

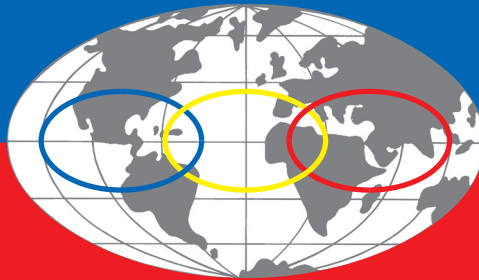
International Angiology

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INTERNATIONALE
DE PHEBOLOGIE**



INTERNATIONAL UNION OF ANGIOLOGY



**CENTRAL
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VASCULAR FORUM**

**UIP Chapter Meeting:
Seoul UIP 2015**

August 27-29, 2015, Seoul, Korea

INTERNATIONAL ANGIOLOGY

Official Journal of International Union of Angiology,
Union Internationale de Phlébologie, Central European Vascular Forum

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Jena, July 2015 – biolitec[®], worldwide leading specialist in the field of medical laser treatments, introduces its new and unique FUSION[®] technology. FUSION[®] provides physicians with the safest medical fibers on the market today, ensuring high-tech laser treatments for the patients' wellbeing.

Especially the fiber products of the ELVeS Radial[™] line have already proven themselves as the most gentle and effective alternative to traditional treatments of varicose veins. In the field of medicine maximum safety is crucial, in particular with regard to medical laser applications. Thanks to the innovative FUSION[®] technology the treatment of varicose veins with ELVeS Radial[™] and the ELVeS Radial 2ring[™] fiber was further refined: With FUSION[®], the silica glass fiber caps are fused to the fiber instead of just glued. That way they resist even the highest temperatures and mechanical strains.

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As with all minimally invasive laser procedures by biolitec[®], the ELVeS[®] laser therapy for the treatment of varicose veins can be performed with almost no side effects. What distinguishes the ELVeS Radial 2ring[™] fiber from other laser treatments is that this endoluminal treatment has a 2-phase radiation. This allows for an optimal homogenous radiation to the vessel wall, yet with less energy density of each ring.

Regardless of which medical field a biolitec[®] laser procedure is used in, all therapies are characterized by their high quality standards and maximum safety. Besides ELVeS[®] for the treatment of varicose veins, the same quality standards also account for LHP[®] and FiLaC[®] for the treatment of hemorrhoids and fistulas, for LIFE[™] for prostate issues and for HOLA[™] for the treatment of myomas. With minimally invasive treatments developed by biolitec[®], patients may generally be able to get back to their daily businesses quicker than after traditional treatments.

About biolitec:

biolitec is one of the leading companies worldwide in the field of medical laser treatments and the only provider that possesses all relevant core competencies – photosensitizers, laser devices and optical fibers – in the field of photodynamic therapy (PDT). Besides laser-based treatment of cancer with the drug Foscan[®], biolitec primarily researches on minimally-invasive and gentle laser treatments and markets them. ELVeS Radial[™] (Endo Laser Vein System) is the most often used laser system worldwide for the treatment of varicose veins. In combination with the Ceralas[®] HPD laser, the innovative contact fiber XCAVATOR[®] enables a gentle treatment of e.g. benign prostatic hyperplasia (BPH) in urology. The new LEONARDO[®] diode laser by biolitec[®] is the first universally applicable medical laser which features a combination of two wavelengths, 980nm and 1470nm, and is suitable for interdisciplinary use. Gentle laser treatments in the fields of proctology, ENT, gynecology, thoracic surgery as well as pneumology also belong to the business field of biolitec. Further information at www.biolitec.com.

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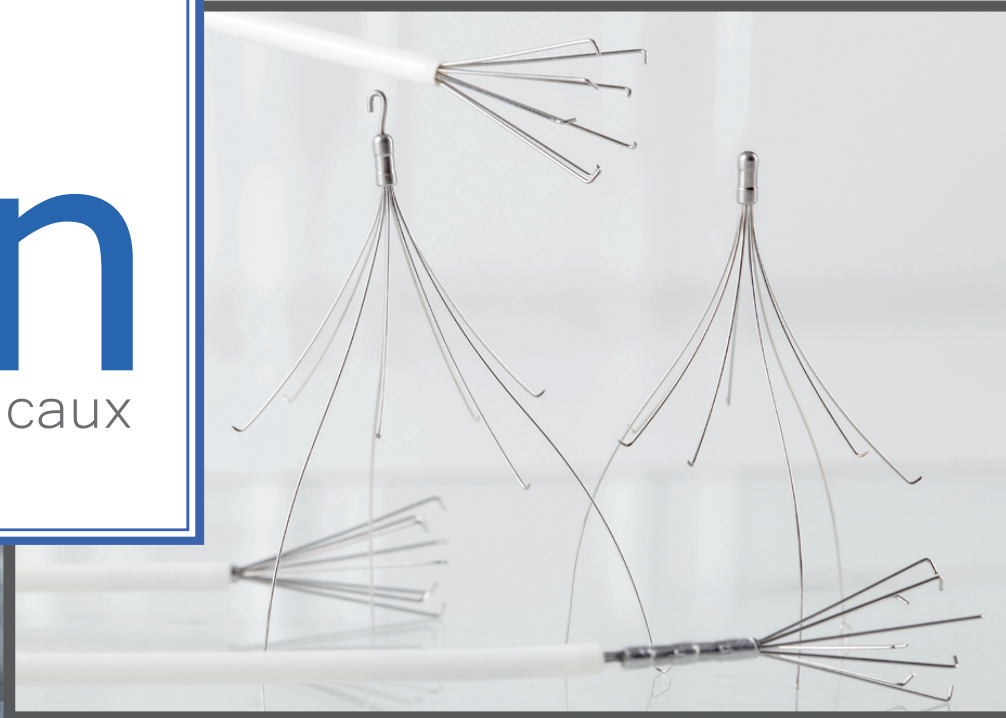


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ABSTRACT BOOK

UIP Chapter Meeting:
Seoul UIP 2015

August 27-29, 2015, Seoul, Korea

Day 1: Thursday, August 27, 2015

No abstracts available

Day 2: Friday, August 28, 2015

07:00-08:00 Breakfast Symposium 1: Venous Thromboembolism	No abstracts available
Breakfast Symposium 2: How to Manage the Venous Ulcer	3
Breakfast Symposium 3: What's New in Vascular Malformation	4
08:40-10:00 UIP Session 1	6
10:30-12:00 UIP Session 2	No abstracts available
12:30-13:30 Luncheon Symposium 1 sponsored by Korea United Pharm. Inc	7
Luncheon Symposium 2 sponsored by Bauerfeind AG	7
14:00-16:00 Free Paper Session 1: Varicose Vein I	8
Free Paper Session 2: Venous Thromboembolism I	12
Free Paper Session 3: Venous Ulcer I	16
Chapter Society Session 1: Singapore Chapter of Asian Venous Forum, Singapore	No abstracts available
Chapter Society Session 2: American College of Phlebology, USA	21
Chapter Society Session 3: Associazione Flebologica Italiana, Italy	21
Chapter Society Session 4: Australasian College of Phlebology and Australian and New Zealand Society of Phlebology, Australia & New Zealand	23
16:30-18:00 Free Paper Session 4: Varicose Vein II	23
Free Paper Session 5: Basic Phlebology	26
Free Paper Session 6: Venous-Lymphatic Disorders and Compression Therapy	29
Chapter Society Session 5: Asian Venous Forum	33
Chapter Society Session 6: Japanese Society for Phlebology, Japan	36
Chapter Society Session 7: Société Française de Phlébologie, France	38
Chapter Society Session 8: Italian College of Phlebology, Italy	No abstracts available

Day 3: Saturday, August 29, 2015

07:00-08:00	Breakfast Symposium 4: Endovenous Thermal Ablation Technique	41
	Breakfast Symposium 5: Compression Therapy in Venolymphatic Disorders	42
	Breakfast Symposium 6: Venous Hemodynamics	42
08:30-09:30	Plenary Lecture 1	43
	Plenary Lecture 2	No abstracts available
09:30-10:00	Congress Presidential Lecture	No abstracts available
10:30-11:30	Symposium 1: Sclerotherapy for Varicosity	43
	Symposium 2: Venous Thromboembolism	45
11:30-12:30	Symposium 3: Endovenous Ablation for Varicose Veins	45
	Symposium 4: Anticoagulant and Venoactive Drugs	46
10:30-11:30	Nurse and Sonographer Symposium 1	47
11:40-12:30	Nurse and Sonographer Symposium 2: Workshop	No abstracts available
12:40-13:40	Luncheon Symposium 3 sponsored by Medtronic Inc.	No abstracts available
	Luncheon Symposium 4 sponsored by Bayer Korea	No abstracts available
14:00-16:00	Free Paper Session 7: Varicose Vein III	48
	Free Paper Session 8: Venous Thromboembolism II	52
	Free Paper Session 9: Diagnosis and Pelvic Disorders	55
	Free Paper Session – Others	No abstracts available
	Chapter Society Session 9: Venous Association of India, India	59
	Chapter Society Session 10: Latin American Venous Forum	63
	Chapter Society Session 11: Chinese Vascular Society, China	63
16:30-18:30	Free Paper Session 10: Varicose Vein IV	67
	Free Paper Session 11: Varicose Vein V	71
	Free Paper Session 12: Venous Ulcer II	75
	Free Paper Session 13: Venous Thromboembolism III	77
16:30-18:00	Sponsored Symposium sponsored by medi GmbH & Co. KG	81

Poster Session

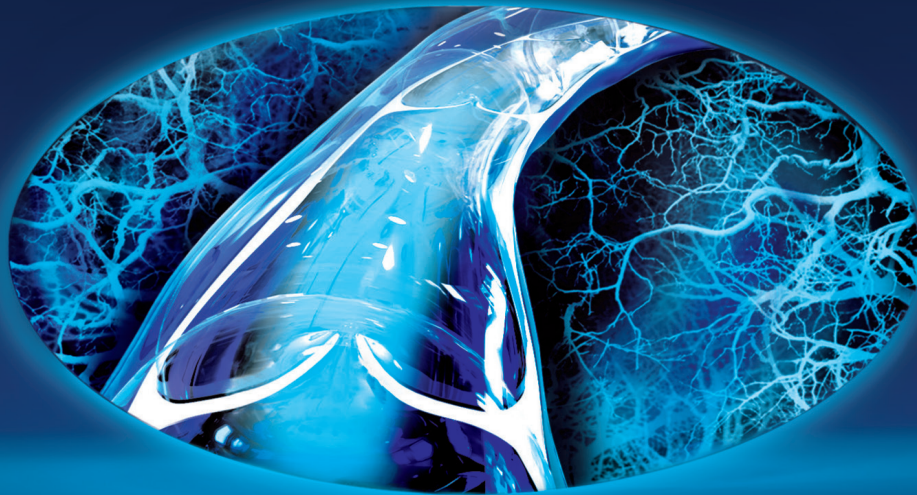
Varicose Vein	85
Venous Thromboembolism	97
Venous Ulcer	103
Basic Phlebology	104
Venolymphatic Disorders and Compression Therapy	108
Diagnosis and Pelvic Disorders	110

Author Index	119
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BREAKFAST SYMPOSIUM 2: HOW TO MANAGE THE VENOUS ULCER

AB0339

BREAKFAST SYMPOSIUM 2

Surgical management of venous ulcers

G. M. Malouf

President Australian and New Zealand Society of Phlebology, Australia

The two medical considerations requiring surgical management in venous ulcer patients are

- 1 the cause of venous hypertension and
- 2 the ulcer or wound itself

In the local vicinity of venous ulcers there are often obvious varicosities. These may be associated with nearby incompetent perforating veins in the calf or saphenous trunk reflux. Deep vein reflux may also be present. We must always bear in mind the possibility of proximal iliac vein narrowing or obstruction as another cause for high venous pressure in the leg.

Good quality venous duplex mapping of the ulcerated leg is essential to develop a comprehensive treatment plan to reduce the venous hypertension. During the duplex assessment all compression bandages and stockings and dressing must be removed to allow complete mapping. Depending on mapping results, several surgical/minimally invasive treatment options to treat the venous pathology will be available, similar to the options available for C2 patients. The easiest and most accessible minimally invasive treatment method to reduce local venous hypertension around an ulcer is simply foam sclerotherapy to varicosities adjacent to the ulcer. This form of treatment is employed in many ulcer clinics around the world. In some cases, more comprehensive definitive treatment to the superficial veins may be the initial treatment. Alternatively superficial or deep vein treatment may be delayed until the ulcer heals using dressings and compression and depending on other circumstances.

In terms of the venous ulcer itself, surgical debridement is commonly required to remove necrotic and/or infected tissue, and to stimulate regeneration from the base and epithelialisation from the ulcer edge. Skin grafting to large or recalcitrant ulcers is commonly performed but only after treatment of the underlying venous hypertension has been undertaken and malignancy or vasculitis excluded on biopsy.

Depending on the population cohort, possibly more than 50% of venous ulcer patients have only superficial venous disease. One must not ignore however the role played by the calf muscle pump and the possibility of coincidental arterial disease in the affected limb. Co-morbid illness such as diabetes, anaemia, vasculitis, obesity, cardiac failure or immobility may be as important as the diseased veins themselves. Adequate wound management and compression are vital.

The same options are available to treat superficial veins in C6 patients as are available to C2 patients but treatment strategies in C6 patients may need to be modified because of the severity and tortuous or recurrent nature of the superficial varicosities, and the increased incidence of coexisting perforator or deep vein reflux. The availability of thermal ablation is increasing and cost is reducing so world-wide use is therefore growing. Sclerotherapy is cheap and repeatable and a very good option, especially in developing countries. Open superficial veins surgery is reducing in frequency world wide but may still be preferable in some countries depending on cost and health systems. Ambulatory phlebectomy under local anaesthetic is very effective in reducing local venous hypertension around a venous ulcer, often combined with sclerotherapy. We must never lose sight of the fact, especially in difficult to manage ulcers, that there may also be proximal venous obstruction, which may be treated endovenously with balloon dilatation and stenting.

Deep vein surgery is being performed in selected centres world wide, for certain patients who have had the superficial venous disease and perforators corrected and still suffer ulcers. Deep vein surgical procedures include endovenectomy and creation of new vein valves, or if valve cusps do exist, restoration of deep vein competence using valvuloplasty, external or open.

Comprehensive treatment of superficial venous reflux is suspected by many practitioners to speed the healing rate of the venous ulcers. There have been few papers to support this. There has however been research to prove that ulcer recurrence is reduced and ulcer free intervals are longer in patients who have had adequate treatment to their varicose veins.

In terms of surgery to the ulcer wound itself sharp surgical debridement followed by good wound management, including infection and moisture control does encourage healing. Complete ulcer shaving or excision can be employed, followed by grafting. Methods of skin grafting include split thickness graft which may or may not require meshing, or pinch grafting under local anaesthetic to stimulate healing, also commonly performed in the ulcer clinic.

Venous leg ulcer management is a challenge for all of us.

AB0370

BREAKFAST SYMPOSIUM 2

Therapeutic alternatives for venous ulcer

F. V. Rasgado

Academia Mexicana de Flebologia y Linfologia, Mexico

The venous ulcer is estimated to affect approximately 10–35% of the entire USA population and approximately 4% of people older than 65 years have active ulcers. The economic burden to the society is estimated to be 1 billion USA dollars per year.

A high rate of arterial hypertension's comorbidity (63.2%) and with prevalence of ulcers with venous or mixed (arterial-venous) etiology (about 80%). In 354 leg ulcers, Koerber found

75.25% venous leg ulcers, 3.66% arterial leg ulcers, 14.66% ulcers of mixed venous and arterial origin and 13.5% vasculitic ulcers, diabetic leg ulcer, the ulcers with an inflammatory border and skin necrosis are often associated to chronic inflammatory diseases like colitis ulcerosa or rheumatoid arthritis. Leg ulcers may also occur in patients with Klinefelter's syndrome. In patients with hypogonadism and testosterone-deficient slow healing ulcers may occur with or without chronic venous disease. There is some evidence that abnormal platelet aggregability or fibrinolysis with an elevated activity of plasminogen activator inhibitor-1 may play an important role, others Ulcers caused by infections.

Compression improves the healing of ulcers when compared with no compression: multicomponent compression systems are more effective than single-component compression systems, high compression is more effective than lower compression and medical compression stockings are more effective than compression with short stretch bandages. With a reduced pressure within the range of 40mmHg it can be safely applied even in patients with arterial impairment. The Coban 2 bandage, induced the ulcer healing in all the patients within the three months of observation period. The effect was not different from Unna boot so far considered as the "gold standard bandage" in compression therapy of venous ulcers. Patients show a healing of 75% in 8 weeks of treatment, the use of a bandage impregnated with coumarine and zinc oxide, it is a good choice as treatment for veno-lymphatic ulcers.

With surgical intervention a significant proportion of ulcers currently managed conservatively can be healed. Ulcer healing occurred in 85% (44 of 52 limbs) of which 52% (27) limbs were no longer confined to compression. Clinical improvement was achieved in 98% of limbs. Surgical correction of superficial venous reflux in addition to compression bandaging does not improve ulcer healing but reduces the recurrence of ulcers at four years and results in a greater proportion of ulcer free time.

Endovenous ablation of incompetent superficial veins improves the healing of chronic primary venous ulcers and decreases the recurrence rates (6-12 m, healing time with RF or L), The use of EVLA in the local management of refractory ulcers following venous surgery appears to be an attractive option that needs to be explored.

In one study it will demonstrated that Ultrasound Guided Foam Sclerotherapy was effective in the abolition of superficial venous reflux with favourable ulcer healing and long-term recurrence rates with a low complication rate. Foam sclerotherapy is an attractive alternative to surgery in this group of patients. This gives a total ulcer healing rate of 71% (22/31) of the studied limbs or 70% (21/30) of the patients. At one year, 65% (20/31) limbs did not have active ulcers.

In none of the comparisons was there evidence that any one dressing type was better than others in terms of number of ulcers healed.

Negative wound pressure treatment creating a negative pressure on ulcer bed is able to favour granulation tissue and shorten healing time.

Leg elevation at 10min each 24 h produces significant drainage of fluid from the legs, promoting tissue dryness and blood flow to the skin around the ulcer, the transcutaneous oxygen measurements did not change during the period of treatment.

Nadroparin plays an important adjuvant role in venous ulcer treatment because it favours pain relief and improves quality of life. It does not improve the healing, only the pain.

Venous ulcers exhibit circannual fluctuations in their onset and healing rates; healing rates after one, two or three months for ulcers that developed in a given month, specially March, May, October and November.

A follow-up study suggests that eradication of superficial reflux with additional subcutaneous fasciotomy as therapy for resistant and recurrent venous ulcer in patients with severe

chronic venous insufficiency improves ulcer healing or skin graft survival.

The 24-week healing rate was significantly reduced in patients with poor ankle motility: 13%, in legs with an ankle motility <35° compared with 60% in legs with an ankle motility >35°, ankle motility was an independent risk factor for chronic venous ulcer healing rate when adjusted for age, ulcer chronicity and popliteal vein reflux (p = 0.001).

Application of autologous platelet-rich gel (PRP) to non-healing vascular ulcers. This treatment is effective in the majority of cases, without side effects. The easy application, the almost complete absence of side effects and the low cost of platelet gel make this approach very interesting to treat chronic non-healing ulcers.

The use of sulodexide in patients with chronic venous leg ulcers accelerates the healing process.

The speed of decreasing of ulcers in group I varied from 0.029 to 0.171 cm²/d whereas in group II it equalled 0.200 to 0.343 cm²/d.

Connexin43-Based Peptide, Targeting Cx43 with ACT1, a peptide mimetic of the carboxyl-terminus of Cx43, accelerates fibroblast migration and proliferation, and wound reepithelialization. Evaluation indicated a reduced median time to 50 and 100% ulcer reepithelialization for ACT1-treated ulcers.

Electrical Muscle Stimulation is an effective and well-tolerated therapeutic method for the treatment of chronic venous disease. The introduced scheme of EMS application was shown to be useful for treatment of chronic edema. EMS demonstrated high efficacy and good tolerability and provided significant reduction in pain severity, VCSS score and ankle edema, as well as a 3-fold increase in the number of healed venous ulcers.

Compression remains the most useful and effective method, multi-layer is most effective, Unna Boot remain the "Gold standard", axial disconnection is very important. Some drugs may contribute to healing, special dressings are expensive, Electrical Muscle Stimulation will be very useful in non-ambulatory patients. New methods should be considered, specially for poorly healing ulcers also differential diagnosis.

BREAKFAST SYMPOSIUM 3: WHAT'S NEW IN VASCULAR MALFORMATION

AB0341

BREAKFAST SYMPOSIUM 3

Klippel-Trénaunay Syndrome: treatment with endovenous laser, long-term results with the regional segmentary skelitization technique

R. Simkin

Faculty of Medicine of Buenos Aires, Argentina

The authors present their experience in the treatment of the troncular varicose veins, and in 1 case distal and diffuse arteriovenous fistulae with laser. We used in the 3 cases endoluminal laser 980nm, with fiber from 200 to 600nm, and in 8 cases the laser 1470 and the fiber from 200 nm. All the cases were guided by intraoperative U.S., also we performed a pre-operative arteriography of the lower limbs. A scanogram of the both leght showing the differences between the ill leg, that contains the diffuse angiomas, the pigmentary nevus and the different measure and length of that leg. All the cases were classified by the Simkin classification of the KTS. In pure KTS, diffuse and mixed, the exception was the case with arteriovenous fistulae, that cases was englobed in this classification as a mixed KTS (arterial and vein component). In the cases that the patient presents a diffuse pattern of micro

arteriovenous fistulae, we usually performed a pre-operative arteriography and we used to practice the regional segmentary skelization technique, which performed the divorce into the arterial and the deep vein venous systems. The first case that we performed endovenous laser in the long saphenous veins bilaterally was primitively operated using the regional segmentary Skelisation Technique in 1987. We performed the arteriography 18 years later and we could observe a recurrence of a diffuse micro-arteriovenous fistulae pattern in the infrapopliteal distal branches in the internal tight of the affected leg. After the endovenous laser during the immediate post-operative control we observed that the pre-operative pattern was disappeared, so we conclude that the endovenous laser in the treatment of the KTS helps to close and treat the diffuse microarteriovenous fistulae. Pattern, also we observed after many years follow up, that the different measure and length of those legs doesn't exist anymore, comparing with the 1987 measures. The 2nd case that we performed endovenous laser was in the great saphenous veins, and also in the pelvic veins (15 years after we did the regional segmentary skelisation technique). The 3rd case was performed in the short saphenous veins, perforators and collateral veins of the tight and on the leg endovenous laser associated with microsurgery and AFL (advance fluorescence technologies) for the angioma located in the legs, with good results.

Long term results of the "Regional segmentary skelization" technique were presented (15-24 years) with good results, and with 3 cm or less difference between the other leg in the pre-operative. When we do the artriography during the post-operative controls appears the secondary av fistulae that demonstrates the persistence of secondary varicoses veins, the recurrence in those cases in about 30 % of the cases.

AB0374

BREAKFAST SYMPOSIUM 3

Clinical course and management of vascular anomalies

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Vascular Anomalies

There is a wide variety of vascular tumours and congenital vascular malformations (CVM). Their diagnosis and treatment can be difficult. Various imaging modalities are required for baseline evaluation and diagnosis including ultrasound examination. Haemangiomas are the most common vascular tumours. They can be congenital or appear during infancy. What is commonly referred to as haemangiomas are actually HOI. These are the most common tumours of infancy and occur in approximately 10% of Caucasians, more frequently in females. HOI have three stages - initial proliferation and growth, a rest stage and then involution. HOI are "self-limited" and benign. They consist of endothelial cells and are highly vascular. Approximately 80% of HOI are located on the face and neck. Those on the surface have a "strawberry" appearance while those under the skin present as a bluish swelling. Complications are uncommon but include surface ulceration and bleeding, pressure on vital organs or even high output cardiac failure if very large. HOI commonly disappear without treatment by 10 years of age leaving little or no visible marks. Large unsightly tumours or those causing complications require treatment. The vast majority of infantile hemangiomas do not require any medical or surgical intervention. Treatment options have included glucocorticosteroids (topical, intralesional and oral) and Beta-blockers, most specifically propranolol. Topical or systemic beta blocker drugs are most effective while surgical excision may be required.

Congenital Haemangiomas

HOI are distinct from congenital haemangiomas that are present at birth. Sub-groups of congenital haemangiomas include:

- RICH - rapidly involuting congenital haemangioma. Undergo rapid involution after birth.
- NICH - non-involuting congenital haemangioma Persist indefinitely.

Ultrasound B-mode shows a discrete solid mass with low internal echogenicity. When the lesion is active, colour and spectral Doppler demonstrates intra-lesional flow with mean peak systolic velocity of approximately 12 cm/sec. When the lesion is involuted, minimal flow is demonstrated on colour and spectral Doppler.

Congenital vascular malformation (CVM)

The reticular phase of embryogenesis occurs for the first three weeks of development. At this stage the circulation consists of unstructured tangled small vessels actively growing from mesenchymal cells or angioblasts. Abnormalities of development that occur before the vascular system matures retain the active growing characteristics of these cells. After about three weeks, the vessels differentiate to form vascular trunks adjacent to the major nerves. Extratruncular or pre-truncular lesions are due to arrested development in the reticular phase. Truncular lesions are due to later arrested development during the phase of vascular trunk formation. Extratruncular malformations keep characteristics of mesenchymal cells that allow them to grow if stimulated. They have an unpredictable course with tendency to convert from a dormant to active phase if provoked by trauma, hormones or particularly by surgical or non-surgical treatment. They have a high tendency to progress with destructive potential and a high recurrence rate and risk of complications. Truncular malformations do not carry the risk of recurrence.

Truncular malformations are more haemodynamically significant than extratruncular malformations

TYPES AND PRESENTATIONS OF CVM

CVMs present with a wide range of presentations and with an unpredictable clinical course. 85% are asymptomatic. They may involve any organ system but most commonly the pelvis, extremities and intracranial circulation. The majority of CVM are either venous malformation (VM), lymphatic malformation (LM) or capillary malformation (CM). Arteriovenous malformations (AVMs) are less common but are the most aggressive. VMs have low flow characteristics but AVMs have high flow characteristics.

Diagnosis

- Baseline evaluation when appropriate may include
- Duplex ultrasound
 - Whole-body blood pool scintigraphy (WBBPS)
 - Trans-arterial lung perfusion scintigraphy (TLPS)
 - Magnetic resonance imaging (MRI) with angiography (MRA) or venography (MRV)
 - Computed tomography (CT) with angiography (CTA) or venography (CTV)
 - Biopsy of individual lesions
- Confirmation of final diagnosis should be made with
- Selective and super-selective arteriography
 - Direct puncture arteriography
 - Standard and/or direct puncture venography

1. VENOUS MALFORMATIONS

Extratruncular VM present with multiple lesions in various tissues such as skin, fat and muscle. Extra-truncular VM can present as varicose veins, lesions or as a lump or swelling depending on the tissue involved. Extensive VM can result in chronic venous insufficiency (CVI) or superficial thrombophlebitis (STP).

Truncular VMs arise from named veins and can closely mimic varicose veins. Some examples include:

- Popliteal vein aneurysm
- Persistent sciatic or marginal vein
- Congenital deep vein incompetence
- Klippel-Trenaunay syndrome

KTS was described by Maurice Klippel and Paul Trenaunay, French physicians in 1900. KTS is defined by the following features:

- A combined capillary - lymphatic - venous malformation.
- Atypical mostly lateral varicosities.
- Soft tissue and skeletal hypertrophy.
- Involvement of one or more limbs and sometimes the trunk.
- Overgrowth of one limb, usually the leg.
- Capillary malformation

Ultrasound

On B-mode a patent extra-truncular VM is a compressible lesion with low flow rates on spectral Doppler. When fully thrombosed these lesions will demonstrate no flow on colour, power or spectral Doppler.

Treatment

General measures include the use of graduated compression stockings. Deep vein incompetence has limited treatment options. Surgery is rarely required in the treatment of extra-truncular lesions. Endovenous laser ablation and foam ultrasound guided sclerotherapy are treatments of choice.

2. LYMPHATIC MALFORMATIONS

Truncular LMs present with primary lymphoedema. Primary lymphoedema presents during childhood and should prompt investigation for a truncular LM. LM can present with recurrent cellulitis or localized infections

Extra-truncular LM presents with cystic lesions. Vessel walls are fragile and bleed into the cystic space. Lesions can also get infected. The cysts can have clear or blood-stained fluid. Extra-truncular LM can present as

- Microcystic - appearing as a cluster of small warts or blisters.
- Macrocystic - appearing as lumps.

Ultrasound

On B-mode an extra-truncular LM is a non-compressible lesion with thin walls and no flow on colour or spectral Doppler within the lesion.

Treatment

Truncular LMs are managed as per lymphoedema. Extra-truncular lesions are treated with irritant sclerosants such as doxycycline, belomycin, ethanol or sodium tetradecyl sulphate.

3. ATERIOVENOUS MALFORMATIONS

This is the most aggressive form of CVM. An active extratruncular AVM allows arteriovenous shunting with high flow due to absence of restriction at a capillary level, as well as retaining a nidus (central area of direct AV connections) capable of rapid multiplication and a high rate of recurrence. Initially presents with localised swelling, thrill and a bruit. Later presents with features of arterial 'steal syndrome' ranging from cutaneous blanching in a reticulate pattern, ulceration, gangrene and skin necrosis. Larger AVM can result in cardiac failure. Truncular AVM is extremely rare. It allows a direct communication between an artery and a vein with no nidus. Truncular AVMs include pulmonary AVF and patent ductus arteriosus.

Parkes Weber syndrome

This condition was first described by Frederick Parkes Weber, 1863-1962, English dermatologist consists of a truncular AVM in association with

- Cutaneous capillary malformations.
- Venous and lymphatic malformations.
- Skeletal or soft tissue hypertrophy.
- Overgrowth of one limb, usually the leg.

Ultrasound

On B-mode an AVM is a non-compressible lesion with highly pulsatile flow on spectral Doppler. If a nidus is present, colour Doppler will demonstrate turbulent flow and aliasing within the nidus. Spectral Doppler will demonstrate arterialised flow in the associated veins with medial thickening and fibrosis on B-mode.

Treatment

It is essential to assess the extent, severity and progression prior to treatment. It is best to manage a dormant AVM expectantly. Early aggressive treatment may be required to prevent life- or limb-threatening complications. It is essential to ensure that the benefits from intervention exceed morbidity from treatment since ill-planned intervention can stimulate explosive growth. Simply closing the feeding artery leaving the nidus intact usually makes the condition worse by provoking more aggressive neovascular growth. The nidus must be controlled to prevent recurrence. However, it is rarely possible to completely eradicate the nidus due to excessive tissue destruction from chemical ablation or excessive bleeding from surgery. Coil embolisation of the enlarged high-flow efferent vein is the most effective means to reduce flow rates allowing the nidus to be more readily treated by sclerotherapy or in some cases by surgical excision. Complications of treatment include arterial embolisation, tissue destruction by sclerosant, severe swelling with progression to compartment syndrome, pulmonary embolism (PE) and end organ ischaemia.

UIP SESSION 1

AB0355

UIP SESSION 1

IUP consensus document on the rehabilitation of patients with chronic venous insufficiency

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No consensus document focused the complex argument of the rehabilitation of venous patients. The following recommendations are proposed.

1) Despite of the clinical severity, all patients afflicted with chronic venous insufficiency (CVI) deserve to follow lifestyle recommendations. These are mainly aimed to reduce venous stasis and symptoms but also to prevent disease progression and complication.

2) Venous patients with severe CVI (severe edema, lipodermatosclerosis, open or healed ulcer), malformations or comorbidities influencing venous function, need Physical Therapies (PT). This is also necessary in patients undergone medical or surgical treatments for venous recanalization or ablation.

3) Poorly active venous patients need to practice Adapted Physical Activities (APA) tailored on their physical ability and comorbidities. In turn, physically active venous patients must be informed about the positive or negative effects of sport activities on their CVI.

4) Severe venous patients, in which impaired psychic or physical conditions impede to follow the above recommendations (lifestyle, PT and APA), need psycho-social support.

LUNCHEON SYMPOSIUM 1
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AB0407

LUNCHEON SYMPOSIUM 1

Interim report of CILOPA trial: the efficacy of advanced cilostazol (Cilostan® CR) in symptomatic peripheral artery disease

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Background. Cilostazol is a selective inhibitor of phosphodiesterase III (PDE3) approved for the treatment of intermittent claudication (IC). It improves ischemic symptoms including ulcer, pain and coldness of the extremities in chronic arterial occlusion. It is also indicated in preventing recurrence of cerebral infarction except cardiogenic cerebral embolism.

CILOPA study was designed to evaluate the efficacy and safety of the new cilostazol controlled release (Cilostan® CR) 200 mg in patients with symptomatic Peripheral Arterial Disease (sPAD). We designed a multi-center, single-arm trial recruiting 6 centers and 100 patients Enrollment in Korea.

Material and methods. Eighty-eight eligible patients were enrolled and administered cilostazol CR once daily for 12 weeks. Ischemic symptoms of lower limbs were evaluated by 100mm-VAS as the primary outcome measure. Global assessment and Ankle-Brachial Index (ABI) were evaluated as secondary outcome measures. To evaluate the safety of cilostazol CR, adverse events, adverse drug reactions, and serious adverse events were evaluated.

Results. The VAS and global assessment significantly improved at week 12 (47.3 ± 23.5 to 36.2 ± 21.7 , $p=0.0002$), (20 to 36). ABI improved at week 12 compared with baseline (0.69 ± 0.18 to 0.71 ± 0.19 , $p=0.066$). The adverse drug reactions were headache, dyspepsia, decreased appetite, and hot flush.

Conclusions. Cilostazol CR significantly improved ischemic symptoms of lower limbs in patients with sPAD. And there was no significant difference in safety compared with commonly-known adverse drug reaction of cilostazol. The new cilostazol CR formulation was found to be effective and safe with the improvement of patient compliance of once daily administration in PAD.

LUNCHEON SYMPOSIUM 2
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LUNCHEON SYMPOSIUM 2

Prevalence and incidence of chronic venous disease and lymphedema

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Background. Chronic venous disorders are among the most common diseases in Germany. In the Bonn Vein Study I (BVS I), conducted in 2000, 3072 participants of the general population of the city of Bonn and two rural townships, aged 18-79 years took part in this study (1350 men, 1722 women). Participants were selected via simple random sampling from the registries of residents. In this follow-up study 6.6 years later, the same population was investigated again to. The aim was to identify the incidence of newly developed chronic venous disorders and of progression of pre-existing CVD.

Material and methods. From May 2007 to September 2008,

we contacted all participants of BVS I and invited them for a reinvestigation. The participants answered a standardized questionnaire and were examined by clinical means and by duplex ultrasound in the same way as in BVS I. In addition to the questionnaire and the phlebological investigations skin fold test at the dorsum of the second toe, was performed. A so-called Stemmer's sign was slightly positive (Stemmer I) when the skin fold was between 0.5 and 1 cm large. Stage II was reached when the skin fold measured more than 1 cm and Stage III when the skin fold was extremely enlarged. Associated risk factors were investigated in a multivariate analysis. The incidence of Stemmer's sign was calculated from the results of a follow up study.

Results. In the BVS I results show a distribution in the CEAP classification with C0: 9.6%, C1: 59.0%, C2: 14.3%, C3: 13.4%, C4: 2.9%, C5: 0.6% and C6: 0.1%, when considering the highest class of each individual. The response at follow-up after 6.6 years was 84.6%. We reinvestigated 1978 participants. The prevalence for varicose veins rose from 22.7 to 25.1% and for CVI from 14.5 to 16%. The incidence for new varicose veins was 13.7% and for new CVI 13.0% per 6.6 years increasing with age. Participants with C-Class C2 as a maximum at BVS I increased to higher C-classes in 19.8% (non-saphenous VV) and in 31.8% (saphenous VV). 1.5 % of the men and 2 % of the women had a manifest lymphedema represented by Stemmer's sign stages II and III. The prevalence of positive Stemmer's sign II and III was markedly higher in the urban population with 2.4 %, compared with the rural population with 0.7% and also increased with the clinical stages of chronic venous diseases in the CEAP-classification. The prevalence of positive Stemmer's sign increased significantly with age (OR 5.4), obesity (OR 4.9), female gender (OR 2.1) urban living (OR 2.8) and sitting profession (OR 1.6). The incidence reached 0.8%/year for a slightly and 0.3%/year for increased positive Stemmer's sign.

AB0396

LUNCHEON SYMPOSIUM 2

The in-vivo performance of compression stockings using air-plethysmography

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Background. Stockings are tested extensively by the manufacturer by quantifying compression strength, pressure graduation, surface contour and knit. Despite this they are not tolerated by some people and could cause harm. Furthermore, compliance is a major issue. These factors may be related to how stockings augment the venous return. This study compared the in vivo performance of elastic compression stockings in healthy controls and in patients with varicose veins (VV), post-thrombotic syndrome (PTS) and lymphoedema.

Material and methods. Stocking ejection force was tested by measuring the reduction of calf volume of a congested calf after sudden deflation of a thigh-cuff (outflow fraction, OF). The performance of a stocking at resisting increases in calf volume after incremental thigh-cuff inflations was tested using an incremental thigh-cuff pressure causing maximal increase in calf volume (IP-MIV). Reflux and gravitational drainage were tested in mL/s using dependency (venous filling index, VFI) and elevation (venous drainage index, VDI) manoeuvres, respectively.

Twelve subjects (legs) were tested in each group using no compression, knee-length Class 1 (18-21 mmHg) compression and then Class 2 (23-32 mmHg) compression. Stocking interface pressures (mmHg) were measured supine at 2 points using the PicoPress®.

Results. The values of the OF, IPMIV, VFI and VDI were quantified in each of the 4 groups. In particular, stockings sig-

nificantly improved the OF and IPMIV in the VV patients and controls. The VFI improved significantly in the VV patients. The VDI improved x6 in the only PTS patient with an iliac occlusion from 2.3 (none), to 14.3 & 13.3 with a Class 1 and 2, respectively.

Conclusions. Stocking performance tests measuring in vivo volume changes, in response to provocation manoeuvres, may explain why the legs of some patients improve with a stocking and why other legs may not benefit greatly.

AB0398

LUNCHEON SYMPOSIUM 2

Pressure and stiffness – the two sides of the compression coin

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Compression therapy entailing the application of pressure to the lower extremities is a fundamental component in the management of acute and chronic venous and also lymphatic diseases. The treatment can be performed by compression bandages, compression stockings and intermittent pneumatic compression devices.

Medical compression stockings are made of elasticated textile. According to the exerted pressure different compression classes are available. The pressure profile of each compression class responds to the resting pressure in the ankle region. The pressure exerted to the leg should compress the veins and improve the muscle pumps. This can be demonstrated in the supine position. In the upright position however even 30-40 mmHg elastic compression stockings may not be able to sufficiently compress the veins.

A second mode of action are the pressure changes during muscle contraction or walking. The ability to withstand the circumference enhancement of the leg during muscle activity or simply after changing from the supine to the upright position depends on the stiffness of the material. Stiffness is defined as pressure increase by increase of leg circumference. The static stiffness index (SSI) is measured as the in vivo pressure standing upright minus the pressure in the supine position. A high static stiffness index means that the pressure under the stocking will rise significantly in the upright position and is able to improve the venous function better than material with a low SSI. Some indications like chronic venous insufficiency (CVI) with skin changes or venous ulcers benefit more from a high SSI than others like symptomatic varicose veins without CVI.

For these reasons it is recommended to consider not only the compression class but also the stiffness of the material used.

AB0405

LUNCHEON SYMPOSIUM 2

Elastic compression elicited beneficial cardiovascular effects: a complex clinical study in healthy, lymphedematous and lipedematous individuals

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Compression therapy-directed research mostly focuses on venous and lymph flow; however the effects of medical compression

stockings on cardiovascular responses have been poorly studied, thus the systemic effects of compression are yet to be fully clarified.

Medical stockings with mild compression were found to ameliorate pulse wave velocity, the gold standard of aortic elastic property measurement. Sports stockings are considered to efficiently improve running capacity however the way of action remains to be elucidated. Non-graduated stockings exert remarkable venous hemodynamic effect but their systemic cardiovascular effect has never been measured. Recent studies showed high aortic stiffnesses of leg secondary lymphedema and lipedema patients. Sustained compression with elastic material is the cornerstone of limb volume control however cardiovascular impacts have been poorly investigated.

We are interested to see whether measurable beneficial effects on aortic function could be attributed to knee-high leg sports or non-graduated stockings in healthy individuals and medical compression panty-hoses in lymph- and lipedema patients.

Eligible probands are subjected to blood pressure, two-dimensional echocardiography and pulse wave velocity measurements to determine aortic elastic properties before and after using compression garments. All studies are conducted under static circumstances except sports and non-graduated stocking trials where dynamic measurements with treadmill exercises are as well accomplished.

According to our working hypothesis, sports and non-graduated knee-high stockings of healthy individuals and panty-hoses of lymphedema and lipedema patients result in positive cardiovascular influences.

FREE PAPER SESSION 1: VARICOSE VEIN I

AB0241

FREE PAPER SESSION 1

Great and lesser saphenous veins segmentary radiofrequency thermoablation tips

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Chronic Venous Insufficiency affects an important proportion of the population. Some epidemiological European studies show in Europe up to 55% and in USA up to 30% of the adult population show some degree of Chronic Venous Disease. A sixth to half exhibit important clinical manifestations. On the other hand, 1.5% of the global population has or has had Venous Ulcers.

In 2006 was made available for clinicians Segmentary Radiofrequency Thermoablation. Due to its characteristics, this system presented great advantages *versus* other devices, which stimulated many users venture into more technically difficult cases.

First of all, there is a set of general guidelines whose fulfillment is basic to solve more complex issues. Among them: an adequate Duplex scan mapping of the extremity with special remarks on the reflux pathways, performing the complete procedure under ecographic vision, the appropriate Ecoguided tumescent anesthesia performed using an atraumatic needle and infusion pump, performing a reinforcement tumescence in the Saphenofemoral Junction and the Thermoablation as such with the adequate number of catheter passes according to the venous segment.

During special cases' treatments, we must know the tips which will help us overcome Great Saphenous Vein complex anatomy. Among those we consider anatomical variability, tortuosities, aneurysmal dilations, superficial venous segments and post-thrombotic segments.

Relative to handling the Lesser Saphenous Vein, we will

have to consider the tips related to anatomical variations of the junction, the relation with the Sural Nerve and the handling of the epifascial segment.

The proper management of these nontraditional situations allows us an excellent standard of work that will achieve the best results for our patients.

AB0105

FREE PAPER SESSION 1

Sclerotherapy in telangiectasias, reticular veins, medium size veins, large size veins, venous ulcer and severe chronic venous insufficiency

J. Chunga Chunga
Glomach Medic, Peru

Background. In the last decade sclerotherapy has become the gold standard procedure to eliminate varicose veins, especially when using the Tessari's method, we can cure very large veins that was difficult in the past. In this work, with patients, for over 30 years, we want to demonstrate that sclerotherapy is the sole most effective method to eliminate all kind of varicose veins, also being the less expensive and shows less complications.

Material and methods. We show videos of treatment in many patients with different stages of varicose veins disease in lower limbs, treated sole with sclerotherapy using Tessari's method, prior clinical examination of our patients.

Results. Great results. We can eliminate all kind of veins in any stage of the disease. Patients continue with their lives normally, and have a better cost/effectiveness result.

Conclusions. With sclerotherapy we can treat all kind of varicose vein problems.

AB0165

FREE PAPER SESSION 1

Comparison of 980 nm bare tip fiber laser with 1470 nm radial fiber laser for treating primary varicose veins

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Background. The use of 980 nm bare tip fiber laser was first approved by the national health insurance in January 2011 in Japan. Next the use of 1470 nm radial fiber laser was approved in April 2014. We used these two devices to treat primary varicose veins. We compared the efficacy and early postoperative complications after endovenous laser ablation (EVLA) between these two devices.

Material and methods. From November 2013 to June 2014, 72 patients (85 limbs) were treated with 980 nm bare tip laser fiber and from July 2014 to January 2015, 136 patients (158 limbs) were treated with 1470 nm radial fiber laser for primary varicose veins. Postoperative local pain, ecchymosis, vein occlusion rate, early postoperative complications, treated vein length, operating time, linear endovenous energy density (LEED) was recorded.

Results. There was no significant difference between operating time, LEED, treated vein length and vein occlusion rate. Postoperative local pain and ecchymosis was tend to be less in the 1470 nm radial fiber group.

Conclusions. EVLA using 1470 nm radial fiber laser resulted in less postoperative local pain and ecchymosis compared with using 980 nm bare tip fiber laser in treating primary varicose veins.

AB0166

FREE PAPER SESSION 1

Steps to avoid nerve damage during endovenous laser ablation (EVLA) for the small saphenous vein (SSV)

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Background. Small saphenous vein (SSV) incompetence is identified in 20% of patients presenting with varicose veins. Treatment options for SSV are surgery and thermal or chemical ablation.

Rate of paresthesia after conventional surgery of SSV is about 25%. Foam offers many advantages, but for large veins, endovenous laser ablation (EVLA) is more efficient. However EVLA, as surgery, may cause paresthesia.

Aim. To assess, from literature data, the risk of paresthesia after EVLA of the SSV, and to highlight methods that could reduce this risk.

Material and methods. Review of literature on international guidelines and specific data regarding anatomy, echography, and EVLA of the SSV.

Results. We identified 15 specific studies on EVLA of the SSV.

Rate of paresthesia was between 1.3% and 11% (4% in average), with only sensory damages (no motor nerve lesions). Guidelines recommend a mapping prior to any type of saphenous treatment, this is of course particularly true for EVLA of the SSV. In addition, due to the improvement of the Duplex scan technology, it is now possible to also identify nerves. We found that neurologic risk is higher in case of a high SSV ending above the popliteal crease, due to a very close position of a branch of the fibular nerve.

Consequently, pre-operative marking for EVLA of the SSV should include the sapheno-popliteal junction and vein connections, but also nearby nerves.

Guidelines recommend local tumescent anesthesia for EVLA. In fact, during the treatment, the patient should be able to report any acute pain suggestive of neurological injury, so that the shot is stopped immediately. That means that the anesthesia must be strictly local.

Conclusions. EVLA is safe, with a low rate of paresthesia that could even be reduced by better mapping and marking of the veins but also of the nerves.

AB0325

FREE PAPER SESSION 1

Present status of vascular surgery in Japan: the survey of varicose veins treatment: Japanese vein study XVII

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Aim. The Japanese Society of Phlebology had been performing survey of venous diseases in Japan. Endovenous laser

ablation (EVLA) was accepted with Japanese health insurance system in 2011, and radiofrequency ablation was permitted also in 2014. Therefore treatment of varicose veins in Japan has been changed rapidly. This study was made to clarify the changes of treatments for primary varicose veins by periodical investigation in Japan.

Methods. A questionnaire survey was mailed to the members of the Japanese Society of Phlebology. The contents of the survey dealt with the treatment of new varicose veins cases in the year 2013 and the treatment strategy. The results were examined and compared to the result of our former survey.

Results. 1) 43,958 limbs of 36,078 patients were reported from 193 institutions. The saphenous type is the most numbers and the age with most frequency was 70. Patients were treated by compression therapy (25.7%), by surgery (73.6%) and by sclerotherapy (7.5%). Surgical treatments included stripping (11.6%), high ligation (6.3%), EVLA (73.3%), perforating vein ligation (5.2%) and endoscopic perforating vein surgery (0.7%). 2) For these five years 107 institutes (56%) newly applied EVLA. EVLA was selected as a first choice at most frequency with tumescent local anesthesia and in hospitalization of one day.

Conclusion. Number of patients with varicose veins increased especially in elder patients. The surgical treatment was selected in large numbers and EVLA became the leading role instead of the conventional surgeries for varicose veins treatment in Japan.

AB0184

FREE PAPER SESSION 1

Mini-invasive high-tie by clip apposition versus cross-sectomy by ligature: long term outcomes and review of the available sapheno-femoral junction therapeutic approaches

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Background. Endovenous procedures (EP) have obtained a central role in the treatment of sapheno-femoral junction (SFJ), leading to a decline in the appeal of surgery.

The aim of the present study is to evaluate the performance of a minimally invasive SFJ high-tie by clip apposition (HT) compared to a traditional high-ligation (HL).

Methods. 150 chronic venous disease (CVD) patients (M/F 1/1) who underwent HT were clinically and sonographically compared with 150 HL (M/F 1/1).

The two groups were homogeneous in CEAP class (C3E-pAsPr), VCSS (6+-1), iliac valve competence, <2 pregnancies, SFJ diameter (7-15 mm), presence of a GSV trunk re-entry perforator.

Results. At 5 years follow up both groups CEAP class decreased to C1, with the exception of 8 (5.3%) C2 cases in HT group and 19 (12.6%) in HL group. VCSS was 2+-1 in HT group and 3+-1 in HL group.

Recanalization was not detected in all HT group recurrences, while pelvic congestion was sonographically demonstrated in 2 cases (25%) along with tributary incompetence along the leg in the remaining 6 cases (75%).

Recurrences in HL group were attributed to SFJ recanalization in 4 cases (21%), pelvic neovascularization in 6 cases (31.6%) and new lower limb tributary incompetence in the remaining 9 cases (47.4%).

The mean length of the HT skin incision was 1.9+-0.2 mm vs 3.1+-0.4 mm in the HL group (P<.05).

Conclusions. The present work demonstrates the need to reconsider the appeal of modern minimally invasive hemodynamic surgery.

Proper HT technique combined with hemodynamic skill is comparable to minimally invasive EP. HT potentially appears to provide more satisfying long term outcomes that can also be obtained in veins with calibers too large to be treated by EP.

The different outcomes obtained by HT vs. HL encourage further investigations regarding factors triggering SFJ recurrence.

AB0176

FREE PAPER SESSION 1

Role of PTFE patch saphenoplasty in reducing neovascularisation in varicose veins

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Background. Recurrence is a major problem in varicose veins. One of the major causes of recurrence is neovascularisation at saphenofemoral junction in open surgery. Various authors have shown effectiveness of barrier techniques like silicone prosthesis, Dacron patch and PTFE patch at SFJ after ligation in reducing neovascularisation and recurrence in varicose veins.

Material and methods. Authors have done a study to see whether polytetrafluoroethylene (PTFE) patch is effective as a mechanical suppressant of angiogenesis at the SFJ thereby decreasing recurrence after initial surgery in varicose veins. Study was done in 100 patients of varicose veins. In 50 patients 1x2cm PTFE patch was applied over SFJ after ligation of SFJ and stripping of GSV. In another 50 patients, same surgical procedure was done except that no patch was applied. All the patients were followed up and Doppler evaluation and clinical examination was done for any evidence of neovascularisation and recurrence at one year.

Results. It was found that there was significant difference in clinical and Doppler reported incidence of neovascularisation in patients where PTFE patch was applied over ligated SFJ. In patients with PTFE patch, there was no evidence of neovascularisation on Doppler examination at one year while doppler evidence of neovascularisation was seen in 5 patients without PTFE patch at SFJ which was statistically significant. This difference in neovascularisation was more pronounced in patients with clinically higher CEAP grade of disease. There was no added complication due to PTFE patch.

The use of PTFE patch saphenoplasty was first reported by Earnshaw *et al.* Bhatti *et al* and Rij *et al* also found PTFE patch saphenoplasty to be safe and potentially effective barrier techniques as in the present study.

Conclusions. PTFE patch application over ligated SFJ is effective in reducing neovascularisation and recurrence in varicose veins.

AB0102

FREE PAPER SESSION 1

Selective high ligation (SHL) of the SFJ decreases the neovascularization and the recurrent varicose veins in the operated groin

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Introduction. Despite introduction of EVLA treatment for GSV insufficiency, surgery for varicose veins is still the method of choice worldwide. The HL can be distinguished in

radical (RHL), first performed by Babcock in 1907, and selective (SHL): the new technique consists to ligate the saphenofemoral junction (SFJ) keeping some of the tributary veins coming from the abdomen wall and the groin. Our study analyzes the recurrence incidence in the groin after the selective of GSV.

Methods. This is a retrospective study performed in a center specialized in venous surgery in Italy. The study included a homogenous cohort of 360 patients underwent unilateral varicose vein surgery from January 2001 to December 2008 (210 females and 150 males, mean aged 51.9 years, range 18 to 75 years, the limbs were 222 rights and 138 lefts), CEAP classification was C2,s. Operative technique was standardised to SFJ ligation with dissection of the tributaries with the selective technique. All patients had a venous reflux from terminal valve of SFJ and the femoral valves were continent. All patients were submitted to Duplex scanning in the postoperative period (days 7th, 15th, 30th, every year after surgery) and by two independent operator in 2013. The follow-up is from 5 years for the patients operated in 2008 to 12 years for the patients operated in 2001.

Results. The recurrences in the groin were founded in seven patients, the incidence is 1.9% of the total cases. It was no venous reflux in the groin at Valsalva in standing position, no venous thrombosis of the GSV stump and of the tributaries were found at duplex examination in postoperative period and at the last visit.

Conclusions. The selective high ligation of the SFJ is an effective technique, decreasing the incidence of recurrent varicose veins in the operated groin.

AB0223

FREE PAPER SESSION 1

World's first interventional technique to restore vein valve function

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Background. Today's treatments of saphenous vein insufficiency are predominantly destructive, using surgical extraction or endovenous closure. Vein-preserving surgery (extraluminal stenting or grafting) is being evaluated, while endoluminal shrinking has not been successful (*e.g.* VNUS restore). After acquiring basic experience in external vein shaping by injectable gels (UIP 2013), now first cases treated with long-lasting hyaluronan with a one year follow-up are presented including video demonstration.

Material and methods. In a pilot study 23 patients (15w, 8 m; 38 - 67 J) with proximal valve incompetence of the GSV (diameter 7.0 - 11.5 mm, mean 8.6) were selected to receive a diameter reduction by circumferential injection of a NASHA gel, 2% solution, crosslink degree: 2%. Injections were performed with a safety system consisting of a relocatable sharp cannula and a flexible blunt outer metal catheter (IntraShape) using continuous ultrasound monitoring, until absence of reflux. Clinical and ultrasound examinations were performed after 2, 12, 26 and 52 weeks.

Results. An orthograde flow could be established in 22/23 cases (95.6%) using gel volumina of 12 - 35 ml (mean: 19.4 ml). After 12 weeks orthograde flow was present in 19/22 cases (86.4%), and after 26 weeks in 18/22 cases (81.8%) and after 52 weeks in 15/22 cases (68.2%). All cases showing reflux (n = 7) received a second gel injection of 4 - 7 ml with hemodynamic success up to week 52 or beyond. There were no adverse reactions or complications.

Conclusions. Extraluminal valvuloplasty by ultrasound-monitored hyaluronan injection is feasible, safe and effective. If case selection, placement technique and gel durability can be further improved, clinical applications with low rates of supplementary injections seem to be achievable. Even treatment of deep vein insufficiency may be an option.

AB0181

FREE PAPER SESSION 1

Intraoperative ultrasonography in modern venous surgery

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The authors present their experience in the field of intraoperative ultrasonography (IU) in venous surgery. Nowadays we cannot imagine of the performance of the endovenous thermal ablation without using of doppler ultrasonography. In this presentation we point out another approaches of intraoperative ultrasonography in open venous surgery.

There are some situations during open venous surgery when we can use of doppler ultrasonography. The most common situation is in ligation of insufficient accessory lateral vein, when IU find exactly the position of the vein and surgeon can lead incision directly above the vein. The great saphenous vein is preserved in these case. It takes shorter time, smaller incision, than in open surgery, Every surgeon can get to difficult situation, when cannot find a saphenofemoral or saphenopliteal junction or it takes very long time. It is became more frequently in overweight patients. It is clear, there is increasing risk of complications such us injury of lymphatics or deep veins system.

IU brings smaller incision, shorter operating time and more safety than without IU.

There are some disadvantages of these approaches. There is a need of portable ultrasonography machine in operating theatre, skilled doctor with doppler ultrasonography.

This method is suitable for specialized departments in venous surgery.

AB0015

FREE PAPER SESSION 1

Cryoavulsion replaces miniphlebectomy in treatment of varicose patients

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Background. To treat tributary varicose vein (VV) miniphlebectomy should be added to stripping of saphenous vein. Cryoavulsion (CA) had been introduced as a new technique of VV treatment. It may be performed multidirectionally by one stab wound to remove many tributary varicosities minimizing number of puncture wounds. We applied CA to treat lower limb VV.

Material and methods. From 2010/3/1 to 2014/2/28 among saphenous stripping VV patients 53 cases of miniphlebectomy (P-group) and 137 cases of CA (C-group) were divided and evaluated demographic factors, complications (No. of wounds, hematoma, neuralgia) and Aberdeen VV satisfaction score (AVVSS) change (preop/postop 2 mos) statistically.

Results. Comparing P-group and C-group (P/C)

1. Demographic factors such as M:F ratio (31:22/59:78) and mean age \pm SD (60.2 \pm 14.3/57.6 \pm 15.4) were similar.

2. VV clinical class in C2:C3:C4 were 32:18:9/73:34:21 and anatomical class in As:As+p:As+d were 29:17:7/68:52:16. Disease pattern was similar.

3. Mean numbers of stab wound (\pm SD) were 7.1 \pm 2.4/2.6 \pm 0.72, so markedly fewer wounds in C-group were noticed (P<0.05).

4. Incidence of hematoma were 81.1% (43/53) and 83.9% (115/137) and that of neuralgia were 11.3% (6/53) and 15.3% (21/137) and AVVSS (pre/post 2mos) were 7.34 \pm 1.56 and 1.72 \pm 0.91 in each (P>0.05).

Conclusions. Cryoavulsion had shown similar incidence of hematoma, neuralgia and patient satisfaction score with miniphlebectomy but was more profitable on number of puncture wounds and cosmetic result than miniphlebectomy.

AB0024

FREE PAPER SESSION 1

The ambulatory surgical treatment of the varicose veins thrombophlebitis

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Background. The thrombosis of the varicose veins represents a complication that makes the treatment of the disease more difficult.

We consider the thrombophlebitis of the varices to be a surgical emergency and we treat it accordingly.

The surgical intervention that we are about to present cures both the varicose disease and the thrombophlebitis.

There is just one condition for the surgery to be possible: no more than 15 days from the start of the thrombosis should pass.

Material and methods. VANST (Varices' Ambulatory Non-stripping Surgical Therapy) is a surgical method of taking out of the circuit of the varicose veins through the interception of the channels of their filling up (both the venous flux and reflux).

The varicose veins are left in place but they become just empty non-functional tubes taken out of the venous circuit.

This method also allows us to perform segmentary thrombectomies.

The procedure consist of:

- local anesthesia
- incisions of 1-5 mm. in the previously marked places
- segmentary thrombectomies
- the varicose veins and the insufficient perforant veins are intercepted, sectioned and ligated
- a non-compressive bandage is applied
- the patient is immediately mobilized and leaves the clinic after 30 minutes.

Results. By practicing this procedure we have operated on 574 cases (368 women and 206 men) with varicose thrombophlebitis.

We performed VANST and segmentary thrombectomies in the same operation.

No cases of DVT or pulmonary thromboembolism during or after this procedure have been registered.

The postoperative evolution was simple. The ordinary activities where immediately presumed and the professional ones after a 24-48 hours.

Conclusions. We consider the varicose thrombophlebitis to be a surgical emergency.

The ambulatory surgical method we perform in these cases solves both the thrombotic complications and the varicose veins disease in the same operation.

FREE PAPER SESSION 2: VENOUS THROMBOEMBOLISM I

AB0097

FREE PAPER SESSION 2

Venous thromboembolism risk and prophylaxis in the acute hospital care setting (ENDORSE), a multinational cross-sectional study: results from the Indian subset data

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Background and aim. Venous thromboembolism (VTE) is a major health problem with substantial morbidity and mortality. It is often under diagnosed due to lack of information on VTE risk and prophylaxis. The ENDORSE (Epidemiologic International Day for the Evaluation of Patients at Risk for Venous Thromboembolism in the Acute Hospital Care Setting) study aimed to assess the prevalence of VTE risk in acute hospital care setting and proportion of at-risk patients receiving effective prophylaxis. We present here the risk factor profile and prophylaxis pattern of hospitalized patients who participated in ENDORSE study in India.

Material and methods. In this cross-sectional study in India, all patients (surgical >18 yr, medical >40 yr) from 10 hospitals were retrospectively studied. Demographics, VTE risk factors and prophylaxis patterns were assessed according to the 2004 American College of Chest Physicians (ACCP) evidence-based consensus guidelines.

Results. We recruited 2058 patients (1110 surgical, 948 medical) from 10 randomly selected hospitals in India between August 2006 and January 2007. According to the ACCP criteria, 1104 (53.6%) patients [surgical 680 (61.3%), medical 424 (44.7%)] were at-risk for VTE. Chronic pulmonary disease/heart failure and complete immobilization were the most common risk factors before and during hospitalization, respectively. In India, 16.3 per cent surgical and 19.1 per cent medical at-risk patients received ACC Precommended thromboprophylaxis.

Conclusions. Despite a similar proportion of at-risk hospitalized patients in India and other participating countries, there was major underutilization of prophylaxis in India. It necessitates increasing awareness about VTE risk and ensuring appropriate thromboprophylaxis.

AB0050

FREE PAPER SESSION 2

The prevalence of venous thromboembolism during the hospital stays of cancer patients is 5 times higher than for the other patients. Results from a French nationwide survey

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Aim. The objective was to describe the prevalence of venous thromboembolism (VTE), pulmonary embolism (PE) and

deep vein thrombosis (DVT) among patient having a diagnosis of malignant tumor (MT).

Methods. Diagnosis Related Group used for the financial management of French hospital gave now the opportunity to investigate the frequency of venous thromboembolism (VTE) and cancer. Statistics are issued from the national PMSI MCO databases encoded using the CIM10. We focused our study in patient having already a diagnosis of MT. Any stay with the ICD-10 codes selected was considered as a hospital-occurred thrombosis unless it was the principal diagnosis of the first Medical Unit Summary. To eliminate outpatient consultations or in day care, stays of < 48 hours were excluded.

Results. The results pertain to the 18,683,603 hospital stays in 2010-2011 and among them 1,070,108 were related to a MT (5.72%). Among these patients, the incidence of hospital stays came to 4.95% (n=53,037) for VTE vs. 1.09% in the total hospital stays population, with 2.31% (n=24,751) for DVT without PE vs. 0.543% and 2.64% (n=28,286) vs. 0.548% for PE with or without DVT. Preliminary results suggest that among them, more than two third (69.9%) could have occurred during the hospital stay.

Conclusions. These results shows the high prevalence of VTE among patient having MT and question the quality of prevention and/or its effectiveness in this population.

AB0328

FREE PAPER SESSION 2

Detection and treatment of distal DVT prevent severe pulmonary embolism after earthquake or natural disaster

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Six ladies (younger than 50 year-old) died from pulmonary embolism in car shelter after Mid Niigata Prefecture Earthquake 2004. We went to disaster area and examined distal DVT (d-DVT) by portable ultrasound machine immediately after the quake. 21 d-DVT were detected in 67 residents who had slept in their own small car every day after the quake. These were generated by venous stasis due to sitting in narrow seat for long time. Positive rate of d-DVT in the residents a year after the quake was 7.8%. As we did the same examination in control area without earthquake in 2006, the positive rate was 2.2%. Since we concluded that d-DVT increased and prolonged in disaster area after earthquake. And also we recognized that d-DVT was detected in residents spent only evacuation facilities after the quake. When we examined d-DVT in evacuation facilities after Noto-Hanto earthquake or Niigata Chu-etsu Oki earthquakes in 2007 and Iwate Miyagi Inland Earthquake 2008, the positive rate of d-DVT was 10.6%, 7.4% and 7.1% respectively. These data shows that d-DVT increase in evacuee with or without car shelter. When we examined d-DVT in evacuation facilities, we also measured D-dimer by point of care testing. If we detected d-DVT and D-dimer value was more than 2.0 µg/ml, we recommended the evacuee to go to hospital. We made local guideline of clinical performance for DVT/PE after earthquake in 2006. After Eastern Japan Great Earthquake, many d-DVTs were determined in evacuee. The highest positive rate of d-DVT in the evacuation facilities was 47.0%. However, many VTE prevention team detected d-DVT and delivered graduated stockings in evacuation facilities immediately after the great earthquake, few severe pulmonary embolism was reported. Early detection and treatment of d-DVT is effective methods for preventing death from pulmonary embolism after earthquake or other natural disaster.

AB0048

FREE PAPER SESSION 2

Mean platelet volume as a predictor of venous thromboembolism (VTE): a systematic review and meta-analysis

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Background. Platelet activity is a major devilish in atherothrombotic events. Mean platelet volume (MPV), which is widely available as a routine parameter of the complete blood count, is a potentially useful biomarker of platelet activity in the setting of venous thrombosis.

Aim. To determine whether an association exists between MPV and VTE

Methods. A literature search of the MEDLINE and Scopus was performed to identify the association between MPV and VTE. Two reviewers independently extracted data. Differences in MPV were expressed as unstandardized mean difference. A retrospective study was performed to analyze differences of MPV between patients with VTE and control.

Results. Among 403 articles identified, 10 studies (5 retrospective cohorts and 5 case controls) comprising 2,265 patients were eligible for pooling. MPV was significantly higher in those with VTE than those without VTE (mean difference 0.61 fL, 95% confidence interval (CI) 0.34-0.88, P < 0.001). Elevated MPV increased the relative risk of VTE as compared as normal MPV (RR1.319, CI 1.061-1.641, I²=82.5%). Among 170 patients, 54-VTE and 58-control, MPV was significantly higher in VTE groups (7.0±0.6 vs. 8.2±1.0, p=0.004).

Conclusions. The available evidence suggests that elevated MPV is associated with VTE. A RCT and further elucidated mechanistic study are required in order to use in practice or guide therapy.

AB0289

FREE PAPER SESSION 2

Thrombosis evolution in spontaneous and post-procedural cases. The new X-PASTE score

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Background. Post Ablation Superficial Thrombus Extension (PASTE) is the thrombosis extension from the termination of the saphenous trunk and in continuity with the closure post-endo-venous ablation.

The present paper describes the new eXtended (X)-PASTE score and shows its utility in the follow-up of spontaneous thrombosis.

Material and methods. PASTE is definitively wider than the other terms. (EHIT- Endo-venous Heat Induced Thrombosis, ETIT-Treatment) An extended local score (0-9), wider than in the other methods (0-4), is used and a global synthetic score resumes the extension in all the venous segments.

The X-PASTE local score is based on a sequence of overlapped couples of segments, the FOCUS and the NEXT. When the FOCUS is occluded, the scores 1-4 are perfect analogues of ETIT.

Results. Several clinical examples are shown practically. In addition, unclassifiable cases with ETIT are easily classifiable with the X-PASTE score.

The local classification is completely compatible with ETIT, but is much wider than ETIT and allows the classification of unclassifiable cases.

The X-PASTE classification can follow the evolution of spontaneous thrombosis.

Conclusions. An extended local score (0-9), wider than in the other methods (0-4), is proposed and a global synthetic score resumes the extension in all the venous segments.

In addition, the X-PASTE classification is also able to describe efficiently the spontaneous thrombosis.

AB0158

FREE PAPER SESSION 2

Thrombus resolution and functional abnormality of proximal deep vein thrombosis after anticoagulation

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Background. To analyze thrombus resolution and functional change in proximal deep vein thrombosis (DVT) after anticoagulation.

Material and methods. From January 2010 to August 2013, 174 patients were diagnosed proximal DVT. Among them we retrospectively reviewed 104 limbs of 100 patients (mean age 58.3 years; female 54.8%). We evaluated thrombus resolution, anatomical change or functional abnormality of deep veins using computer tomography (CT) or duplex ultrasonography (DUS) after anticoagulation for at least three months.

Results. Complete resolution occurred in 18 (36.7%) of 49 limbs with iliofemoral DVT, 25 (71.4%) of 35 limbs with femoropopliteal DVT and 17 (85.0%) limbs of 20 segmental thrombosis. Thrombosis in common femoral vein was increasing risk of remnant thrombus ($p < 0.05$). Hypoplasia of thrombosed vein was developed in 14 (25.9%), 8 (9.1%) and 2 (2.8%) limbs among 54 iliac, 88 femoral and 72 popliteal veins respectively. Reflux was confined to the deep venous system in 36 (40.0%) of 90 limbs underwent DUS. Venous reflux was developed in 19 (21.6%) of 55 femoral veins and 22 (30.6%) of 72 popliteal veins. Reflux accompanied with proximal flow disturbance as iliac vein compression or proximal vein hypotrophy was developed in 9 (25.0%) limbs.

Conclusions. In this study, less thrombus resolution or more venous hypotrophy occurred in iliac DVT. Therefore early thrombus removal may helpful to preserve venous function, especially in iliofemoral DVT. For the development of post-thrombophlebitic syndrome, long-term follow-up investigation is mandatory.

AB0203

FREE PAPER SESSION 2

Venous pathology of lower extremities in chronic thromboembolic pulmonary hypertension

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Aim. Chronic thromboembolic pulmonary hypertension (CTEPH) is serious and life-threatening disease. Pathophysiology of CTEPH is still unclear. We investigate abnormality of lower extremity venous system.

Material and methods. History, physical findings, duplex scan of lower extremities, CT venography and air phlethymography findings of 21 CTEPH (10 males, 11 females) pa-

tients were investigate. Surgical specimen of nine patients with pulmonary thromboendarterectomy were also investigate according to Jamieson classification.

Results. Four patients had history of acute pulmonary embolism. Two patient has history of symptomatic deep vein thrombosis. With duplex scan, fifteen patients has deep vein thrombosis (11 proximal type, 4 distal type), three patient has saphenous varicose veins and deep vein thrombosis. Surgical findings of pulmonary thromboendarterectomy and site of DVT was as following Jamieson 1 (proximal thrombi in pulmonary artery): 6 cases (no DVT 2 cases, iliac DVT 2 cases, popliteal DVT 1 case, soleal DVT 1 case), Jamieson type 2 (intermediate type): 2 cases (femoral DVT 1 case, no DVT 1 case), Jamieson type 3 (distal type) 1 case (IVC DVT 1 case). There is no clear relationship between site of DVT and pulmonary artery thrombus.

Conclusions. Most of CTEPH patients seemed have previous DVT or varicose veins, or risk factor of DVT/PE. There should be strong relationship DVT and CTEPH, because significant number of chronic phase of DVT cannot detected by duplex scan. Close follow-up of leg pathology is required for DVT and APE patients.

AB0206

FREE PAPER SESSION 2

Resection and prosthesis of superior vena cava in malignant tumors of the chest cavity

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Aim. Superior vena cava syndrome is a devastating complication of obstructive lesions compromising the superior vena cava and its branches. Most cases today are caused by malignant tumors. The most frequent are lung carcinoma.

Material and methods. Between 1995 and 2014 65 patients with superior vena cava syndrome underwent surgical treatment for thoracic tumors. In all cases the vena was restricted by a neoplastic sleeve. A vertical sternotomy was performed in mostly cases. Another patients received an associated right anterolateral thoracotomy to obtain good surgical exposure for tumor resection and grafting.

Results. A 12–18 mm diameter polytetrafluoroethylene graft was inserted in all cases. The tumor resection was radical in 39 (60%) cases and palliative in 26 (40%). All patients had immediate relief of obstruction after by-pass. Five patients alive without disease at now. Mediana morbidity 21 months. All prostheses were passable imposed under control ultrasound, CT studies performed in all patients after 6, 12 months. Cases of pulmonary embolism was not.

Conclusions. Resection and prosthetic superior vena cava with malignancies of the chest cavity accompanied by long-term survival of patients with preserved patency imposed prostheses and the absence of PE.

AB0084

FREE PAPER SESSION 2

An evaluation of IVC filter related complications in an urban tertiary care setting

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Background. Retrievable IVC filters are routinely used in acute clinical settings in most hospitals worldwide, albeit

skepticism in some quarters regarding their actual utility, in view of their inherent complications.

Aim. This study aims to objectively evaluate IVC filter related complications encountered in a busy tertiary care setting in Mumbai.

Material and methods. Retrospective data was collected from case records of all cases where an IVC filter was used in house or was encountered during treatment. The study period was from December 2008 to December 2014.

Results. A total of 123 filters were deployed by us and 14 other retrievable filter deployed patients were referred to us for opinion. 48 Gunther Tulip (Cook), 46 G2X (Bard), 18 Optease (Cordis) filters and 11 other brands were used by us and 3 Optease and 11 Gunther Tulip filters were referred for opinion.

Of the 123 cases, 86 cases followed up with us. Deployment related complications included 6 filter tilts on table, all with the Cook filter. Delayed complications included penetration of IVC in one case (Bard), retrieval failure in 23 cases, the maximum incidence being with Optease filter. Salvage procedure was abandoned in 2 cases due to filter fracture (both Optease). Of the 14 referral cases, 11 filters were insitu for more than 2 years, with 3 cases of IVC and iliac vein thrombosis, none requiring the filter to stay insitu. In all 14 cases, retrieval was either not attempted or was unsuccessful.

Conclusions. Acute proximal DVT is rampant and is being treated with catheters by most high volume centers. Filters are lifesaving in an Indian scenario where mechanical thrombectomy devices are not licensed for use. Irretrievability and its issues remain a persisting bugbear but can be minimized by proper patient communication, usage indications and operator education and skill.

AB0185

FREE PAPER SESSION 2

Can preretrieval CT predict the difficult removal of IVC filter?

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Background. Inferior vena cava (IVC) filter is relatively safe procedure, but the potential negative long-term effects of IVC filters is reported. During IVC filter insertion, there have been complicated filter retrieval. We examine filter characteristics at preretrieval computed tomography (CT) that are associated with complicated IVC filter retrieval.

Material and methods. Institutional review board-approved retrospective review of IVC filter retrievals between January 2008 and June 2014 was performed to identify patients with preretrieval CT for an IVC filter retrieval. Complicated retrieval was defined by use of nonstandard techniques, procedural time over 30 mins, filter fracture, filter tip incorporation into the IVC wall, and retrieval failure. Preretrieval CT images were evaluated for tilt angle in mediolateral and anteroposterior directions, CT appearance of tip embedding, degree of filter strut perforation, and distance of filter tip from the nearest renal vein and dwelling time.

Results. Of 76 patients, twenty-four patients (32%) with complicated retrievals and 52 control patients (68%) with uncomplicated retrievals were evaluable for preretrieval CT characteristics. Mediolateral and anteroposterior tilt angle, degree of perforation, and dwelling time were higher for the complicated *versus* non-complicated retrieval group ($P < 0.01$). Complicated retrieval was associated with tip embedding (HR; 2.34-10.23; $P < 0.01$), tilt angle of more than 15° (HR; 1.94-8.47; $P < 0.01$) and dwelling time (HR; 1.29-5.42; $P < 0.01$).

Conclusions. CT appearance of tip embedding, increased tilt with complicated IVC filter retrieval. Therefore, preretrieval

CT may helpful in select patients for retrieval approach if necessary.

AB0033

FREE PAPER SESSION 2

Venous claudication in Behçet's Syndrome

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Background. Intermittent claudication due to venous disease is known to occur in BS patients especially among those with lower extremity venous thrombosis (LEVT). With this study we reassessed prospectively presence of claudication by a treadmill exercise and a questionnaire survey.

Material and methods. We studied 61 BS patients with LEVT (mean age: 36.5 ± 7.7), 40 without venous disease (mean age: 34.2 ± 7.1) and 56 healthy controls (mean age: 35.9 ± 8.8). Only males were studied and those with peripheral arterial disease were excluded. Intermittent claudication was assessed initially by Rose questionnaire. Then, patients were asked to walk in the treadmill at a speed of 3.5 km/h and 10% inclination for 10 minutes. Patients who first experienced symptoms consistent with venous claudication but still able to walk and those who had to give up the treadmill were noted. Ankle brachial pressure indices (ABPIs) were also measured.

Results. Pre and post-exercise ABPIs were similar among the patients and the controls. There were significantly more patients who described claudication in the questionnaire among those with LEVT (21/61, 34%) compared to those with no venous disease (2/40, 5%) and healthy controls (0/56) ($p < 0.001$). Similarly, more patients with LEVT (13/61) suffered from any leg pain during treadmill exercise compared to those with no venous disease (3/40) and healthy controls (1/56) ($p = 0.002$). Only those with LEVT (6/61, 10%) had to stop the treadmill challenge due to claudication.

Conclusions. Venous claudication seems to be a severe and frequent symptom being present in up to 1/3 of BS patients with LEVT. It clearly limits walking capacity in 10% of these patients.

AB0032

FREE PAPER SESSION 2

Successful endo-venous laser ablation for a patient with Klippel-Trénaunay Syndrome after enhanced CT study

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Aim. Klippel-Trenaunay syndrome is a rare congenital disorder containing venous malformation. Varicose veins of this disorder are sometimes found not to be the surgical candidates. Successful endovenous laser ablation after meticulous enhanced CT study is reported.

Case description. The patient is a 50 year old female who was diagnosed as Klippel-Weber syndrome in her childhood and followed up by a university hospital. She has been suffered from

leg varicose veins and edema along with frequent cramping of the calf muscle. Both her legs were covered with superficial varicose veins and skin pigmentation along with severe edema. As varicose veins, it was diagnosed as class 4 of CEAP classification. With the vascular echo ultrasound, among many superficial dilated venous abnormalities, bilateral great saphenous veins and left small saphenous vein were severely dilated and had a significant regurgitation. To identify possible congenital venous anomalies, enhanced CT study was performed. The CT study revealed the narrowing of bilateral femoral veins at lower thigh. This result confined the surgical treatment only for the calves. Endovenous laser ablation for left small saphenous vein and varicectomy of right calf was performed. The patient is in good condition 3 months after surgery with no complication and remarkable improvement of preoperative symptoms.

Conclusions. Various complicated venous anomalies of Klippel-Trenaunay syndrome make its surgical treatments difficult. With the current case, localized surgical treatment after CT study could be performed safely and effectively. Surgical treatment of varicose veins with Klippel-Trenaunay syndrome is feasible after detailed examination of vasculature.

AB0255

FREE PAPER SESSION 2

Management of acute pulmonary embolism during pregnancy

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Background. Pregnancy is well-established risk factor for venous thromboembolism (VTE) and pulmonary embolism (PE) is the major cause of maternal death. The aim of this study is to describe our experience in the management of acute pulmonary embolism in pregnant women.

Methods. From 2002 to 2014, we experienced 300 VTE cases. Eight of 300 patients were pregnant and 3 had PE. Medical records of 3 pregnant patients with PE were analyzed retrospectively.

Results. All 3 patients had massive pulmonary embolism with right ventricular failure. Diagnosis was made by computed tomography (CT). Anticoagulation therapy was started immediately after admission; however, tachycardia and hypotension persisted in all patients. Surgical embolectomy was performed. One patient had cesarean section (28th week of pregnancy) before embolectomy. The other two patients (24th and 22nd week gestation) underwent surgical embolectomy with close monitoring of fetal heart rhythm during cardiopulmonary bypass (CPB). One fetal death occurred.

Conclusions. Pregnancy is a hypercoagulable state with a high risk of thromboembolic complications. Although CPB during pregnancy is associated with a high fetal and maternal mortality, aggressive treatment option can be necessary in order to save lives of mother and child.

AB0240

FREE PAPER SESSION 2

Retrievable IVC filters – which one is more effective and safe?

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Background. Venous thromboembolism (VTE) remains a major cause of morbidity and mortality. It has been reported

that placement of IVC filter is effective in the prevention of acute pulmonary embolism (aPE). However, incidence of deep vein thrombosis (DVT) is increased if the filter is left for a long period of time. Retrievable filters may be left in place permanently or they may be retrieved after when then become unnecessary. Outcome of retrievable IVC filters was evaluated.

Material and methods. Between 2003 and 2014, 84 retrievable IVC filters were implanted in 84 patients with VTE. These patients were divided into 3 groups: 19 Gunter tulip (G), 21 Optease (O) and 44 ALN (A). Rate of recurrent DVT and retrievability of IVC filters were reviewed.

Results. PE related mortality after filter placement was 1.2% (1 patients in group O). Trapped thrombus was found in 1 (5.3%, group G), 2 (9.5%, group O) and 2 (4.5%, group A) patients at time of follow-up. DVT deterioration was seen in 1 (5.3%, group G), 3 (14.2%, group O) and 2 (4.5%, group A) patients. Filters were retrieved in 5 (26.3%, group G), 4 (19.0%, group O) and 7 (15.9%, group A) patients. The mean interval between implantation and retrieval was 15.0 days in group G, 15.3 days in group O and 336.7 days in group A. Success extraction was achieved in all but one case (in group G).

Conclusions. Our study shows the efficacy of ALN filter.

FREE PAPER SESSION 3: VENOUS ULCER I

AB0054

FREE PAPER SESSION 3

New concept in venous ulcer treatment. Abolishing most distal reflux: does it count?

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Background. It was noted that patients presenting with venous ulcers had a network of refluxing veins in the vicinity of the ulcer. This network of veins was termed “ulcer veins”.

Aim. To assess the association of “ulcer veins”, and to assess the result of obliteration of the ulcer veins using foam sclerotherapy on ulcer healing.

Methods. Consecutive patients presenting with open venous ulcers from March 2009 to September 2011 were enrolled into the study.

Duplex scan was performed for all patients. The underlying venous pathology was determined: the presence of reflux or obstruction in every segment of the superficial and deep venous system, and in particular the presence of incompetent perforators or refluxing “ulcer veins”. Patients were treated from the primary venous pathology along standard lines of modern venous therapy. Ulcer veins were treated by ultrasound guided foam sclerotherapy. Patients were followed up weekly using Duplex until all refluxing veins were found obliterated, or the ulcer healed.

Results. 66 ulcers in 62 patients, 42 male and 20 female, with a mean age of 47.12 years (range 22-84). Underlying venous pathology was primary reflux in 42 limbs and post-thrombotic in 24. Of the 66 limbs with open ulcers 47 (71.2%) showed refluxing ulcer veins. Reflux was present in all 66 limbs, and was associated with occlusion in 4. Follow up was obtained in all limbs except 1 (98.5%). Mean follow up was 19.1 months (range 2.3-41 months). Healing was achieved in 50, and improvement in 4 (83.1%) ulcers. Failure of healing occurred in 10 (15.4%). One ulcer healed but recurred, one ulcer was lost to follow up.

Conclusions. Ulcer veins were detected in a significant

number of patients presenting with open venous ulcers. Obliteration of the ulcer veins using foam sclerotherapy resulted in healing in a significant number of patients.

AB0302

FREE PAPER SESSION 3

Analysis of causes of non-healing in chronic venous ulcers

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Background. 3715 patients with ulcers that did not heal even after best recommended practices including compression, medical therapy and Endovascular procedures beyond eight weeks were subjected the review. Ours is a tertiary referral vascular surgical unit specializing in venous ulcers.

Material and methods. Patients on regular follow up are included in this study. The disease burden was as follows: Hypothyroidism 323 patients 8.69%, Large Fibroid Uterus 63 patients 1.69%, Hyperuricemia 251 patients 6.75%, PCOS 56 patients 1.50%. Collagen Vascular disease 73 patients 1.96%, Diastolic dysfunction 596 patients 16.04%, Central Obesity 3654 patients 98.35%, Stroke 7 patients 0.19%, Type 2 Diabetes Mellitus 636 patients 17.1%. Ankle Fibrosis and Subtalar joint derangement was present in almost all patients.

Ultrasound findings in all these patients at admission prior to Endovascular procedure showed peri-venous edema requiring high probe pressure to compress.

Results. All 3715 patients with delayed ulcer healing were admitted for re-evaluation. Repeat ultrasound, foot elevation and ankle exercises were done. Feeding veins were foamed. 92 patients had ulcers which refused to heal. Of these 92 patients with recalcitrant ulcers, 64 patients had fixed flexion deformities, 38 patients had arterial insufficiency and distal vessel disease. Severe fibrosis around ulcers was a feature with local ischemia. Reports have been published about ulcer excision and grafting in such patients. We have no experience.

Conclusions. Ankle fibrosis and arterial insufficiency has to be recognized early to prevent failures.

Co-morbidities that cause splinting of veins due to edema leads to venous insufficiency, delays ulcer healing.

Ultrasound review of ulcers is important.

AB0293

FREE PAPER SESSION 3

Cytokine profiles in ulcer wound fluid: a useful tool to discriminate venous leg ulcers

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Background. Venous leg ulcers (VLU) represent a debilitating condition afflicting millions of individuals worldwide. Although several studies evaluated the proteomics of ulcers, there is a paucity of information on biomarkers of healing/nonhealing VLU. We investigated the role of different classes of cytokines, chemokines, colony stimulating factors, and growth factors in plasma and ulcer wound fluids as possible biomarkers for the early biochemical differentiation of inflammatory and granulating venous ulcers.

Material and methods. Plasma and ulcer wound fluids were collected from 48 patients with VLU, classified as inflam-

matory (n=32) and granulating (n=16) ulcers according to their healing or non-healing progression. Plasma and exudates were analyzed to quantify the levels of 27 parameters of the inflammatory status by multiplexing magnetic microbead-based immunoassays. Statistical analyses were performed through the Mann-Whitney test, assuming $p < 0.05$ as statistically significant.

Results. Multiplex immunoassays revealed significantly increased levels of most of the parameters in ulcer wound fluids compared to plasma, while the chemokines IP-10 ($p=0.0047$), RANTES ($p=0.0207$) and Eotaxin ($p=0.0007$) resulted increased in plasma samples. In addition, wound fluids from inflammatory ulcers were characterized by significantly increased levels of IL-1 β ($p=0.0123$), IL-12 ($p=0.0002$), IL-8 ($p=0.0303$), IL-10 ($p=0.0490$), VEGF ($p=0.0004$) and GM-CSF ($p < 0.0001$), whereas granulating ulcers showed significantly increased levels of IP-10, RANTES, and PDGFbb ($p < 0.0001$, $p=0.0009$, $p=0.0063$, respectively).

Conclusions. The inflammatory processes occurring in venous leg ulcer microenvironment play an important role during the wound repair, driving both the inflammatory and the proliferative phase. The identification of a specific profile of cytokines in ulcer wound fluid, as a mirror of the VLU microenvironment, provides an important non-invasive tool to discern the clinical course of venous ulcers, assisting clinicians in the biochemical identification of venous ulcers which may naturally predispose to heal compared to ulcers requiring pharmacological approaches.

AB0284

FREE PAPER SESSION 3

Using duplex ultrasound to identify the source of superficial reflux in venous leg ulcers

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Aim. Explore the venous reflux associated with medially or laterally located venous leg ulcers and their source of origin

Methods. This report presents the results of duplex investigations performed in consecutive leg ulcer patients, all with venous reflux, from 2012-2014. A total of 78 patients (83 legs), with chronic venous leg ulcers (CEAP: C6) were examined in our hospital. The data collection integrated an examination that included medical history and clinical diagnoses and measurements such as body mass index and range of motion of the ankle joint. Venous function was assessed with duplex ultrasound, and the cases were described using the CEAP classification. Additionally, a technique was performed with duplex ultrasound investigation of the ulcer bed and the venous system. The principle is to follow venous reflux from the ulcer area to its proximal origin. The detected reflux routes were classified either as "axial" or "crossover" type.

Results. A total of 32 % (25) of the ulcer patients showed no clinically visible varicose veins. 45 patients had medial ulcers, 20 lateral ulcers, 8 medial and lateral, and 5 had gaiter ulcers. 28 of the medially located ulcers had reflux in the great saphenous vein (GSV), 12 showed reflux in the medial perforating veins (axial types), and 5 had reflux in the small saphenous vein (SSV; crossover type). From 20 patients presenting with lateral ulcers, 11 showed GSV incompetence (crossover type) and only 3 SSV incompetence (axial type). 6 patients showed refluxes penetrating from deep into lateral perforating veins.

Conclusions. In venous ulcer patients, an extended examination (CEAP classification) and a duplex scanning are recommended to identify the source for the venous reflux. This seems essential for planning a rational treatment of venous reflux ulcers.

AB0271

FREE PAPER SESSION 3

New pharmacological treatment for venous-lymphatic ulcers of lower limbs

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Background.

- Lymphovenous disease generally develops at last stage in venous-lymphatic ulcers.

- World incidence of venous ulcers amounts to 2.7% of the population; the highest incidence is seen in Sweden 5%, Brazil 4%, Spain 2%, Uruguay 1.5% and USA 600 cases/year.

-70% of lower limb trophic lesions are due to chronic venous insufficiency.

-The highest frequency is seen in females and it increases with age.

-The present study is based on 2,000 patients of different sex and age, with venous-lymphatic ulcers in lower limbs, particularly following chronic venous insufficiency.

Aim. Show successful outcomes with a new pharmacological treatment: Phlebotonics: (Hidrosmin, Diosmin-hesperidine, Hydroxyethylrutosides) together with Lymphokinetics: 2H-1Benzopyran-2-one tablets, cream or powder. Antibiotics: tablets are prescribed according to swab test with antibiogram. Locally: mechanical washing with saline solution or boric acid and after air drying, we use a combination of antibiotics, antiseptics and healing agents. Orthomolecular medicine: maintains the molecular balance and improves circulatory disorders using Calcium, Vitamin D3, Magnesium and Vitamin C, homeostasis is reestablished.

We prescribe orthopedic compression, especially multilayer and elastic bandages to increase reabsorption of fluids and improve healing.

Material and methods. Period: 1996-2014. Age: 29-86 years. Sex: predominantly female. Topography: lower limbs.

Results. Using the combined pharmacological treatment, venous-lymphatic ulcers present a reduction and improvement in venous return, lymphatic drainage and lymphokinetic activity, reducing the lymphatic drainage which perpetuated the infection in ulcers. This treatment also prevents functional, aesthetic, psychological, work, sexual and social disorders.

Conclusions. This new proposal of pharmacological treatment reduces venouslymphatic ulcers in low limbs up to 90% in less than 6 months. This is important given their negative impact on the patient's quality of life and the lack of effective treatments to date.

AB0253

FREE PAPER SESSION 3

The foam sclero-therapy in elderly patients with severe and disabling CVD (CEAP C4-C6 Study)

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Background. Ultrasound guided foam sclerotherapy appears to be the most promising alternative to surgery as it is minimally invasive and because of its reduced cost and favourable safety profile.

Material and methods. Between December 2005 and December 2014 we performed ultrasound guided foam sclero-

therapy in 94 patients with C4-C6 (CEAP classification) CVD, with a mean age of 73.8 years (range 68-85). All patients were evaluated before and after treatment and evaluated every year for 8 years through the Venous Severity Score System (VSSS) and quality of life questionnaire (SF12). 34 had been suffering from one or more leg ulcers (C6 - CEAP) for an average period of 3.2 years.

Results. During the 6-84 months follow-up period (mean/average, 31.9 months) symptoms improved or disappeared in all patients. Ulcer healing was observed in 28 out of 34 patients (82,3 %) with an average treatment time of 3.7 months. On average, VCSS improved from a baseline value of 13.6 to an after-treatment value of 4.1 P<0.001; VDS score improved from 1.9 to 0.8 P<0.001. No major or minor systemic side effects have been observed. The statistical evaluation of the SF12 questionnaire (Test Wilcoxon) 0-72 month period (mean/average 31.9 months) has showed the improvement of the quality of life for both the physical and mental component. (PCS-12 P<.001) (MCS-12 P 0.018).

Conclusions. In elderly patients, usually reluctant to undergo surgery, foam sclerotherapy is in our opinion a treatment of first choice; it allows this group of patients to hope for a cure and gain back, at least to a partial extent, their autonomy with significant positive repercussions on a psychological and social level.

AB0040

FREE PAPER SESSION 3

Venous ulcer treatment with sclerofoam versus a conventional treatment: randomized prospective clinical trial

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Background. Venous ulcers (VU) are the most common ulcers of the lower limb. It has a high morbidity and is a financial strain on the health system.

Aim. To determine the rate of healing VU with a conventional treatment versus the use of conventional treatment plus ultrasound-guided foam endoluminal occlusion.

Material and methods. A prospective randomized clinical trial was conducted on patients attending the Vascular Surgery clinics in Occidente de Kennedy-Bogota Hospital during 2011-2012. A total of 44 patients age 18 and over, with venous insufficiency, VU, and ankle-brachial index greater than 0.8, were included. A total of 48 extremities were analyzed in the two groups; one group a) Control: conventional treatment with non-compressive bandages, Vaseline gauze, and wound care and b) Study group: control treatment plus endoluminal occlusion with ultrasound-guided foam in the superficial venous system by Tessari method using 1% lapidium hydrochloride (sklerol). Follow-up was carried out at week 3, 8, 12 and 24.

Results. The healing rate of the ulcer at week 24 was 20 (83.3%) extremities healed by the endoluminal occlusion with ultrasound-guided foam group vs. 3 (12.5%) extremities healed in the group using the conventional treatment (P=.0005). No major complications arising from treatment were observed in either group.

Conclusions. The healing rates of the VU after endoluminal occlusion with ultrasound-guided foam are safe and effective. This minimally invasive technique is far superior to conventional treatment with non-compressive bandages, vaseline gauze, and wound care, exclusively.

AB0133

FREE PAPER SESSION 3

The role of foam sclerotherapy (UGFS) in the treatment of ulcus cruris

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Background. In the pathophysiology of ulcus cruris neglected varicose veins are behind 75% of the cases.

In case critical basic diseases exist, surgical solutions represented a risk.

Although endovascular interventions mean a lower stress, but they are more expensive operations.

The method of foam sclerotherapy proved to be a good intermediate solution in curing patients with increased risk, in the case of whom the main reason behind the longer existing and not healing ulcus cruris was a clinically provable VSM deficiency – thus a surgery would have been required.

Material and methods. For patients with increased risk we use FOAM treatment as an alternative to the surgical solution.

In the case of 11 patients in 5 cases by targeting the healing of the ulcer and in 6 cases with the intention to prevent recidiva.

We used Ultrasound Guided Foam Sclerotherapy with polidocanol and easy foam kit.

We recorded the condition of the wound with photo documentation – we used the local treatment and compression therapy.

We performed TcPO₂ measuring before and after the treatment

Results. Following a 6-month follow up period we can establish that all 11 patients are free of ulcer- wounds healed, and did not renew, respectively.

The improvement of local circulation was well detectable, which is the basis of healing and recidiva-free condition.

Conclusions. In our practice, even in the cases where otherwise surgery would be required, we opt for foam treatment – in the case of elderly patients or patients with diabetes or cardiopulmonary deficiency.

It is easy to carry out – the improvement of circulation and wound healing is significant with minimum stress.

We no longer need to expose our patients to the stress caused by the saphena stripping that was previously applied as a golden standard, yet we can guarantee the recidiva-free condition.

AB0016

FREE PAPER SESSION 3

Complex treatment of trophic ulcers in lower limbs chronic venous insufficiency

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Background. To optimize approaches to treatment of the C6 class patients by combined use of surgical correction methods, autodermoplasty and combined impact of a low-intensity laser radiation and fine dispersion drug irrigation of the trophic ulcers.

Material and methods. Examined and treated 160 patients C6 class. In 102 (63.7%) patients in the I group a combined impact of laser radiation and fine dispersion drug irrigation was applied. In the II group (n=58) patients were treated with standard methods. Patients in both groups administered su-

lodexide in the normal way. Phlebectomy was conducted together with the operations of Cokkett – 25 (24.5%), Linton – 20 (19.6%), SEPS – 32 (31.4%), SEPS and fasciotomy – 17 (16.7%), autodermoplasty – 94 (58.7%).

Results. In the 1st group on the 5th day a decrease of microbial contamination levels from 107-108 to 104-105 (p<0.05) was registered, and on the 20th day – its absence was established. Dynamic parameters of epithelialization prevailed in the 1st group more than in 2-folds (p<0.05). Clearing of the surface, appearance of granulation and epithelialization beginning made up 4.2±1.1 and 9.6±1.3, 5.9±0.8 and 13.1±2.1, 8.9±1.2 and 23.3±1.6 days, respectively. The complete epithelialization in patients of the 1st and 2nd groups was 29.1±0.7 and 46.2±0.8 days (p<0.05). 12 months after the conservative treatment, trophic ulcer recurrence in the 1st group in 34.8%, and in the 2nd group – in 66.7% have been observed. Preoperative preparation in the 1st group reduced the preoperative period by 2.8 folds. Full engraftment of the autodermotransplant in the 1st group was achieved in 75% of cases, in the 2nd – in 32.3%.

Conclusions. The combined use of low intensity laser radiation and fine dispersion drug irrigation is an effective treatment of venous trophic ulcers. Used in complex therapy sulodexide promotes epithelialization of venous ulcers.

AB0047

FREE PAPER SESSION 3

Prospective clinical trial for rapid healing of venous ulcers with terminal, axial and perforator interruption of the reflux source (TAPIRS) plus multilayer bandage

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Introduction. Chronic Venous Ulcer (CVU) are the most common ulcers in extremities, representing high morbidity and constituting a high financial strain. The ESCHAR clinical trial showed that axial and perforator surgical ablation of reflux plus compression in CVU achieved a healing rate of 65% in a 24-week period. These surgical techniques are being replaced by minimally invasive procedures, such foam sclerotherapy.

Aim. The aim of this study was to determine VU healing time and rate through a protocol using Terminal, Axial and Perforator Interruption of the Reflux Source (TAPIRS), which included an endoluminal venous occlusion with ultrasound-guided foam and a multilayer bandage system until achieving ulcer healing.

Material and methods. A prospective clinical trial was conducted on patients with chronic venous leg ulcers (CEAP [clinical, etiological, anatomical and pathological elements] C6) during 2013 and 2014. A total of 17 patients aged 18 years and over, presenting venous insufficiency, VU, and an ankle-brachial index greater than 0.8, were included and total of 17 extremities were analyzed. All of the patients were under endoluminal occlusion with ultrasound-guided foam in the axial superficial venous system and perforator and terminal veins near to the ulcer, using Tessari method with 3% polidocanol. Follow-up was carried out at every week and a Doppler test was conducted after 4 and 12 weeks.

Results. The average age of patients was 56.4 years. The active ulcer duration prior to treatment were 2.96 years. The study showed that all UV were healing before 7 weeks, the healing rate was 3.92 cm² /week and the time in weeks until the ulcer was healed were 3.53 (24 days).

Conclusions. The minimally invasive ablation of Terminal,

Axial and Perforator Reflux with compression in patients with active VU is safe and leads to a faster healing during the treatment of CVU.

AB0087

FREE PAPER SESSION 3

Outcomes of subfascial endoscopic perforator vein surgery for treating venous stasis ulcers

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Aim. We evaluated surgical outcomes and leg venous function changes after subfascial endoscopic perforator vein surgery (SEPS) using a one-port system combined with interruption of incompetent superficial veins.

Methods. Between September 2005 and September 2014, 51 limbs (45 patients) were treated for venous stasis ulcers. We studied operative complications, venous clinical severity scores (VCSS) and surgical outcomes, and measured the venous filling index (VFI), venous volume (VV) and residual volume fraction (RVF) using air plethysmography, preoperatively and 1, 6, 12 and 24 months postoperatively.

Results. In 79.2% of cases, SEPS was combined with stripping or endovenous laser ablation (EVLA) of incompetent saphenous trunks. There were no severe complications such as deep vein thrombosis or operative/postoperative bleeding. VCSS significantly improved (6.5 ± 3.1 at 1 month and 3.9 ± 2.5 at 6 months postoperatively compared with 17.0 ± 3.5 preoperatively). The ulcer healing rate was 90.4% after 6 months and the cumulative recurrence-free rate was 95.7% during a mean follow-up of 38.5 months. Preoperatively, the VFI, VV and RVF were 6.2 ± 3.1 mL/s, 114.5 ± 55.7 mL and $65.1 \pm 22.7\%$, respectively. These values improved to 2.3 ± 1.5 L/s, 77.9 ± 31.5 mL and $45.2 \pm 25.8\%$, 12 months postoperatively, and 2.6 ± 1.5 mL/s, 80.7 ± 30.6 mL and $39.8 \pm 16.0\%$, 24 months postoperatively, respectively; the changes at 12 or 24 months were statistically significant.

Conclusions. SEPS had no severe complications and good surgical outcomes. Venous function significantly improved by 24 months postoperatively. SEPS, combined with stripping or EVLA of the saphenous trunk, is safe and effective for treating venous stasis ulcers.

AB0337

FREE PAPER SESSION 3

EVRA ulcer trial: a randomised clinical trial to compare early versus delayed endovenous treatment of superficial venous reflux in patients with chronic venous ulceration

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Background. The timing of offering superficial venous intervention to patients, in terms of its effect on leg ulcer healing is controversial. We present a trial designed to clarify the issue.

Material and methods. This is a multi-centre, prospective,

randomised controlled trial funded by the National Institute for Health Research (NIHR HTA) Programme (project number 11/129/197).

The sample size calculation for this study was based on the primary outcome of ulcer healing. According to previous published literature, the 24-week healing rate in patients randomised compression alone was approximately 60%. To calculate a sample size for this study, we estimated a benefit associated with early treatment of around 15%. 208 subjects per group are required to identify a difference of 60% vs. 75% in 24-week healing rates with 90% power. Incorporating a 10% drop out rate, plus further allowances for protocol violations and unexpected dropouts, the target sample size for the trial was calculated at 500 patients.

Patients are randomised to either early endovenous treatment of superficial venous reflux in addition to standard care compared to standard care alone. All patients are examined clinically at 6 weeks, with monthly telephone follow-ups to document resource use and monitor patient safety. 4, weekly ulcer healing verification visits are performed upon notification of healing. Quality of life is measured at baseline, 6 weeks, 6 and 12 months.

Results. The primary endpoint of this study is time to ulcer healing. Over 2500 patients have been screened, with a 9% inclusion rate. A quarter of patient screened were ineligible with respect to ulcer duration.

Conclusions. This study will be the first large randomised multicentre trial to report on the clinical, quality of life and cost effectiveness of treating patients with venous ulcers by early superficial venous intervention. Screening data will provide overall generalisability to the future results.

AB0086

FREE PAPER SESSION 3

Treatment of chronic venous ulcer with superficial, perforator, and deep vein surgery

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Background. The purpose of this study was to analyze the outcomes associated with superficial vein surgery, perforator surgery, and deep vein surgery in the management of patients with chronic venous insufficiency (CVI).

Methods. From September 2009 to November 2014, 71 patients had venous ulcers were examined in the following groups: Group1; has superficial venous insufficiency (SVI), no incompetent perforator vein (IPV) observed, Group2; IPV observed (with or without SVI), Group3; has deep venous incompetence and persistent ulcers even after performing superficial vein surgery and/or perforator surgery. We performed the stripping or the endovenous ablation as a superficial vein surgery, and the subfascial endoscopic perforator surgery (SEPS) to eliminate IPV. And we performed the Neovalve method as a deep venous reconstruction.

Results. Seventeen patients in the group1 were treated with a superficial procedure alone. Clinical improvement was seen in 16 cases (94%) and the average follow-up was 36.9 months with 6% of healed ulcers recurred. Forty nine patients in the group2 were treated with the SEPS concomitant with or without a saphenous ablation. Of the 51 limbs treated with SEPS, 96% of the IPVs were ablated, and 91% of the limbs remained clinically improved with 8% ulcer recurrence rate with a mean follow-up of 36.6 months. Five patients in the group3 underwent the Neovalve reconstruction, and demonstrated a 100% ulcer healing rate with no recurrent symptoms with a mean follow-up of 12 months.

Conclusion. Even if the persistence of deep reflux is a cause of CVI, the SVI and the IPVs should be corrected first, since

these procedures are effective for most patients. The persistent ulcers which do not respond to superficial venous surgery and perforator surgery are an indication to correct the deep reflux.

CHAPTER SOCIETY SESSION 2: AMERICAN COLLEGE OF PHLEBOLOGY, USA

AB0389

AMERICAN COLLEGE OF PHLEBOLOGY

Post thermal ablation recurrence - what are the problems and modes of treatment?

N. Morrison

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Well-performed surgical stripping of the great saphenous vein (GSV) does not guarantee technical success as seen in a report from Munasinghe in the British Journal of Surgery (2007) documenting revascularization of the strip tract in nearly one-fourth of patients. And although much less common, neovascularization is also seen following endovenous thermal ablation procedures. More commonly, however, are recurrent varicose veins from non-saphenous sources such as pelvic insufficiency, saphenous tributary incompetence, previously unknown abdominal or pelvic obstruction, or simple disease progression.

Treatment modalities for varicose vein recurrence range from uncomplicated surgical procedures including phlebectomy to more difficult groin dissection. As an alternative, if technically feasible, repeated thermal ablation or one of the newer non-thermal, non-tumescent techniques (cyanoacrylate adhesive or mechano-chemical ablation) may produce more permanent saphenous ablation. By far the simplest, least expensive treatment modality is ultrasound-guided foam sclerotherapy (UGFS). A variety of UGFS techniques will be demonstrated.

If pelvic insufficiency is determined to be the source of recurrence, diagnostic maneuvers including trans-vaginal or trans-perineal duplex ultrasound may identify specific reflux escape points, while CT venogram or MR venography may be necessary to identify sources higher in the pelvis or abdomen such as compression syndromes (nutcracker, May-Thurner), abdomino-pelvic venous obstruction (previously unsuspected DVT), or gonadal vein incompetence. Venography on an intent-to-treat basis will be the ultimate diagnostic/treatment modality for most patients, with utilization of coil embolization and catheter-directed pelvic sclerotherapy and or endovenous dilation and stenting sometimes required. Occasionally surgical techniques may be used for nutcracker or other compression syndromes.

Whatever the cause it is important to bear in mind that control of lower extremity venous incompetence can be achieved, but permanent cure is an unrealistic goal.

CHAPTER SOCIETY SESSION 3: ASSOCIAZIONE FLEBOLOGICA ITALIANA, ITALY

AB0380

ASSOCIAZIONE FLEBOLOGICA ITALIANA

Laser-assisted foam sclerotherapy (LAFOS)

A. Frullini

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In order to enhance the treatment of insufficient saphenous vein with sclerosing foam, we have used a new technique

called LAFOS (Laser Assisted Foam Sclerotherapy) in which a new specifically designed Ho:YAG laser has been used to shrink the vein immediately before sclerosing foam injection. This laser pre-treatment is capable to significantly reduce vein diameter thus less foam volume is necessary to ablate the vein with lower chance of complications. The procedure is performed in ambulatory setting as anesthesia is not required.

We are presenting the short time results of the last 89 cases treated by LAFOS.

The laser system we used has a 5W max average power with max 500 mJ per Pulse.

The treatment was performed on 75 with insufficient Greater Saphenous Vein (GSV) and 14 Lesser Saphenous Vein (LSV) LAFOS. The mean of maximum diameter of GSV was 14.04 mm and 11.64 mm for LSV.

Vein shrinkage was easily achieved and the internal lumen diameter was reduced in association with thickening of the vein wall.

Complete occlusion was always observed at one month with proper placement of the fiber.

At more than 1 year vein occlusion was observed in 95.6% of cases. The mean diameter in the four cases with partial recanalization at 1 year was 16.25 mm.

No complications due to foam sclerotherapy were observed with the exception of minor bruising that resolved uneventfully. Echoguided aspiration of intraluminal clots was routinely performed.

No pain was referred during the laser procedure and no patients required anesthesia. In a few patients adjustment of laser energy was necessary to avoid discomfort and most patients were unaware of the laser action.

The immediate reduction of the vein caliber makes possible treating of large veins (over 1.4 mm), with sclerosing foam. This was a true coarctation proven by histologic study (not a vasospasm).

We believe that LAFOS could represent a true enhancement of foam sclerotherapy allowing better immediate occlusion rate and possibly better late outcome.

AB0386

ASSOCIAZIONE FLEBOLOGICA ITALIANA

Ultrasound-guided foam sclerotherapy of recurrent varices of the great and small saphenous vein: 5-year follow-up

P. Pavei

Day Surgery Unit, University Hospital, Italy

Background. Recurrent varices after surgery (REVAS) are a common, complex and costly problem. The causes of recurrences are technical or tactical in approximately 29% of cases, while neovascularization is responsible for another 29%. On the other hand, 32% of recurrence are represented by varices in new sites, which can be related to the progression of the disease.

Ultrasound guided foam sclerotherapy (UGFS) proved to be effective in recurrent varices.

Material and methods. In this observational study from 2006 and 2012 we treated 142 neovascularization, 155 inguinal recurrence and 28 popliteal recurrences both due to residual stump. For neovascularization 0.3-0.5% Polidocanol (POL) sclerosant foam (SF) was injected for vein having diameter <3 mm and 0.5-1% POL or Sodium Tetradecylsulphate (STS) SF for higher vein diameters. The patients with residual sapheno-femoral or sapheno-popliteal junctions were treated with 1% STS SF for diameter up to 5mm, while for larger veins 3% STS was used. From 1 to 3 sessions were necessary in both groups with 4 to 10 ml injected per session.

Results. In the group of neovascularization the 3-5 years follow up revealed good results in 90.9% of the cases. In the group of popliteal recurrences the 3-5 years follow up showed 60% of good results, while in the group of inguinal recurrences we observed 80.8% of good results at 3-5 years. We did not have major complication. As minor complications we had 0.2% of gastrocnemial vein thrombosis, 0.1% of minor neurological problems, 2.8% of superficial vein thrombosis, 3.9% of pigmentation and light to mild post-treatment pain in 16.5% of the cases.

Conclusions. In conclusion our data show that UGFS is a well tolerate technique, preferred by previously operated patients, safe and easily repeatable with good medium-term results both in case of neovascularization and of recurrence from residual femoral or popliteal stump.

AB0382

ASSOCIAZIONE FLEBOLOGICA ITALIANA

Eco-foam sclerotherapy of "P" point pelvic shunt in pelvic congestion syndrome

L. Tessari

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Background. Pelvic congestion syndrome is a recently recognized clinical problem due to pelvic vein insufficiency. Sometimes, propagation of venous reflux into the lower extremities causes varicose veins and chronic venous disease (CVD). Moreover, C. Franceschi and A. Bahnini reported that varicose veins readily visible in the medial aspect of the thigh in the presence of a competent sapheno-femoral junction, are mostly fed by reflux through the vein of Alcock channel.

The perineal site of reflux (point P) pierces the perineal superficial layer at the level of the *transversus* perinei superficialis muscle. It is associated with the junction of the perineal and labial veins which are reflux-filled by the internal pudendal vein (Alcock channel).

C. Franceschi and A. Bahnini have proposed a surgical approach to the treatment of these two points of reflux after a meticulous colour-duplex ultrasound investigation and precise skin marking.

The present author proposes a different approach to the treatment of these points of reflux, above all with regard to point P, through the injection of sclerosant foam with colour-duplex ultrasound guide.

Aim. To assess feasibility, efficacy and safety of ultrasound guided sclerotherapy foam sclerotherapy in treating reflux of the refluxing vein/s in Alcock channel, as well as treating the consequent varicose veins of the lower limbs.

Methods. Point P has been visualized and located with colour-duplex ultrasound examination, while having the patient in a gynecological position, with the probe in transversal position between the ischio-pubic bone and the posterior vaginal cavity.

When point P is located, and its distance from the skin is measured in order to establish the necessary needle length, we proceed with the direct injection of the foam prepared according the Tessari method, using sodium tetradecylsulfate 2% and a mixture of the soluble and biocompatible gases (CO₂ 70% + O₂ 30%).

647 consecutive women patients, affected by CVD of the lower limbs, underwent both clinical and colour duplex investigation, demonstrating in 95 women (age 32-66 years) venous reflux from the vein of the Alcock channel. They underwent one session of ultrasound guided foam sclerotherapy, followed in 22 cases, by a second stage injection after 3 weeks. Follow-up includes clinical as well as ultrasonographic evaluation.

Results. The average follow-up lasted 5 years. No minor

nor major complications have been reported, and the patients' reactions to the treatment have been optimal. Reflux through the Alcock channel vein as well as the connected varicose veins disappeared in the treated area entirely. The follow-up shows excellent results after 5 years (88% complete obliteration).

AB0379

ASSOCIAZIONE FLEBOLOGICA ITALIANA

Collagen cross-linking for vein restoration

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Heating therapies are increasingly used in the treatment of venous insufficiency. Unfortunately this is driven primarily by the availability of new technology, not by a detailed understanding of the biotermomechanics. Mostly research are aimed at shrinking collagen. Despite the wide application of heat-induced collagen shrinkage, serial collagen denaturation during the shrinkage process and the subsequent tissue remodeling have not been investigated in detail due to the lack of an appropriate tool. Without basic quantification of the underlying processes in terms of parameters that can be controlled clinically, identification of preferred interventions will continue to be based primarily on trial and error.

The aim of this study is to identify new photodynamic techniques for collagen shrinking of the venous wall. This should be achieved in a operator independent way by physical or chemical means.

Our goal was to induce the collagen type III shrinkage of the tunica media without damaging the endothelium of the vein with an holmium laser. Our hypothesis was that the fluid blood is easily able, by thermal convection, to quickly cool the wafer-tin of the endothelium, while the tunica media, being not in touch with the fluid blood and having a bigger thickness, compared to the endothelium, it buildings up heating and cooling take place just by thermal conduction. Moreover, we know that thermal conduction process is slower than the thermal convection one and so, this increases thermal stress on the tunica media. We used the finite elements method to simulate light and thermal distribution inside the different vein layer, comparing mathematical data with histologies on samples treated with different laser settings. We found interesting results when the wavelength has an water absorption coefficient of water (α) in the range between 20-40 cm⁻¹. Future direction would be to evaluate potential use of this very promising new patent pending technology.

AB0387

ASSOCIAZIONE FLEBOLOGICA ITALIANA

Which surgery for varicose veins in 2015?

P. Pavei

Day Surgery Unit, University Hospital, Italy

Background. Recent Clinical Guidelines (NICE July 2013) suggest for people with confirmed varicose veins and truncal reflux, to offer first endothermal ablation, second, if endothermal ablation is unsuitable, ultrasound guided foam sclerotherapy and only if the previous options are unsuitable, surgery.

As a consequence, to be competitive surgery must become less invasive, performed on an ambulatory basis and possibly under local anesthesia.

Material and methods. From 2009 we have started to treat selected patients with a simplified high ligation of the saph-

no-femoral junction with preservation of the epigastric vein and of the branches coming from the abdomen under local echoguided tumescent anaesthesia.

From 2009 to 2012 we treated 63 patients: 31 patients needed local anesthesia + sedation, while 32 were operated on only under local echoguided anesthesia. All patients underwent stripping of the Great Saphenous vein and 59 also received phlebectomies. All 63 patients completed the 36 months follow up. Clinical and echocolor Doppler examination were performed at 7 days, 3 months, 1 and 3 years.

Results. At 3 years none of the patients had clinical visible varices. The echocolor Doppler examination revealed only 1 recurrence (neovascularization). We observed 8 competent Anterior Accessory Saphenous Veins, already visualized in the pre-operative assessment, and 3 patients with pelvic varicose veins, treated with foam sclerotherapy. No major complications were recorded.

Conclusions. In conclusion in 2015 surgery, to be competitive towards endovascular treatments, needs to be simpler and cheaper and therefore based on a careful echodoppler mapping, to be less invasive, performed on an ambulatory basis, possibly under local anaesthesia.

CHAPTER SOCIETY SESSION 4: AUSTRALASIAN COLLEGE OF PHLEBOLOGY AND AUSTRALIAN AND NEW ZEALAND SOCIETY OF PHLEBOLOGY, AUSTRALIA & NEW ZEALAND

AB0217

AUSTRALASIAN COLLEGE OF PHLEBOLOGY AND AUSTRALIAN AND NEW ZEALAND SOCIETY OF PHLEBOLOGY

Detergent sclerosants are consumed and deactivated by circulating blood cells and proteins

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Aim. To investigate the deactivating effects of circulating blood cells and lymphatic fluid on the lytic activity of detergent sclerosants.

Methods. Samples of whole blood (WB), platelet-rich plasma (PRP), isolated leukocytes were incubated with various concentrations of Sodium Tetracycl Sulphate (STS) or Polidocanol (POL) and added to human umbilical vein endothelial cells (HUVECs) which were then counted using a fluorescent plate reader. Full blood counting was performed using a haematology analyser. Platelet lysis and microparticle formation was assessed using lactadherin binding in flow cytometry.

Results. Detergent sclerosant activity was decreased in whole blood when compared to plasma and saline controls. The sclerosant lytic activity on endothelial cells was increased 23-fold for STS and 59-fold for POL in saline compared with whole blood. At high concentrations, sclerosants lysed erythrocytes, leukocytes and platelets. Platelets were more sensitive to the lytic activity of sclerosants than other cell types. Neutrophils were the most susceptible of all leukocytes to the lytic activity of sclerosants. The presence of erythrocytes and leukocytes in samples decreased the lytic activity of sclerosants. Sclerosants at all concentrations induced erythrocyte-derived microparticle formation.

Conclusions. Detergent sclerosants are consumed and deactivated by circulating blood cells. This deactivating effect is above and beyond the neutralising effects of plasma proteins and contributes to the overall neutralising effect of blood. Different blood cell types exhibited varying levels of vulnerability to the lytic activity of sclerosants with platelets being the most and erythrocytes the least vulnerable (platelets > leukocytes > erythrocytes).

AB0132

AUSTRALASIAN COLLEGE OF PHLEBOLOGY AND AUSTRALIAN AND NEW ZEALAND SOCIETY OF PHLEBOLOGY

Arteriovenous malformations and Stewart-Bluefarb Syndrome

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Aim. This presentation will discuss Stewart-Bluefarb Syndrome (SBS), a rare angioproliferative disorder characterised by acroangiokeratosis (AAD) associated with an underlying arteriovenous shunt.

Methods. Five patients with SBS will be discussed and literature pertaining to this condition reviewed.

Results. In this case series, all underlying AV communications were initially diagnosed on duplex ultrasound and confirmed with magnetic resonance angiography (MRA). Four patients were found to have a congenital AV malformation while one patient was diagnosed with a post-thrombotic AV fistula. In one female and two male patients the diagnosis was delayed as the AAD closely resembled other conditions. Management included observation and intervention using a variety of techniques including percutaneous or trans-catheter embolization, endovenous laser, radiofrequency ablation and foam ultrasound guided sclerotherapy.

Conclusions. This case series highlights the challenges involved in the diagnosis and management of SBS. Given the local and systemic sequelae of high flow shunts, correct diagnosis and early detection of the underlying AV abnormality is crucial in the long-term management of these patients and in preventing the associated complications.

FREE PAPER SESSION 4: VARICOSE VEIN II

AB0068

FREE PAPER SESSION 4

Use of cyanoacrylate adhesive for treatment of incompetent great saphenous veins: 12-month results of the VeClose trial

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Background. Endovenous thermal ablation techniques have been used successfully to treat incompetent saphenous veins. Though efficacious, a disadvantage is the need for tumescent anesthesia, involving multiple needle sticks along the length of the target vein. The VeClose trial sought to demonstrate non-inferiority of a novel treatment modality using cyanoacrylate embolization (CAE) agent compared with radiofrequency ablation (RFA) for the treatment of refluxing great saphenous veins (GSV).

Methods. Two hundred twenty-two patients with symptomatic GSVs were randomly assigned to treatment with either the VenaSeal™ closure system (CAE; n=108) or ClosureFast™ ablation catheter (RFA; n=114). The primary endpoint of the study was complete closure of the target GSV at 3 months as assessed by duplex ultrasound and adjudicated by an independent core laboratory. Secondary endpoints included peri-procedural pain, ecchymosis at 3 days, and adverse event rate. Follow-up assessments occurred at 3 days, 1, 3, 6 and 12 months post treatment. No adjunctive therapy was allowed for 3 months.

Results. Complete vein closure at 3 months was 95.4% RFA and 98.9% CAE ($p < .0001$; non-inferiority); at 6 months was 94.3% RFA and 98.9% CAE ($p < .0001$) and at 12 months 96.8% RFA and 96.8% CAE. Peri-procedural pain was similar between the groups. Significantly less ecchymosis was observed in the CAE group than RFA ($p = .0013$) at day 3. Serious adverse events were observed in 2.8% CAE versus 3.5% RFA treated subjects none of which were deemed related to the index device or procedure.

Conclusions. Non-inferiority of closure rates for CAE compared to RFA at 12 months was demonstrated. Twelve month results of the VeClose trial demonstrate continued safety and effectiveness for treatment of incompetent saphenous veins with CAE.

AB0070

FREE PAPER SESSION 4

The French technique of chemical ablation of the great saphenous vein (GSV)

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French Society of Phlebology, France

Background. To describe the guidelines of the French technique of chemical ablation of the great saphenous vein (GSV).

Methods. A brief history will identify the reality of the concept of French method, and then will be reminded of the technique, the results through some French studies and the side effects that are actually not specific. We conclude with limitations and medium-term prospects.

Results. Whether in the development of sclerotherapy, in particular by contribution from school Raymond Tournay, for the introduction of ultrasound guidance, the use of sclerosing foam, making the extemporaneous foam, the validation of the effectiveness of ultrasound guided foam sclerotherapy by randomized controlled trials and evaluation and understanding of complications in studies dedicated, French phlebologists played an essential role which led to the concept of French method which got through the recent European guidelines (recommendation 19) the status of recommended method (grade 1C) in the chemical ablation of the GSV.

Discussion. Limits, besides the contraindications, are mainly located at the caliber of the vein to be treated. In France this limit will remain blurred as we will only have one foaming sclerosing agent and the thermal ablation techniques will still not be refunded. It is not unreasonable in this situation to put this limit high enough, around 8 to 10 mm. Refund of the thermal ablation should reduce this limit below 6 mm, pending the emergence and validation of new techniques.

Conclusions. The concept of French technique of chemical ablation of the GSV (such as the small saphenous vein elsewhere), result of the works of the French school of Phlebology, within the French Society of Phlebology, is a fact reinforced by the European recommendations, and certainly still have nice future ahead of it.

AB0120

FREE PAPER SESSION 4

Sciatic nerve varices: unknown or underdiagnosed?

K. Pacheco

Member of SBACV, Brazil

Aim. To report our experience with patients with sciatic nerve varices (SNV) and to indicate which type of patient is more likely to be afflicted with this particular pathology.

Material and methods. The same consisted of 2,400 patients, selecting 80 (3.3%) as possible suffered of SNV. Patients with the following conditions were highly-suspected: patients with varicose on the lateral aspect of the leg, thigh, and oco politeo; with uncontrolled vatical recurrence after safenectomy; with symptoms of and who tested positive for pelvic varices; with a history of deep vein thrombosis; and complaint of sciatic pain along with an increase in the diameter of one limb in relation to the other. They underwent detailed and rigorous examination of the losango popliteo in order to identify varicose inside the sheath of the sciatic nerve and the side of the leg. Of these 10 underwent venous angiography to detail the anatomical relationship with the sciatic nerve.

Results. Of the 80 cases, we found 21 (26.3%) cases positive fore SNV by ultrasound. 10 patients had SNV associated with uncontrolled variceal recurrence after safenectomy, while the other 10 were associated with pelvic varices. Sciatic pain was present in 100% of the patients who tested positive for SNV.

Conclusions. SNV are not well-known in medicine. If the doctor makes an examination as described in the

AB0011

FREE PAPER SESSION 4

The methods and the results of subfascial endoscopic perforator surgery in Europe, North America, and Japan

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Background. In Japan, Subfascial Endoscopic Perforator Surgery (SEPS) was accepted as a national advanced medical system by the Ministry of Health, Labor and Welfare in May 2009. Moreover, SEPS was accepted as a medical service under health insurance by the Ministry in April 2014, because simpler and easier method than classical SEPS in North America and Europa was developed and performed by the members of Japanese SEPS studying group (JSEPS).

Methods. The methods and the results of SEPS in Japan were evaluated, compared with those in North America and Europa. The importance of SEPS as an alternative therapy was discussed based on the Japanese medical system.

Results. In Japan, most of SEPSs were performed by two-port system using 6mm sized screw-type ports introduced by Haruta. This method has never been tried in the other countries than Japan, and it is characterized by CO₂ not leaking out of the subfascial space without using a tourniquet. As a result, the visual field becomes much better with the lower CO₂ pressure than the classical SEPS, and the technic of SEPS became more simple and easier. More than 2500 of SEPS were performed in Japan, while 1180 in the other countries. According to the data which a part of the members of JSEPS performed of publish in each so far in Japan, primary ulcer healing rate (PUHR) was 93-100%, ulcer recurrence rate (URR) was 0% (f/u; 24-72 months) to 8.3% (mean f/u; 47 months). In the other countries, PUHR was 88% and URR was 13% (mean f/u 21months).

Conclusion. The methods and the results of SEPS in Japan were different from those in the other countries and SEPS was an important alternative therapy in Japan. JSEPS is now accumulating the whole data and is going to analyze the result in detail.

AB0204

FREE PAPER SESSION 4

Trans-illuminated powered phlebectomy showed higher incidence of complications and redo varicose vein surgery than stab avulsion phlebectomy

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Background. This study compares the results between trans-illuminated powered phlebectomy (TIPP) and stab avulsion phlebectomy (SAP).

Material and methods. Between August 2001 and January 2015, 452 patients having 489 limbs were conducted varicose vein surgery. Among them, 279 patients were operated with TIPP (group 1) and 141 patients with SAP (group 2). Postop complications and incidence of redo surgery were compared.

Results. Postop complications were wound problem in 6, paresthesia in 2 and sustained serous discharge in 2, respectively. Complication rates were 2.2% (10/452) in overall, 2.5% (7/279) in group 1 and 1.4% (2/141) in group 2 ($p=.046$, $OR=1.77$). Incidence of redo surgery were 34 cases (8.1%) in overall, remnant varicose in 3 and delayed disease progression in 31 cases, respectively. They showed 8.6% (24/279) incidence of redo surgery in group 1 and 4.2% (6/147) in group 2 ($p<.001$, $OR=2.02$). However, there is no difference in times to redo surgery between group 1 (1982.7 \pm 305.4 days, 5.43 years) and group 2 (1822.5 \pm 295.5 days, 4.99 years) ($p=.8025$).

Conclusions. Trans-illuminated powered phlebectomy showed higher incidence of complications and redo varicose vein surgery than stab avulsion phlebectomy.

AB0044

FREE PAPER SESSION 4

Isolated phlebectomy leads to disappearance of great saphenous vein reflux: experience with ASVAL principles in Russia

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Background. Ascending theory of developing of primary varicose veins claims that pathological process starts in tributaries and only after that reflux develops in saphenous trunk. Therefore, removal of varicosities has to result in elimination of saphenous reflux. The principle of isolated phlebectomy without any intervention on an incompetent saphenous trunk is known as ASVAL method. We conducted a study to estimate what impact an isolated phlebectomy may have on great saphenous vein's (GSV) diameter and reflux.

Material and methods. We operated on 51 limbs in 43 patients (35 women, 8 men) aged from 21 to 71 (mean 46) with GSV incompetence and tributary varicosities. There were 42 (82%) C2 limbs, 7 (14%) limbs and 2 (4%) C4 limbs. All GSVs had reflux not lower than knee level. The diameter of GSVs at saphenofemoral junction was 0.45-1.34 cm (mean 0.83), on an upper thigh 0.42-0.87 cm (mean 0.61).

We performed only phlebectomy without GSV ablation under local anesthesia. Follow-up periods were 7 days, 1, 3, 6, 12 months after surgery.

Results. We observed 3 (6%) cases of GSV thrombosis during the first week. No other complications were observed.

The diameter of GSV decreased: after 12 months at saphenofemoral junction it was 0.38-1.16 (mean 0.65), in the upper thigh - 0.36-0.86 (mean 0.45) ($p=0.003$).

At 1 month 46 legs were examined, 34 (64%) were free from GSV reflux. At 3 month - 19 from 32 (59%), at 6 month - 21

from 33 (64%), at 12 month - from 24 (58%) GSV's were competent.

Conclusions. Isolated phlebectomy has a significant hemodynamic effect on the GSV: saphenous reflux disappears in majority of patients and GSV's diameter significantly reduces. The GSV-destroying approach still strongly dominates all over the world while extending the experience of ASVAL principles may have a great impact on phlebological practice.

AB0285

FREE PAPER SESSION 4

The CEAP survey: rationale and preliminary results

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CEAP is a score designed to describe synthetically the chronic venous insufficiency (CVI). Two papers in 1996 show the original (OR) CEAP classification. A revision (REV) was published in 2004. There is an apparent inconsistency between the two CEAP releases. OR classifies the anatomical segment designations into the anatomical A category, while REV includes it into the pathological P one. The reported shift presents some points of interest and unexpected advantages. Two similar clinical cases are presented. OR assigns them the same score, while REV is able to differentiate the cases. CEAP is not a clinical dossier but only an instantaneous image of a patient, presents an inter-observer reproducibility and cannot follow the evolution of CVI. The shunt classification is a theoretical framework regarded by a few outstanding interventionists as an essential tool for the comprehension of chronic venous diseases. The advanced terms are not in conflict with the shunt classification. They could be instead only complementary points of view. This work started from a discussion on the list Vasculab, showing that satisfaction about CEAP is variable. At 20 years from the original publication and 10 years from its revision, a new revision seems to be necessary.

An On Line CEAP survey was decided on Vasculab to gather essential information for a future revision. The main interest was to check the routine use of CEAP and the need for a revision or simplification. The current work was not constrained inside the Vasculab Community, being instead extended to other interested groups. The survey is still in progress and is available in English, French and Italian.

This paper is a synthetic overview of the survey and a preliminary report of its results.

AB0079

FREE PAPER SESSION 4

Simultaneous EVLA of incompetent truncal and perforating veins with 2ring™ radial fiber

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Background. EVLA with Radial™ fiber is «gold standard» in the treatment of CVD. However this method has some limitations in cases of incompetent perforating veins (IPV), because of necessity to use special kits for IPVs (Slim). We offer our method of GSV, SSV and IPV ablation with the 2ring™ radial fiber.

Methods. 39 patients (43 legs) with primary varicose and

incompetent trunk and IPVs on the calf. F-31 (79.5%), M-8 (20.5%). Mean age 50.4 ± 15.2 y. Incompetence of GSV – 31 (72.0%), SSV – 6 (14.0%), GSV+SSV – 3 (7.0%), AASV – 3 (7.0%). We found 54 IPVs with reflux more than 0.5 sec. Average diameter of IPVs was 5.0 ± 1.2 mm. Average length of a direct part of IPVs was 24±5mm. For EVLA of trunks and IPVs we used laser 1470 nm by Biolitec Ceralas 15E and 2ring™ radial fiber. For EVLA of IPVs we used short 6Fr introducer by Terumo (Radiofocus II). After EVLA of incompetent trunk we set introducer and fiber into IPV. EVLA was performed with manual traction of the fiber with power 8 watts. LEED was 200 J per vein. Results were evaluated in 1 day, 1 week and 1 month. We evaluated quality of obliteration (ultrasound duplex), pain, phlebitis, paresthesia.

Results. In all cases we performed EVLA of IPVs without any problems. We didn't find carbonization of the fiber after procedure. In 1 day, 1 week, 1 month after procedure IPVs were closed in 92.6%. Obliteration was successful with good shrinking. In 7.4% we found incomplete occlusion. In 1 case we found paresthesia (1.85%) and in 2 cases mild phlebitis (3.7%).

Conclusions. Simultaneous EVLA of trunk and IPVs with one 2ring™ radial fiber is possible. It can be important in cases with big diameter of trunk when using of 2ring™ fiber is more preferably.

AB0270

FREE PAPER SESSION 4

The patient's opinion of outcome one year after endovenous laser ablation of the GSV or SSV

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Background. Patients undergoing an endovenous laser ablation (EVLA) of the great (GSV) or short (SSV) saphenous vein at Venous Centre, Malmo are offered a one-year postoperative examination. This visit includes a clinical and ultrasound examination. Follow up data are registered in the patients file (Skalpell, Metodika Ltd, Sweden).

The patients opinion of outcome is registered anonymously and separately on a touch screen by the patient on a web based programme (Improveit Ltd, Halmstad Sweden). Data are analysed online.

Material and methods. From Jan 1 2013 through December 31 2013, 1086 patients were treated with EVLA (double ring radial 1470 nm laser with the generator set at 12W, Biolitec GmbH, Germany) of the GSV and SSV. In most cases simultaneous local excisions of local varicosities were made.

The superficial venous insufficiency was classified as CEAP 2 42.7%, CEAP3 8.9%, CEAP4 34%, CEAP5 3.5% and CEAP6 3%.

Results. There were 749 women (69%) and 337 men. Median age was 58 years (46-67) 945 (87.0%) attended follow up. The recanalization rate (complete or partial) as seen on ultrasound was 1.8% for the GSV and 4.4% for the SSV.

889 (92.0%) of patients described a significant symptom reduction. 71 (7.5%) felt unchanged/did not know and 5 (0.5%) even felt worse.

A limitation of this analysis is that outcome data cannot be matched to ultrasound data on a patient-to-patient basis.

Conclusions. Most patients experienced a significant symptom reduction at the one-year follow up. But 8% experienced no difference or even felt worse.

This discrepancy could indicate that the patients preoperative expectations were not met or that the symptoms were only in part related to superficial venous insufficiency.

The results furthermore emphasises the need of a thorough preoperative examination and patient information.

FREE PAPER SESSION 5: BASIC PHLEBOLOGY

AB0217

FREE PAPER SESSION 5

Detergent sclerosants are consumed and deactivated by circulating blood cells

D. Connor, O. Cooley-Andrade, W. X. Goh, D. Ma, K. Parsi

St Vincent's Centre for Applied Medical Research, Australia

Background. To investigate the deactivating effects of circulating blood cells and lymphatic fluid on the lytic activity of detergent sclerosants.

Material and methods. Samples of whole blood (WB), platelet rich plasma (PRP), isolated leukocytes were incubated with various concentrations of Sodium Tetradecyl Sulphate (STS) or Polidocanol (POL) and added to human umbilical vein endothelial cells (HUVECs) which were then counted using a fluorescent plate reader. Full blood counting was performed using a haematology analyser. Platelet lysis and microparticle formation was assessed using lactadherin binding in flow cytometry.

Results. Detergent sclerosant activity was decreased in whole blood when compared to plasma and saline controls. The sclerosant lytic activity on endothelial cells was increased 23-fold for STS and 59-fold for POL in saline compared with whole blood. At high concentrations, sclerosants lysed erythrocytes, leukocytes and platelets. Platelets were more sensitive to the lytic activity of sclerosants than other cell types. Neutrophils were the most susceptible of all leukocytes to the lytic activity of sclerosants. The presence of erythrocytes and leukocytes in samples decreased the lytic activity of sclerosants. Sclerosants at all concentrations induced erythrocyte-derived microparticle formation.

Conclusions. Detergent sclerosants are consumed and deactivated by circulating blood cells. This deactivating effect is above and beyond the neutralising effects of plasma proteins and contributes to the overall neutralising effect of blood. Different blood cell types exhibited varying levels of vulnerability to the lytic activity of sclerosants with platelets being the most and erythrocytes the least vulnerable (platelets > leukocytes > erythrocytes).

AB0266

FREE PAPER SESSION 5

Air travellers: a pharmacist's study shows a higher risk of DVT than usually described and the benefit of wearing elastic compression stockings

F. Allaert

Medical Evaluation Chair and CEN Nutriment, France

Aim. To describe the clinical profiles of people buying elastic compression stockings (EC) proposed by their pharmacists to prevent DVT linked to their next air flight and the incidence of DVT occurring during their holidays or when they return.

Methods. National observational study. Each pharmacist inform their clients about the risk of DVT when flying, propose them to buy EC and ask them to return a self-questionnaire describing all health problems occurring during their holidays or during the 15 days after.

Results. Among 2096 persons included in the study 47.9% bought an EC. Logistic analysis shows that EC buyers presented more DVT risk factors than non-buyers: venous insufficiency OR:2.0 (p<0.0001), personal/past-history of DVT OR:1.6 (p<0.05)/OR 1.5 (p<0.01), flight duration>4 hours OR:1.5 (p<0.001), women/men OR:1.2 (p<0.05) and they were more aware of the risk OR:2.3 (P<0.0001). The incidence of DVT was

much higher than generally described ranging from 1.2 to 1.9 in the global population (1.0 to 1.7 with EC and 1.5 to 2.2 without EC) and logistic analysis showed the predictive value of personal DVT history OR 3.8 ($p < 0.05$), flight duration > 4 h OR 3.7 ($p < 0.05$) and puffy feet when landing OR 10.0 ($p < 0.01$).

Conclusions. Today people buying EC are at higher risk than non-buyer and wearing their EC decreases their risk of DVT to the same level or even lower than those at lower risk but not wearing them. Reports of DVT are much higher than generally described but are justified and may challenge previous evaluations of that risk.

AB0215

FREE PAPER SESSION 5

Temperature increases during foam generation

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Background. We have previously demonstrated that detergent sclerosant foams are less stable at higher temperatures and have proposed pre-cooling sclerosants as a method of improving foam stability. As the process of foam generation using the Tessari method involves mechanical agitation, this study investigated the effect of this agitation on foam temperatures.

Material and methods. Sodium Tetradecyl Sulfate (STS) and Polidocanol (POL) (0.5%, 1.5% and 3.0%) were used. Prior to foam generation, the sclerosant and all constituent equipment was cooled to a range of temperatures (4-25°C) and then compared to cooling the sclerosant liquid only. Foam was generated using a modified Tessari method. During the process of foam agitation, temperature changes were measured using thermocouples for 60 seconds.

Results. Pre-cooling the sclerosant and constituent equipment resulted in cooler foam in comparison to only cooling the sclerosant. A starting temperature of 4°C produced an average foam temperature of 9.2°C for STS and 9.8°C for POL. It was also found that only cooling the sclerosant provided minimal cooling to the final foam temperature, with the temperature reaching 19.1°C and 17.9°C respectively for STS and POL. There was no difference foam temperatures for different concentrations of STS or POL.

Conclusions. The foam generation process itself has a measurable impact on final foam temperature and needs to be taken into consideration when creating foam. Precooling all constituent equipment, including the sclerosant, results in an optimal foam temperature after completion of the mechanical foaming process.

AB0103

FREE PAPER SESSION 5

Association of SNPS of HFE gene with varicose veins in Russian population

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Background. Primary varicose veins are the most frequent form of chronic venous disease and the most common venous

pathology of lower limbs. Recently, the association of p.C282Y variant in HFE gene with the increased risk of venous ulceration was shown. We supposed that HFE polymorphism might be involved not only in ulceration process, but also in common susceptibility to primary varicose veins.

Material and methods. We genotyped p.C282Y and p.H63D in patients with varicose veins ($n=463$) and in the control group ($n=754$). Determination of genotypes of SNPs was performed by Real-time PCR. Statistical analysis was performed using the R-language.

Results. The HFE p.C282Y gene variant was significantly associated with varicose veins (GG vs. GA+AA OR = 1.79, 95% C.I. = [1.11-2.89], $P = 0.02$, power = 94%). HFE p.H63D was not associated with varicose veins in this patient population. We did not confirm the association of HFE p.C282Y with venous leg ulcer development (OR = 1.41, 95% C.I. = [0.27-7.26], $P = 0.77$). Moreover, we performed a meta-analysis of our results combined with the results of Italian researchers, and also did not reveal any association (pooled OR = 2.54, 95% C.I. = [0.93-6.91], $P = 0.38$). We also observed no evidence of association for HFE p.H63D with venous leg ulcer development either in Russian population (OR = 0.25, 95% C.I. = [0.06-1.00], $P = 0.06$) or later in the meta-analysis (OR = 0.64, 95% C.I. = [0.14-3.01], $P = 0.56$).

Conclusions. Thus, we can conclude that the HFE gene polymorphism affects the risk of developing primary varicose veins.

AB0294

FREE PAPER SESSION 5

Glycosaminoglycan Sulodexide: a "Janus effect" in venous ulcer microenvironment

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Background. The venous ulcer microenvironment is composed by cells, proteins/enzymes, and extracellular matrix components crucial for tissue repair processes. In particular, MMP-2 and MMP-9 play a key role both in the degrading activities of inflammatory phase, and in the remodeling processes of the granulating phase. The aim of this study was to investigate how exudate from inflammatory and granulating ulcers alters the activity of MMPs released by THP-1 monocytic cell line, and how glycosaminoglycan Sulodexide can modulate this release.

Material and methods. THP-1 were exposed to increasing doses of ulcer wound fluid (UWF) pooled from both inflammatory and granulating ulcer patients ($n=10$), at the final concentration of 1-10%, in presence and absence of Sulodexide co-treatment (0.12 LSU/mL). Culture media and UWF were used for the semi-quantitative analyses of MMP-2 and MMP-9 by gelatin zymography. Multiplexing immunoassays were used to quantify both MMP levels.

Results. Our results demonstrated that inflammatory ulcers showed increased levels of total MMP-2 and MMP-9 respect to granulating ulcers ($p=0.0026$ and $p=0.0025$, respectively), with activated MMP-2 and monomeric and multimeric MMP-9 in granulating ulcers. The treatment of THP-1 cells with inflammatory UWF revealed a dose-dependent increased expression of activated monomeric MMP-9 (86kDa), while THP-1 exposed to increasing doses of granulating fluid showed an increased shedding of zymogenic MMP-9 (92 and 225kDa), and activated MMP-2 (66kDa) and MMP-9 (86kDa). Glycosaminoglycan Sulodexide was able to modulate the release of MMPs from THP-1 stimulated both with inflammatory and granulating stimuli.

In particular, while SDX reduced the gelatinolytic activity of MMP-9 from inflammatory UWF-exposed THP-1, this glycosaminoglycan increased the activity of MMPs induced by granulating UWFs.

Conclusions. Our results highlighted the “Janus double-effect” of the glycosaminoglycan Sulodexide in THP-1 cells exposed to non-healing and healing stimuli, suggesting anti-proteolytic effect in the inflammatory phase, and pro-remodelling function in the granulating phase.

AB0300

FREE PAPER SESSION 5

Primary prevention PREVENT study I

R. Vellettaz

Clínica Colón, Mar del Plata, Argentina

Background. This study is based on information obtained of Argentina campaign of primary prevention in Phlebology 2010.

Aim.

Determine demographics data, rate of risk factors, previous treatments, symptoms, signs, C of CEAP, VCSS, CIVIQ 20, correlate variables.

Material and methods.

Population: 2163 patients

Included: 2144

Excluded: 9 by severe flaws in data collection

Multicenter: 16 simultaneous centers

Period: 23 / August 27, 2010

We did not perform either reliability inter-observer index or Kappa index.

Results.

Average age: 52.55 years

Female sex: 86.8%

Rate of risk factors: consistent with international studies

All are more prevalent in men, less mesenchymal disease.

Multiple risk factors (over three): 77%

Symptoms / signs: rate 50% higher than in international studies

CEAP: higher prevalence C3 50.98%

CEAP C1 prevalence in women: 89.81%

C1 higher prevalence in patients less than 55 years: 59.30%

CEAP C4-C6 correlates with elevated BMI, sedentary life-style, positive AHF and history of DVT.

Higher C CEAP correlates with higher pretreatments rate and multiple risk factors.

CVSS average overall: mild 0.48

Domains pain, varicose veins, edema: moderate

Higher CVSS in older men

CIVIQ 20: average overall 73.2

Higher rate: moderate impairment CIVIQ 20

Female sex, younger age, multiple risk factors correlated with lower CIVIQ 20

Minor CEAP C with minor CIVIQ 20

Minor CVSS with minor CIVIQ 20

Higher CVSS with higher CEAP C

Conclusions. High prevalence of high degree C of CEAP, higher rate of symptoms and signs, lower rate of previous treatments.

Increased severity of CVD and lower HRQOL indicates late consultation for failure prevention.

This study improves the knowledge of demographic factors and proposes preventive measures to promote health and prevention of CVD in Argentina.

AB0291

FREE PAPER SESSION 5

Sulodexide reduces the inflammatory phenotype of the endothelial cells caused by serum from patients with chronic venous disease

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²Medical University of Poznań, Poland

Background. We found previously that sulodexide used for 8 weeks in patients with chronic venous disease (CVD) suppresses the intravascular inflammation. We tested what is the effect of prolonged exposure of human venous endothelial cells *in vitro* to serum from patients with CVD on function of these cells and how it is modified when they are simultaneously exposed to sulodexide.

Material and methods. Human umbilical venous cells (HUVEC) were cultured in 25cm² flasks, during 15 days in standard medium (control), or in medium supplemented with 5% CVD serum pooled from 8 patients (CVD-serum) ± Sulodexide 0.25 LRU/ml (SUL). Medium was changed every 3 days and the collected supernatant was stored for further examination.

Results. We observed that concentrations of IL-6, MCP-1, ICAM-1 were gradually increasing during the following medium exchanges, in supernatants containing 5% CVD serum, as compared to control medium: maximally by 55%, p<0.01, 26%, p<0.02 and 64%, p<0.01, respectively. In supernatants obtained after incubation of HUVEC in medium + CVD serum+ SUL, concentrations of IL-6, MCP-1 and ICAM-1 were maximally less increased as compared to control: IL-6 by 18%, p<0.05 vs. CVD-serum; MCP-1 by 7%, p<0.05 vs. CVD-serum and ICAM-1 by 20%, p<0.02 vs. CVD-serum. At the end of 15 days incubation oxidative stress in cells treated with CVD-serum was higher by 68%, p<0.02, and in cells treated with CDD serum+ SUL by 11%, p<0.05 as compared to control group. Release of IL-6 after stimulation with IL-1 (100 pg/ml) was the highest in CVD-serum group: 3540± 670 pg/105 cells vs. 1850± 540 pg/105 cells in control (p<0.01 vs. CVD-serum) and 2320 ±430 pg/105 cells in CVD-serum-SUL (p<0.02 vs. CVD-serum).

Conclusions. Chronic *in vitro* exposure of HUVEC to medium supplemented with CVD serum induces their inflammatory phenotype. Sulodexide used as supplement to medium significantly reduces that effect.

AB0056

FREE PAPER SESSION 5

Antegrade saphenous volume displacements are a principal determinant of reflux measurements

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Background. Quantifying reflux with ultrasound is a challenge in the hemodynamic assessment of venous insufficiency. Parameters like reflux duration, peak reflux velocity and volume flow demonstrate great variability and are operator dependent. This study recognises that reflux is part of a recirculation circuit and introduces the novel recirculation ratio (RR). The objective was to measure the RR by comparing antegrade and retrograde volume displacements within the great saphenous vein (GSV).

Material and methods. Sixteen legs of 16 patients with GSV reflux were scanned at the upper thigh with duplex. The clinical CEAP was C2=3, C3=2, C4a=6, C4b=4, C5=1. The median

(range) age, VCSS and GSV diameter were 63(21-79) yrs, 8(4-16) and 7(5-10) mm, respectively. A manual calf compression and release (MCCR) manoeuvre performed once was followed by 3 automated cyclical compression and release manoeuvres (ACCR).

Results. Expressed as median [inter-quartile range]. The ACCR compared to the MCCR resulted in longer reflux duration (16.4[8.2-16.4] s *versus* 5.7[3.7-6.8] s, $P < .0005$), higher time-averaged mean velocities (TAMV) in reflux (23.5[14.9-27.9] cm/s *versus* 14.1[9-17.6] cm/s, $P < .0005$) and greater reflux volume displacements (81.7[38.8-152.8] mL *versus* 27.3[16.4-53.4] mL, $P < .0005$). Increasing antegrade volume measurements correlated significantly with increasing reflux volume measurements: ACCR ($r = .841$, $P < .0005$), MCCR ($r = .762$, $P = .001$). The ratio of reflux volume/antegrade volume (RR) was 2.14[1.58-2.74] with the ACCR. Adjusted to a standard median for each leg, the reproducibility limits (x3) of the RR was excellent at 2.14 (95%CI: 2.09-2.21).

Conclusions. This study evaluated reflux as an expression of antegrade flow using the RR. It appears that GSV reflux volume correlates strongly with the amount of displaced antegrade volume, irrespective of manoeuvre. Measuring GSV recirculation with the RR using volume displacements may lead to two clinical applications: (1) provide a method of quantifying reflux and (2) assess harm (reflux) *versus* benefit (antegrade flow) in considering which patients are suitable for saphenous intervention (eg, in the post-thrombotic syndrome).

AB0110

FREE PAPER SESSION 5

The prevalence of ovarian varices in patients with endometriosis

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Member of the SBACV, Brazil

Background and aim. Endometriosis and ovarian varices manifest with similar symptomologies and the hormone estradiol is implicated in both. We decided to investigate the possible association between them.

Results. The prevalence of ovarian varices in patients with endometriosis was 80%, whereas, the control group was only 24%. The elevated percentage of ovarian varices in patients with endometriosis is highly significant.

Material and methods. The sample consisted of 48 female patients between the ages of 18 and 50 years old. The study took place in the city of Rio de Janeiro in the southwest region of Brazil from May 2013 to September 2014.

These patients were found in the Gynecology Clinic of UERJ (State University of Rio de Janeiro). This study was authorized by the Ethics Committee and the patients signed waivers of consent.

There were 25 patients who had been diagnosed with endometriosis. 15 had been confirmed by surgery or histopathology and 10 by nuclear magnetic resonance.

There were also 23 patients without endometriosis who were considered to be the control group. This group was matched alongside the former group in terms of sex, race, body mass index, and age.

Paraovarian varices were defined as the presence of dilation equal to or greater than 5 mm in the longitudinal cut showing tortuous veins with reflux in the adnexal region.

Significant reflux was defined as the presence of retrograde flux lasting longer than 0.5 s, monitored by Doppler pulse wave.

Conclusions. Our results suggest that ovarian varices play a very important role in the physiopathology of endometriosis. Ovarian varices may evolve with oxidative stress in the function of the ovary, provoking an imbalance in its genetic,

hormonal, and immunological aspects, provoking the chronic inflammatory process and the oxidative stress particular to endometriosis.

FREE PAPER SESSION 6: VENO-LYMPHATIC DISORDERS AND COMPRESSION THERAPY

AB0335

FREE PAPER SESSION 6

Comparison of the hemodynamic effects of different compression systems for the treatment of venous leg ulcers

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Czech Society of Phlebology, Republic of Czech

The impaired function of the venous system of the lower extremities may be caused by hemodynamically significant primary varicose veins or postthrombotic syndrome. Venous pump power decreases and venous refilling time becomes shorter. The result of this situation is the increase of venous volume followed by venous hypertension, which is transmitted from deep venous system to superficial veins through incompetent perforators, then to smaller veins and venous capillaries. This leads to the expansion of capillary fenestrations causing edema through transport of fibrinogen to perivascular space and formation of pericapillary fibrin cuffs. Impaired rheology of venous capillaries involves the formation of erythrocyte microthrombi, leukocyte adhesion and their passing through into perivascular space with subsequent tissue inflammation. Changes of endothelial activity complete the tissue hypo- and dystrophy that can lead to the development of venous leg ulcer.

All these changes can only be reduced by external compression, which represents the essential conservative method for treating venous leg ulcers.

The author presents a historical overview of the external compression for this indication, from times of Hippocrates to the latest advancement in the venous leg ulcer treatment. Special attention is paid to the Czech school of compression therapy (by Holan, Strejcek). For certain types of compression tools, the author demonstrates their impact on venous hemodynamics measured by calibrated photoplethysmography (D-PPG).

AB0055

FREE PAPER SESSION 6

Performance of compression stockings in venous insufficiency using air-plethysmography

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Background. The *in vivo* performance of elastic compression stockings was tested using air-plethysmography. Performance at resisting increases in calf volume after a dependency manoeuvre and after thigh compression was assessed using the venous filling index (VFI) and the novel Incremental thigh-cuff Pressure causing the Maximal Increase in calf Volume (IP-MIV), respectively. The ability of a stocking to enhance venous return was assessed using the outflow fraction (OF) and the ejection fraction (EF).

Material and methods. Twelve normal control subjects were compared to 12 patients (C2=2, C3=3, C4a=4, C4b=2,

C5=1, median VCSS=8[5-11]) with varicose veins (VV) and 12 patients (C3=1, C4a=4, C4b=7, median Villalta scale=11[6-23]) with post-thrombotic syndrome (PTS) using no compression, knee-length Class 1 (18-21 mmHg) compression and then Class 2 (23-32 mmHg) compression. Stocking interface pressures (mmHg) were measured supine at the B1 ankle point and mid-calf, using the PicoPress®.

Results. The median B1 vs. mid-calf interface pressures with Class 1 & Class 2 were, Controls: 18 vs. 13 (p=0.002) & 25 vs. 17 (p=.002); VV: 20 vs.15 (p=0.002) & 27 vs. 19 (p=0.004); PTS: 19 vs. 16 (p=0.01) & 26 vs. 22 (p=0.004), respectively. This confirms significant graduated compression.

The median (inter-quartile range) VFI, IPMIV, OF and EF were, Controls: 1.1(0.5-1.6), 20(20-30), 43(38-51), 52(49-54); VV:4.6(3-7.1), 20(10-20), 47(40-58), 37(26-47); PTS: 5.4(1.7-9.1), 30(20-50), 36(28-47), 39(29-49), respectively. Stockings significantly improved the IPMIV & OF in the VV patients (Class 1: p=0.002 and Class 2: p=0.002 & Class 1: p=0.023 and Class 2: p=0.06), respectively, and controls (Class 1: p=0.003 and Class 2: p=0.002 & Class 1: p=0.019 and Class 2: p=0.006) and improved the VFI in the VV patients (Class 1: p=0.019 and Class 2: p=0.002). Compression strength-response relationships were not observed.

Conclusions. Stockings significantly resisted calf volume increases and enhanced the venous return in controls and VV patients. They had a positive haemodynamic effect only in selected PTS patients.

AB0224

FREE PAPER SESSION 6

Cartridge-applied silicone pads for eccentric compression of varicosities after sclerotherapy: saphenal, popliteal and spider vein application

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Aim. Eccentric compression may support healing after venous treatments. However, home-made compression media frequently show friction and skin irritations, long-term wearing is not well tolerated, daily renewal is exhausting. We evaluated three modalities of Venartis silicone gel pads (SGP).

Material and methods. The SGP system applies silicone gel from a cartridge along the target vein, placed on an underlying self-adhesive film and covered with a second film, forming a functional unit, firmly but removably attached to the skin. Silicon gels were evaluated in 3 x 20 patients undergoing microfoam sclerotherapy: A) SGP 22 (Shore-A 22) for use along saphenous veins of 10 – 22 mm diameter, B) SGP 14 (Shore-A 14) for use in regions close to joints, in particular the popliteal region, and C) SGP 24 fh (Shore-A 24, fast hardening) for use on spider veins of 0.2 – 1 mm diameter. Randomized parts of the varicosities were covered with SGP for two weeks, while other parts were left to stocking compression (Cl. II) only. Daily showers and sports were allowed.

Results. Saphenal SGP 22 achieved improvements in vein diameter shrinkage of 33-62% (mean 48.1) compared to stocking compression. Local complaints or pain were reduced by 78%. Popliteal SGP 16 achieved improved diameter reductions of 21-52% (mean 36.2). On spider veins, photography as criterion showed complete disappearance of veins after 8 weeks in 82.1% in SGP-covered spots versus 31.3% in regions without SGP. Minor skin irritations not limiting patient comfort or application time were observed in 8/60 cases (13.3%, edge of silicone pads). There were no other adverse reactions, in particular any allergies.

Conclusions. Venartis SGP is a safe, effective and comfort-

able modality to support vein diameter regression after sclerotherapy, in particular after saphenal sclerotherapy, in the sensitive popliteal region and even on spider veins.

AB0273

FREE PAPER SESSION 6

Lymphedema experience from a tropical country

S. Gogia, A. Gogia

Sanwari Bai Surgical Centre, India

Background. Our comprehensive care center, was setup in 1996. In 2010, we added the services of trained counsellor in 2010 along with sequential pumps in lieu of single chambered.

Care protocol. Patients are counselled and put on long term Penicillin, if there is evidence/doubt of infective episodes. Most care is conservative through compression by bandaging and pumps administered in the clinic few a few days. Surgery (debridement, nodo venous shunts and debulking is undertaken as per need. Home care is strictly advised on follow-up through bandaging/garments as well as pumps if affordable.

Methods. All patients undergo an initial consultation and general examination including serial limb measurement at fixed points. Limb volume is calculated through a software (Medic Aid®). Possible reduction was by comparison to the opposite side or using a nomogram calibrated to BMI if B/L disease.

Results. 472 total patients attributed to various causes. 209 were male and 263 female, 381 had leg edema alone, and 59 arm. Further details in 189 showed that 131 gave h/o ADL attacks with 88 having active cellulitis, 99 had eczema 111 fungal infection between the webs.

Comparative volume studies available for 236 limbs. 108 with incremental recordings showing an average reduction of 1.67 litres (max 13.7) = to an average 54% (range -10 to 90%) of possible. 22 of 24 with ulcers healed completely including 2 with more than a 12 year history.

45 patients with follow up recording at least a month later revealed a low recurrence rate unless there was infection or was not rigidly maintaining selfcare and antibiotics.

Conclusions. These results are better than our own past results. We emphasize that slow cycle sequential pumps and a trained team is important as well as a home care regime.

AB0130

FREE PAPER SESSION 6

Experience of lymphedema treated by using free vascularized normal lymph node transfer in 14 cases

Y. K. Shim

Yonsei S Hospital, Korea

Free vascularized normal lymph node transfer (FLNT) might improve the lymphatic circulation at the site of lymphatic obstruction and enhance the immunity on the affected limb theoretically. The grafted normal lymph nodes can be vascularized immediately after microsurgical anastomose the artery and veins and new lymphatic vessels will grow from transferred lymph nodes.

I have operated lymphedema by FLNT in 14 cases. Lymphedema was affected to upper extremity in 3 cases, and to lower extremity in 11 cases. And 4 cases were primary lymphedema and 10 cases secondary lymphedema. Transferred recipient site were 2 of axilla, 1 of forearm, 8 of inguinal, and 3 cases of medial thigh. Followed up results for

8 years. I checked the change of diameter during follow up. Reduction of diameter in upper extremity 2 cases among 3 FLNT and in lower extremity 9 cases among 11 FLNT cases. I observed more effective reduction in proximal part of FLNT than distal part of graft, in secondary lymphedema than primary lymphedema, in the patients who applied daily compression therapy than who ignore compression therapy, in the patients who developed lymphedema in shorter period than the patients who are suffered from thick fibrosis and repeated inflammation for longer time. During follow up periods, the grafted lymph nodes could not see by ultrasonogram and it is replaced by scar tissues. We recommended compression therapy 24/7 immediately after operation. The patients who did not do compression therapy properly have no change in diameter.

In conclusion, I observed that proper drainage of lymphatic fluid in affected limb were not clear in 14 cases. FLNT can be applied under the very careful indications.

AB0227

FREE PAPER SESSION 6

Retrospective analysis of the treatment of congenital vascular malformations using a multidisciplinary approach: 12 years' experience of a single center

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Aim. This retrospective analysis evaluates the efficacy and safety of our imaging protocol and therapeutic strategies in the treatment of congenial vascular malformations in a large series of patients.

Methods. All patients treated in our center between 2002 and 2014 was reviewed. Management decisions were based on patients' clinical manifestations as well as the site of critical lesions, and included conservative care, sclerotherapy, embolization, surgical resection, or a combination of these modalities. Treatment goals were established by the patient and physician at the time of initial evaluation. The outcome evaluation was based on patient- and physician-derived treatment goals and responses to management. Post-procedural complications were identified.

Results. The 2926 patients with vascular malformations included 1262 (43.1%) males and 1664 (56.9%) females, ranging in age from under 2 months to 63 years. For the site of lesions, 462 (15.8%) were on the lower extremities, 426 (14.6%) were on upper extremities, 428 (14.6%) were on the chest, 306 (10.5%) were on the abdomen, 384 (13.1%) were on the back, 402 (13.7) were on head and neck, the remaining 518 (17.7%) invaded multiple regions. Of the vascular malformations, 214 (7.3%) were managed conservatively, 1107 (37.7%) were treated with sclerotherapy (pingyangmycin), 117 (4.0%) were treated with transcatheter arterial embolization, 1063 (36.3%) were surgically resected, and 425 (14.5%) were managed with a combination of modalities. Patients managed conservatively had minimal alteration in status. Response to sclerotherapy resulted in improvement in 996 (90.7%) patients, embolization resulted I improvement in 98 (83.8%) patients, surgical resection resulted in improvement in 965 (90.8%) patients, and combination therapy resulted in improvement in 411 (96.7%) patients.

Conclusions. Therapeutic strategy should be made according to the lesion characteristic and location. Staged surgical resection has higher improvement rate than simple surgery. Multidisciplinary approaches can result in favorable outcomes with an acceptable complication rate.

AB0220

FREE PAPER SESSION 6

Congenital vascular malformations manifested as peripheral venous disease in adults

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Background. Congenital vascular malformations in adults are rare states and may be disguised as peripheral venous disease (PVD).

Aim. Showing the incidence, types, diagnosis and treatment of congenital vascular malformations manifested as PVD in adults.

Material and methods. In the period of 1989 – 2013 at our Clinic 2.659 (1.768 female, 891 male) adult patients suffering of chronic venous diseases (CVD) were examined. Diagnosis of PVD is established by clinical picture and color duplex ultrasound (Simens Acuson Anteres, probe 7.5, 3.75 MHz). In several statets phlebography (cavography) and NMR used. At 53 suspicious intraoperative findings we performed pathomorphological researchs (Hematoxilin-eosin, Van Gieson elastica, Masson Trichrome).

Results. Congenital vascular malformations with varicose manifestation were diagnosed in 28 patients: primary venous aneurysms (8), angiomyomatosis + aneurysm of saphenous vein (2), venous hemangioma (3), malformations that drains into normal vein (3), arterio-venous malformations (3), Klippel – Trenaunay disease (3), isolated malformations without peripheral draunage (3), hypoplasia inferior cava vein (2) and AV malformatio cum muscular hemangioma (3). Except hypoplasio IVC (2), Klippel Trenaunay disese (2) and AV malformatio cum muscular haemangioma (2), all patients were surgical treated.

Conclusions. Congenital vascular malformations in adults may be manifested as PVD are rare clinical entities (about 1%). That states has different pathohistological forms. The most therapeutic aspect is different surgical procedures.

AB0088

FREE PAPER SESSION 6

Treatment of congenital vascular malformation: 20-year clinical experience in a single center

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Background. As the treatment of congenital vascular malformation (CVM), endovascular treatment has improved the treatment results for the past decades. But in order to obtain better treatment result, it should be considered to select appropriate target lesion and procedure related complications. We report our treatment experience of CVM with classification and we investigate the incidence of procedure related complication after performing endovascular treatment for the last 20 years.

Material and methods. We retrospectively reviewed the database of patients with CVM from 1995 to 2014 at our CVM clinic. We investigated demographic data, classification of CVM, type of treatment and incidence of complication after endovascular treatment.

Results. Among total 2874 patients with CVM (mean age, 23.7±15.6 years; range, 0-81 years; male, 44.4%), venous malformation (VM) and lymphatic malformation (LM) was 1691 patients (58.8%) and arteriovenous malformation (AVM) was 439 patients (15.3%). For the treatment of VM and LM, endo-

vascular treatment, surgical treatment and both of endovascular and surgical treatment was performed in 492 patients (29.1%), 63 patients (3.7%) and 75 patients (4.4%) respectively. And AVM is more frequently required treatment, endovascular treatment, surgical treatment and both of them was performed in 218 patients (49.7%), 11 patients (2.5%) and 59 patients (13.4%) respectively. After endovascular treatment (n=918 patients), the incidence of local complications were 17.3% soft tissue injury (bullae formation or skin necrosis), 3.9% neuropathy, 1.1% deep vein thrombosis. As systemic complication, there was 2.5% pulmonary artery hypertension, 0.5% distal embolization. And 1 patient had cardiac arrest and 1 patient had cerebral infarction after procedure.

Conclusions. Most common type of CVM was VM or LM, but AVM was more frequently required treatment in this study. Endovascular treatment was major treatment modality for the CVM and had an acceptable complication rate considering the effect on quality of the life. But it is important to select proper candidate for treatment of CVM patient to avoid its complication.

AB0230

FREE PAPER SESSION 6

Treatment of cavernous / venous hemangioma by endovenous laser ablation, ethanol ablation and foam sclerotherapy application

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Background. Virchow divided vascular abnormalities in simple angiomas, cavernous and racemos angiomas. But in 1982 Muliken & Glowacki described new classification based on biological, immuno-histochemical, radiological & hemodynamic differences.

Here we are presenting case report of a 25 y.o. female undergone successful treatment of right calf soft tissue intramuscular swelling growing in size since 8 yrs. No tenderness, but painful swelling increasing in size during walk or standing swelling reduces in size on lying supine and leg elevation.

Material and methods. Venous doppler & MRI scan revealed soft, non-pulsatile, compressible swelling in right calf muscles. Multiple, dilated, hypertrophied, vascular channels of size 30.1 x 25.0 x 26.3 mm.

- Endovenous laser ablation done with 980 nm diode laser (Biolitec, Germany) under spinal anaesthesia (since ethanol injections are painful & sometimes cause pulmonary arterial vasospasm & hypoxia; hence close cardiac monitoring and pulmonary arterial pressure measurement done by nursing staff & anaesthesiologists).

- Ablation and embolisation done under Duplex Doppler & DSA Cathlab guidance. 400 micron laser fiber to deliver 8-10 W power & 70 Joules/cm energy delivered at pulsed mode in hemangioma nidus. Photo-thermal coagulation of intra-muscular venous channels.

- Inj. Asklerol (Polidicanol) in foam form (1:4 Tessari method) injected into superficial branch varices along GSV in tibial shin.

- Inj. absolute alcohol (95% ethanol) mixed with inj. lipidol [as iodinated contrast agent] injected in 2:3 proportion into multiple dilated, slow flow venous channels. Embolisation agents filled venous spaces and injected till stasis is achieved.

- Cl.2 Full length medical elastic compression stocking applied over right leg for 2 mts.

Results. The intra-lesion sclerosis of hemangioma with laser & ethanol gave good results on 10 days, 1 month, 3 month follow up.

Conclusions. We believe that laser, ethanol and foam sclerotherapy is a valid therapeutic option for photo-thermal coagulation of intra-muscular venous channels and cavities.

AB0137

FREE PAPER SESSION 6

Endovascular treatment of Budd-Chiari Syndrome with occlusion of hepatic veins

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Background. To explore the experience of endovascular treatment of Budd-Chiari syndrome BCS with occlusion of hepatic veins.

Material and methods. Retrospectively analysis the clinical material of 32 cases of BCS with occlusion of hepatic veins. Inferior vena cava (IVC) angioplasty or stent implant and splenorenal shunt, transfemoral vein or transjugular hepatic vein angioplasty and percutaneous transhepatic recanalization and combined with transjugular and/or transfemoral vein angioplasty of hepatic veins were performed, respectively. B-ultrasound was used to guide to locate the hepatic veins during endovascular treatment in complex BCS cases.

Results. Two cases were failed to find the main hepatic vein in percutaneous transhepatic venography and then quit endovascular therapy, the others were successfully performed hepatic veins angioplasty and IVC angioplasty. The pressure of hepatic vein decreased from (43.23±7.69) cmH₂O to (16.54±3.97) cmH₂O t=21.23, P<0.01. The preliminary symptoms were obviously relief, ascites disappeared, abdominal distension palliated, chest and abdominal wall varicose veins collapsed one week after endovascular treatment. During perioperative procedure 2 cases with liver puncture bleeding were cured by opening abdominal to hemostasis. The follow-up duration was 1 month to 60 months and mean 24.8 months. No stent migration and hepatic vein restenosis and occlusion. Chest and abdominal wall varicose veins were disappeared and esophagus phlebeurysma were obviously relief in esophagus visualization. There were no pulmonary embolism and death.

Conclusions. The procedure of endovascular treatment of BCS with occlusion of hepatic veins is simple, mini-injury and effective. However, the long-term effect should be further study and research.

AB0373

FREE PAPER SESSION 6

Occupational leg edema reduction and quality of life in the nursing staff of a hospital

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Background. It's established that the occupational leg edema is produced by remaining standing or sitting, and it generates a venous hypertension, liquid extravasation and therefore the venous symptoms. The aim of this study is to demonstrate the existence of the occupational leg edema and the analysis of the life quality (QoL) before and after a treatment in the nursing staff of a hospital.

Methods. 84 patients (83 women; 1 man) CEAP ≤2, average 41 years (21min-72max), were randomized into 3 groups in which they were prescribed a phlebotonic and a compression

stocking. Group 1: Venosan Compression stocking (C) class I 18-22mmHg (N=29); Group 2: Drug (D) Venosmil: Hidrosmin 200mg (N=29); Group 3: D and C: Venosmil: Hidrosmin 200mg and Venosan compression stockings 18-22mmHg (N=29). Each group was studied during a month: at the beginning of the treatment (day 0), after 2 weeks of treatment, and finally at the end of the month. A complete clinical history, a Duplex Doppler venous and arterial color ultrasound scan, volumetric measure of the leg by Dr. Rossi method and a quantification of the edema grade through the pitting method, was performed. In addition, a CIVIQ-20 (QoL) survey and a visual analogue scale (VAS) of pain and edema was carried out.

Results. The leg occupational edema volume was reduced in average 10.97ml (2326.17ml to 2315.20ml); by treatment type the volume decreased by 16.83ml (D and C), 10.5ml (C) and 5.59ml (D). In addition, the percentage of patients without edema increased at the end of the treatment (32.5% vs. 70%). The pain and swelling VAS values were shrunk, (5.58/10 to 1.75/10), (3.92/10 to 0.71/10) correspondingly. The CIVIQ-20 global index increased 16,542 points (67.163/100 vs. 83.705/100 pts.) being statistically significantly (P value <0.0001 Wilcoxon). However, it was not established a superiority in between the treatment types (P value <0.651 Kolmogorov-Smirnova).

Conclusion. The existence of occupational leg edema was confirmed. The treatments increased the QoL, decreased the edema and the volume of the lower limbs at the end of the study, as well as the symptomatology was improved.

CHAPTER SOCIETY SESSION 5: ASIAN VENOUS FORUM

AB0066

ASIAN VENOUS FORUM

Migrating phlebitis: a new approach for the etiology

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Background. The term 'migrating phlebitis (MP)' refers to a segmental and episodic inflammation of small and middle-sized non-varicose veins, involving mostly superficial veins. The majority of cases are primary and the exact etiology is unknown.

In those, MP accompanied Buerger disease is believed to be an early symptom often preceding the clinical manifestation of arterial occlusion. MP may be associated with the presence of an underlying malignancy.

Our study confirmed the presence of periodontal bacteria DNA from Buerger disease patients' MP (3 positive out of 4 cases).

Methods. Pathological findings of MP were obtained from three recent cases. The study was performed using two male Wister rats in which the iliac veins were exposed. After the ligation of the veins, a low and high density *P. gingivalis* solution was injected respectively. The veins were resected after three hours and two weeks. After hematoxylin-eosin, elastic, and immune staining, a microscopic study was performed.

Results. Three clinical cases showed chronic phase of Buerger disease. The lumen is organized or narrowed with a thrombus in which a few lymphocytes were seen. The internal elastic lamella was disrupted. The media was almost normal. In an experimental study, three hours and 2 weeks after the injection, the pathological study appeared the same as the

textbook MP pictures, except for the giant cells. An infected thrombus and split formation of the internal elastic lamella were characteristic findings. A living Pg was observed only in the case of injection after 3 hours.

Conclusions. Our study suggested that MP might be strongly associated with periodontal bacteremia. The studies about malignant disease demonstrate that periodontitis is related to the malignant disease. Furthermore, the chemotherapy exaggerates the periodontal infection.

From the above mentioned facts, it might be thought that all MP is carried out primarily from the periodontal pathogen.

AB0064

ASIAN VENOUS FORUM

Endovenous laser therapy for lower limbs varicose veins: a single-center experience

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Background. Endovenous laser therapy (EVLTL) is a new, minimally invasive percutaneous endovenous technique for ablation of the incompetent veins. The aim of this study was to evaluate the early and intermediate outcomes of EVLTL in the treatment of lower limb saphenous vein reflux.

Methods. Between March 1, 2006, and January 15, 2015, we conducted a prospective clinical trial to treat patients with saphenous vein reflux using a 980-nm multidiode endovenous laser with and tumescent local anesthesia. Follow-up with Duplex at day 1 and 3, 6 and 12 months.

Results. EVLTLs were performed on 1084 limbs in 775 patients with a mean age of 35 years and 72% were females. According to the CEAP classification, majority were C2 (85%). The pulse time was 5 seconds with 1 second pause. Saphenous vein occlusion rates were 99.9% at day 1, 99.7% at 1 week, 99.2% at 1 month, 98.8% at 3 months, 98.3% at 6 months, and 97.6% at 12 months after EVLTL. Sub analysis of the patients who received a voltage of 15W showed an occlusion rate of 100% at 1 week, 99.9% at 3 months, 99.56% at 6 months, and 98.8% at 12 months. Thrombus protruded into the lumen of the common femoral vein (CFV) was seen in 18 limbs (1.66%) after EVLTL. These patients were treated with anticoagulation or antiplatelet medications depending upon extent of thrombus protrusion. Duplex follow-up scans of these patients performed at 12 weeks, showed no longer thrombus protruding into the CFV and deep veins were normal and no of signs of thrombosis were present.

Conclusions. Short term and intermediate results of EVLTL are excellent. Greater doses of energy delivered are associated with better results. Long-term follow-up and comparison with standard stripping techniques are required to confirm the durability of EVLTL.

AB0006

ASIAN VENOUS FORUM

Postoperative hemodynamic changes after endovenous laser ablation and phlebectomy in varicose vein surgery

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Aim. This study was designed to examine postoperative venous hemodynamic changes at 1 and 6 months after end-

ovenous LASER ablation (EVLA) and phlebectomy for primary great saphenous varicose veins.

Methods. We retrospectively analyzed 116 limbs from 102 patients who were treated with EVLA from 2011 to 2013 at Samsung Medical Center. Venous hemodynamic changes were evaluated by air plethysmography (APG) preoperatively and at 1 and 6 months postoperatively. The measured hemodynamic changes included venous volume (VV), venous filling index (VFI), residual volume fraction (RVF), and ejection fraction (EF).

Results. The study included 52 limbs from males (44.8%) and 64 limbs from females (55.2%, male/female ratio 1:1.23). The mean age of the patients was 54.8 ± 12.3 years. The preoperative median values were VV of 99.1 mL, VFI of 3.6 mL/s, RVF of 39.2%, and EF of 55.5%. The 1-month and 6-month postoperative median values were VV of 77.6 and 75.5 mL, VFI of 1.4 and 1.5 mL/s, RVF of 32.5 and 26.4%, and EF of 60.5 and 66.2%, respectively. The postoperative reduction rates between preoperative and 1-month measurements for VV, VFI, and RVF were 18.6%, 63.9% and 22.2%, and the increase in EF was 7.9%. ($P < .001$, $P < .001$, $P < .001$, $P = .043$) Comparing 1-month and 6-month measurements, the reduction rates of VV and RVF were 1.9% and 15% and the increase rates of VFI and EF were 3.2% and 7.6%, respectively. EF was significantly increased at 6 months compared with 1 month after EVLA ($P = .013$), but the other parameters showed no statistically significant differences between 1 and 6 months after EVLA.

Conclusions. This study demonstrated that the venous hemodynamic parameters of primary varicose veins improved after performing EVLA and phlebectomy.

AB0277

ASIAN VENOUS FORUM

Mid and long-term results of inferior vena cava filter in the clinical application of a single-center

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Background. To evaluate the mid- and long-term clinical-curative effect and complications after the inferior vena cava filter (VCF) implantation.

Material and methods. 272 patients from August 1998 to August 2012 in our hospital were retrospectively reviewed and divided into A, B, C three groups respectively, according to unable to anticoagulation, conventional simple anticoagulant therapy, anticoagulation with embolectomy or local catheter thrombolysis and stent implantation etc. The caval patency rate, PE happen and complications were analyzed and summarized.

Results. Filter implantation of all the 272 cases is successful. No related serious complications and symptomatic pulmonary embolism (PE) occurred. Postoperative follow-up for 3 months - 9 years, an average of 3.8 ± 1.2 years. The number of new-onset PE is 3, recurrent DVT is 29, and PTS is 40. There are 19 patients presented with inferior vena cava thrombosis, 9 cases totally occluded. Patency rate of three years was 88.64%; patency rate of vena cava respectively is: Group A 84.2%, Group B 96.43%, Group C 98.58%, and B, C groups are better than A group. Patency rate of vena cava in different locational DVT: the left lower limb is 98.65%, that is higher than the right (90.32%) and double side (83.33%).

Conclusions. VCF can prevent PE safely and effectively. It is also important as an adjunct to a comprehensive

treatment to improve the efficacy of VTE. Postoperative anticoagulation therapy may improve long-term patency of the vena cava.

AB0261

ASIAN VENOUS FORUM

Deep venous thrombosis, alba and cerulea dolens surgical intervention outcome among Yemeni patients

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Background. In 1856, Virchow indicated that a hypercoagulable state, stasis and endothelial damage are the main factors lead to venous thrombosis; the calf veins are the most common site of a thrombus, but 40% of DVTs occur in the femoral and iliac veins, usually started behind valves. The three basic goals originally stated for iliofemoral venous thrombectomy were (1) to avoid pulmonary embolism by removing the thrombus, (2) to eliminate early morbidity by eliminating pain, swelling, and ischemic tissue loss, (3) to minimize the post-thrombotic sequelae by preserving patency and maintaining valve function and avoidance of rethrombosis.

Aim. Outcome study of venous thrombectomy among 65 Yemeni patients suffering from acute ilio-fem-popliteal DVT in last 7 years.

Setting. Althora teaching hospital/Sanaa university and Technology hospital.

Material and methods. 65 patients, 60 female, 5 male. In period between January 2008 and December 2014. Diagnosis based on clinical evaluation manifested by pain, severe swelling, blue discoloration, and some of them developed symptoms and sign of pulmonary embolisms. Investigated by Doppler scanning, CT angio and routine blood investigation. Venous thrombectomy done for all patients while inferior vena cava filters done in some of them with high risk of pulmonary embolism.

Results. 91% of successful rate, 9% morbidity (6 patients), without mortality.

Conclusions. The earlier the intervention the more likely the successful, successful iliofemopopliteal thrombectomy will significantly reduce early morbidity in patients with phlegmasia cerulea and alba dolens; the pain and edema quickly subside, and the discoloration resolves.

AB0058

ASIAN VENOUS FORUM

Iliac vein stenting in the context of acute ilio-femoral DVT

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Background. Iliac vein compression commonly presents with acute ilio-femoral deep venous thrombosis (DVT). Untreated, this condition may result in crippling post-thrombotic syndrome. We present our experience with this technique for the past 15 years.

Material and methods. Data of patients presenting with acute ilio-femoral DVT who were treated with catheter di-

rected thrombolytic (CDT) and iliac vein stent were reviewed. Selection criteria for CDT included proximal thrombosis involving the iliac veins, good functional status with reasonable life expectancy, recent onset of less than 15 days, and absence of contraindication to anticoagulation. Our protocol for CDT included Duplex guided access into the popliteal vein, thrombolysis using r-TPA at a dose of 1mg/half hour with pulse-spray technique, duplex follow up 12 hourly, completion venography. Uncovered iliac vein stenosis at completion of lysis was treated with self-expanding Nitinol stent.

Results. Of 62 patients treated with CDT for acute ilio-femoral DVT, 37 patients (59%) were treated with iliac vein stents (16 males, 19 females, mean age 39). There were no technical failures in the iliac vein stent group. One stent embolized during deployment and was immediately retrieved. Follow-up ranged from 6 months to 15 years. Only three stents occluded during follow up. Patients with complete lysis and patent stents maintained excellent functional status.

Conclusions. Iliac vein stenting in the context of acute ilio-femoral DVT is a safe procedure with rewarding long-term outcome.

AB0036

ASIAN VENOUS FORUM

Surgical venous thrombectomy for phlegmasia cerulea dolens and venous gangrene of the lower extremities

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Background. Phlegmasia cerulea dolens (PCD) and venous gangrene are limb and life-threatening conditions of iliofemoral acute deep vein thrombosis (DVT).

Material and methods. The authors retrospectively evaluated surgical management of 15 patients from 125 patients with acute iliofemoral DVT (6 PCD and 9 venous gangrene) between January 1991 and August 2002 with long-term follow-up.

Results. All of our 15 patients underwent surgery within 10 days of the onset of symptoms. Six patient with impending gangrene and failure for initial management with bed rest, extremity elevation, fluid resuscitation, and systemic anticoagulation for six to 12 hours underwent iliofemoral venous thrombectomy and distal arteriovenous fistula (AVF) can preserve limbs. In nine patients with venous gangrene that underwent iliofemoral thrombectomy below knee had transmetatarsal amputation done after decreasing leg edema. All patients underwent caval filter insertion before venous thrombectomy. There was no pulmonary embolism (PE) or immediate mortality. Anticoagulation treatment was given for at least six months. The distal arteriovenous fistula was closed as a secondary operation six weeks after initial operation.

On the follow-up, 10-year period, seven patients died from the advanced carcinomas 7, 9, 9, 12, 14, 18, and 20 months after an operation. The remaining eight patients have regularly followed-up over 120 months. Three patients (37.5%) had recurrence of DVT; the rate of recanalization in common iliac veins on duplex scan was 100%. Three patients (37.5%) developed reflux in at least one deep venous segment without signs and symptoms of postphlebotic syndrome.

Conclusions. Surgical venous thrombectomy with distal AVF are safe method and should be reserved to treat PCD and venous gangrene patients with contraindications to thrombol-

ysis or in condition that thrombolytic therapy is not available. There is no postphlebotic syndrome on the long-term follow-up (>120 months) of all surviving patients.

AB0265

ASIAN VENOUS FORUM

Surgical treatment of pulmonary embolism

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Background. Pulmonary embolism (PE) remains a worldwide medical problem with high morbidity and mortality. We report our experience of ultrasound-assisted catheter-directed thrombolysis (EKOS) or pulmonary embolectomy (PEL) for acute PE, and pulmonary endarterectomy (PEA) for chronic thromboembolic pulmonary hypertension (CTEPH).

Material and methods. We studied consecutive patients who underwent EKOS or PEL for acute PE, or PEA for CTEPH at our Hospital in recent 10 years. Surgical candidates for EKOS were those of high-risk PE with shock and dilatation of right ventricle; those for PEL were similar patients unable to receive successful thrombolytic therapy. Three patients in recent year underwent EKOS. Twenty-six patients underwent PEL. Among them, 15 (58%) received preoperative extracorporeal membrane oxygenation (ECMO) support for acute massive PE with profound shock, while 12 (80%) underwent CPR before ECMO. The median ECMO duration was 33 hours, with range from 18 to 238 hours.

Surgical candidates for PEA were those with chronic thromboembolic lesions. Thirteen patients underwent PEA under cardiopulmonary bypass through median sternotomy with deep hypothermic total circulatory arrest.

Results. No bleeding or mortality was noted in EKOS patients. After PEL, bleeding was suffered in 5 (19%), mortality in 6 (23%). All the 6 mortality patients were under CPR before operation. All the 11 patients who did not need ECMO before PEL survived with 0% mortality.

After PEA, no operative mortality was suffered. Postoperative complications included reperfusion lung edema in 3 and pneumonia in 1. All recovered after medical therapy. After a mean follow-up of 48.4±35.1 months, all patients showed marked improvements in clinical status and were alive without recurrence.

Conclusions. It is safe and effective to use EKOS in high-risk PE. Pulmonary embolectomy can be performed successfully in highly compromised patients even under ECMO requiring CPR. With appropriate patient selection, PEA can be performed successfully with no operative mortality.

AB0093

ASIAN VENOUS FORUM

Retrospective analysis comparing RFA and diode laser in treatment of GSV

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730 patients who underwent endovenous ablation therapy for refluxing great saphenous vein between June 2011 and September 2012 were included in the study. 400 patients un-

derwent ablation with 1470 nm diode laser and 330 were treated with radiofrequency ablation. All patients were treated as outpatients in the office. Following evaluations were performed at one month and three months, with clinical and ultrasound examination. Effective closure of the GSV was documented, as well as the pain score in all patients, including the VCSS score. There was no difference in the closure of the GSV between RFA and diode laser. However the pain scores following the procedure were lesser in those undergoing RFA as compared to laser. In conclusion, both RFA and diode laser are equally effective in closure of the GSV in the short term.

CHAPTER SOCIETY SESSION 6: JAPANESE SOCIETY FOR PHLEBOLOGY, JAPAN

AB0325

JAPANESE SOCIETY FOR PHLEBOLOGY

Present status of vascular surgery in Japan: the survey of varicose veins treatment: Japanese vein study XVII

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Aim. The Japanese Society of Phlebology had been performing survey of venous diseases in Japan. Endovenous laser ablation (EVLA) was accepted with Japanese health insurance system in 2011, and radiofrequency ablation was permitted also in 2014. Therefore treatment of varicose veins in Japan has been changed rapidly. This study was made to clarify the changes of treatments for primary varicose veins by periodical investigation in Japan.

Methods. A questionnaire survey was mailed to the members of the Japanese Society of Phlebology. The contents of the survey dealt with the treatment of new varicose veins cases in the year 2013 and the treatment strategy. The results were examined and compared to the result of our former survey.

Results. 1) 43,958 limbs of 36,078 patients were reported from 193 institutions. The saphenous type is the most numbers and the age with most frequency was 70'. Patients were treated by compression therapy (25.7%), by surgery (73.6%) and by sclerotherapy (7.5%). Surgical treatments included stripping (11.6%), high ligation (6.3%), EVLA (73.3%), perforating vein ligation (5.2%) and endoscopic perforating vein surgery (0.7%). 2) For these five years 107 institutes (56%) newly applied EVLA. EVLA was selected as a first choice at most frequency with Tumescence local anesthesia and in hospitalization of one day.

Conclusions. Number of patients with varicose veins increased especially in elder patients. The surgical treatment was selected in large numbers and EVLA became the leading role instead of the conventional surgeries for varicose veins treatment in Japan.

AB0326

JAPANESE SOCIETY FOR PHLEBOLOGY

Venous thromboembolic complication after endovenous thermal ablation for varicose veins: report from Japanese Endovenous Ablation Committee for varicose veins

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Background. Endovenous ablation for varicose veins (EVA) has been popular after approval of 980nm laser device by the Japanese insurance system in 2011. However incidence and importance of venous thromboembolic (VTE) complication of EVA is not clear, yet.

Methods. Survey of VTE after EVA was performed among the Japanese Endovenous Thermal Ablation Committee approved institutions from 2011 to 2013. Details were also obtained for the cases with endovenous heat induced thrombosis (EHIT) class 3, 4, any deep vein thrombosis (DVT) or pulmonary embolism (PE).

Results. Data of 43,203 cases was obtained from 143 institutions. Total reported VTE were EHIT2: 318 cases, EHIT3: 51 cases, EHIT4: 7 cases, PE: 3 cases, any other DVT: 24 cases. Incidence was 1.0% in EHIT 2, 0.10% in EHIT3, 0.013% in EHIT4, 0.0067% in PE, and 0.06% in any other DVT. Detail of seven EHIT4 were as follows: Origin of varices were GSV in 6 cases and SSV in 1 case. Onset was from POD #4 to #45 days (average 15.8days). Most proximal site of EHIT4 was iliac vein in 3 cases, femoral veins in 3 cases and popliteal veins in 1 case. Venous duplex before onset of EHIT4 was performed in 6 cases, demonstrating no DVT in 3 cases, EHIT2 in 2 cases and EHIT3 in 1 case. Details of PE was followings: Patients were 46 to 68 y/o females. Origin of varices were left GSV in 1 case and bilateral GSV in 2 cases. Two cases were massive PE with hypotension and hypoxia in POD #1 and another was non-massive PE with dyspnea in POD #4. All cases were treated mainly by anticoagulation with uneventful course.

Conclusions. VTE complication after EVA was rare. Post-operative venous duplex scan can predict occurrence of EHIT4 to some extent, but not PE.

AB0329

JAPANESE SOCIETY FOR PHLEBOLOGY

SEPS as a new choice in sever refractory cases of leg ulcers and report about present condition of IPV treatment in Japan

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As a new method for treating refractory leg ulcer cases with chronic venous insufficiency due to IPV (insufficient perforating veins), SEPS (Subfascial Endoscopic Perforating Vein Surgery) was proposed in the 1990s in Europa and America. But now, PAPS (percutaneous ablation of perforators) and sclerotherapy are provided instead.

The major reasons of a decline of SEPS are as follows: the first reason is technical difficulties of SEPS, and the second

reason is that SEPS cannot be done as a day surgery. However, it is well known that SEPS can handle IPVs surely, and long-term results are superior and less complications of maneuver than the other methods.

Our SEPS procedures have been so simplified over the last 12 years by Japanese society for endoscopic therapy of venous disease (J-SEPS), and the most important key point was to change the access port. The name of this port is Endo TIP® cannula, which was developed by the Karl Storz Company in Germany. All of the installments, which we use for our Two Port System SEPS, were originally designed for laparoscopic cholecystectomy operation. Another point was the increase of choice for energy devices such as ultrasonic coagulation and cutting devices or vessel sealing system to sever IPVs.

Consequently, SEPS was authorized as the national advanced medical treatment by the Japanese Ministry of Health, Labor and Welfare in May, 2009 for the chronic venous insufficiency of C4b-C6 patients, according to the CEAP classification. From April 2014, SEPS has been fully covered by the national insurance system.

The aim of this study is to show our “simplified SEPS” operation procedures, which point out the differences from the original method by Peter Gloviczki and to report about the present condition of IPV treatments in Japan.

AB0327

JAPANESE SOCIETY FOR PHLEBOLOGY

Factors associated with the development of post-thrombotic syndrome in patients with deep vein thrombosis

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The initial treatment of deep vein thrombosis (DVT) includes prevention of thrombus propagation and development of pulmonary embolism. Another important thing is prevention of post-thrombotic syndrome (PTS), the late complication of DVT. PTS has been reported to occur in 20-40% of patients who have DVT, and is severe in 5-10%. Recent studies have identified ipsilateral recurrent DVT as a risk factor for PTS. However, most patients with no apparent history of recurrent DVT may also develop severe symptoms of PTS over time. For this reason, it is difficult to reliably predict which patients are likely to develop PTS in the acute phase of DVT.

Unfortunately, PTS has been an under diagnosed. While objective evidence of venous incompetence by duplex ultrasound helps to confirm the diagnosis, PTS should not be diagnosed if clinical symptoms are absent. At this moment, the Villalta scale has been validated in several studies and shows good correlation with disease-specific quality of life.

Concerning the predictors for development of PTS, our previous study has demonstrated that ilio-femoral DVT (OR 3.4, 95% confidence interval [CI] 1.4-8.6) was highly associated with development of PTS. Moreover, venous occlusion combined with reflux (OR 4.4, 95% CI 2.9-20.7), peak reflux velocity >29.7 cm/s (OR 13.7, 95% CI 4.1-45.7) and mean reflux velocity >8.6 cm/s (OR 4.4, 95% CI 1.5-12.9) in the popliteal vein detected by duplex scanning at 6 months after DVT were strong predictors of PTS. Recently, we found that changes in calf muscle oxygenation during standing and exercise measured by near-infrared spectroscopy significantly differ between patients with and without PTS. The relationship between changes in oxygenated and deoxygenated hemoglobin levels during these movement are considered as the important indicative parameters reflecting the progression of PTS, and these data offer new insights into calf muscle hemodynamics at the microcirculation level.

AB0328

JAPANESE SOCIETY FOR PHLEBOLOGY

Detection and treatment of distal DVT prevent severe pulmonary embolism after earthquake or natural disaster

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Six ladies (younger than 50 year-old) died from pulmonary embolism in car shelter after Mid Niigata Prefecture Earthquake 2004. We went to disaster area and examined distal DVT (d-DVT) by portable ultrasound machine immediately after the quake. 21 d-DVT were detected in 67 residents who had slept in their own small car every day after the quake. These were generated by venous stasis due to sitting in narrow seat for long time. Positive rate of d-DVT in the residents a year after the quake was 7.8%. As we did the same examination in control area without earthquake in 2006, the positive rate was 2.2%. Since we concluded that d-DVT increased and prolonged in disaster area after earthquake. And also we recognized that d-DVT was detected in residents spent only evacuation facilities after the quake. When we examined d-DVT in evacuation facilities after Noto-Hanto earthquake or Niigata Chu-etsu Oki earthquakes in 2007 and Iwate Miyagi Inland Earthquake 2008, the positive rate of d-DVT was 10.6%, 7.4% and 7.1% respectively. These data shows that d-DVT increase in evacuee with or without car shelter. When we examined d-DVT in evacuation facilities, we also measured D-dimer by point of care testing. If we detected d-DVT and D-dimer value was more than 2.0 µg/ml, we recommended the evacuee to go to hospital. We made local guideline of clinical performance for DVT/PE after earthquake in 2006. After Eastern Japan Great Earthquake, many d-DVTs were determined in evacuee. The highest positive rate of d-DVT in the evacuation facilities was 47.0%. However, many VTE prevention team detected d-DVT and delivered graduated stockings in evacuation facilities immediately after the great earthquake, few severe pulmonary embolism was reported. Early detection and treatment of d-DVT is effective methods for preventing death from pulmonary embolism after earthquake or other natural disaster.

AB0330

JAPANESE SOCIETY FOR PHLEBOLOGY

Compression therapy in Japan

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Compression therapy is one of the most powerful instruments of the phlebologist and lymphologist.

The effect depends on several factors, the exerted pressure, the sites of the limb where the compression therapy is applied, the compression materials such as short-stretch or elastic bandages, and the application technique.

Regarding to research of compression therapy, Japanese is outstripped by North America and Europe. I present a new method to determine the stiffness of elastic garments and bandages and also a new device to wear compression stocking quickly.

Established in 1981, the Japanese Society of Phlebology strives to promote basic and clinical research activities and education in the scientific field of phlebology and lymphology. To achieve these objectives, Annual meeting for Japanese Society of Phlebology award a prize for superior paper in compression research from 2013. And Stoking conductor system was established in 2002. It diffuses a knowledge of compression therapy and educate doctor, nurse, and physical therapist.

**CHAPTER SOCIETY SESSION 7:
SOCIÉTÉ FRANÇAISE DE PHLÉBOLOGIE,
FRANCE**

AB0385

SOCIÉTÉ FRANÇAISE DE PHLÉBOLOGIE

Hemodynamic and clinical specifics of “PREVAIT”

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PREVAIT means PRÉsence of Varices After Interventional Treatment. In another word it equals to the recurrence of varicose veins (C2 or VV) after any curative treatment. For REVAS only surgery has been considered.

The word PREVAIT includes:

- 1- Recurrent VV (Reappearance of varicose veins in an area previously treated successfully)
- 2- Residual VV (Varicose veins left behind after the treatment)
- 3- PREVAIT also includes neovascularization (real new VV).

Clinical specifics

Usually they are tortuous, at the palpation they give the impression of being flimsy like cigarette paper. Their diameter is variable.

They can be situated in any territory. Very often there topographies are situated not far from scars.

Hemodynamic specifics

Secondly patients must be investigated with Duplex scanning (DS).

In several studies, patients were preoperatively investigated with Duplex scanning and treated by high ligation, saphenous trunk stripping. In the Kostas series, 28 out of 100 patients had PREVAIT after 5 years: recurrent VV mainly resulting from neovascularization in 30%, new VV as a consequence of disease progression in seven limbs in 25%, complex patterns in 10 limbs (10/28, 36%) and residual veins due to tactical errors in 3 limbs (3/28, 11%). Other papers comes to nearly same results.

Progression of the disease and neovascularization are responsible for more than half of the recurrences.

In order to understand what is the anatomy of VV after a curative treatment it is mandatory to set up the same investigation protocol before and after the treatment: a physical examination, a Duplex scanning and if the device is available an air plethysmography.

It is important to work on this topic because it occurs in about 35% of treatments, it costs a lot of money and it is the origin of numerous problems to everybody, patients and physicians. Large prospective studies should be performed to clear up the picture.

AB0384

SOCIÉTÉ FRANÇAISE DE PHLÉBOLOGIE

French and international recommendations for ultrasound investigations of recurrent varicose veins

L. Moraglia

French Society of Phlebology, France

Background. Varicose recurrences after operative treatment (PREVAIT) are a common problem, complex and costly. Duplex ultrasound is the reference standard in assessing the morphology and haemodynamics of the lower limb veins, including recurrent varicose veins.

Methods. The Quality Standards of the French Society for Vascular Medicine for the ultrasound assessment of the superficial venous system of the lower limbs and UIP Consensus Document on Duplex Ultrasound Investigation of the Veins of the Lower Limbs after Treatment for Varicose Veins, give guidelines for Duplex Ultrasound Scanning (DUS) in patients with PREVAIT.

Results. DUS for PREVAIT needs 3 methods of investigation: B-mode ultrasound, pulsed duplex ultrasound and color duplex scanning. A complete investigation of the different venous systems is necessary. This investigation provides anatomic and hemodynamic data about topographical sites of recurrence that can be mapped, possible sources of reflux from the deep to the superficial venous system, intensity of reflux; and nature of sources. In addition, duplex scanning (DS) gives information on perforator and deep venous systems.

Conclusions. Duplex ultrasonography, made with a precise methodology, is a fundamental component of the investigation of the patients with PREVAIT, giving essential data for the treatment.

AB0383

SOCIÉTÉ FRANÇAISE DE PHLÉBOLOGIE

Benefits of foam sclerotherapy in the treatment of recurrent varicose veins

J.-L. Gillet

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Superficial venous insufficiency is a chronic disease. Recurrent varicose veins occur whatever the initial technique of treatment. They are documented in many publications and are called “PREVAIT”. They can occur at the site of the former treatment (neovascularization at the sapheno-femoral (SFJ) or sapheno-popliteal junction (SPJ); saphenous trunk recanalization) or in different areas. Usually, they are multiple, complex, involving different veins which form a complex and often tortuous network of varicose veins.

Foam sclerotherapy (FS) is the only technique that can deal with almost all the types of recurrent veins. The vast majority of experts in phlebology agrees that a surgical re-intervention at the former SFJ or SPJ is, exceptionally, necessary.

In patients with very large and superficial veins, phlebectomies can also be used. Other techniques, such as endovenous laser or pelvic embolization, can be proposed in specific conditions.

According to the more recent guidelines, such as the Guidelines published in International Angiology (2014) and the European Guidelines for Sclerotherapy (Phlebology, 2013), “there is general agreement that ultra-sound guided FS is the first line of treatment in almost all cases” and “sclerotherapy is recommended for residual and recurrent varicose veins (grade 1B)”.

UIP Chapter Meeting: Seoul UIP 2015

August 27-29, 2015, Seoul, Korea

Saturday, August 29, 2015

August 29, 2015

Saturday

**BREAKFAST SYMPOSIUM 4:
ENDOVENOUS THERMAL
ABLATION TECHNIQUE**

AB0211

BREAKFAST SYMPOSIUM 4

The East European endovascular method

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Background. In the first year of our laser surgery (29 limbs) the recurrency rate was unacceptably high: 13.8%. This is why several modifications were introduced. Now the Hungarian experience will be presented.

Material and methods. EEEM was performed on 1000 saphenous vein varicosity limbs in a 7 year period, with various laser instruments (980, 1470, 1550 nm). The age range was between 17 and 82 years, women:men=71:29%. The diameter of the saphenous veins (GSV 82.8%, SSV 12.5% and AASV 4.5%) was between 4 and 32 mm.

Methods. EEEM is as follows: (1) the tip of the laser fibre is 0.5 cm from the femoral vein (2) the delivered energy is about 100 J/cm (3) more energy to the proximal than to the distal part of the saphenous stem (4) the amount of cooled tumescent anaesthetic solution is 5 ml/cm (5) the tumescent solution compresses the SFJ (6) all insufficient perforators are treated (7) LMWH prophylaxis is given.

Manual pullback was employed. To remove tributaries foam sclerotherapy, Varady's hook and the saw-knife were used. In the last 4 years classic varicose vein surgery has not been performed, which means every saphenous stem varicosity case without selection was included in this survey.

Results. Occlusion following surgery of the operated saphenous stems was 100%. Recurrent varicosity was found in 6.3% in the limbs followed longer than 1 year. There were a further 8 ultrasound positive cases (recanalised saphenous veins, refluxive perforator veins) without the clinical appearance of varicosity.

Conclusions. According to our study, EEEM is recommended instead of classic surgery or other laser surgery methods in every saphenous vein varicosity.

AB0395

BREAKFAST SYMPOSIUM 4

Technical tips for endovenous laser ablation from the Baltic

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Aim. Recently endovenous laser ablation (EVLA) has undergone an incredibly rapid development. In the developed countries it has become the current gold standard for varicose vein treatment, entirely replacing crossectomy and stripping. Only 15 years have passed since the first EVLA, which is why there is still a major deficit of information among doctors about this technology and its everyday application in practice.

A clear sign of this is the popularity of the workshops and congresses organized by the Baltic Society of Phlebology. In all of these events doctors have exhibited active interest in different technical details of EVLA.

Methods. In last 8 years we have initiated and performed 11 different trials in our clinic. Data from 1803 limbs treated in these studies by using a 1470 nm laser and bare tip, off-the-wall, radial and 2ring radial fibers. Duplex ultrasound was used to evaluate for treatment failure and complications. Consequently information from these studies aims at summarizing the important practical information necessary for a successful performance of EVLA.

Results. At present, the gold standard of EVLA in our clinic is lasers with water absorbing laser wavelengths (in practice, the most frequently used is the 1470 nm diode laser) and radially emitting fibres. After undergoing treatment with this technology, more than 90% patients do not feel pain after the ablation, so no pain relieving medication is required and EVLA can be performed without using compression therapy after surgery. This outpatient surgery provides for an even enhanced cosmetic effect, a lower risk of complications and better quality of life following the surgery. Moreover, it can be performed on more elderly patients and on patients with serious medical conditions, because it is done using only ultrasound guided local anaesthesia. It should be noted that due to EVLA a patient needs to stay in the clinic only for 1 to 2 hours and may continue their daily and professional activities on the same day.

Conclusions. EVLA of superficial venous insufficiency with a radially emitting 2ring laser fiber using a 1470 nm diode laser is a safe and efficient treatment option with very low level of side effects and pain after therapy.

AB0391

BREAKFAST SYMPOSIUM 4

Thermoablation powered by segmentary radiofrequency of the great and lesser saphenous veins. Tips

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Chronic venous insufficiency affects an important proportion of the population. Some epidemiological European studies show in Europe up to 55% and in USA up to 30% of the adult population presenting some degree of chronic venous disease. A sixth to half of the population exhibit important clinical manifestations. On the other hand, 1.5% of the global population has or has had venous ulcers.

Thermoablation powered by segmentary radiofrequency became available for clinicians in 2006. Due to its characteristics, this system presented great advantages *versus* other devices, which encouraged many users venture into more technically difficult cases.

First of all, there is a set of general guidelines whose fulfillment is basic to solve more complex issues. Among them: an adequate Duplex scan mapping of the extremity with special remarks on the reflux pathways, performing the complete procedure under ecographic vision, the appropriate Echoguided tumescent anesthesia using an a-traumatic needle and infusion pump, performing a reinforcement tumescence in the saphenofemoral junction and the thermoablation as such with the adequate number of catheter passes according to the venous segment.

During special cases' treatments, we must know the tips which will help us overcome great saphenous vein's complex anatomy. Among those we consider anatomical variability, tortuosities, aneurysmal dilations, superficial venous segments and post-thrombotic segments.

Regarding handling the lesser saphenous vein, we will have to consider the tips related to anatomical variations of the

junction, the relation with the sural nerve and the handling of the epifascial segment.

The proper management of these nontraditional situations allows us an excellent standard of work that will achieve the best results for our patients.

BREAKFAST SYMPOSIUM 5: COMPRESSION THERAPY IN VENO-LYMPHATIC DISORDERS

AB0356

BREAKFAST SYMPOSIUM 5

Effect of compression therapy on leg veins anatomy

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Descartes University, France

Background. Direct mechanical compression of the veins seems to be the main mechanism of action of compression therapy in chronic venous disease.

New imaging techniques allow a quantitative evaluation of the biophysical impact of compression on the 3D anatomy of the leg.

We recently show that medical compression, providing an interface pressure (IP) of 22 mmHg, significantly compressed the deep veins of the leg but not, paradoxically, superficial varicose veins.

Aim. To use 3D modeling and volume quantification in order to better understand the anatomical effects of compression therapy on the venous system.

Material and methods. A total of 15 individuals were studied by T2 weighted MRI of the calf or thigh in different body positions (supine, prone, upright) before and after application of different stockings and bandages.

In every case the interface pressure was measured by the use of Picopress® pressure transducer. Compression devices producing different pressures and stiffness were assessed. A realistic interactive 3D vectorial model of the leg was obtained by using the Winsurf® software.

Results. Even with a low external pressure it is possible to induce deformations of the underlying muscle compartments and narrowing of the deep veins in standing position. This paradox could be partially explained by the intra muscular pressure during standing position as explained in a recent paper.

Conclusions. 3D modeling renders clear graphic images of segments of the lower extremity demonstrating the effect of compression on the underlying tissue structures including superficial and deep veins, but the hemodynamical effects remain unclear.

BREAKFAST SYMPOSIUM 6: VENOUS HEMODYNAMICS

AB0354

BREAKFAST SYMPOSIUM 6

Pathophysiology of CVD and the effects of venoactive drugs

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The risk factors for chronic venous disease are genetic, age, hormonal (pregnancy, female sex due to progesterone, hormone replacement therapy), obesity, greater height,

prolonged standing and others that lead to venous hypertension.

Venous hypertension affects the (a) macrocirculation causing altered shear stress, venous wall stretch, dilatation, valve damage, reflux, blood stasis and edema. On the (b) microcirculation it causes glyco-calix (GAGs) alteration, altered shear stress, extracellular matrix (ECM) remodelling, venous wall hypoxia, pericapillary fibrin cuff and endothelial activation. The above, through recruitment of leukocytes, monocytes and macrophages lead to inflammation by the action of many factors which will be mentioned below. The inflammation causes endothelial dysfunctions (CVD and risk of thrombosis) and dermal changes (lipodermatosclerosis and pigmentation) that can lead to venous ulcers.

The venoactive drugs could be administered topically when they may relieve some complaints of heaviness or oedema due to the cooling effect of gels and systemically i.e. intravenously, intramuscularly or orally. There are 3 main categories of these drugs.

1. The phlebotonic or phlebotropic drugs which are either synthetic like calcium dobesilate or of plant origin. The most important phytopharmaca are (a) the flavonoids or gamma-benzopyrones (i.e. diosmin, hesperidin and oxerutin) (b) the saponins like escin which is a horse chensnut seed extract and (c) the extracts of ginkgo biloba.

2. Pentoxifylline which is a synthetic xanthine derivative, related to theophylline and caffeine only structurally.

3. The main GAGs or mucopolysaccharides are: hyaluronan and the sulfates of dermatan, chondroitin and heparan. The most important GAGs are Sulodexide (SDX) and Mesoglycan, that are polypharmacologic multi-target drugs which can mediate their therapeutic effects through several mechanisms. They act pharmacologically as: mild anticoagulants, modulate leukocytes and macrophages, regulate adhesion molecules like selectins, intercellular adhesion molecule (ICAM), vascular cellular adhesion molecule (VCAM), endothelial-leukocyte adhesion molecule (ELAM), interact with growth factors such as the vascular endothelial growth factor (VEGF) and fibroblast growth factor (FGF), affect inflammation via matrix metalloproteinases (MMPs) and enhance fibrinolysis. On the endothelial cells the GAGs release tissue factor pathway inhibitor (TFPI) and modulate platelet mediated thrombogenesis. The endothelium acts against increased shear stress caused by macrocirculatory haemodynamic injuries such as: ischemia, venous hypertension and stasis or hypoxia, promoting the release of protective factors with relevant antithrombotic and fibrinolytic activities. However, the endothelium may exhaust its reactive capacity and activate inflammatory mediators such as cytokines.

SDX's antithrombotic activity is by interaction with several serine protease inhibitors like antithrombin (AT) and heparin co-factor II (HCII). It inhibits thrombin formation through 2 separate pathways by the fast moving heparin (FMH) via AT catalysis and by the dermatan sulphate (DS) via HCII catalysis, in a synergetic way. GAGs promote the release of tissue plasminogen activator (tPA) and reduces the activity of plasminogen activator inhibitor (PAI) thereby exerting fibrinolytic activity without a change in the activated partial thromboplastin time (aPTT).

Glyco-calix is a thin-filament of GAGs and should be considered as the transducer between the haemodynamic macrocirculatory system and endothelial function. It counteracts the injuries to endothelial function induced by haemodynamic stress

The endothelium regulates the microcirculation depending upon the synthesis of autocrine and paracrine molecules like: prostacyclin, tPA, nitric oxide (NO), tissue factor (TF), thrombomodulin and proteins C and S.

Circulating cells, leukocytes and platelets are also involved in the expression and release of several molecules, including:

inflammatory cytokines, integrins, leukotrienes and platelet activating factor. The GAGs act on lipopolysaccharide (LPS) stimulated macrophage cells by a dose-dependent inhibition of the: interleukins IL-1, IL-7, IL-8, IL-12, IL-17, granulocyte-colony stimulating factor (G-CSF), granulocyte-macrophage colony-stimulating factor (GM-CSF), monocyte chemoattractant protein-1 (MCP-1), macrophage inflammatory protein (MIP-1) and tumor necrosis factor- α (TNF- α) release. The also act by a dose independent inhibition of: IL-6, interferon- γ (IFN- γ), IL-10, IL-2 and IL-13.

AB0406

BREAKFAST SYMPOSIUM 6

Postoperative hemodynamic changes after varicose vein surgery

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The objectives of varicose vein tests are anatomic localization and quantification of the reflux. Ambulatory venous pressure (AVP) has been used for the evaluation of venous hemodynamics. AVP is measured by inserting a needle into a vein on the dorsum of the foot, which is connected through a pressure transducer and the hemodynamic parameters are measured. Because of invasiveness, it cannot be repeated frequently nor can it be used as a screening test. Air plethysmography (APG), first introduced by Christopoulos et al., is a non-invasive technique, which can measure relative volume changes in the lower limb in response to postural alterations and muscular exercise. The results of APG have been shown to correlate well with AVP and it has been used for measuring the quantitative hemodynamic information of varicose veins. APG can be used in conjunction with Duplex ultrasound to provide better information concerning venous function. Duplex ultrasound is the most useful examination for evaluating venous valvular incompetence, but it provides relatively little quantitative hemodynamic information. Several studies have been shown that APG is useful to diagnose and quantify venous reflux and to evaluate the clinical severity of chronic venous insufficiency. APG provides reproducible hemodynamic measurements that can be evaluated noninvasively in serial examinations. APG is now widely used for the preoperative examination of varicose veins, but there are only few studies that have compared the hemodynamic changes in varicose veins before and after operation. The published results of the comparative data of hemodynamic improvement between treatment modalities are limited. Today we will present the results of postoperative hemodynamic changes by means of air plethysmography after varicose vein surgery.

PLENARY LECTURE 1

AB0375

PLENARY LECTURE 1

Contemporary management of acute and chronic iliofemoral venous obstruction

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Iliofemoral venous obstruction is associated with significant morbidity. Acute iliofemoral DVT (IFDVT) often presents as an uncomfortably swollen leg with bluish discoloration,

termed phlegmesia cerulea dolens. Treated with anticoagulation alone, these patients often have the highest venous pressures resulting in the most severe post-thrombotic morbidity.

Studies have shown that adopting a strategy of thrombus removal either surgical venous thrombectomy or using catheter-based techniques, significantly reduces post-thrombotic morbidity and can reduce the risk of recurrence.

Once patients develop chronic post-thrombotic iliofemoral venous obstruction, plasminogen activators are no longer effective since the tissue causing luminal obstruction is no longer thrombus. It is fibrous in nature—specifically collagen types I and III. Patients with chronic occlusion of the iliofemoral venous system will improve significantly if unobstructed venous drainage from their profunda femoris vein to the IVC can be restored. Operative endovenectomy of the common femoral vein with endoluminal recanalization of the ilio caval segment is a procedure designed to restore proximal venous drainage and reduce the severity of the patients post-thrombotic syndrome. The technique and the results of this procedure will be presented.

SYMPOSIUM 1: SCLEROTHERAPY FOR VARICOSITY

AB0179

SYMPOSIUM 1

New data supporting safety of foam sclerotherapy

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Aim. Sclerosing agents (SA) are blood inactivated.

Investigations concerning the interaction among SA and blood components have never been deeply investigated. Aim of the study is to identify SA blood ligands.

Methods. An electrophoresis assessment of the plasma proteins was done at first, aiming to identify the ones involved in the SA binding. Then a second investigation was developed aimed to identify the binding strength among plasma protein and SA after sclerotherapy.

Thirty-one blood samples were collected from CVD patients and tested by Capillary and Agarose Gel electrophoresis. The electrophoretic runs were performed adding polydocanol (POL) or sodiumtetradecylsulphate (STS).

Six patients undergoing saphenous vein sclerotherapy were divided in two groups.

In group A (4 patients) a blood sample was obtained from the brachial vein, before an STS 3% injection into the GSV (T0). The sampling was repeated 1, 3, 5, 10 minutes later.

In group B (2 patients), the procedure was performed with the same timing on the same side femoral vein.

In the second investigation Free-STS (fSTS) and total protein-bound STS (bSTS) were measured.

Results. POL mainly binds to beta-globulins, while STS to albumin and alpha-globulins: 11%, 62.6% and 30.7%, on the protidogram.

In the brachial vein, the average bSTS concentration in $\mu\text{g/ml}$ was 0, 0.568, 5.98, 6.91 and 7.2, at T0, 1', 3', 5', 10'. fSTS was 0.

In the femoral vein, bSTS average concentration in $\mu\text{g/ml}$ was 0, 1.62, 13, 24.6 and 8.67, respectively at T0, 1', 3', 5', 10'. fSTS was 0.

Conclusion. STS binds to albumin (62.6%) and alpha-globulins (31.6%), while POL is ligated mainly by the beta-globulins (11%), so getting fastly inactivated once inside the venous stream.

The origin of the sclerotherapy complications can't be linked just to the drug direct effect along the systemic circulation.

AB0259

SYMPOSIUM 1

Balloon control of the saphenofemoral junction during foam sclerotherapy

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Some have advocated balloon occlusion of the saphenofemoral junction during foam sclerotherapy to prevent foam entering the deep venous system. The idea that such a maneuver might be successful is simply not justifiable. We performed intraoperative duplex examination of the deep venous system, simultaneous transthoracic echocardiography, and transcranial Doppler monitoring during injection, demonstrating foam progressing not only into the deep venous system, but into the central circulation and indeed into the cerebral circulation in some patients with right-to-left shunts (estimated to be over 25% of the normal population).

Further, occlusion of the proximal saphenous vein, rather than preventing progression of foam into the deep venous system, actually encourages flow into deep veins, because it is prevented from progressing gradually through the saphenofemoral junction and is forced into perforator veins.

Additionally, on release of the balloon, there will be an immediate bolus of foam into the deep venous system which progresses to the heart. It is much more likely that a bolus of foam bubbles will progress through a right-to-left shunt, such as a patent foramen ovale, than bubbles that gradually migrate to the heart as following foam injection of a non-occluded great saphenous vein. It is precisely for this reason that an occlusion balloon-tipped catheter is rarely used.

Finally, using simultaneous transthoracic echocardiography and/or transcranial Doppler monitoring of the middle cerebral artery during ultrasound guided foam sclerotherapy, we have shown that the use any of the suggested methods to prevent migration of at least some bubbles from the injected superficial vein into the deep venous system and beyond (e.g., leg elevation, small foam volumes, post-injection rest) is simply ineffective. Complications such as deep venous thrombosis and systemic symptoms will occur at a certain (albeit low) rate, and asserting that use of an occlusive balloon is wishful thinking.

AB0381

SYMPOSIUM 1

Prevention of visual and neurologic disturbance after sclerotherapy

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Aim. A possible cause of sclerotherapy complications could be the release of Endothelin 1 (ET 1). We have studied *in vivo* and *in vitro* the anti-ET 1 action of Aminafone (AMNA).

Methods. We studied 3 groups of rats treated with polidocanol (POL) sclerotherapy: the group C, control, and the groups G1 and G2, that received respectively a 30 mg/kg/die or a 150 mg/kg/die of AMNA for 15 days before sclerotherapy.

In vitro studies were performed on HUVEC cells: cells survival was analyzed in presence of AMNA and POL at different concentrations, and ET 1 level measurement was performed through an immunoenzymatic assay.

Results. Rats in group C showed an early mortality of 40%. This value was only 13.3% and 20% in group G1 and G2.

The treatment with AMNA 6µg/ml did not affect HUVEC viability. After POL 0.05% and 0.5% treatments, HUVEC were viable in 44.36% and 2.25% respectively.

After AMNA pre-treatment and POL treatment, ET 1 cellular release was significantly lower after 6 (p< 0.01) and 12 hours (p< 0.05) in respect to control without AMNA.

Conclusions. This study confirms ET 1 release after sclerotherapy and lower *in vivo* mortality in G1 and G2 groups gives us a clue of ET 1 possible role in generating side effects.

Aminafone has been proven to be effective in inhibition of ET 1 release from endothelial cells after sclerotherapy. No other conclusion can be made at this moment on a possible role of anti-endothelin drugs in the prevention of sclerotherapy side effects.

AB0357

SYMPOSIUM 1

Cryo-laser and cryo-sclerotherapy (CLaCS) guided by augmented reality (AR) to treat telangiectasia, feeder veins and small varicosities: ten-year experience

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A new technique to treat the combination of telangiectasia and the associated causative reticular veins ("feeder veins") of the leg (CLaCS - Cryo Laser Cryo Sclerotherapy) will be presented.

The CLaCS technique employs the following features: (1) augmented reality (AR) viewing of the feeder veins; (2) application of transdermal laser energy to the feeder veins and overlying telangiectasias; (3) injection of the feeder vein and surface telangiectasias with a sclerosant; (4) skin temperature protection and numbing of the skin with application of a flow of cold air throughout the procedure. Photodocumentation before and after procedure in 100% of the patients

A 1064nm ND:Yag transdermal laser was set to a 6mm spot size, average 70J/cm² fluence, and 15ms pulse width. Transdermal laser was directed at the feeder veins identified through AR (VeinViewer), overlying and nearby telangiectatic vessels being targetted with transdermal laser. Feeder vein sclerotherapy was then performed, with telangiectatic vessels injected with Dextrose75% as the sclerosing solution.

This method is free from anaphylaxis and free from skin ulcers due to the high viscosity of Dextrose75%. Hyperpigmentation is as low as 0.48% due to the synergy of the thermal lesion and the osmotic lesion. Burnings are also rare (0.24%) due to the low energy fluence. The laser not only damages the endothelium but also causes edema and internal diameter reduction. The edema generates a trapping effect for the Dextrose75%. This trapping causes longer sclerosant contact time within the vein increasing sclerotherapy effectiveness and lowering pigmentation rates. Average of clearance is over 75% after 2 sessions.

CLaCS technique guided by AR to treat telangiectasias of the legs is superior to either sclerotherapy or laser. Visualiza-

tion and treatment of feeder veins is key to produce optimal resolution on telangiectasia treatment and to prevent recurrences.

Ten-year experience with thorough high definition photo-documentation, videos and results will be presented.

SYMPOSIUM 2: VENOUS THROMBOEMBOLISM

AB0372

SYMPOSIUM 2

Iliofemoral DVT in pregnancy

A. Comerota

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Aim. Extensive deep vein thrombosis (DVT) is associated with severe postthrombotic morbidity when treated with anticoagulation alone. Extensive DVT during pregnancy is usually treated with anticoagulation alone, risking significant post-thrombotic morbidity. Thrombolytic therapy and operative venous thrombectomy have been safely and effectively used in selected pregnant patients. The purpose of this report is to review the short and long-term outcomes of eleven patients with extensive DVT of pregnancy treated with a strategy of thrombus removal.

Methods. From 1999-2011, eleven patients were referred for management of extensive DVT during pregnancy, ten patients with iliofemoral/caval DVT and one with acute superior vena caval syndrome. Gestational age ranged from 8 to 36 weeks. All patients were offered a strategy of thrombus removal including catheter-directed thrombolysis, pharmacomechanical thrombolysis (PMT), and/or operative venous thrombectomy. Fetal monitoring was performed throughout hospitalization. Radiation exposure was minimized by using pelvic lead shields, limiting fluoroscopy, using small visual fields, hand held contrast injections and avoiding magnified views. Following intervention, leg compression was applied, patients were anticoagulated with heparin and ambulated. Patients were converted to vitamin K antagonists after delivery. Follow up included objective evaluation using venous duplex and the Villalta scale.

Results. Catheter-directed thrombolysis and PMT were used in nine patients. Two patients declined thrombolytic therapy but agreed to venous thrombectomy, and one patient had operative thrombectomy as an adjunct to PMT. Each patient had complete or near complete thrombus resolution and rapid improvement in clinical symptoms. Eight patients delivered healthy infants at term; two are currently in their third trimester, one suffered an in-utero death 5 days post lysis due to her antiphospholipid antibody syndrome. One patient developed two major complications, gross hematuria requiring blood transfusion and a left popliteal artery pseudoaneurysm that resolved with compression ultrasound. Mean follow up was 2 years, without evidence of recurrence. Three patients had uneventful subsequent pregnancies. Venous duplex ultrasonography demonstrated patent veins and normal valve function in 8 patients. Of the 10 patients with iliofemoral DVT, 9 had Villalta scores <4, and one patient had a score of 5, consistent with mild postthrombotic syndrome.

Conclusions. Extensive DVT of pregnancy can be effectively and safely treated with a strategy of thrombus removal, resulting in a patent venous system with normal valve function, prevention of postthrombotic morbidity, and reduction in recurrence. Operative and catheter-based techniques can be tailored to the patient.

AB0353

SYMPOSIUM 2

Current trend in the treatment of DVT in Japan

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Epidemiology and clinical management of acute venous thromboembolism (VTE) in Japan have become apparent through The Japan VTE Treatment Registry (JAVA), nationwide, observational, multicenter, Japanese cohort study. Between April 2009 and March 2010, 1,076 patients with acute VTE were registered which consisted of isolated acute deep vein thrombosis (DVT) (68.6%), acute pulmonary embolism (PE) (17%), and both DVT and PE (14.4%). The mean age was 65.3±15.1 years (19-95). The speculated risk factors for VTE consisted of cancer (27%), immobilization (20.9%), recent surgery (17.8%), and others. Inferior vena cava filter were inserted in 40.6% of the patients and thrombolysis were performed in 21.1%. For anti-thrombotic treatment, unfractionated heparin was administered followed by warfarin with an international normalized ratio of 2.0 (range, 1.5-2.5). The incidence of major bleeding during the observation periods of 252.5 days was 3.2% per patient-year, including 2 fatal hemorrhages and 7 intracranial hemorrhages. The recurrence of VTE was observed in 29 patients, indicating an incidence rate of 3.9% per 100 patient-years. In spite of a low level of target INR compared to western countries, the VTE recurrence rate was almost similar to that observed in the recent western registries.

SYMPOSIUM 3: ENDOVENOUS ABLATION FOR VARICOSE VEINS

AB0260

SYMPOSIUM 3

Tips for small saphenous vein thermal ablation

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Only 10% of patients with superficial venous incompetence have only SSV reflux but fully one-third of patients with great saphenous vein (GSV) reflux have concomitant SSV reflux, often segmental via an incompetent inter-saphenous vein. Anatomically the termination of the SSV is quite variable with 75% joining the deep venous system at or near the popliteal fossa. The remaining 25% of patients have SSV termination in the thigh deep venous system, either through thigh perforators or connecting with the GSV. Popliteal or femoral vein reflux will be seen in 75% of patients with SSV reflux, although the segmental deep venous reflux will often resolve following superficial venous ablation. Although not always the case, lateral malleolar ulcers are suggestive of SSV incompetence. Because of the proximity to the SSV of both motor nerves (in the popliteal fossa) and sensory nerves (sural nerve in the distal leg), caution is advised for thermal ablation in these two anatomic areas. Complete anatomical and physiologic information via duplex ultrasound is the critical link to successful therapy.

Because ablation of the proximal portion of the SSV is one of the most important keys to successful treatment of SSV incompetence, access via micro-puncture should be chosen to accomplish ablation of the longest segment as is practical, keeping in mind the proximity of the sural nerve to the vein distally. Thermal injury to the sural nerve will generally produce mild hypoesthesia but can occasionally result in significant and painful dysesthesia which is particularly troublesome for the patient and will sometimes lead to litigation. Thermal

injury to the motor nerves in the popliteal fossa can lead to a disastrous outcome with foot drop.

The first attempt of access is likely to be the most frequently successful, so careful planning of the primary access site is important. Even if the largest diameter of the SSV, which will be the best chance for successful access, is in the distal leg, the practitioner can simply omit treatment of the distal SSV by stopping treatment at or just below the mid-calf. Localized heat, reverse Trendelenberg position or vaso-dilatory cream may be helpful in dilating the SSV for more facile access.

Sometimes the SSV may lie directly on top of the popliteal vein or gastrocnemius veins, with the potential to produce thermal injury to these deep venous structures. Expertly delivered ultrasound-guided tumescent anesthetic can separate these structures and reduce the risk of such thermal injury.

In the case of incomplete ablation of the SSV, if technically feasible thermal ablation may be repeated. If only a partially patent SSV remains, it is very unlikely to ultimately close permanently and ultrasound-guided foam sclerotherapy (UGFS) can be very helpful in achieving complete obliteration. Furthermore it is felt by most that complete elimination of the incompetent veins is mandatory for successful treatment of the patient's symptoms, again with UGFS or phlebectomy.

Mandatory for complete elimination of superficial venous insufficiency must include:

- Endothermal/chemical ablation of:
 - distal small saphenous vein
 - persistently incompetent perforators
 - incompletely ablated veins.

AB0209

SYMPOSIUM 3

Tactical options in laser ablation in the perforator veins (EPLA)

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Background. Controversies exist about the participation of the perforator veins in the development of venous disease. Ablation of longitudinal reflux (GSV, SSV) reduce diameter and increase valvular continence in perforator veins (C2 to C4). However, we have found C5 - C6 with exclusive insufficiency of perforator veins. We have developed the Echoassisted Perforating Vein Laser Ablation (EPLA) technique.

Methods. A prospective and closed study from December 2004 to September 2007 with a 5 years follow-up, 134 patients. We treated 302 insufficient perforators mainly in the inner side of the leg. We made echoassisted marking to set location, diameter and reflux of the perforator veins with measurements of security margins. (Margin 1: distance skin - aponeurotic hole. Margin 2: distance aponeurotic hole - deep vessels). We used a Diode Laser of 980 and 810 nm of wave length, with optical fibers of 400-600 microns, continuous mode, 30-140 joules/cm. Echoassisted procedure with tumescent anesthesia. The echographic follow up at 1st week, 1st, 3rd, 6th month and 1st, 2nd, 3rd, 4th and 5th year. Repermeabilized perforators before the 1st week were considered persistent and recurrence after the 1st month.

Results. Aesthetic and symptomatic improvement. Ulcer healing in treated cases.

Early occupational and social reinsertion. Persistence of 7 perforators after the procedure. Recurrence of 15 perforators before the 6th month (occlusion of 93%). No general complications.

No evidence of infection, skin necrosis or deep venous thrombosis.

Conclusions. Though today we prefer using 1470 laser, with radial fiber and 30 joules average in perforators of large

caliber, EPLA is a minimally invasive therapeutic option that requires a learning curve, clear instructions, showing its efficiency after a follow up of 5 years with the mentioned results.

SYMPOSIUM 4: ANTICOAGULANT AND VENOACTIVE DRUGS

AB0376

SYMPOSIUM 4

Proper duration of anticoagulation for acute VTE

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Decisions regarding the proper duration of anticoagulation for patients with venous thromboembolism balance the risk of recurrence without anticoagulation *versus* the risk of major bleeding in patients treated with anticoagulation.

There are two basic approaches to determining the risk of recurrence. One is to assess the generic risk of recurrence and treat all patients accordingly. The second is to evaluate specific elements of individual risk, such as residual thrombus burden and thrombus activity, to then determine individual recommendations for duration of care.

Ultrasound assessment of residual "thrombus" burden determined by degree of post-thrombotic luminal obstruction can be used to assess recurrent risk. Patients with $\geq 40\%$ luminal obstruction were shown to have significantly higher risk of recurrence than those with minimal or no residual obstruction. d-Dimer levels have also been used to stratify risk. Those who have elevated d-Dimer levels have significantly higher risk than those with normal d-Dimer levels.

A number of tools have been proposed to assess bleeding risks. The HAS-BLED score and the VIENNA bleeding risk calculator are two instruments which have been validated to stratify bleeding risk in patients taking anticoagulants.

Finally, extended therapy with a reduced dose of anticoagulant has been shown to significantly reduce risk of recurrence without an increased risk of major bleeding. Additional studies are under way to confirm these observations.

Physicians now have abundant information at their disposal to make informed decisions to purpose duration of anticoagulant for VTE.

AB0393

SYMPOSIUM 4

Recent guidelines in the management of deep vein thrombosis (DVT)

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Management of DVT has been much improved for last decade by new evidences. Most DVT can now be treated in outpatient clinic without admission. Direct oral anticoagulant (DOAC) would be preferable over VKA for secondary prevention of DVT because of lower bleeding complication rate. Although anticoagulation for 3 months is enough for the management of provoked DVT, extended anticoagulation is recommended in patients having unprovoked or cancer-associated DVT. Because recent guidelines tend to have more concern about the bleeding complication of antithrombotic agents, various models to predict bleeding and recurrence

of DVT were introduced. DOAC-associated bleeding is a new concern with increasing use of DOACs. Aspirin is proved to be effective in secondary prevention of DVT but the benefit is less than that of anticoagulant. The use of early mechanical or pharmacological thrombolytic and inferior vena cava filter is limited in special situation because of their potential serious complications. Elastic stocking is proved to have no effect to prevent postthrombotic syndrome.

NURSE AND SONOGRAPHER SYMPOSIUM 1

AB0340

NURSE AND SONOGRAPHER SYMPOSIUM 1

Postoperative care after varicose veins surgery

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President Australian and New Zealand Society of Phlebology, Australia

Varicose veins surgery can take many forms. Open surgery is still performed widely, usually involving an incision at the groin or in the popliteal fossa and then removal of part or all of the diseased saphenous trunk, usually followed by small incisions to remove clusters of varicosities. Thermal ablation to the saphenous trunks does not require a large entry wound but the region of thermal ablation does require consideration and care following the procedure. Accompanying thermal ablation is commonly foam sclerotherapy or surgical phlebectomy also requiring specific care. Sclerotherapy, using foam or liquid, can be used as a stand alone treatment for saphenous trunks or tributaries. With this range of treatments available, many aspects of care after treatment have to be considered.

Small skin incisions are closed with adhesive steri-strips, not full length but these can easily be cut into 1/3 lengths. Skin clips are not advised because of overlying compression producing discomfort from the clips. If surgical removal of saphenous trunks or varicosities has occurred, at the end of the procedure clot must be evacuated from the strip tract or the varicosity removal sites. Larger wounds are closed with either nylon sutures or buried absorbable sutures. If there is a groin wound, injection of local anaesthetic to that wound following closure reduces subsequent analgesia requirements.

Over the steri-strips, non-stick soft vaseline impregnated dressings can be applied to all wounds which may ooze blood because strong compression to the limb is going to be applied. If dressings in contact with the skin absorb blood and then dry out they can cause friction skin blisters and so the non-stick dressings directly to the wounds prevent this. Absorptive pads can then be placed over areas of incisions or ablation. These thicker pads absorb blood and act as eccentric compression once either strong bandages or strong compression stockings are applied over the top. This eccentric compression places extra pressure on the surgical/treated sites according to the law of Laplace. Most open surgery is followed by multiple layer firm compression bandaging including at least one adhesive or cohesive layer. Postoperative stocking kits are available to apply compression to the limb following surgery. When using such stocking kits padding is required beneath the stocking for eccentric compression and also to absorb leakage of blood or tumescent solution. Groin wounds can be compressed with a combine pad fixed with adhesive tape (be mindful of adhesive allergy) to close the dead space, and this pad may be removed after 24 hours. Special areas of consideration on the leg are the foot and also the area between the top of the bandage and the groin wound. The foot region occasionally undergoes phlebectomy or sclerotherapy. Good padding and compression are vital in this region. Very proximal wounds that are unable to be bandaged need separate dressings and may cause annoying bleeding.

The aim of the adequate wound dressings and good compression is to reduce bleeding, treated vein refilling, hematoma, oedema, skin blisters and pain and importantly to allow immediate or early ambulation.

Immediate management considerations following varicose veins surgery must include venous thromboembolism prophylaxis, analgesia, possible use of antibiotics, and the need for early mobilisation. A pre-treatment risk assessment for VTE must be made including a decision as to whether anticoagulation, usually heparin, is to be given for ten days post treatment. The Caprini DVT risk score is very useful in this regard. Many practitioners order one dose of post-treatment heparin, and the value of this is questionable. Analgesia is usually required after open surgery, one intramuscular shot in recovery and oral analgesics to take home. Less analgesia is required following thermal ablation and foam sclerotherapy but these methods may require topical analgesia to the inflamed areas once compression is removed. Open varicose veins surgery is usually a sterile procedure but it is common to give at least one shot of prophylactic antibiotics or occasionally a five day oral course. Mobilisation is immediate if the procedure is performed with the patient awake and under local anaesthetic. It is delayed when sedation or a regional or spinal or general anaesthetic is employed but by two hours patients are all expected to be mobile with knee and ankle bending and a normal gait, despite this being a little uncomfortable with very firm compression on the leg. Such firm compression is maintained continuously for up to three days from the time of treatment. Then the compression can be removed, the patient showers and applies compression stockings, as discussed and obtained preoperatively. Expect pain along the saphenous trunks treated, no matter what treatment has been used. Downtime from work and leisure is extremely variable depending on occupation, leisure and sporting activities, method of travel to work, patient expectations and allowed sick leave. Many patients can work from home.

Review at the physician's office either by the doctor or nurse to inspect the leg, possibly remove sutures or steri-strips and to scan for saphenous vein closure and possible DVT, should occur within two weeks of treatment. Patients often require further support stockings daily for some weeks. Subsequent UGS to remaining tributary varicosities or cosmetic microsclerotherapy as required can be performed at a later time once the bruising and tenderness has all settled.

Long term postoperative care is important. Varicose veins patients must be informed that recurrence either of more varicose veins or more leg symptoms is common, and if they return at an early stage for treatment, perhaps by sclerotherapy and/or ambulatory phlebectomy, control can be maintained easily. One timetable is to follow up at six months for duplex scanning and then perhaps years later or maybe earlier if more veins appear.

AB0404

NURSE AND SONOGRAPHER SYMPOSIUM 1

The role of compressive dressing of the leg: elastic stocking and bandage

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Compression therapy is one of the treatments in reducing leg venous or lymphatic swelling. According to Laplace's law ($P=T/R$), body fluid is introduced into vascular vessel or moved to other sites when the pressure applied to the human body. There are two types of pressures in using compressive dressing (resting and working pressure). Working pressure is formed by multilayer bandage during muscular contraction. The mechanisms of compression therapy are as follows: to re-

duce ultra-filtration pressure by increasing tissue pressure, to improve the venous and lymphatic circulation by promoting the physiological muscular pumping action, to increase central venous volume, cardiac volume and diuretic functions, to make hardened tissues smooth.

Elastic stocking has several type according pressure, ≤ 17 mmHg, 18-21 mmHg, 23-32 mmHg, 34-46 mmHg, ≥ 47 mmHg. Stocking should be prescribed by patient's diagnosis, severity of leg swelling and replaced every six months because of reduced durability of material.

The effects of compression bandages will vary by the winding number and tension, but has more high working pressure than stocking. The bandages will wrap in several layers and be kept for a long time and exercise daily. The band wrapped around the toes at first, to wind rolled up to the top by using an increasingly wide bandage.

Therefore compression therapy is an important part of treatment in leg edema, the correct diagnosis and prescription can increase the effectiveness of the treatment.

FREE PAPER SESSION 7: VARICOSE VEIN III

AB0182

FREE PAPER SESSION 7

Endolaser in saphenous veins: experience in El Salvador, an update

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Aim. To review the results of the use of laser in saphenous veins incompetence, realized in private consultancy in El Salvador.

Methods. Retrospective study of patients with great and small saphenous veins incompetence, diagnosed ultrasonographically, operated under tumescent local anesthesia with 810 nm Laser in clinic, from January 2006 to August 2014.

Results. 285 patients with postoperative ultrasound monitoring of at least one year, the mean age was 50 years with a range between 18 and 80 years. The average diameter of insufficient terminal valve was 7.9 mm with range of 4.9 to 15.1 mm. CEAP grades 2-6, all laser treatments were completed in 1 session, additional sessions were required for sclerotherapy treatment of superficial varices.

Most frequent complications: bruising, postoperative pain, and induration of treated vein. Less frequent fever (2), DVT (1), retained laser fiber (1).

Satisfactory occlusion could not be achieved in 18 (6.9%) limbs, 10 with reflux (3.8%) and 8 (3.1% with no reflux). All reflux were treated with ultrasound guided sclerotherapy satisfactory.

Conclusions. The procedure performed in clinic is safe, very effective and can be performed in most patients with impaired greater and lesser saphenous veins with few complications.

AB0201

FREE PAPER SESSION 7

The relationship between patient status and recurrence rate following laser surgery of varicose veins

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Background. In the last 8 years far fewer cases needed classic surgery: in the last 4-year period only laser operations were performed. This study analyses our 43 recurrent cases.

Material and methods. In an almost 7-year period 1000 limbs (814 patients) were operated on, of which 68.1% could be followed. The age range was between 17 and 84 years: 10.6% were older than 70, and 71% were women. The diameter of the saphenous veins (GSV 82.8%, SSV 12.5% and AASV 4.5%) were between 4 and 32 mm. Double saphenous stem (48), ectasia above 20 mm (15), recurrent varicosity (92), acute varicophlebitis (26), BMI >35 (53), later pregnancy (15), CVI (C4-5 107), crural ulcer (C6 34) were present. VCSS was 7.1. Other treated chronic diseases were in 219 cases.

Results. Occlusion following surgery of the operated saphenous stems was 100%. Recurrent varicosity was found in 43/681 limbs (6.3%), if there were no risk factors: 3.5% (6/339). Recurrence rate was much higher in different special condition groups: (1) double saphenous stems 12.5% (6/48), (2) extremely dilated (>20 mm) varicose veins 26.7% (4/15), (3) high BMI >35 15.1% (8/53), (4) surgery of recurrent varicosity 6.3% (6/95), (5) sporting activity and demanding manual labour 15.5% (7/45), (6) cardiac decompensation 100% (1/1), (7) pregnancy 33.3% (5/15). There were a further 8 ultrasound positive cases (recanalised saphenous veins, refluxive perforator veins) without the clinical appearance of varicosity 1.2% (8/681). In 25% more than one risk factor was present. VCSS after surgery 2.2. Factors without any influence on the recurrence rate are: age, gender, other diseases (except former deep venous thrombosis and cardiac decompensation), presence of a crural ulcer and superficial phlebitis.

Conclusions. Our results are better with lasers than with the classic surgical method, but some patient conditions compromise good long-term results.

AB0101

FREE PAPER SESSION 7

Endovenous laser ablation in a public hospital in Israel - nine years' experience: the way we do it

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Background. Health care in Israel is universal and participation in a medical insurance plan is compulsory. All Israeli citizens are entitled to basic health care as a fundamental right. Based on legislation passed in the 1990s, citizens join one of four health care funds for basic treatment but can increase medical coverage by purchasing supplementary health care. Basic insurance coverage includes only the stripping operation as a treatment for superficial vein disease.

Material and methods. Description of 1614 EVLA procedures performed in a government hospital in Israel. A cost comparison between the endovenous laser procedure and the stripping operation is presented. Some demographic and procedural data are shown.

Results. We describe our experience performing endovenous ablation (EVLA) combined with US-Guided Foam Sclerotherapy (USGFS) in a government hospital using the stripping operation code. The procedures were performed on an out-patient basis (admission and discharge on the same day), using tumescent anesthesia only.

Conclusions. Endovenous procedures performed in the government hospital were less expensive compared to the stripping operation. Patients who had no private health insurance coverage could enjoy modern medical technology for free. The system was built efficiently both economically and in use of time.

AB0078

FREE PAPER SESSION 7

Extremely dilated truncal varicose veins treated with endovenous laser

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Background. Laser ablation of extremely dilated truncal veins is not commonly used in everyday practice because of possible higher failure rate. This study assesses the efficacy of these unusual procedures.

Material and methods. In total, 268 procedures were assessed. Diameter of treated veins was defined as more than 15mm for great saphenous vein (GSV) (n=156, 15-28.8mm) and more than 10mm for short saphenous vein (SSV) and anterior accessory GSV (AAGSV) (n=112, 10-24.8mm). Before surgery, all patients were assessed with colour flow duplex ultrasonography and reflux pattern and diameter of the truncal vein were recorded. The endovenous procedures were performed using 980nm and 1470nm diode or 1320nm Nd:YAG lasers. In the follow-up (1 to 72 months post op) patients were assessed clinically and with duplex ultrasound.

Results. No deep venous thrombosis, nor pulmonary embolism were recorded. In majority of patients we found bruising and/or indurations along the treated veins which resolved within 2 to 3 weeks. In SSV patients, the paresthesias were quite frequent (in 7%) just after the procedures but they resolved spontaneously within 2 months in majority of cases. Once, the neovascularisation was found in the popliteal fossa and the total occlusion rate was 96.87%.

Conclusions. Even if extremely dilated, nearly all truncal veins can be treated successfully and safely with endovenous laser ablation comparably to well established ablation of GSV.

AB0173

FREE PAPER SESSION 7

Totally endovenous laser ablation without phlebectomy or sclerotherapy for treatment of varicose veins

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Background. Endovenous laser ablation (EVLA) has rapidly become popular with clinicians for treatment of varicose veins. Residual varicose veins following EVLA, phlebectomy or foam sclerotherapy can be concomitantly performed. The aim of the present study was to investigate the safety and efficacy of totally EVLA without phlebectomy or foam sclerotherapy.

Material and methods. This retrospective study reviewed the treated patients with symptomatic varicose veins and venous insufficiency at our hospital from January 2007 to December 2013. Systems included 980 nm diode, 1,320nm diode laser devices. The procedures are as follows: 1) preoperative venous mapping, 2) needling in each varicose vein with a 1-2 cm gap using 20-22 gauge intravenous (IV) cannula catheters, 3) EVLA of great or less saphenous vein, 4) EVLA via IV catheter. Most pre-treatment evaluation included ultrasonography and lower extremities computed tomographic three-dimensional reconstruction, and clinical and ultrasonographic evaluations were performed before treatment and at each follow-up visit. Success was defined as complete absence of reflux.

Results. There were total of 619 EVLA treatments performed in 493 patients. Totally EVLA were performed 554 (89.4%) without phlebectomy or foam sclerotherapy under Duplex ultrasound and 59 EVLA were not. In 145 patients, bi-

lateral intervention is made. Recanalization occurred in 21 out of 554 EVLA (3.7%) during the follow-up period. Postoperative complications were few (mild induration and ecchymosis) and well tolerated (no DVT or nerve injury). In a satisfaction survey of patients more than 1 year after EVLA treatment, 539 (97.3%) were mostly or very satisfied with their treatment results.

Conclusions. Totally EVLA without phlebectomy or foam sclerotherapy for symptomatic saphenous vein incompetence and varicose veins has excellent subjective and objective outcomes. This technique appears to be effective in reducing symptoms, resolving varicose veins.

AB0297

FREE PAPER SESSION 7

Endolaser vein ablation results from Paraguay

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Background. Paraguay, a country with tropical temperatures, has a high incidence of vein problems. The principal objective of this study is to demonstrate the effectiveness and security of the treatment as well as the personal experience in our surgical practice in the ELA of the saphenous vein and his collaterals branches from March 2009 to March 2014.

Material and methods. FU of 974 endolaser treatment in 854 patients with incompetent GSV, SSV, perforating vein, were treated with 1470 diode laser energy (Eluminar). Vein access is achieved by percutaneous needle or stab wound /Mueller-hook approach. Local tumescent perivenous anesthesia with klein solution was delivered under ultrasound guidance.

Energy was applied at 2-7 watts along the GSV starting at 1 cm of the SFJ, laser energy was delivered with a 600 or 800 nm bare fiber with pullback every 2 cm with pulses of 1 with no inguinal access.

Results. Immediate collapse of the GSV or SSV was assisted after the treatment and occlusions were observed in 98% of treated veins after 24 months of FU, patients were instructed to resume daily activity and wear stockings after one week of the treatment.

In four cases at the weekly FU we found partial recanalization in the sonogram, minimal skin burns, ecchymosis and paresthesia were observed. There were absence of DVT and severe complications.

Conclusions. EVLA is a minimally invasive ambulatory outpatient treatment for the reflux of the GSV, SSV with result comparable or superior than surgical treatment. Safe, easy to perform, well tolerated, no general anesthesia with higher rate of acceptance than surgery.

Continued evaluation and long term follow up are required to define the complete role of the laser in treatment of the varicose vein reflux.

AB0034

FREE PAPER SESSION 7

Endovenous laser ablation with 1320nm - extraordinary success and safety for over 10 years. Detailed ultrasound-guided sclerotherapy and tumescent local infiltration are essential partners for success

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Background. Endovenous Laser Ablation (EVLA) has become the gold standard for treating varicose veins in the last 20 years, using near infrared wavelengths. For over 10 years a

1320nm laser has been reliable, using baretipped fibres, careful perivenous infiltration of tumescent local anaesthesia, and detailed ultrasound guided foam sclerotherapy (UGS) to eliminate all sources of venous reflux.

Material and methods. 1500 refluxing vessels were treated in 973 patients aged 14-194yrs were enrolled in New Zealand over a 10 year period, CEAP 2-6. Over 95% had significant venous symptoms, less than 5% attended for cosmesis. Baseline duplex ultrasound (US) mapping confirmed venous reflux and suitability for EVLA. A minimum 4mm diameter straight segment was usual for venous access. EVLA was with 1320nm and bare-tipped fibres, under careful Klein tumescent anaesthesia. Both limbs were treated concurrently, with distal foam UGS performed stat, repeated after 1-7 days. Extrinsic pad compression was occasionally used. Class 2 compression hose were worn for 10-14 days, exercising for a minimum of 30 minutes daily. Duplex US surveillance was at 7 and 30 days, then 6, 12, 36 and 60 months.

Results. Trunkal varicose vein closure has been demonstrated over many years, with 100% patient self-scored popularity of the procedure. There have been no serious adverse outcomes - no fatalities, strokes, deep vein thrombosis, iatrogenic ulcers, fibre fracture, burns or allergic reactions. 2 pulmonary emboli were seen. No EHIT 2-4 complications were observed. Only 1 vein segment required repeat EVLA 2o closure after 3 years. Secondary closure of EVLA treated trunks with UGS was rare.

Conclusions. The day stay procedure of EVLA for varicose veins is very safe and effective, using near infrared wavelengths (1320nm), baretip fibres, detailed tumescent anaesthesia, and foam sclerotherapy techniques. This concurs with international current guidelines.

AB0119

FREE PAPER SESSION 7

Thermal ablation of saphenous veins is feasible and safe in patients older than 75 years: a prospective study (EVTA study)

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Background. Elderly patients over 75 years may have more comorbidities and their venous insufficiency is often more severe than in younger patients. Consequently, thermal ablation (TA) may represent an interesting alternative option to surgery for saphenous vein treatment. However, this population represents only a small minority of the patients included in TA studies or are not present at all.

Aim. To investigate tolerance and safety of TA, consisting of radiofrequency or endovenous-laser (EVLA) of saphenous veins (SV) in elderly (group1 \geq 75years), compared with a control-group (group2 $<$ 75years).

Material and methods. Observational-multicenter-prospective study conducted, under the aegis of the French and Swiss Societies of Phlebology (18 centres).

Ninety patients were included in group1, 617 in group2 (mean-age 80-y and 53; 69% women in both groups), representing 863 SV. Mean trunk-diameters were similar in both groups (small-SV: 6 mm; great-SV: 7 mm). In group1, comorbidities were more frequent, particularly cardiac insufficiency, diabetes, history of thrombosis, and CEAP clinical class was significantly higher.

Results. EVLA was used in 86% of cases. Settings used were similar in both groups for each technique. Only 6% of TA were performed in an operating-room for group1 (14% group2). Tumescent local anaesthesia (TLA) alone was used in

91% of cases in group1 (85% group2). The mean pain-score was only 1.6 for the procedure itself (VAS 0-10; 10 max.) and 1.4 for the 10 days following the procedure. Side effects were few, but rate of paraesthesia was higher when general anaesthesia was used (11.8% compared with TLA alone (2.2%). At 3 months, 100% of SV were occluded in group1 (99.5% group2), with high satisfaction score (9.3/10).

Conclusions. TA is safe and effective in elderly; it should be performed strictly under TLA to minimize side effects.

AB0195

FREE PAPER SESSION 7

Five-year result of endovenous radiofrequency ablation for superficial venous insufficiency of the small saphenous vein: a retrospective single-center experience

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Background. Endovenous radiofrequency ablation of superficial venous insufficiency in small saphenous vein have been proposed as a axis treatment modality among varicose vein treatments. The purpose of this study is to evaluate the long term treatment outcomes of endovenous radiofrequency ablation of small saphenous vein.

Material and methods. A single center retrospective review of small saphenous vein insufficiency treated with radiofrequency ablation between July 2009 and June 2014. Radiofrequency ablation was performed on 43 limbs in 39 patients with symptomatic varicose vein under tumescent anaesthesia without general anaesthesia or regional anaesthesia. Post-operative follow up was performed after 1 week, 6 month, and then yearly.

Results. The mean age of patients was 53.9 \pm 11.09 years (range: 29-76 years) and 21 (53.8%) were women. The average body mass index was 22.97 \pm 3.78 kg/m². Mean length of ablated vein was and mean diameter 2 cm distal from SPJ was 8.17 \pm 1.19. The occlusion rate at 60 month was 90.3% by Kaplan-Meier analysis. No major complications occurred.

Conclusions. Our 5-year experience suggests that endovenous radiofrequency ablation in small saphenous vein insufficiency is an effective, safe and durable treatment modality with low complication rates.

AB0323

FREE PAPER SESSION 7

Radiofrequency ablation of the saphenous vein, experience on 331 patients

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Aim. Show our experience in endovascular obliteration of the saphenous vein (SV) with radiofrequency as an alternative to conventional extirpative treatment of varicose veins and endovascular laser.

Material and methods. This report reviewed our experience with the radiofrequency ablation procedure in 331 patients over a seven year period. Age range 17 to 85 years. In all patients the procedure was performed on an outpatient basis. Were treated: Greater saphenous vein (GSV): 293, small saphenous vein (SSV): 28, both saphenous: 5, vein anterior accessory: 5. There has been a high percentage of occlusion, and where the permeable persisted vein, did not show symptoms of venous insufficiency. Few patients had minor complications

(skin pigmentation, paresthesias, phlebitis of the treated vein or any collateral vein saphenous. One patient was found to have extension of an asymptomatic, non-occlusive thrombus into the common femoral vein 1 week after the procedure.

Results. All patients treated had high obliteration rate, and only one case EHIT was observed.

Conclusions. Radiofrequency ablation of the SV appears to be a safe alternative to conventional stripping with ligation and endovascular laser. Endovenous radiofrequency treatment for saphenous veins offered a clinical success for all patients treated.

AB0014

FREE PAPER SESSION 7

Radiofrequency ablation of saphenous stems: problems during the procedure and how to solve them

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Background. It is proved radiofrequency ablation (RFA) of saphenous stems provides better patient's quality of life compare with stripping. But there are many problems which can make impossible to perform RFA.

Material and methods. Prospective study included 1867 patients (2234 saphenous stems) with CVD, C2-C6 class. Overall, 1887 great saphenous veins were underwent radiofrequency ablation, 335 small saphenous veins and 12 anterior accessory great saphenous veins. The diameter of the saphenous trunks was 4 - 26 mm.

Results. Duplex ultrasound (DUS) showed possible difficulties in 88 cases. These were:

1. Convoluted saphenous stems. To solve the problem we used displacement of the tip of RFA catheter with the hand through skin under DUS and Valsalva's maneuver. It could help to increase diameter of the vein and pass catheter through the curved part. However, in 21 patients we had to use 2 introducers, the second was imposed just above obstacle.

2. Small diameter of vein. There are two actions to solve the problem, namely, to perform Valsalva's maneuver and to lower patient's limbs.

3. In case of venous aneurysm just below sapheno-femoral junction it is important to define distance between them. The distance less than 20 mm is a relative contraindication for RFA. We had to perform high flush ligation after RFA in one case because of thrombosis of the aneurysm.

4. Skin Stretch Maneuver decreases an angle in cases of vein angulation.

As a result, in all the cases but one RFA has reached its aim.

Conclusions. Radiofrequency ablation of incompetent saphenous stems is a safe and effective method to abolish reflux in superficial venous system. DUS performed by surgeon is the best way to avoid problems during the procedure.

AB0134

FREE PAPER SESSION 7

Ablative techniques are ineffective in many cases of varicose veins. Notes about pathophysiology of recurrent varicose veins

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Ablative surgery of varicose veins (VV) commonly gives a good outcome in short-term, but at long-term f-u the recurrent varicose veins (RVV) are an obvious event in approximately 50% of cases, with a re-intervention rate at around 40%. In the

post-thrombotic syndrome (PTS), the obstacle to the forward flow and / or the post-recanalization reflux bring overload within superficial circulation and develop secondary varices (sVV) in many cases. In these cases, the ablative surgery leads to the appearance of RVV with high frequency, twice than after primary varicose veins (pVV) ablation. That means the role of DVI is important and perhaps predominant compared to other causes of RVV in sVV.

Ablative surgery in pVV is justified by the assumption that the deep circulation is intact and competent and can carry a supply function, so that the superficial veins ablation is basically harmless, irrelevant and anyhow with positive cost/benefit ratio. This assumption is not proven by reliable studies. The series of data, from literature and personal, show primary DVI (PDVI) in RVV with an overall prevalence around 45%, near to the RVV rate after the pVV ablation. These data suggest a causal link between PDVI and RVV in pVV.

Meanwhile this conclusion needs support by targeted studies, the ablative strategy should be avoided in sVV and in pVV associated with PDVI, but replaced with a strategy getting a more stable and durable hemodynamic balance. This can be achieved by joining the CHIVA strategy, which preserves the saphenous backward drainage, with deep and/or superficial valve repair in every eligible case, to keep also the saphenous forward drainage. In our series of 47 cases, this conservative and repairing strategy shows to reduce the RVV rate at 4 years f-u, but it must be confirmed by appropriate clinical trial.

AB0333

FREE PAPER SESSION 7

CEAP classification: proposals for 2015 to accept CA and CB for each class

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Background. Everyone uses the CEAP in order to classify their venous patients.

But there are some issue:

1-Corona phlebetatica (CPh) of the foot is classified in C1.CPh means that the venous disease is becoming a Chronic Venous Disease. More over this CPh is predictive of leg Ulcers.

2-All kind of Varicose Veins (VV) are included in C2 like Recurrent VV which are very different from primary VV.

3-Several sorts of edema can be put in C3 Class: like lymphedema, etc.

Material and methods. In 2001 it has been decided to divide C4 in 2 subgroups, C4a and C4b. Our proposal is to propose the same subdivision Ca and Cb for each 'C' class in order to have a similar organization at all levels. We tried to see if it was possible to find 2 items in each class with respect to the clinical severity. A similar idea has been studied.

Results.

- C1 got already two items: telangiectasias and reticular blue veins

- C2 could be divided in two: primary VV and recurrent VV (REVAS)

- About C3, works showed that CPh is a clinical sign in between edema and C4a.

- C4 is already cut in two. C4a: eczema-pigmentation and C4b: lipodermatosclerosis-Atrophie Blanche (AB).

- Obviously for C5 and C6 their "recurrences" can be noted "b" because because they are much more severe.

So the propositions could be: a and b at each level. Ex: C3a=Edema, C3b=CPh.

Conclusions. This improvement of CEAP is done without any change.

Inclusion of REVAS and CPh in the 'C' are mandatory.

FREE PAPER SESSION 8: VENOUS THROMBOEMBOLISM II

AB0037

FREE PAPER SESSION 8

Incidence and risk factors of venous thrombosis following major abdominal surgery

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Background. Venous thromboembolism (VTE) is a common surgical complication in Western populations more than in Asian populations. The purpose of the study was to determine the incidence and risk factors of VTE in Thai patients undergoing major abdominal surgery.

Material and methods. A prospective cohort study was conducted from January to September 2014 in our institution. A total 167 patients who underwent major abdominal operation were analyzed. For the diagnosis of deep vein thrombosis (DVT), duplex Doppler ultrasonography was performed in all patients on days 5-7 following surgery and in patients suspected of DVT until 4 weeks after surgery. CT angiography of pulmonary vasculature was carried out in patients suspected of pulmonary thromboembolism (PE). All patients were divided into two groups, non-VTE and VTE groups. The Student t-test or Wilcoxon Ranksum test was used to compare all continuous variables between both groups. Fisher's exact test was used to compare all categorical variables. The risk factors of VTE were identified by step backward risk regression analysis and reported with risk ratio (RR) and 95%CI. A p-value of <0.05 was regarded as statistically significant.

Results. VTE is diagnosed in 6 patients (an incidence of 3.6%; 95% confidence interval [CI] 3.39-3.81); three patients for proximal DVT (1.8%) and three patients for PE (1.8%). All cases were symptomatic. By multivariable analysis, risk factors of VTE can't be identified. However, higher BMI and postoperative longer rest on bed have trend to increase the risk for VTE.

Conclusions. The incidence of VTE in Thai patients who underwent major abdominal operation is low (3.6%), even in the context of risk factors typically regarded as high risk.

AB0228

FREE PAPER SESSION 8

Incidence of deep vein thrombosis after abdominal surgery in Korean patients

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Background. Venous thromboembolism is a relatively rare but serious complication of abdominal surgery. This study evaluated the incidence of deep venous thrombosis (DVT) after abdominal surgery using Duplex ultrasound (DUS) and comparing two groups of patients who has no antithrombotic prophylaxis and with other group who used mechanical thromboprophylaxis. The aim of this study was to investigate prospectively the incidence of deep venous thrombosis (DVT) after abdominal surgery in Korean patients using only mechanical thromboprophylaxis.

Material and methods. On a prospective screening, we evaluated the incidence of DVT in 202 patients who were scheduled to undergo abdominal surgery for gastrointestinal, hepatobiliary, or pancreatic disease. Patients with No mechanical thromboprophylaxis (n =152) patient with mechanical thromboprophylaxis (n =50) to prevent DVT. The patients were examined with Duplex ultrasonography pre- and postoperatively. No patient had any symptoms or signs of DVT postoperatively, and ultrasonography showed no signs of thrombosis in iliac, femoral, and popliteal veins in any of the patients.

Results. The mean patient age was 58.2±11.7 years, and the male were 113 (56%) to female 89 (44%). DVT occurred at a rate of 0% but incidence of vein thrombosis was 13 (6.4%). All the cases of vein thrombosis were asymptomatic and located in the soleal vein.

Conclusions. The incidence of venous thromboembolism after abdominal surgery seems to be low, and major abdominal surgery as a risk factor for thromboembolic disease might have been overestimated in the Western countries compares to Korea. A larger, randomized, multi-center study is needed to establish the guidelines towards the prevention of DVT occurrence after abdominal surgery in Korea.

AB0327

FREE PAPER SESSION 8

The post-thrombotic syndrome: factors associated with the development of post-thrombotic syndrome in patients with deep vein thrombosis

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The initial treatment of deep vein thrombosis (DVT) includes prevention of thrombus propagation and development of pulmonary embolism. Another important thing is prevention of post-thrombotic syndrome (PTS), the late complication of DVT. PTS has been reported to occur in 20-40% of patients who have DVT, and is severe in 5-10%. Recent studies have identified ipsilateral recurrent DVT as a risk factor for PTS. However, most patients with no apparent history of recurrent DVT may also develop severe symptoms of PTS over time. For this reason, it is difficult to reliably predict which patients are likely to develop PTS in the acute phase of DVT.

Unfortunately, PTS has been an under diagnosed. While objective evidence of venous incompetence by duplex ultrasound helps to confirm the diagnosis, PTS should not be diagnosed if clinical symptoms are absent. At this moment, the Villalta scale has been validated in several studies and shows good correlation with disease-specific quality of life.

Concerning the predictors for development of PTS, our previous study has demonstrated that ilio-femoral DVT (OR 3.4, 95% confidence interval [CI] 1.4-8.6) was highly associated with development of PTS. Moreover, venous occlusion combined with reflux (OR 4.4, 95% CI 2.9-20.7), peak reflux velocity >29.7 cm/s (OR 13.7, 95% CI 4.1-45.7) and mean reflux velocity >8.6 cm/s (OR 4.4, 95% CI 1.5-12.9) in the popliteal vein detected by duplex scanning at 6 months after DVT were strong predictors of PTS. Recently, we found that changes in calf muscle oxygenation during standing and exercise measured by near-infrared spectroscopy significantly differ between patients with and without PTS. The relationship between changes in oxygenated and deoxygenated hemoglobin levels during these movement are considered as the important indicative parameters reflecting the progression of PTS, and these data offer new insights into calf muscle hemodynamics at the microcirculation level.

AB0280

FREE PAPER SESSION 8

An experimental study on modeling of inferior vena cava thrombosis in New Zealand white rabbits

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Chinese Society of Vascular Surgery, China

Background. To explore a new modeling of deep vein thrombosis in rabbits.

Material and methods. 27 New Zealand white rabbits, were

randomly divided into two group (modeling group 18, control group 9). Rabbits in modeling group, by incomplete ligation plus temporary blocking blood flow in inferior vena cava, established disease model of deep vein thrombosis; only exposing of vena cava is performed in control group. At 48 hours and 7 days after modeling, ultrasound and pathological examination were took. Comparison between the two groups was also done.

Results. Modeling procedures were successfully completed, successful rate is 100%. One rabbit died due to diarrhea; ultrasound and pathology showed thrombosis in vena cava lumen of modeling group, and significant changes in the vein wall. While there was no thrombosis in control group, and changes in vein wall.

Conclusions. By incomplete ligation plus temporary blocking, we can establish a stable model of venous thrombosis in rabbits. And that is an ideal venous thrombotic disease model.

AB0312

FREE PAPER SESSION 8

Pulmonary embolism provability based on the location of thrombi in legs

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Background. Most of pulmonary embolism (PE) is caused by thrombosis of leg veins. Location of leg thrombi is suspected to affect the provability or severity of pulmonary embolism, but there are few researches about it. In this study, we analyzed relation between the location of leg thrombi and pulmonary embolism.

Material and methods. We enrolled all the patients who were diagnosed deep vein thrombosis (DVT) in our hospital from 2006. We classified and scored the pulmonary embolism according to the affected arteries; main (4), lobar (3), segmental (2) and subsegmental (1) arteries. We also grouped the DVTs of legs according to the laterality and level of thrombi (right/left/bilateral, and iliac/femoral/popliteal/calf).

Results. Overall 388 cases were enrolled and 13 cases were excluded because of uncertainty of the data. Female was 196 (52%) and mean age was 64 years old (12~98). PE was detected 214/375 (57.1%) among the all DVT cases. PE from right, left, and bilateral DVT was 78/124 (62.9%), 121/232 (52.2%), and 15/19 (79.0%) and mean PE severity score was 1.750, 1.293 and 2.474 respectively ($p = 0.050$, $p = 0.004$). PE from iliac, femoral, popliteal and calf vein was 80/165 (48.5%), 91/137 (66.4%), 24/40 (60%) and 19/43 (57.6%) and mean PE severity score was 1.170, 1.942, 1.600, and 1.242 respectively. Femoral vein was most frequent site to make PE ($p = 0.039$, $p = 0.001$). The main pulmonary artery embolism was also most frequent in femoral vein DVT (42/137, 30.7%) ($p=0.001$).

Conclusions. Left side DVT was more frequent than right side but provability of the probability of PE was higher in right side DVT. The provability of PE was the highest in the femoral vein DVT among the leg thrombi and severity of PE was also highest in the femoral vein level DVT.

AB0279

FREE PAPER SESSION 8

Exercise versus immobilization in the treatment of acute deep vein thrombosis during different clot-organized stages: an animal experiment

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Chinese Society of Vascular Surgery, China

Background. To evaluate the corresponding influence on pulmonary embolism incidence between immobilization and

exercise in different stage of thrombus after acute deep vein thrombosis in rabbits.

Material and methods. Forty-eight New Zealand rabbits were randomly divided into three groups depending on the different organized stage of thrombus: the early, medium and later stage group. Each group was subdivided into two subgroups: the immobile and mobile subgroup. Rabbit modeling of deep vein thrombosis was made by ligating the right femoral vein. Among the early—stage group, rabbits of the immobile subgroup were fixed for 3 days, while that of the mobile subgroup were free to move for 3 days, then each was euthanized to extract the lungs for pathological examination. Among the medium—stage group, each of the immobile subgroup were fixed for 7 days, while the mobile subgroup ones were fixed for 3 days, then released free-moving for 4 days following the pathological extraction. Among the later-stage group, animals in the immobile subgroup were fixed for 14 days comparing the mobile subgroup fixed for 7 days and next free.

Moving for 7 days, then each was euthanized and the lungs to be dissect, pulmonary lobe embolism was diagnosed and analyzed.

Results. Among the early—stage group, pulmonary embolism incidence (PEI) of the immobile and mobile subgroup was 4/8 VS 3/8. The pulmonary lobe embolism incidence (PLEI) was 17.5% (7/40) vs. 15.0% (6/40). Among the medium stage group PEI of the immobile and mobile subgroup was 3/8 vs 2/8, PLEI was 37.5 (7/40) vs. 25.0% (10/40). Among the later—stage group, PEI of the immobile and mobile subgroup was 3/8 vs. 3/8, PLEI was 12.5 (5/40) vs. 15.0 (6/40). There was no statistical difference between immobilization subgroup and mobilization subgroup among different stage groups.

Conclusions. On the premise of given anticoagulation treatment, early ambulation does not significantly increase pulmonary embolism incidence after acute deep vein thrombosis of lower extremity in rabbits.

AB0301

FREE PAPER SESSION 8

Rheolytic thrombectomy showed safe and effective results for endovascular treatment of acute DVT

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Background. Acute deep vein thrombosis (DVT) has been treated by catheter-directed treatment (CDT) including thrombolysis and pharmacomechanical thrombectomy (PMT) to prevent chronic venous insufficiency. Rheolytic thrombectomy (RT) is one of well-known PMTs. This study was conducted to evaluate clinical experience of PMT.

Material and methods. This is a retrospective study of prospectively registered data base of patients who underwent PMT of acute DVT in Seoul St. Mary's hospital from 2013 to 2015. The AngioJet thrombectomy system with Solent Omni catheter was adopted as a PMT. Patient's demographics, detailed Procedures, their results were collected through electronic medical records (EMR) and picture archiving and communication system (PACS).

Results. Twenty patients were enrolled. (8 men, mean age: 60.5 year old) There was 15 iliofemoral DVTs, 3 DVTs involving IVC, 1 femoral DVT and 1 subclavian DVT. Technical success rate of RT was 75%. RT without lytic agent in 5% (1 of 20), concomitant catheter-directed thrombolysis with RT in 15% (3 of 20): after incomplete RT (2/3) and before RT due to extensive thrombus (1/3). Median procedure times for RT alone and

RT with thrombolysis were 90 min and 26 hours. Procedures were completed in less than 3 hours for 85% of patients. Iliac vein stenting was done in 15 patients (75%). Bleeding event occurred in 1 patient who underwent thrombolysis and subsided without sequelae. There was hemoglobinuria in 5 patients, recovered within 12 hours.

Conclusions. This study demonstrate that rheolytic treatment of DVT is safe and effective and can potentially reduce the need for concomitant CDT and intensive care.

AB0171

FREE PAPER SESSION 8

Management of superficial vein thrombosis of the legs: update and current recommendations (French Society of Phlebology)

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Superficial Vein Thromboses (SVTs) were for a long time considered to be a benign disease.

Recent studies have shown their potential seriousness. A concomitant deep vein thrombosis (DVT) was identified in 25 to 30% of patients at presentation, and a pulmonary embolism in 4 to 7% of patients. Subsequent VTEs were reported in 3 to 20% of patients.

Management has changed. Until recently, although numerous anticoagulant strategies had been tested, none had clearly demonstrated its clinical benefit. Recently, the Calisto study has validated a protocol based on fondaparinux 2.5 mg daily for 45 days, leading to update the recommendations.

Our objective is to present the rational and update of the management of SVT of the legs and the current recommendations and guidelines.

All patients with SVT should have bilateral duplex scanning:

- To assert the diagnosis of SVT;
- To determine the precise location and extent of the SVT;
- To diagnose or rule out the presence of DVT (25-30%).

(Level of evidence: high)

On the basis of the data of the literature and in agreement with the last ACCP recommendations and the conclusions of the Cochrane review, it is logical to recommend, in patients with symptomatic SVT of at least 5 cm in length, the use of a prophylactic dose of fondaparinux or LMWH for 45 days over no anticoagulation (Grade 2B). Wherever the cost of treatment with fondaparinux is acceptable, we suggest fondaparinux 2.5 mg daily over a prophylactic dose of LMWH (Grade 2C).

However, the recommendations and guidelines are of a low grade. Some questions remain in the management of SVT. Some risk factors for subsequent development of VTE have been identified but further research is needed to clearly define subgroups of patients with a higher incidence of VTE after SVT.

AB0233

FREE PAPER SESSION 8

DSA venography, venoplasty, compression therapy combined with factor XA inhibitor anticoagulation in post-thrombotic syndrome

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Background. Deep vein thrombosis of leg veins is termed as 'silent killer' since femoro-popliteal and segmental calf veins

thrombosis most of the time gets unnoticed causing morbidity with post thrombotic syndrome. While ilio-femoral DVT creating havock of pulmonary thrombo-embolism and increasing death rates.

Moderate to gross persistent, calf tenderness, moderate limb swelling, etching, heaviness with skin discoloration. Difficulty in walking, moderate thrombophlebitis and healed or active venous ulcers at ankle. Superadded infections leading to venous gangrene.

Material and methods. DSA venography, venoplasty, compression therapy combined with factor Xa inhibitor anticoagulation is done in single or both lower limbs of 72 male and female patients in 2010-15. All of these patients selected for procedure by clinical assessment, hyper-coagulability blood tests, thrombophilia screening and prior "venous Doppler study".

- Endo-venous balloon plasty and stenting done for chronic, residual thrombotic occlusion between 50-90% mainly at common iliac and femoral veins done in 18 cases to relieve venous hypertension and obstruction.

- Compression stockings, factor Xa inhibitor anticoagulant Xarelto 10 mg bd for 30-90 days.

Results. 80-90% success achieved in 3 months span of this combined treatment. Compression therapy and oral anticoagulation caused recanalisation of occluded veins, reduced venous congestion, improved limb swelling, opening up of venous channels and minimal skin discoloration. While balloon plasty and stenting in more advanced cases recanalised ilio-femoral segment with good venous return from superficial venous system. However, grossly affected valvular system in great and short saphenous veins may need 'laser ablation' surgery in future if deep venous system shows 85-90% patency.

Conclusions. Compression therapy and oral anticoagulation for mild to moderate PTS cases and balloon plasty and stenting in more advanced, severe cases will be future treatment of choice in these creeping leg disease cases. No complications like acute venous insufficiency, intractable leg swelling or mortality documented in any case.

AB0147

FREE PAPER SESSION 8

Comparison of thrombus removal between anticoagulation alone and catheter-directed thrombolysis plus anticoagulation in deep vein thrombosis

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Background. Catheter-directed thrombolysis (CDT) has been widely used as an alternative therapy to anticoagulation in advantage of rapid restore venous flow, pain relief, edema reduction, and prevention of post-thrombotic syndrome (PTS). However, it may cause massive bleeding and has limited indications. Anticoagulation alone therapy has still a role for treatment in deep vein thrombosis (DVT).

Material and methods. We retrospectively analyzed 113 DVT patients treated by anticoagulation alone (Group 1, N=83) and catheter-directed thrombolysis (Group 2, N=30) with follow up CT venography from January 2012 to December 2014. We analyzed recurrence free rate, prevalence of lesions, and thrombus removal rate in each lesions.

Results. During follow-up (mean, 8.1±9 months), the overall thrombus removal rates were 84.3% and 63.3%. The recurrence free rates were higher in group 1 (98.8% in 3 months, 98.8% in 6 months, 89.3% in 12 months) than group 2 (93.1%, 89.1%, 72.8%), however, there was no statistically significance by Log-rank test (p<0.079). Removal

rates of thrombus in each lesions were 100% (5/5 patients) vs. 80% (4/5) in IVC, 91.2% (31/34) vs. 94.1% (17/16) in iliac vein, 87.9% (51/58) vs. 88.9% (24/27) in femoral vein, 94.3% (50/53) vs. 77.8% (21/27), and 100% (18.2) vs. 100% (9.1) in calf vein and upper extremity vein by univariable analysis, however, there was no statistically significance ($p=1.000$, $p=1.000$, $p=0.055$, NA,NA) Smoking, previous DVT, obesity, and cancer history were shown as statistically significant difference in univariable analysis. Although thrombus removal rate was higher in Group, there was no statistically significance between two groups in Cox Proportional Hazard model. ($p=0.338$).

Conclusions. Anticoagulation alone has a role as before and there was no superior results to treat DVT between two groups. Therefore, it may not be needed aggressive procedure for treatment of DVT.

AB0262

FREE PAPER SESSION 8

Prophylactic application of inferior vena cava (IVC) filters to prevent pulmonary venous thromboembolism (VTE) among Yemeni patients

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Background. An inferior vena cava filter (IVC Filter) is a type of vascular filter, a medical device that is implanted into the inferior vena cava to presumably prevent life-threatening pulmonary emboli. However, in cases where patients are at high risk of developing a clinically significant PE and cannot be sufficiently anticoagulated, placement of an IVC Filter may be recommended.

Aim. Outcome study of prophylactic treatment by application of IVC Filters among 110 Yemeni patients suffering from DVT of high risk to develop DVT and PE.

Setting. University of Science & Technology Hospital, Saudi-German Hospital and Yemen Scan Center.

Material and methods. 110 patients within period of last 3 years (January 2012-December 2014), Age 17-to-75 years. They had been undergone routine investigations. The ordinary seldinger angiographic technique through femoral and internal jugular veins were the methods of introduction. Applications of bard and cordis filters which all inserted to infra-renal part of IVC.

Results. Success rate was 99.1% while failure rate was 0.9%.

Conclusions. IVC Filters are essential and should consider to prevent all patients with high risk of developing PE.

FREE PAPER SESSION 9: DIAGNOSIS AND PELVIC DISORDERS

AB0053

FREE PAPER SESSION 9

Duplex criteria and patient selection in modern vein therapy

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Diagnostic duplex to evaluate for Superficial Venous insufficiency has been well described. The objectives of the

examination are to define the incompetent veins; as sources of refluxes; importantly to correlate the relevant findings to the patient clinical presentation. On standing d; position; the main Superficial Venous Trunks: Great Saphenous Vein (GSV); Small Saphenous Vein (SSV); Superficial Accessory Saphenous (SASV) or Thigh Extension of the Small Saphenous (TE); if presents; are thoroughly examined for: presence of reflux; with a longer duration more than 0.5 sec duration; for diameter (with or without aneurysmal dilation); for presence of any tortuous segment. The previous points are tremendously important to plan an appropriate line of treatment of the array of the modern vein therapy: Endovenous thermal Ablation (EVTA); either by radiofrequency (RFA); or Laser (EVLA); or chemical ablation (by foam sclerotherapy). Moreover; Duplex operator should look for other sources of refluxes; outside fascial compartment; called extra-axial varicosities which are better treated by foam sclerotherapy or mini-phlebectomies. Finally; deep pigmentation; dermatoliposclerosis; or ulcerations; (C4-5-6). If iliac vein obstruction is present; diameter of the vein is reported; presence of collaterals; inflow is calculated from the femoral veins; as those patients could be candidates for iliac vein angioplasty and stenting. We live in a revolutionary era for the modern vein therapy; and binary simple data of venous duplex either vein is patent or not; refluxing or not are not sufficient anymore. We need to extract more information to get better selection of our patients; candidates for modern vein treatment.

AB0159

FREE PAPER SESSION 9

Anatomical variations of the saphenous fascia in the Indian population

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Background. The Great Saphenous Vein has been described to run completely within a deep plane of the hypodermis which lies directly over the fascia covering the underlying muscles. This course easily seen by ultrasonography, described as the "saphenous eye" sign, is the sine que non for its correct identification, allowing the vascular surgeon to discriminate the GSV from large tributary veins that ascend along a parallel path. This has been documented in almost hundred percent of western population.

In our experience in the Indian population, the saphenous compartment is not complete in a significant percentage of patients. We thus conducted this study to determine the prevalence of this anatomical variation.

Material and methods. We conducted a prospective study on 50 male patients in a vascular surgery OPD, analysing the completeness of the saphenous fascia using ultrasonography. The completeness of the fascia was documented at the upper thigh, mid thigh, above knee, below knee and above ankle. When the fascia was found to be incomplete, the distal most level at which the fascia was complete was documented. Anatomical variations of the GSV as described in western literature was also recorded in our population.

Results. Of the cases screened, only 72% had the complete saphenous fascia. In the rest, the fascia was not complete and ended in the mid or distal thigh.

Conclusions. Physicians involved in endo-venous ablative therapy of veins should be aware of this frequent variation of saphenous fascia as it dictates the correct plane of injection of tumescence. The use of compression therapy and the compression pressures required may differ if the GSV lies outside the saphenous fascia.

AB0254

FREE PAPER SESSION 9

Female varicocele: clinical-therapeutical correlations

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Background. The aim of this paper is to present our experience in the clinical definition of disease and to report the results of treatment with foam sclerotherapy.

Material and methods. We studied 59 women with typical symptoms and signs of PCS: chronic pelvic pain, dyspareunia, vulvar varices or legs varices.

All patients were examined by means of echo color Duplex scanning of venous system of lower limbs and transvaginal approach to evaluate the presence of pelvic varicocele and varicose veins.

The protocol was: medical history – clinical examination, Instrumental diagnosis (lower limbs and transvaginal color Duplex ultrasound), angio MRI (in case of positive ultrasound evaluation), endovascular therapy (transbrachial endovascular foam sclerotherapy). The follow-up of patients was: 1st instrumental examination and symptoms evaluation at 2 months, 2nd instrumental and clinical examination at 6 months, further control at 12 months.

Selective sclerotherapy of pelvic veins with transbrachial access by means of 10 ml of foam with 1 ml of sodium tetradeceyl sulphate 3% with air (Tessari method).

Results. Complete resolution of symptomatology in 58 patients (out of 59).

Instrumental control: complete resolution of varicocele in 56, partial results in 2 cases. Further treatment after 12 months in 1 patient for persistent pre-menstrual pelvic pain and dyspareunia. Regarding the lower limbs varicose veins, complete resolution of leg varices in 49 patients, residual leg varices without symptoms in 10 cases.

Conclusions. Given the pathophysiology of pelvic congestion syndrome, the most promising treatment modalities have been those that target the ovarian veins specifically. Early selective venography, as pre-treatment evaluation, can adequately visualize the ovarian veins. Foam sclerotherapy has the advantage over open surgery in that it leaves no obvious scar and can be conducted as an outpatient.

AB0017

FREE PAPER SESSION 9

Optimization of conservative treatment of pelvis venous disease

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Background. Improve the results of conservative treatment of varicose veins of the pelvis through the use of compression therapy and sulodexide.

Material and methods. A clinical and instrumental examination of 102 women with varicose veins of the pelvis from 22 to 62 years. The average age of 36.3 ± 4.02 years. Instrumental examination included ultrasound scanning of lower extremity veins, veins of the perineum and pelvis, CT, ovarygraphy.

In the I group of patients includes the use of conservative treatment ($n = 34$), abdominal bandage (shorts from waist to upper thigh), class II compression.

In group II compression therapy combined with the use of the drug sulodexide.

Efficacy of treatment was evaluated by dynamic reduction of pelvic pain.

Results. All patients showed symptoms of pelvic venous plethora: chronic pelvic pain, dyspareunia, discomfort in the hypogastrium. In 32 (31.4%) patients diagnosed vulvar varicose veins. According to the ultrasound angioscanning pelvic veins marked expansion and reflux of blood through the veins gonadal and pelvic venous plexus in 24 (23.5%), isolated lesions of the pelvic venous plexus in 78 (76.5%).

In the I group the best results are achieved by expanding the isolated pelvic venous plexus. Chronic pelvic pain halved from 7.2 ± 1.1 to 3.8 ± 0.6 points. With the defeat of the ovarian vein and pelvic venous plexus significant clinical effect is not achieved.

In the treatment of sulodexide (II group) in 93.6% of cases significantly decreased clinical signs and symptoms (pain, paresthesia, swelling of the feet, functional weakness). Improves venous circulation, increased venous tone, decreased levels of fibrinogen.

Conclusions. Conservative treatment of varicose veins of the pelvis using abdominal compression bandages is effective. The use of sulodexide reduces the symptoms of chronic venous insufficiency due to combined effect on the vascular wall and hemostatic system.

AB0200

FREE PAPER SESSION 9

Sensitivity and specificity of different D-dimer tests compared to ultrasound examination of deep vein thrombosis

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Background and aim. The aim of our study was to evaluate the sensitivity and specificity of three D-dimer tests (DDPlus Dade Behring, HemosIL, Vidas) compared to ultrasonography examination.

Material and methods. This study has been performed over the June 2013 until October 2014 period at the Clinical Center of Serbia. In our ambulance 800 patients with problems had been reported. Our surgeons by physical examination and history selected 110 patients who entered our study. In our study there were not pregnant woman included. All of them have undergone through the same protocol which was composed from: first, primary care physician systematically obtained patients' history and physical examination and subsequently referred patients to the laboratory to undergo D-dimer testing as second step. Finally, real-time CUS of the symptomatic leg was used as reference test in all patients.

Results. From 110 patients 5 patients were excluded from study because they had thrombosis of greater saphenous vein (GSV). Using CUS we have found thrombosis in 43 (40, 1%) of our patients (from which proximal localization had 26 [60, 5%] patients). Without thrombosis were 62 (59, 9%) patients. Comparing CUS with D-dimer tests we have found following sensitivity (Sn) and specificity (Sp): for Behring D-dimer test Sn 93, 0%, Sp 40, 0%, for HemosIL test Sn 84%, Sp 66% and for Vidas test Sn 95%, Sp 59%. Since the Vidas test has the greatest sensitivity value and the time needed to perform this test is significantly shorter comparing to the other tests it is used as the D-dimer test of the first choice in many laboratories worldwide.

Conclusions. The study results suggest that the addition of Vidas D-dimer tests to diagnostic algorithm could improve the management of the patients with suspected deep vein thrombosis in daily practice.

AB0292

FREE PAPER SESSION 9

Accuracy of venous filling index on standing (VFIST) and pure regurgitation index (PRI), a novel index obtained by air plethysmography, for detecting venous reflux

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Aim. To evaluate the accuracy of venous filling index on standing (VFIST) and a new index named Pure Regurgitation Index (PRI), obtained by air plethysmography, for detecting venous reflux.

Material and methods. One hundred and sixty-one healthy subjects (161 limbs) (NG) and 180 varicose vein patients (180 limbs) (VG) were investigated. All subjects underwent duplex ultrasonography for verifying venous reflux and air plethysmography to obtain hemodynamic parameters such as VFIST, VFI in the supine position (VFISu), and the maximum arterial inflow rate (maxAIR). Since VFIST is calculated as the sum of the venous regurgitant flow rate and arterial inflow rate, which are affected by body mass index (BMI), our novel index for quantifying pure venous reflux, described below, was created. Since the venous filling rate is considered to be affected by venous tone and venous volume, VFISu was used instead of maxAIR.

Pure Regurgitation Index (PRI) = (VFIST-VFISu) / BMI (mL•m²/s•kg).

To evaluate the accuracy of VFIST and PRI, receiver operating characteristics (ROC) curves were created.

Results. The mean values (range) of VFIST in the NG and VG were 0.739 (0.295–5.191) mL/s and 5.171 (0.962–17.78) mL/s, respectively. The mean values (range) of PRI were 0.029 (-0.020–0.149) mL•m²/s•kg and 0.180 (-0.004–0.600) mL•m²/s•kg, respectively. There were significant differences (p < 0.001) between the two groups in both parameters. The optimal cut-off value, sensitivity, specificity, and area under the curve (AUC), obtained from analyzing the ROC curves of VFIST vs. PRI were 2.058 mL/s vs. 0.059 mL•m²/s•kg, 93.3% vs. 90.3%, 88.8% vs. 91.3%, and 0.954 vs. 0.964, respectively.

Conclusions. This study indicates that while both VFIST and PRI are highly accurate indicators of venous reflux, PRI, which is not affected by arterial inflow rate and body mass index, is slightly superior to VFIST, especially in subjects with greater body mass index.

AB0071

FREE PAPER SESSION 9

Lymph node vein network (LNVN) at the groin: ultrasound assessment. Significance in primary and recurrent varicosis. Potential for diagnostic pitfall

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In the inguinal lympho-ganglionic lamina, closely related to the regional lymphatic nodes from the inguinal and sub-inguinal groups, there is a network of small caliber veins, mostly situated between the great saphenous vein (GSV) and the anterior accessory GSV (AAGSV), which has been named lymph node vein network (LNVN) by the UIP consensus document. Although it may display diverse anatomical and functional patterns on ultrasound scans, the LNVN is constantly present. Sonographers might not be aware about the presence and meaning of LNVN at the groin. Thus, findings while scanning may be missed, underestimated or misunderstood. With connections to

the GSV, AAGSV, other superficial veins and deep venous system, when incompetent the LNVN may not only be involved in primary superficial venous insufficiency (SVI) but in post-treatment varicose recurrence as well. It may explain at least 6% of primary GSV insufficiency and a significant percentage of groin recurrences. Evidence of the above-mentioned connections has been given not only by diagnostic imaging methods but also through anatomic dissections. If these venous connections remain intact after treatment for SVI, they may become routes for reflux. Vascular remodeling with dilation of pre-existing LNVN connections, as an adaptive response to the new hemodynamic scenario created after - either conventional or endovenous - SVI treatment, may result in ultrasound patterns which resemble those often described as neovascularization in medical articles. Post-surgical inflammatory neovascularization has been blamed - in variable percentages - for recurrent varicose veins, although this remains a controversial issue. Through schemes, animations and ultrasound images, this lecture presents a review of the topic from a practical point of view. It is an image-based presentation almost devoid of texts, with material from the recently published book: *Venous Ultrasound. A Comprehensive Approach. Lower Extremities and Pelvis. Atlas and Texts* by Dr. Miguel Lo Vuolo.

AB0319

FREE PAPER SESSION 9

Surgical strategy of Budd-Chiari Syndrome management

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Background. Budd-Chiari Syndrome is due to hepatic vein outflow obstruction caused by stomach bloating, hepatomegaly, ascites, lower extremity edema, progressive liver damage, GI bleeding and a series of clinical syndromes. According to the pathologic characteristics can be divided into three types, supra-hepatic inferior vena cava diaphragm give priority to narrow or occlude; inferior vena cava diffuse narrow or occlude; hepatic vein obstruction. After long term research and practice, aiming at different type, different states, we perform intervention treatment, shunt surgery and radical surgery, most patients could be cured, achieve long-term survive.

Material and methods. From April 2006-August 2012, a total of 118 patients were treated in our hospital. 77 male, 41 female, range from 2-78 years, mean age 35.4 years. Course from 20 days to 23 years. Surgical method include radical excision, cava-atria shunt, meso-atria shunt, meso-jugular vein shunt, meso-cava-jugular vein shunt, meso-cava shunt, periumbilical-jugular vein shunt, periumbilical-atria shunt, periumbilical-cava shunt, IVC balloon angioplasty, hepatic vein angioplasty, peritoneal cavity-jugular veins shunt, chest cavity- jugular vein shunt, etc. Preparation before the operation, correct hypoalbuminemia, correct electrolyte disorder, ascites venous retransfusion after filtering, improve liver and kidney function, make patient health adjusted to the best condition, reduce the risk of surgery. During operation, give digitoxin and diuretics to prevent cardiac dysfunction/heart failure, pay attention to protect liver and kidney function.

Results. With the patients are relatively complex, more than 50% of the patients had previous interventional or surgical treatment, some cases even had been treated by 3 to 4 times surgery. Surgical successful rate is 94.5%, perioperative death, 3 cases.

Conclusions. According to different types, different stage of the disease, we take the individual strategy, and apply some innovative method. The purpose is to simplify the surgical procedure, ensure safety, make patient get maximum benefits.

AB0309

FREE PAPER SESSION 9

Intravenous leiomyomatosis and leiomyosarcoma involving vena cava or iliac vein

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Background. Intravenous benign leiomyomatosis (LM) and leiomyosarcoma (LS) is very rare tumorous disease. Many LSs are often originated from uterine myoma, but LS may develop without uterine myoma.

Material and methods. Seoul national university hospital database from 1997 to 2014 were reviewed retrospectively. LM and LS cases were collected from medical records as intraoperative surgical findings and postoperative pathologic findings.

Results. Total 9 cases (5 LM, 4 LS) were identified as intravenous LM or LS. Two cases (1 LM, 1 LS) involved common iliac vein. All the patients were female except one. Mean age was 51.0 ± 17.1 . All LM patients had history of hysterectomy due to uterine myoma. None of LS patients was associated with uterine myoma. Mean operation time was 517.4 ± 330.2 (360.4 ± 97.1 in LM, 713.8 ± 431.1 in LS) min, and mean blood loss during the operation was 11431.2 ± 18879.0 (3462.5 ± 2626.6 in LM, 19400 ± 25600.9 in LS) ml. Two LM and 1 LS had mass extension into right atrium. Four LM and 1 LS were removed as R0 resection, but 1 LM and 3 LS were not resected completely. One LM and 3 LS were recurred, and reoperations were done in 1 LM and 1 LS. All patients except 1 LS were survived with a mean follow-up duration of 37.9 ± 38.8 months. Two mortalities were due to multiple organ metastasis and azotemia after palliative unilateral nephrectomy.

Conclusions. LM and LS are rare tumor of smooth muscle cell origin involving large veins, but they can lead different clinical courses. During the removal of this tumor causing vein occlusion and massive collaterals, the surgeons may encounter massive bleeding, intensive preparation before the operation is needed.

AB0138

FREE PAPER SESSION 9

Central venous interventions in patients with chronic renal failure: results and follow up in 40 patients

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Background. To analyze the effectiveness of central venous interventions as the primary treatment for central venous obstruction in patients undergoing hemodialysis.

Material and methods. Forty patients presented with symptomatic shunt dysfunction and arm swelling due to central venous obstruction. Technical success, complication, and patency rates were evaluated.

Results. Stent deployment was successful in all patients, and early rethrombosis (within 1 week) was not noted in any patient. Technical success to cross the lesion was there in 82%. Most of the failures were from the right sided obstructions. Nearly all patients who underwent plain balloon angioplasty had a recurrence within 4-6 weeks. 15 patients had a recurrence on follow up which was treated percutaneously with angioplasty alone in all the patients. The 3-, 6- and 12 month primary patency rates were 90%, 80% and 52% respectively.

Conclusions. In the treatment of central venous obstruction, stent placement shows excellent technical results and helps preserve vascular access for a substantial period. Multiple repeat interventions are, however, frequently required to maintain patency. Right sided obstructions are more difficult to treat than the left ones.

AB0332

FREE PAPER SESSION 9

Constitutional phlebopathy in patients with chronic cerebral ischemia

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Background. Chronic cerebral ischemia (CCI) is a stroke risk factor. Original vein tonus, constitutional and inheerited factors import in CCI rise.

Material and methods. 209 CCI patients and 30 controls matched for age and sex were examined. The patients groups with constitutional phlebopathy - 93 patients (44.5%) - and without constitutional phlebopathy - 116 patients (55.5%) - were determined.

Veins of Rosental (VR), tentorial sinus, internal jugular veins (IJV), ophthalmic veins hemodynamics were studied with ultrasonic scanner SSD-5500 ("Aloka", Japan) and Sono-line G-60 ("Siemens", Germany). Vmax, Vmin, Vmed, IR, Vvol, S were examined. Statistica 6.0 and Excel were applied.

Results. Internal jugular veins S at CCI exceeds the norm ($p < 0.01$). VR Vmax, Vmin, Vmed are higher and VR IR is lower in constitutional phlebopathy patient group, than in control group. Constitutional phlebopathy patients have IJV hypoplasia (24.7%) and valvular maldevelopment of IJV (100%). IJV valvular maldevelopment (27.2%) emerged in Valsalva test only. IJV Vmed, Vmin, Vmax are lower, IJV Vvol max and IR are higher in constitutional phlebopathy patient group than in control group.

100% constitutional phlebopathy patients turn out to have the backflow in ophthalmic veins in the sitting position.

Conclusions. By means of ultrasonic diagnostics it was shown that the changes in the blood flow parameters of veins levels of cerebral blood supply are forming a Doppler pattern of cerebral venous discirculation in patients under CCI with constitutional phlebopathy.

AB0021

FREE PAPER SESSION 9

Anticoagulant activity in pineapple (*Ananas comosus*) fruit extract

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Background. Anticoagulant is important in vascular medicine. However, the side effects of anticoagulant use are high. Alternative substance is needed. On the other side pineapples contain bromelain enzyme which prohibit the ERK-2 (extracellular signal-regulated kinase) pathway in the signal transduction involved in blood clotting. This study aims to prove that pineapple extract has anticoagulant activity *in vitro* and *in vivo*.

Material and methods. The study was conducted on 33 rats (*Rattus norvegicus*) divided into three groups; i.e. the positive control which was treated with EDTA, the negative control with the provision of water and the group which was treated with pineapple extract. All treatments were given per oral. The method used to measure antiplatelet activity was bleeding Time, to measure the activity of coagulation *in vitro* was clotting time, and clot retraction. The design used in this research was randomized post test only controlled group.

Results. Antiplatelet activity *in vivo* showed in bleeding time test results, which said that the group treated with pineapple extract had the bleeding time longer than positive and

negative controls. While on the clotting time, to examine the anticoagulant activity *in vitro*, the group treated with pineapple extract was longer but did not have significant difference compared to positive control. In the clot retraction test, the remaining serum produced in group treated with pineapple extract was more than the negative control although it is less than positive control.

Conclusions. In conclusion, pineapple extract has anti-coagulant and anti-platelet activity.

AB0314

FREE PAPER SESSION 9

Role of post-operative auscultation in AVF maturation

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Vascular access is the lifeline of a hemodialysis patient. Arterio-venous fistulas (AVF) and grafts are the current options for permanent vascular access for hemodialysis. Although there is an increased use of AVFs, a number of complications such as thrombosis, infection and stenosis have plagued the care of these accesses. Vascular access dysfunction is a major contributor to the overall morbidity and mortality of hemodialysis patients, hence placing a significant burden on the health care sector. In this light, the purpose of this study is to provide a cost-efficient way to predict the maturity of AVF by using an objective indicator such as a bruit.

This is a retrospective cohort study where a chart review of all patients with AVFs placed from January 2011 to July 2014 were done at the University of Santo Tomas Hospital. Among the 268 AVFs created, a total of 85 were included with a majority of males (62%) and a mean age of > 60 years old (51%). The most frequent cause for hemodialysis was Diabetic nephropathy (49%) and hypertensive nephrosclerosis (18%). Among the 85 eligible patients, 44 were included in the Auscultation (bruit) group, while 41 were included in the Non-Auscultation (no bruit) group. In the bruit group, 84% (n=37) of the AVF created matured. While in the no bruit group, only 60% of the AVF matured. The relative risk is 1.38 with p-value of 0.017.

Based on the data gathered, we conclude that by detecting a bruit immediately post-operatively, it may indicate that the AVF has an elevated chance of maturity and a reliable objective indicator of maturation. We strongly recommend auscultation immediately after AVF creation be used routinely as cost effective way to predict or increase the chance of AVF maturation and decrease burden among chronically dialyzed patients.

CHAPTER SOCIETY SESSION 9: VENOUS ASSOCIATION OF INDIA, INDIA

AB0378

VENOUS ASSOCIATION OF INDIA

Evaluation of long-term results of percutaneous treatment of central vein stenosis or occlusions in chronic kidney disease patients with AV-access

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Introduction. Stenosis or occlusions of central venous system are caused by wide spectrum of diseases which leads to

CVH which can be cause of av access malfunction or failure or closure. Such complications occur in 5-20% of access patients. The objective of our report is to evaluate the long term results of endovascular treatment of central venous stenosis and occlusion in patients with av-access.

Material and methods. In this retrospective study, the study population included 9 patients who demonstrated features of central venous hypertension and were treated from January 2013 to July 2014 at M.S.Ramaiah hospital. The group consisted of 6 males and 3 females ranging from age 30-75 years. In all the patients, the indication for PTA/ stenting was the edema of an upper extremity and dysfunction of the AV-shunt resulting in blood flow impairment and high venous pressure stenosis or occlusion which was diagnosed by means of venous duplex scanning.

Results. All 9 patients were monitored at 3, 6, 12 months. A complete response to the initial PTA occurred in 5 patients. 2 patients had a partial response to the initial PTA with an end point of AVF ligation in 1. One patient had minimal improvement after PTA and fistula ligation was required in it. In one patient PTA was technically unsuccessful as we failed to negotiate through tight stenoses. In one patient the PTA result was suboptimal (residual stenosis > 50%), stent was implanted. Primary symptom free period for complete response group was 7.2 months as compared to 3.6 months in partial response group.

Conclusions. PTA with possible stent implantation is a method of choice in the treatment of stenosis and occlusion of CVS. Despite the relatively frequent re-interventions, endovascular treatment is capable to preserve long-term function of av-access. PTA could provide symptomatic relief in patients that present with central venous stenosis and upper-extremity edema. Complications from PTA are infrequent. It offers a minimally invasive, first-line approach for a difficult problem in a patient population with significant comorbidities.

AB0245

VENOUS ASSOCIATION OF INDIA

MMP-1, MMP-2, MMP-9, MMP-13, TIMP-1, TIMP-2 in varicose vein

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Background. Many aetiological correlation has been described for formation of Varicose vein. Few studies in Western scenario have shown that matrix metalloproteinases and tissue inhibitors of matrix metalloproteinases have role in the pathogenesis of varicose vein but no such work has been done in Indian patients. The aim of this study was to study detailed histology of varicose vein and to see the expression of MMP-1, MMP-2, MMP-9, MMP-13, TIMP-1, TIMP-2.

Material and methods. 75 cases of varicose vein and ten control leg veins were included in this study. The venous tissue samples obtained at surgery were stained by Hematoxylin and eosin (H&E), Masson trichrome and Verhoeff's staining. Immunohistochemistry of varicose vein was done for MMP-1, MMP-2, MMP-9, MMP-13, TIMP-1, TIMP-2 antibodies. Cytoplasmic expression of various antibodies in various layers was graded as over expression or normal and absent.

Results. Focal intimal thickening (47.6%), increased medial thickening (73%) and fragmentation of elastin fibers (84.1%) were the major histological changes noted in H&E and special stained sections. MMP 1 was over expressed in 90% in all layers with 10% normal expression. MMP2 was not over expressed in any sample, 16% normal expression

and 84% had no expression. MMP9 was over expressed in about half samples while normal expression in rest of the samples. MMP 13 was over expressed in about 50% samples while rest showed normal expression. TIMP 1 and 2 were not expressed in any sample. These expressions were correlated with CEAP grade and it was found that MMP1, MMP9 and MMP 13 expression were almost 100% in C5-6 of CEAP grade.

Conclusions. Increased expression of MMP1, MMP 9 and MMP 13 plays an important association in varicose veins. Further expression of these are more correlated with increasing CEAP grade.

AB0052

VENOUS ASSOCIATION OF INDIA

Incidence of DVT in high risk neurosurgical Indian patients. Need of early chemoprophylaxis?

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Background. Deep venous thrombosis (DVT) is thought to be less common in Asians than in Caucasian population. The incidence of DVT in high-risk groups, especially the neurosurgical population has not been well studied. This leaves no firm basis for the start of prophylactic anticoagulation in the Indian neurosurgical patients. This is a prospective observational study to determine the early occurrence of DVT in the neurosurgical patients and to decide on need to use anticoagulation in the early post operative period.

Material and methods. We screened 138 consecutive high risk neurosurgical patients based on inclusion and exclusion criteria. The study progressed over one and a half years with consecutive patient selection. The femoral veins were screened using Doppler ultrasound on day 1, 3 and 5 of admission into the neurosurgical intensive care unit at the Christian Medical College and Hospital, Vellore, India.

Results. There has been a 4.3% (6/138) incidence of DVT with none of the six patients with features of DVT having signs and symptoms of pulmonary embolism. There was significant association with femoral vein catheterization.

Conclusions. There is a low incidence of DVT among the high risk neurosurgical population evaluated within the first 5 days of admission to Intensive Care Unit, limiting the need of chemical thrombo-prophylaxis to the high risk patients.

AB0162

VENOUS ASSOCIATION OF INDIA

Histopathological investigations on the great saphenous vein treated with endoluminal endofrequency ablation

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Background. Radiofrequency Ablation (RFA) system is a minimally invasive technique to produce endoluminal ablation of a varicose vein. There is not much data on the histopathologic effect of RFA on the human vein. In order to better understand the exact mechanism and sites of action of the device we studied in detail the histological changes in the vessel

wall of a great saphenous vein (GSV) after it was subjected to RFA.

Material and methods. We studied the effect of RFA on the human GSV. Vein was obtained as a left over piece from a patient undergoing coronary artery bypass grafting (CABG) and one varicose segment removed by phlebectomy. The RFA probe (VNUS, Covidien) was inserted into the vein, covered with warm packs at body temperature and the VNUS generator fired. The vein was then subjected to HPE.

Results. On gross inspection immediately during the RF application, the vein shrunk lengthwise and in diameter with marked narrowing of the lumen. On histology - focal edema of the media, modification of intercellular cement, loss of endothelium, separation and disruption with hyperplasia of the intima, delamination of the media, alteration of collagen, modification of the cell nuclei of the media and thermal coagulation of smooth muscle. The thermal effect was pan-mural and extending up to the adventitia.

Conclusions. We believe that these findings have clinical relevance. They will help us to manufacture better hardware and also to scientifically quantitate the specifications of a device. They may help us in improving our technique of ablation. This will lead to better efficacy and a reduction in the complication rate. This technique may also become a standard method to try out newer devices since it uses human saphenous vein.

AB0189

VENOUS ASSOCIATION OF INDIA

Optimising results with radiofrequency ablation

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Background. Radiofrequency Ablation (RFA) is now an established endovascular method of treating varicose veins. As with any procedure deviation from established protocols can result in sub-optimal results. Perfect planning prevents poor performance.

Methods. Optimisation of results will be discussed under the following heads:

a. The first step is of knowing the patient and the pathophysiology of the process. It is imperative to be honest with the patient at the very start regarding the results expected and the possibility of recurrence.

b. The next step is to know the correct time to intervene and perhaps even more importantly – when not to intervene.

c. A clear understanding of the ‘nuts and bolts’ of the machines required ie the ultrasound machine and the RFA machine. Exact anatomy, site of SFJ and SPJ, location of large perforators, accessory venous channels etc is mandatory.

d. The most vital for the surgeon is to know his own limitations and level of training – nosce te ipsum.

e. The technique of the procedure - from preoperative preparation, knowledge of endovascular techniques, asepsis and antisepsis, proper cannulation, adequate tumescent anesthesia, exact positioning of the catheter, and method of application of the pressure dressing. The devil is in the details. No step is minor or can be overlooked.

f. Early postop ambulation, Class II compression stockings, regular duplex scanning.

g. An accurate documentation – the duplex findings with diagram, CEAP Class, length of vein ablated, the vein treated, site of cannulation, duration of treatment, details of energy delivered, power settings etc should be clearly documented in the patient charts.

Conclusions. By a meticulous approach the results of RFA for varicose veins can be optimized.

AB0097

VENOUS ASSOCIATION OF INDIA

Venous thromboembolism risk and prophylaxis in the acute hospital care setting (ENDORSE), a multinational cross-sectional study: results from the Indian subset data

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Background and aim. Venous thromboembolism (VTE) is a major health problem with substantial morbidity and mortality. It is often under diagnosed due to lack of information on VTE risk and prophylaxis. The ENDORSE (Epidemiologic International Day for the Evaluation of Patients at Risk for Venous Thromboembolism in the Acute Hospital Care Setting) study aimed to assess the prevalence of VTE risk in acute hospital care setting and proportion of at-risk patients receiving effective prophylaxis. We present here the risk factor profile and prophylaxis pattern of hospitalized patients who participated in ENDORSE study in India.

Material and methods. In this cross-sectional study in India, all patients (surgical >18 yr, medical >40 yr) from 10 hospitals were retrospectively studied. Demographics, VTE risk factors and prophylaxis patterns were assessed according to the 2004 American College of Chest Physicians (ACCP) evidence-based consensus guidelines.

Results. We recruited 2058 patients (1110 surgical, 948 medical) from 10 randomly selected hospitals in India between August 2006 and January 2007. According to the ACCP criteria, 1104 (53.6%) patients [surgical 680 (61.3%), medical 424 (44.7%)] were at-risk for VTE. Chronic pulmonary disease/heart failure and complete immobilization were the most common risk factors before and during hospitalization, respectively. In India, 16.3 per cent surgical and 19.1 per cent medical at-risk patients received ACC Precommended thromboprophylaxis.

Conclusions. Despite a similar proportion of at-risk hospitalized patients in India and other participating countries, there was major underutilization of prophylaxis in India. It necessitates increasing awareness about VTE risk and ensuring appropriate thromboprophylaxis.

AB0093

VENOUS ASSOCIATION OF INDIA

Retrospective analysis comparing RFA and diode laser in the treatment of GSV

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730 patients who underwent endovenous ablation therapy for refluxing Great Saphenous vein between June 2011 and September 2012 were included in the study. 400 patients underwent ablation with 1470 nm diode laser and 330 were treated with Radiofrequency ablation. All patients were treated as outpatients in the office. Follow evaluations were performed at one month and three months, with clinical and ultrasound examination. Effective closure of the GSV was documented, as well as the Pain score in all patients, including the VCSS score. There was no difference in the closure of the GSV between RFA and diode laser. However the pain scores following the procedure were lesser in those undergoing RFA as compared to laser. In conclusion, both RFA and diode laser are equally effective in closure of the GSV in the short term.

AB0164

VENOUS ASSOCIATION OF INDIA

Effect of topical lidocaine and prilocaine cream on pain scores for endovenous laser ablation (EVLA) as a daycare procedure

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Aim. To study the effect of topical Toplap® cream (eutectic mixture of Lidocaine 2.5% and Prilocaine 2.5%) on pain scores in patients undergoing Endovenous laser ablation (EVLA) under tumescent anaesthesia.

Material and methods. Consecutive 100 varicose vein patients requiring laser ablation for truncal veins were included in the study. Topical Toplap® cream (eutectic mixture of Lidocaine 2.5% and Prilocaine 2.5%) was applied 60-90 minutes prior to procedure over the whole length of vein to be ablated and also over the superficial varicosities planned for hook phlebectomy. Endovenous laser ablation and hook phlebectomy was performed under tumescent anesthesia. Pain score was analyzed using visual analogue scale immediately post procedure.

Results. 100 patients underwent EVLA during the study period. Majority of patients were in higher CEAP classes. 78% patients underwent Hook phlebectomy along with EVLA. Peri-procedural average pain score using Visual Analog scale was 2.72. During a post procedural questionnaire, all patients opted for EVLA under same type of anesthesia if they needed it for the other limb.

Conclusions. For EVLA procedures under tumescent technique, use of topical Toplap cream appears to reduce the pain score.

Topical Toplap cream application for sufficient duration after preoperative marking significantly lessens the pain and improves patient's acceptance of the procedure.

AB0159

VENOUS ASSOCIATION OF INDIA

Anatomical variations of the saphenous fascia in the Indian population

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Background. The great saphenous vein has been described to run completely within a deep plane of the hypodermis which lies directly over the fascia covering the underlying muscles. This course easily seen by ultrasonography, described as the "saphenous eye" sign, is the sine que non for its correct identification, allowing the vascular surgeon to discriminate the GSV from large tributary veins that ascend along a parallel path. This has been documented in almost hundred percent of western population.

In our experience in the Indian population, the saphenous compartment is not complete in a significant percentage of patients. We thus conducted this study to determine the prevalence of this anatomical variation.

Material and methods. We conducted a prospective study on 50 male patients in a vascular surgery OPD, analysing the completeness of the saphenous fascia using ultrasonography. The completeness of the fascia was documented at the upper thigh, mid thigh, above knee, below knee and above ankle. When the fascia was found to be incomplete, the distal most level at which the fascia was complete was documented. Anatomical variations of the GSV as described in western literature was also recorded in our population.

Results. Of the cases screened, only 72% had the complete saphenous fascia. In the rest, the fascia was not complete and ended in the mid or distal thigh.

Conclusions. Physicians involved in endo-venous ablative therapy of veins should be aware of this frequent variation of saphenous fascia as it dictates the correct plane of injection of tumescence. The use of compression therapy and the compression pressures required may differ if the GSV lies outside the saphenous fascia.

AB0392

VENOUS ASSOCIATION OF INDIA

Managing cardiogenic shock

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A 70-year-old male, non-diabetic, non-hypertensive, had sudden onset of swelling from right calf to thigh of right leg. It was painful on examination his leg was tense and mildly tender. Patient had normal blood pressure 120/70 mmHg. His clinical diagnosis was made as deep vein thrombosis. He had no such past history and had no history of any other significant illness. Patient had come from long air travel of 10-12 hour duration in economy class (five to six days back).

His investigation showed slight increase in total leukocytes count with all other biochemistry reports being normal. His lower Doppler revealed acute deep vein thrombosis of right femora-iliac vein. He was given option of conservative management vs. catheter directed thrombolysis. With one hour of admission, before they could decide for a plan of action, patient had sudden hypotension and dyspnoea with systolic blood pressure of 50 mmHg. He was immediately resuscitated with intravenous fluids (IV fluids) and inotropes. His clinical diagnosis was made as acute pulmonary embolism. His X-ray was normal with ECG showing sinus tachycardia. His bed side echocardiography shows dilated left atrium and right ventricle (RA and RV) with tricuspid regurgitation. Pulmonary artery pressure (PA) of about 60-70 mmHg.

Since there was no time for any further evaluation, patient was immediately shifted to cath lab for pulmonary angiography. His left femoral vein was punctured and venogram was done. Which essentially revealed normal left femora-iliac venous system and normal inferior vena cava. His pulmonary angiography was done using 6F NIH catheter. Which revealed complete occlusion of right main pulmonary artery and normal left pulmonary artery with PA pressure of 75/40 mmHg. At that time, systolic pressure was 80/60 mmHg. We had an option of catheter directed thrombolysis, mechanical breaking the thrombus, thrombectomy, or surgical embolectomy. As patient was already in shock on the cath lab table, mechanical breaking of the thrombus was planned. At that time having no other option, catheter was exchanged with JL catheter and tried to break with wires and multiple balloon dilation using 4-8 mm balloons. This achieved partial recanalization of right upper right lobe of pulmonary artery and patient got relatively stable. Now, we had option of catheter directed thrombolysis in pulmonary artery or of popliteal vein, with decision yet to be taken for indication and timing for IVC filter. We first planned for IVC filter followed by catheter directed thrombolysis in popliteal vein. A cord is retrievable IVC filter was implanted via left femoral vein, below renal veins. This was followed by popliteal venogram, which revealed complete occlusion of popliteal femoral system. Simple catheter directed thrombolysis was given in pop-

liteal vein using streptokinase 300,000 bolus followed by 1lac units/hrs with heparin infusion of 800 units/h for 24-hours. This was followed by check angiography next day which showed normal looking popliteal-femora iliac venous system. At the same time started oral anticoagulation with overlapping of low molecular weight heparin, clexane 40 mg S/c B.D. He achieved therapeutic INR of 2 on the fourth day. Patient was discharged on the fifth day on stable condition. Hence his protein C, S and antithrombin III factor and Leiden factor being normal. We planned him to put on oral anticoagulation for six months, but after one month patient was lost to follow up. His filter could not be retrieved.

Deep vein thrombosis and pulmonary embolism are sudden killers. Treatment need to be individualised depending on multiple factors like age of patient, symptoms of patient, duration, coexisting disease and any evidence of pulmonary embolism. In this case, patient was successfully managed with mechanical thrombectomy of pulmonary embolus with partial recanalization and stabilization of vitals. This was followed by placement of IVC filter to prevent recurrent embolism in view of popliteal and femora-iliac thrombus, and for later catheter based thrombolysis was given. Patient was discharged in stable condition on oral anticoagulants.

Pulmonary embolism can be a life-threatening emergency with dramatic onset of hemodynamic collapse. Urgent treatment requires high index of suspicion and timely intervention in the form of catheter based or pharmacologic thrombolysis or rarely surgical embolectomy. In addition consideration needs to be given for placement of IVC filter to prevent recurrence in appropriate clinical scenario.

AB0111

VENOUS ASSOCIATION OF INDIA

Retrospective analysis of ultrasound study done on female patients for varicose veins

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From September 2013 to September 2014, 126 cases of female patient with varicose vein underwent ultrasound examination for the veins. Our prime focus of the study was that of the random patients of male and female arriving at our DIVAS setup. What was the number of female and how many of them had associated pelvic vein refluxes? We observed from our analysis that 28.57% (n=36) number of female patients having varicose veins had associated pelvic vein refluxes.

An increase in suspicion of refluxing pelvic vein, mainly ovarian vein and hypogastric vein was observed where varicosities were noted over medial and posterior thigh, gluteal region and vulvar varicosities. It was observed that only 30% of these patients complained of pelvic pain, whilst the rest had typical symptom of edema of the lower calf, ankle and foot, having night cramps, eczema and visible varicose veins.

The cases were studied by linear USG in standing and by trans- vaginal probe for ovarian veins carrying reflux.

Those patients who had refluxing GSV at SFJ or any level towards ankle with ovarian reflux were primarily treated for GSV thermal ablation and bunch phlebectomy +/- sclerotherapy and kept for follow up. 2nd group of patient with no GSV varicosity but multiple varicosities in lower limb with normal SFJ were taken for coil deployment and kept for follow up.

CHAPTER SOCIETY SESSION 10: LATIN AMERICAN VENOUS FORUM

AB0373

LATIN AMERICAN VENOUS FORUM

Occupational leg edema reduction and quality of life in the nursing staff of a hospital

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Background. It's established that the occupational leg edema is produced by remaining standing or sitting, and it generates a venous hypertension, liquid extravasation and therefore the venous symptoms. The aim of this study is to demonstrate the existence of the occupational leg edema and the analysis of the life quality (QoL) before and after a treatment in the nursing staff of a hospital.

Methods. 84 patients (83 women; 1 man) CEAP ≤ 2 , average 41 years (21min-72max), were randomized into 3 groups in which they were prescribed a phlebotonic and a compression stocking. Group 1: Venosan Compression stocking (C) class I 18-22mmHg (N=29); Group 2: Drug (D) Venosmil: Hidrosmin 200mg (N=29); Group 3: D and C: Venosmil: Hidrosmin 200mg and Venosan compression stockings 18-22mmHg (N=29). Each group was studied during a month: at the beginning of the treatment (day 0), after 2 weeks of treatment, and finally at the end of the month. A complete clinical history, a Duplex Doppler venous and arterial color ultrasound scan, volumetric measure of the leg by Dr. Rossi method and a quantification of the edema grade through the pitting method, was performed. In addition, a CIVIQ-20 (QoL) survey and a visual analogue scale (VAS) of pain and edema was carried out.

Results. The leg occupational edema volume was reduced in average 10.97 ml (2326.17ml to 2315.20 ml); by treatment type the volume decreased by 16.83 ml (D and C), 10.5 ml (C) and 5.59 ml (D). In addition, the percentage of patients without edema increased at the end of the treatment (32.5% vs. 70%). The pain and swelling VAS values were shrunk, (5.58/10 to 1.75/10), (3.92/10 to 0.71/10) correspondingly. The CIVIQ-20 global index increased 16.542 points (67.163/100 vs. 83.705/100 pts.) being statistically significantly (P value < 0.0001 Wilcoxon). However, it was not established a superiority in between the treatment types (P value < 0.651 Kolmogorov-Smirnova).

Conclusions. The existence of occupational leg edema was confirmed. The treatments increased the QoL, decreased the edema and the volume of the lower limbs at the end of the study, as well as the symptomatology was improve.

CHAPTER SOCIETY SESSION 11: CHINESE VASCULAR SOCIETY, CHINA

AB0358

CHINESE VASCULAR SOCIETY

Cancer clearance for "unprovoked" venous thromboembolism cases from four Chinese hospitals

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Aim. To verify the significance of prospective serum cancer markers clearance program for primary venous thromboembolism (VTE) cases.

Methods. During 1 July 2010 within 31 Dec 2013, data from four Chinese vascular centers was prospective registry. All the cases diagnosed as primary VTE by first vascular physicians were underwent serum cancer markers clearance. Long term follow up was required to confirm real cancer occurrence and long term survival rate. A total of 212 cases (164 male and 48 female) were enrolled in this study. Mean age was 55 \pm 12 years old.

Results. Twenty three cases (10.85%) were finally scanned as malignant. The sensitive of markers: carcino-embryonic antigen (CEA) 0.70, carbohydrate antigen (CA) 199 0.54, CA242 0.31, CA153 0.56, CA125 0.84, CA724 0.12, combined markers 0.96. The specificity of above markers was 0.97, 0.98, 0.98, 0.97, 0.92, 0.98 and 0.82. CA 125 showed best sensitive and specificity as a sole marker. The positive likelihood ratio for markers: CEA 22.83 (95%CI 7.62-71.40), CA199 18.21 (95%CI 4.54-87.23), CA242 12.43 (95%CI 4.22-72.23), CA153 19.12 (95%CI 3.43-53.22), CA125 9.54 (95%CI 3.43-20.44), CA 724 5.37 (95%CI 1.19-18.14), combined of markers 6.23 (95%CI 3.56-12.34). The negative likelihood ratio for markers: CEA 0.32 (95%CI 0.14-0.86), CA199 0.45 (95%CI 0.24-0.88), CA242 0.69 (95%CI 0.44-0.95), CA153 0.45 (95%CI 0.29-0.75), CA125 0.22 (95%CI 0.10-0.45), CA 724 0.89 (95%CI 0.79-1.10), combined of markers 0.26 (95%CI 0.01-0.54). CEA+CA125 showed better positive and negative likelihood ratio. 6 months, 12 months and 24 months survival rate for malignant (23 cases) and non-malignant (189 cases) were 52.6%, 42.3%, 28.2% and 99.5%, 98.7%, 98.7% respectively.

Conclusions. It is reasonable to screening malignant for "unprovoked" VTE cases. Combined multiple serum cancer markers showed best result. CA125 plus CEA showed acceptable result for some limited condition. CA50 was useless for cancer screening.

AB0359

CHINESE VASCULAR SOCIETY

Different treatments for iliac venous compression syndrome with acute deep venous thrombosis

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Background. Iliac venous compression syndrome (IVCS) often manifests itself as deep venous thromboses of left lower extremity, disfunction of the venous valves, varicose vein, post-thrombus syndrome (PTS), and so on. There were no very effective approaches to treat the chronic complications of IVCS, such as PTS. However, if the IVCS with acute deep venous thrombus was treated in time, the results were satisfactory.

Aim. To investigate suitable treatments for IVCS with acute deep venous thrombus.

Material and methods. The study enrolled 35 patients, who complained of acute left leg edema and the circumferences of whose bilateral lower extremities were equal previously. Before the operation plans were decided, the venography through dorsal vein of foot was given. 6 patients with isolated iliac vein thrombus and 29 patients with extensive deep venous thrombus were distinguished. The retrieval filters were placed for all patients. For the patients with isolated iliac vein thrombus, the femoral vein was punctured, the wire was passed through common iliac vein, and then balloon angioplasty and stent-graft was given. IVCS was diagnosed when the stenosed iliac vein was expanded with balloon. For the patients with extensive deep venous thrombus, right femoral vein was punctured, and the catheter-directed thrombolysis was indicated. If failed, the femoral vein was exposed, thrombectomy was given, and the balloon angioplasty and stent-graft were carried out at the stenosed segment of iliac venous. After the thrombus was drawn out using Fogarty catheter, IVCS was

diagnosed by venography through iliac vein. Patients were followed up for 15 days before the filter was retrieved. The detumescence percent of left lower extremity were calculated by (post-operation circumference of the left lower extremity on the Xth day circumference of the right lower extremity)÷(pre-operation circumference of the left lower extremity circumference of the right lower extremity). The detumescence percent of the left lower extremity was calculated at the level of thigh, calf, and ankle respectively.

Results. For 6 patients with isolated iliac vein thrombus, 10 balloons were used, 6 stents were implanted. All these patients were diagnosed as IVCS during the operations. The detumescence percent on the 7th day was 92%, and 98% on the 15th day. For 29 patients of extensive deep venous thrombus, the thrombolytic catheter was succeeded in 6 patients. The detumescence percent on the 7th day was 40%, and 64% on the 15th day. The other 23 patients underwent thrombectomy, balloon angioplasty and stenting. 28 balloons were used, 21 stents were placed. 22 patients were diagnosed as IVCS during the operations. The average amount of thrombus acquired during the operation was 18ml. The detumescence percent on the 7th day was 90%, and 96% on the 15th day.

Conclusions. The incidence of IVCS in the patients with deep venous thrombus was underestimated. In order to avoid post-thrombus syndrome, IVCS with acute deep venous thrombus needs radical treatments.

AB0360

CHINESE VASCULAR SOCIETY

Varicose vein surgery without antibiotic prophylaxis: experience with 664 patients in a single center

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Aim. Our objective was to evaluate the outcome of varicose vein surgery without the use of prophylactic antibiotics. This study was held from January 2011 to August 2013 in our hospital.

Methods. A total of 664 varicose vein surgery patients were retrospectively reviewed and basic data were recorded, including age, sex, peri-operative antibiotic use, classification of the varicose, and post-operative complications. All the patients were underwent the the great saphenous vein for high ligation and varicose vein stripping. The drain was not routinely placed. Any complications were analyzed.

Results. A total of 392 (59%) females and 272 (41%) males were included, giving ratio of 1.44:1. The average age was 50.68 years. The mean operation time was 45.3 min. Classification including II 267 (40.2%), III 331 (49.8), IV 47 (7.1%), V 19 (2.9%). 106 had temporally nerve paralysis. 68 had subcutaneous induration, and only eight had wound infection (1.2%).

Conclusions. Antibiotic prophylaxis in varicose vein surgery is not an essential pre-operation preparation for all patients, if guidelines for antibiotic prophylaxis in clean surgery are adhered to and surgeons have sophisticated skills in the procedure.

AB0377

CHINESE VASCULAR SOCIETY

Catheter-directed thrombolysis for acute iliofemoral deep vein thrombosis

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Aim. To investigate the effect of the catheter-directed thrombolysis (CDT) for acute iliofemoral deep vein thrombosis.

Methods. 41 patients with acute iliofemoral deep vein venous thrombosis were performed the treatment of CDT via trans popliteal vein. 16 patients with pulmonary embolism were implanted with inferior vena caval filter. 22 patients underwent balloon dilatation in iliofemoral venous. The average time of thrombolysis with urokinase was 72 hours.

Results. There was no death after the operation and no appearance of serious pulmonary embolism. All the swelling leg was mostly fade away. At 3-month follow-up, the iliofemoral venous of 32 patients restored its flow and there are still 9 patients suffer the common Iliac vein stenosis. The mean Villalta score was 3.2±3.5.

Conclusions. The CDT for acute iliofemoral deep vein thrombosis was safe and effective.

AB0363

CHINESE VASCULAR SOCIETY

The perioperative care of inferior vena cava filter implantation and transcatheter thrombolysis

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Aim. To explore the clinical value of perioperative standardized nursing of deep venous thrombosis in the lower extremity by applying inferior vena cava filter placement and transcatheter thrombolysis.

Material and methods. Review of 245 cases patients in our hospital with deep vein thrombosis since 2010, 140 cases of men, 105 cases of women, aged 25-80 years. 204 cases in left leg, whereas the other 41 cases in right leg, which were treated by inferior vena cava filter implantation and transcatheter thrombolysis. Standardized nursing were managed for these cases in the perioperative period.

Results. All patients were successfully managed by the implantation of inferior vena cava filter and transcatheter thrombolysis. The clinical symptoms of all cases improved significantly, subsequent angiography revealed that venous thrombosis completely disappeared in 220 patients and partial recanalization in 25 patients. No pulmonary embolism and other adverse reactions occurred in any patients.

Conclusions. For patients with deep venous thrombosis, by standardized perioperative care and monitor of vital signs, the patients stay in bed and raise the limbs. The incidence of pulmonary embolism can be avoided largely by vena cava filter implantation. To discover the situation after close observation of the puncture site, the presence or absence of complications, standardized care, can promote postoperative recovery, improve the cure rate and reduce the days of hospital stay.

AB0369

CHINESE VASCULAR SOCIETY

Percutaneous puncture catheter-directed foam sclerotherapy of ovarian varicocele: early results

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Aim. Foam sclerotherapy of the ovarian varicocele is a relatively new and promising treatment option for patients with axial reflux. Its usefulness may be limited by low primary occlusion rates. We present a standard technique for catheter-directed foam sclerotherapy, which facilitates foam delivery

precisely to its intended site of action and potentially improves occlusion rates.

Methods. A selective series of 13 females, mean age 39.4 years, of the ovarian varicocele were treated with foam sclerotherapy using a standard technique for foam delivery from 2008 to 2009. Patients were treated with 1% polidocanol foam through a catheter, which was inserted percutaneously over a guidewire into the trunk of vena ovarica. All successfully treated patients were examined by colour duplex 1 to 12 months after the procedure.

Results. 13 patients with an insufficiency reflux of the vena ovarica were treated with the catheter-directed foam sclerotherapy. Primary technical success was achieved in all the patients. The concentrations (1.0%) and doses (4-9 ml) of polidocanol was mainly we used. Mean follow-up time was 5.3 months. Pelvic cavity flatulency was totally released in 12 patients, 1 was partly released. 2 of the 5 patients whom had algopareunia were recovered, 3 patients who combined with perineal region varicosis were extenuation. During follow-up, the trunk of the vena ovarica were all occlusion.

Conclusions. The use of percutaneously catheter directed foam sclerotherapy over a guidewire is feasible and has resulted in high primary occlusion rates

AB0364

CHINESE VASCULAR SOCIETY

Foam sclerotherapy for reticular phlebectasis of lower extremities: efficacy, safety and cost-effectiveness using Aethoxysklerol (polidocanol) in comparison with endovenous laser treatment

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Aim. The problem of reticular phlebectasis in the lower leg is a common disease and associated with long-term morbidity. The aim of this paper is to report our own series of patients treated by Aethoxysklerol (polidocanol) (POL) for the chemical ablation of reticular phlebectasis of lower extremities.

Material and methods. A total of 41 patients between 18 and 69 years old with reticular phlebectasis in the lower limbs after high ligation with stripping of great saphenous veins were enrolled. Patients were randomized into two groups at 1- and 3-month follow-up, one receiving 1% Aethoxysklerol and the other group receiving endovenous laser treatment (ELT). Graduated compression stockings were used in both groups for 3 months. Occlusion rates and clinical scores were assessed by blinded examiners. Incidence of procedure-related side effects (pain, hyperpigmentation) and complications (burn, infection, deep vein thrombosis, paresthesia and necrosis of skin) were recorded. Cost-effectiveness as cost per quality-adjusted life-year (QALY) gained.

Results. Foam sclerotherapy and endovenous laser treatment were successfully performed in all of the patients. At 1, 3 months' follow-up, 94%, 96% and 98% of reticular phlebectasis were fully occluded, 4%, 2% and 1% were partly occluded. 85%, 90% and 96% of patients noted complete symptom resolution, respectively. Ablation rates were higher for POL ($p < 0.001$) than for ELT.

There were no significant differences in side-effects between the two treatments. The cost-effectiveness analysis showed that POL had the relatively high probability ($\approx 80\%$) of being cost-effective.

Conclusions. Considerations of both the clinical outcomes and the cost-effectiveness suggest that foam sclerotherapy should be considered as the treatment of choice for suitable patients.

AB0365

CHINESE VASCULAR SOCIETY

Etiologic analysis and clinical experience of recurrent varicose veins

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Aim. To summarize the etiologic factors and evaluate the clinical outcome of reoperations of 187 limbs of recurrent varicose veins.

Methods. Retrospective analysis of the etiologic factors of 187 limbs (181 patients) of recurrent varicose veins admitted to our hospital from January 2007 to December 2014. All patients underwent color Duplex ultrasonography, ascending venography and descending venography of lower extremity for etiologic reasons and were treated by individual project of reoperations.

Results. In the 187 limbs, 143 limbs 76.4% had residual main great saphenous veins or tributaries, 152 limbs 81.3% had incompetent perforator veins, 43 limbs (23.0% had neovascularization, 14 limbs 7.5% had incompetent small saphenous veins, 26 limbs 13.9% had incompetent femoral veins, 11 limbs (5.9% had iliac vein compression syndrome, 1 limb 0.5% had Budd-Chiari syndrome. All limbs underwent reoperations by individualized project. The cure rate of varicose veins were 100%. Follow-up for 6-72m (35.2m), no recurrence of varicose veins, VCSS postoperation 0-5 1.2 ± 0.5 vs. preoperation 1-17 6.3 ± 2.4 there was significant difference $P < 0.01$.

Conclusions. Residual and incompetent great saphenous veins or tributaries and incompetent perforator veins were the main etiologic factors of recurrent varicose veins. Therapeutic principle of recurrent varicose veins is to eliminate the reverse flow of superficial vein system and ligation of incompetent perforator veins. It is very necessary to treat the main cause for secondary varicose veins.

AB0366

CHINESE VASCULAR SOCIETY

Endovascular treatment of recurrent Budd-Chiari Syndrome in China: the availability and efficacy

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Aim. The aim of the study was to identify risk factors of recurrence in IVC-type Budd-Chiari syndrome (BCS) managed by angioplasty and stenting, analyse causes of the recurrent cases and evaluate the feasibility and primary outcomes of endovascular therapy for recurrent BCS after percutaneous angioplasty and stenting.

Methods. Firstly, we retrospectively studied 219 patients with IVC type of BCS who were treated with PTA and stenting in our centre from January 2007 to December 2014. Multivariate retrospective analysis was performed using characteristics recorded at the time of diagnosis to explore risk factors of recurrence.

Results. 219 patients were diagnosed with BCS. 172 patients with primary BCS underwent percutaneous recanalization were performed with further analyses. Of them, there were 28 patients suffered recurrence. And there 144 cases had a good patency during follow-up period. The baseline characteristics of patients were listed and compared. Multivariate analysis yielded the age, Child-Pugh score, MELD and total bilirubin as independent recurrent indicators after stenting. A total of 25 patients with recurrent BCS who underwent percutaneous recanalization, with few complications and a high

short- and mid-term patency, suggesting endovascular treatment of recurrent BCS is an available and efficient therapy.

Conclusions. Age, total bilirubin and severity of liver failure are the main risk factors in BCS recurrence. The possible recurrent mechanisms of BCS include thrombosis in the stent, restenosis or re-occlusion in or above the stent, new septum formation above the stent and stent caused HV obstruction. For the recurrent BCS after stenting, endovascular therapies, including CDT, angioplasty and stenting, are an effective and safe management and yield a positive long-term outcome.

AB0371

CHINESE VASCULAR SOCIETY

Iliac vein compression is not equal to iliac vein compression syndrome — a prospective study of 500 non-vascular-related symptomatic patients' population

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Aim. It is the purpose of this prospective study to determine the incidence of iliac vein compression syndrome (IVCS) in an asymptomatic population.

Methods. A totally 500 patients who were informed consented with non-vascular related symptoms was enrolled in our study. The degree of compression of the left common iliac vein was calculated, and follow-up has proceeded. The compression degree $\geq 25\%$ was used as the diagnostic criteria of iliac vein compression, while the diagnostic criteria of IVCS was existed iliac vein compression and affected vascular events.

Results. 37.8% of patients had a compression degree greater than 25% while 9.8% greater than 50%. There was a significant difference between men (17.82% \pm 18.19%) and women (25.9% \pm 19.9%) in the compression degree of the LCIV ($P < 0.01$). In addition, the LCIV compression degree of the youth women group (41.51% \pm 16.51%) has a statistically significant difference ($P < 0.001$) when compared with middle-aged women group (22.87% \pm 19.10%). We found no difference in the compression degree of common iliac vein in tumor and non-tumor group. The incidence of IVCS and DVT in the follow-up period was 0.71% and 1.43%, respectively.

Conclusions. Iliac vein compression was found widespread in the non-vascular related symptomatic patients, but 90% of them were asymptomatic. The incidence of IVCS was low. Iliac vein compression is not equal to IVCS, it is merely the one of predisposing factors of IVCS, and need no intervention without symptoms.

AB0367

CHINESE VASCULAR SOCIETY

Evaluation of non-permanent inferior vena cava filter placement in patients with deep venous thrombosis after lower extremity fracture: a single center retrospective study

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Objectives. To evaluate the effectiveness of non-permanent inferior vena cava (IVC) filter in preventing peri-operative pul-

monary embolism (PE) for lower extremity and/or pelvic bone fracture patients with deep vein thrombosis (DVT).

Methods. Lower extremity or pelvic bone fracture patients with lower extremity DVT in our hospital from January 2003 to October 2014 were retrospectively analyzed. An elaborate registration system was established to track patients who underwent filter placement for appropriate follow-up and filter retrieval. Data was analyzed by age, gender, position of fracture, position of thrombus, filter implanting, complications, retrieval rate, rates of entrapped clot. Patients were divided into IVC filter group and control group (no filter implantation). The incidence of perioperative symptomatic PE and mortality were analyzed using the chi-square test.

Results. Totally 41577 patients with pelvic and/or lower extremity fracture underwent orthopedic surgery in our hospital between January 2003 to October 2014, among which, 2763 cases complicated with lower extremity DVT conformed by ultrasonography. Among them, 1700 were excluded to the filter therapy, and 1063 patients accepted filter implantation. There were 823 non-permanent filters (205 temporary filters and 618 retrievable filters) were applied. All filters were successfully deployed with no major complications. After a mean 14.2 days indwelling time, all of the temporary filters were removed on schedule. Retrieval were attempted in 556 patients who undergone retrievable filter implantation and were successfully retrieved in 545 (98%) cases. Mean indwelling time was 16.3 days in these cases. Retrieval was not attempted in the remaining 62 patients because of ongoing contraindication to anticoagulation ($n = 20$), lost of follow-up ($n = 24$), failed catheter directed thrombolysis (CDT) therapy due to large trapped thrombi within the filter ($n = 18$). The total retrieval rate was 90% (556/618). Symptomatic PE occurred in 35 patients, achieved PE ratio of 0.10% (1/823) as 2.00% (34/1700) in the filter group and control group. Totally 14 patients died of acute PE, and the mortality rates were 0% (0/823), 0.82% (14/1700) in the two groups, respectively. The incidence of symptomatic PE and mortality in the filter group were significantly lower than those in control group.

Conclusions. Non-permanent IVC filter placement is a safe and effective method for preventing peri-operative symptomatic and fatal PE in pelvic and/or lower extremity fracture patients with DVT.

A restricted follow-up system and starting anticoagulant therapy as early as possible right after the operation may contribute to the improvement of the retrieval rate.

AB0368

CHINESE VASCULAR SOCIETY

Outcome of endovascular treatment of iliac vein compression syndrome in Yunnan province of China

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Aim. To retrospectively evaluate the outcome of endovascular treatment in patients with iliac vein compression syndrome (IVCS).

Materials and methods. Between January 2010 and January 2013, 42 consecutive patients with the non-thrombosis iliac vein compression syndrome were evaluated for outcome of endovascular treatment.

Results. Technical success was achieved in all patients (100%). Primary and secondary patency rates were 98.7% and 100% at 2 years. Resolution of symptoms was achieved in 36 of 42 patients (85%) with the marked relief of pain and swelling

at 24 months. The healing of venous ulcer at was 82.1%. Major complication was seen in one patient (3%).

Conclusions. Endovascular treatment the iliac vein compression is emerging as a safe and effective alternative to traditional open surgery.

FREE PAPER SESSION 10: VARICOSE VEIN IV

AB0250

FREE PAPER SESSION 10

Role of injection pressure, flow and sclerosant viscosity in causing cutaneous ulceration during sclerotherapy

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Background. The objective of the study is to evaluate the viscosity of popular sclerosants and their flow hydrodynamics through a syringe/needle to further discuss Hiroshi Miyake's old, venous-capillary reflux theory using additional objective data (Cutaneous necrosis caused by sclerosing agents: experimental study in rabbit ears' veins; University of Sao Paulo, 1972).

Material and methods. The following sclerosing agents were tested in the study: 75% dextrose (D75%); 50% dextrose (D50%); 5% ethanalamine oleate (Etha5%); 0.5% laureth-9 (Aet0.5%) and 0.1% sodium tetradecyl sulphate (STS0.1%). Using 5 mL syringes and 27G needles, the resulting pressures and flows for each sclerosant agent were measured. To do this, a three-way stopcock was connected between the syringe and the needle so that an arm of the stopcock could be used to measure injection pressures with a digital monitor in 1 mmHg increments. Two trials were performed: in trial 1, the syringe was attached to a Samtronic 680 infusion pump and in trial 2, the solutions were injected manually.

Results. The observed sclerosant viscosities were as follows: D75%: 0.28 Poise; D50%: 0.12 Poise; Etha5%: 0.10 Poise; Aet0.5%: 0.07 Poise; and STS0.1%: 0.04 Poise. In trial 1 (constant flow), it was observed that D75%, which had the highest viscosity of the sclerosants tested, had the highest pressure readings. In trial 2 (constant pressure), the flow obtained with the D75% solution was lower than the flow of the other solutions.

Conclusions. Based on the rabbit study theory, vessel size and sclerosant viscosity and strength, not extravasation, play a role in causing ulceration from injection sclerotherapy. As a result, they all affect the potential of venous-capillary reflux being caused by sclerotherapy injection and, thus, the risk of postsclerotherapeutic cutaneous ulceration.

AB0219

FREE PAPER SESSION 10

Combined surgical and foam sclerotherapy for management of acute bleeding reticular varicose veins

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Background. Combined surgical and polidocanol foam sclerotherapy for management of acute bleeding reticular varicose veins (v.v) of the lower limb was used in this study inspite of literature to avoid because of risk of DVT.

Material and methods. Clinical prospective study in-

cluding 125 patients with mean age 43 years, were diagnosed as having acute bleeding reticular varicose veins clinically and with duplex examination. Blood tests for bleeding tendency was done They were treated with elastic bandage local compression as the first line of treatment to give time for stable crust and skin creeping ,then Duplex Scanning to detect patency and competency of deep , perforators and superficial venous system. Sapheno-Femoral disconnection(SFD)was done in incompetent group and preoperative polidocanol foam sclerotherapy 0.5 to 1 % using easy foam syringes ,Veinlite and 4X loop magnification and following patients clinically and with veinlite and Duplex at one week, 1, 3, 6, months for complications, recurrence and incidenc of DVT was reported.

Results. 75 males and 50 females with acute perforative and ulcerative bleeding. STP was noted distally in 35 cases. Thirty four patients had previous SFD with bleeding from ankle area and chin of the tibia, 14 without SFJ reflux with bleeding from lateral aspect of the thigh and 77 with SFJ reflux with bleeding from ankle area and medial side of the leg. In these 77 cases surgery was don under spinal anesthesia plus intraoperative foam sclerotherapy of bleeding reticular v.v. Maximum dose of foam was 10 ml. No recurrence of bleeding and no DVT.

Conclusions. There was no report of using foam sclerotherapy during surgery as a treatment of acute bleeding (v.v). The technique is simple, safe and effective.

AB0183

FREE PAPER SESSION 10

Delivery of external therapeutic ultrasounds over foam injected troncular veins, increase sclerosis efficacy

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Background. Exists recently a new therapeutic approach to locally deliver drugs. Consists in the intravenous injection of microbubbles loaded with the therapeutic agent, and the external local application of high power ultrasounds (HP-US) allowing to shears movements, resonance and implosions of these microbubbles, causing the sonoporation or rupture of the underlying endothelium, and thereby applying locally the drug. In phlebology, we apply into varicose veins stationary bubbles formed by a detergent, which we think, acts by injuring the endothelium of veins. Because the foam is placed only a few centimeters below the skin, we have the opportunity to externally apply HP-US, searching for a greater endothelial irritation.

Materials and methods. The foam was prepared by the double connector (i2M-Labs) or Tessari method, using etoxiesclerol (Kreussler) diluted in 5% dextrose solution and using a mixture of CO₂/O₂ (70/30%) (Carbueros-Metalicos). After foam injection, through catheterized troncular (>3mm) varicose veins, filled veins were identified by ultrasonography, and during the time that the patient remains motionless, HP-US were applied, from a therapeutic US source (Therasonics® 460).

Results. 38 procedures were practiced, in 16 extremities from 12 (C2-C6) patients. Treating ten great and four small saphenous veins, 14 accessories veins (two with a diameter >1.5 cm), 3 perforators and 7 newly formed veins. The HP-US was applied for 12.5 ± 4.7 minutes at 0.6 ± 0.09 W/cm². No adverse effects were observed. Compared to our reported previous experience, a significant (p < 0.011) increase in complete venous obstruction has been obtained. The deep venous system remains ever permeable.

Conclusions. The local application over foam filled varicose veins of moderate power US is devoid of side effects and significantly improve the obstructive power of sclerosants at less concentration. But, we need to optimize the HP-US parameters (power, time), standardized foam and perform a randomized comparative trial with the standard treatment.

AB0141

FREE PAPER SESSION 10

Six-month clinical outcomes of a randomised controlled trial comparing mechanochemical ablation to radiofrequency ablation: the multicentre Venefit™ versus ClariVein® for varicose veins (VVCVV) trial

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Background. Endovenous techniques are currently the recommended choice for truncal vein treatment. However, thermal techniques require tumescent anaesthesia, which can be uncomfortable during administration. Non-tumescent non-thermal techniques would therefore have potential benefits. We have previously reported the periprocedural outcomes for a randomised controlled trial comparing the patients experience while receiving mechanochemical ablation (MOCA) or radiofrequency ablation (RFA). This study reports the longer term clinical outcomes.

Materials and methods. Patients attending for primary varicose vein treatment were randomised to receive MOCA (ClariVein®) or RFA (Covidien® Venefit™). The most symptomatic limb was randomised. The primary outcome measure was intra-procedural pain using a validated visual analogue scale. Secondary outcome measures included were change in quality of life and clinical scores.

Results. One hundred and seventy patients have been randomised (51% in the MOCA group). All the baseline characteristics, including demographics, CEAP classification, clinical scores and quality of life (QoL) scores were similar. The VCSS score at 1 month was 2.7 for the MOCA group compared to 3.3 for the RFA group ($p=0.279$), while, at 6 months, the corresponding scores were 2.3 for MOCA and 2.5 for RFA ($p=0.614$). The EQ-5D scores were 0.810 for MOCA at 6 months compared to 0.714 for RFA ($p=0.103$). The 6 month AVVQ was again similar between the two groups at 6 months (12.7 for MOCA compared to 14.1 for RFA; $p=0.611$).

Conclusions. The previously reported results show that MOCA is less painful than RFA procedure. However, at 6 months the clinical and quality of life scores were similarly improved in both treatment groups.

AB0151

FREE PAPER SESSION 10

Early experience on the use of cyanoacrylate to treat patients with symptomatic long saphenous vein incompetence

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Aim. The objective of this study was to evaluate the safety and efficacy of endovenous injection of cyanoacrylate (VenaSeal, Saphenon) in treating symptomatic varicose veins.

Material and methods. Patients with varicose veins due to duplex-proven incompetent LSVs and underwent endovenous cyanoacrylate injection were recruited. Primary outcome measures included occlusion of the treated vein segment. Patients received post-operative follow up venous duplex at 1 week, 1, 6, and 12 months. Secondary outcome measures included: post-operative pain, ecchymosis, venous severity score, Aberdeen varicose vein questionnaire, quality of life Questionnaire (as measured by SF36) and side-effects or major events from this treatment modality.

Results. Thirty-three incompetent LSVs (mean diameter 0.9 (range 0.6-1.1 cm) in 17 patients (4 males, median age 62.6 (range 39-78) from September 2014 to January 2015 were included (CEAP: C3-20, C4a-10, C4b-1, C5-1, C6-1). All the procedures took place under local anaesthesia in our minimally-invasive surgical centre, without the use of tumescence anaesthesia. All the patients were ambulatory immediately post-operatively and discharged on the same day. Median follow-up period was 1.28 (range 0.26-3.52) months, and no deep vein thrombosis was detected. All the treated LSV were successfully obliterated, with the mean LSV stump of 2.68 (range 0.8-6.5cm) cm. Mean post-operative pain score was 0.82 (range 0-3; normal 0-10). Ecchymosis scores were 23 with no bruises, 9 mild bruising and 1 moderate bruising. Mean scores preoperatively and 1 month postoperative for: venous severity score, Aberdeen varicose vein questionnaire, SF36 (physical health), SF36 (mental health) were: 7.3 to 2.2 (Student's t test: $p<0.001$), 24.9 to 5.0 ($p<0.001$), 44.8 to 44.0 ($p=0.751$), 58.9 to 56.1 ($p=0.094$) respectively. There were no side-effects or major events, but one patient developed minor wound infection treated with antibiotics.

Conclusions. Our short-term experience showed that endovenous cyanoacrylate injection for LSV incompetence was safe and effective. Longer term results are anticipated.

AB0222

FREE PAPER SESSION 10

A new gluing modality for insufficient saphenous veins

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Background. Gluing of veins is discussed as being superior to thermo-occlusive methods or sclerotherapy. The first approved gluing method uses continuous placement of larger amounts of aggressive, resin-like and hardly absorbable cyanoacrylate (VenaSeal). It is limited to saphenous veins below 12 mm Ø and to the effect of external manual compression. These drawbacks could be overcome by a new modality which combines pointwise gluing for vein wall adhesion and catheter sclerotherapy for rapid endothelium denaturation.

Materials and methods. In 21 patients undergoing phlebectomy, 38 non-branched vein segments of 10 - 20 cm in length and 6 - 12 mm in diameter (mean: 8.5 mm) were selected to receive gluing: vein segments were closed by ligature at one end and provided with a vascular access sheath at the other end. A novel coaxial catheter system (ScleroGlue) was introduced and foam sclerotherapy (Aethoxysklerol 1%, 1+4 with air) performed. After 1 minute the foam was evacuated and pointwise gluing in 5 cm intervals performed using modified acrylates under negative pressure to keep the vein walls tightly attached. After 5 minutes the treated vein segment was removed from its in-situ position and preserved for histological evaluation.

Results. In 35/38 vein segments histology showed total denaturation of the endothelium, while in 3/32 vein segments denaturation was 93-99%. 82 of 91 glued spots

(90.1%) were strongly cohesive when exposed to forces of up to 10 N. The amount of glue used was 3-6 mg (mean: 4.6 mg) per cm vein.

Conclusions. The ScleroGlue technology seems to provide reliable denaturation and economical gluing, achieved without any external compression and using very low glue quantities. Clinical studies are intended as soon as an approved, truly bioresorbable glue becomes available.

AB0075

FREE PAPER SESSION 10

Controversial topics in diagnosis and therapy of varicose veins of lower extremities

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Venous surgery is developing very fast last years and many techniques which were considered as "gold standards" some years ago have different alternatives now leading to same or even better results in diagnosis and treatment. It is the case of chronic venous insufficiency of lower extremities presenting mainly as varicose veins.

During the 39th Phlebological days with international participation held in November 2014 in Hradec Kralove, Czech Republic the discussion on different topics in this field was organised among participating specialists from different european countries. Seven important themes were discussed:

- What is the optimal procedure for ultrasound examination of the superficial venous system?
- Local or general anesthesia in surgical management of varicose veins - what's better?
- Saphenous ligation – is it still a golden standard procedure in the surgical treatment of truncal varicosis?
- Optimal endovascular treatment of truncal varicosis - laser of radiofrequency?
- Surgical treatment of calf perforators – is it really necessary?
- Superficial varicophlebitis - conservative or surgical treatment?
- Relapses of junctions - surgical revision or foam sclerotherapy?

Every session was followed by secret auditorium voting using electronic devices and this paper will present the most important arguments of specific speakers and the results of auditorium voting.

AB0326

FREE PAPER SESSION 10

Venous thromboembolic complication after endovenous thermal ablation for varicose veins: report from Japanese endovenous ablation committee for varicose veins

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Introduction. Endovenous ablation for varicose veins (EVA) has been popular after approval of 980nm laser device by the Japanese insurance system in 2011. However incidence

and importance of venous thromboembolic (VTE) complication of EVA is not clear, yet.

Methods. Survey of VTE after EVA was performed among the Japanese Endovenous Thermal Ablation Committee approved institutions from 2011 to 2013. Details were also obtained for the cases with endovenous heat induced thrombosis (EHIT) class 3, 4, any deep vein thrombosis (DVT) or pulmonary embolism (PE).

Results. Data of 43203 cases was obtained from 143 institutions. Total reported VTE were EHIT2: 318 cases, EHIT3: 51 cases, EHIT4: 7 cases, PE: 3 cases, any other DVT: 24 cases. Incidence was 1.0% in EHIT 2, 0.10% in EHIT3, 0.013% in EHIT4, 0.0067% in PE, and 0.06% in any other DVT. Detail of seven EHIT4 were followings: Origin of varices were GSV in 6 cases and SSV in 1 case. Onset was from POD #4 to # 45 days (average 15.8days). Most proximal site of EHIT4 was iliac vein in 3 cases, femoral veins in 3 cases and popliteal veins in 1 case. Venous duplex before onset of EHIT4 was performed in 6 cases, demonstrating no DVT in 3 cases, EHIT2 in 2 cases and EHIT3 in 1 case. Details of PE was followings: Patients were 46 to 68 y/o females. Origin of varices were left GSV in 1 case and bilateral GSV in 2 cases. Two cases were massive PE with hypotension and hypoxia in POD #1 and another was non-massive PE with dyspnea in POD# 4. All cases were treated mainly by anticoagulation with uneventful course.

Conclusions. VTE complication after EVA was rare. Post-operative venous duplex scan can predict occurrence of EHIT4 to some extent, but not PE.

AB0162

FREE PAPER SESSION 10

Histopathological investigations on the great saphenous vein treated with endoluminal endofrequency ablation

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Background. Radiofrequency Ablation (RFA) system is a minimally invasive technique to produce endoluminal ablation of a varicose vein. There is not much data on the histopathologic effect of RFA on the human vein. In order to better understand the exact mechanism and sites of action of the device we studied in detail the histological changes in the vessel wall of a great saphenous vein (GSV) after it was subjected to RFA.

Material and methods. We studied the effect of RFA on the human GSV. Vein was obtained as a left over piece from a patient undergoing coronary artery bypass grafting (CABG) and one varicose segment removed by phlebectomy. The RFA probe (VNUS, Covidien) was inserted into the vein, covered with warm packs at body temperature and the VNUS generator fired. The vein was then subjected to HPE.

Results. On gross inspection immediately during the RF application, the vein shrunk lengthwise and in diameter with marked narrowing of the lumen. On histology - focal edema of the media, modification of intercellular cement, loss of endothelium, separation and disruption with hyperplasia of the intima, delamination of the media, alteration of collagen, modification of the cell nuclei of the media and thermal coagulation of smooth muscle. The thermal effect was pan-mural and extending up to the adventitia.

Conclusions. We believe that these findings have clinical relevance. They will help us to manufacture better hardware and also to scientifically quantitate the specifications of a device. They may help us in improving our technique of ablation. This will

lead to better efficacy and a reduction in the complication rate. This technique may also become a standard method to try out newer devices since it uses human saphenous vein.

AB0283

FREE PAPER SESSION 10

Varicose vein surgery without antibiotic prophylaxis: experiences with 664 patients in a single center

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Aim. Our objective was to evaluate the outcome of varicose vein surgery without the use of prophylactic antibiotics. This study was held from January 2011 to August 2013 in our hospital.

Methods. A total of 664 varicose vein surgery patients were retrospectively reviewed and basic data were recorded, including age, sex, peri-operative antibiotic use, classification of the varicose, and post-operative complications. All the patients were underwent the great saphenous vein for high ligation and varicose vein stripping. The drain was not routinely placed. Any complications were analyzed.

Results. A total of 392 (59%) females and 272 (41%) males were included, giving ratio of 1.44:1. The average age was 50.68 years. The mean operation time was 45.3 min. Classification including II 267 (40.2%), III 331 (49.8), IV 47 (7.1%), V 19 (2.9%). 106 had temporally nerve paralysis. 68 had subcutaneous induration, and only eight had wound infection (1.2%).

Conclusions. Antibiotic prophylaxis in varicose vein surgery is not an essential pre-operation preparation for all patients, if guidelines for antibiotic prophylaxis in clean surgery are adhered to and surgeons have sophisticated skills in the procedure.

AB0123

FREE PAPER SESSION 10

Ambulatory venous pressure studies and its correlation with CEAP grading of varicose veins

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Background. In a normal limb, during ambulation, there is a fall in venous pressure as the calf muscle pump and unidirectional valvular activity propel the blood from the lower limb to the heart. Failure of this mechanism results in ambulatory venous hypertension predisposing to varicose veins. The study aimed at studying the lower limb ambulatory venous pressure in various CEAP grade.

Materials and methods. Ambulatory venous pressure (AVP) measurements was carried out in 67 limbs. Limbs were classified according to CEAP grading. Four groups were made as Group 1 (CEAP 0): 7; Group 2 (CEAP 1, 2): 24; Group 3 (CEAP 3, 4): 21; Group 4 (CEAP 5, 6): 15. For pressure measurement, dorsal foot vein was cannulated with a cannula and connected to Physiograph through a pressure transducer filled with heparinized saline. Patient performed 10 tip toe exercise.

Results. Median ambulatory venous pressure (Pamb) showed a progressive increase from Group 1 (18 mm Hg) to Group 2 (51.5 mm Hg) to Group 3 (69 mm Hg) to Group 4 (91mm Hg). Recovery time for 50, 75 and 90% recovery of pressure after cessation of exercise were significantly low-

er while the percentage recovery in first 4 seconds was significantly higher in the Group 4. Pressure relief index (PRI) showed a significant stepwise decreasing trend from group 1 to group 4. The prevalence of ulceration increased significantly with increasing Pamb, decreasing RT90 recovery and PRI. No parameters showed significant difference between different anatomical patterns of competence.

Conclusions. AVP correlates with the clinical grading of CEAP classification of varicose veins but not with anatomical sites of incompetence. Pressure relief index, recovery time intervals and mean AVP are the important parameters that can help in identifying and grading of clinical severity of the disease.

AB0394

FREE PAPER SESSION 10

Endovenous laser ablation with 1470 nm laser and radial fibers in varicose vein surgery

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Aim. To demonstrate the outcome and side effects after endovenous laser ablation (EVLA) of refluxing great saphenous vein (GSV) with a 1470 nm diode laser (Ceralas E 1470 nm, biolitec) and the 2ring radial fiber (ELVeS Radial 2ring™, biolitec®).

Methods. Between November 2011 and March 2013, 150 legs in 150 consecutive patients where treated by EVLA for GSV incompetence using a 2ring radial fiber. All patients were randomized into 3 groups. Group A had no postoperative compression. Group B used postoperative compression with a thigh-length graduated compression stocking (23-32 mmHg) for 7 days and Group C used the same kind of stocking for 28 days postoperatively. Investigations where performed clinically and by duplex ultrasound by an experienced phlebologist prior to intervention (screening visit), day of intervention (D0) and at follow-up visits at day 7 (D7) and 28 (D28) after the procedure for side effects, complications and occlusion.

Results. At day 28, 4 patients were lost to follow-up, 2 in group A and 2 in group B. All GSVs showed complete occlusion without early recurrence of reflux within 28 days. The pain score in group A reduced from 1.4 on the day of the intervention to a mean of 0.9 at days 1-7 and to 0.5 at days 8-28. In group B and C the corresponding values were 1.0, 0.4, 0.4 and 1.5, 0.6, 0.4. The difference between groups A and B for D1-7 was significant (p=0.009). 83%, 79% and 86% in groups A to C did not develop any postoperative pain and 88%, 88% and 92% did not use any analgesics accordingly. The resolution of varicose vein tributaries without additional treatment was observed 76%, 69% and 88% in groups A to C. No significant differences between the groups appeared for return to normal activity, return to work, satisfaction with the treatment, leg circumference and for the improvement in VCSS and Villalta scales.

Conclusions. EVLA of GSV with a radially emitting 2ring laser fiber using a 1470 nm diode laser is a safe and efficient treatment option. In comparison with other studies using a bare fiber and lower wavelengths postoperative pain and ecchymoses are reduced. Wearing a compression stocking after the procedure only slightly reduces pain within the first week. Taking the very low pain levels in account post-treatment compression may not be necessary if modern treatment devices are used. Staged strategy for varicose veins superficial branches can be recommend.

FREE PAPER SESSION 11: VARICOSE VEIN V

AB0031

FREE PAPER SESSION 11

Safe and effective ablation at low linear endovenous energy density using 1470nm diode laser with radial two-ring fibers

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Background. To investigate the efficacy and safety of endovenous ablation at low linear endovenous energy density (LEED) by 1470nm diode laser with radial two-ring fiber, our recent clinical experience is reported.

Materials and methods. A total of 510 cases of endovenous laser ablations for varicose veins of lower extremities were consecutively performed by single surgeon from April through November in 2014. All patients were retrospectively reviewed. Mean age was 63.6±12.0 years old. There were 196 males and 314 females. In terms of preoperative CEAP classification, 160 patients (31.4%) were in class 4 or worse. All patients were divided into two groups. Group-A consisted of 310 patients who were treated with 1470nm diode laser using radial two-ring fibers. Group-B consisted of 200 patients treated with 980nm diode laser using bear fibers. Although basic patients' characteristics did not show significant difference between two groups, LEED was 47.8±8.0 J/cm in Group-A and 66.8±9.2 J/cm in Group-B respectively ($p<0.001$). Medium-term results of the patients in two groups were compared.

Results. Averaged follow-up period was 82.8±18.3 days. No mortality or major morbidity was recorded in both groups. Class 2 or worse endovenous heat induced thrombosis (EHIT) was not found in both groups. Class 1 EHIT were found with 1 patient in Group-A and 5 patients in Group-B ($p=0.0399$). Recanalization or incomplete occlusion of saphenous vein was recorded with one patient in both groups. Post-operative pain needed additional dose of analgesia was found with 1.3% of patients in Group-A and 7% in Group-B ($p=0.036$). Post-operative extensive subcutaneous hemorrhage was found with 2.7% of patients in Group-A and 32.5% in Group-B ($p<0.001$).

Conclusions. Ablation at low LEED by 1470nm diode laser with radial two-ring fiber yielded the excellent medium-term results with less post-operative complications than 980nm diode laser with bear fiber.

AB0139

FREE PAPER SESSION 11

Medium term results of endovenous laser ablation of the great and small saphenous vein incompetence with a 1470 nm laser and radial fiber

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Backgrounds. Endovenous Laser Ablation is one of the thermoablative techniques recommended for the treatment of saphenous vein incompetence. Many reasons and updated literature validate this orientation. The aim of this study was to assess medium-term results concerning efficacy, taking into account the occlusion rate of the saphenous trunk and the postoperative pain.

Materials and methods. This study was performed with

a 1470nm laser and radial fibers. 372 (310 great and 62 small saphenous veins) consecutive patients with GSV and SSV echocolor Doppler confirmed insufficiency referred to the Centre between May 2008 and December 2011 were included in the study. The technique followed a standardized protocol: the laser was set in the continuous mode with a power of 5-6watts; the energy to be delivered was calculated following the X 10 rule (diameter in mm x10) for the trunk and the X 20 rule for the junction.

Results. A persistently occluded saphenous trunk and a competent sapheno-femoral stump at the echocolor Doppler examination were considered an excellent result. The 62 SSV incompetence had an excellent result with a stable occlusion of the trunk and a competent sapheno-popliteal stump. The 310 GSV incompetence showed a persistently occluded saphenous trunk, but 37 (12%) of them had a refluxing sapheno-femoral stump with 2 symptomatic varicose veins along the anterior accessory saphenous vein. 2/3 of the patients suffered no pain and did not use any analgesics.

Conclusions. Using this technique we can obtain a 100% of occlusion of the saphenous trunks and a 100% of competent sapheno-popliteal junction. We observed a very low incidence of recurrent varices along the AASV. Some non-optimal ECD results (isolated refluxing stump 8% and refluxing AASV 2%) without varices or symptoms are still under evaluation because at longer follow up, may eventually result in a failure.

AB0169

FREE PAPER SESSION 11

Endovenous laser ablation 1470/1560 nm in a series of 4000 procedures: optimal treatment protocol

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Background. Endovenous laser ablation of saphenous veins still has some controversies in optimal laser wavelength, treatment protocol and types of fibers.

Materials and methods. 4000 EVLA procedures, CEAP C2-C6. GSV 75.5%, SSV 6.5%, AASV 9%, GSV+SSV 3.5%, GSV+AASV 5.5%. Treated veins with diameter more than 15 mm - 13.8%. Endovenous laser ablation was performed on an ambulatory basis with tumescent anesthesia and diode lasers 1470/1560 nm and radial fibers (Biolitec, Germany). We used standard treatment protocol: continuous mode with power range 5-10 Watts, automatic fiber pull-back speed 0.7 mm/sec and LEED 70-140 J/cm. Before each procedure we performed measuring of the real laser power at the fiber tip with "Ophir" power meter. In postoperative period we evaluated the occlusion rate, visual-analogue scales of the pain (0-10; day 1-5), duration of analgesics, endothermal heat induced thrombosis (EHIT) and local complications. Ultrasound imaging was performed on 1, 7, 14 days and 6 months after EVLA.

Results. Recanalizations were observed in 1.5% of the patients, but after routine measurement of laser power before EVLA the occlusion rate became 99.5%. Analgesics took only 6% of the patients on the first day after EVLA. Visual-analogue scales of the pain (0-10) showed very low levels of pain: day 1 - 1.2; day 2 - 0.7; day 3 - 0.3; day 4 - 0.2; day 5 - 0.2. Endothermal heat induced thrombosis revealed in 1.4% of patients in two first weeks: EHIT II - 1.2%, EHIT III - 0.2%. No deep vein thrombosis or pulmonary embolism occurred. No persistent pain or paresthesia occurred in the follow-up.

Conclusions. EVLA 1470/1560 nm with radial fibers is

highly effective, safe and painless procedure in the treatment of incompetent saphenous veins.

AB0178

FREE PAPER SESSION 11

Ex-vivo investigations of innovative fibres for use in endoluminal vein treatment procedures

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Background. During the last decade, endoluminal laser treatment (ELT) has been rapidly developing. Protocols using radially emitting ELT fibres in combination with infrared laser light show clinical advantages over the bare-fibre technique and near infrared irradiation. Although the clinical response rate is high several side effects occurred. Innovative light application systems and feedback systems are therefore being under development to potentially improve the clinical situation.

Material and methods. The irradiation patterns of bare fibres and radially emitting 1-ring and 2-ring fibres were measured using the goniometer technique. Additionally, ray-tracing simulations were performed for these different fibre geometries to identify possibilities for optimization. The device robustness, device handling and tissue effects were investigated using the established ox-foot-model. Furthermore, temperature measurements were performed either intraluminally within the irradiation field using a tiny temperature sensor and on the outer surface of the vessel wall by means of a thermocamera.

Results. The comparison of ray-tracing simulations and measurements identified improvement potential especially with regard to surface polishing. All fibres showed sufficient mechanical and thermal robustness. The destruction threshold is far beyond the light powers employed during clinical application. The 1-ring fibre showed very high peak temperatures for a short time, while the 2-ring-fibre hold its somewhat lower maximum temperature for a longer time. Both forms of energy application resulted in the desired shrinkage and destruction effect. In this regard, the handling of the 2-ring fibre appears subjectively more convenient with reduced sticking-related problems.

Conclusions. In this model acute tissue effects could be investigated, supporting to improve the understanding of the mechanisms and especially of the interaction between handling, manoeuvres and tissue effects. In comparison to other fibre systems the 2-ring radially emitting fibre in combination with IR laser light and specific application parameters showed improved handling and safety features.

AB0100

FREE PAPER SESSION 11

Early results of endovenous laser ablation of varicose veins with 1470 nm laser and radial 2 ring fiber

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Aim. Endovenous laser ablation (EVLA) with a 1470-nm diode laser was covered by Japanese National Health insurance in 2014. The aim of this study is to report early results of a single-center experience with EVLA of the saphenous varicose veins with 1470 nm laser and radial 2ring fiber.

Material and methods. From June 2012 to November 2014, 601 patients (715 limbs) with primary varicose veins were treated with 1470nm laser (Ceralas E1470/15W, CeramOptec GmbH, Germany) and radial 2ring fiber fiber (ELVeS Radial 2ring™ fiber, CeramOptec GmbH, Germany). Laser energy was administered at 10W of power with constant pull-back of laser fiber under tumescent local anesthesia. The patients were assessed by clinical examination and venous duplex ultrasonography at 24-48 hours and one month follow-up postoperatively.

Results. Mean operating time, length of treated vein and linear endovenous laser energy were 34 minutes, 30 cm and 87 J/cm, respectively. Major complications such as deep vein thrombosis and skin burns were not seen. There were 3 limbs (0.4%) of pain and 3 limbs (0.4%) of bruising of the treated area. There were 40 limbs (5.5%) of endovenous heat-induced thrombus (EHIT). Occlusion rate at one month was 100%.

Conclusions. EVLA for saphenous varicose veins with a 1470 nm laser and a radial 2ring fiber resulted in less postoperative pain and bruising. This procedure is a minimally invasive, safe and efficient treatment as an outpatient procedure.

AB0157

FREE PAPER SESSION 11

EVLA vs. miniphlebectomy of the extrafascial veins

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Background. EVLA is an effective and safe option in the treatment of incompetent saphenous veins. But in cases with "S"-type of GSV incompetence on the thigh to avoid phlebitis, pain and pigmentation it was considered to use miniphlebectomy for extrafascial tributaries. Our previous study demonstrated that during EVLA for complete damage of the venous wall it is necessary LEED more than 72 J/cm or EFE more than 33 J/cm². 2Ring™ radial fiber allows to use high energy without any carbonization. We compared high energy EVLA with 2Ring™ radial fibers of direct extrafascial GSV tributaries on the thigh with Varady's miniphlebectomy.

Material and methods. 40 patients (40 legs) with S-type of GSV incompetence. In group A (N=20) was performed EVLA of GSV and EVLA of extrafascial segment on the thigh. Mean diameter of extrafascial tributary was 7.5±2.2 mm, length 25.3±6.2 cm. In group B (N=20) was performed EVLA of GSV and Varady's miniphlebectomy of extrafascial segment. Mean diameter of extrafascial tributary was 7.0±1.3 mm, length of segment 26.2±5.8 cm. EVLA was performed with tumescent anesthesia and diode laser 1470 nm (Ceralas 15E, Biolitec) and 2Ring™ radial fibers. In group A we used the following parameters: mean power was 7.2±1.0 W (6-10W), pull-back speed 0.5-0.7 mm/sec, LEED 105±21.8 J/cm (90-182), EFE 48.5±9.0 J/cm² (32-56). In postoperative period we evaluated visual-analogue scales of the pain (days 1, 7, 30), hematomas, paraesthesias, pigmentations and occlusion rates.

Results. In Group A (EVLA) we found significant reduction of postoperative pain and haematomas compare to Group B. The occlusion rate was 100% in both groups. There was no significant difference between groups in paraesthesias and pigmentations rates.

Conclusions. EVLA 1470 nm with 2Ring™ radial fibers of GSV extrafascial tributaries on the thigh accompanied with significant reduction of postoperative pain and haematomas compare to miniphlebectomy.

AB0116

FREE PAPER SESSION 11

Biochemical endothelial injury detection of sapheno-femoral junction in endovenous laser ablation of varicose veins

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Background. Thrombus formation and extension to femoral or popliteal veins and pulmonary embolism may be thought as a complication of EVLT in varicose veins treatment we aimed to study the thermal energy effect of the procedure under standardized conditions on biochemical markers of platelets and endothelium activities.

Material and methods. 25 patients admitted to vascular surgery department of Alexandria armed forces hospital with varicose veins and GSV. Reflux and all treated by endovenous laser ablation during: 7/1/2013_12/25/2014. Venous blood samples were taken from iliofemoral and antecubital veins, before during and one day after surgery of P-selectin, soluble thrombomodulin, fibrin degradation products and D-dimer.

Results. There was no immediate rise of P-selectin and sTM in iliofemoral nor antecubital veins, where FDPs D-dimers were significantly elevated post operatively in the tow regions.

Conclusions. 980 pulsed mode diode laser doesn't induce measurable endothelial and platelets activation in iliofemoral region during endovenous ablation of varicose veins.

AB0172

FREE PAPER SESSION 11

New technique in the treatment of large saphenous veins without requisite tumescent anesthesia: the LAFOS technique (laser-assisted foam sclerotherapy) - French Society of Phlebology

J.-L. Gillet

French Society of Phlebology, France

Background. The LAFOS technique is a new approach in the treatment of large (saphenous trunk > 0.8 cm) incompetent great (GSV) and small (SSV) saphenous veins.

Material and methods. The Sclerolux Holmium laser Ho:HAG 2100nm is the only laser able to reduce the diameter of the vein with no damage to the endothelium, before performing foam sclerotherapy.

The Holmium laser leads to an immediate and significant reduction of the vein diameter (1st step) transforming the large vessel into a smaller one that can be treated with a limited volume of sclerosing foam (2nd step) with better chance of success.

This technique is an in-office procedure. No tumescent anesthesia is required.

Procedure:

- Access vein with a short catheter (17-18G).
- Insert optical fiber.
- Perform shrinkage of the collagen fibers of the media by delivering light energy with a pulsed Ho:HAG holmium laser (5 W max average power with max 500mJ per pulse).
- Inject a relatively small volume of sclerosing foam. On average:

GSV : 5-6 mL of polidocanol 3% foam

SSV: 2-3 mL of polidocanol 2% foam

Preliminary results (Frullini A et al, Phlébologie (French) 2013)

50 patients were enrolled in a pilot study.

A complete occlusion was observed in all patients at one-month follow-up.

No complication was reported.

Personal Experience: At 6 months and 1 year, the clinical results remained excellent. We observed no complication. In some patients a small recanalization (2-3 mm) was observed and was easily treated with a direct injection of sclerosing foam (closed needle technique).

Conclusions. The immediate reduction of the vein caliber makes possible treatment of large veins with small volume of sclerosing foam.

The LAFOS technique could represent a true enhancement of foam sclerotherapy of large saphenous veins, allowing better immediate occlusion rate and possibly a better outcome.

AB0005

FREE PAPER SESSION 11

Clinical results of endovenous laser ablation using low linear endovenous energy density combined with high ligation for great saphenous varicose veins

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Background. This study was designed to analyze the efficacy and complications in endovenous LASER Ablation (EVLA) with 1470nm diode lasers using low linear endovenous energy density (LEED) combined with high ligation for varicose veins.

Methods. We retrospectively analyzed 116 limbs of 102 patients who received operations due to great saphenous varicose veins. 30J/cm of LEED with a constant speed of 2mm/sec were delivered by a 1470 nm diode LASER machine. The sapheno-femoral junction was ligated with a small inguinal incision. The complications and status of great saphenous vein (GSV) were checked at 1 month and 6 months, postoperatively.

Results. There were 51 male limbs (43.9%) and 65 female limbs (56.1%). The median age was 56 years (IQR 45.63). The occlusion rates of the GSV were 98 (84.5 %) at 1 month and 116 (100%) at 6 months, postoperatively. The rate of partial occlusion was significantly higher in males than females ($p = 0.004$). There were two deep vein thrombosis (1.7%), 27 feelings of cord (23.3%), 36 skin numbness at the knee area (31.0%) at 1 month postoperatively, and three feelings of cord (3.4%), and 6 instances of skin numbness (8.6%) at 6 months, postoperatively. The diameter and depth of GSV did not affect the rates of feeling of cord and numbness ($p = 0.728, 0.208, 0.247, 0.884$, respectively).

Conclusions. EVLA with 1470nm diode laser using low LEED combined with high ligation for great saphenous varicose vein has lower complication rates and higher occlusion rates of GSV.

AB0161

FREE PAPER SESSION 11

Interest of hypnosis in endovenous thermal treatments: a preliminary prospective study

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French Society of Phlebology, France

Background. Hypnosis has been suggested as efficient safe means in reducing discomfort and adverse effects during

medical procedures. We tested this assumption for patients undergoing percutaneous endovenous thermal procedures in a prospective, single-center study.

Material and methods. 20 patients were selected a row to receive intraoperative hypnotic relaxation (mean age 54 years; 55% woman).

Patients rated their pain and anxiety on 0–10 scales before and after the procedures.

No patients knew in advance that they would have a self-hypnotic relaxation.

Results. The mean pain score was only 2.2 for the procedure itself (VASP 0-10; 10 max).

Before the treatment the mean anxiety score was 3.95 (scale 0-10; 10 max), and decrease to 0 for all patients during the procedure except one who gave 1.

All patients were very satisfied to receive intraoperative hypnotic relaxation.

Conclusions. It's interesting to note that anxiety is reduced in all cases and the patients are very satisfied by the presence of the hypnotic therapist; the patient's comfort is greatly improved as well as the doctor.

A randomized study would be very interesting to carry out in order to compare endovascular procedures with or without hypnosis and the effects on pain, anxiety and discomfort.

AB0196

FREE PAPER SESSION 11

The comparison of clinical outcomes of current surgical stripping *versus* endovenous radiofrequency ablation for superficial venous insufficiency of the great saphenous vein: a retrospective single-center experience

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Background. Endovenous radiofrequency ablation of superficial saphenous vein insufficiency have replaced old fashioned conventional ligation and stripping as a alternative technique. The purpose of this study is to compare the long term treatment outcomes of current surgical stripping *versus* endovenous radiofrequency ablation for superficial venous insufficiency of the great saphenous vein.

Material and methods. Between July 2009 and June 2014, RFA was performed to treat varicose vein on 288 limbs in 251 patients and current surgical stripping under duplex sono and tumescent anesthesia was performed on 57 limbs in 54 patients. All patient were symptomatic and diagnosed as varicose vein and underwent level 2 clinical classification with color duplex scan. Post-operative follow up was performed after 1 week, 6 month, and then yearly.

Results. There was no significant difference in age, gender ratio, and risk factors before procedure and surgery such as history of diabetes, hypertension, smoking, CVA, myocardial infarction and renal failure between the two groups. There was no significant difference between mean used tumescent solution (RFA 244.44±44.04cc vs surgical stripping 187.05±53.67cc, p=0.12). There was no significant difference in occlusion rate at 60 month between groups (RFA 94.3% vs surgical stripping 92.1%, p=0.08). No major complications were occurred except one deep vein thrombosis after surgical stripping.

Conclusions. Both endovenous radiofrequency ablation and current surgical strippings are effective methods for superficial venous insufficiency of the great saphenous vein.

AB0329

FREE PAPER SESSION 11

SEPS as a new choice in severe refractory cases of leg ulcers and report about present condition of IPV treatment in Japan

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As a new method for treating refractory leg ulcer cases with chronic venous insufficiency due to IPVs (insufficient perforating veins), SEPS (Subfascial Endoscopic Perforating Vein Surgery) was proposed in the 1990s in Europa and America. But now, PAVs (percutaneous ablation of perforators) and sclerotherapy are provided instead.

The major reasons of a decline of SEPS are as follows: the first reason is technical difficulties of SEPS, and the second reason is that SEPS cannot be done as a day surgery. However, it is well known that SEPS can handle IPVs surely, and long-term results are superior and less complications of maneuver than the other methods.

Our SEPS procedures have been so simplified over the last 12 years by Japanese society for endoscopic therapy of venous disease (J-SEPS), and the most important key point was to change the access port. The name of this port is EndoTIP® cannula, which was developed by the Karl Storz Company in Germany. All of the installments, which we use for our Two Port System SEPS, were originally designed for laparoscopic cholecystectomy operation. Another point was the increase of choice for energy devices such as ultrasonic coagulation and cutting devices or vessel sealing system to sever IPVs.

Consequently, SEPS was authorized as the national advanced medical treatment by the Japanese Ministry of Health, Labor and Welfare in May, 2009 for the chronic venous insufficiency of C4b-C6 patients, according to the CEAP classification. From April 2014, SEPS has been fully covered by the national insurance system.

The aim of this study is to show our “simplified SEPS” operation procedures, which point out the differences from the original method by Peter Gloviczki and to report about the present condition of IPV treatments in Japan.

AB0207

FREE PAPER SESSION 11

Our experience of radiofrequency ablation of varicose veins

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Background. The efficacy of different devices for varicose veins has been sparingly assessed. We tried to evaluate different RF Ablation devices in our study.

Material and methods. Study of 216 limbs in 188 patients was done.

Results. The efficacy of different devices for varicose veins has been sparingly assessed. We tried to evaluate different RF Ablation devices in our study. Our experiences with both Celon & VNUS devices will be shared. *In vitro* effects on macro as well as microscopic will be presented. Study of 216 limbs in 188 patients was done. Study revealed details of CEAP classification and relation to vein diameter. Patient follow up to five years was done and the results will be reported. Observations in terms of successful procedures, failures and recurrence rates will be highlighted. Details of failures and recurrences were studied.

FREE PAPER SESSION 12: VENOUS ULCER II

AB0062

FREE PAPER SESSION 12

Venous ulcers: any progress in treatment?

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Background. The purpose of this review is to see if there is any change in the treatment of venous ulcer in the last three decades.

Material and methods. In 1998, I reported the experience of the largest university hospital in Saudi Arabia, King Saud University of 90 patients (Int Angiol 1998; 17: 108-12) in which the study cover the years between 1991-1997. The recommendation was to do surgical intervention to reduce the incidence of ulcer recurrence whenever superficial venous reflux is a prominent component of abnormal venous function. This constitutes 30% to 50% of cases. Most other centers reported the same.

Results. I revisited the new cases in my institute and review the clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum in addition to systemic review and meta-analysis of surgical interventions *versus* conservative therapy for venous ulcer from 1990 December 2013, which show same results and same recommendation.

Conclusions. So is there any change, did the new modality of investigation and pharmacological therapy add any more progress in the venous ulcer treatment?

All those developments will be discussed in this presentation.

AB0193

FREE PAPER SESSION 12

Calling for an improvement in chronic venous disease classification

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CEAP classification of chronic venous disease (CVD) was introduced in 1994 and had been revised once about 10 years ago. A venous disease classification allows for uniformity at describing the stage of disease at presentation, the aetiology and pathogenesis and allows for comparison of management strategy. It is widely accepted that the C (clinical) classification is useful for day to day outpatient documentation and the E (etiologic), A (anatomic) and P (pathophysiologic) components are more useful for research purposes. We have applied the C- classification to our consecutive series of 1,239 legs with chronic venous disease. We find that the classification is lacking in the aspect that it does not include patients with complications from chronic venous insufficiency such as bleeding, superficial thrombophlebitis, cellulitis and eczema. These complications are classified as C4, but a classification that is able to discriminate these varied presentations in C4 will be more useful. Clinical classification should also be pragmatic and should allow for management decision.

We propose a new category of C-classification based on problems at presentation to aid developing countries' physicians on its management.

Clinical presentation investigation management options:

1. Telangiectasia/venular ectasia: clinical examination (Duplex scan if symptomatic) + conservative/sclerotherapy.
2. Asymptomatic varicose veins: clinical examination.
3. Symptomatic varicose vein: clinical examination, hand held Doppler, Duplex scan conservative/ compression/ endovenous therapy/ open surgery (mild swelling, pain, cramps).

4. Varicose veins with bleeding: clinical examination, hand held Doppler, Duplex scan compression/ open surgery/ endovenous therapy.

5. Superficial thrombophlebitis: mandatory Duplex scan, supplemented with other investigations if in doubt need to rule out deep vein thrombosis, post thrombotic.

6. Eczema, cellulitis, lipodermatosclerosis/ gross oedema syndrome and deep vein incompetence: management option.

7. Healed ulcer as in 4 but antibiotics and anticoagulants may have to be considered.

8. Active ulcer.

AB0065

FREE PAPER SESSION 12

Sociodemography of patients with venous ulcers in South India

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Background. Chronic leg ulcers are seen in 2-7% of the general population. 70% of the chronic leg ulcers have venous etiology. The treatment options include conservative management with limb elevation, compression bandages and ulcer care.

The aim was to study the socio-demography pattern of patients presenting to the vascular outpatient clinic at Christian medical college, Vellore, South India with chronic venous ulcers (CEAP-C6 disease).

Material and methods. It was a cross-sectional, observational, hospital based study. Review of outpatient records of all patients with chronic venous ulcers attending our vascular outpatient clinic from September 2012 to July 2013 was done. The parameters assessed were demographic details, education, occupation, monthly income, socioeconomic status and venous duplex findings.

Results. A total of 170 patients were included in the study. There was male predominance with the disease was commonly seen in 36-45 years age group. Majority of our patients were from South India (71%) and 2/3 of that burden was from Tamilnadu. It was found commonly among middle class individuals who were working in private firm. Most of the patients had poor educational and income status. As per venous duplex findings, many of them had perforator incompetence.

Conclusions. Chronic venous ulcers are common in men belonging to the middle age group unlike the West where chronic venous disease is prevalent in the women and elderly population. They are prevalent in the low and middle socioeconomic groups.

AB0111

FREE PAPER SESSION 12

Retrospective analysis of ultrasound study done on female patients for varicose veins

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From September 2013 to September 2014, 126 cases of female patient with varicose vein underwent ultrasound examination for the veins. Our prime focus of the study was that of the random patients of male and female arriving at our DIVAS setup. What was the number of female and how many of them had associated pelvic vein refluxes? We observed from our analysis that 28.57% (n=36) number of female patients having varicose veins had associated Pelvic vein refluxes.

An increase in suspicion of refluxing pelvic vein, mainly ovarian vein and hypogastric vein was observed where vari-

cosities were noted over medial and posterior thigh, gluteal region and vulvar varicosities. It was observed that only 30% of these patients complained of pelvic pain, whilst the rest had typical symptom of edema of the lower calf, ankle and foot, having night cramps, eczema and visible varicose veins.

The cases were studied by linear USG in standing and by trans-vaginal probe for ovarian veins carrying reflux.

Those patients who had refluxing GSV at SFJ or any level towards ankle with ovarian reflux were primarily treated for GSV thermal ablation and bunch phlebectomy +/- sclerotherapy and kept for follow up. 2nd group of patient with no GSV varicosity but multiple varicosities in lower limb with Normal SFJ were taken for coil deployment and kept for follow up.

AB0135

FREE PAPER SESSION 12

Evaluation of perforating vein in stasis dermatitis and ulcers

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Background. To treat stasis dermatitis and ulcer in C4 to C6 chronic venous insufficiency, it is important to find out what is responsible for the stasis of venous blood. Reflux of great saphenous vein and small saphenous veins are responsible in most cases. In some case incompetent perforating veins (IPV) are also involved in the mechanism of venous blood stasis. Although direct resection or subfacial endoscopic perforator surgery (SEPS) are known as treatment for IPVs, it is still controversial to treat IPVs in the first operation. In this study the evaluation of IPV in C4 to C6 legs was investigated.

Material and methods. To evaluate the involvement of perforating veins, rubber tourniquet was used to block the reflux of peripheral veins. Doppler patterns of lower leg vein were compared when milking the calf muscle with or without blocking the peripheral venous blood reflux. When there was no change with blocking the peripheral vein reflux, the case was defined as possible. When the reflux of lower leg was diminished or disappeared, the case was defined as negative.

Results. In 7 out of 13 cases, the results were positive which indicated IPVs were also responsible for the stasis. In these 7 positive cases, 3 cases were the recurrent varicose vein after peripheral vein treatment and one case was with IPVs without the reflux of peripheral and deep vein systems. Three cases (75%) out of 4 C6 cases, the result was positive.

Conclusions. This preliminary study shows how to evaluate the cause of venous blood stasis. This simple and easy evaluation helps to determine the strategy for treatment of severe chronic venous insufficiency.

AB0104

FREE PAPER SESSION 12

Venous ulcer treatment: personal techniques

J. Chunga Chunga

Glomach Medic, Lima, Peru

Background. Venous ulcer is the last step of of venous disease, in our country, because of the lack of phlebologist a lot of patients end in this stage. The main cause of venous ulcer is the presence of varicose veins, so those must be eliminated first in order to cure the ulcer.

Hygiene, elastic compression and rehabilitation are the other 3 proops that will help us achieve our goal of healing the ulcers.

Material and methods. Patients with venous ulcer, clinical examination and then multi-therapy.

1. Hygiene
2. Treatment of varicose veins
3. Phlebologic rehabilitation
4. Elastic compression
5. Pharmaceutical treatment

Results. Good results. Healing of the ulcer.

Conclusions. Sclerotherapy eliminates varicose veins, improving chronic venous insufficiency, oxygenates the tissues and closes the ulcer.

AB0336

FREE PAPER SESSION 12

What are the medical compression systems used in France for a venous leg ulcer?

A. Cornu-Thenard

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Background. In order to heal venous leg ulcers, dressing and compression therapy are necessary.

The most used medical compression system in France since a long time is bandages. The first MD who promoted bandages was Tournay (+/-1950). Then Stemmer, several Beneluxian and German Dermatologists-Phlebologists encouraged it (+/-1970). Later this technique went all over the European countries in order to heal leg ulcers.

Methods. Numerous publications indicate that medical compression therapy is the corner stone to obtain the cicatrization for venous ulcers. They are all included in Hugo Partsch & ICC paper.

Results. As it is possible to read, the idea was to stop the venous reflux in the superficial and the deep venous systems. And so to stop and reduce edema, which is most important sign to fight.

1- The oldest published papers point out that they were using very inelastic (stiff) bandages, like Unna boots. The less old ones say that they were using inelastic bandage, like a 40 mmHg dressing around the leg.

2- The youngest ones propose to use elastic bandage but with the idea to make several turns at the same level in order to get an inelastic bandage. Others use several bandages one on the top of the first one. The reached bandage is a very inelastic bandage.

3- The very youngest ones prefer using elastic stockings.

They write that this technique is more easy to use, is more interesting about the pressure because it is mandatory strong at the bottom and light on the top, with the pressure you want. The problem is that MCS are elastic.

In order to get an inelastic "stocking" as for MCB we can to put several MCS one on the top of the first one. The reached stocking or bandage is a very inelastic bandage above all if they are many. Superimposition gives the stiffness.

Conclusions. It appears that the best technique could be the use of MC Stockings.

AB0164

FREE PAPER SESSION 12

Effect of topical lidocaine and prilocaine cream on pain scores for endovenous laser ablation (EVLA) as a daycare procedure

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Aim. To study the effect of topical Toplap® cream (eutectic mixture of Lidocaine 2.5% and Prilocaine 2.5%) on pain scores

in patients undergoing Endovenous laser ablation (EVLA) under tumescent anaesthesia.

Material and methods. Consecutive 100 varicose vein patients requiring laser ablation for truncal veins were included in the study. Topical Toplap® cream (eutectic mixture of Lidocaine 2.5% and Prilocaine 2.5%) was applied 60-90 minutes prior to procedure over the whole length of vein to be ablated and also over the superficial varicosities planned for hook phlebectomy. Endovenous laser ablation and hook phlebectomy was performed under tumescent anesthesia. Pain score was analyzed using visual analogue scale immediately post procedure.

Results. 100 patients underwent EVLA during the study period. Majority of patients were in higher CEAP classes. 78% patients underwent Hook phlebectomy along with EVLA. Peri-procedural average pain score using Visual Analog scale was 2.72. During a post procedural questionnaire, all patients opted for EVLA under same type of anesthesia if they needed it for the other limb.

Conclusions. For EVLA procedures under tumescent technique, use of topical Toplap cream appears to reduce the pain score.

Topical Toplap cream application for sufficient duration after preoperative marking significantly lessens the pain and improves patient's acceptance of the procedure.

AB0160

FREE PAPER SESSION 12

Strategic treatment of varicose C5 and C6

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C5 and C6 varicose treatments have various choices. This treatment choices are different for each countries. Vascular and endovascular division of Cipto Mangunkusumo Hospital has collected and tabulated patient data diagnosed varicose that is treated by various treatments between January and December 2014.

All patients are classified based on C1 until C6 varicose with gender, age, occupation, and kind of treatments. Based on 142 cases which is treated, is found 36 (25.35%) cases diagnosed C5 and C6 varicose and most of them are more than 41 years old (23.94%). Most of the patient are women (69.91%) and most of the patient are housewife and retire.

Kind of treatments which is performed are 12 cases by debridement and compression, 9 cases by EVLA, phlebectomy and compression, 7 cases by compression, 3 cases by compression and multiple phlebectomy, 2 cases by RFA, multiple phlebectomy and compression, and 3 cases by other treatment choices (multiple phlebectomy, Linton procedure, and debridement; stripping and compression; and stripping, phlebectomy, compression).

AB0045

FREE PAPER SESSION 12

Laser ablation of perforating veins in C5 patients with post-thrombotic syndrome does not prevent ulcer's recurrence

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Aim. The aim of randomised controlled trial was to establish whether laser ablation of perforators decreases postthrombotic ulcer's recurrence rate or not at one year follow-up.

Material and methods. 63 patients were randomly assigned to either endovenous laser ablation of incompetent calf

perforating veins (IPVs) with subsequent compression treatment with class 3 stockings or to compression alone.

31 patients aged from 33 to 72 were in the study group (12/39% women). Duration of PTS was 3-27 years (mean 11.5). VCSS score was 10-18 (mean and median 13). 32 patients aged 34-74 were in a control group (10/31% women) with PTS duration 2-39 years (mean 11.2) and VCSS score 9-16 (mean and median 13).

There were 91 IPVs on 31 limbs with diameters 0.2-0.85 cm (mean 0.4) in the study group and 87 veins with diameters 0.2-0.86 cm (mean - 0.41) in the control group.

We performed laser ablation with 940 nm device. Amount of energy delivered depended on perforators caliber: in the veins 0.2-0.3 cm energy was not less than 75 J, in 0.4-0.6 cm - not less than 300 J, in large perforators with diameter more than 0.6 cm we applied 325-600 J. Mean LEED was 186 J/cm. Number of ablated veins were from 1 to 7 per leg.

Results. Duplex ultrasound showed that 70 (77%) perforators had been successfully occluded on 3-5 day after procedure. Ulcer recurrence during 12 months occurred in 10 (32%) patients in the study group and in 11 (34%) in the control group (p=0.859). Mean VCSS score after follow-up period was 12 in both groups. Only 17 (24%) from 70 perforators remained occluded after one year.

Conclusions. Laser ablation of IPVs being performed with energy that commonly used does not prevent ulcer's recurrence in C5 patients with PTS.

FREE PAPER SESSION 13: VENOUS THROMBOEMBOLISM III

AB0113

FREE PAPER SESSION 13

Epidemiological updates of venous thromboembolism in a Chinese population

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Background. Deep vein thrombosis (DVT) is uncommon in Asians and routine thromboprophylaxis in the form of anticoagulation for surgery is controversial. The current study aims to provide an update on epidemiology of venous thromboembolism in a population based scale.

Material and methods. Information from 2010 to 2011 was retrieved from a centralized computer public healthcare database serving an ethnic Chinese population of 7.1 million. The incidence, demographics and hospital mortality rates of DVT and pulmonary embolism (PE) were obtained, and analyzed for different surgical categories.

Results. The overall annual incidences of DVT, PE alone and PE with DVT were 30.0, 8.7, 3.0 per 100,000 population respectively. Overall male to female ratio was 1 to 1.24. Venous thromboembolic disease was more common with increasing age in both sexes. The annual age-specific incidences of DVT, PE alone and PE with DVT were 0.4, 0.2 and 0.1 per 100,000 for those aged 0-14 years, 1.6, 0.7, and 0.3 per 100,000 for aged 15-24, 6.6, 1.5, 0.6 per 100,000 for aged 25-34, 12.7, 2.7 and 1.6 per 100,000 for aged 35-44, 21.5, 6.2 and 2.4 per 100,000 for aged 45-54, 31.5, 12.4 and 3.9 per 100,000 for aged 55-64, 72.2, 22.6 and 8.9 per 100,000 for aged 65-74, 159.7, 53.0 and 14.5 per 100,000 for aged 75-84, and 335.5, 60.2 and 21.9 per 100,000 for aged 85 or above (Chi square test, p<0.001). 30 days mortality rates associated with DVT, PE alone and PE with DVT were 9.0%, 17.4% and 13.3% respectively. Among 103,023 major and intermediate

surgical operations a year, the mean incidence of postoperative DVT, PE alone and PE with DVT were only 0.20%, 0.08% and 0.04% respectively.

Conclusions. Compared with similar study 10 years ago, there was a general increase in incidence of DVT and PE. Post-operative thromboembolic event was not common.

AB0052

FREE PAPER SESSION 13

Incidence of DVT in high-risk neurosurgical Indian patients. Need of early chemoprophylaxis?

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Background. Deep venous thrombosis (DVT) is thought to be less common in Asians than in Caucasian population. The incidence of DVT in high-risk groups, especially the neurosurgical population has not been well studied. This leaves no firm basis for the start of prophylactic anticoagulation in the Indian neurosurgical patients. This is a prospective observational study to determine the early occurrence of DVT in the neurosurgical patients and to decide on need to use anticoagulation in the early post operative period.

Material and methods. We screened 138 consecutive high risk neurosurgical patients based on inclusion and exclusion criteria. The study progressed over one and a half years with consecutive patient selection. The femoral veins were screened using Doppler ultrasound on day 1, 3 and 5 of admission into the neurosurgical intensive care unit at the Christian Medical College and Hospital, Vellore, India.

Results. There has been a 4.3% (6/138) incidence of DVT with none of the six patients with features of DVT having signs and symptoms of pulmonary embolism. There was significant association with femoral vein catheterization.

Conclusions. There is a low incidence of DVT among the high risk neurosurgical population evaluated within the first 5 days of admission to Intensive Care Unit, limiting the need of chemical thrombo-prophylaxis to the high risk patients.

AB0085

FREE PAPER SESSION 13

Incidence and clinical characteristics of DVT after TKA

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Background. Deep vein thrombosis (DVT) after total knee arthroplasty (TKA) is very common and leading cause of death due to this procedure. The objective of this study was to investigate the incidence and clinical characteristics of DVT after TKA with DVT chemoprophylaxis.

Material and methods. This is a prospective cohort study in single institution. The patients received postoperative DVT chemoprophylaxis (low molecular weight heparin [LMWH] or Fondaparinux), followed by duplex ultrasonography to check for DVT 1-2 weeks after TKA. The clinical characteristics were summarized and analysed by chi-square test and regression analysis.

Results. Five hundred and thirty-four patients were enrolled from January 2007 to December 2010. DVT chemoprophylaxis was administered in 524 (98.1%) of the 534 patients. DVT occurred in 9 subjects (1.69%); 8 subjects had DVT in the leg, and 1 subject had a pulmonary embolism. Among them,

asymptomatic DVT was observed in 5 patients (0.94%). Univariate analysis showed that surgical methods (revision, $P = 0.0007$), body mass index (BMI) (>25 , $P = 0.0028$), low platelet count (less than 150×10^3 , $P = 0.0219$), time in the intensive care unit (ICU) ($P < 0.0001$), no administration of prophylactic LMWH ($P = 0.0392$), and a history of DVT ($P < 0.0001$) were significant risk factors of DVT.

Conclusions. The incidence of DVT was 1.69% after TKA with prophylactic antithrombotic therapy. Revision surgery, BMI, low platelet count, time in ICU, absence of prophylactic LMWH and history of DVT were significant risk factors of DVT.

AB0346

FREE PAPER SESSION 13

Deep vein thrombosis in Thai population: malignancy, the predominant clinical risk factor

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Deep vein thrombosis (DVT) was thought a rare disease in Thailand. Since the use of duplex ultrasonography for the DVT screening in limb swelling population, we could detect 1,424 DVT patients in our institute during the last 5 years. The predominant clinical risk factor was malignancy (39.9%) followed by postoperation (15.6%) and limb immobility (12.3%). The most common sites of malignancy was genitourinary system (50.4%) followed by gastrointestinal system (13.2%) and hepatopancreatobiliary system (11.6%). Postoperative DVT occurred more frequently in cancer patients than in non-cancer patients (21.1% vs. 11.9%, $p < 0.028$). Bilateral DVT was found more commonly in cancer patients compared with non-cancer patients (17.0% vs. 6.5%, $p = 0.003$). Pulmonary embolism was detected more frequently in cancer patients compared with non-cancer patients (10.5% vs. 5.9%, $p = 0.20$). Fatal pulmonary embolism was higher in cancer patients than in non-cancer patients (3.3% vs. 0.5%, $p = 0.08$). The mortality in DVT patients with cancer was also higher than in those without cancer (20.3% vs. 5.4%, $p < 0.001$).

In conclusion, DVT was not uncommon disease in Thai population. Malignancy, the most predominant clinical risk factor, carried the high risks of morbidities and mortality in DVT patients.

AB0107

FREE PAPER SESSION 13

Elastic compression: our daily practice

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The main objective when using compression is to create an external pressure greater than the internal pathological pressures, with that improving micro and macro-circulation.

Graduated compression hosiery is widely used as first line treatment for varicose veins.

In our experience compression must include foot and ankle because for us the venous plantar pump is the first step towards fighting the reflux, for that we use a 6 inches elastic bandage that allow us with a single turn to cover it and make it work as a whole.

We use two kinds: elastic bandages and stockings.

With elastic bandages, for us, the only disadvantage is that

patients must learn how to use it, but when they feel the symptoms relief they became our allies in using them.

When using stockings we must give the specific instructions to our patients: the mmHg that they need for their stage, take the exact measurements of their legs, how to wear it and for how long. We think that any patient with venous insufficiency should use stockings that give at least 20mmHg of pressure.

AB0197

FREE PAPER SESSION 13

Ultra-low molecular weight heparin (ULMWH) Semuloparin in prevention of venous thromboembolic events (VTE) in cancer patients receiving chemotherapy

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Background. VTE is a life threatening complication following Chemotherapy in cancer patients. Semuloparin is a ULMWH with Anti Xa and residual Factor IIa activity. It's a relatively new drug and used in very few centres in India. This study was done to evaluate the efficacy and safety of Semuloparin in Thromboprophylaxis of cancer patients receiving chemotherapy.

Material and methods. Patients with metastatic or locally advanced solid tumors were included when a new chemotherapy regimen was started. Patients with creatinine clearance <30 and contraindication for anticoagulation were excluded. Patients were randomised to daily subcut Semuloparin 40mg or placebo. The primary outcome was the development of DVT, non-fatal PE or VTE related death. Any clinical evident bleeding or major bleed was the safety outcome.

Results. 1200 patients were randomised in the study and up to 75% of patients had metastatic or locally advanced cancer. 40% had CA lung, 30% had colorectal tumors with liver metastases and rest were different solid organ tumors. Mean duration of treatment was 4 months. In an intent to treat analysis, Semuloparin resulted in 55% reduction in the primary efficacy outcome *versus* placebo. Treatment was consistent across DVT and PE with upto 50% reduction in PE incidence. No difference of treatment effect was seen with the location or the stage of the tumor. Incidence of clinical relevant bleeding was 2.3% *versus* 1.85% in placebo and the incidence of major bleed was 1% *versus* 0.8% in placebo.

Conclusions. Semuloparin reduced the VTEs in cancer patients receiving chemotherapy without increasing the risk of bleeding. There is no difference with the stage and location of cancer. Thromboprophylaxis should be considered in cancer patients receiving chemotherapy.

AB0186

Free Paper Session 13

Mechanical thrombectomy with Trerotola compared with catheter-directed thrombolysis for treatment of acute iliofemoral deep vein thrombosis

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Background. Mechanical thrombectomy (MT) of acute deep vein thrombosis (DVT) is safe and effective in reducing thrombus burden. MT utilizing a percutaneous thrombectomy

device confers a great advantage because it may reduce both the dose of the thrombolytic agent and the overall procedure time compared with a conventional catheter-directed thrombolysis (CDT). We examined the results of MT using the Trerotola device and evaluated factors affecting patient outcome.

Material and methods. This retrospective study was performed using data from a database of patients who had undergone treatment for an acute iliofemoral DVT from January 2005 to December 2011, at 2 institutions. The patients' clinical characteristics and procedures were compared, and the outcomes of treatment with the Trerotola in the MT group were compared with those obtained with CDT.

Results. There were a total of 98 DVTs (left 76; right 22) in 90 patients (34 men); 53 DVTs were treated with MT and 45 with CDT. There were no statistical differences in the clinical characteristics among the MT with CDT, MT only and CDT group. Symptom improvement was seen in 78% (18 limbs) of the MT group, 80% (24 limbs) of the MT with CDT group, and 71% (32 limbs) of the CDT group ($P < 0.498$). The procedure time was shorter in the MT with CDT group (18.2 ± 8.2 hr) or in the MT only group ($2.7 \pm .20$ hr) compared with the CDT group (29.3 ± 9.4 hr; $P < 0.001$). Urokinase dose was lower in MT only (0 million units) or in the MT with CDT group (5.13 ± 3.72 million units) than in the CDT group (7.51 ± 4.54 million units; $P < 0.001$).

Conclusions. MT with the Trerotola device for acute iliofemoral DVT required shorter procedure times and lower urokinase doses than conventional CDT, while providing the same results.

AB0321

FREE PAPER SESSION 13

Multimodal approach for the management of Klippel-Trénaunay Syndrome

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Venous Association of India, India

Background. The condition was first described by French physicians Maurice Klippel and Paul Trénaunay in 1900; they referred to it as naevus vasculosus osteohypertrophicus. The birth defect affects men and women equally, and is not limited to any racial group. It is not certain if it is genetic in nature, although testing is ongoing. There is some evidence that it may be associated with a translocation at t(8;14)(q22.3;q13). Some researchers have suggested VG5Q has an association.

Material and methods. KTS is a complex syndrome, and no single treatment is applicable for everyone. Treatment is decided on a case-by-case basis with the individual's doctor.

Results. Mayo Clinic has reported the largest experience in managing KTS with major surgery. In 39 years at Mayo Clinic the surgery team evaluated 252 consecutive cases of KTS, of which only 145 (57.5%) could be treated by primary surgery. The immediate success rate for treating varicose veins was only 40%, excision of vascular malformation was possible in 60%, debulking operations in 65%, and correction of bone deformity and limb length correction (epiphysiodesis) had 90% success. All the procedures demonstrated high recurrence rate in the follow-up. Our result is similar to the Mayo Clinic report.

Conclusions. Primary surgical management of KTS has limitations and non-surgical approaches need to be developed in order to offer a better quality of life for these patients. Ultrasound guided foam sclerotherapy is the state of the art new treatment which could potentially close many large vascular malformations. Compression garments can be used to alleviate almost all of these, and when combined with elevation of the affected area and proper management. Compression garments are also used lately after a debulking procedure to maintain the results of the procedure.

AB0132

FREE PAPER SESSION 13

Stewart-Bluefarb Syndrome secondary to arteriovenous malformations and acquired non-traumatic arteriovenous fistula: report of five cases and a review of literature

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Stewart-Bluefarb syndrome (SBS) is a rare angioproliferative disorder characterised by acroangiokeratosis (AAD) associated with an underlying arteriovenous shunt. This condition should be differentiated from AAD of Mali classically described in association with chronic venous insufficiency (CVI). Recognition of SBS may be difficult or delayed as the cutaneous manifestations may resemble a variety of other dermatological conditions. Most commonly, AAD may be confused with Kaposi's sarcoma (KS) and the condition is often referred to as 'pseudo-KS'. AAD may also resemble or coexist with pigmentation of CVI and be clinically confused with the 'cavernous' form of a capillary malformation. We describe five patients with SBS. In one female and two male patients the diagnosis was delayed as the AAD closely resembled other conditions. All underlying AV communications were initially diagnosed on duplex ultrasound and confirmed with magnetic resonance angiography (MRA). Four patients were found to have a congenital AV malformation while one patient was diagnosed with a post-thrombotic AV fistula. Management included observation and intervention using a variety of techniques including percutaneous or trans-catheter embolization, endovenous laser, radiofrequency ablation and foam ultrasound guided sclerotherapy. This case series highlights the challenges involved in the diagnosis and management of SBS. Given the local and systemic sequelae of high flow shunts, correct diagnosis and early detection of the underlying AV abnormality is crucial in the long-term management of these patients and in preventing the associated complications.

AB0136

FREE PAPER SESSION 13

Predictive factors of pulmonary embolism combined with lower extremity deep vein thrombosis

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Background. Pulmonary embolism (PE) most commonly results from lower extremity deep vein thrombosis (DVT) and PE is potentially life-threatening. But the risk factors for PE with lower extremity DVT have not been known clearly. We investigated predictive factors of PE combined with DVT in two hospitals.

Material and methods. From January 2010 to December 2012, 428 patients were diagnosed lower extremity DVT with or without PE. We retrospectively reviewed the medical records of these patients. Characteristics of patients, details of DVT lesions and laboratory findings associated with hypercoagulability were analyzed as risk factors for PE combined with DVT.

Results. 238 patients (55.6%) were diagnosed lower extremity DVT without PE and 190 patients (44.4%) were diagnosed lower extremity DVT with PE. There were 84 patients with symptomatic PE (19.6%). The mean age of patients was 66.17 ± 12.88 in DVT without PE, 64.78 ± 14.53 in DVT with PE ($P=0.304$). Any laboratory findings associated with hypercoagulability were not statistically different between two groups. In univariate analysis, immobilization was revealed as indicator of PE combined with DVT ($P=0.032$). The patients

with cerebral vascular accident showed a lower incidence of PE compared with the patients without cerebral vascular accident ($P=0.033$). In multivariate logistic regression analysis, immobilization also retained statistically significance for PE combined with DVT (OR=1.551, 95% CI 0.999-2.408, $P=0.050$).

Conclusions. The results of our study suggest that immobilization is useful the independent predictive factor of PE combined with DVT.

AB0091

FREE PAPER SESSION 13

Anatomic and clinical risk factor for pulmonary embolism in patients with deep vein thrombosis of the lower extremity

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Background. Pulmonary embolism (PE) is the lethal complication of deep venous thrombosis (DVT). Iliac vein compression is related with DVT. On the other hand, it may prevent the thrombus from migrating into the pulmonary circulation. The aim of this study was to evaluate the anatomic and clinical risk factors of PE in patients with DVT of the lower extremity (LE).

Material and methods. The patients with DVT underwent duplex ultrasound (DUS) and/or computed tomography (CT) of LE. PE was evaluated with chest CT. The patients were classified as group 1 (DVT without PE) and group 2 (DVT with PE). We analyzed the anatomic and clinical risk factors associated with PE in patients with DVT. As the anatomic factor, the shortest length between the common iliac artery (CIA) and spinal body (SB) was measured. In statistical analysis, we used independent t-test and multivariable logistic regression model.

Results. We examined 114 patients (age 62.7 ± 16.9 years, 41.7% men) with DVT with/without PE. The prevalence of concurrent DVT/PE was 52.6%. Neither the risk factors nor blood tests differed significantly between two groups. Of all the assessed patients characteristics (age and sex, BMI, diabetes, hypertension, history of varicose vein, previous DVT, history of surgery, infection, pneumonia, coronary artery disease, chronic renal failure, and paralysis), the only one factor, infection, was significantly and independently associated with PE ($P=.04$). The lengths between CIA and SB were 6.7 ± 3.5 mm in group 1 and 11.3 ± 3.7 mm in group 2, respectively ($P<.0001$). With ROC curve analysis, 7.6mm was the cut-off value for the risk of PE in patients with LE DVT.

Conclusions. Infection was significantly and independently associated with concurrent DVT/PE. The shorter length between CIA and SB (less than 7.6mm) may prevent the PE in patients with DVT. Our results should be further investigated in a larger prospective study.

AB0199

FREE PAPER SESSION 13

A retrospective analysis on diagnosis and treatment for 55 cases of acute superior mesenteric venous thrombosis

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Aim. We performed a retrospective study on the patients of acute superior mesenteric venous thrombosis (ASMVT) for analyzing the etiology, clinical manifestations, diagnosis and treatment in order to improve the clinician awareness of the disease and diagnosis, make a reasonable choice for treatment and then elevate the curative effect.

Materials and methods. We selected 55 patients of ASMVT from January 2003 to September 2014 in the First Affiliated Hospital of Sun Yat-sen University who were divided into two groups: 25 patients with surgical treatment (group) and 30 patients with anticoagulation combined thrombolysis (group). And we performed a retrospective analysis on these two groups.

Results. 49 cases (89.09%) appeared abdominal pain and most of them complained upper abdominal pain. 41 patients had tenderness. 26 cases had rebound tenderness and 25 cases showed abdominal muscle tension. All of the operations in Group I were successful. 24 cases were performed exploratory laparotomy and 23 cases had necrosis small intestine excision. In Group II, 51 cases had anticoagulation and 23 cases treated thrombolysis as well. In Group I, the mean length of stay in hospital was 14.36 ± 7.76 days (11.30 ± 6.23 days in Group II). All 25 cases were fasting (but 22 cases in Group II) and the average fasting time was 7.32 ± 7.16 days (3.07 ± 2.96 days in Group II). Just 2 patient had the perioperative complication which was incisional infection as well as peritoneal cavity infection. There was no perioperative death but 2 case in Group I and 2 cases in Group II were automatically discharged. The curative rates were 92.00% in Group I and 93.33% in Group II.

Conclusions. If the patient has peritonitis intestinal necrosis may be judged. The best treatment is necrotic bowel removal. Meanwhile, once ASMVT was diagnosed, early anti-coagulant therapy should be used as necessary treatment.

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AB0401

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Prevalence and incidence of venous leg ulcers and lymphedema in the general population

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Background. Venous leg ulcers are the most severe complication of chronic venous diseases. They induce high costs, loss of quality of life and have a high recurrence rate. Lymphedema is an important cause for leg diseases in the general population. Up to now almost no epidemiological data concerning lymphedema of the legs is available.

Material and methods. In the Bonn Vein Study, a population based cross-sectional study with 3,072 individuals randomly chosen from population registers in the city of Bonn and the surrounding rural townships, aged between 18 and 79 years, prevalence and risk factors of chronic venous diseases were evaluated. In addition to the questionnaire and the phlebological investigations skin fold test at the dorsum of the second toe, was performed. A so called Stemmer's sign was slightly positive (Stemmer I) when the skin fold was between 0.5 and 1 cm large. Stage II was reached when the skin fold measured more than 1 cm and Stage III when the skin fold was extremely enlarged. The incidence of venous leg ulcers and Stemmer's sign were calculated from the results of a follow up study (Bonn Vein Study 2) 6.6 years after the first evaluation.

Results. 0.1% of the general population showed an active and 0.6 a healed venous ulcer with the most important risk factors obesity and higher age. In the clinical investigation 1.5% of the men and 2% of the women had a manifest lymphedema represented by Stemmer's sign stages II and III. The prevalence of positive Stemmer's sign II and III was markedly higher in the urban population with 2.4%, compared with the rural population with 0.7% and also increased with the clinical stages of chronic venous diseases in the CEAP-classi-

fication. The prevalence of positive Stemmer's sign increased significantly with age (OR 5.4), obesity (OR 4.9), female gender (OR 2.1) urban living (OR 2.8) and sitting profession (OR 1.6). The incidence reached 0.8%/year for a slightly and 0.3%/year for increased positive Stemmer's sign.

Conclusions. These data show a prevalence of 0.7% for healed and active venous ulcers and a high prevalence and incidence of lymphedema of the legs in the general population and the increased risk for the obese and older population as well as the correlation with chronic venous diseases.

AB0399

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State of the art: the current treatment of venous leg ulcer

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Objectives. Venous leg ulcers (VLUs) have a prevalence of 1% to 1.5% in the general population. An expert committee of the UIP has reviewed the ulcer guideline of the American Society of Vascular Surgery and the American Venous Forum and has made comments.

Results. Some of the important consensus proposals are: as follows.

In a patient with a venous leg ulcer without arterial involvement or peripheral neuropathy, we recommend strong compression pressure (>40 mmHg resting pressure at the ankle) over low compression pressure to increase venous leg ulcer healing rate. [GRADE 1; LEVEL OF EVIDENCE B]

In a patient with a healed venous leg ulcer, we suggest compression therapy to decrease the risk of ulcer recurrence. [GRADE 1; LEVEL OF EVIDENCE B].

We suggest using intermittent pneumatic compression (IPC) when other compression options are not available, cannot be used, or have failed to aid in venous leg ulcer healing after prolonged compression therapy. [GRADE 2; LEVEL OF EVIDENCE C].

We suggest IPC in addition to standard compression when possible [GRADE 2; LEVEL OF EVIDENCE C].

In a patient with a venous leg ulcer (C6) and incompetent superficial veins that have reflux directed to the bed of the ulcer, we suggest surgery of the incompetent veins, or alternative ablation techniques, in addition to standard compressive therapy to improve ulcer healing. [GRADE 2; LEVEL OF EVIDENCE C].

In a patient with a venous leg ulcer (C6) and incompetent superficial veins that have reflux directed to the bed of the ulcer, we recommend surgery [GRADE 1; LEVEL OF EVIDENCE B] or an alternative ablation technique [GRADE 2; LEVEL OF EVIDENCE C] of the incompetent veins in addition to standard compressive therapy to prevent recurrence.

AB0400

SPONSORED SYMPOSIUM

Adjustable Velcro Compression Devices are more effective than inelastic bandages to reduce venous oedema: a randomized, controlled pilot study

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Background. To reduce leg oedema inelastic bandages (IB) are usually recommended for the initial treatment phase. Dis-

advantages are that they lose pressure quickly and need to be applied by costly trained staff.

Aim. The aim of the present study was to assess if Adjustable Velcro Compression Device (AVCD) which can be re-adjusted by the patient to the changing leg volume, could be an alternative in the therapy phase of chronic leg edema.

Material and methods. 40 legs of 36 patients (17 males; 19 females aged 71.4 ± 10.2 ; range 52-85 years) affected by chronic venous leg oedema were randomized to receive two different compression treatments for 7 days: group A) IB applied with a supine pressure of about 60 mmHg, group B) AVCD applied to exert a pressure of 40 mmHg in supine position and re-adjusted by the patient when the device became loose because of edema reduction.

Leg volume was assessed after 1 and 7 days by tape measurements of leg circumferences and volumetry was calculated according to the truncated cone formula.

The compression pressure (CP) was measured by means of a pneumatic pressure transducer in supine and in standing position at application and removal of compression devices. The patient's wearing comfort of the compression device was assessed at time 0 and day 7 by a Visual Analogue Scale (VAS).

Results. Both compression systems achieved a significant reduction of total leg volume after 1 and 7 days compared to baseline ($P < 0.0001$). AVCD achieved a volume reduction by -19% after 1 day and -26% after 7 days significantly greater than IB both after 1 day, -13% ($P < 0.01$), and after 7 days -19% ($P < 0.01$).

At application compression pressure was much higher with IB than with the AVCD, both in supine (median values 62 vs. 43 mmHg) and in standing position (median values 72 vs. 52 mmHg) ($P < 0.01$). IB-pressure dropped down significantly to a range of 20-30 mmHg in supine and to 30-40 mmHg in standing position, both one and seven days later. Compression pressure with AVCD remained unchanged or was even higher, both after 1 and 7 days.

Comfort was good with both devices. Shoe wearing was significantly easier with VD ($P < 0.0001$).

Conclusions. In patients with chronic venous leg edema, adjustable velcro compression devices exerting a supine pressure around 40 mmHg, consistent overtime, are more effective than inelastic bandages in reducing edema. They are equally tolerated and make shoes wearing easier. AVCDs make self-management of chronic leg edema possible allowing considerable cost-savings.

AB0403

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Compression after invasive treatment of varicose veins

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We have performed a literature search regarding results of compression after invasive treatment, especially after varicose vein surgery, endovenous thermal ablation and sclerotherapy.

Compression after varicose vein surgery

We have found several publications regarding this topic. In summary it could be stated that compression therapy after varicose vein surgery is able to reduce postoperative hematomas, postoperative pain and leg volume. The ideal length of compression postoperatively is unclear as well as the ideal pressure.

Compression therapy after endovenous thermal ablation

There were only a few publications regarding compression therapy after endovenous thermal ablation. One study compares endovenous laser therapy with bare fibers with and without compression after treatment and showed that compression leads to a significant reduction of pain. And other randomized controlled trials after endovenous laser therapy showed significant less pain in favor of the stocking group and patients with stockings had a statistically higher score of satisfaction postoperatively. There was no literature published regarding radiofrequency ablation.

Compression therapy after sclerotherapy

There were a lot of publications comparing compression versus no compression after sclerotherapy of spider and reticular veins. They showed significant better results for the compression groups regarding less pigmentations, hematomas and better outcome. The optimal length of compression seems to be three weeks. In the literature there were no clear advantages for compression after foam sclerotherapy of large veins.

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Poster Session

AB0290

POSTER (VARICOSE VEIN)

Radiofrequency ablation of varicose vein improved VCSS despite failure of complete closure of saphenous vein in 1 year

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Background. Varicose vein is one of the most common vascular disease and radiofrequency ablation (RFA) has been one of the treatment modalities. This study is to evaluate symptomatic improvement and occlusion rate of saphenous vein after RFA of varicose veins.

Material and methods. A retrospective review was performed using prospectively registered data for all patients who underwent RFA for varicose vein at Seoul St. Mary's hospital between June 2012 and June 2013. Duplex scan was done before RFA, within 1 week, 6 months, and 1 year after the procedure. At the same time, improvement of symptoms, quality of life and complication were assessed with VCSS (venous clinical severity score). Statistical analysis was done using SPSS programs. And $P < 0.05$ was considered statistically significant.

Results. One hundred and seventeen patients with 183 legs were enrolled. 65% of the patients were women, 56.4% were treated on both legs, and 78.6% were performed on the great saphenous vein (GSV). The mean age was 53.2 ± 11.1 year, mean BMI was 24.1 ± 10.8 , mean size of GSV was 4.93 ± 1.59 , and mean size of SSV was 3.51 ± 1.56 . On postoperative duplex scan, occlusion failure of GSV at 12-month was present in 9 patients (13.3%) and occlusion failure of SSV at 12-month was absent. Mean total VCSS was 4.08 ± 1.67 at before operation, 0.63 ± 1.14 at 12-month after operation ($p < 0.001$).

Conclusions. RFA of varicose vein improves symptoms obviously without severe complications. During 1 year follow up, 14 patients had failed complete occlusion of GSV. 13 of the 14 patients had improved VCSS despite of recanalization, one patient underwent reoperation due to symptoms aggravation. We think this is because of reduction of the GSV diameter and loss of venous reflux after the procedure.

AB0311

POSTER (VARICOSE VEIN)

Changes of saphenous vein stump after radiofrequency ablation for great saphenous vein incompetence

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Background. The purpose of this study were to report the change of great saphenous vein (GSV) stump after endovenous radiofrequency ablation (RFA) and to analyze the relationship of the positioning of a catheter tip and the change of GSV stump.

Material and methods. From January to September 2014, 67 patients with 91 limbs underwent RFA for GSV incompetence. The data on demographics, change of GSV stump length and clinical symptoms were prospectively collected and reviewed. Ablations were performed between 2 cm to 2.5 cm distal to the saphenofemoral junction.

Results. The residual GSV stump decreased in length to

1.465 ± 0.504 cm (95% confidence interval 1.336-1.595) at 1 month after RFA. This length persisted throughout the 1-, 3-, 6-month follow-ups. There were no statistically significant differences during the follow-up period. Both Venous Clinical Severity Score and Aberdeen Varicose Vein Symptom Severity Score was significantly improved at 1-month and improved even further at 3-month. One patient (1.1%) developed endovenous heat-induced thrombosis (EHIT) Class 3 at one-month follow-up and was treated with anticoagulation for 3 months.

Conclusions. This study has shown that the recommended positioning of RFA catheter tip (2.0-2.5 cm) is adequate to achieve successful closure of GSV and to decrease the incidence of EHIT.

AB0308

POSTER (VARICOSE VEIN)

Treating veins with monopolar radiofrequency - experience and results of the EVRF system

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Endovenous ablation has replaced stripping and ligation as the technique for elimination of saphenous vein reflux. One of the endovenous techniques is a radiofrequency based procedure. Newer methods of delivery of radiofrequency were introduced in 2007. Endovenous procedures are far less invasive than surgery and have lower complication rates. The procedure is well tolerated by the patients, and it produces good cosmetic results. Excellent clinical results are seen at 4-5 years, and the long-term efficacy of the procedure is now known with 10 years of experience.

The radiofrequency ablation of varicose veins is based on thermocoagulation. The principle of thermocoagulation is heating the vein which makes it coagulate. This rise in temperature to 70-100 degrees Celsius is achieved by sending a high frequency pulse into the tip of the catheter or needle. Because of the rise in temperature the proteins in the vessel wall will solidify and make the vein disappear. Due to the isolation of the catheters the effect is very local, causing minimal damage to the surrounding tissue.

Immediately after endothermal vein treatment, biopsy specimens show a significant reduction in the size of the vein lumen, with denudation of endothelium, thrombus formation, thickened vessel walls, loss of collagen birefringence, and inflammatory changes. The zone of thermal damage is limited to 2 mm beyond the point of contact with the electrodes. Picture 1 shows the histology of the vein lumen one hour after endovenous ablation: the acute loss of endothelium is apparent. In Picture 2, 6 weeks after the endothermal procedure thrombus formation in the vein lumen and fibroblast migration to the intramural thrombus is clearly visible.

AB0313

POSTER (VARICOSE VEIN)

Modern approaches to surgical treatment of patients with lower limb venous varices: endovenous laser ablation and radiofrequency obliteration

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Background. Comparison of clinical and anatomical results of radiofrequency obliteration (RFO) and endovenous

laser ablation (EVLA) in treatment of venous varices and identification of the main differences between technologies.

Material and methods. Data on comparative efficiency of ClosureFast radiofrequency obliteration and endovenous laser ablation at the wavelength of 1470 nm using a radial fiber probe. A prospective non-randomized multicenter study was conducted in patients with venous varices of the great saphenous vein (GSV). 105 patients with venous varices with an incompetent great saphenous vein (GSV) underwent surgery, 56 patients received EVLA, 49 patients received RFO. Patient's age was 18 to 74 years, GSV diameter at venous entry site was under 2 cm, classes C2-C3. The diagnosis and severity of the disease were determined using the VCSS, VSFS and CEAP disease severity classification scales. The venous status was assessed using the data of examination and triplex angioscanning. Comparative analysis was performed using the following criteria: duration of surgery, pain level on day 1, occurrence of postoperative hematoma, paresthesia, phlebotic reaction, dynamics of the quality of life according to the questionnaire and disease severity according to VCSS at 1 year.

Results. The pain median after EVLA within 24 hours after EVLA and RFO was 1.0 and 1.4 respectively. The differences of the quality of life between the groups before surgery were statistically insignificant ($p = 0.17$), at 1 month the quality of life after EVLP was higher ($p < 0.0001$), at 1 year the differences were insignificant. The relative risk of recanalization was 1.0. The frequency of fibrous transformation and obliteration of the target vein after Closure Fast RFO was 92%, after EVLA at 1470 nm using a radial fiber probe 97%.

Conclusions. The EVLA and RFO techniques are associated with a milder postoperative period, high obliteration efficiency and no apparent recovery period.

AB0004

POSTER (VARICOSE VEIN)

Comparison of endovenous thermal ablation therapy for primary varicose veins: 980 nm laser versus radiofrequency ablation

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Background. Two types of endovenous catheter ablation therapy, laser and radiofrequency ablation, for incompetent saphenous veins were compared.

Material and methods. A total 575 cases of primary varicose veins due to saphenous vein insufficiency were treated with endovenous catheter ablation in a day surgery clinic. Biolitec ELVeS Laser (wave length: 980 nm) was used for 277 cases. Covidien Closure FAST™ (radiofrequency, RF) was used for 298 cases. Tumescence local anesthesia and intravenous analgesic was undergone during surgery. Large varices were resected by stab avulsion technique. NSAID (loxoprofen) was given to relief postoperative pain.

Results. Operation time, mean diameter of treated veins, and incision numbers for stab avulsion were not different between the groups. All patients could walk immediately after surgery and went home. On the day of surgery, clinic stay was almost 2 hours. Minor complications, such as hematoma and superficial phlebitis, were seen in 4% in both groups. Pain was postoperatively noted in 53% patients in laser group and 5% in RF group. Subdermal induration was observed in 18% patients in laser group and 3% in RF group. Endovenous heat-induced thrombus (EHIT, Class 2), deep vein thrombosis, and pulmonary embolism were not observed in either groups. One month after treatment, occlusion rates were 100% and recanalization has not been experienced in either groups.

Conclusions. Although both procedures were effective enough to treat saphenous vein insufficiency, RF ablation was considered to be less invasive than 980 nm laser ablation.

AB0322

POSTER (VARICOSE VEIN)

Evaluation of the usefulness of ultrasound monitoring during the immediate postoperative endovascular ablation of the saphenous vein

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Aim. To evaluate usefulness of ultrasound monitoring post radiofrequency ablation of saphenous vein within 24/36 hs PO.

Material and methods. During the period 01/06/2014 to 01/01/2015 a total of 127 endovascular radiofrequency ablation procedures were performed. 114 procedures in 101 patients on the Greater saphenous vein (GSV) and 13 procedures in 9 patients on the small saphenous vein (SSV). The procedures were performed in Ambulatory Surgery Unit, under sedation or general anesthesia, ecoguide tumescence and radiofrequency ablation in 100% of cases who were discharged home with an average stay of 3 hours, without conversion process. We use LMWH prophylaxis in patients at risk and doubtful risk for a period of 5 days after surgery. 75 patients (68.2%) with 85 procedures underwent ultrasound study within 24/36 hours, assessing occlusion and EHIT.

Results. All patients evaluated had obliteration rate of 100% and in no case EHIT was evidenced.

Conclusions. Ultrasound follow immediately after ablation of saphenous vein, in our experience did not detect complications that generate a change in routine therapeutic management of our patients.

AB0324

POSTER (VARICOSE VEIN)

Radiofrequency ablation of the saphenous vein, experience on 331 patients

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Background. Endovascular obliteration of the saphenous vein (SV) with radiofrequency has been proposed as an alternative to conventional extirpative treatment of varicose veins and endovascular laser.

Material and methods. This report reviewed our experience with the radiofrequency ablation. In 331 patients over a seven year period. Age range 17 to 85 years. In all patients the procedure was performed on an outpatient basis.

Results. Were treated: Greater saphenous vein (GSV): 293, small saphenous vein (SSV): 28, both saphenous: 5, vein anterior accessory: 5. There has been a high percentage of occlusion, and where the permeable persisted vein, did not show symptoms of venous insufficiency. Few patients had minor complications (skin pigmentation, paresthesias, phlebitis of the treated vein or any collateral vein saphenous). One patient was found to have extension of an asymptomatic, non-occlusive thrombus into the common femoral vein 1 week after the procedure.

Conclusions. Radiofrequency ablation of the SV appears to be a safe alternative to conventional stripping and endovascular laser. Endovenous radiofrequency treatment for saphenous veins offered a clinical success for all patients treated.

AB0099

POSTER (VARICOSE VEIN)

Initial result of radiofrequency ablation treatment for lower limb varicose vein

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Aim. From Japanese national insurance approval in June 2014, we adapted radiofrequency ablation treatment for varicose vein as the first line therapy. We report initial result of this treatment.

Results. Until Jan. 2015, 56 cases, 74 limbs were treated by this method. The entire procedure was performed under ultrasound-guided tumescent local anesthesia with sedation. Concomitant phlebectomy was performed during surgery. Male: female was 17:39, age was 39–85 (67.3±11.0), C2:C3:C4:C5:C6 was 27:11:14:2:2. Treatment for GSV were 68 limbs, for SSV were 9 limbs (3 were both). After procedure, initial echogram was performed within 72hrs and all targeted veins were closed (Occlusion rate was 100%). Endovenous heat induced thrombosis (EHIT) class 1:2:3:4 were 71:3:3:0, respectively. Class 3 patients were treated by oral anticoagulation drug and all thrombus within deep venous system was resolved with one month later examination. At one month check-up, 2 pigmentation and 1 phlebitis were observed.

Conclusions. Radiofrequency ablation treatment is a safe and effective procedure. We plan to report 6-month short-term results also.

AB0189

POSTER (VARICOSE VEIN)

Optimising results with radiofrequency ablation

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Background. Radiofrequency Ablation (RFA) is now an established endovascular method of treating varicose veins. As with any procedure deviation from established protocols can result in sub-optimal results. Perfect planning prevents poor performance.

Material and methods. Optimisation of results will be discussed under the following points.

a. The first step is of knowing the patient and the pathophysiology of the process. It is imperative to be honest with the patient at the very start regarding the results expected and the possibility of recurrence.

b. The next step is to know the correct time to intervene and perhaps even more importantly – when not to intervene.

c. A clear understanding of the ‘nuts and bolts’ of the machines required ie the ultrasound machine and the RFA machine. Exact anatomy, site of SFJ and SPJ, location of large perforators, accessory venous channels etc is mandatory.

d. The most vital for the surgeon is to know his own limitations and level of training – nosce te ipsum.

e. The technique of the procedure – from preoperative preparation, knowledge of endovascular techniques, asepsis and antisepsis, proper cannulation, adequate tumescent anesthesia, exact positioning of the catheter, and method of application of the pressure dressing. The devil is in the details. No step is minor or can be overlooked.

f. Early postop ambulation, Class II compression stockings, regular Duplex scanning.

g. An accurate documentation – the Duplex findings with diagram, CEAP Class, length of vein ablated, the vein treated, site of cannulation, duration of treatment, details of energy

delivered, power settings etc should be clearly documented in the patient charts.

Conclusions. By a meticulous approach the results of RFA for varicose veins can be optimized.

AB0077

POSTER (VARICOSE VEIN)

Anterior accessory great saphenous vein treated with endovenous laser

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Background. Endovenous laser ablation of great saphenous vein (GSV) represents well established technique of radical therapy of varicose veins of lower extremities with excellent long-term results. However, the laser ablation of anterior accessory GSV (AAGSV) remains infrequent in everyday surgical practice. This study assesses the efficacy of this unusual procedure.

Material and methods. From April 2003 to June 2014 we performed endovenous laser ablation of AAGSV in 147 patients (31 men and 116 women). In total, 173 AAGSV procedures were done. Before surgery, all patients were assessed with colour flow duplex ultrasonography and reflux pattern and diameter of the truncal vein (3.5 to 22.8mm) were recorded. The endovenous procedures were performed using 980nm diode or 1320nm Nd:YAG lasers combined with 600 microns bare fiber. In the follow-up (1 month to 10 years post op) patients were assessed clinically and with Duplex ultrasound.

Results. No deep venous thrombosis, nor pulmonary embolism were recorded. In majority of patients we found bruising and/or indurations along the treated veins which resolved within 2 to 3 weeks. Twice, the neovascularisation was found in the groin and the total occlusion rate was 92%.

Conclusions. Even technically more difficult and delicate, endovenous laser therapy of AAGSV can be performed safely and finally with excellent results comparable to well established ablation of GSV.

AB0076

POSTER (VARICOSE VEIN)

Endovenous laser therapy of varicose veins – 13-year Czech experience

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Aim. This review describes our own laboratory and clinical experience with endovenous laser procedures.

Material and methods. After meticulous laboratory experiments starting in 2002 we performed in total more than 1700 endovenous laser procedures of trunk varicose veins of lower extremities in more than 1300 patients (great, small and accessory saphenous and Giacomini veins). Every patient was preoperatively examined clinically and with color Duplex machine. Post-operative follow-up (clinical and Duplex ultrasound) was performed after 3-5 days and 1 month, 6 months and yearly thereafter.

The results were evaluated by comparison of CEAP clinical class and quality of life (QoL) pre- and post-operatively and by the percentage of recanalizations and also using Kaplan-Meier life-table method.

Results. Two cases of peripheral thrombosis but no pulmonary embolism were diagnosed in the post-operative period; from the whole cohort, the postoperative data were available during different time periods in 99% of cases.

Saphenous occlusion was verified in 97.3% after 1 month, non-occlusion or early reopening was seen in 2.7%. Final occlusion rate was 94%. Mean clinical CEAP classification improved from 2.22 (before operation) to 0.24 (1 month after) and 0.48 (last visit) and also QoL was significantly better in laser group compared to traditional surgery group ($p < 0.001$). The sick leave was also significantly shorter in the laser group (median 0 days) compared to traditional group (median 40 days), $p < 0.001$.

Conclusions. Apart from minimizing recurrence, EVLA is also valuable with respect to its cosmetic effect and gentleness of the procedure, allowing fast return to full activity. The results of the procedure depend mainly on meticulous pre-operative ultrasound examination and technically excellent procedure to administer sufficient amount of energy to the venous wall. The long-term results of these procedures are equal or even better than traditional open surgery.

AB0018

POSTER (VARICOSE VEIN)

A case of arteriovenous fistula after endovenous laser ablation for varicose vein

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Endovenous laser ablation (EVLA) is the common treatment for symptomatic varicose veins (VVs). The treatment has been shown to produce high rates of truncal vein occlusion with few complications. However, in rare cases, the severe complications including endothermal heat induced thrombosis and arteriovenous fistula (AVF) might occur after the laser treatment. We herein report a 81-year-old male who was treated by EVLA for VV on his left side of great saphenous vein (GSV), and suffered from AVF on his left side of groin at one postoperative period. Duplex ultrasonography (DUS) showed the AVF between the proximal site of GSV and the branch of common femoral artery, which led to leg ischemia due to deep venous reflux. Surgical procedure for closing the AVF was performed, and his symptom was resolved. Even though the severe complications are rare after the EVLA, there is potentially serious sequela of postoperative AVF, leading to severe limb edema and high-output cardiac failure. On the basis of our experience, we would recommend expectant management with clinical and DUS surveillance.

AB0299

POSTER (VARICOSE VEIN)

Endovenous heat-induced thrombosis (EHIT) or extension of thrombosis superficial post thermal ablation (PASTE) after EVLT of GSV with 1470 nm laser

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Background. The EHIT is a pathognomonic complication of thermal ablation.

Aim. To evaluate incidence, progression and risk factors.

Type of study: non-randomized, retrospective

Period: 15/08/08 - 15/8/13

Surgical technique: percutaneous, in ambulatory unit with local anesthesia

Materials: 1470 nm diode laser

Population: 1063 GSV

Sample: 16 patients

Method: We measured the diameter of GSV at the SFJ, the reflux time, distance from the tip of the fiber to the terminal valve and residual stump.

Physical parameters: LEED 30/40 J/cm

Diagnosis and progression of EHIT: 3rd, 7th and 30th day

We do not indicate simultaneous complementary treatment.

We analyzed demographic data: sex, age and clinic severity.

Results. Incidence:

3rd day: 1.22%

Type1: 1050 limbs 98.787%

Type2: 12 limbs 1.128%.

Type3: 1 limb 0.09%

Type4: no

7th day: 1.51%

Type1: 1047 limbs 98.49%

Type2: 15 limbs 1.4%

Type3: 1 limb 0.09%.

Type4: no

EHIT progression:

15 patients with EHIT2 resolved spontaneously at one month.

3 patients with EHIT1 progressed to EHIT2

DVT and TEP: no

Comparison: G1: no EHIT versus G2: EHIT

Average age: G1: 53.70 versus G2: 62.40, sex: male G1: 32 versus G2: 56.25%, diameter of GSV G2: 116 versus G1: 92 mm Statically significant.

Clinical diagnosis: the highest percentage C3, degree of reflux, mean distance of the fiber tip: 2 cm (1.8-2.3 cm) and residual GSV stump: 2.3 cm (1.4-3.3 cm). Not statically significant.

Conclusions. Incidence is low, early DUS determines increase the rate of diagnosis and progression.

Risk factors associated with increased rate include: age, sex, vein size.

Clinical severity, degree of reflux, position of the catheter tip, and length of stump were not a risk factor.

We do not perform simultaneous complementary treatments, and perform DVT prophylaxis in all patients according to the risk, therefore these cannot be considered as bias.

AB0143

POSTER (VARICOSE VEIN)

10-years experience with endovenous laser ablation of varicose veins

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Background. The authors of the retrospective study present 10 years outcomes with endovenous laser ablation of the varicose veins.

Material and methods. Endolaser surgery of varices has been performed since 2004, firstly with the instrument of 980nm wavelength; and exclusively with 1470 nm wavelength laser beam since 2008. All procedures were performed only in "One-day surgery" mode. At the beginning we used general anaesthesia and later we preferred combination tumescent anaesthesia and analgesia. The big tributary veins we often performed phlebectomy or the endovenous laser during the procedure on the main vein. In our patients the procedure is always performed under the protection of LMWH, in accordance with other authors.

Results. 892 patients, who passed the total of 1025 ELVeS procedures in the period from 2004 to 2013, were assessed in this study. 96 of the procedures were bilateral; the great saphenous vein was treated in 78% of cases.

nous vein was treated in 85.9% cases, and the small saphenous vein in 14.0% patients. The reflow in the great saphenous vein occurred in 5.88%, and in the small saphenous vein in 8.82%. None of those patients had to be re-operated for this reason.

Conclusions. The successful endo-laser ablation of insufficient main veins of lower limbs and all their affected branches is a very significant progress. However, it must be performed radically and with the attempt to treat the disease the most complexly even during the primary treatment.

AB0049

POSTER (VARICOSE VEIN)

Endovenous laser treatment combined with mini-incisional high ligation in great saphenous varicose veins

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Aim. This study aims to evaluate the complications after modified endovenous laser treatment (EVLT), EVLT combined with mini-incisional high ligation (MIHL), for great saphenous varicose veins.

Material and methods. Records of 61 patients with great saphenous varicose vein who underwent EVLT combined MIHL from March 2011 to December 2014 were retrospectively analyzed. We made a tiny incision (less than 1 cm) on inguinal skin on which marked with ultrasound prior to operation. High ligation of great saphenous vein (GSV) and EVLT were performed with a 600 µm laser fiber introduced into the distal GSV through the cut down of the vein.

Results. A mean age of 61 patients (male 13, female 48) was 48.7 ± 12.8 years (range: 21 to 76 years). Involving right lower extremity was in 50 patients and left in 39 patients. Most of the patients were class C2 to C4 based on the CEAP classification: Forty patients had C2, eighteen C3, two C4, one C5. Symptoms were significantly improved in all patients. Postoperative medial thigh pain was developed in 13 patients, but it did not interfere with daily activities. Numbness was developed on the medial thigh in 3 patients, which resolved in a couple of weeks. Four patients had allergy to the compressive stocking. Adhesive bandage caused skin bulla formation in one patient. There was no recurrence, deep vein thrombosis or deaths during follow up.

Conclusions. EVLT combined with MIHL was performed as a minimally invasive surgery for varicose vein and showed low occurrence rate of complication and no incidence of recurrence and deep vein thrombosis.

AB0152

POSTER (VARICOSE VEIN)

Endovenous laser ablation of incompetent veins with 1470nm radial slim fiber

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Background. The treatment of incompetent perforating veins (IPVs) is controversial. However this treatment has been shown to results in more rapid healing of ulcers and lower re-

currence rate. The therapeutic options used for the treatment of IPVs of the leg include open surgical ligation, subfascial endoscopic perforator surgery, and sclerotherapy. Percutaneous ablation of perforators (PAPS) is a relatively new, minimally invasive technique, which closes off potential source of reflux. A new thin one-ringed radial fiber (ELVeS Radial slim™ Fiber) has been available that works with 1470-nm diode laser. The aim of study was to gain initial data on the safety and efficacy of PAPS with this fiber.

Material and methods. A total of four perforating veins (thigh 1, leg 3) in four limbs of four patients (male 2, female 2) were treated in our clinic. The CEAP's clinical classifications were C2 (1), C4b (2) and C5 (1). The target vein was identified with DUS in a reverse Trendelenburg position and punctured using micro puncture device or 16G needle via superficial vein or directly. Then radial slim fiber was inserted. Perivenous local tumescent anesthesia was given under US control. A 1470nm diode laser was used at a power of 6W in the continuous pullback mode. After treatment, DUS is used to confirm occlusion of the treated vein segment.

Results. In all treated perforating veins, occlusion with elimination of reflux could be demonstrated immediately after the procedure. Follow up of 1month, all IPVs were still occluded and no thrombotic adverse events.

Conclusions. In our preliminary results show that treatment of IPVs with the radial slim fiber and a 1470nm diode laser is safe and successful.

AB0221

POSTER (VARICOSE VEIN)

Endovenous techniques are improved by ultrasound-guided hyaluronan injection instead of tumescence

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Background. Thermal closure methods are currently replacing surgery in the treatment of saphenous vein insufficiency. However, standard saline-based tumescent anesthesia is not suitable for optimal results, as it compresses the target vein just for a few hours. After basic experience with hyaluronan (UIP 2013) we examined a modified substance to achieve initial and lasting vein lumen reductions.

Material and methods. 44 patients (28 f, 16 m, 42-71 yrs.) with insufficiency of the GSV, diameter 7.4-23.1 mm, distance to skin >10 mm, receiving endovenous laser treatment (1470 nm) or catheter microfoam (Aethoxysklerol 1%) were randomized for lumen reduction: One group (A) received a novel hyaluronan solution (NASHA, n = 12, investigational, crosslink ratio of < 1.0%), while another group (B) received standard tumescent fluid (n = 12). Some patients (n = 20) received both hyaluronan and tumescence in separate GSV segments. The application of hyaluronan was performed with a coaxial safety cannula system (IntraShape) using ultrasound monitoring. Clinical and sonographic follow-up was performed after 2, 8, 16 and 26 weeks.

Results. Hyaluronan injection was technically successful in 41/44 cases (93.2%). Initial diameter reduction obtained by hyaluronan was 54-81%, mean: 68.3%. Clinical follow-up showed a complete absence of symptomatic phlebotic reactions and no discolorations in hyaluronan-treated segments, while segments with tumescent anesthesia had symptomatic inflammations in 15/22 cases (68.2%) or mini-thrombaspersions (5/22, 22.7%). Visible hematoma were present in 2/22 (8.7%) after hyaluronan versus 18/22 (81.8%) after tumescence. No adverse events of hyaluronan were observed.

Conclusions. Initial and long-term vein lumen reduction of

endovenous methods can be improved by using cross-linked hyaluronan solution instead of tumescence fluid. The procedure is safe and effective. Combined with microfoam sclerotherapy, a simple and very comfortable modality is established, which will be subject to further investigations.

AB0347

POSTER (VARICOSE VEIN)

Esclerotherapy and laser at Centro de Varices y Estetica Laser Paraguay

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Aim. We present in this study our report of a useful therapy for patients suffering from varicose veins and to assess the effectiveness of laser therapy plus esclerotherapy with polidocanol in our clinical practice in Paraguay.

Material and methods. Between December 2006 and March 2011, 745 patients with varicose veins were treated with sclerotherapy and the hand piece of 980nm diode laser (Synus R). All patients were between class I and II CEAP classification patient satisfaction were assessed after all he procedures.

Results. Our protocol requires a total of 2 monthly sessions for a 3 month period according to the clinical case to treat, the chemical sclerosis of vessels of 1mm or less was done with polidocanol with concentrations ranging from 0.25% to 0.5%, followed by laser transdermic photocoagulation of vessel of less than 1 mm with a fluency between 100 to 150 joules by square cm in the same session.

Conclusions. Sclerotherapy combined with the laser beam, was most effective than sclerotherapy and laser alone. After this treatment we suggest new perspectives in the treatment of patients with varicose vein disease. The immediate success rate after the completion of treatment was higher than 90% and we conclude that it has a very good results aesthetically and physiologically for all patients with vein cosmetic problems.

AB0090

POSTER (VARICOSE VEIN)

Endovenous heat-induced thrombosis after radiofrequency ablation: is it a knotty problem?

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Background. Endovenous radiofrequency ablation (RFA) is a safe and effective treatment for varicose veins caused by saphenous reflux. Endovenous heat-induced thrombosis (EHIT) is a unique complication of this procedure. The purpose of this study is to describe the frequency and clinical consequence of EHIT after RFA and the correlation with vein diameter and the length of proximal patent segment of saphenous vein after ablation.

Material and methods. A retrospective analysis was performed using prospectively collected data from March 2009 to July 2014. Preoperative Duplex scans were obtained using standard protocols to establish reflux and target vein diameter. Postoperative Duplex scans were obtained within 7 days after the procedure and 1-month, 6-month follow-up. The incidence of EHIT and the relationship between vein diameters with the length of the proximal patent saphenous segment after ablation were analyzed. We investigated CEAP score, venous clinical

severity score (VCSS), and quality of life (QoL) score. The paired t-test and bivariate correlation analysis using SPSS Ver. 19.0 (Armonk, NY) were used for statistical analysis.

Results. RFA was done in total 720 limbs in 524 patients (male 226, female 298). The mean age was 52.8±0.5 years (range 8-84). EHIT occurred in 5 of the limbs ablated for an incidence of 0.7%. The EHIT resolved completely in all patients. Preoperative mean diameter of saphenous vein was 6.7±1.8mm (3.5-11.2mm). The mean length of the proximal patent saphenous segment was 12.5±8.5mm (0-44.3mm). The correlation coefficient between two parameters was -0.017. Clinical outcomes of clinical class, VCSS, QoL score were improved significantly, 2.33±0.78 to 1.29±0.96, 3.48±0.98 to 0.63±1.16, 6.91±6.69 to 3.38±4.74, respectively.

Conclusions. RFA for varicose vein has a high success rate with a low risk of EHIT and unproblematic clinical course. There was no correlation between the diameter of saphenous vein and the proximal patent saphenous segment.

AB0242

POSTER (VARICOSE VEIN)

Comprehensive treatment of the reticular-telangiectatic complex

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Reticular varicosities and telangiectasias are the first level of chronic venous disease and have high frequency. There are epidemiological studies that show up to 90% of the population suffering from telangiectasias and 59% are isolated. There is an important ethiological relationship between incompetent reticular veins and telangiectasias, which guides the treatment.

Being the main objective of solving the problem the elimination of the reflux at its leaking point, is tremendously important the identification of the incompetent reticular vein. We found a good ally at this point using magnified virtual reality and high frequency ultrasound.

For treating the reticular vein we use Nd:YAG 1064 nm long pulse laser with contact cooling system together with echo-guided microfoam Polidocanol sclerotherapy. Residual telangiectasias are treated with Nd:YAG 1064 nm laser and the very superficial and thin networks with intense pulse light. Technical details ensure good results.

AB0128

POSTER (VARICOSE VEIN)

5 reasons to preserve the saphenous trunk with the CHIVA method

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The saphenous trunk can always be preserved using the CHIVA method. The advantages to preserving the saphenous trunk can be summarized in 5 points.

1. Using the saphenous trunk for an arterial by pass of the legs or coronaries

2. Limiting the evolution of varicose vein disease as demonstrated by the recent Thomas Korpff study. This study demonstrates that the increased residual venous pressure resulting from the suppressed drainage of healthy tributaries after stripping leads to an increased varicogenesis.

3. Limiting the need to re-intervene if a new escape point appears or in the case of the recurrence of a treated one. This happens thanks to the fact that if new post-treatment escape points appear, they drain into the saphena as well as to the efficacy of the re-entry perforators that allow the blood to reach the deep system without new visible varicose veins. The order maintained by the saphenous trunk in case of recurrences makes managing the venous disease easier.

4. The saphenous trunk can represent a compensative circle (vicarious shunt) in case of deep vein thrombosis or traumatic obstruction. The same applies to a post-thrombotic syndrome with an obstructive or restrictive component. This function results from the development of a pressure gradient from the deep to the superficial system and is independent of the saphenous valve competence.

5. After 10 years CHIVA results are better than stripping, as demonstrated by 4 RCTs and by a Cochrane Review.

AB0074

POSTER (VARICOSE VEIN)

VANST – a modern surgical approach in the aesthetic treatment of the varicose veins

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Background. A new era of surgical treatment of the varicose disease is upon us.

This study aims to present VANST (Varices' Ambulatory Non-stripping Surgical Therapy) – a modern minimally invasive aesthetic ambulatory surgical method of taking the varicose veins out of the circuit by disconnecting the ways of their filling-up (both venous flux and reflux).

Through this procedure the varicose veins are left in place but they become just empty non-functional tubes.

Material and methods. The steps of the procedure:

A – The marking on the skin of the places of the future incisions

B – The surgical intervention:

- Local anesthesia with 1% lidocaine

- Incisions of 1-5 mm

- The varicose veins (including saphenous trunks) are intercepted, sectioned and ligated; the same procedure is applied for insufficient perforant veins

- A non-compressive bandage is applied

C – The patient is immediately mobilized after the operation and leaves the clinic after 30 minutes

D – Post-operative check-ups.

Results. Total number of the procedures: 2008.

The closing-up and disappearance of the varicose veins occurs immediately in 100% of the cases.

A 5-year follow-up of 1279 cases (63.7%) showed that the recurrence of the varicose disease after VANST occurred in 89 cases (6.95%).

VANST can be applied in a great variety of cases:

- troncular insufficiency of the GSV and of the SSV including the giant varicose veins

- varicose veins complicated with lipodermatosclerosis or leg ulcer

- superficial thrombophlebitis of the inferior limbs

- recurrent varicose veins

- varices from non-saphenous origins

Conclusions. VANST permanently takes the varicose veins out of the circuit, but preserves the patient's normal venous capital. VANST can replace stripping in the treatment of the severe complicated cases. VANST is a leading modern procedure of surgical treatment for the varicose disease.

AB0210

POSTER (VARICOSE VEIN)

Compression film bandage: the first modality to provide continuous vein compression while allowing sports and showering

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Background. Textile compression media (stockings, bandages) are a standard after invasive vein treatments. However, compression by stockings is often discontinued, at least overnight, and bandages have to be frequently renewed. A new compression film bandage (CFB) could offer continuous support for several weeks.

Material and methods. The investigated film bandage (Venartis Inc.) is a prototype consisting of a self-adhesive polymer film of <20 microns in thickness, water resistant but breathable by micropores, with elastic properties achieving pressures of 14-18 mmHg at the ankle region. In 125 patients (73 f, 52 m, 28-72 yrs.) receiving foam sclerotherapy, superficial leg varicosities (4-12 mm Ø) were randomized to A) continuously worn CFB plus compression stocking German class II by day (n=50), B) compression stocking alone (n=50), and C) CFB alone (n=25), all worn for 2 weeks. All activities including work and sports were allowed, as well as daily taking showers. Vein regression was registered by ultrasound and clinical examination after 2 weeks.

Results. 70/75 patients with CFB (93.3%) completed 14 d wearing time, while 4/75 (5.3%) reported film dissolution after 8-12 days after intensive sports (>1 h), and 1/75 (1.3%) had film displacement at the thigh due to stocking-induced tension. Superficial varicosities compressed with CFB (B) showed a faster diameter reduction of 16-42% (mean: 28.2%) compared to stocking (A). Symptoms (inflammation, induration, discoloration) were observed in 3/75 (4%) when using CFB versus 48/75 (65.3%) related to stocking compression. Comparing CFB alone (C) to stocking (B), no significant difference was detected.

Conclusions. The novel compression film bandage contributes significantly to a faster and asymptomatic regression of foam-occluded superficial varicosities. It may also serve as an alternative for patients not tolerating textile compression media, or during summer time.

AB0046

POSTER (VARICOSE VEIN)

Esthetic advantage of cryotherapy in tributary varicosity patients

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Background. Cryotherapy (CA) is recently introduced as a new treatment modality in varicosity treatment. Cryostripping (CS) is effective in removing saphenous truncal varicosity by small incision and cryoavulsion (CA) is also effective to remove tributary varicosity by puncture wound so by using both methods multiple varicosity patients can be treated through same puncture wounds with good esthetic outcomes.

Material and methods. During 2 years (from Jan. 2010 to Dec. 2011) varicosity patients whose clinical class were 2-4 in CEAP class had been treated by CS of GSV or SSV with 1-2 small incision and CA were performed with same wound or 1-2 more puncture wounds. Complication and satisfaction scores such as VCSS (Venous Clinical Severity Score) and AVVSS (Aberdeen Varicose Vein Severity Score) were evaluated.

Results. 1) In 58 patients, male to female ratio was 33:25, mean age was 47.0±13.6 and in CEAP class, C2:31 C3:23 C4 4 patients in each and all patients were As2, 3 and 4.

2) Numbers of puncture wound were 2.13±0.85 (except groin incision).

3) Complications such as hematoma are 53 cases (91.4%) which were subsided within 2 months and mild neuralgia occurred in 20 cases (34.5%) which were easily controlled by analgesics.

4) Their sick leave from work was 4.3 ± 1.7 days.

5) In 55 patients with F/U 2 months, VCSS change were 4.25 ± 1.12 / 0.75 ± 0.69 and AVVSS change were 8.52 ± 0.99 / 1.11 ± 0.89 (preop / postop 2 months)

Conclusions. 1) Cryoavulsion of tributary varicosity may be combined with cryostripping minimizing additional puncture wounds efficiently.

2) Hematoma incidence was high because of incidental subcutaneous fat removal in early postop period.

3) Two month later cryotherapy resulted in minimal puncture scars on patient's esthetic aspects.

AB0127

POSTER (VARICOSE VEIN)

Cryosurgical treatment of varicose vein in 2,918 cases

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The high ligation and saphenous stripping has been the traditional therapeutic method used for varicose veins for many centuries. Recently, EVLT, VNUS and Trivex have been introduced as a minimally invasive procedure. However, there are considerable rate of recurrences. We needed a better treatment method to fulfill these requirements. I introduced this cryosurgery (cryostripping and cryophlebectomy) to phlebology for the first time in Korea in the last several years. Cryostripping is a kind of inversion stripping using cryoadhesion of the probe tip. The probe is inserted into the lumen of the vein and moved in a distal direction of the saphenous vein. When the tip of the probe is frozen and adheres to the vein wall, and then the surgeon can pull out the vein in an inverted manner. Cryophlebectomy is used for the perforator and reticular veins of saphenous branches with small diameter and tortuous veins. This can remove unwanted veins by vascular endoluminal probing, or just contact the side of the vein walls and can be extracted. I have used the cryosurgery for the treatment of varicose veins using X-cryo from Jul. 2006 to Jun. 2014; in 8 years I had 4,569 patients. Cryostripping was performed in the greater saphenous vein (GSV) in 2,013 cases, and lesser saphenous vein (LSV) in 905 cases. Among the 2,918 cases, we found only one case of recurrence in the LSV operation, and mild peripheral nerve injury in only 2 cases in our study. The results of cryosurgery in the treatment of varicose veins is very satisfactory.

In conclusion, cryosurgery in the treatment of varicose veins is highly effective, less expensive, simpler procedure, minimally invasive, very aesthetic, speedy recovery, less complications, and less recurrence. To date, it is considered one of the best treatment methods for varicose veins.

AB0174

POSTER (VARICOSE VEIN)

The consequences of aging on the population in the management of varicose veins by sclerotherapy (French Society of Phlebology)

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Aim. An aging population requires evaluation of methods of treatment in older patients. Are the sclerotherapy treatments in older and younger patients different?

The objective was to evaluate the indications, practical modalities, safety and tolerability of sclerotherapy in patients 75 years of age and older and to compare with a control group (CG) composed of younger patients.

Material and methods. This multicenter prospective study was conducted by the French Society of Phlebology. Each center had to collect in 10 to 20 patients ≥ 75 years of age and an equal number of patients 18 to 74 years of age to comprise a control group (CG), the treatment indication, the patient's personal history, the CEAP clinical class, the type of veins treated, the characteristics of sclerotherapy and the possible occurrence of a complication (immediate and at 1-month follow-up).

Results. Population: 418 patients were enrolled in 15 centers: 176 patients ≥ 75 years of age (mean: 79.4 years) and 242 patients 18 to 74 years of age (mean: 52.7 years).

CEAP clinical classes C4, C5 and C6, a history of deep vein thrombosis (DVT) (12.5%) and superficial vein thrombosis (11.9%), oral anticoagulant therapy (9.1%) and ongoing anti-platelet therapy (16.5%) were statistically more frequent in older patients.

All types of veins were treated from saphenous veins to telangiectasia.

Sclerotherapy: There was no difference in concentrations of the sclerosing agent.

When foam sclerotherapy was used (91.5% of cases), the injected volume was statistically lower in the group of subjects ≥ 75 years

Complications: One vasovagal syncope occurred in the group ≥ 75 years. One asymptomatic distal DVT was reported in both groups at 1 month follow-up.

Conclusions. This observational study demonstrated the feasibility of sclerotherapy in older patients, with no specific complications nor need for special precautions. Foam sclerotherapy was widely used in this population.

AB0190

POSTER (VARICOSE VEIN)

Long term skin ulceration after sclerotherapy

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Patient: Male, 69 years old

History: The patient was diagnosed with varicose veins of lower extremities and treated by surgery with extensive surgical incisions in another hospital in 2000. Relapse in varicose veins occurred due to blood reflux of great saphenous vein (GSV) in the left leg. Therefore in 2009 he received Endovenous Laser Ablation (EVLA) and ambulatory phlebectomy. Sclerotherapy using Sodium Tetradecyl Sulfate (STS) was conducted 7 times until 2012.

In 2014 ultrasound guided sclerotherapy was conducted. 2 weeks later, skin necrosis was found. So wet dressing was performed then patient was sent home. For the next 3 weeks the patient performed treatment on himself which made the wound become bigger, deeper and messy. Therefore curettage was done for the next 8 days. The wound site became clean but there was no reduction in size hence hydrocolloid band was used. It was a little bit effective. But unlike other patients, the treatment was put to an end after 4 months.

Due to the wide extensive surgery performed in another hospital, the subcutaneous layer became too thin and scar formation was developed. And it made the skin necrosis easily and healing of scar was delayed. Also due to the same reason, extensive skin debridement and suturing of the wound site could not be done.

In conclusion, sclerotherapy performed to the patient with a damaged subcutaneous layer developed long term skin necrosis. Therefore when performing sclerotherapy to such patients, it is necessary to be cautious.

AB0117

POSTER (VARICOSE VEIN)

French sclerotherapy and compression: practice patterns

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Background. Based on the recommendations of experts, and supported by a low level of proof, compression after sclerotherapy is applied all over the world.

Aim. Investigating the practice of French vascular physicians (VP) for sclerotherapy and the use of post-sclerotherapy compression.

Material and methods. A questionnaire concerning their practices was sent to French VPs through their regional vascular medicine professional development associations.

Results. A total of 366 VPs replied to the questionnaire, of whom 63% (229/366) were in private practice, 6% (21/366) in hospitals, and 31% (115/366) had a mixed private-hospital practice. Sclerotherapy was practised by 88% (323/366) of them. Two thirds of the VPs used sclerosing foam (SF) and practised sclerotherapy using ultrasound-guidance (USG). Less than one third of the VPs regularly applied compression after sclerotherapy. When compression was applied, it was usually after treatment of saphenous or accessory saphenous veins and, in most cases, medical compression stockings (MCS) of 15-20 mmHg were used. With respect to the period recommended for wearing compression, this ranged from 48 hours to 1 week for 65% (193/299) of the VPs questioned.

Conclusions. The great majority of VPs who answered the questionnaire employ USG to perform sclerotherapy and use SF. Compression after sclerotherapy is diversely applied in France and does not comply with the recommendations of the French Health Authorities who recommend wearing a stocking of 15-20 or 20-36 mmHg for a period of 4 to 6 weeks. Thus, less than one third of the VPs regularly used elastic compression and when they did, it was usually a MCS of 15-20 mmHg, for one week or less.

AB0114

POSTER (VARICOSE VEIN)

Role of weakness of vein wall in pathogenesis of varicose veins

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Background. Vein distensibility is controlled by collagen, elastin and smooth muscle in its wall. Any defect in relative distribution of these components may be responsible for weak vein wall and varicose veins.

Material and methods. Authors have studied histopathological changes in the vein wall specimens in 40 patients of varicose veins after stripping and in 10 patients with normal vein (taken from patients of arterial bypass grafting).

Results. We found significant differences in the GSV wall in patients with and without varicose veins. These changes were more pronounced in patients with higher clinical grade (CEAP) of disease. On H & E stain, there was significant increase in the tunica intima and media thickness. This was due to increase in the connective tissue component and migration of SMCs from tunica media to intima. On Masson's trichrome stain, there was significant increase in color area percentage of collagen in tunica media in varicose vein patients. This increase in the level of collagen causes separation of SMCs in the tunica media and they are not able to maintain the venous tone. On comparing the color area percentage of SMCs in the tunica media there was significant increase in the level of SMCs but there was loss of regular arrangement of SMCs in the varicose vein group which causes loss of venous tone.

On Verhoff's stain, there was significant decrease in the level of elastin at the internal elastic lamina in varicose vein group which results in increase in the stiffness in the vein wall. Such veins are not able to bear changes in venous pressure and lead to varicose veins.

Conclusions. Hence primary changes in the vein wall rather than valvular incompetence may be responsible for pathogenesis of varicose veins.

AB0069

POSTER (VARICOSE VEIN)

Prevention of recurrent varicose veins

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Background. Varicose recurrences after operative treatment (PREVAIT) are a common problem, complex and costly. Can we prevent, or, at least, reduce its incidence?

Material and methods. Review of the literature.

Results. We distinguish residual varices resulting from an 'oversight' involving the skin marking quality and therefore the anatomic and hemodynamic mapping, or secondary to a wrong tactical choice (here too, the quality of the Duplex ultrasound investigation may come into account).

The true recurrences frequently find their cause in the disease progression. The identification of predisposition to chronic venous disease would help. Apart from a few specific points, the breeding ground for recurrent varicose veins has not been clearly defined. The progression of the disease depends on the importance of venous recognized risk factors (heredity, age, term pregnancies, physical inactivity, overweight...) but also other specific factors (abnormalities of the deep venous system, lack of muscle pump calf, wanted pregnancy...). The suspicion of a strong evolutionary potential, presence of specific factors can lead to modulate the therapeutic decision and propose a regular postoperative follow-up.

Other causes of recurrences are technical errors (prevention = improvement of practices) or an incorrect choice of technique (prevention = better understanding of techniques and of their limitations) and, finally, a widely accepted phenomenon: neovascularization, for which conventional surgery open air is the most often implicated technique.

Conclusions. the prevention of recurrent varicose veins requires a management of chronic venous disease, improvement of practices of preoperative Duplex ultrasound examination and of the practice of surgical technique (and a judicious choice of it) and through regular post-operative follow-up which permit, even if it is then a failure admission, to reoperate early (usually by ultrasound-guided foam sclerotherapy), and prevent the development of major recurrent varicose veins.

AB0303

POSTER (VARICOSE VEIN)

A case of great saphenous varicose vein without sapheno-femoral junction incompetence with competent superficial epigastric vein: evidence of ascending pathogenesis of varicose veins

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Background. Although varicose veins of the leg (VV) are common disease, etiology and pathogenesis of VV is not clear yet. There is descending and ascending theory in pathogenesis. We report a case of VV originate from great saphenous vein (GSV) without sapheno-femoral junction (SFJ) incompetence but with competent superficial epigastric vein (SEV) which function as origin of venous reflux.

Case report. Sixty five year-old male was presented with left leg VV complicated with leg cramps, edema and dermatitis for four years. He had past medical history of CABG. Duplex scan of the leg demonstrated competent SFJ with incompetent GSV from just below SEV drainage to varicose vein conjunction at below knee area. It also demonstrate competent highest valve between SFJ and SEV. High ligation and stripping of GSV was performed. We noted SEV had thin wall and was dilated to 3 mm in diameter during surgery. Surgical specimen demonstrated normal looking highest valve was present between SFJ and orifice of SEV.

Conclusions. This case support ascending theory in pathogenesis of VV. We will report this case with literature reviews.

AB0288

POSTER (VARICOSE VEIN)

Doppler ultrasound assessment of the lower limb venous flow: passive squeezing test versus active calf contraction (Paraná manoeuvre)

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Background. The use of the Doppler ultrasound in the assessment of the lower limb venous flow with manual calf squeezing test (squeezing) is widespread. However, its reliability is limited. To improve the quality of assessment, a gentle push-or-pull manoeuvre (Paraná) was proposed. The manoeuvre was described in 1998 by Claude Franceschi during a Doppler vascular course in Paraná (Argentina). Gently pushing-from-the-rear or pulling-from-the-front, the manoeuvre elicits a proprioceptive reflex isometric contraction (systole) followed by a release (diastole) of the calf. In order to maintain the balance, the patient contracts the calf and consequently a centripetal flow in the venous system occurs.

Material and methods. Flow values were derived from Doppler velocity and echo caliber measures. Data from Paraná and squeezing were compared. A total of 575 flow measurements were performed among 57 patients on 20 healthy popliteal veins, 13 incompetent SFJ (Sapheno-Femoral Junction), 13 incompetent GSV (Great Saphenous Vein) trunks and 11 re-entry perforators altogether.

Results. Standard deviation of the acceleration shows that Paraná is more or equally accurate compared to squeezing. In

healthy subjects Paraná moves 40% more blood volume in the popliteal vein than squeezing.

In incompetent superficial veins, the diastolic phase of Paraná, compared to squeezing, is more than 3 times longer in the incompetent SFJ, more than 2 times longer in the incompetent GSV trunk, and more than 4 times longer in the re-entry perforators.

Conclusions. The Paraná manoeuvre is qualitatively equivalent to the squeezing test but far more quantitatively effective.

AB0142

POSTER (VARICOSE VEIN)

Patient's perspective of service provision for the management of varicose vein disease

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Background. Varicose veins are common, affecting approximately one third of the population of the United Kingdom. We set out to evaluate patients' perception of provision of the varicose vein service and future developments.

Material and methods. Between March to June 2014, patients attending the Vascular Outpatient Clinic with a venous complaint at a London Hospital were asked to fill an anonymous questionnaire about the service offered for varicose vein disease.

Results. One hundred and six patients completed the questionnaire. Most were females (62%) with a mean age of 51 ± 15 years. Patient's most common complaint for attending the clinic was pain, varicosities, swelling and heaviness. Three in four patients felt their varicose veins had a moderate or significant effect on their quality of life. More than 90% stated that the waiting time between a vascular appointment and venous scan should be no more than 1 month and 85% believed varicose vein procedures should be received within 1 month of their appointment. Ninety percent of patients expressed their assent when asked whether they would consider attending a 'one-stop' vein clinic offering same day diagnosis and treatment. Most patients were generally accepting of the fact that most procedures would be carried out under local anaesthetic.

Conclusions. This study illustrates that patients with symptomatic varicose veins preferred less time from referral to treatment and having fewer vascular outpatient appointment prior to their treatment. The potential 'one-stop' vein clinic appears to be a preferred option from a patient perspective and this concept needs exploring further.

AB0140

POSTER (VARICOSE VEIN)

The trends of inpatient and outpatient phlebosurgery in a large industrial city

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Background. The advent of minimally invasive endovascular techniques has contributed to more effective and safe treatment of patients with varicose veins (VV). However, the choice of inpatient phlebosurgery or outpatient endovascular procedures for VV remains ambiguous.

Aim. To determine the ratio between inpatient and outpatient phlebectomy in a large industrial city during the recent 5 years.

Material and methods. The city database of inpatient and outpatient procedures for VV between 2009 and 2013 was used.

Results. The total number of standard phlebectomies varied between 1627 and 1957 (mean 1867±65) surgical procedures/year. The number of open interventions did not tend to decrease. About 30% of patients with VV were operated on by general surgeons since 2011.

The total number of office procedures performed in patients with VV was: 12,108 in 2011, 14,740 in 2012, and 14,669 in 2013. The number of sclerotherapy (ST) procedures doubled during the first three years (from 1516 procedures in 2005 to 3449 in 2007).

The proportion of thermoablations (TA) in the total number of office procedures was close to 20%. There was an annual increase of TA: 2011 – 1672, 2012 – 3352, 2013 – 2585. Endovascular laser coagulation (ELC) prevailed in the structure of office TA procedures (51.8 – 74.6%). The ratio of ELC and radiofrequency coagulation was in 2011 – 2.6/1, in 2012 – 5/1, and in 2013 – 3.3/1.

Conclusions. Positive trends in phlebectomy have been revealed: a significant increase in patients treated for VV, a wider spectrum of treatment procedures, social and economic effectiveness of outpatient phlebectomy. However, the number of inpatient phlebectomies does not tend to decrease.

AB0188

POSTER (VARICOSE VEIN)

Focus on corona phlebectatica: diagnostic, significance and predictive value in chronic venous disorders

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Background. Corona phlebectatica (Corona) is a main clinical sign associated with chronic venous disorders (CVD). It is a good predictor for skin changes indicating a decompensation of the disease. However, it is not yet included in the clinical part of the CEAP classification, mainly due to the lack of operational criteria for its positive diagnosis.

Aim. To focus on the diagnostic and predictive values of corona, and to answer some relevant questions: How to define relevant operational criteria for a simple and reliable diagnosis in daily practice?

Results. In order to clinically define corona, the association of blue telangiectases and stasis spots has the best specificity, and the blue telangiectases is the most sensible item. Their associated presence can be considered as a good operational criterion for the positive diagnosis of corona.

Corona has also shown to be significantly correlated with the presence of incompetent leg perforator veins.

The presence of corona also has a high value to predict the occurrence of skin changes and venous ulceration in the next few years of evolution of the disease.

Conclusions. Corona should no longer be considered as simple telangiectases of the foot (C1). It is a simple and reliable clinical entity, extremely relevant for the severity of the disease. This is the reason why a careful examination of the ankle should be done in any patient with CVD.

AB0256

POSTER (VARICOSE VEIN)

How do we choose the treatments of varicose veins?

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Cabinet de Phlébologie, France

Background. Many different treatments of varicose veins are available, most recent studies show similar results at five years for most endovenous ablation techniques (chemical or thermal). The choice may depend on other parameters than efficacy only, furthermore, the definition of efficacy remains disputable.

Material and methods. An extensive analysis of criteria of clinical and instrumental efficacy as well as the analysis of other factors influencing the choice such as comfort of the procedure, patient's preferences, and cost effectiveness, is presented. The weight of each of these criteria deserves to be finely tuned since not a single one of them is sufficient to evidence the efficacy of a treatment.

Various methods of assessment can be constructed including clinical scores (VCSS), quality of life scales, and other patient reported outcome measures (PROMs).

Finally, an approach to micro-economics and cost effectiveness analysis is offered and the financial differences between countries is analyzed.

Results. Socio economic analysis is impaired by the variations in prices and fees, clinical results are reliable if assessed by PROMs, instrumental evaluation lacks correlation with clinical results.

Conclusions. Cost effectiveness of the available treatments of varicose veins is variable according to local prices and fees, it may not be the final argument for the choice of the treatment that seems to depend more on the physician's preferences and patient's information. A trade-off on willingness to pay seems to play an important role too.

AB0131

POSTER (VARICOSE VEIN)

Foam sclerotherapy is the number one choice for the treatment of spider veins

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Spider veins can cause disfigurement of the lower legs and other parts of the body. Sclerotherapy is the best treatment for spider veins. It was introduced to Korea in the early 1990's as a therapeutic method for varicose veins and a minimally invasive cosmetic procedure. Historically, the safest sclerotherapy was developed by European doctors about 50 years ago, and it is still the preferred treatment method for spider veins today, even though the innovative laser medicine is taking the place of new therapeutic regimens of vascular lesions in skin.

Sclerotherapy is the treatment method for unsightly spider veins and telangiectasia, by introducing a sclerosing drug into the vessel. The sclerosing drug creates an injury (endothelial damage) to the intimal layer of vessels, forming a thrombosis inside the vessel. Eventually, the thrombosis blocks the blood flow, and in time, the thrombosis becomes fibrosis (endosclerosis).

Foam sclerotherapy was introduced by Tessari L. 2001, and has become the standard technique in the field of phlebology, due to its simplicity. It is less toxic, non-invasive, no operation and a cost efficient treatment.

However, phlebologists should apply sclerotherapy in moderation to minimize complications. It is very good to follow the principles of sclerotherapy. I would like to discuss the indications, contraindications and complications of sclerotherapy.

AB0315

POSTER (VARICOSE VEIN)

Superficial thrombophlebitis post varicose veins treatment. A benign entity? Is it time to treat?

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Current practice favors the treatment of spontaneous superficial thrombophlebitis (ST) by using prophylactic dose fondaparinux for 6 weeks. The need to pharmacologically treat patients that develop superficial thrombophlebitis after surgical treatment for superficial varicose veins of the lower limbs remains a controversial topic.

The general consensus is that these patients are at lower risk of thromboembolism given the relative.

AB0252

POSTER (VARICOSE VEIN)

Economic evaluation of great saphenous vein ablation: results from an emerging health care setting

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Background. To conduct economic evaluations of radiofrequency ablation (RFA), ultrasound-guided foam sclerotherapy (UGFS) and standard surgery for great saphenous vein (GSV) reflux to inform health benefit package development under Universal Health Coverage in Thailand.

Material and methods. A cost-utility analysis was performed using decision tree analytic model to estimate an incremental cost-effectiveness ratio (ICER) using quality-adjusted life years (QALYs) gained as a utility measure. A societal perspective was adopted. Transitional probabilities were derived from a systematic review and meta-analysis and a prospective cohort. Direct medical costs were obtained from standard Thai costings. Direct non-medical costs, indirect costs, and utility were obtained from interviewing GSV-refluxed patients post-intervention. A probabilistic sensitivity analysis using Monte Carlo simulation was performed to assess the effect of the parameter uncertainties.

Results. Compared with inpatient surgery, RFA cost 12,935 Baht and 20,872 Baht higher whereas UGFS cost 6,159 Baht less and 1,558 Baht higher for outpatient and inpatient setting respectively. For outcomes, at 1 year RFA had slightly lower QALY whereas UGFS yields additional 0.025 QALY. RFA was dominated to surgery due to higher cost with lower QALY. Outpatient UGFS was dominant to surgery and had ICER of 62,320 Baht per QALY for inpatient. Given the ceiling threshold of 160,000 Baht per QALY, outpatient RFA and UGFS had chance of 0.15 and 0.71 to be cost-effective.

Conclusions. UGFS represents good value for money for treatment of GSV reflux compared to standard surgery and RFA in the Thai health care setting.

AB0251

POSTER (VARICOSE VEIN)

Quality of life after great saphenous vein ablation in thai patients with great saphenous vein reflux

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Background. To determine QoL in Thais after intervention for great saphenous vein (GSV) reflux.

Material and methods. Patients with CEAP classes 2 and 3 were enrolled. QoL was measured using EQ-5D, either endovenous or surgery, pre-intervention, 1 week and 1 month post-intervention. Patients reporting no problem in each domain at pre- and 1 month post-intervention were compared. Utility gain was estimated from EQ-5D and compared between clinical classes. Proportion of worsening QoL at 1 week post-intervention was compared between endovenous procedures vs. surgery.

Results. Eighty-three (56 endovenous procedures and 27 surgery) were enrolled. QoLs were significantly better in all domains post-intervention: pain/discomfort (58%), mobility (42%), anxiety/depression (38%), usual activities (19%), and self-care (9%). Utility gain was 0.255 (95% CI: 0.197, 0.313) and higher in class 3. At 1 week post-intervention, surgery had significant higher patients with worse mobility scores.

Conclusions. GSV ablation significantly improved both physical and mental QoLs in Thai GSV-refluxed patients.

AB0307

POSTER (VARICOSE VEIN)

Mechanochemical endovenous ablation (MOCA) with a hybrid infusion (liquid and foam)

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Background. Mechanochemical Endovenous Ablation (MOCA) device uses a technique that combines mechanical endothelial damage using a rotating wire with the infusion of a liquid sclerosant. However, when the treating veins have 10 mm or greater, the amount of sclerosant to be used is large, what makes it impossible to simultaneously treat more than one vein.

The authors also detect that recanalisation in these cases are frequent. Thus they present a new technique that successfully can treat this type of veins

Methods. Between January and June 2014 the authors treat 18 limbs (5 bilateral) with venous insufficiency (14 with great saphenous insufficiency and 4 with less saphenous insufficiency) in 13 patients.

All veins have 10 or more mm of diameter at 3 cm of the junction (medium 11.6 mm) and in all cases only was used local anaesthesia.

After 4 months only the occlusion rate was analyse.

The difference between our technique and the classic consists of more rotation time in the femoral junction zone (60 seg), and using liquid during the first 2 cm of the pullback.

After, we continue the pullback only with the rotating wire.

In the final we inject in the vein 4/5 cm of polidocanol foam (4/1 Tessari method) with ultrasonographic control

Results. After 4 months only one great saphenous vein present sings of recanalisation.

In all other cases the veins are completely occlude.

Conclusions. The authors conclude that the user of these technical, that combine rotation, liquid and foam, will be able, in future, to change substantially the treatment of venous disease of the lower limbs.

AB0258

POSTER (VARICOSE VEIN)

Is home made foam safe for sclerotherapy of varicose veins?

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Background. The use of foamed sclerosing agents has been popularized 15 years ago by Cabrera and Monfreux and, administered under duplex guidance, it has allowed sclerotherapy to reach an amazing level of efficacy. However, for various reasons, "homemade" foam (which remains the one used in 99%+ of cases) still receives disputable criticism.

Material and methods. We have analyzed publications in which complications related to foam have been reported and also the articles presenting an alternate choice.

Results. The gross actual incidence of severe adverse events after foam sclerotherapy is very low and not higher than that of other treatments of varicose veins (surgery, endovenous thermal ablation). Complications such as delayed stroke are not related to home made foam, some putative complications such as pulmonary hypertension have never been reported, and an objective analysis of RCTs demonstrates the good safety profile of "homemade" foam. Foam has been used for 15 years now and is legally licensed in many countries including France, UK, Germany, etc.

Conclusions. As of today, "homemade" foam offers affordability, convenience, efficacy, and safety. Evidence of a better sclerosing agent remains to be presented, the cost effectiveness of the method is also an incredible advantage over alternate methods.

AB0115

POSTER (VENOUS THROMBOEMBOLISM)

Study of prevalence of increased factor VIII levels in patients of deep vein thrombosis in North India

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Background. Increased levels of factor VIII is an important thrombophilic factor associated with deep vein thrombosis. The intrinsic, FVIII-dependent pathway catalyzes conversion of factor X into factor Xa approximately 50 times more efficiently than the extrinsic pathway. Hence estimation of its levels may help in management as these patients may require anticoagulation for a longer period.

Material and methods. The study was conducted in 50 patients divided in two groups, 40 patients in group A having DVT proved on color Doppler and 10 control patients in group B not having any venous disease and the prevalence of increased levels of factor VIII was studied in northern region

of India. Samples for measuring the levels of factor VIII were drawn prior to the initiation of anticoagulant therapy. Factor VIII measurement is based on activated partial thromboplastin time (aPTT) assay on IL coagulation systems provided by ACL advance. In the study our laboratory normal range for factor VIII was 50-150%.

Results. In Group A, there were 20 patients out of 40 (50%) who were having increased factor VIII levels while in group B, there was no patient who was having increased levels of factor VIII. Odds ratio came out to be 20. The difference between values of prevalence of two groups respectively was statistically significant showing that the prevalence of factor VIII was increased in patients with DVT in group A as compared to patients without DVT. All the reported studies conducted on factor VIII have shown prevalence of $\geq 20\%$. In the present study the higher prevalence rates of increase factor VIII may be due to regional or racial differences showing a high prevalence in Indian population as compared to Western population.

Conclusions. There is high prevalence of increased factor VIII levels in DVT patients in Indian Population.

AB0144

POSTER (VENOUS THROMBOEMBOLISM)

Linear bypass surgery in post-thrombotic occlusion of the iliac and femoral veins

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Russia

Background. To evaluate the immediate and long-term results of operations do not cross bypass post-thrombotic occlusions of the iliac and femoral veins.

Material and methods. From Sept 2012 to May 2014 in the clinic Surgery Postgraduate Medical N°1 Medical Military Akademia routinely over the post-thrombotic occlusive lesions of the iliac-femoral segment deep vein operated 5 patients. All patients had varicose form of post-thrombotic disease with decompensated forms of chronic venous insufficiency (CVI): permanent swelling of the lower extremities was present in all patients, trophic disorders of the skin and subcutaneous fat in 4 (80%), including leg ulcer in 3 patients (60%). Preoperative evaluation included a thorough scanning of ultrasound, ascending and descending femoral and iliac venography. Also in combined surgical interventions after the reconstructive phase followed the steps to remove the varicose saphenous veins, ligation of incompetent perforating veins.

Results. The postoperative period was uneventful: infectious complications have not been reported, it was 1 case of transient paresthesia, stitches removed in 8-10 days. Length of hospital stay of 5-7 days. Patency of bypass grafts, anastomosis was monitored during the ultrasound at 5, 10, 14 days. 4 patients had complete patency, 1 patient in the early period of 5 days marked the emergence of a PTFE graft not full-occlusive Thrombosis, wich not need to perform thrombectomy. Assess the immediate and long-term results is based on the degree of CVI patency of grafts and anastomoses on 1, 3, 6, 12, 24 month. In particular from 6 months and then all patients showed complete patency of bypass grafts, and the degree of CVI at the time of follow-up visit was described as C1-2 class.

Conclusions. The operation of the linear PTFE bypass or femoral vein resection and prosthetic autovein are an effective method of surgical treatment of patients with post-thrombotic occlusions of the iliac-femoral segment of deep vein thrombosis.

AB0163

POSTER (VENOUS THROMBOEMBOLISM)

DVT of the upper limb due to subclavian vein stenosis

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Aim. DVT of the upper limb is less common than of the lower limb. We present a case of DVT upper limb treated successfully with thrombolysis and stenting.

Material and methods. A 55 year old lady presented with a history of acute swelling and pain of the right upper limb of 3 days duration. There was a history of prior chemotherapy and radiotherapy for Ca right breast. Examination and Doppler examination revealed DVT of the brachial, axillary and subclavian vein. Her blood investigations did not reveal any feature of thrombocytosis or thrombophilia. Catheter Directed Thrombolysis (CDT) was carried out. A venogram showed multiple large clots. tPA 5 mg was instilled by lacing into the clot via the catheter. Then a continuous infusion of tPA at 1 mg/h was given. After 24 hours the venogram was repeated after 24 mg of tPA. It showed complete lysis of the clot which had now unmasked a tight stenosis of the subclavian vein. This was dilated with a ev3 Evercross 6mm x 60 mm balloon and then stented with a Protégé Everflex self-expanding 6 mm x 60 mm stent.

Results. The patient did well with the stenting and the swelling immediately disappeared. She was kept on LMWH (Arixtra GSK 7.5 mg s/c OD) for 10 days and then switched to Tab Acetrome keeping her INR between 2-2.5.

Conclusions. DVT of the upper limb is less common than of the lower. It should be looked for in cases of swelling of the upper limb and aggressively treated. CDT helps in resolution of the clot. In case of underlying stenosis – it should be dilated and stented to prevent recurrence.

AB0153

POSTER (VENOUS THROMBOEMBOLISM)

Central vein stenosis in patients with ESRD in Cipto Mangunkusumo Hospital, Indonesia

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Each patient ESRD stage V requires the access to hemodialysis. There are 2 kinds of access for hemodialysis are permanent and non-permanent access. Non-permanent access is used as a bridge to permanent use of subsequent access. Non-permanent access are tunnelled cuffed catheters and Untunneled catheter. Complications of catheter use is the presence of central venous stenosis. Have conducted a retrospective study of cases of central venous stenosis treated vascular surgery section RSCM, Jakarta, Indonesia. All cases of central venous stenosis treated with a history of previous use of untunnelled hemodialysis catheter.

AB0149

POSTER (VENOUS THROMBOEMBOLISM)

May-Thurner and Paget-Schroetter syndromes – diagnosis and management strategies

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May-Thurner and Paget-Schroetter syndromes are uncommon lower limb and upper limb acute venous thrombosis syndromes. Delay in treatment is linked with higher risk of

chronic morbidity from limb swelling and other consequences of post-thrombotic syndrome.

With high clinical index of suspicious, diagnosis is often relatively straightforward.

Management strategies are similar for both conditions, i.e. 1. thrombus removal and revascularisation, 2. maintain long term venous patency.

However in actual practice, the anatomical configuration that causes Paget-Schroetter Syndrome precludes a total endovascular solution in maintaining long term venous patency. The author will share from his experience about the potential pit falls in surgical and endovascular intervention.

AB0278

POSTER (VENOUS THROMBOEMBOLISM)

Characteristics of malignance patients with deep venous thrombosis as initial presentation

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Background. To study the characteristics of malignance patients with initial presentation of deep venous thrombosis.

Material and methods. This perspective study screened neoplasm among patients with deep venous thrombosis without evident thrombosis risk between May 2010 and January 2012. The characteristics of location of deep venous thrombosis, incidence of pulmonary embolism, serum biomarker of tumor-gender, ages were compared between screening positive and screening negative patients.

Results. In total of 117 patients of deep venous thrombosis without manifest risk risks, 84 patients were recruited, including 43 male and 40 males with average age of 62.52±16.03. Malignant neoplasms were detected in 8 patients with incidence of 9.52%, including lung cancer in 3 patients, pancreas cancer in 1 patient, soft tissue sarcoma in 1 patient, ovarian cyst in 1 patient, cervical cancer in 1 patient, colon cancer 1 patient. Mean age of malignant group was 50.63±24.68 which was not different from that of 63.78±14.55 in screen negative group (P=0.42) Proximal deep venous thrombosis presented in all patients with malignant neoplasm was more frequent than that of 63.17% in screen negative group (P=0.047). Positive rate of serum biomarker was 62.5% in neoplasm group which was higher than that of 10.53% in screen negative group (P=0.002). Sub-massive pulmonary embolism was detected by computer tomography angiography in 5 patients in malignant neoplasm group with incidence of 62.5%, higher than that of 18.40% in screen negative patients (P=0.01). Median lifetime of patients with neoplasm after diagnosis was 6 months.

Conclusions. Most of patients with malignant neoplasm primarily presenting deep venous thrombosis have proximal deep venous thrombosis with high incidence of pulmonary embolism and adenocarcinoma, high level of serum biomarkers of tumors. The lifetime is short after diagnosis. It is worthy to screen neoplasm in patients of deep venous thrombosis without evident risk.

AB0154

POSTER (VENOUS THROMBOEMBOLISM)

Clinical and radiologic course of acute portomesenteric venous thrombosis treated with anticoagulation therapy

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Aim. The aims of this study were to determine the clinical and radiologic outcomes of patients with acute portomesen-

teric venous thrombosis (APMVT), and also to assess the incidence of recanalization.

Material and methods. This retrospective study included 30 patients who were diagnosed with APMVT and managed with anticoagulation from January 2002 to December 2014. Patients with isolated superior mesenteric vein (SMV) thrombosis, malignancy of the liver, and cirrhosis were excluded. We evaluated the early outcomes including bowel resection (BR), long-term clinical results, and radiologic changes including recanalization on follow-up computed tomography (CT).

Results. Among 30 patients, 11 patients (37%) underwent BR (6 patients due to advanced bowel infarction at the time of diagnosis, 3 due to failed anticoagulation, and 2 due to late stricture). Twenty-three patients received follow-up CT at least 6 months after anticoagulation and the mean duration of last radiologic follow-up was 39.9 months. On follow-up CT, portal vein (PV) was recanalized in 65% (15/23) of patients, however, SMV was recanalized in 26% (6/23) patients ($p=0.058$). Complete thrombosis of PV and ascites revealed high tendency to cavernous transformation of PV (CTPV) ($p=0.071$ and $p=0.058$) and the independent risk factors of CTPV was combined splenic vein (SV) thrombosis ($p=0.044$) on multivariate analysis. The mean duration of clinical follow-up was 55.8 months. During the follow-up periods, 5 patients died (3, malignancy; 1, cerebral infarction; 1, anastomosis leakage) and 1 patient suffered from variceal bleeding. Overall survival rates at 1 year, 3 years, and 5 years were 93%, 88%, and 88%, respectively.

Conclusions. Recanalization occurs more frequently in PV compared with SMV after anticoagulation in patients with APMVT. Complication associated portal hypertension was rare in these patients during follow-up. Alternative therapy to prevent CTPV should be considered when SV thrombosis are present.

AB0275

POSTER (VENOUS THROMBOEMBOLISM)

Diagnosis and treatment strategy with challenge in acute mesenteric venous thrombosis

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Acute mesenteric venous thrombosis (MTV) is acutely mesenteric ischemic a kind of type. It is divided into primary MTV and secondary MTV, Approximately majority of MTVs are secondary. It is important reasons that to direct injury, local venous congestion or stasis, or hypercoagulable states. Abdominal pain, nausea and vomiting, lower gastrointestinal bleeding, and constipation are common complaints, sometimes can keep on for few days. Full understanding disease characteristics, D-dimer, CTA will contributes to diagnosis of MTV. Anticoagulation is very important treatment method as soon as the diagnosis has been established and with the purpose of to prevent recurrence, it is very necessary to continuously 3-6 months anticoagulation treatment.

AB0236

POSTER (VENOUS THROMBOEMBOLISM)

Thrombolysis and surgical venous thrombectomy of endovenous heat-induced thrombosis after bilateral endovenous laser treatment – a case report

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Endovenous Heat-Induced Thrombosis (EHIT) is frequently reported after endovenous laser ablation (EVLA). Here we

report a case of EHIT treated by catheter-directed thrombolysis and surgical venous thrombectomy. In case, a 57-year-old woman presented with painful swelling of left leg for a week. She was performed EVLA for both great saphenous vein reflux 2 months ago at outside hospital. Duplex ultrasound and computed tomography venography revealed a localized deep vein thrombosis from left external iliac vein to femoral vein. Catheter-directed thrombolysis was tried overnight with urokinase after insertion of vena cava filter to prevent pulmonary embolism. Despite the lysis of thrombus in EIV, large thrombus was remained in femoral vein, which seemed to be chronic DVT. Surgical venous thrombectomy was done by a small inguinal incision over the femoral vein. The thrombus was tightly adhered to the GSV. Saphenofemoral junction was transected and the thrombus was removed. Oral anticoagulation with rivaroxaban was performed for 3 months. The incidence and timing of occurrence of EHIT is not fully recognized. Asymptomatic EHIT near SFJ can progress to symptomatic iliofemoral DVT, even two months later. Duplex surveillance of EHIT after EVLA might be recommended for a few months.

AB0124

POSTER (VENOUS THROMBOEMBOLISM)

Phlegmasia cerulea dolens: case report

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Background. Phlegmasia cerulea dolens is a rare manifestation of deep vein thrombosis and result from massive thrombosis compromising venous outflow, which cause ischemia.

Case description. A 75-year-old male presented to the emergency department with painful swelling of a left leg for 12 hours without prior trauma history. He also complained of numbness and weakness of the left lower leg and foot. His medical history was notable for hypertension and hyperlipidemia. On physical examination, the left whole leg showed purplish discolorization and the left femoral and dorsalis pedis artery pulses were detected by hand-held Doppler examination. Duplex ultrasound revealed a left ilio-femoro-popliteal deep vein thrombosis. After a diagnosis of acute limb ischemia caused by phlegmasia cerulea dolens, intravenous heparin was immediately administered and an emergent venous thrombectomy was performed. After venous thrombectomy, the pain was relieved. The next day, the left leg color returned to normal and he fully recovered motor and sensory defect.

AB0330

POSTER (VENOUS THROMBOEMBOLISM)

Compression therapy in Japan

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Compression therapy is one of the most powerful instruments of the phlebologist and lymphologist.

The effect depends on several factors, the exerted pressure, the sites of the limb where the compression therapy is applied, the compression materials such as short-stretch or elastic bandages, and the application technique.

Regarding the research on compression therapy, Japan is outstripped by North America and Europe. I present a new method to determine the stiffness of elastic garments and bandages and also a new device to wear compression stocking quickly.

Established in 1981, The Japanese Society of Phlebology strives to promote basic and clinical research activities and education in the scientific field of phlebology and lymphology. To achieve these objectives, the annual congress of the Japanese Society of Phlebology awards a prize for superior paper in compression research from 2013. And Stoking conductor system was established in 2002. It diffuse a knowledge of compression therapy and educate doctor, nurse, and physical therapist.

AB0122

POSTER (VENOUS THROMBOEMBOLISM)

Recurrent venous thromboembolism in patients on directly acting oral anticoagulants (DOAs) – a real-world clinical issue

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Introduction. DOAs are replacing the monopoly of warfarin however the efficacy of DOAs in patients with morbid obesity is unclear. We are presenting two cases highlighting recurrent venous thromboembolic disease (VTE), in patients on DOAs.

Case reports.

1. A 25-year-old female with a BMI of 45 presented with sudden onset dyspnea. She had been on rivaroxaban for 6 months due to bilateral PE (post-surgery). She also had a past history of PE (4 yrs ago) while on contraceptive pill and was warfarinised for 1 year. A repeat CTPA showed bilateral PE with a progression of clots on the right side.

2. A 77-year-old female with BMI of 37 presented with 12 weeks of progressive dyspnea and chest pain. She was on warfarin for atrial fibrillation and was changed over to dabigatran (110mg BD) 3 months prior to the onset of current symptoms. She underwent a V/Q scan which showed bilateral PE.

Discussion. EINSTEIN-DVT and -PE studies (Rivaroxaban) showed consistent efficacy among various patient subgroups and concluded that no dose adjustments are required. However, the extremes of age, weight, and renal function were not well represented. In Breuer et. al.'s study, a patient with a BMI of 44.7 given twice daily 150mg dabigatran had sub-therapeutic serum levels. Our patient on dabigatran (110 mg b.d) was grade II obese which raises the concern for suboptimal dosing as per the RE-COVER trial.

Conclusions. The use of DOAs in treatment of acute VTE is bound to increase as the physicians become more familiar with this group of medications. The pharmacokinetics, bioavailability and predictable dose-response curves make them an attractive treatment option. However caution should be exercised in prescribing DOAs in patients with morbid obesity, as the data regarding adequate dose and efficacy, is lacking in this sub-group.

AB0175

POSTER (VENOUS THROMBOEMBOLISM)

Risk factor associated with recurrence in venous stent for deep vein thrombosis in the lower extremity

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Aim. The aim of this study is to evaluate the risk factor of recurrent iliofemoral deep vein thrombosis performed endovascular venous stenting.

Material and methods. We retrospectively reviewed the medical records of 82 patients performed iliofemoral venous stenting for deep vein thrombosis at Chonbuk National University Hospital from January 2001 to December 2013. All patients were performed preoperative computed tomography (CT) and we followed up every 3~6 months after venous intervention. Recurrent venous thrombosis was diagnosed by CT or Duplex scan. Univariate and multivariate analyses were conducted to identify the risk factor of recurred deep vein thrombosis.

Results. There were 23 men and 59 women, and their mean age was 52.9 years (range: 23-85). The median follow up periods were 46 months (range: 12-139). 16 patients had risk factors of deep vein thrombosis, such as immobilization, major surgery or recent trauma. 15 cases were recurred deep vein thrombosis after endovascular venous stenting, and primary patency rate of iliofemoral venous stenting was 77.7% at 10 years. Absent thrombolysis with mechanical thrombectomy (p=0.050) and absent of postoperative heparinization (p=0.030) were statistically significant in univariate analysis, but absent thrombolysis with mechanical thrombectomy was only statistically significant in multivariate analysis (p=-0.026).

Conclusions. In our series, the risk factor associated with recurrent deep vein thrombosis in iliofemoral venous stenting was absent thrombolysis with mechanical thrombectomy.

AB0264

POSTER (VENOUS THROMBOEMBOLISM)

Mechanical thrombectomy with Solitaire AB stents in combination with thrombolysis for treatment of intracranial venous sinus thrombosis

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Background. To retrospectively determine the safety and effectiveness of mechanical thrombectomy for intracranial dural sinus thrombosis with Solitaire AB stents.

Material and methods. This is a retrospective analysis of consecutive 12 patients with intracranial dural sinus thrombosis who treated with mechanical thrombectomy by using Solitaire AB stents between January 2013 and October 2014. The patients were followed up for 3 to 12 months after the procedure.

Results. Fourteen Solitaire AB stents were used. The procedure was completed in all patients without complications. At the same time, 2 patients performed catheter-directed thrombolysis with urokinase 300,000 to 700,000 U. The postoperative symptoms in all the 12 patients were improved significantly. Glasgow coma scale scores at admission: 1 case was 3, 1 was 12, and 10 were 15. Glasgow coma scale scores at discharge: 11 cases were 5, and 1 was 4. Statistically significant difference between Glasgow coma scale scores admission and discharge was identified (P<0.05). The patients were followed up for 3 to 12 months, 1 were followed up by telephone, 1 were followed up at the outpatient department, 6 were followed up with MRV, 4 were followed up with DSA, and none had recurrence.

Conclusions. Using Solitaire AB stents for intracranial venous sinus mechanical thrombectomy may significantly improve the clinical symptoms of patients. Single-center experience has shown that no obvious complications occurred.

AB0317

POSTER (VENOUS THROMBOEMBOLISM)

Clinical observation of anticoagulation and endovascular mechanical thrombectomy with Solitaire AB stents in the treatment of cerebral venous sinus thrombosis

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Background. To present the clinical outcomes of National Institutes of Health Stroke Scale (NIHSS) and visual analog scale (VAS) response after patients treated for cerebral venous sinus thrombosis with endovascular mechanical thrombectomy compared to patients treated with anticoagulation (control).

Material and methods. 42 patients were diagnosed as cerebral venous sinus thrombosis by clinical MRI, and MRV examination. They were divided into anticoagulation therapy group (group A, n=22) and mechanical thrombectomy group (group B, n=20). Heparin 100 mg/24h was infused intravenously during the first 3 days, and after that warfarin was administered orally for half a year in patients of group A; Mechanical thrombectomy with stents were performed and anticoagulant therapy was continued for 6 months in patients of group B. The present symptom (headache) of the patients was scored by VAS at the different time points before and 3 days, 3, 6 and 12 months after the treatment. The neurological function of the patients at the different time points before and after the treatment were evaluated by NIHSS.

Results. The VAS scores was 6.4 ± 1.7 three days after the treatment in group A, and it was 3.2 ± 1.2 in group B; the VAS score was 4.2 ± 1.1 three months after the treatment in group A, and it was 2.0 ± 1.3 in group B. There were significant differences between the two groups ($P < 0.05$). The NIHSS scores were 14.8 ± 2.1 , 10.2 ± 1.3 , 9.7 ± 1.8 , and 7.1 ± 1.2 respectively at 3 day, 3, 6, and 12 months after the treatment in group A, and they were 9.0 ± 0.6 , 7.1 ± 1.4 , 5.9 ± 2.1 , and 5.3 ± 2.2 in group B. There were significant differences between the two groups at the same time point ($P < 0.05$).

Conclusions. There was a significantly better improving and neurological function in patients treat with endovascular mechanical thrombectomy compared to controls.

AB0276

POSTER (VENOUS THROMBOEMBOLISM)

Iliac vein compression is not equal to iliac vein compression syndrome – a prospective study of a 500 non-vascular-related symptomatic patients' population

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Aim. The purpose of this prospective study is to determine the incidence of iliac vein compression syndrome (IVCS) in an asymptomatic population.

Material and methods. A total of 500 patients who were informed consented with non-vascular related symptoms was enrolled in our study. The degree of compression of the left common iliac vein was calculated, and follow-up has proceeded. The compression degree $\geq 25\%$ was used as the diagnostic criteria of iliac vein compression, while the diagnostic criteria of IVCS was existed iliac vein compression+ affected vascular events.

Results. 37.8% of patients had a compression degree greater than 25% while 9.8% greater than 50%. There was a significant difference between men ($17.82\% \pm 18.19\%$) and

women ($25.9\% \pm 19.9\%$) in the compression degree of the LCIV ($P < 0.01$). In addition, the LCIV compression degree of the youth women group ($41.51\% \pm 16.51\%$) has a statistically significant difference ($P < 0.001$) when compared with middle-aged women group ($22.87\% \pm 19.10\%$). We found no difference in the compression degree of common iliac vein in tumor and non-tumor group. The incidence of IVCS and DVT in the follow-up period was 0.71% and 1.43%, respectively.

Conclusions. Iliac vein compression was found widespread in the non-vascular related symptomatic patients, but 90% of them were asymptomatic. The incidence of IVCS was low. Iliac vein compression is not equal to IVCS, it is merely the one of predisposing factors of IVCS, and need no intervention without symptoms.

AB0150

POSTER (VENOUS THROMBOEMBOLISM)

Clinical investigation of the efficacy of PTA with a 20mm diameter balloon in the middle and lower segments of inferior vena cava obstruction syndrome

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Background. To investigate the clinical efficacy of big balloon PTA in the middle and lower segments of inferior vena cava obstruction syndrome (IVCS).

Material and methods. A retrospective analysis of the clinical data: 38 cases patients in our hospital from January 2012 to October 2014 were treated in middle and lower segments of the IVCS. All patients, PTA of the IVC was performed using balloon 20 mm in diameter, which merged with thrombosis 12 cases, first underwent catheter-based thrombolysis by the jugular vein, and then use the big balloon PTA with the obstructed IVC, followed by the vein patency access by color Doppler ultrasonography or CT and follow-up in recent mid-term results.

Results. IVC occlusion of 37 patients are successful open, one case is not open; no one cases of the IVC rupture bleeding; two cases of recurrence, one case use balloon 20 mm in diameter Once again, another case use the stend; follow-up one month to 24 months, the clinical symptoms disappeared.

Conclusions. Using the balloon 20mm in diameter PTA in the middle and lower segments of IVCS is Safe and effective, the recent mid-term effect is good.

AB0126

POSTER (VENOUS THROMBOEMBOLISM)

Efficacy of retrievable inferior vena cava filter placement in the prevention of pulmonary embolism during catheter-directed thrombectomy for lower-extremity deep vein thrombosis

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Background. Inferior vena cava filter (IVC) placement is not indicated for thrombolytic interventional treatment for deep vein thrombosis (DVT). We analyzed the efficacy and feasibility of retrievable IVC filter placement for the preventive management of embolic shedding during catheter-directed thrombectomy for DVT of lower extremity.

Material and methods. Seventy patients (35 males and 35 females) who underwent placement of retrievable IVC filter for deep vein thrombosis of lower extremity between March 2008

and January 2014 were included in this study. Two types of retrievable IVC filters (OptEase Filter, Cordis, Roden, The Netherlands; Gunther Tulip Filter, Cook, Bloomington, IN, USA) were used to prevent thromboembolic events during catheter-directed thrombectomy. All filters were implanted percutaneously by interventional physicians at two Hospital. Most patients underwent thrombectomy procedures. Some of the patients had been on thrombolytic agents (urokinase and/or heparin). After filter placement, subcutaneous low-molecular-weight heparin and warfarin therapy were overlapped to achieve a target international normalized ratio (INR) range of 2~3.

Results. The thrombus was dislodged through the IVC filter during catheter-directed thrombolytic therapy in 22 patients (31.4%). In 22 cases, the thromboses were trapped by the retrievable IVC filter, and follow-up images showed thrombus capture. 34 patients (48.5%) received percutaneous transluminal angioplasty (PTA). Additional stents were inserted in 23 patients (65.7%). Pulmonary embolism was not observed in patients implanted with retrievable IVC filters.

Conclusions. Our study findings suggest that retrieval IVC filter placement during interventional treatments of DVT of lower extremity such as thrombectomy of vein thrombus with/without stent insertion at compressed deep vein is favorable and effective for protecting against pulmonary embolism (PE) or lethal complications. We recommend carefully that before the management of DVT thrombus of lower extremity, retrieval IVC filter placement should be considered for preventing morbidity related the PE.

AB0112

POSTER (VENOUS THROMBOEMBOLISM)

The characteristics of post-operative deep vein thrombosis in kidney transplant recipients – difference from other types of surgery

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Background. Deep vein thrombosis (DVT) is a severe and common complication that occurs after a major operation. Despite the commonality of DVT, there is limited data on the incidence and characteristics of DVT after kidney transplantation (KT). Further exacerbating the limitations of the existing literature is that most studies have been retrospective in design and were conducted in Western countries. The aim of this study was to evaluate the incidence of lower extremity DVT with mechanical thromboprophylaxis within 1 year of KT in Korean.

Material and methods. A total of 503 consecutive patients who underwent KT from November, 2009 to October, 2013 were included. The frequency of DVT during the first year after KT was evaluated using serial color Duplex ultrasound (CDU) at postoperative 1 week, 2 weeks, 4 weeks, 3 months, 6 months, and 12 months.

Results. DVT occurred in 22 patients (4.4%) during this period. All except one DVT were asymptomatic and detected routine scheduled CDU. The timing after transplant is illustrated in Table I below. The incidence of DVT within 1 week is only 18.1% of total DVT and the highest number of DVT (27.3%) occurred in the third months after transplant. On multivariate analysis, recipient age at transplantation (RR 1.059, 95% CI 1.013-1.107, p=0.012) and history of DVT (RR14.468, 95% CI 2.245-93.227, p=0.008) were only significant risk factor for DVT.

Conclusions. Compared with DVT occurred after other type of major surgery, the characteristics of DVT in KT recipi-

ents were lower incidence, mild symptoms, and late onset of DVT. These findings suggest that different and longer prophylaxis is required to prevent DVT in KT recipient.

	≤1 wk	2 wks	4 wks	3 mo.	6 mo.	12 mo.
N. of DVT	4 (0.8%)	6 (1.3%)	4 (0.9%)	6 (2.2%)	1 (0.7%)	1 (0.8%)
N. at risk	484	475	456	270	151	123

TABLE I

AB0180

POSTER (VENOUS THROMBOEMBOLISM)

The choice of optimal tactics thrombectomy from deep veins of the lower extremities in floating phlebothrombosis

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Russia

Aim. To develop the optimum tactics in removing floating thrombi in the deep veins of the lower extremities.

Material and methods. From September 2008 to September 2014 in the clinic 84 open thrombectomies for floating phlebothrombosis of the lower extremities were performed. Floating upper of thrombus in 44% was located in the iliac-femoral segment, in 44% in common and superficial femoral vein, and in 12% in the femoral-popliteal segment. The length of the floating element was 4 cm in 2 patients (2.4%), from 4 to 8 cm in 44 patients (52.4%) and more than 8 cm in length in 38 patients (45.2%).

Results. 63 patients carried out the first stage of implantation of removable vena cava filter (Opt Easy, Cordis, USA), then within 24-48 hours thrombectomy was performed from the deep veins of the lower extremities. 5 patients in up to 45 days cava filter is removed, the remaining 58 - left in a permanent position. At the same time embolism in cava filter before thrombectomy occurred in 2 of these patients (3%). 21 patients without the use of tactics used cava filter - thrombectomy was performed and plication of the main vein to. In the long-term (6 months - 5 years) period was examined 71 patients (84.5%). Cava filter thrombosis and recurrent deep vein thrombosis occurred in 13 patients (15.4%) in the group which was left cava filter in a permanent position.

Conclusions. The combined use of vena cava filters and thrombectomy of the deep veins of the lower extremities in floating phlebothrombosis accompanied by up to 15% in the long-term recurrent thrombosis filter and deep vein thrombosis. Optimal method of surgical treatment of floating venous thrombosis of the lower extremities is open thrombectomy with carrying out the plication of the main vein.

AB0187

POSTER (VENOUS THROMBOEMBOLISM)

Initial imaging analysis of Budd-Chiari Syndrome in Henan province of China: most cases have combined inferior vena cava and hepatic veins involvement

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Background. To evaluate the type of venous involvement in Chinese Budd-Chiari Syndrome (BCS) patients and the relative diagnostic accuracy of the different imaging modalities.

Material and methods. Using digital subtraction angiography (DSA) as a reference standard, color Doppler ultrasound (CDUS), computed tomography angiography (CTA), and magnetic resonance angiography (MRA) were performed on 338 patients with BCS. We analyzed the course of the main and any accessory hepatic veins (HVs) and the inferior vena cava (IVC) to assess the etiology of obstructed segments and diagnostic accuracy of CDUS, CTA and MRA.

Results. Among the 338 cases, there were 8 cases (2.4%) of isolated IVC membranous obstruction, 45 cases (13.3%) of isolated HV occlusion, and 285 cases (84.3%) with both IVC membranous obstruction and HV occlusion. Comparing with DSA, CDUS, CTA had a diagnostic accuracy of 89.3% and 80.2% in detecting BCS, and 83.4% of cases correctly correlated by MRA.

Conclusions. In Henan province, most patients with BCS have complex lesions combining IVC and HV involvement. The combination of CDUS and CTA or MRI is useful for diagnosis of BCS and guiding therapy.

AB0257

POSTER (VENOUS THROMBOEMBOLISM)

How to assess a post-thrombotic syndrome?

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Background. Post-thrombotic syndrome (PTS) is the main cause of secondary venous disorders (the other being compression) and a major cause of chronic venous insufficiency. It is associated to deep reflux and obstruction. A delayed development of varicose veins may be observed too. Since correction of deep reflux and obstruction become available with appreciable success, assessment of PTS is more important than ever.

Material and methods. Currently available clinical evaluations (clinical scores: Villalta, VCSS) and instrumental assessments (level 2 and 3 examinations) are described and their various merits are discussed. Prevention of PTS by modern management of deep vein thrombosis (DVT) is reported

Results. A logical flow chart of PTS work-up is presented.

Conclusions. PTS must be searched for by interrogation, medical history analysis, and clinical examination. It must be refined by clinical scores and specific instrumental assessment in order to allow correction and subsequent improvement of patients' hemodynamic status, clinical features and quality of life. Conversely, if the diagnosis of PTS can be eliminated, this may lead to a less bothersome management of the patients.

We recommend that the complete work-up (level 1, 2 and 3) should be carried out in an institution familiar with deep venous reconstructive surgery.

AB0170

POSTER (VENOUS ULCER)

Foam sclerotherapy and venous ulcer

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Background. Venous ulcers (*ulcus cruris venorum*) are chronic wounds occurring due to improper functioning of veins valves of the lower extremities (venous insufficiency). Foam sclerotherapy treatment is a therapeutic option to treat and heal rapidly vein ulcers.

Aim. The aim of this study is to assess the effectiveness of foam sclerotherapy on ulcer healing and recurrence in chronic venous legs.

Material and methods. Venous ulcer treated with foam sclerotherapy by Tessari method 4:1 using sclerosing agent 3% STS, or 3% polidocanol and UNNAs Boot short stretch bandages.

Results. The treatment process of venous ulcer has been implemented in a period of 9 to 10 weeks.

Conclusions. Foam sclerotherapy is an efficient and safe technique. It helps the vascular surgeon to rapidly cure the patient's veins valves of the lower extremities affected by venous ulcers.

The aim of this study was to present the case of veins ulcers treated by using foam sclerotherapy. 3 cases of patients men age of 63 years old, were used as prototypes. These 3 patients were suffering from vein ulcers CEAP C6 classification active ulcer, localized on the lateral aspect of the malleolus region. The average size of ulcer was 5 cm.

AB0168

POSTER (VENOUS ULCER)

Ulcus cruris venosum and PRP therapy

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Background. Venous ulcers (*ulcus cruris venorum*) are wounds occurring due to malfunctioning of venous valves in the lower extremities of human body.

Venous ulcers are one of the major reasons behind chronic wounds formation. The treatment of venous ulcers is a complicated and expensive medical procedure.

On the contrary, the autologous Platelet Rich Plasma (PRP) is a simple procedure contributing to rapid wounds healing process. This is due to the releasing of many growth factors such as: (i) the platelet derived growth factors, (ii) the fibroblast derived growth factors and (iii) the epidermal growth factors.

Aim. To study the efficiency of PRP applied to the management of chronic venous ulcer, and the releasing of many growth factors such as: (i) the platelet derived growth factors, (ii) the fibroblast derived growth factors and (iii) the epidermal growth factors.

Material and methods. Venous ulcer treated by using PRP and UNNAs Boot short stretch bandages.

Case description. A 53-year-old female patient with venous ulcer classification CEAP stage C6, located on the lateral area of the malleolar region, due to the post thrombotic syndrome and deep venous insufficiency.

The area of active venous ulcer was 10x10 cm, symptomatic including: ache, pain tightness, skin irritation, heaviness, muscle cramps and other complaints attributable to veins dysfunction.

Results. The healing process of venous ulcer takes at most 9 weeks.

Conclusions. PRP is a safe, simple and efficient procedure in treating chronic venous ulcers.

AB0194

POSTER (VENOUS ULCER)

Radiofrequency treatment of incompetent perforating vein. Chiang Mai University experience

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The purpose of this study was to report the 1 year outcomes including perioperative period associated with interruption

of incompetent perforator veins (IPV) using radiofrequency ablation (RFA) as adjunctive therapies in the management of patients with chronic venous insufficiency (CVI). The study cohort included our initial experience with 5 patients with CVI stage C5 or C6 who underwent minimally invasive perforator interruption with RFA of IPV (RFA-IPV) as part of the management of their CVI. All patients were evaluated after having failed conservative treatment with compression dressings. Relevant patient characteristics and comorbidities were recorded. In this subset (n = 6 IPV) of 5 patients with CVI who had adjunctive IPV treatment, underwent RFA-IPV along with ablation of the great saphenous vein for C5 or C6 disease. There were 3 midhigh IPV and 3 posterior tibial IPV. All IPV were done by using pull technique except one posterior tibial IPV, which was performed by using focal technique. All patients were performed under local anesthesia together with tumescence anesthesia. Procedural major complications were not found in this case series. No recanalisation was seen in this series during 1 year follow up by ultrasound except the IPV which was done by focal ablation technique. This study supports the premise that in patients with advanced venous disease, there may be a benefit directly attributable to perforator interruption with RFA-IPV. Since there was low perioperative complication rates in patients undergoing RFA-IPV, thereby making this procedure more attractive in patients with multiple comorbidities. However long term study is needed to evaluate the effectiveness and feasibility of RFA IPV in Thailand.

AB0145

POSTER (VENOUS ULCER)

Study of the relationship between static foot disorders (SFDS) and clinical severity of chronic venous disease (CVD)

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Aim. To study the relationship in between static foot disorders and the CEAP clinical severity in Thai populations.

Material and methods. 178 CVD patients were recorded using standardized record form that includes finding from duplex ultrasound, the clinical CEAP classification, and the venous clinical severity score. The clinical CEAP classification was determined in both limbs. A standardized measurement of the Djian-Annonier angle was used to quantify and identify the presence of SFDS. The normal angle is between 119° and 128°. The angle <119° is called hollow foot and the angle >128° is called flat foot.

Results. There were 27 (15%) men and 151 (85%) women. 356 limbs were included in this study and 346 limbs were measured the Djian-Annonier angle. The C0-C1 group were 196 (55%) limbs and the CVD group (C2 or more) were 160 (45%) limbs. The SFDS were found 172 (49.7%) limbs in this study. 90 (47%) limbs were found in the C0-C1 group and 82 (52.5%) limbs were found in the CVD group. The flat foot in the CVD group were 59 (37.8%) limbs that higher than the other groups significantly ($p < 0.001$). The hollow foot was no different in both groups. The mean Djian-Annonier angle was significantly ($p < 0.001$) higher in the CVD group, when the hollow feet were excluded.

Conclusions. The static foot disorders are commonly found in Thai population. The flat foot is the important risk factor for chronic venous disease. For the clinical practice, the detection of SFDS is a new key. The CVD symptoms will improve when the SFDS are corrected.

AB0216

POSTER (BASIC PHLEBOLOGY)

Detergent sclerosants at sublytic concentrations induce apoptosis and oncosis *in vitro*

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Aim. To investigate the effects of detergent sclerosants sodium tetraethyl sulphate (STS) and polidocanol (POL) on human leukocytes at sub-lytic concentrations.

Material and methods. Human leukocytes were isolated and labelled with antibodies to assess for apoptosis and oncosis by fluorescence microscopy and flow cytometry. Cell viability and membrane integrity were assessed using trypan blue, fluo-3 and propidium iodide (PI) staining. Phosphatidylserine (PS) exposure (apoptosis) was identified by flow cytometry using lactadherin. Caspase 8 expression was used as a marker of the extrinsic pathway of apoptosis and Bax for the intrinsic pathway. Porimin expression was used to assess oncosis.

Results. Up to 40% of leukocytes maintained membrane integrity at sub-lytic concentrations ($\leq 0.15\%$) of sclerosants. The remaining 60% did not maintain membrane integrity but were not completely lysed. PS exposure was increased with both STS and POL exhibiting a dose- and time-dependant trend. Expression of both Caspase 8 and Bax was increased in leukocytes treated with STS while those exposed to POL expressed Bax only. Both agents increased the leukocyte expression of porimin at 0.075%. On fluorescence microscopy, stains for Caspase 8 and Bax were slightly increased for STS and only Bax was increased for POL. Porimin stain was markedly positive for both STS and POL.

Conclusions. Both sclerosants induced leukocyte apoptosis and oncosis at sub-lytic concentrations. STS activated both extrinsic and intrinsic pathways of apoptosis while POL stimulated the intrinsic pathway of apoptosis only. Both agents stimulated the porimin pathway of oncosis.

AB0218

POSTER (BASIC PHLEBOLOGY)

Morphological changes in circulating and vascular blood cells after exposure to detergent sclerosants

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Aim. To investigate morphological changes in vascular and circulating blood cells following exposure to detergent sclerosants sodium tetradecyl sulphate (STS) and polidocanol (POL).

Material and methods. Samples of whole blood (WB), isolated leukocytes, platelets, endothelial cells (EC) and fibroblasts were incubated with varying concentrations of sclerosants. WB smears were stained with Giemsa and examined by light and bright field microscopy. Phalloidin and Hoechst stains were used to analyze cytoplasmic and nuclear morphology by fluorescence microscopy. EC and fibroblasts were analysed by live cell imaging.

Results. Higher concentrations of sclerosants induced cell lysis. Morphological changes in intact cells were observed at sub-lytic concentrations of detergents. Low concentration STS induced erythrocyte acanthocytosis and macrocytosis while POL induced Rouleaux formation and increased the population of target cells and stomatocytes. Leukocytes showed swelling, blebbing, vacuolation and nuclear degradation following exposure to STS, while POL induced pseudopodia for-

mation, chromatin condensation and fragmentation. Platelets exhibited pseudopodia with STS and a 'fried egg' appearance with POL. Exposure to STS resulted in size shrinkage in both EC and fibroblasts while EC developed distinct spindle morphology. POL induced cytoplasmic microfilament bundles in both EC and fibroblasts. Patchy chromatin condensation was observed following exposure of fibroblasts to either agent.

Conclusions. Detergent sclerosants are biologically active at sub-lytic concentrations. The observed morphological changes are consistent with cell activation, apoptosis and oncosis. The cellular response is concentration dependent, cell-specific and sclerosant-specific.

AB0213

POSTER (BASIC PHLEBOLOGY)

Microscopic structure of sclerosant foams

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Aim. To determine the effect of filter use, sclerosant concentration, sclerosant type and liquid air-fraction on foam bubble diameters and counts.

Material and methods. Sclerosant foams were investigated using light microscopy for a range of Liquid-plus-Air Fractions (LAF) (1+2, 1+4 and 1+8), concentrations (0.5–3%), sclerosant types (STS and POL), and with and without the use of filters. Foams were generated using a modified Tessari method and placed into wells for microscopic analysis. Bubble diameters and counts were quantified using computer analysis.

Results. Increasing the air-content of the LAF significantly increased bubble diameters and significantly decreased bubble counts. There was no significant difference between STS and POL in terms of bubble diameters and counts. The introduction of filters had no effect on bubble counts, and only decreased bubble diameters for 1.5% concentrations of sclerosant.

Conclusions. The primary determinant of bubble diameter and count is the liquid air fraction. Other parameters have little to no effect on bubble diameter and count.

AB0214

POSTER (BASIC PHLEBOLOGY)

Electron microscopy of sclero-coagulum

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Aim. The aim of this study was to determine the microscopic characteristics and structural composition of ex-vivo coagulum/trapped blood post-sclerotherapy.

Material and methods. Coagulum/trapped blood was identified and extracted with a 20ml syringe during sclerotherapy. Samples were stained for fibrinogen and analysed with fluorescence microscopy or dehydrated and coated in gold palladium and analysed by scanning electron microscopy.

Results. On fluorescence microscopy fibrin strands in trapped blood appeared to be thinner than the strands found in spontaneous thrombus samples. Trapped blood displayed a disorganized mesh-like pattern. On scanning electron microscopy, a disorganized pattern was evident. There was a small number of clusters of platelets and multiple polyhedrocytes generated during the platelet contraction stage of the clot.

There were also multiple debris and structures resembling casts of cells.

Conclusions. In conclusion, coagulum/trapped blood seen after sclerotherapy shares similarities with spontaneous thrombus formed in superficial veins. Trapped blood contains a vast number of polyhedrocytes confined into the fibrin strands. They also present a reduced number of clusters of platelets. However, the distribution of the fibrin strands is different showing a disorganized, mesh-like pattern and the strands seem to be thinner. There were also an increased number of cast structures that have not been described previously.

AB0245

POSTER (BASIC PHLEBOLOGY)

MMP-1, MMP-2, MMP-9, MMP-13, TIMP-1, TIMP-2 in varicose vein

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Background. Many aetiological correlations have been described for the formation of varicose vein. Few studies in Western scenario have shown that matrix metalloproteinases and tissue inhibitors of matrix metalloproteinases have role in the pathogenesis of varicose vein but no such work has been done in Indian patients. The aim of this study was to study detailed histology of varicose vein and to see the expression of MMP-1, MMP-2, MMP-9, MMP-13, TIMP-1, TIMP-2.

Material and methods. 75 cases of varicose vein and ten control leg veins were included in this study. The venous tissue samples obtained at surgery were stained by hematoxylin and eosin (H&E), Masson trichrome and Verhoeff's staining. Immunohistochemistry of varicose vein was done for MMP-1, MMP-2, MMP-9, MMP-13, TIMP-1, TIMP-2 antibodies. Cytoplasmic expression of various antibodies in various layers was graded as over expression or normal and absent.

Results. Focal intimal thickening (47.6%), increased medial thickening (73%) and fragmentation of elastin fibers (84.1%) were the major histological changes noted in H&E and special stained sections. MMP 1 was over expressed in 90% in all layers with 10% normal expression. MMP2 was not over expressed in any sample, 16% normal expression and 84% had no expression. MMP9 was over expressed in about half samples while normal expression in rest of the samples. MMP 13 was over expressed in about 50% samples while rest showed normal expression. TIMP 1 and 2 were not expressed in any sample. These expressions were correlated with CEAP grade and it was found that MMP1, MMP9 and MMP 13 expression were almost 100% in C5-6 of CEAP grade.

Conclusions. Increased expression of MMP1, MMP 9 and MMP 13 plays an important association in varicose veins. Further expression of these are more correlated with increasing CEAP grade.

AB0057

POSTER (BASIC PHLEBOLOGY)

A new tool to sensitize patients to their venous disease: the venous score

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Background. Many years ago, cardiologists developed on the basis of the Framingham study an "arterial age" which is very useful to sensitize patients to their cardiovascular risk. The purpose of the study was to develop a "venous age" to

make people more aware of their venous disease and to better adhere to lifestyle improvement and venous disease treatments.

Methods. The score calculation was based on an international epidemiological study conducted in 24 countries in the daily practice of general practitioners. The data base included patients with or without venous disease, whatever the reason for which they were consulting and whatever the level of their venous disease which was systematically described according to the elements of the international CEAP classification.

Results. The study covers 124 235 patients aged of 52 among whom 69.4% were female. Among them 18.8% had no sign of venous disease (C0), 22.9% had only functional symptoms (C0s), 40.6% had telangiectasies or reticular veins, 34.8% varicose, 24.9% edema, 14.0% skin changes, 7.3 healed ulcers and 4.3% active ulcers. The statistical analysis has determined the number of years which must be added to the real age to get the "venous age" by comparison of the age of somebody who has no venous functional symptoms or physical signs. The results provide that number for women and men according to the different venous symptoms and sign they present.

Conclusions. This first attempt of creating a "venous age" will be certainly improved in the next future, using more complex analysis based on risk factors or other criteria, but it seems already efficient to make people aware of their venous risk and to better adhere to lifestyle improvement and venous disease treatments.

AB0125

POSTER (BASIC PHLEBOLOGY)

Molecular genetic analysis of FOXC2 gene mutation in varicose vein (VV) patients of North India

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Background. Varicose vein is a complex disease, influenced by a number of genetic and environmental factors. FOXC2 gene situated on chromosome 16q24.3 encodes a regulatory transcription factor. It is implicated in both lymphatic and vascular development.

Material and methods. To detect genetic mutation among FOXC2 gene locus, DNA of 190 patients and families with clinical diagnosed VV was subjected to molecular genetic analysis. There were 116 males and 74 females. Purified DNA was amplified with polymerase chain reaction using allele specific three designed primers set.

Results. Detection of mutation FOXC2 region I was done with PCR product -413 bp of the 5' regions to +655bp of exon. Amplification of 5' UTR region I of FOXC2 gene was carried out. The amplified fragments (I, II and III) were of sizes 607, 269 and 450 bp, respectively. One hundred two male patients and sixty seven female patients have shown at least one mutation in region I of FOXC2 gene. A (-91C→G) transversion in 16.84% cases and two SNPs (-41G→A) and (-41G→T) was detected in 64.21% and 52.63% cases respectively. None of these mutations was detected in healthy control subjects.

χ^2 value revealed a significant association between type of mutation and sex ratio of varicose veins cases ($df = 2, p > .002$). The information about various life style risk factors was correlated with the mutation present. Fisher's exact analysis revealed a significant association between three working groups, sex ratio and FOXC2 mutations ($p < 0.05$).

Prevalence of varicose veins in patients with positive family history was 61.11%. Adjusted OR was 6.375 (95% CI: 0.7508-54.126) in men and 0.319 (95% CI: 0.0319-3.181) in women.

Conclusions. It indicates a significant role of genetic factors in the occurrence of varicose veins.

AB0229

POSTER (BASIC PHLEBOLOGY)

Epidemiology of constitutional phlebopathy

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Background. Currently constitutional phlebopathy is detected as a pathogenetic subtype of cerebral venous circulatory dynamics defects. The purpose of this study is to evaluate the epidemiology of the risk factors of constitutional and genetic venous disgeny.

Material and methods. As part of the single epidemiological screening research were examined 54 men and 161 women between 40 and 59 years. All surveyed was checked for "venous" complaints: increased headache, faintness, visual disturbance while wearing tight collars (symptom of "tight collar"), after sleeping with a low headboard (symptom of "high pillow"), a feeling of "falling asleep eyes sand" (a symptom of "sand in the eyes"), puffiness of the face in the morning; presence in closest relatives of lower limb varicose veins, hemorrhoids, varicocele; clinical manifestations phlebopathies typical localization: lower limb varicose veins, hemorrhoids, varicocele, varicose veins of the esophagus. Statistical analysis was performed using "Statistica 8.0" applications and Excel, significant difference was considered at $p < 0.05$.

Results. Constitutional phlebopathy was identified in 103 (47.9%) patients, burdened venous anamnesis combined with different venous pathology site – in 74 (34.4 %) people, without clinical implications of phlebopathy – in 7 (3.3 %). Constitutional phlebopathy was identified in 71 (44.1 %) women and 32 (59.3) men, with $p < 0.05$. Symptom "high pillow" occurs in 42 (19.5%), a symptom of "tight collar" – 98 (45.6%), puffiness of the face in the morning – 71 (33.0%), a symptom of "sand in the eyes" 66 (30.7%). Varicose veins of the lower extremities was detected in 84 (39.1%), esophagus in 1 (0.5%), varicocele in 1 (0.5%), hemorrhoids in 77 (35.8%), $p < 0.05$.

Conclusions. Constitutional phlebopathy is widespread within examined population – 47.9% of the people aged 40-59.

AB0202

POSTER (BASIC PHLEBOLOGY)

Advanced complicated diabetes mellitus confuting thoracic and abdominal aortic aneurysm rupture: a population-based cohort study

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Background. Studies have associated diabetes mellitus (DM) with the reduced risk of abdominal aortic aneurysm (AAA), thoracic aortic aneurysm (TAA) and dissection (TAAD). We used the national insurance data of Taiwan to examine these correlations for an Asian population. The association was also evaluated by DM severity.

Material and methods. We identified 160,391 patients with type 2 DM diagnosed from 1998 to 2008, and 646,710 comparison subjects without DM, frequency matched by diagnosis date, sex and age (mainly the elderly). The DM severity was partitioned into advanced and uncomplicated status according to DM-related comorbidities.

Results. The overall pooled incidence rate of TAA and AAA was 15% lower in the type 2 DM cohort, with an adjusted hazard ratio (aHR) of 0.64 (95% CI 0.56-0.74) in the multivari-

able Cox model. Patients with advanced type 2 DM was significantly associated with reduced TAA rupture and AAA without rupture, with aHRs of 0.50 (95% CI 0.35-0.71) and 0.53 (95% CI 0.40-0.69), respectively. Uncomplicated type 2 DM was also associated with reduced AAA without rupture (aHR = 0.58, 95% CI 0.45-0.74).

Conclusions. Our results demonstrate that patients with diabetes in this Asian population have reduced the growth of thoracic and abdominal aortic aneurysms. The observed paradoxical confuting phenomenon between severity of DM and aortic aneurysms is evident. Further research is required to investigate the mechanisms.

AB0192

POSTER (BASIC PHLEBOLOGY)

The severity of chronic venous disease of the legs among nurses in operative theaters and wards

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Background. Nursing is an occupation with a high prevalence of chronic venous disease (CVD). Nurses in operative theater (OTN) are believed to have more severe CVD than nurse in the ward (WN), because they mainly work in standing position. However, there is no supporting evidence for this believe. This study aims to determine the relationship between types of nurse and severity of CVD in the legs.

Material and method. A cross-sectional study was carried out among 198 nurses from the Maharaj Nakorn Chiang Mai Hospital, Thailand. The required subjects' information was collected through a self-filled questionnaire and the physical examination of the CVD severity according to the clinical finding using the CEAP standards. A Duplex scan was also carried out.

Results. The prevalence of CVD was 78.79%. The prevalence of at least CEAP C2+ in OTN and WN was 10.26 and 17.50%, while the prevalence of CEAP C1 (telangiectasia) in OTN and WN was 69.17 and 56.4 respectively. These trend reach a statistically significant (P=0.002).

Conclusions. This study had determined the risk variables of types of nurse on the severity of CVD. OTN seems to have less severe CVD than those with WN. This data could be interventional in improving the environment in working place and quality of life for their long-term career.

AB0191

POSTER (BASIC PHLEBOLOGY)

The relationship between CEAP severity and quality of life scale (CIVIQ) in Thai population

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Aim. This study aimed to the relationship between CEAP severity and the score the quality of life (CIVIQ). There is limited such data in Asia population.

Material and methods. A cross-sectional study was carried out among 448 participants from the outpatient department in the Maharaj Nakorn Chiang Mai Hospital, Thailand. The required subjects' information was collected through a self-filled questionnaire (CIVIQ) and the physical examination of the CVD severity according to the clinical finding using the CEAP standards. A Duplex scan was also carried out. The analysis compared each psychological domain between normal, C0-C1 (mild disease) and at least C2 (severe disease).

Results. 448 participants recruited in our study. Participants were 112 severe disease, 231 mild disease and 105 normal. This study found the patients with severe disease in CEAP had higher score in CIVIQ scale in pain repercussion (pain in the legs), physical function (limited in climbing stairs, limited kneeling, limited in walking bristly), social activities (limited in going out in the evening) and psychological dimension (feeling edge, feeling a burden to people, feeling handicapped, difficult to get going, not feeling like going out, embarrassed to show one's legs)

Conclusions. This study showed patients with severe disease had higher scale in CIVIQ in many domains than other groups in Asian population.

AB0263

POSTER (BASIC PHLEBOLOGY)

Personalized treatment of varicose disease – new opportunities

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Background. Varicose veins is a ubiquitous disease, a risk factor of which is a hereditary predisposition. Despite this, genetic diagnosis is not applicable. Identification of constitutional risk factors allows you to schedule a personalized diagnostic and treatment, to conduct the most effective personalized preventive measures. The purpose of the study was the identification of molecular-genetic risk factors of varicose disease of the lower extremities.

Material and methods. A study group comprised 270 patients with varicose disease clinical class C2-C6 by CEAP, the control group 150 patients without venous pathology. All patients genotype determined by allelic variants of matrix metalloproteinases 1171 dupA (5A/6A) gene MMP3, 82 A/G MMP12 gene, and vascular endothelial growth factor 634 G/C gene VEGF. DNA analysis for genetic isolated from whole blood by phenol-chloroform extraction. Genetic research conducted by allele-specific Real-Time PCR.

Results. It is shown that carriage of the polymorphic allele 82 A/G gene MMP12 is a risk factor for the development of varicose disease, OR = 3.455 (p = 0.00002), homozygous for the A allele of the risk is higher in 12.5 (p = 0.00016) times compared to wild type. Also, for carriers of polymorphic allele of the VEGF gene revealed an increased risk of varicose disease, OR = 3.261 (p = 0.00034), while the homozygous genotype risk is 6.321, p = 0.00011.

Conclusions. Thus, polymorphic variants of genes MMP12 and VEGF are highly significant predictors of varicose disease of the lower extremities. Using custom algorithms will expand diagnostic and treatment capabilities of phlebology, effectively carry out preventive measures and treatment. In addition, the formation of risk groups on the basis of genetic factors may be the basis for rehabilitation. Genetic testing can be a powerful tool for early diagnosis of personalized high risk of developing varicose disease.

DNA methylation and gene expression profiling reveals MFAP5 as a regulatory driver of extracellular matrix remodeling in varicose vein disease

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Background. Varicose vein disease is the most common form of chronic venous disease which affects one quarter of the adult population. Little is known about the molecular basis of varicose vein disease. A few attempts have been made so far to apply OMICS technologies to elucidate mechanisms of this disease but none of them utilized methylome or even combined transcriptome and methylome approaches in order to find an interplay between various genetic and epigenetic factors in the development of varicose vein disease. Herein we made such an attempt and performed systems biological analysis using joint transcriptome and methylome analysis, as well as advanced bioinformatics analysis that could broaden our understanding of varicose vein pathogenesis and its key regulators.

Material and methods. Using microarray-based technologies we compared genome-wide gene expression and DNA methylation profiles of 20 paired samples of patients with varicose vein disease. Differential expression analysis using Illumina GenomeStudio software revealed 274 genes whose expression was significantly altered in varicose veins (confirmed independently with RT-qPCR for the “most interesting top” genes). Gene Ontology-term enrichment analysis of those genes (using the geneXplain platform) identified such prominent GO categories as “extracellular matrix organization” (COL15A1, COL1A2, COL4A2, COL5A2, COMP, CYR61, EFEMP1, ITGA5, MFAP5, PLOD1, PLOD2, PXDN, SFRP2, SULF1, adj. p value $<1.2 \cdot 10^{-6}$) and “cell adhesion” (CDH2, COL15A1, COMP, CTGF, CX3CR1, CYR61, ITGA1, ITGA5, PCDH20, RND3, SPOCK1, SULF1, THBS2, TPM4, WISP2, adj. p value $<6 \cdot 10^{-3}$). The genes underlined play an important role in both processes and overlap with the general group of genes of “blood vessel morphogenesis”. Differential methylation analysis revealed 578 CpG sites whose methylation status was significantly altered in varicose veins. GO-term enrichment analysis of the hyper- and hypo-methylated sets of genes indicated the following GO categories: cell-cell signaling (adj. p value $<2.1 \cdot 10^{-5}$), cell communication (adj. p value $<5.0 \cdot 10^{-5}$), tissue and organ development (adj. p value $<1.3 \cdot 10^{-5}$), and genes of extracellular space proteins (adj. p value $<6.0 \cdot 10^{-3}$), which was consistent with GO analysis of the gene expression pattern. In the joint analysis of transcriptome and methylome data we identified only 3 overlapping genes ($p < 0.01$): MFAP5, WISP2 (up-regulated and hypomethylated), and HRC (down-regulated and hypermethylated). Among differentially methylated genes were genes for important transcription factors: Hox-related factors, thyroid hormone and estrogen receptor-related factors, Pax-factors, WT1, GFI1, Fox-factors, RUNX3, TBX5; myogenic transcription factors and other T-box factors. Binding sites for some of them (involved in many tissue remodeling processes) were found in the promoters and enhancers of up-regulated genes using large-scale promoter analysis (utilized F-Match algorithm in geneXplain and the TRANSFAC® database) and the composite module analyst. Profoundly, for transcription factor E2F4 playing a pivotal role in dysregulation of cell cycle in cancer, its binding site containing CpG site CG15815843 (hypomethylated in

varicose veins) was found in the first non-coding exon of MFAP5 gene up-regulated in varicose veins. We speculate that methylation of CG15815843 in MFAP5 gene (resulted in regulation of its expression, presumably through E2F4) plays a causative role in varicose vein disease. MFAP5 is not well-annotated though is known to participate in maintaining large vessel integrity (confirmed in knock-out mice), playing a role in the biology of the hematopoietic and vascular systems, regulating growth factor bioavailability, possessing significant pro-angiogenic activity and relating to extracellular matrix remodeling. In the present work MFAP5 was validated in independent RT-qPCR studies and confirmed by immunohistochemical imaging together with COMP gene product.

We also presented a hypothesis about an auto-activation regulatory mechanism (targeted the up-regulated TNFRSF11B, GNAQ, CX3CR1 and CTGF) that may stabilize the pathogenic signaling circuit. We applied the key-node analysis algorithm (the geneXplain platform plus the TRANSPATH® database) and identified master regulators such as TGF-beta, TNFRSF11B, GNAQ, CX3CR1, CTGF, ITGA5 and MFAP5. The second-last signaling protein ITGA5 integrin, which plays an important role in connecting cytoskeleton and extracellular matrix mechanics, we found belonged to three important GO processes largely activated in varicose veins. Pathway analysis revealed MFAP5 as the potential primary master regulator upstream of integrins indicating its key role during development of varicose vein disease. Limitations are that additional comparative analysis should be conducted in varicose veins at different stage and localization.

Conclusions. In a systems biological analysis we identified a number of potential players in extracellular matrix remodeling, acting as essential drivers of varicose vein pathogenesis. A coherent model with signaling networks we proposed is a new important direction for investigation of varicose vein pathogenesis.

AB0281

POSTER (VENO-LYMPHATIC DISORDERS AND COMPRESSION THERAPY)

Endovascular repair of an infected ruptured isolated iliac artery aneurysm combined with congenital lymphedema: report of a case

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Background. A novel technique using reversed iliac leg of a Zenith device had been reported. Here we report a complicated isolated iliac artery aneurysms (IIAAs) combined with congenital lymphedema using this novel technique and review the relative literature to discuss the current treatment modalities.

Case report. A 46-year-old man was admitted to our institution presented a mass in left lower quadrant present accompanied with abdominal pain for 60 days. Computer tomography angiography (CTA) revealed a complicated IIAAs and a massive retroperitoneal hematoma. Percutaneous puncture and drainage at the hematoma was done. *Enterococcus faecium* was isolated from the hematoma. The infection was controlled after two weeks' drainage and anti-infection treatment. The IIAAs were successfully excluded using the novel technique. The 12-month CTA follow-up was unremarkable.

Conclusions. Using of inverted Zenith device legs is safe and effective even in complicated IIAAs. Further studies are warranted before it can become a widely acceptable definitive treatment option.

AB0129

POSTER (VENO-LYMPHATIC DISORDERS AND COMPRESSION THERAPY)

Therapeutic trial of lymphedema using adipocyte derived stem cell grafts with combined therapy

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Recently, the promise of a successful therapeutic lymphangiogenesis has been realized in a variety of animal model applications and some of clinical reports using stem cells. By the homing effects and paracrine effects, releasing many cytokines, stem cells can regenerate lymphatics and new vessels. I tried combination therapy of liposuction, microsurgical drainage and adipose cell derived stem cells (ADSC) with hopes of lymphangiogenesis. I observed complete normalization of lymphedema in the affected limb in one case among 43 cases post-op. 17 months in a lady who suffered from lymphedema. She does not need to compress; even after heavy exercise, no more swelling. All 43 patients have great volume reduction from 80% to 110%, compared to normal site within 6 months after operation and improved quality of life.

Current treatments for lymphedema cannot reverse the fundamental pathophysiology, however the researchers can put efforts into the stem cells, stem cells can regenerate lymph vessels and therefore provide clinically good results of lymphedema. Also, more longer follow-up studies are necessary.

AB0272

POSTER (VENO-LYMPHATIC DISORDERS AND COMPRESSION THERAPY)

Group care for lymphedema

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Background. This is a preliminary report. A planned scientific study is awaiting Ethics Committee approval.

The OPD based comprehensive care centre was started at the surgery OPD of AIIMS in 2011. Initially an extension of the Breast Cancer Clinic for Post Mastectomy edema, it provided a combination of counselling for self-care, OPD-based pumping and bandaging. With improvement in outcomes, the patient load was expanded to leg oedema, venous problems and ulcers.

Material and methods. The special group therapy room is under the care of the trained voluntary counselor. Patients are from surgery, oncology and other departments who come after already having undergone lympho-scintiscanning, and basic care. Most are already on Benzathine Penicillin 1.2 mega units every three weeks.

The weekly visit of the counselor is for interviewing new patients and group counselling sessions. She also demonstrates bandaging technique and use of pump. Rest of the days, patients train each other and apply the pump as well as bandage on their own. Dressing, if required, is assisted by the nurse in the OPD.

Results. Of the 354 patients with various types of lymphedema there were 227 females - mostly post mastectomy and 120 males. 19 had ulcers and 13 had varicose veins. The average age was 42 years (range 30 to 65 yrs). Patients improved remarkably subjectively through reduction in discomfort, limb size, and pain. Reduction in limb size revealed hidden ulcers in an additional 3 patients. All the ulcers have healed. In many, reduction continued with self-care at home.

Conclusions. Comprehensive group care for swollen limbs

and ulcers is successful is a wonderful method to tackle India's huge workload, as well other areas with a similar patient profile. Besides better outcomes, it results in continuance of self-care at home.

AB0051

POSTER (VENO-LYMPHATIC DISORDERS AND COMPRESSION THERAPY)

Validation of the psychometric properties of a self-reported questionnaire assessing adherence to the wearing of elastic compression stockings

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Aim. To identify the discriminant questions of a short self-questionnaire measuring patients' adherence to the wearing of elastic compression stockings and to validate the questionnaire's mandatory psychometric properties: acceptability, test-retest reliability, internal consistency and external validity.

Material and methods. The gold standard for the development of an evaluation questionnaire involves, conducting an exhaustive review of the literature, identifying the questionnaire items through patient interviews, reducing and selecting the questions by the use of statistical methods such as PCA using Varimad rotation, and measuring the comprehensibility and acceptability of the first version of the final questionnaire. Once these steps have been completed, test and retest reliability has then to be conducted through a group of patients answering the questionnaire repeatedly over a short time interval. Then, the questionnaire has to be filled out by a large sample of patients in order to evaluate its internal consistency using Cronbach's alpha test and its external validity by comparison to other adherence indicators and, better still, by direct objective measurement of compliance as part of a clinical trial. This study also provides the opportunity to score the questionnaire so as to define the adherence threshold using ROC analysis.

Results. Patient interviews revealed that besides direct compliance questions, other questions about adherence to wearing elastic compression and patient satisfaction need to be added. Therefore the initial idea of a simple compliance questionnaire has changed into an adherence questionnaire including a section on compliance. An objective device has been developed to measure and record electronically how long patients wear their elastic stockings in order to test the external validity of the adherence questionnaire. The first version of the compression adherence questionnaire will be presented.

Conclusions. A validated compression adherence self-questionnaire will soon be available to fill a large gap in current clinical trials on elastic compression efficacy.

AB0244

POSTER (VENO-LYMPHATIC DISORDERS AND COMPRESSION THERAPY)

Usefulness of cohesive layer for short stretch bandages

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Compression therapy has demonstrated a reduction of the ultrafiltration effective pressure, increase of venous and lymphatic

drainage, improvement of muscle pump, central hemodynamic effects, extension of the reabsorption surface, provides successful treatment results and softens fibrotic changed tissues. Fixed multilayer short stretch bandages has been of paramount importance in the treatment of venous ulcers and eczema due to chronic venous disease and lymphedema management.

One of the most important facts to be considered is the maintenance of the interphase pressure in time, resulting in less bandages changes therefore less discomfort and cost for the patient. One of the main facts in the drop of the compression system's pressure is the displacement between layers and one of the methods used for avoiding this, is the use of an external cohesive layer which prevents or limits it. The drop of the interphase pressure in a group of volunteers using short stretch bandages was studied to determine the use of the cohesive layer, which is strongly recommended. We suggest change the compression system every 5 days.

AB0177

POSTER (VENO-LYMPHATIC DISORDERS AND COMPRESSION THERAPY)

Diagnosis of inferior vena cava malformation: a case report

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Malformations of the inferior vena cava (IVC) are rare presentations and are usually asymptomatic. They are caused by disturbances in the embryological formation of the venous system or can develop as a result of perinatal venous thrombosis with secondary impairment of the venous development. We report on the case of an 18 year-old man whose chief complaint was a long lasting hematuria without pain. Laboratory findings were relatively normal and the ultrasound described a 60 cm/s velocity gradient between the intrahepatic IVC and infrahepatic IVC. Diagnostic venography showed complex malformation of the intrahepatic IVC and both renal veins drained into retroperitoneal hemiazygous veins without thrombosis.

AB0334

POSTER (VENO-LYMPHATIC DISORDERS AND COMPRESSION THERAPY)

Venous malformation and its management updates

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Venous malformations (VM) are frequently encountered in the vascular surgical practice in Bangladesh. Due to lack of awareness of the patients and an effective referral system, most patients with VM present late, often with large tumors. Most cases come to the vascular surgeons through general surgeons. Diagnosis is suggested by fine needle aspiration and cytology (FNAC) showing a blood smear. Duplex study of the mass shows enhanced vascularity of venous type. MRI is sometimes done for large lesions to see tissue invasion and to plan surgical strategy. Treatment is based on surgical excision whenever feasible. Complete excision is often feasible with low rate of recurrence. Postoperative complications include recurrence, nerve damage resulting in sensory and sometimes motor deficits and rarely critical vascular damage resulting in arterial or venous insufficiencies. Minimally invasive treatments like sclerotherapy and radiofrequency ablations have started to feature in the management strategies of venous malformations in Bangladesh.

AB0267

POSTER (VENO-LYMPHATIC DISORDERS AND COMPRESSION THERAPY)

Lymphedema complicated with deep venous thrombosis

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Background. Lymphedema is defined as the interstitial, abnormal, accumulation of protein-rich fluid in soft tissues, results from the dysfunction of lymphatic system, an imbalance between lymph formation and its absorption into the proximal lymphatics.

Material and methods. The patient (male, 62 years old) was admitted in 1st Surgical Clinic, County Emergency Hospital "Pius Brinzeu" Timisoara, University of Medicine and Pharmacy "Victor Babes" Timisoara, Romania on 21 October 2014: lymphedema complicated with deep venous thrombosis. In such clinical case is recommended hospitalization in a specialized department, to fit the correct diagnosis and therapeutic approach. To treat acute complication (deep veins thrombosis) we use heparin, elevated leg, 4 layer bandage and, when acute signs were removed we transferred the patient to the Dermatology Department for the complete decongestive therapy and local treatment.

Results. General signs disappearance after 7 days of pathogenic treatment and significantly improving of local signs, with reduction of edema, disappearance of local redness, pain, other complaints, ability to move without pain, were evidence of the favorable evolution, the good outcome. Patient discharge, after 21 days of hospitalization (14 days in our clinic and 7 in Dermatology Department) must be pursued with ambulatory specific conservative treatment.

Conclusions.

1. Combined measures required the treatment of acute complications of lymphedema, with good outcome, despite of knowledge of no curative treatment of this disease.

2. Treatment of lymphedema includes practical advices, manual lymph drainage, bandaging, self-bandaging, elastic compression garment, skin care and physical exercises, surgery sometimes. Weight loss may be useful if obesity.

AB0121

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

The prevalence of ovarian varices in patients with cancer

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Background. To evaluate the possible association of ovarian varicose in patients with cancer, as 15% of these patients develop venous thrombosis.

Material and methods. 40 female patients with confirmed diagnoses of cancer underwent a transvaginal ultrasound with color Doppler.

Results. 95% of these patients had positive diagnoses for ovarian varices with a diameter equal to or larger than 5mm.

Conclusions. Our results suggest that oxidative stress present in ovarian varicose causes inflammation in the microcirculation of the ovary and alters the endothelial phenotype, stimulating the angiogenesis particular to cancer and activating procoagulants.

AB0146

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

The cases of pelvic congestion syndrome

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Pelvic congestion syndrome (PCS) is the disease causing chronic pelvic pain resulting from reflux or obstruction of the veins in the pelvis. It can also be brought by compression of the left renal vein between the superior mesenteric artery and the aorta, also known as the nutcracker syndrome. PCS has been treated with surgical, interventional and medical therapy. 5 cases of PCS will be presented.

Case 1. A 59-year-old woman suffered vulvar varices extending to her leg. Angiography showed venous reflux in the left ovarian vein and the stenosis on the orifice of the left renal vein. She was observed because of slight symptoms.

Case 2. A 34-year-old woman suffered occasional dull pain in her left lower quadrant for the past two years. Angiography showed venous reflux in the left ovarian vein and the left renal vein compressed between superior mesenteric artery and aorta. Coil embolotherapy was performed for the left ovarian vein. No pressure gradient was measured between inferior vena cava and left renal vein.

Case 3. A 43-year-old woman suffered pain in her right leg for over ten years, dull pain accompanied with her menstruation in her lower abdomen and vulvar varices. Angiography showed venous reflux in the left ovarian vein and coil embolotherapy was performed for it. One year after the treatment, symptoms recurred and embolotherapy was performed for the enlarged branch of the left ovarian vein.

Case 4. A 53-year-old woman suffered discomfort in her lower abdomen, pollakiuria and vulvar varices. Angiography showed venous reflux in the left ovarian vein and coil embolotherapy was performed for it.

Case 5. A 60-year-old woman suffered pollakiuria and vulvar varices. Angiography showed venous reflux in the left ovarian vein and coil embolotherapy was performed for it.

All of the treated cases were improved. One of the cases was retreated. Any complications was not observed.

AB0063

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Should we develop an Asian vascular and endovascular training program?

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Background. Vascular and endovascular surgery has undergone a major changes since the last thirty years. The question is it possible to achieve harmonically of knowledge and skills and provide an indication that any Asian country candidates have received a structured vascular training with a pass level of competence. Asian countries has a different ways in looking to vascular surgery, but with a population which in the world largest and most populous continent with more than 4.4 billions people, covering 8.7% of the earth's total surfaces area and comprise 30% of its land area with very rich history, cultures and different types of medicines in addition to different behavior of vascular diseases to the rest of the world.

Material and methods. I am proposing structuring a specific Asian Vascular and Endovascular Training Program which with the cooperation of various Asian nations states could be a unifying process that provide a standard of Vascular Training to which all countries can aspire. This proposal

should stress that the Asian Program cannot and doesn't bypass national accreditation but maybe it can be used by each countries as part of their respected accreditation process, and as a service to the medical association of these countries to be used to recognized the level of individual qualification.

Results. The proposal will have carefully considered criteria allowing the trainees to move between different Asian countries enriching the speciality. The training program will have a minimum acceptance total duration of surgical training with specific number of arterial and venous operations with logbook, CME, vascular laboratory and endovascular specific module is suggested to cover all aspects of theoretical knowledge and finally two part qualification exam.

Conclusions. The full detailed program will be presented and discussed in the meeting.

AB0067

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Superior mesenteric artery angle monitoring during Nutcracker stenting

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Endovascular stenting (EVS) for Nutcracker Syndrome (NS) have become increasingly popular due to its good short and midterm outcome with very low mortality and morbidity rate. Numerous stenting techniques have been described but there are still areas for further improvement. SMA angle monitoring is a new technique that could facilitate precise deployment of the stent, apart from using intra-vascular ultrasound (IVUS). It is relatively inexpensive but carries some risk to arterial system involved. We present a case of an 18-year-old female who experienced chronic lower abdominal pain for 1 year without symptoms commonly associated with NS. A computed tomography (CT) of the abdomen was done to look for underlying cause and revealed compression of the LRV by the SMA and the aorta with varicosities of its tributaries. During the EVS, we placed an angled catheter into the SMA origin for angle monitoring. The SMA angle measured was 32 degrees. A 14x60mm self-expanding nitinol stent was deployed after pre-dilatation. Post stenting run showed good stent expansion, with no contrast reflux into the LRV tributaries and an increased SMA angle to 86 degrees. Post-procedure, her recovery was uneventful and her symptoms were relieved. She was anti-coagulated upon discharged. At 3 months follow up, she had no recurrence of symptoms and her abdominal X-ray and ultrasound revealed no stent migration with a patent non-dilated LRV. As conclusion, SMA angle monitoring is another inexpensive adjunct technique which can be used but need further evaluation due to the risk involved.

AB0282

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Surgical management of synovial sarcoma with femoral vein invasion

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Synovial sarcoma is rarely occurred aggressive neoplasm in soft tissue. A 38-year-old male has found a palpable mass

in his right inguinal area. He had right leg edema one month ago. Biopsy of the mass confirmed synovial sarcoma which had invasion and obliteration of right external iliac vein. The en bloc resection of right thigh synovial sarcoma was done from external iliac vein to common femoral vein and from external iliac artery to superficial femoral artery. For the reconstruction of common femoral vein, we harvested superficial femoral vein. About 10 cm of superficial femoral vein was used for jump graft of the resected segment of common femoral vein. It was anastomosed to upper external iliac vein end to end and distally to deep femoral vein bifurcation site. After en bloc resection, his leg edema was improved. Invasion of right external iliac vein can reduce blood stream and obstruction of lymphatic ducts have made leg edema. When his operative wound was healed completely, his treatment has approached multidisciplinary. Hematocologist recommended him to receive chemotherapy, however, he refused additional chemotherapies. We are observing him with no other treatment.

AB0072

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Are superficial venous anatomy and reflux paths... predictable?

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As a complex network, prone to anatomical variations, the superficial venous system can be difficult to scan. However, some quite constant patterns are present to remind us that, under the apparent structural chaos of the superficial net, anatomical predictability still can be found. Using current concepts in anatomy, nomenclature and classification of lower limb's venous systems, through schemes, animations and ultrasound images, this lecture presents a practical review of the topic. It not only gives insights around some anatomical – usually associated – findings, but also considers some predictable routes for normal venous return and reflux transmission. This is an image-based presentation almost devoid of texts, with material from the recently published book: *Venous Ultrasound. A Comprehensive Approach. Lower Extremities and Pelvis. Atlas and Texts* by Dr. Miguel Lo Vuolo.

AB0274

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Clinical and radiological features of venous stroke

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Aim. The purpose of this study is to assess the role of brain magnetic resonance imaging (MRI) in patients with venous stroke (VS) in relation to clinical disorders.

Material and methods. 42 patients with clinical manifestations of stroke were examined. There were 16 men aged 41 to 80 years (mean age 60 ± 10.9 years) and 26 women aged from 48 to 80 years (mean age 62 ± 10.3 years) among them. The average age of all patients was 61 ± 10.4 years. Of 42 patients 10 were diagnosed venous infarction using brain MRI and MR-venography, the remaining 32 patients were diagnosed arterial infarction.

Results. VS develops in females and in patients at a relatively young age (52.7 years at venous infarction and 65,3

years at arterial infarction). For VS is characterized by subacute, slow development of clinical manifestations. In the VS clinical picture cerebral symptoms prevail over focal. There were detected no focal symptoms inherent only VS symptoms. Focal neurological deficit is caused by the topography of focal brain lesions. In the clinical picture of the disease of patients with VS a significant place is occupied by the symptoms that indicate cerebral venous circulatory distress. During VS there is a trend of relatively rapid regression of general cerebral symptoms. Localization of venous infarction doesn't match with the "pools" of blood supply of main intracranial arteries. Parietal-occipital region is most commonly tends to affect. The form of foci VS is irregular, and uneven contours and fuzzy. MR-signal lesion venous infarction is in most cases heterogeneous. A distinctive feature of VS is the presence of signs of vasogenic cerebral edema by MRI in the first days of the disease.

Conclusions. From our results, VS has characteristic clinical and radiological features. Brain MRI in combination with MR-venography is best carried out in patients with VS to timely implement therapeutic and prophylactic measures.

AB0320

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Treatment of child portal hypertension

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Background. Portal hypertension is portal vein blood flow obstructing, cause of portal system pressure increase, which results in the splenomegaly, hypersplenism, Esophageal gastric fundal varices, haematemesis, melena, ascites and a series of symptoms of the disease. Child portal hypertension is rare, most operation apply autologous graft transplantation.

Material and methods. From March 2010 to June 2011, we treated seven children with portal hypertension. Four boys, three girls. Age from 2 to 8 years old, an average of 5.1 years old. Course from 1 months to 4 years, an average of 23.7 months. Clinical manifestation: abdominal distension and ascites in 7 children, hematemesis or melena in 6 cases, anemia in 6 children, oliguria in 2 children, belly wall varicose veins in 7 children, splenomegaly and hypersplenism in 6 children, hepatomegaly in 4 children and jaundice in 2 children. We performed umbilical vein - inferior vena cava graft shunt in 1 child, portal vein- inferior vena cava graft shunt in 2 children, splenectomy plus pericardial devascularization in 1 child, portal - inferior vena cava anastomosis in 2 children, venous thrombolysis 1 child.

Results. Current 0-24 months follow-up. In 2 children with portal-IVC anastomosis appeared with melena at half and one month postoperation respectively, the symptom disappeared after conservative treatment.

In 3 children of application of graft no haematemesis or melena reappeared, graft is open. 1 child of splenectomy plus pericardial devascularization in good condition.

Conclusions.

1. Portal hypertension is complex, for prehepatic, hepatic, post hepatic portal hypertension caused by different pathogenesis, we should take individualization treatment, simplify operation, ensure safety, make patients to receive the maximum benefit.

2. Grafts with special design could be used for children's portal hypertension. It could rapidly reduce the portal pressure, reduce the risk of bleeding, save lives, gain time for further treatment. The long-term effect is under follow-up.

AB0225

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Ultrasound-guided punctures: improved hygiene using a novel disinfectant ultrasound couplant spray

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Background. The use of conventional ultrasound gel during venous interventions goes along with several problems: gel requires intense wiping for removal, color markings will not stick on gel-covered skin, gel deposits will delay punctions and catheter handling, and even sterile gel will be contaminated with bacteria mobilized from skin pores and wrinkles. We evaluated a new disinfectant ultrasound couplant spray (DUCS) containing Octenidin and Phenoxyethanol.

Material and methods. The study included 20 patients, 32-73 yrs., with symmetric saphenous insufficiency and >30 cm of superficial varicosities. Legs were randomized to (A): Mapping using conventional ultrasound gel, intervention using sterile ultrasound gel; or (B): Mapping using DUCS (>3 min. contact time), intervention using DUCS (>5 min contact time). Prior to puncture and after intervention samples were taken in symmetric locations at potential puncture sites using contact plates. The number of colony forming units (CFU) was determined, furthermore the procedural time.

Results. The evaluation of 20 cases (40 legs, 168 samples) showed bacterial growth for A (standard) after hygienic preparation with a mean of 11.6 CFU (0-74) and for B (DUCS) of 2.6 CFU (0-19). After treatment, A showed increased growth with 17.5 CFU (2-180) while B showed even improved hygiene with just 2.1 CFU (0-8). Comparing corresponding locations, DUCS-treated areas were superior or equal to standard in 93.8% of the samples. Mean procedural time was 18:20 min. for standard and 12:40 for DUCS-using procedures. Gel consumption was 32-71 ml (mean: 51) for standard, and 4-8 ml (5.4 ml) for DUCS.

Conclusions. The use of the novel DUCS provides similar or even better hygienic conditions than conventional alcoholic disinfection. The application may help to simplify endovenous procedures and to significantly reduce intervention time.

AB0306

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Spy trans cutaneous angiography - to prognosticate ischemic wound healing

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To predict the outcome of ischemic wound based of its perfusion on spy angiography (SA) is an ongoing study. SA provide objective, quantifiable, and reproducible parameters of perfusion, that aids in to the clinical decision to determining the need for revascularization, success of revascularization and in directing wound management, closure and predicting the wound healing. Here we describe the perfusion of ischemic wound pre and post revascularization procedure based on SA and its outcome on SA data. In this case study, a 42-year-old diabetic and hypertensive male had peripheral vascular disease with nonhealing wound on left foot with gangrenous 1st and 3rd toe. We performed a SA of the wound of left foot pre and post revascularization procedure. Pre-procedure perfusion of wound was $\leq 43\%$ on angiography, which was $\geq 93\%$ post-procedure. In preoperative angiography there was poor perfusion in ulcer area, which was showing no signs toward healing and poor prognosis of all toes as perfusion of toes were also poor.

Review angiography after angioplasty was showing increased perfusion in the uncle area, but still there was poor flow in all toes. On follow-up patient's wound was healed but he had to undergo amputation of all toes, which was predicted based on post procedural SA. In this case, SPY technology provides accurate data in determining the future outcome of a wound. When coupled with a clinical assessment and an understanding of the patient's health and history as well as additional vascular assessment, SPY can be a useful adjunctive procedure to assist the surgeon in determining the amount of tissue removal needed during a future procedure & to predict the outcome of wound.

AB0310

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Endovascular adjunct to peripheral vascular trauma-save limb and life

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Trauma is one of the leading cause of mortality and morbidity especially in the young or middle age group. The lethal triad of trauma (hypothermia, coagulopathy, and acidosis) is almost always triggered by initial uncontrolled or concealed hemorrhage. Time is of utmost importance in terminating the vicious cycle.

Endovascular interventions are an important and evolving adjunct to open surgical management of peripheral vascular injuries. Used judiciously by trained personnel, they not only decrease surgical time, avoid exposure to anaesthesia, hasten recovery, but most importantly breakdown the catastrophic sequelae of ongoing bleed by rapid hemorrhage control. They allow vascular control at difficult surgical terrains such as subclavian or iliac vessels with much compared ease and rapidity.

We present 4 interesting cases of trauma and its sequelae managed with endovascular adjuncts at different points in the resuscitative and rehabilitation stations.

In our first case of a stab injury over right femoral artery with acute hemorrhage, a covered stent across the transected artery was curative as well as hastened recovery.

In the second case in the hybrid suite, a long segment of balloon occlusion of the iliac artery allowed rapid physiology control and easier surgical repair of the transected common femoral vessels.

The third case required a covered stent across the leak from a previously repaired subclavian vessel to prevent life threatening hemothorax. In another interesting case of a badly mutilated post traumatic shoulder with an axillary pseudoaneurysm, a covered stent across the axillary vessel facilitated further reconstructive shoulder surgery.

AB0106

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Phlebologic rehabilitation: homemade exercises for ulcer patients

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Background. Rehabilitation in our patients hasn't always be a discussion topic, maybe because of the lack of studies, but it has always been an important part of healing leg ulcers by venous insufficiency. We want to establish the clinical benefits of the exercises we teach our patients of venous ulcer by

improving the range of ankle movement (ROAM), and demonstrate the benefits in wound healing.

Material and methods. Patients with leg ulcers caused by venous insufficiency that came to our practice from April 2012 to December 2012.

27 patients with venous leg ulcers (9 males, 18 females); 35 limbs; 42 active leg ulcers. Sizes of the ulcers: 20 cm² to 100 cm² (mean of 60 cm²). We teach our patients and a family member a series of exercises in our private practice, to be performed at home or at workplace 10 minutes work 3 times per day; alongside with compression therapy, hygiene and sclerotherapy.

Results. ROAM was reduced in all patients with venous leg ulcers (22°±5) and patients with long time ulcers, showed lower levels of ROAM. After doing this exercises as scheduled, patients improve their ROAM (30°±5) and also has a lesser time in healing their ulcer (1 to 4 months with a media of 2 months). The exercises are better performed with elastic compression.

Patients with venous leg ulcers are often told to rest in bed, when we tell them to do this exercises and walk, they feel better with themselves becoming our best allies in healing their ulcers.

Conclusions. This research has shown that phlebologic rehabilitation improves ROAM and alongside sclerotherapy, hygiene and compression therapy heals venous leg ulcers faster and also improves our patient's psychology because they can walk and be efficient again.

AB0148

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Traumatic tearing of common femoral artery and external iliac vein treated by hybrid operation

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Background. Endovascular treatment is an important adjunct to open surgical treatment of vascular injuries in trauma case. It has advantages of operative time saving, decreasing blood loss, and short hospital stay. It also permits immediate control of hemorrhage and facilitate other open surgical repair. We report a rare trauma case of coexisting common femoral artery and external iliac vein tearing caused by falling down from the horse.

Case description. A 75-year-old male patient was brought to emergency room with an obvious right thigh swelling, significant pain, and low blood pressure. The horse flipped over and landed on top of the patient. The CT scan showed active bleeding on right common femoral artery (CFA) and massive hematoma in right groin area. The preoperative angiography under mobile C-arm revealed tearing of right common femoral artery on the emergency operation. Using balloon angioplasty, ballooning of external iliac artery provided blockage of hemorrhage. The Viabahn Endoprosthesis (Gore & Associates, Flagstaff, AZ) was deployed through contralateral and retrograde approach at the tearing of right CFA. The final angiography showed complete covering of tearing site. The vertical incision of right groin revealed tearing on external iliac vein (EIV) and massive hematoma around vessel. The direct anastomosis on tearing EIV could provide control of hemorrhage. The patient survived from severe trauma and can ambulate by hybrid operation.

Conclusions. In our experience, the hybrid operation may offer proper treatment of vascular injuries in advantage of less blood loss, rapid operation time, and early ambulation. Also, in the case of trauma, vein injury should be considered when vessel injury is suspected.

AB0156

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Early recurrence of adventitial cystic disease of popliteal vein: a case report

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Adventitial cystic disease (ACD) is a rare vascular disease, and it is very unusual for ACD to develop in vein. We report a case of recurrent ACD in popliteal vein (PV) after cyst excision. A 56-year-old man presented left calf swelling for 10 days. The lesion was suspected to deep vein thrombosis in PV on duplex ultrasonography (DUS) and computed tomography (CT). However we could not rule out other disease entity such as ACD or rupture of Baker's cyst because the lesion was not improved after anticoagulation. His symptom was relieved after conservative treatment and he refused further surgical exploration. On the follow up CT angiography after 1 month, he had still venous lesion and combined with PA occlusion thought to be chronic adhesive lesion, but collateral vessels were well developed. After 5 years, he presented aggravation of left calf swelling. We decided surgical exploration via posterior approach suspicious with ACD in PV. We founded ACD in PV and aspirated cystic lesion. The cystic fluid was yellowish-mucoid nature. We performed excision for cystic wall and confirmed restoration of popliteal venous flow. His symptom was improved after operation. However, 4 months after operation, his symptom was recurred and the PV was nearly occluded on CT.

AB0061

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

One-stage radical removal of intravenous leiomyomatosis extending to right atrium via bilateral gonadal veins

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Intravenous leiomyomatosis (IVL), a rare, benign smooth muscle cell tumor, extends from the uterus into pelvic and systemic veins and, more rarely, into the right cardiac chambers. Among the reported cases, the tumor is usually known to enter through the lumen of the iliac vein, and grow into the inferior vena cava, while the involvement of bilateral ovarian veins is uncommon. Complete tumor resection is the key to the therapy.

We present a 25-year-old female patient suffering from abdominal distention for one month. IVL originating from the uterus and extending to the right atrium through bilateral ovarian veins and then inferior vena cava was diagnosed from preoperative imaging studies. The patient was successfully operated through a one-stage approach with a complete excision of the tumor under extracorporeal circulation. Total hysterectomy and bilateral salpingo-oophorectomy was done. Histopathologic findings confirmed the diagnosis of IVL. The patient's post-operative recovery was uneventful without recurrence and re-stenosis at the 7 months' follow-up. To our knowledge, this is the first reported case of a cardiac-extending IVL with the tumor extension through bilateral gonadal veins. In conclusion, IVL may grow within veins along various routes. One-stage radical resection can be a safe and effective alternative for the treatment of IVL with the tumor extension via bilateral gonadal veins. Long-term follow-up is recommended because of the possibility of recurrence and metastases.

AB0316

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Nutcracker Syndrome: report of 3 cases

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Nutcracker Syndrome is a rare vascular compression syndrome. Still there are no specific treatment guideline. We experienced three patients with Nutcracker Syndrome with or without superior mesenteric syndrome. We took the operation in two middle-aged woman patients with typical clinical features. We performed a left renal vein transposition in one patient and left renal vein transposition and Roux-en-Y duodenojejunostomy in another patient with simultaneous superior mesenteric artery syndrome. Postoperatively they recovered without any complication. In the last patient we have been observing clinically because of younger age, recent diagnosis, and mild symptoms. Thus we report relatively these rare cases with literature review.

AB0318

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Combined vascular compression syndrome with celiac artery compression syndrome, superior mesenteric artery syndrome, and Nutcracker Syndrome: a case report

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There are some types of vascular compression syndromes. As a arterial compression disease there are celiac artery compression syndrome, superior mesenteric artery syndrome, popliteal entrapment syndrome, and cystic adventitial disease; as a venous compression disease, May-Thurner's syndrome and Nutcracker Syndrome; and as a possible combined disease, thoracic outlet syndrome. We experienced a middle-aged woman patient with celiac artery compression syndrome, superior mesenteric artery syndrome, and nutcracker syndrome simultaneously. She had operation of laparoscopic median arcuate ligament decompression before one year, but she had been complained persistent symptoms of postprandial discomfort, nausea/vomiting, and weight loss with simultaneous flank and lower abdominal pain and pareunia. We performed Roux-en-Y duodenojejunostomy for SMA syndrome and left renal vein transposition and left gonadal vein ligation for nutcracker syndrome. She recovered without any complication. Thus we report this extremely rare case with a literature review.

AB0304

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Improvements in vein preservation for arterio-venous fistula formation as a result of a novel health awareness intervention

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Background. The arteriovenous fistula is the gold standard method for dialysis related vascular access. Repeated ve-

nepuncture results in venous scarring making the creation of a successful fistula difficult or impossible. We assessed knowledge of vein preservation in patients and healthcare staff within our unit and designed a novel healthcare intervention campaign entitled 'Save Your Vein'.

Material and methods. 158 patients undergoing dialysis or attending Low Clearance Clinic (LCC) within a 6-month period (May to October 2014) were identified. Of these, 22 were excluded. 40 doctors, 22 medical students, 8 phlebologists and 10 nurses also participated. Each person completed a survey to determine understanding and practice of vein preservation. Following this, patients were issued wristbands, alert cards and leaflets. Healthcare staff were issued lanyards and attended teaching sessions. Posters were placed in key areas in primary and secondary healthcare settings. A post-intervention survey performed in a different unit assessed the impact of the campaign (patient group n=88, staff n=40).

Results. 68.5% of the patient group and 97% of the healthcare group did not know about vein preservation. Post campaign results showed improvement in knowledge with 94% of patients and 92% of staff aware of vein preservation, a 203% and 323% improvement respectively. Clinical practice also improved with 90% of patients undergoing venepuncture in the back of the hand or dominant arm.

Conclusions. Our campaign, entitled 'Save Your Vein' has a multifaceted approach targeting patient and healthcare staff groups. Results demonstrate a universal improvement in knowledge of vein preservation and a positive change in practice. In the long term, we anticipate the numbers of fistulae created in our unit will increase with an associated improvement in patient outcomes. Following the overwhelming success of the campaign, the British Kidney Patient Association has supported a national roll-out of this campaign later in 2015.

AB0155

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Vascular access outcomes using single-stage transposed basilic vein transposition

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Background. Vascular access is the most important need for chronic renal failure patients. Although the transposed basilic vein arteriovenous fistula (TBAVF) is increasingly performed for hemodialysis vascular access in patients lacking adequate superficial veins, little is known about the long-term patency or risk factors for failure.

Material and methods. A retrospective analysis was conducted for 180 patients who had a TBAVF created between 2006 June and Dec 2014. Primary outcomes were unassisted and assisted patency rates and primary failure rates.

Results. This was the first access procedure in 27% of patients, mean age was 55 years. There were 38% men. Unassisted and assisted patency rates were 45% and 75% at 1 year and 45% and 60% at 2 years, respectively. Primary access failure occurred in 5% of cases. The most common complication was wound infection. Unassisted access patency was significantly worse in patients with a previous access or an ipsilateral central venous catheter. The most common cause for failure was early puncture, graft kinking and hemmatoma.

Conclusions. In summary, the TBAVF provides a very good viable option for vascular access in patients who have poor superficial veins; however, certain patient characteristics seem to affect long-term patency and should be considered when exploring access option.

AB0295

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Brachial vein transposition arteriovenous fistula for hemodialysis access: results of 17 procedures

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Background. Recently the number of patients for hemodialysis is increasing, so there are many patients who underwent many failed arteriovenous fistula (AVF) procedures. Their arm veins are usually not suitable for repeat AVF creation. The brachial vein transposition (BrVT) AVF is often adopted effectively for the patients with inadequate superficial upper extremity veins, but this method is scarcely reported.

Material and methods. We retrospectively analyzed the records of consecutive 16 patients who underwent 17 BrVT AVF procedures by one-stage operation from October 2008 through December 2014.

Results. The mean age of the patients was 68.8 years (range, 47 to 80 years). They included 8 women (50%) and 9 diabetic patients (56.3%). All but 2 patients had undergone previous upper extremity access procedure, and another patient had had two procedures. Mean follow-up was 12.2 months (range, 0 to 58 months). Post-operative complications included graft occlusion in 3 patients, bleeding at the puncture site in 1 patient. First puncture for hemodialysis was done after average of 22 postoperative days. Eight patients required reintervention within 1 year. The functional secondary patency rate was 80% at 6 months and 52 % at 1 year.

Conclusions. BrVT AVF procedure by one-stage operation is a useful arrow for the patients with inadequate superficial upper extremity veins, but many patients needed reintervention for access maintenance.

AB0232

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Central venous plasty and stenting in catheter-induced brachio-cephalic venous stenosis

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Introduction. A 14 y.o. male k/c/o Joubert syndrome with delayed mile stones having bilateral renal failure on regular hemo-dialysis. Left arm sudden development of soft tissue swelling, hardness, tenderness increasing since 15 days.

A-V fistula above elbow is patent and functioning (made for renal dialysis).

Venous Doppler and CT venography showed tight stenosis (? fibrotic) at left brachio-cephalic and SVC junction.

Material and methods.

- 8 fr sheath & diagnostic H1 catheter, New Amplatz wire
- 12 x 40 mm Advance PTA balloon used to dilate stenotic lesion. 14 x 60 mm self-expanding Nitinol stent (EPIC- Abbott) deployed at stenotic segment.

- Post stenting dilatation done with 8 mm x 12 mm balloon at 5-8 atm pressure and stent is fixed properly.

Results. Post stenting venous return from left brachio-cephalic is excellent and left sided central veins are well opacified.

Conclusions. To do revascularisation of stenotic or occluded central veins like SVC, brachio-cephalic or subclavian balloon venoplasty and deploying self-expanding nitinol stent for life time result is ultimate treatment of choice.

AB0305

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Venous way of epithelial tumors' metastasis

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Background. The majority of cancer patients die not from the primary tumor and its metastases (secondary tumors formed by cells that have been separated from the primary lesion).

It is known that tumors of epithelial origin (carcinoma) metastatic nodal by. Today, much interest is presented in the study of the processes and ways of metastasis of tumors and there was a presumption of the fact of participation of the venous system in the metastasis of tumors of epithelial origin. Probably, this is connected with a large percentage of metastasis tumors of the abdominal organs to the liver and lungs.

Material and methods. The Study is conducted at Ulyanovsk Oncology dispensary. The study included such nosologies, such as: C15, C19, C34, C43, C50, C56, C61 (ICD X). A range of studies from 2009 to 2014 (for 5 years).

Results. Our study found that in malignant neoplasm of rectosigmoid connection metastases most often determined in the liver - 76 %, 13.5% - canceros of the abdominal cavity, and only 10.5% in the ovaries. Malignant melanoma of the skin that mainly affects the regional lymph nodes are: 45% - in inguinal lymph nodes, 55% - axillary regional lymph nodes.

Metastases in lung cancer, in most cases, spread to regional lymph nodes in the mediastinum - 70.6%, 17.7% - the left lung, 11.7% - the right lung. Malignant neoplasm of stomach metastases more commonly affect the liver - 64%, 36% - canceros abdominal cavity

With the a computer program we was developed a virtual 3D model of the blood supply to the abdominal organs.

Conclusions. The spread of such diseases as cancer of the stomach and cancer of the rectosigmoid compounds (C16, C19 ICD X) occurs mainly by venous. In the internal organs metastasis of gastric cancer and rectosigmoid Department by hematogenous fall during germination of the tumor in the vascular system of the portal vein or limfogematogennym way through the thoracic lymph duct, which flows into the venous system. The most common target organs for metastasis lesions, tumors of the rectosigmoid junction and the stomach is the liver and ovaries.

AB0118

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Does superficial venous surgery influence the hemodynamics of deep veins?

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Aim. Aim of the study was to evaluate how superficial venous surgery / endovenous laser ablation influence the deep vein blood flow velocity and the diameter of the common femoral vein.

Material and methods. 35 consecutive patients with chronic venous disease who underwent endovenous laser ablation of the GSV with concomitant microphlebectomies were enrolled in the study. There were 29 women and 6 men with mean age of 53.3 years. Most patients had varicose veins class C2-C3, 2 patients C4 and 2 patients C6 following CEAP classification.

Measurement of the blood flow velocity of the common femoral vein (CFV) and its diameter before the operation, at one week and at one month of follow-up was performed.

Results. Mean blood flow velocity in the CFV before operation was 25.7 ± 2.1 cm/s (ranged from 13.6 to 63 cm/s). At one week it was 29.4 ± 2.2 cm/s (from 13.8 to 60 cm/s). At one month 30.5 ± 1.9 cm/s (from 16 to 49 cm/s). When the measurements were compared we found a statistically significant elevation of the blood flow velocity in the CFV at 1 month: 25.7 ± 2.1 cm/s vs. 30.5 ± 1.9 cm/s ($p=0.034$). Mean diameter of the CFV of the operated legs before operation was 10.6 ± 0.5 mm (ranged from 5.6 to 15.1 mm). At one week it was 10.5 ± 0.4 mm (from 6.2 to 13.4 mm) and at one month 9.9 ± 0.6 mm (from 6.5 to 15.7 mm). Spearman correlation coefficient $r(s)$ between blood flow velocity in the CFV and its diameter was -0.41 ($p<0.01$) before operation and -0.64 ($p<0.001$) at 1 month.

Conclusions. Endovenous laser ablation of the great saphenous vein with microphlebectomies demonstrated slight increase of the blood flow velocity in the CFV and decrease of its diameter at 1 month of follow-up. These findings should be further investigated.

AB0035

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Venous function in healthy young adults assessed using air plethysmography

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Background. Venous function is assessed using air plethysmography (APG) globally. For diagnosis of venous insufficiency, there are the popular standard values suggested by Nicolaidis et al. However, there is limited data about the APG examinations in healthy people, particularly in young adults.

Material and methods. We measured venous function in healthy volunteers aged 21 to 22 years using APG[®] air plethysmograph (APG-1000, ACI Medical LLC, San Marcos, California, USA). Venous volume (VV), venous filling index (VFI), ejection fraction (EF), and residual volume index (RVFI) were recorded in bilateral legs of the subjects. The relationship between each venous function index and body height, body mass index (BMI), body surface area (BSA), and calf circumference (CC) was also evaluated. Values were described as the median (interquartile range). A p value of <0.05 indicated a significant difference.

Results. After excluding legs that were not successfully measured, 33 legs of 18 women were analyzed. The median height, BMI, BSA, and CC of subjects were 1.57 m, 20.5%, 1.47 m², and 34 cm respectively. The median values of VV, VFI, ER, and RVFI were 59.4 (55.2-64.8) ml, 0.5 (0.4-0.7) ml/s, 58.9 (44.9-70.3)%, and 19.7 (15.1-32.6)% respectively. No clear correlation was found between each venous function and body size.

Conclusions. Venous function assessment using APG was less likely to be affected by body size in Japanese women in their twenties with a standard body proportion. However, the VV was smaller than those in other reports. The VFI in healthy young adults appeared lower than those of older people. The EF in this study seemed to be lower than those in foreign studies on young adults but showed nearly identical values to those in another Japanese study on people in their forties.

AB0343

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Protocol of approach for the pelvic venous pathology

J. L. Monedero, S. Z. Ezpeleta

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Pelvic Congestion Syndrome is a condition caused by an increase, both in number and size, of intra-pelvic venous structures. These structures typically present a varicose morphology, consisting of tortuous, dilated and ecstatic veins, with flow alterations.

The main symptom is chronic pelvic pain, with more than 6 months of evolution and non-other related cause. This pain will increment with the patient on standing position. Other symptoms of this syndrome include perineal heaviness sensation, dyspareunia, dysmenorrhea, and apparition of genital and lower limb varicose veins.

This syndrome is closely related to multiple pregnancies in women, but also to the presence of congenital compressions. The venous hypertension is considered as the main etiology, developing refluxes in gonadal veins and tributaries to internal iliac veins. Depending on the patient, and typically in cases of compromised pelvic floor, leaking points to the lower limb will appear or not.

The diagnosis is established using Color Duplex Ultrasounds, both transvaginal DU and external transparietal DU, with a reliability of 96%. Other medical imaging techniques, such as CT angiogram and/or MR angiography, could be required in some cases, in order to clarify the diagnosis.

A diagnostic confirmation is undertaken using pelvic phlebography, allowing performing the embolization treatment of the refluxive veins in the same procedure. In some cases, a Stenting procedure is also required to treat compressive syndromes, as a part of the treatment of the refluxes.

It will be also necessary to study pelvic venous pathology in cases of atypical lower limb varicose veins, as previously established. In those cases, it will be also mandatory to treat the refluxive veins as part of treatment.

Resuming, embolization therapy to treat pelvic insufficient axis is an efficient procedure, with a success rate of more than 97%, both in women and men, with minimal complications founded.

AB0344

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Technical approach and complications in the study of the pelvic venous pathology

J. L. Monedero, S. Z. Ezpeleta

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Selective pelvic phlebography is the gold standard technique for the study of pelvic venous pathology.

In our unit, we use a percutaneous approach, typically through the elbow joint vein (basilic vein). In some cases, it is necessary to use other accessing point, through femoral vein, in the case of retro-aortic left renal vein or in cases of a difficult access from inferior vena cava.

The right jugular vein is also an option in cases of studying upper limb veins, with a difficult access due to low caliber.

Typical complications are vasospasm in the narrow veins of the lower limb, especially the cephalic vein. The most frequent haematomas occurs in the femoral or jugular accesses. The selective injection of the contrast media could generate an extravasation that will cause minimal disturbance for the patient, with non hemodynamical repercussions.

Possible allergic reactions to contrast media are very rare and should be immediately treated with the usual technique.

When performing embolization treatments, a migration of coils may occasionally occur, but the later use of new devices as detachable coils reduce this complication almost completely. Also, micro-foam perfusion can migrate and produce minor complications such as cough or other of minor significance.

A resume of the statistical outcomes will be exposed.

AB0212

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Standardization in venous mapping report – how we do it

A. Sampaio

Europe Vein Center, Faro, Portugal

Understanding a vein condition, anatomy, haemodynamics and landmark is crucial for a good diagnosis and treatment planning.

We suggest a basic but understandable venous mapping

cart to help the surgeon to understand the actual problems the patient has and to make easier to discuss treatment based on a representative draw.

AB0234

POSTER (DIAGNOSIS AND PELVIC DISORDERS)

Infrared picture as a document before phlebectomy

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Not always do varicose veins have a distinctive impression through the skin to the naked eye.

Infrared light can get through the skin and make visible the vein network. Infrared picture can help you (a) to locate veins, (b) to store a reference map of them before the treatment, (c) to display the condition to the patient, and (d) to compare results.

The authors take infrared pictures before and after superficial vein treatment.

Author Index

A

Abaligeti G., 19.
Abraham V., 98.
Aga K., 94.
Ahn S. H., 53, 85, 102.
Aikawa, K., 9.
Aiyappan V., 100.
Akesson M., 26.
Alameri A. S., 34, 55.
Albino J., 96.
Alborov Y., 14, 97, 102.
Aleksandrovna M., 108.
Aljaber F., 52, 73.
Aljabri B., 33.
Allaert F.-A., 50, 92.
Allaert F., 12, 26, 105, 109.
Allegra C., 18.
Alomran M., 33.
Als Salman M., 33, 75, 111.
Ambrosino M., 43.
Amorim P., 96.
An E., 77.
An J. S., 111.
Antignani P. L., 18, 25, 56, 95.
Aoyama N., 33.
Arslan C., 15.
Arworn S., 104.
Asrial R., 77.
Astafeva E., 25, 72.
Aworn S., 35.
Ayoub G., 41.
Azzam M., 7, 28, 29.

B

Banerjee S., 113.
Baraukova L., 85.
Bashar A.H.M., 110.
Bauza Moreno H., 50, 86.
Bedi H. S., 60, 69, 87, 98.
Behnia M., 27, 105.
Belentsov S., 51.

Belova L. A., 106.
Belova L., 58, 112, 116.
Belova N. V., 58.
Benigni J.P., 42.
Benzenine E., 12.
Bercovich J., 45.
Bester L., 80.
Bhanushali J. P., 14.
Bi Y., 101.
Bian C., 57, 112.
Bicknell C., 94.
Bihari I., 41, 48.
Bihari P., 41.
Bishara R., 34.
Bok S. K., 47.
Bootun R., 68, 94.
Bottini O. H., 45.
Bradbury A.W., 20.
Bręborowicz A., 28.
Brovkin M., 94.
Bulbulia R.A., 20.
Burchielli S., 44.
Burleva E., 94.
Busuttill A., 94.

C

Choi C. J., 99.
Caggiati A., 6.
Calton N., 60, 69.
Camilli D., 51.
Camilli S., 51.
Canata V. Jr, 49.
Canata V. M. Jr, 90.
Canata V., 49, 90.
Cappelli M., 90, 94.
Carpentier P. H., 51.
Carpentier P., 95.
Casals Sole F. J., 67.
Cavezzi A., 43, 81.
Chan C. Y., 35.
Chan Y. C., 68.
Chang G., 80.
Chapman-Smith P., 49.

Chaudhary P., 58, 115.
Chaufferind G., 109.
Chauhan V., 79.
Chawla R., 62.
Che Chan Y., 77.
Chen H., 65.
Chen J., 65.
Chen X., 64, 70.
Chen Y.-S., 35.
Chen Y., 63.
Cheng L., 66.
Cheng S. C., 98.
Cheng S. W. K., 77.
Cheng S. W., 68.
Cheung G. G., 68.
Chi N.-H., 35.
Chiangmai W. N., 107.
Chiyoya M., 16.
Cho H. R., 53.
Cho I., 115.
Cho S. G., 15, 79.
Choi C. J., 58.
Chou N.-K., 35.
Choudhury N. A., 110.
Chugunov A., 71.
Chung J. K., 11, 85, 91.
Chung K. Y., 111.
Chung W. S., 92.
Chunga Chunga J., 9, 76.
Chunga Prieto J. A., 78, 113.
Ciubotaru V., 12, 91.
Comerota A., 43, 45, 46.
Connor D., 23, 26, 27, 104, 105.
Cook S., 100.
Cooley-Andrade O., 23, 26, 104, 105.
Corbeta R., 49, 90.
Cornu-Thenard A., 38, 42, 51, 76, 95.
Crane J., 115.
Crebassa V., 105.
Cristodor P., 110.
Croce L., 17, 27.
Cullum N., 20.

D

Da Pozzo E., 44.
Dang Y., 63.
Daniel C., 92.
Davies A. H., 20, 68, 94.
Degovics D., 8.
Deguchi J., 116.
Dekiwadia D., 62, 75.
Delfrate R., 94.
Demekhova M. Y., 27.
Deshpandey S. B., 70.
Desnos P., 50.
Dharmarajah B., 68.
Dhillon S., 58, 115.
Di C., 63.
Di Stefano R., 44.
Do Y. S., 31.
Dolidze U., 25, 72.
Dotta M., 50, 86.
Dragic P., 41.
Du D., 105.
Du X., 64.

E

Efremova I., 116.
Eishi Y., 33.
Ektova M., 94.
Epstein D., 20.
Ermini S., 90, 94.
Ezpeleta S. Z., 117.

F

Fajardo E., 18.
Fakhry A., 73.
Fan L., 64.
Fan X., 65.
Fanelli R., 43.
Fauzia K. A., 58.
Felice F., 44.
Figueiredo G., 18.
Filipenko M. L., 27.

Forster T., 8.
Fortes R., 29.
Foser C. M., 86.
Franceschi C., 90, 94.
Franklin I. J., 94.
Frullini A., 21, 22, 44.
Fu X., 63.
Fujimura H., 87.
Fukuda I., 16.
Fukuda W., 16.
Furukawa A., 33.
Furukawa H., 117.

G

Galili O., 48.
Gallucci M., 18.
Gallus A., 100.
Gangadharan A. N., 14.
Garin A., 59.
Gavallér H., 8.
Gavrilov E., 14, 97, 102.
Gavva E., 25, 72.
George A. J., 60, 78.
Gerard J.-L., 9.
Geroulakos G., 7, 28, 29.
Gheewala U. S., 59.
Gianesini S., 10.
Gibson K., 23, 38, 54, 73, 92.
Giraldo O., 18.
Gogia A., 30, 109.
Gogia S., 30, 109.
Goh W. X., 23, 26, 104.
Gohel M., 20.
Gonçalves Pacheco K., 110.
Graissaguel A., 109.
Grover T., 113.
Guex J. J., 92, 95, 97, 103.
Gui X., 114.
Guo D., 100, 101.
Guo W., 64.
Gural Romero O., 45.

H

Ha J. W., 58, 99.
Hall C., 115.
Hamel-Desnos C., 50, 92, 93, 109.
Han A. R., 58, 99.
Han X.-W., 100.
Han X., 101, 102.
Han Y. M., 100, 110.
Hanpipat S., 35.
Hanzawa K., 13, 37.
Harunarashid H., 111.
Haruta N., 24, 36, 74.
Hashimoto K., 116.
Hashiyama N., 14.
Hasimaya N., 94.
Heatley F., 20.
Heo S. H., 31, 73.
Hirabayashi T., 9.
Hirokawa M., 72.

Honda T., 117.
Hong K. C., 15, 79.
Honma K., 111.
Horsirimanont S., 13.
Hoshino Y., 20.
Hu Z., 80.
Huang B., 17, 64, 70.
Huang S.-C., 35.
Huh S., 14, 98, 114.
Husseiny A., 67.
Hwang H. P., 100, 110.
Hwang H. P., 49.
Hwang J. C., 53.
Hwang J. K., 53, 85, 101.

I

Idris M. A. M., 111.
Igari K., 88.
Ilyukhin E. A., 27.
Inoue K., 24.
Inoue Y., 33, 36, 69, 88.
Intriago Giler E., 32, 63.
Iqbal K., 33.
Ishii T., 76.
Ito H., 20.
Ito T., 36, 69.
Iwai T., 33, 111.
Iwata H., 9, 36, 37, 99.
Izumi Y., 33.
Izzo M., 43.

J

Janushka V., 85.
Jeon K. W., 102.
Jeon Y. S., 15, 79.
Jeong J. Y., 10, 14, 49, 789, 114.
Jian Z., 66.
Jiang C., 63.
Jiang X.-H., 31.
Jin H. Y., 85.
Jindal R., 115.
Jindal R., 58.
Jo K. H., 89.
Joh J. H., 80, 90.
Joseph M., 60, 78.
Julinek S., 11, 88.
Jun K. W., 53, 85.
Jun Z., 66.
Jung H. J., 54, 114.
Jung I. M., 11, 85, 91.
Jung J. H., 110.

K

Kadiss A., 70.
Kagaya H., 116.
Kaiser C., 96.
Kalitko I., 25, 72.
Kalodiki E., 7, 28, 29, 42.
Kamhawy A. H., 67.
Kamiya C., 116.
Kantarci F., 15.

Kantarovsky A., 48.
Kaspar S., 41, 49, 69, 87.
Katayama T., 76.
Katayama Y., 24.
Katorkin S., 19, 56.
Katorkina E., 56.
Katsini R. E., 86.
Katsini R., 50, 86.
Kaur N., 58, 115.
Kaur T., 58, 115.
Kawasaki M., 117.
Kawasaki Y., 76.
Kawase I., 15, 71.
Kemény L., 8.
Kern P., 50.
Khabazova K., 77.
Khanna A., 59, 70, 105.
Khubulava G., 14, 97, 102.
Kichikawa K., 36, 69.
Kim D. I., 31, 33, 52, 73.
Kim D. S., 25, 43.
Kim H. K., 14, 98, 114.
Kim H. K., 53, 85.
Kim J. I., 79, 85, 101, 102.
Kim J. Y., 53, 78, 79, 102.
Kim J. H., 14, 114.
Kim M. H., 53, 85, 102.
Kim S. D., 53, 85, 101.
Kim S. M., 85.
Kim S. Y., 58, 99.
Kim W. S., 50, 74.
Kim Y. W., 33, 73, 98.
King T. (in Memoriam), 67.
Kingkeow C., 107.
Kirienko A., 25.
Kitaoka T., 116.
Klein D., 11, 88.
Ko S. H., 53, 85.
Kobayashi Y., 14.
Kojima K., 117.
Komada T., 24.
Korbela M., 118.
Korom E., 8.
Kouchi M., 36, 74.
Kozlov S., 85.
Kudo T., 88.
Kuinose M., 20, 117.
Kumar A., 97.
Kumar M., 59, 105.
Kume H., 111.
Kumrin T., 107.
Kurihara N., 72.
Kusagawa H., 24.
Kushnarchuk M., 19.
Kuwada N., 117.
Kwak H. S., 110.
Kwatra K., 60, 69.

L

La Mura R., 45.
Lajom C. M., 59.
Lane T. R. A., 68, 94.
Laohapensang K., 35, 52.
Larin I., 14, 97, 102.
Lasrsson L., 26.

Lattimer C., 28, 29.
Lattimer C.R., 7.
Lausecker M., 92.
Law Y., 68, 77.
Lebedev I., 25.
Lee D., 100.
Lee J. C., 49.
Lee J. H., 80.
Lee J. M., 98.
Lee J. I., 115.
Lee K. B., 43.
Lee L., 75.
Lee S. H., 85, 94, 101.
Lee S. S., 54, 114.
Leelahavarong P., 96.
Legal E., 49, 90.
Leshchysyn Z., 116.
Li D., 63.
Li K., 63.
Li M., 63.
Li T.-F., 100.
Li T., 101.
Li W. D., 65.
Li W., 63.
Li X. Q., 65.
Liang K., 63.
Liew N. C., 75.
Ligi D., 17, 27.
Lim C. S., 68, 94.
Liu C., 17, 63.
Liu P., 65.
Lo Vuolo M., 57, 112.
Lo Z. J., 98.
Lu D., 63.
Lundell A., 26.

M

Ma D., 23, 26, 104.
Ma G., 114.
Ma J., 100, 101.
Makhmutova A., 116.
Maksimovic Z., 31.
Malm H., 26.
Malouf G. M., 3, 47.
Mały I., 11, 88.
Mancini S., 10.
Mannello F., 17, 27.
Mano M., 89.
Mariani F., 10.
Marquez Fossier C., 50, 86.
Martinez Granados A. A., 48.
Martinez H. D., 50, 86.
Masaki H., 20, 117.
Mashin V. V., 106.
Mashin V., 112, 116.
Mashin V.V., 58.
Masuda M., 94.
Masumoto S., 117.
Maurins U., 41, 70.
McClure D., 96.
Mei J., 66.
Menegatti E., 10.
Meng Q. Y., 65.
Mikutski N., 85.

Min S. I., 99.
Min S. K., 7, 58, 99.
Miyake K., 44, 67.
Miyata T., 45.
Mo M., 9, 14, 36, 69.
Moiseev M., 112, 116.
Monedero J. L., 117.
Monsallier J.-M., 93.
Montealegre C., 19.
Moon I. S., 53, 79, 85, 101, 102.
Moraglia L., 24, 38, 93.
Morales Bazarro M., 45.
Morello R., 93.
Moreno H. B., 86.
Morrison N., 21, 23, 44, 46.
Mosti G., 17, 27, 42, 81.
Mou M., 94.
Mutirangura P., 78.

N

Naik B., 59, 105.
Najem M., 68.
Nam W. S., 53, 85.
Neaume N., 73.
Nemes A., 8.
Nemoto H., 36, 69.
Nieves E., 18, 19.
Nishibe T., 9, 36.
Nobuoka H., 86.
Noorit P., 96.
Noppeney J., 82.
Noppeney T., 82.
Nuñez L. G., 90.

O

O'Connor A., 23, 80.
O'Shea C., 100.
Obitsu Y., 36, 69.
Occhionorelli S., 10.
Ogawa T., 36, 69.
Oh D. Y., 46.
Ohe H. J., 53, 85.
Oktay V., 15.
Okubo Y., 76.
Olariu S., 110.
Orelkin V., 116.
Orrapin S., 35, 104.
Orrego A., 8, 41, 90, 109.
Otsuru M., 76.
Ozu Y., 24.

P

Pacheco K., 24, 29.
Padaria S., 35, 61.
Pandiyana A., 17.
Pannier F., 7, 8, 70, 81, 82.
Papastavrou D., 103.
Parakh R., 113.

Parikov M., 25, 71, 72.
Pariwatsakulchai N., 107.
Park H. C., 80, 90.
Park H. J., 53.
Park J. H., 115.
Park K. H., 80.
Park K. Y., 15, 79.
Park S. C., 53, 85, 101.
Park S. J., 53.
Park Y. J., 33, 73.
Park Y. S., 33, 73.
Park Y. G., 92.
Parsi K., 5, 23, 26, 27, 80, 104, 105.
Parsch H., 42, 81.
Passariello F., 13, 25, 90, 94.
Patel H., 113.
Patel M., 25.
Pathak B., 79.
Pavei P., 21, 22, 71.
Phromkutkaew S., 107.
Pinjala R., 12, 61.
Pinmars N., 107.
Pongratz T., 72.
Pongtam O., 107.
Portnoy I., 48.
Poskitt K.R., 20.
Pradhan N., 79.
Pratama D., 98.
Prave S., 70.
Proprom N., 13.
Purino P. Jr., 59.
Pyzhik R., 85.

Q

Quantin C., 12.

R

Rabe E., 7, 8, 70, 71, 72.
Radu D., 110.
Raffetto J. D., 17, 27.
Ragg J. C., 11, 30, 68, 89, 91, 113.
Ramirez M., 18.
Ramli A. R. H., 111.
Rasgado F. V., 3.
Rastel D., 109.
Ratanasoontornchai N., 104.
Reanpang T., 104.
Renton S., 68.
Rerkasem K., 103, 104, 107.
Rits J., 70.
Rozsos I., 19.
Ruehm A., 72.

S

Saitou Y., 14.
Sakata M., 9, 36.
Sakdawongseree P., 107.

Sampaio A., 118.
Samuel V., 55, 61.
Sanchez C., 19.
Sanchez J., 59.
Santi M., 17, 27.
Saprygina L. V., 106.
Sato O., 116.
Sato S., 111.
Satokawa H., 36.
Satokawa H., 9.
Schaub P., 72.
Schmedt C.-G., 72.
Sekhar R., 14.
Seliverstov E. I., 27.
Seliverstov E., 25, 77.
Selvaraj A. D., 75.
Sen J., 10.
Seo Y. W., 53.
Seryapina Y. V., 107.
Sevostyanova K. S., 27, 107.
Seyahi E., 15.
Shadrina A. S., 27.
Shao M., 66.
Sharma S., 106.
Shatunova E., 56.
Shevela A. I., 27, 107.
Shi S., 63.
Shi Y., 65.
Shibuya T., 76.
Shim Y. K., 30, 92, 95, 109.
Shinhara R., 36, 74.
Shinozaki K., 76.
Shiraishi Y., 57.
Shokoku S., 89.
Shonov O. A., 27.
Shu C., 31.
Shui S.-F., 100.
Shui S., 101.
Shukla R. C., 70.
Sim S. B., 9.
Simkin R., 4.
Singh C., 93.
Singh G. J., 74.
Singh S., 70, 93, 97.
Singhal N., 10.
Siribumrungwong B., 13, 96.
Slavin D., 25, 71, 72.
Smetanina D., 108.
Smetanina M. A., 27.
Smirnov O., 94.
Smolyakov A., 85.
Sokolova E. A., 27.
Soldatsky E. Y., 27.
Soloviy M., 116.
Song I. C., 14, 98, 114.
Spath P., 10.
Spreafico G., 71.
Sritharan K., 68, 94.
Sroka R., 72.
Stephen E., 55, 61.
Stepnov I., 25, 72.
Strejcek J., 29.
Sugano N., 9, 36.
Sugawara K., 94.
Suh B. Y., 80.
Suh J. H., 89.
Suhartono R., 77.

Suman P., 59, 105.
Sun Y., 66.
Szabó A., 85.
Szolnok G., 8.
Szönyi E., 19.

T

Tabuchi A., 20.
Taha W., 16, 55.
Takiuchi H., 117.
Tamura T., 117.
Tan L., 27.
Tanemoto K., 20, 117.
Taniguchi S., 16.
Tarasov V., 14, 97, 102.
Tarte M., 32, 54, 116.
Teerawattananon Y., 96.
Terasaki H., 33, 111.
Tessari L., 22, 43.
Tessari M., 10, 43.
Tewarson V., 60, 69, 98.
Thakkinstant A., 13, 96.
Thusay P., 14.
Ting A. C., 68.
Tiwary S. K., 70.
Tiwary S., 59, 105.
Tono T., 76.
Toyofuku T., 88.
Tripey V., 93.
Tsai C. L., 106.
Tsukamoto Y., 86.
Tuzun H., 15.

U

Ugurlu S., 15.
Uhl J. F., 42, 51, 95.
Umeda M., 33.
Urbanek T., 28.
Utoh J., 86.

V

Vachirasrisirikul S., 52.
Vadasz G., 19.
Vannini M. E., 10.
Varga J., 8.
Varga M., 8.
Varghese R., 17.
Vashist M. G., 10, 93, 97, 106.
Vashist M., 106.
Vasic D., 31, 56.
Velletaz R., 28, 88.
Vereshchagina O. A., 106.
Verma H., 113.
Verzhak I., 14, 97, 102.
Vieira J., 96.
Vigants R., 70.
Vijayan R., 61, 76.
Voronina E. N., 27.

W

Wang C.-H., 35.
Wang G., 63.
Wang J., 80.
Wang S.-S., 35.
Wang S., 66, 80.
Wang T., 31.
Wardhana W., 98.
Warwick J., 20.
Watanabe Y., 117.
Wei S., 65.
Weisel J., 104, 105.
Wilasrusmee C., 13, 96.
Won Y. S., 53, 78, 85, 101.
Wong K., 27, 105.
Wu H., 66.
Wu I-H., 35.
Wu M., 66.
Wu S., 65.

Wu Z., 102.
Wu Z., 17, 64, 70.

X

Xie H., 65.
Xiong F., 17, 64, 70.
Yaacob N. Y., 111.
Yamada N., 9, 36.
Yamaki T., 36.
Yamaki T., 9, 37, 52, 69.
Yamamoto E., 116.
Yamamoto T. 72.
Yamasawa T., 117.
Yan Z., 65.
Yang Y., 17, 64, 70.
Yano T., 36, 74.
Yao C., 80.
Yasuda S., 76.
Yazici H., 15.

Ye P., 66.
Ye W., 63.
Ye Z., 65.
Yigit Z., 15.
Yin H., 80.
Yoon S. Y., 115.
Youn S. S., 101.
Yu H. C., 49, 100, 110.
Yu H. Y., 35, 65.
Yuan D., 17, 64, 70.
Yuan K., 65.
Yun S. S., 53, 79, 85.
Yun W. S., 80, 99.
Yunoki Y., 20, 117.

Z

Zakaria R., 111.
Zamboni P., 10.
Zernoviczky F., 41.

Zhai S., 63.
Zhang C., 66.
Zhang D., 63.
Zhang F., 34, 52, 53, 66, 98, 99,
101, 108.
Zhang H., 65.
Zhang J., 65.
Zhang K., 63.
Zhang L., 65.
Zhang W., 101, 102.
Zhang Y. Q., 65.
Zhang Z., 63.
Zhao J., 17, 64, 70.
Zheng C., 64.
Zheng Y., 114.
Zhou P., 101, 102.
Zhou W., 32.
Zhu Y., 80.
Zini F., 43.
Zolotukhin I., 25, 77.
Zuolo M., 10.