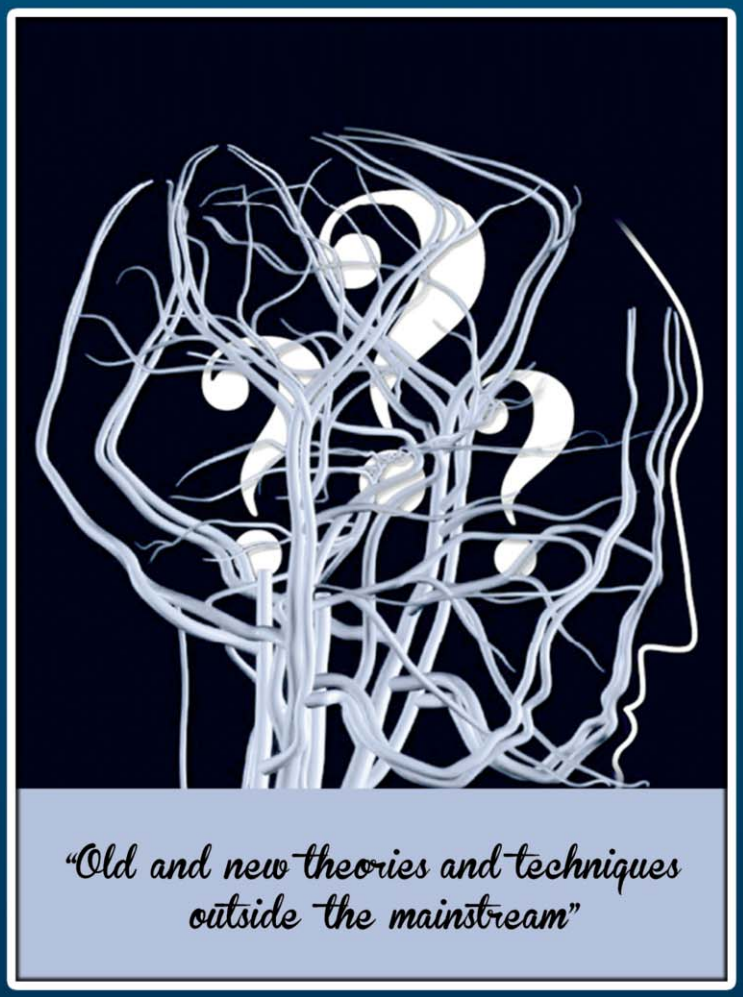
The Hungarian Journal of

VASCULAR DISEASES

2014/3.



Another Phlebology

Symposium
on Practical Questions

Scientific Program
and
Abstract Book

10-11 October 2014

Novotel Budapest Centrum
Budapest, Hungary

The Hungarian Society for Angiology and Vascular Surgery
The Hungarian Society for Cardiovascular and Interventional Radiology

Phlebológia *Másképp*

Gyakorlati Kérdések Nemzetközi Szimpóziuma

2014. október 10-11.

Novotel Centrum, Budapest

A kongresszus angol nyelvű (magyar szinkron tolmácsolás)

Témák: vénás pathofiziológia és diagnosztika, kompressziós kezelés, sclerotherapia, hab sclerotherapia, hagyományos, haemodynamikus és ablatív visszérműtét, billentyű problémák és megoldások, thrombosis, post-thrombotikus szövődmények és azok kezelése, mindenféle technikák különböző problémák megoldására, egyebek.

"Régi és új teoriák és módszerek, a megszokottakon túl"

Csak angol nyelvű előadásokat tudunk elfogadni.

Szervező:
Magyar Angiológiai és Érsebészeti Társaság,
Hazai Vénás Fórum

Weblap: www.phlebology.hu
Email: imre.bihari@phlebology.hu

WELCOME MESSAGE

On behalf of the Hungarian Venous Forum and the Hungarian Society of Angiology and Vascular Surgery, it is a great pleasure to invite you to join us at our international meeting, the Another Phlebology Symposium. This congress will be held over one and a half days, which is much longer and more stimulating than our usual national meetings.

This is the first in a series of conferences. Here we prefer to speak about new and unknown things rather than prove topics which have already been proved many times before. This means we would like to discuss both completely new discoveries, works in progress without strong supportive evidence, and other things not really new, but not yet mainstream in our discipline. The reason why some notions are not fashionable might be because they are not supported by firms, or only a few colleagues use them, but they could be beneficial for many patients. On the other hand we are looking for some non-evidence-based dogmas and trying to get rid of them.

There are different branches of phlebology which we are going to deal with. Some are discussed now in more detail than others. We have tried to include not only clinicians but also researchers to see the possibilities of future developments.

High-level papers could be selected, many of which really deal with another phlebology than is usually practised in most parts of the world.

We invite you to Budapest, one of the most beautiful capitals in the world, and because of continual renovation more so today than ever before. You will discover an international city, rich in arts and culture. You will enjoy visiting museums, the Opera House and the Castle district which has a newly restored grand entrance and park. Hungary, as every nation, has a unique history that can answer many visitors' questions about the city and Hungarians: the very different language in the middle of Europe, the various Turkish baths, the impressive size of the Parliament, the continuously changing monuments and statues in the city, to mention only some of them.

We hope you enjoy the conference and the city!

We look forward to seeing you in Budapest,

Dr. Imre Bihari
Chair of the Symposium

Organising and Scientific Commitees

CHAIRMAN OF THE SYMPOSIUM:

Imre BIHARI

LOCAL ORGANISING AND SCIENTIFIC COMMITTEE:

Gábor MENYHEI
Csaba DZSINICH
László ENTZ
István MOGÁN
Zsolt PÉCSVÁRADY
Attila SZABÓ
Győző SZOLNOKY
Tamás SÁNDOR
Géza TASNÁDI

SCIENTIFIC ADVISORY BOARD:

George M SOMJEN (Australia)
Zoltán VÁRADY (Germany)
Frantisek ZERNOVICZKY (Slovakia)
Slavin DMITRY (Russia)
Thomas EATON (USA)
Alexander FLOR(Austria)
Alessandro FRULLINI (Italy)
Monica GLOVICZKI (USA)
Peter GLOVICZKI (USA)
Svatopluk KASPAR (Czech Republic)
Ullrich KATZ (Germany)
Fedor LURIE (USA)
Raul MATTASSI (Italy)
René MILLERET (France)
Martin OSWALD (Germany)
Matvey PARIKOV (Russia)
Fausto PASARIELLO (Italy)
Malay PATEL (India)
Thomas PROEBSTLE (Germany)
Attila PUSKAS (Romania)
Zbignew RYBAK (Poland)

ORGANISER OF THE HANDS-ON COURSE:

Gabor MENYHEI

Event organiser: Columbus Welcome Management

PROGRAMME

Friday 10 october 2014

SESSION 1

Varicosity, thrombosis and crural ulcers

Chair: *F Lurie, Zs Pecsvarady*

14.00 – 14.10 1. Evolution and venous disease.
M Oswald (Germany)
14.10 – 14.20 2. Adaptation of human veins to gravitational load.
G Gosi, Gy L Nadasy, A Monori-Kiss, G Raffai, E Feher, Z Szeberin, E Monos, Gy Acsady (Hungary)
14.20 – 14.30 3. Ultrasonic angiography on veins with complicated forms of CVI.
A Albitsky (Italy)
14.30 – 14.40 4. Experience with the new anticoagulants.
Zs Pecsvarady (Hungary)
14.40 – 14.50 5. Thrombolytic treatment of acute iliofemoral deep vein thrombosis.
B Nemes, A Berencsi, P Sótonyi, E Dosa, K Huttl (Hungary)
14.50 – 15.00 6. Chronic wounds - desire and reality.
U Katz (Germany)
15.00 – 15.10 7. Leg ulcers - compression only?
F Zernoviczky (Slovakia)
15.10 – 15.20 8. The influence of knee-high elastic compression on arterial compliance: the examination of compression-exerted systemic effects.
Gy Szolnoky, H Gavallér, A Gonczy, I Bihari, L Kemeny, T Forster, A Nemes (Hungary)
15.20 – 15.30 9. Sulodexide - an old-new agent for CVD treatment.
I Páczi (Hungary)
15.30 – 15.50 Keynote Lecture: 10. Management of venous leg ulcers (Guidelines of AVF and SVS).
F Lurie (USA)
15.50 – 16.00 Discussion
16.00 – 16.30 Coffee break

SESSION 2

Venous malformations

Chair: R Mattassi, G Tasnadi

16.30 – 16.40 11. Contribution of Hungarian experts to the treatment of venous malformations.
I Bihari (Hungary)
16.40 – 16.50 12. Just a birthmark or tip of the iceberg? Diagnostic imaging of venous malformations.
Gy Balazs (Hungary)
16.50 – 17.00 13. Conservative and surgical treatment of lymphatic malformations.
A Szabo, G Tasnadi (Hungary)
17.00 – 17.10 14. New treatment approach for diffuse arterio-venous malformations of the lower extremities.
Z Rybak (Poland)
17.10 – 17.20 15. Cases of intramuscular aneurysms in the knee bend and thigh. Is this a type of venous malformation?
I Bihari, A Apor, G Tasnadi (Hungary)
17.20 -17.40 Keynote Lecture: 16. Morphology of peripheral venous malformations: are they all similar?
R Mattassi, L Crespi, W Pozzoli (Italy)
17.40 – 17.50 Discussion

18.00 – 19.00 Opening ceremony
19.00 – 21.00 Welcome reception. Get-together party

Saturday 11 october 2014

SESSION 3

Endovenous treatment of varicosity

Chair: R Milleret, A Szabo

9.00 – 9.10 17. Steam ablation of the great saphenous vein.
R Milleret (France)
9.10 – 9.20 18. Comparative analysis of methods for thermal and non-thermal obliteration of varicose veins.
V Semenuks (Latvia)
9.20 – 9.30 19. Endovenous saphenous ablation using EVRF radiofrequency device and CR45i catheter. Experience of 515 cases.
A Szabo (Hungary)
9.30 – 9.40 20. Anterior accessory great saphenous vein treated with endovenous laser.
S Kaspar (Czech Republic)

9.40 – 9.50 21. Insufficient perforating vein dissection with radiofrequency coagulator.
G Menyhei (Hungary)

9.50 – 10.00 22. Endovenous laser ablation 1470 nm: radial or bare fibers? Experimental and clinical study.
DA Slavin, MA Parikov, AN Chugnov (Russia)

10.00 – 10.10 23. Randomized controlled studies comparing endovenous thermal, open surgical and chemical vein ablation.
V Sefranek (Slovakia)

10.10 – 10.20 24. Laser ablation of unwanted hand veins.
A Flor, A Shamma (Austria)

10.20 – 10.30 25. East European Endovenous Treatment modality of varicose veins.
1000 cases in 7 years.
I Bihari, F Zernoviczky, S Kaspar, P Dragic, G Ayoub, P Bihari (Hungary)

10.30- 10.50 Keynote Lecture: 26. Which endovenous treatment and how?
T Proebstle (Germany)

10.50 – 11.00 Discussion

11.00 – 11.20 Coffee break

SESSION 4

Sclerotherapy (foam and liquid)

Chair: A Frullini, F Zernoviczky

11.20 – 11.30 27. Laser-assisted foam sclerotherapy.
A Frullini (Italy)

11.30 – 11.40 28. Prevention of Endothelin-related side effects of sclerotherapy with aminaftone pre-treatment.
A Frullini (Italy)

11.40 – 11.50 29. Mechanochemical ablation for endovenous occlusion - first results.
A Szabo (Hungary)

11.50 – 12.00 30. Ultrasound guided foam-sclerotherapy as the sole method of treating superficial venous reflux.
M Patel (India)

12.00 – 12.10 31. Rates of duplex-detected recanalisation 5 years after ultrasound guided foam sclerotherapy and relationship with clinical, haemodynamic and patient-reported outcomes.
Darvall KAL, Bate GR, Bradbury AW (UK)

12.10 – 12.20 32. Tumescence-assisted sclerotherapy in varicose vein treatment – factors influencing the treatment results.
P Hawro, T Urbanek (Poland)

12.20 – 12.30 33. Ways of improving sclerotherapy: reticular veins and teleangiectasias.
MA Parikov, DA Slavin, IM Kalitko, EV Astafieva, EA Gavva, UR Dolidze, IA Stepnov (Russia)

12.30 – 12.40 34. Using the radiosurgery in the therapy of spider nevi and thread veins with the help of polarized light.
G Titkay (Hungary)

12.40 – 12.50 35. What are the differences between C1 and C2, only the size?
I Bihari (Hungary)

12.50 – 13.10 Keynote Lecture: 36. Cyanoacrilate glue treatment of varicose veins.
T Proebstle (Germany)

13.10 – 13.20 Discussion

13.20 – 14.20 Lunch

SESSION 5

Surgical treatment of varicosity

Chair: T Eaton, G Menyhei

14.20 – 14.30 37. Hemodynamic assessment of the safety of varicose vein removal in the presence of deep vein obstruction.
F Lurie (USA)

14.30 – 14.40 38. Venous leiomyoma –a rare cause of venous obstruction.
Cs Dzsinich, G Vallus, Gy Toth, L Barta, G Darabos, G Nyíri (Hungary)

14.40 – 14.50 39. Experience in the use of sclerotherapy and miniphlebectomy as additional procedure used to remove varicose veins during EVLT.
J Kalemba (Poland)

14.50 – 15.00 40. Surgical treatment of spider veins.
Z Varady (Germany)

15.00 – 15.10 41. A prospective study to compare cryostripping and conventional stripping
G Menyhei, E Arato, G Kasza, L Sinay, L Benko, G Fazekas (Hungary)

15.10 – 15.20 42. EVLA vs miniphlebectomy of the extrafascial veins – which is better?
MA Parikov, DA Slavin, IM Kalitko, EV Astafieva, EA Gavva, UR Dolidze, IA Stepnov (Russia)

15.20 – 15.30 43. Quality-of-life assessment in patients after endovenous laser therapy and conventional surgery for great saphenous varicose veins.
R Vlachovsky (Czech Republic)

15.30 – 15.50 Keynote Lecture: 44. Improving the Durability of Vein Treatments.
T Eaton (USA)

15.50 – 16.00 Discussion

16.00 – 16.20 Coffee break

SESSION 6

Haemodynamics of varicosity and conservative surgery

Chair: F Passariello, R Milleret.

16.20 – 16.40 Keynote Lecture: 45. Haemodynamics of varicosity and conservative surgery.
F Passariello (Italy)

16.40 – 16.50 46. Varady's minisurgical concept.
Z Varady (Germany)

16.50 – 17.00 47. ASVAL method: technical aspects and evidence.
P Pittaluga, S Chastanet (France)

17.00-17.10 48. External banding valvuloplasty.
C Dresler (Germany)

17.10 – 17.20 49. A new venous varicosity model in rat: Combined effects of orthostasis and chronic partial occlusion of saphenous vein.
G Dornyei, O Sevcsik, M Jackel, E Monos, G L Nadasy (Hungary)

17.20 – 17.30 50. Introduction to three-dimensional regenerative ambulatory phlebotherapy (TRAP) (video).
S Capurro (Italy)

17.30 – 17.40 51. Long-term results of saving the great saphenous vein.
I Bihari (Hungary)

17.40 – 18.00 Keynote Lecture: 52. What is the future of venous disease treatment?
R Milleret (France)

18.00 – 18.10 Discussion

18.10 – 23.00 Hungarian Evening with Horse show *(Domonyvölgy)*

PROGRAM

Péntek, 2014. október 10.

1. SZEKCIÓ

Varikozitás, thrombózis és lábszárfekély

Üléselnök: *Lurie F., Pécsvárady Zs.*

14.00 – 14.10 1. Az evolúció és a vénás betegség
Oswald M. (Németország)

14.10 – 14.20 2. Az emberi vénák alkalmazkodása a gravitációs terheléshez.
Gősi G., Nádasy Gy.L., Monori-Kiss A., Raffai G., Fehér E, Szeberin Z., Monos E., Acsády Gy. (Magyarország)

14.20 – 14.30 3. Komplikált CVI esetek ultrahangos angiográfiája.
Albitsky A. (Oroszország)

14.30 – 14.40 4. Új antikoagulánsokkal szerzett tapasztalatok.
Pécsvárady Zs. (Magyarország)

14.40 – 14.50 5. Acut ilio-femoralis mélyvénás thrombózis thrombolitikus kezelése.
Nemes B., Berencsi A., Sótonyi P., Dósa E., Hüttl K. (Magyarország)

14.50 – 15.00 6. Krónikus sebek – vágy és realitás.
Katz U. (Németország)

15.00 – 15.10 7. Lábszár fekély, – csak kompresszió?
Zernoviczky F. (Szlovákia)

15.10 – 15.20 8. A lábszár kompressziós harisnya hatása az artériás teljesítményre: kompresszió által kifejtett szisztémás hatás vizsgálata.
Szolnoky Gy., Gavallér H., Gönczy A., Bihari I., Kemény L., Forster T., Nemes A. (Magyarország)

15.20 – 15.30 9. Sulodexide – egy régi-új kezelés krónikus vénás elégtelenségben.
I Páczi (Magyarország)

15.30 – 15.50 Felkért előadás: 10. Lábszár fekély kezelése (AVF és SVS módszertani levele).
Lurie F.(USA)

15.50 – 16.00 Diszkusszió

16.00 – 16.30 Kávé szünet

2. SZEKCIÓ

Vénás malformációk

Üléselnök: *Mattassi R., Tasnádi G.*

16.30 – 16.40 11. Magyar szakemberek részvétele a vénás malformációk kezelésének fejlesztésében.
Bihari I. (Magyarország)

16.40 – 16.50 12. Csak egy anyajegy, - vagy ez a jéghegy csúcsa? Vénás malformációk képalkotó diagnosztikája.
Balázs Gy. (Magyarország)

16.50 – 17.00 13. Nyirok malformációk konzervatív és sebészi kezelése.
Szabó A., Tasnádi G. (Magyarország)

17.00 – 17.10 14. Új kezelési stratégia az alsó végtagi diffúz arterio-venózus malformációk kezelésében.
Rybak Z. (Lengyelország)

17.10 – 17.20 15. Térdhajlati és comb intramuszkuláris aneurizmás esetek. Ez egy vénás malformáció?
Bihari I., Apor A., Tasnádi G. (Magyarország)

17.20 – 17.40 Felkért előadás: 16. Perifériás vénás malformációk morfológiája, - mind egyformák?
Mattassi R., Crespi L., Pozzoli W. (Olaszország)

17.40 – 17.50 Diszkusszió

17.50 – 18.00 Kávé szünet

18.00 – 19.00 Megnyitó

19.00 – 21.00 Fogadás

Szombat, 2014. október 11.

3. SZEKCIÓ

Varikozitás endovénás kezelése

Üléselnök: *Milleret R., Szabó A.*

9.00 – 9.10 17. V. saphena magna gőz ablációs műtéte.
Milleret R. (Franciaország)

9.10 – 9.20 18. A varikozitás hő és nem hő obliterációs műtéteinek összehasonlító vizsgálata.
Semenuks V. (Lettország)

9.20 – 9.30 19. Endovénás, rádiófrekvenciás saphena ablació CR45i katéter alkalmazásával. 515 eset tapasztalata.
Szabó A. (Magyarország)

9.30 – 9.40 20. V. saphena magna elülső oldalágának kezelése endovénás lézer műtéttel.
Kaspar S. (Cseh Köztársaság)

9.40 – 9.50 21. Elégtelen perforans véna kezelése rádiofrequenciás koagulátorral.
Menyhei G. (Magyarország)

9.50 – 10.00 22. Endovénás lézer abláció 1470 nm-es készülékkel: radiális vagy csupasz szál? Kísérletes és klinikai tanulmány.
Slavin D.A., ParikovM.A., Chugnov A.N. (Oroszország)

10.00 – 10.10 23. Randomizált, kontrolált tanulmányok az endovénás hő-, sebészi- és kémiai vénás abláció összehasonlítására.
Sefranek V. (Szlovákia)

10.10 – 10.20 24. Zavaró kéz vénák lézer ablációja.
Flor A, Shamma A. (Ausztria)

10.20 – 10.30 25. Varikózus vénák kelet-európai endovénás kezelési módszere. 1000 eset tapasztalata 7 év alatt.
Bihari I., Zernoviczky Z., Kaspar S, Dragic P., Ayoub G., Bihari P.

10.30 – 10.50 Felkért előadás: 26. Melyik endovénás kezelést alkalmazzuk és hogyan?
Proebstle T. (Németország)

10.50 – 11.00 Diszkusszió

11.00 – 11.20 Kávé szünet

4. SZEKCIÓ

Szkleroterápia (folyadék és hab)

Üléselnök: *Frullini A., Zernoviczky F.*

11.20 – 11.30 27. Lézer-asszisztált hab szkleroterápia.
Frullini A. (Olaszország)

11.30 – 11.40 28. Endothelin kiváltotta szkleroterápiás mellékhatások megelőzése aminafton előkezeléssel.
Frullini A. (Olaszország)

11.40 – 11.50 29. Mechanokémiai eljárással kiváltott endovénás elzárás első eredményei.
Szabó A. (Hungary)

11.50 – 12.00 30. Ultrahang irányított hab szkleroterápia, mint egyedüli eljárás a felületes vénás reflux kezelésére. *Patel M. (India)*

12.00 – 12.10 31. Duplex ultrahang vizisgálattal kimutatott rekanalizációk 5 évvel a hab scleroterapia után . Összefüggések a klinikai, hemodynamikai és beteg megítélési eredményekkel.
Darvall KAL, Bate GR, Bradbury AW (Egyesült Királyság)

12.10 – 12.20 32. Visszerek kezelése tumescens eljárással támogatott szkleroterápiával. A kezelés eredményét befolyásoló tényezők.
Hawro P., Urbanek T. (Lengyelország)

12.20 – 12.30 33. A szkleroterápia elősegítése retikuláris vénák és teleangiektáziák kezelése során.
Parikov M.A., Slavin D.A., Kalitko I.M., Astafieva E.V., Gavva E.A., Dolidze U.R., Stepnov I.A. (Oroszország)

12.30 – 12.40 34. A pókvénák és seprűerek rádiósebészeti kezelése polarizált fény segítégével.
Titkay G. (Magyarország)

12.40 – 12.50 35. Mi a különbség a C1 és C2 varikozitás között – csak a méret?
Bihari I. (Magyarország)

12.50 – 13.10 Felkért előadás: 36. Varikozitás kezelése cyanoacrilát ragasztóval.
Proebstle T. (Németország)

13.10 – 13.20 Diszkusszió

13.20 – 14.20 Ebéd

5. SZEKCIÓ

Varikozitás sebészi kezelése

Üléselnök: *Eaton T., Menyhei G.*

14.20 – 14.30 37. A varicositas eltávolításának biztonsága mélyvéna obstrukció esetén. Hemodinamikai felmérés.
Lurie F. (USA)

14.30 – 14.40 38. Venás leiomyoma – a venás obstrukció ritka oka
Dzsinich Cs., Vallus G., Tóth Gy., Barta L., Darabos G., Nyíri G. (Magyarország)

14.40 – 14.50 39. Az EVLT kapcsán végzett varikózus vénák eltávolítása – kiegészítő szkleroterápiával és miniphlebektómiával szerzett tapasztalataink.
Kalemba J. (Lengyelország)

14.50 – 15.00 40. Seprűvénák sebészi kezelése.
Várady Z. (Németország)

15.00 – 15.10 41. A cryo-stripping és a hagyományos stripping prospektív összehasonlító tanulmánya.
Menyhei G. Arató E, Kasza G, Sinay L, Benkő L, Fazekas G (Magyarország)

15.10 – 15.20 42. EVLA vagy miniphlebectomia az extrafasciális vénák kezelésére – melyik a jobb?
Parikov M.A., Slavin D.A., Kalitko I.M., Astafieva E.V., Gavva E.A., Dolidze U.R., Stepnov I.A.(Oroszország)

15.20 – 15.30 43. A v. saphena magna endovénás lézer- és hagyományos műtéte utáni életminőség felmérés.
Vlachovsky R.(Cseh Köztársaság)

15.30 – 15.50 Felkért előadás: 44. A véna kezelés tartósságának javítása.
Eaton T.(USA)

15.50 – 16.00 Diszkusszió

16.00 – 16. 20 Kávészünet

6. SZEKCIÓ

A varikozitás hemodinamikája és konzervatív sebészete

Üléselnök: Passariello F., Milleret R.

16.20 – 16.40 Felkért előadás: 45. A varikozitás hemodinamikája és konzervatív sebészete.
Passariello F. (Olaszország)

16.40 – 16.50 46. Várady minisebészeti koncepciója.
Várady Z. (Németország)

16.50 – 17.00 47. ASVAL eljárás: technikai vonatkozások és bizonyítékok.
Pittaluga P., Chastanet S. (Franciaország)

17.00-17.10 48. Külső körülkötéses billentyű plasztika.
Dresler C. (Németország)

17.10 – 17.20 49. Új varikozitás model patkányon: az orthostasis és a v. saphena magna krónikus, részleges okklúziójának hatása.
Dörnyei G., Sevcsik O., Jäckel M, Monos E., Nádasy G.L. (Magyarország)

17.20 – 17.30 50. Bevezetés a három dimenziós, ambuláns , regeneratív visszérkezelésbe (TRAP) (video).
Capurro S. (Olaszország)

17.30 – 17.40 51. A v. saphena magna megőrzésének hosszú távú eredményei.
Bihari I. (Magyarország)

17.40 – 18.00 Felkért előadás: 52. Merre halad a vénás betegségek kezelése?
Milleret R. (Franciaország)

18.00 – 18.10 Diszkusszió

18.10 – 23.00 Magyaros est lovas bemutatóval
(Domonyvölgy)

Doctors who have Contributed to the Development of Phlebology in Hungary

TAMAS SÁNDOR, IMRE BIHARI, GABOR BARTOS

Hungarian phlebologists and their predecessors were able to keep up with developing trends in the wold of phlebology. They brought a lot of knowledge home to Hungary. Indeed, in some cases they were pioneers of this development.

1. The initial stages of phlebology as part of general surgery can be found in the historical time following the failed Hungarian Revolution, after 1848. The founder of Hungarian surgery, *János Balassa* (1814-1868) tied the varicose great saphenous vein with percutaneous stitches in the upper third of the thigh and just below of the knee and removed the stitches after some days. He had learnt this method in Paris.

2. A follower of Balassa at the University of Pest was *József Kovács* (1832-1898). He successfully sutured injured deep veins with a fine needle and thread in 1882. He was one of the first in the world who could suture vessels successfuly. To appreciate what a great achievement this was at that time, it is necessary to remember that Alexis Carrel got the Nobel Prize in 1902 for working out a reliable vascular anastomosis method.

3. In 1918 the Hungarian-born *Gábor Nobl* (1864-1938) professor of dermatology in Vienna, emphasised the significance of stasis in the development of CVI which at that time was called: ”varicose symptom complex”. He was also one of the pioneers of sclerotherapy[1].

4. *Géza de Takats* (1892-1985) as a young doctor worked as an assistant professor of surgery at the University of Budapest. During the First World War he served as a first lieutenant in the Medical Corps of the Austro-Hungarian Army, on the Russian Front. Later on, with a Rockefeller fellowship he went to Chicago. He played an important role in the development of modern vein surgery in the USA. Founded the Vascular Clinic, University of Illinois, as well as the Vein Clinic of Northwestern University in 1936. Dr. de Takats was the first surgeon who performed thrombectomy from the inferior v. cava as well as the ligature of this vein in America. He observed that heparin can be absorbed from the subcutaneous tissues and his ingenious thought was to use low dose subcutaneous heparin prophylaxis against venous thromboembolism. [3, 4]

5. A milestone in pharmacological phlebology was the discovery of flavonoids by *Albert Szentgyörgyi* (1893-1986). He was awarded the Nobel Prize for the description of vitamin C in 1937. Szentgyörgyi's team also found a vitamin-like material which was called rutin, or vitamin P. Rutin together with other flavonoids has a beneficial effect on the capillaries, veins and lymphatics. [5, 6]

6. Phlebology as a branch of angiology started with the work of Károly Bugár-Mészáros (1900-1989). Major details can be read on venous diseases in his book "Diagnosis, Pathology and Treatment of Vascular Diseases" published in 1944.[7] Dr. Bugár-Mészáros was one of the founders and the first president of the Hungarian Society for Angiology (HSA), in 1966. The following year he was elected vice-president of the International Society of Angiology, in Barcelona. He presented his phlebotrop medicine at the World Congress of Phlebology in Amsterdam, 1968. The capsule contained rutin, aescin, vitamins and essential lipids. Today one of the most prestigious prizes of the HSA is named after him.

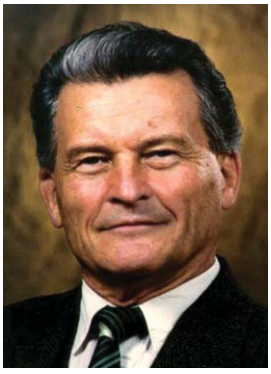
7. The leading personality of Hungarian angiology as well as phlebology was *Lajos Soltész* (1917-1982). As professor of the Clinic of Cardiac and Vascular Surgery, Semmelweis University, Budapest, he was the founder of the school of vascular surgery in Hungary. He taught the proper technique of phlebological diagnostics and surgery. The first in the country, he performed numerous arterial reconstructive operations. He dealt also with vasclar malformations [8, 9, 10]. Participating in the World Congress of Angiology in Brazil, 1979 Soltész found that the specialists of vein diseases were tending to form independent phlebological societies or sections. This encouraged him to propose the organisation of the special phlebological section of the HSA. He recommended György Radó to lead the section. *Soltész* was a very cultured and compassionate person.

8. *Endre Mester* (1903-1984) professor of general surgery, in 1967 only a few years after the first working laser was invented, started his experiments with the effects of lasers on skin cancer. He is credited as the discoverer of the positive biological effects of low power lasers. He was finally successful in the treatment of chronic wounds. He proved the beneficial biostimulating effect of laser therapy for the treatment of leg ulcers.[30,31]

9. *György Radó* (1918-1998) after graduating from Debrecen University, enlisted in the military and was sent to a labour camp on the Eastern Front during the Second World War. On his successful escape he joined the resistance. After the war, he worked as a dermatologist and later as a military doctor. He was appointed head of the Central Military Hospital, Budapest, in 1953. During the Hungarian Revolution of 1956, he treated the freedom-fighters and Russian soldiers equally, according to „the Hippocratic oath and the Ten Commandments". When the revolution failed he hindered the handing over of the injured rebels to the political police and just managed to avoid the death penalty. Russian officers had witnessed his active and proper treatment. He was sentenced to 12 years but released from prison after 5 years. His friend Dr. Soltész suggested that as a dermatologist he ought to deal with leg ulcers. Radó established an important out-patient center for treatment of chronic venous diseases. He invented directed compression therapy for insufficient perforator veins.[11] Finally, the Phlebological Section of the HSA was founded in 1979 under his leadership. After his death and the democratic changes in the country the Military Hospital was temporarily named after him.

10. In 1987 *György Acsády* was elected president of the Section. Under his direction large-scale phlebological activity developed in the country. He wrote many scientific papers on venous diseases, suggested a new theory on the development of varicosity, modified the Palma operation and, with the resection of the indurated subcutaneous tissues, he introduced a new operation technique for the treatment of leg ulcers. Dr.Acsády directed the Clinic of Vascular and Cardiac Surgery, Semmelweis University and his vascular surgical activity was internationally acknowledged. [12, 13] The First European Congress of UIP chaired by György Acsády and Tamás Sándor was held at the Budapest Congress Center, 6-10 September 1993. Until now this was the most important international program in Hungarian phlebology. The work of the scientific committee was assisted by the most prestigious phlebologists including A. Davy, J. Bergan, F. B. Cockett, J. A. Dormandy, L. J. Greenfeld, W. Hach, G. Jantet, D. Negus, A. Nicolaides, H. Partsch, R. Stemmer, H. van der Mollen, J. van der Stricht, L.J.Villavicenzio, L.K.Widmer and V.Wienert.

11. *Tamás Sándor* was elected chair of the Phlebological Section in 1994. His scientific activity focuses on epidemiology, diagnosis and prophylaxis of venous thromboembolism, especially on travel-related venous thrombosis. After his studies in Malmő, Sweden he carried out clinical trials. Dr. Sándor introduced LDH and LMWH prophylaxis in Hungary. [17, 18, 19]



12. The basic sciences have contributed to the treatment of venous diseases in practice. *Emil Monos* is an internationally-known researcher of the venous system. He discovered important mechanisms operating in the physiological control of venous haemodynamics and blood vessel functions, including myogenic capacity autoregulation and other local control mechanisms of the veins. His present research interests are in the physiological control of orthostatic tolerance and the adaptation of the lower leg vessels to long term gravitational stress which is an especially important factor for astronauts. [35, 36, 37]

13. In Hungary *Géza Tasnádi*, a dedicated pediatric and vascular surgeon is an expert in vascular malformations. Almost every Hungarian child is included in his registry and followed from birth to adulthood. He is a board member of the International Society of Vascular Malformations (ISSVA). Dr. Tasnádi organised the 10th World Congress of ISSVA in Budapest, 1994.[38, 39]

14. *Gábor Menyhei* was the chair of the Phlebological Section between 2007-2011, and is now president of the Hungarian Society of Angiology and the director of the Vascular Surgical Department, University of Pécs, Hungary. He has given numerous lectures as well as presenting papers on different aspects of venous surgery, such as SEPS, cryovaricectomy, Palma operation and caval plication. Dr. Menyhei is a founding member of the European Venous Forum.[20, 21]

15. Recently the leading organiser of phlebology in the country is *Imre Bihari* who has chaired the Phlebological Section since 2012. Sclerotherapy was forbidden for decades, and the breakthrough was due to him gaining information at international conferences and from personal experience and presenting his results in different studies. Now he is the number one expert in sclerotisation, including foam sclerotherapy, and organises practical trainings in Hungary [33, 34]. He has published a textbook about the treatment of varicosity, and has written many papers, such as the use of Smetana's knife, pathomechanism of the development of spider veins, corona phlebectatica paraplantaris and laser ablation of varicose veins. [22-27] The first angiological journal in Hungarian was also founded by Imre Bihari, and has been published since 1994. Since then he has been the editor of the journal, which contains important articles on venous diseases.

Nowadays distinguished Hungarian phlebologists and vascular surgeons are curing patients all over the world. They share their experiences and help Hungarian doctors back home in every way.

16. *Péter Gloviczki* was a student under Lajos Soltész at Semmelweis University, Budapest. Today he is professor of surgery, chair, Division of Vascular and Endovascular Surgery, director of Gonda Vascular Surgery, Mayo Clinic, Rochester, USA as well as the 15th chair of the American Venous Forum. His studies cover the complete field of venous surgery. Dr. Gloviczki is the editor of the „Handbook of Venous Disorders". This book contains the latest information on venous diseases with evidence-based clinical guidelines and is an essential work for every phlebologist. [40, 41]

17. *Zoltán Várady* is the founder and director of the Vein Clinic Frankfurt, Germany and professor of the „Instituto Mexicano de Flebologia". His minisurgical technique for the treatment of varicosity, and his surgical instruments, the phlebo-extractors and phlebodissectors are used everywhere. Dr. Várady organises the very popular „Internationaler Frankfurter Workshop für Phlebologie" every year.

18. *Mihály Földi* deals with lymphology, a subject closely related to phlebology,which is why we mention him here. He worked in this field in Hungary and he went to Germany where he founded a special clinic which deals with lymphatic problems. He worked out what is currently the most effective treatment of lymphoedema, complex decongestive treatment.

This series is not complete. Here we mention several further names whose achievements will be written about in detail in the next paper about the history of Hungarian phlebology: Éva Meskó, Zsolt Pécsvárady, András Hetényi, Viktória Várkonyi, György Vas, Géza Sas, Attila Nemes, John Dormandy, Peter Conrad, George M.Somjen, Peter-Pablo Komlos, György Déri, István Kubik, Attila Puskás, Roberto Várnagy and this list is not complete…

References

1. *Hohlbaum GG.* Zur Gesichte der Kompressionstherapie. In: Bishof J, Grossmann K, Scholz A editors. Phlebologie. München: Medikon Verlag, Jena: Gustav Fischer Verlag; 1990.p.75-121.
2. *Elischer E.* Treatment of varicose veins with injection (A visszértágulatok befecskendezéssel való gyógyításáról). Orv.Hetil. (Medical Weekly) 1925; 66:560-63.
3. *Bergan JJ,Yao JST. Geza de Takats:* Biography and Bibliography. In: Bergan JJ, Yao JST, editors. Venous Problems. Chicago, London: Year Book Medical Publishers; 1978.p.587-602.
4. *De Takats G.* The subcutaneous use of heparin. A summary of observations. Circulation 1950; 2: 837-848.
5. *Müller B, Gábor M.* Zur Gesichte der Bioflavonoide. In: Bischof J, Grossmann K, Scholz A, editors. Phlebologie. München: Medikon Verlag, Jena: Gustav Fischer Verlag; 1990. p. 209-216.
6. *Bentsáth A, Rusznyák S, Szent-Györgyi A.* Vitamin Nature of Flavones. Nature 1936; 138: 798.
7. *Bugár-Mészáros K.* Diagnosis, Pathology and Treatment of Vascular Diseases (Az érbetegségek diagnostikája, kór- és gyógytana). Budapest: Magyar Orvosi Könyvkiadó Társulat; 1944.
8. *Soltész L.* Contributions to clinical and experimental studies of the hypertrophy of the extremities with congenital arteriovenous fistulae. J.Cardiovasc Surg 1965; 23 (Suppl 1) : 260.
9. *Soltész L, Solti F, Gloviczki P, Szlávy L, Entz L.* Limb circulation in varicosity of various types. Acta Med Acad Sci Hung 1982; 39: 63-7.
10. *Belov S.* Laudatio in memoriam Lajos Soltész. In: Loose DA, Weber J, editors. Angeborene Gefässmissbildungen. Lüneburg: Nordlanddruck Verlag; 1997.p.13-16.
11. *Radó Gy.* Compression of the Fascial Gap. In: May R, Partsch H, Staubesand J, editors. Perforating Veins. München, Vienna: Urban and Schwarzenberg; 1981. p.247-250.
12. *Acsády Gy, Papp L, Kékesi V, Osváth B, Juhász-Nagy S.* Thermographic study of haemodynamic changes due to arterio-venous shunt. Acta Chir Hung 1986; 27: 87-97.
13. *Lengyel I, Acsády Gy.* Histomorphological and pathobiochemical changes of varicose veins. A possible explanation of the development of varicosis. Acta Morphol Hung 1990; 38: 259-67.
14. *Hetényi A, Kaszás F, Nemecz P.* Early recurrency after Trendelenburg-Madelung operation and radical varicectomy. Responsibility of the surgeon. (Korai recidiva Trendelenburg-Madelung műtét és radikális varicectomia után) Orv Hetil (Medical Weekly) 1976; 117: 2963-6.
15. *Hetényi A, Páhoki G.* Plastik des Mündungstrichters der Vena saphena magna. Phlebol u. Proctol 1985; 14: 177-9.

16. *Fórizs Z, Hetényi A.* Doppler Diagnosis in Angiology (Angiológiai Doppler diagnosztika) Budapest, Heidelberg: Springer; 1995.
17. *Sándor T, László E, Magyary F, Turcsányi G, Hetényi L, Izinger E et al.* Prophylaxis of postoperative thromboembolism with heparin-dihidroergotamine combination. Phlebology 1986; 1: 57-64.
18. *Sándor T.* Recent Aspects of Arterial and Venous Thrombosis – Clinical Application of LMWH. Int Angiol 1996; 15 (Suppl 1) 5.
19. *Sándor T.* Travel thrombosis: Pathomechanisms and clinical aspects. Pathophysiology 2008; 15: 243-252.
20. *Menyhei G, Gyevnár Zs, Arató E, Kelemen O, Kollár M.* Conventional stripping versus cryostripping: a prospective randomized trial to compare complications and change in quality of life. Eur JVasc Endovasc Surg 2008; 35: 218-23.
21. *Menyhei G, Hardi P, Arató E, Kasza G, Kelemen O, Kollár L.* Assessment of changes in calf muscle pump function after subfascial endoscopic perforator surgery. Perfusion 2007; 20: 299-304.
22. *Bihari I, Bartos G, Markovics G.* Hungarian names in phlebo-lymphatic clinical research. Int Angiol 2009; 28: (Suppl 1) 129.
23. *Bihari I.* Can varicectomy be performed if deep veins are occluded? J Dermatol Surg Oncol 1990; 16: 806-7.
24. *Bihari I, Magyar É.* Microshunt Histology in Teleangiectasias. Int Angiol; 1999: 98-101.
25. *Bihari I, Molnár Gy.* Experiences with the saw-knife phlebectomy. Int Angiol 1999; 20: (Suppl) 150.
26. *Bihari I, Egresits J, Nemcsik J, Farkas K.* Laser-Doppler examination of corona phlebectatica paraplantaris. Int Angiol 2011; 30: 130-4.
27. *Bihari I.* Varicosity and its Treatment (Visszérbetegség és kezelése) Budapest: Á+B Kiadó; 2004.
28. *Dzsinich C, Gloviczki P, van Heerden JA, Nagorney DM, Pairoleo PC,Johnson CM et al.* Primary venous leiomyosarcoma: a rare but lethal disease. J Vasc Surg 1992; 15: 595-603.
29. *Vas Gy.* Venous Diseases of the Lower Limb. (Az alsó végtag vénás betegségei) Budapest: Medicina; 1963.
30. *Mester E, Nagylucskay S, Tisza S, Mester A.* Neuere Untersuchungen über die Wirkung der Leserstrahlen auf die Wundheiligung – immunologische Effekte. Z.Exper Chir 1977; 10: 301-6.
31. *Mester E, Mester AF, Mester A.* The biomedical effect of laser application. Lasers Surg Med 1985; 5: 31-9.
32. *Nemes A.* editor. Diseases of the Veins and Treatment (A vénák betegségei és kezelésük) Budapest: Medicina; 1986.
33. *Bihari I.* Injection sclerotherapy of lower limb varicosity. 25 years and 115 000 Injections. (Az alsó végtagi varicositas sclerotherápiája: 25 év és 115 000 injekció tapasztalata) Orv Hetil (Medical Weekly) 2007; 148: 51-8.
34. *Bihari I.* The fate of sclerotherapy in Hungary. Int Angiol 2001; 20 (Suppl): 150.
35. *Monos E, Bérczi V, Nádasy Gy.* Local control of veins: biomechanical, metabolic and humoral aspects. Physiol Rev 1995; 75: 611-666.
36. *Monos E, Lóránt M, Dörnyei G, Bérczi V, Nádasy G.* Long term adaptation mechanisms in extremity veins supporting orthostatic tolerance. News Physiol Sci 2003; 18: 210-4.
37. *Monos E.* Physiology of the Venous System. Budapest: Semmelweis Publisher; 2010.
38. *Tasnádi G.* Treatment of vascular malformations in newborns and infants. In: Mattasi R, Loose DA, Vaghi M, editors. Haemangiomas and vascular malformations. Milano: Springer Italia; 2003.p.251-72.
39. *Tasnádi G.* Epidemiology of vascular malformations.In: Mattasi R, Loose DA, Vaghi M, editors.Haemangiomas and vascular malformations. Milano: Springer Italia; 2003.p.109-11.
40. *Gloviczki P,* editor. Handbook of Venous Disorders. 3rd edition. London: Edward Arnold Publishers; 2009.
41. *Gloviczki P.* Presidental address: Venous surgery – from stepchild to equal partner. J Vasc Surg 2003; 38: 871-8.
42. *Puskás A.* Chronic Venous Diseases (Idült vénás betegségek). Cluj (Kolozsvár): Scientia editor; 2007.

Abstracts

1. EVOLUTION AND VENOUS DISEASE

Martin Oswald
Prinzregensrasse 8, 86150 Augsburg, Germany

Introduction. Every time I attend a phlebological meeting, I come to talk about the cause of venous disease, which is sitting on chairs. Previously I pointed out the historical and epidemiological evidence for this hypothesis. Today I will explain how venous disease evolves. Evolution is nature`s answer to needs in life, formed by anatomy. In natural circumstances the answer has been and will always is the optimal solution, resulting in health.

History. For 90 percent of evolution, life was restricted to water. There anatomy evolved from single cell to multicellular organisms on to bigger animals with heart, arteries and veins. The veins of fish, of all water-animals, are without valves. Fish move or simply float. They cannot fall down in a medium with identical weight.

Then - 360 million years ago, life went ashore to spread on land. Here the situation was different. The animal is heavy compared to the surrounding air. It is pulled down by gravity now. The vital organs stayed practically unchanged. Their veins, the visceral veins, also ours, are without valves still. To guarantee basic function under the influence of gravity, nature had to create something which simulated floating in water.

Posture. The necessary new attribute for this was posture. This ability materialized in adequate skeleton-changes and newly evolved anatomy: Postural muscles capable of keeping tension for a long time. It is in these that pressure gradients occur, which would interrupt blood flow to the heart or even reverse it. To avoid this, valves are necessary in areas influenced by posture in all living bodies outside water.

It is not movement - fish already move - it is posture, which demands valves. So when we look for the background of venous disease, then we have to look for something which disturbs posture. In the course of 3500 million years, evolution created all kinds of species, including the human being, to be born and live without varicose veins, none of them to ever be struck by thrombosis or embolism. This was history.

The story. Evolution never stops. Whenever there is life, there is evolution. Evolution is happening right now in each of us. During just one minute 5 million cells are destroyed, 5 other million cells newly incorporated instead. According to needs, the quality of the new cell can be the same or vary from the original. This way our body recreates itself. Now back to posture. The human anatomy is unique. It is the only vertical, upright being among animals. When it comes down to the ground for sitting, it just folds this straight line with active postural muscles contracting in different situations. As in natural life, the need for such postures do not change, postural-muscle-cells must turn to the same cells all through life. This is evolution with the same result.

Chair-life. Using a chair, the change of position is artificially stopped some 40 cm above the ground in a 90 degree flexion in the hip joint, similar in the knee. This then, in addition, is a passive situation of being held. Position instead of posture. As postural muscles are not needed now for many hours daily, nature replaces muscle cells by hard connective tissue cells to stabilize the joints in the new position. The chair is literally embodied, incorporated. This is evolution with the result of something else. Besides the knee and hip the stiffening process extends to the rest of the body. The originally flexible spine shows rigid lordoses and kyphoses. Over the years, the once straight skeletal construction turns to one with kinks from head to toe.

This evolutionary process would lead to a new type of healthy creature, but the chair-sitter is two in one. Is also one who stands up trying to be straight, to be right, to be human. This demands evolutionary compensation, as the original anatomy has gone by now. Having lost a majority of postural muscles the intension of posture against gravity must be taken over by speed-oriented: locomotion muscles.

These, in this way abused, suffer adaptive hypertrophy; other unused motion-muscles suffer degenerative fattening at the same time.

The effect on the vein system. Is that in all this disorder, bones, muscles, tendons, nerves and veins get in the way of each other? The vein, the least stable, the most adaptive organ eventually gets entrapped between its altered neighbour's. Periodical compression depending on which kind of being, the chair-sitting or the trying to be straight version, causes periodical congestion in blood- flow.

Blood always follows a pressure gradient. Venous flow in natural anatomy is directed towards the heart without exception (even if there is no congestion proximally). In the new anatomy there are areas of relative hypertension, others with pathologically low tension in tissues, which should be drained. The nervous system never changes anatomically in life. It feels all such sensations in tissues as well as the described intravenous congestion and steers anatomic adaption again.

Evolutionary action Nr 1: Varicose veins. For the necessary transport out of the congestion to low pressure areas evolution uses existing veins. Cell by cell evolution transforms vein walls to thin-layer aneurysms to dimensions otherwise only seen in arteries. The same way, cell by cell, the diameter and length of the vessel is adapts. Actively, cell by cell, valves are demolished. Blood-flow can reverse this way, pressure can be balanced. The result could be called a reverse bypass. But the bypasses we know from constant, chronic arterial and venous obstruction are perfused in one, the original, direction only.

Varicose veins are different: They can transport in two directions, and they do. They are a new invention of nature for this new type of body, the hybrid, the chair-sitter, who also has to stand up trying to be the straight human as well, which is impossible with known, proven, existing anatomic structures.

This is why evolution creates varicose veins, two-direction draining vessels, the only ones in our body, the only ones in nature. Evolution has built them according to the local needs.

Evolutionary action Nr. 2: Thrombosis. In similar anatomic disorders, when or where the solution in the form of varicose vein is impossible, nature reacts with an instant mechanism. In case of prolonged interrupted blood flow, coagulation sets in. Localized thromboses evolve this way.

So far nature has created the varicose vein and the thrombus, which are the optimal solution for a regional problem. Unfortunately these do not suit the rest of the body. There they can cause modest symptoms or even make life impossible. Eventually hydrostatic pressure in the new blood vessel might equal arterial inflow to skin and other tissue and cause necrosis there. We call this an ulcer. The stadium of thrombosis can even kill us, if squeezing structures express the thrombus out of the area of formation embolism stops arterial lung perfusion in lung or brain. Besides these worst cases, any phenomenon in phlebology can be explained by observing evolution: may it be matting, phlebitis, recurrence, whatever it is. Also these do not exist, but evolve.

Conclusion. Evolution creates all natural appearances on earth. Without exception scientific observations must and will fit into this point of view. Life is determined to be in water without posture or outside water with posture, but never there without posture can fined to a chair. When we give up our natural destiny to struggle against gravity and use the artificial chair for comfort instead, we sacrifice the wonder of our original human anatomy. The evolutionary forces, eternally linked to the existence of gravity, are misled to unnatural anatomic changes. One possibility, among many others, is venous disease.

2. ADAPTATION OF HUMAN VEINS TO GRAVITATIONAL LOAD

Gergely Gősi, [2]György L Nádasy, [2]Anna Monori-Kiss, [2]Gábor Raffai, [3]Erzsébet Fehér, Zoltán Szeberin, [2]Emil Monos, György Acsády

Semmelweis University, Heart and Vascular Center, Department of Vascular Surgery, Budapest, Hungary
[2]Semmelweis University, Clinical Experimental Research Department and Department of Human Physiology, Budapest, Hungary
[3]Semmelweis University, Department of Anatomy, Histology and Embryology, Budapest, Hungary

Background. Lower and upper body human veins are exposed to different gravitational stresses. We investigated the consequences of the regional differences in two studies. We evaluated the biomechanical properties of human superficial veins affected by remarkably different orthostatic stress. We also investigated the histological differences of the veins from the two regions. In a previous study, our group determined the amount of electron-dense vesicles in rat limb vein endothelium. In the present study we investigated the difference in the amount and geometry of secretory vesicles in the endothelium of human endothelium exposed to different orthostatic loads.

Patients and methods. Superficial small vein segments were removed during vascular operations. In the first study side-branches of external jugular veins and of great saphenous veins were excised (eleven in each group). Digitalized pressure-diameter curves were recorded in Krebs-Ringer solution, and after administration of 10^{-5} M norepinephrine and 10^{-5} M acetylcholine, calcium-free solution was used to determine passive biomechanical properties. Eight small neck vein and seven saphenous vein samples of similar sizes were collected for histochemistry. Hematoxylin-eosin (HE), resorcin-fuchsin stainings and immuno-histochemistry for smooth muscle actin (SMA) were made. In the second study 25 vessel samples were collected for electromicroscopic analysis. Ten samples were taken from the upper and 15 from the lower extremities. Vesicular area/total endothelial cross section area was determined by computer-based morphometry. Long and short axes of granule cross sections were measured by image analyzing software.

Results. Leg vein walls were thicker in Krebs-Ringer solution. Isobaric wall stress was significantly higher in cervical veins. The significant differences in incremental distensibilities and elastic moduli were dependent on pressure level and smooth muscle tone. Spontaneous tone and norepinephrine induced contractions were significantly higher in leg veins. Endothelial dilation was larger in cervical vein segments. Resorcin-fuchsin and smooth muscle actin staining structures were more abundant in leg veins. Vesicular density in all samples took 2.26±0.34%. Comparing vesicular density of areas with different chronic orthostatic stress (upper extremity vs. leg) proved to be

statistically insignificant. Examining the geometry of the dense vesicles, we found the vesicles from arm samples to be more circular and granules from the endothelium of leg veins more frequently elongated ($p<0.01$).

Discussion. The major findings of the first study are the following: 1. isobaric wall stress of cervical veins is higher than that of the leg; 2. distensibility of neck veins is higher in the low pressure range which corresponds to in vivo pressures here; 3. spontaneous myogenic tone and NE-induced contractility are significantly higher in leg samples; 4. endothelial dilation is more pronounced in jugular veins; 5. these biomechanical properties can mostly be explained by higher muscularity and more abundant elastic membranes in leg veins. The density of the vesicles does not depend on the vascular region or orthostatic load. Ellipticity of these granules is significantly different in areas exposed to different gravitational stresses. One can speculate that the granules of the two regions undergo a different maturation process.

Conclusion. Comparing active and passive bio-mechanical properties of human veins affected chronically by different orthostatic loading, we found several quantitative differences that reflect the physiological adaptation mechanisms to long-term gravitational stress. The lack of difference between vesicular density within endothelial cells exposed to different gravitational stress might be attributed to the lifestyle and/or exposure of dynamic changes of hydrostatic pressure during daily human activity. Comparing the relative frequencies of granules with different short and long axes we found the vesicles from leg samples to be more elongated. It is probable that leg granules develop into more elongated ones, contributing to differences in thrombotic and hemodynamic behaviour.

3. ULTRASONIC VEIN ANGIOGRAPHY IN COMPLICATED CVI CASES

Alexander Albitsky
CDC MEDSI on Belorussian station "MEDSI Group"

Introduction. Chronic Venous Insufficiency of the lower limbs (CVI) is one of the most frequently encountered pathological condition in everyday medical practice, characterised by a progressive and often complicated course. Duplex angioscanning is currently considered by all surgeons as the primary method of instrumental diagnosis of various forms of chronic venous insufficiency. It gives detailed information about the state of the deep, superficial and communicating veins and solves issues of medical tactics in the vast majority of patients. Technical possibilities of modern ultrasound scanners allow us to visualise almost all the mainstream of the inferior vena cava. The efficiency and diagnostic accuracy of angio-scanning decrease with lymphatic insufficiency (ultrasonic beam scattering due to the accumulation of fluid in the subcutaneous tissue), and in patients who are overweight. In these cases, we think the use of "Levovist" contrast media, enhancing the ultrasound signal, is justified.

Aim. The development of contrast ultrasound techniques on patients with various forms of CVI.

Materials and methods. The suggested method of contrast ultrasound examinations of CVI patients is performed by an ultrasonic scanner with colour flow mapping, using a linear sensor in the frequency range of 6 to 12 MHz. The drug is injected into a rear foot vein, or into the distal great saphenous vein at a concentration of 200 mg/l - with moderate Doppler signals, not enough for complete diagnostic information, or 300 mg/l - with weak Doppler signals. An enhanced echo signal usually remained for 1 - 2 minutes, so in some cases it was necessary to reintroduce "Levovist" contrast media. Complications after the administration of contrast material were not seen. Ultrasonic angiography was performed at the standard points - the lower and middle third of the tibia, the popliteal region, the lower and middle third of the thigh, the projection of the sapheno-femoral and sapheno–popliteal junctions.

Patients. At the CDC MEDSI on Belarussian station and Clinic of the Surgery Faculty of the Russian State Medical University, we examined 20 patients with complicated forms of varicose vein and post-thrombotic disease. All patients had significant lower limb lymphedema. All the patient examinations were first performed by conventional ultrasound procedure, and then with the "Levovist" echo-contrast agent.

Results. In 12 varicose patients in trophic disorder stage and severe edema, ultrasonic angiography revealed perforating veins in the femoral and crural region, which with conventional ultrasound were not detected. In 1 post-thrombotic patient, asymptomatic non-occlusive thrombus of the superficial femoral vein was detected in the Hunter channel with contrast material. In 7 cases popliteal recanalisation in common and superficial femoral veins could be seen, which in conventional ultrasound was not detected because of marked edema.

Conclusion. Based on these data we can conclude that Ultrasonic Angiography with contrast media is indicated in patients with complicated forms of CVI. It significantly improves the visualisation of the perforating veins of the calf and thigh, as well as the deep veins in "difficult" anatomical areas.

4. EXPERIENCE WITH THE NEW ANTICOAGULANTS

Zsolt Pécsváradi
Flór Ferenc Teaching Hospital, 2nd Dept of Internal Medicine, Vascular Center, Kistarcsa, Hungary

The new oral anticoagulants (recently named direct oral anticoagulants – DOAC) have given rise to a revolutionary new era for the treatment of DVT/PE for our patients. These new drugs are the direct Xa or thrombin inhibitors.

Both groups of drugs were authorized for the prevention of DVT/PE after orthopedic surgery and for SPAF (stroke prevention of non-valvular atrial fibrillation). However because of the regulatory process, we just had have longer experience to use Xa blocker Rivaroxaban in the treatment of DVT/PE.

We have started to use Rivaroxaban in the Einstein Phase III study. We have performed (independently of the protocol because of our practice) extra duplex US control of the thombus on the monthly visits to our site and found a much faster recanalisation rate than with classic vitamin K antagonists.

We have learnt from the DOAC studies that the extended use (1 - 1.5 yrs) of new anticoagulants for secondary prevention significantly decreases the recurrence of DVT/PE, but recently no guidelines have suggested the extension of the anticoagulation treatment based on the hemodynamic stage of the venous a system (recanalisation of the thrombus). However, it is known from the literature that the incomplete recanalisation could be an important risk factor for recurrent DVT.

Thus we are regularly control the recanalisation of our patients during our clinical practice with Rivaroxaban, trying to figure out the relative risk of recurrence based on a score of full thrombus recanalisations, and also measuring the competence of recanalised venous checking the level of reflux.

In this presentation we summarize the literature of this issue and our preliminary experience.

5. THROMBOLYTIC TREATMENT OF ACUTE ILIO FEMORAL DEEP VEIN THROMBOSIS

Balázs Nemes, Anikó Berencsi, Péter Sótonyi, Edit Dósa, Kálmán Hüttl

Heart and Vascular Center of Semmelweis University

Anticoagulant therapy fails to prevent postthrombotic syndrome (PTS) in a significant proportion of patients with acute proximal deep venous thrombosis (DVT), leading to significant disability, quality of life impairment, and socioeconomic costs. Endovascular thrombolytic therapy, whose effectivity was proven by the CAVENT study succesfully reduces the rate of PTS. Pharmacomechanical thrombectomy combines catheter-delivered thrombolytics and mechanical thrombectomy, resulting in less procedure time, shorter hospital stay and lower cost.

At the Heart and Vascular Center 21 patients with ilio-femoral venous thrombosis were treated between January of 2009 and December of 2013 using catheter directed thrombolysis (CDT) or rheolytic thrombectomy. The average age of the patients was 36 years, the female:male rate was 2:1. Nine patients was treated using CDT, in 12 patients rheolytic thrombectomy was performed; stents were deployed in 12 cases. Complete recanalisation was achieved in more than 60% of the patients. Average thrombolysis time was 32 hours in the CDT group, but using Angiojet thrombolysis the time decreased to 12 hours. The amount of rt-PA used also decreased (from an average of 100 mg to 36 mg). Major complications did not occur. Using the Villalta-score 89% of patients had no signs of postthrombotic syndrome during the followup period. Our experience shows that thrombolysis can be successfully used for acute ilio femoral DVT.

6. CHRONIC WOUNDS: DESIRE AND REALITY

Ullrich Katz

Klinik am Ruhrpark, Bohum, Germany

Our patients are getting older and still experience their chronic wounds for too long. Despite " Modern Wound Management" which means a variety of dressings, they are unmanageable. We go on accepting existing wounds for many years. My presentation shows firsthand a variety of practical courses on action. Photos are relatively simple, but a successful way out of the dilemma of chronic wounds.

7. LEG ULCERS – COMPRESSION ONLY?

Frantisek Žernovický

Angio, Bratislava, Slovakia

Venous leg ulcer is the end-stage complaint trouble of patients with chronic venous insufficiency. Up to 1% of the western population suffers. The basic treatment is compression. Nevertheless, in some cases and stages of the disease additional procedures may be necessary. In the course of healing sometimes an exudative dermatitis can occur and persist a long time. Areas of new skin suddenly break down. With local use of crystallic hydrocortison we can stop this destructive process and restart the healing. In up to 40% of venous leg ulcers there is an insufficient perforator or some other varicose vein in the background. Their abolition may promote the healing and – according to our experience – effectively prevent a recurrence (0,7% to 5,8% !). If we succeed in cleaning the ulcer base, we can find with the aid of ultrasonography under the ulcer large venous sinuses and close them with sclerotherapy – the so called TIRS method. From the beginning of compression therapy the patient should be urged to walk. After healing we must encourage our patients to continue an active mode of life, with as much walking as possible. Together with compression, treatment of varicose veins and insufficient perforators, this is an effective way to prevent a recurrence.

8. THE INFLUENCE OF KNEE-HIGH ELASTIC COMPRESSION ON ARTERIAL COMPLIANCE: THE EXAMINATION OF COMPRESSION-EXERTED SYSTEMIC EFFECTS

Győző Szolnoky[1], Henriette Gavallér[2], Anna Gönczy[1], Imre Bihari [3], Lajos Kemény[1], Tamás Forster[2], Attila Nemes[2]

[1]Department of Dermatology and Allergology, Medical Faculty, Albert Szent-Györgyi Clinical Center, University of Szeged, Szeged, Hungary,
[2]2nd Department of Medicine and Cardiology Centre, Medical Faculty, Albert Szent-Györgyi Clinical Center, University of Szeged, Szeged, Hungary,
[3]Vein Clinic Budapest, Budapest, Hungary

Compression therapy directed research mostly focuses on venous and lymphatic conduit, but the effects of medical compression stockings (MCS) on cardiovascular responses are poorly investigated.

A comprehensive study was conducted to measure whether the application of knee-high leg MCSs with different pressures could influence aortic stiffness parameters as pulse wave velocity (PWV) evaluated by an oscillometric method, aortic elastic properties determined by 2-dimensional transthoracic echocardiography (2DE) and cardiovascular autonomic function.

16 volunteers underwent blood pressure measurement, 2DE and pulse wave measurement by arteriograph at baseline, then in knee-high compression class (ccl) 1, 2 and 3 MCSs in a consecutive manner.

No significant changes of echocardiographic aortic stiffness parameters compared to mean baseline values were detected in the study population regardless of which MCS they wore. The application of ccl 1 MCSs significantly reduced baseline PWV (mean baseline value: 7.34 ± 1.59 m/s, ccl 1 mean value: 6.58 ± 0.89 m/s, p =0.0519, respectively). The usage of ccl 2 and ccl 3 stockings also substantially decreased PWV (ccl 2 mean value: 6.63 ± 0.66 m/s, p=0.0537; ccl3 mean value: 6.52 ± 0.94 m/s, p=0.0484, respectively).

Light compression with preventive MCSs is already able to have a beneficial cardiovascular influence measured by arteriography.

9. SULODEXIDE – AN OLD-NEW AGENT FOR CVD TREATMENT

István Páczi

UniCorp Biotech Ltd, Hungary

Sulodexide (SDX) is a blend of two glucosaminoglycan (GAG) entities, namely a fast moving heparin (80%) fraction and dermatan sulphate (20%). It is biologically active by both the parenteral and oral routes. In the past few years it has been re-explored by scientists as a specific agent for vascular abnormalities. Besides its antithrombotic, anti-inflammatory and endothelium-protecting effects it lowers plasma viscosity and improves microcirculation without any serious alterations of the blood clotting mechanisms and tests, thus being much less conductive to bleeding risk than heparins.

The best available clinical evidence of the efficacy of SDX administered orally with or without an initial parenteral phase is the following: alleviation of symptoms in chronic venous disease and especially acceleration of healing of venous leg ulcers; prevention of cardiovascular events in survivors after acute myocardial infarction; marked improvement of intermittent claudication in patients with peripheral occlusive arterial disease; and abatement of proteinuria in patients with diabetic nephropathy that may contribute to the amelioration or stabilization of kidney function. Although further clinical trials are warranted, SDX is presently widely accepted in many countries as an effective and safe long-term, endothelial-protecting drug.

10. 2014 EVIDENCE-BASED CLINICAL PRACTICE GUIDELINES OF THE AMERICAN VENOUS FORUM AND THE SOCIETY FOR VASCULAR SURGERY: MANAGEMENT OF VENOUS LEG ULCERS

Fedor Lurie

Jobst Vascular Institute, USA

Guidelines present a synthesis of evidence-based recommendations for the diagnosis and treatment of a specific medical condition. The value of a guideline is that it provides consistency among treatment protocols given to patients, resulting in improved efficacy and the quality of care and reduced cost. The need for cost containment of health care has placed the development and implementation of clinical care guidelines as a high priority for health care systems. Both the prevalence of venous leg ulcers - 1% to 1.5% of the population—and the economic impact of ulcers are two compelling reasons to develop a specific guideline for this problem. The care of ulcers can consume a significant amount of resources, so that an agreed on "best practice" algorithm can maximize the quality and effectiveness of care while minimizing cost and resource use. Moreover, leg ulcers are associated with prolonged disability, important socioeconomic impact, and significant psychosocial morbidity. Because approximately 50% of venous leg ulcers may recur within 10 years, they are marked by a significant component of chronicity, which compounds their economic impact and need for repetitive care. Ulcers also can be painful, so that a patient's ability to work may be compromised, and can also affect the retired segments of the population, thereby compounding both the indirect and direct costs of treating ulcers.

11. CONTRIBUTION OF HUNGARIAN EXPERTS TO THE TREATMENT OF VENOUS MALFORMATIONS

I.Bihari
Budapest, Hungary

The first Hungarian vascular surgeon who dealt specifically with vascular malformations was *Geza de Takats* (1892 - 1985). At that time he was working in Chicago and was one of the pioneers of vascular surgery in the USA. He dealt also with vascular anomalies of limbs and wrote a clear classification of them. He made distinctions between arterial, venous and arteriovenous malformations (1932). He dealt with vascular surgical interventions.

Here in Hungary *Guszich* in 1933 wrote about aneurysmatic dilatations of veins and their treatment.

Emerick Szilagyi (1910-2009) who also worked in the USA, in Detroit, was a highly regarded arterial surgeon. He dealt with arterio-venous shunts and wrote about their influence on the venous system.

The most influential person in this topic was *Lajos Soltesz* (1917-1982). After his graduation he worked at Balassagyarmat where he wrote his first paper about vascular malformations: „Cervical haemangioma compressing the spinal cord". In 1951 he came to Budapest to the surgical clinic of the University where he established the first vascular surgical department in Hungary. He focused mainly on vascular anomalies. He wrote his PhD dissertation about „Congenital arterio-venous fistulas of the limbs". He was the first to recommend a more informative diagnostic name than syndromes. Up until his time, the principal criterion of A-V shunts was a pulsating murmur. According to his opinion, oxygen content was more informative. Experimentally he examined the relationship between bone growth and oxygen content. He proved that A-V shunts open after a while in hypoxic limbs.

Important assistance to clinicians is given by an enthusiastic researcher, *István Kubik,* an anatomist who could help us show where the embryonic origin of pathologic vessels is.

It is necessary to mention *Peter Gloviczki* who began to deal with vascular malformations in Budapest. He did experimental and clinical surgery on lymphatic vessels.

One important student of Soltész is *Géza Tasnádi*. He wrote his dissertation about „Venous dysplasias in infants and children". As a result of his work, Hungary belongs to those countries where vascular malformations are recognised and start to be treated in early childhood. He is the leader and organiser in this discipline regarding scientific achievements, and the treatment of unusual cases in special clinics in this country or abroad. He keeps in contact with specialists all over the world, from Europe to Asia and America. He organised the 10th World Congress of the ISSVA in Budapest. He deals not only with organisation but also with epidemiology, embryology, treatment of arterial, venous, arterio-venous and lymphatic malformations from diagnostic to conservative, invasive or surgical treatment. He has written several chapters in different textbooks edited in Hungary and abroad. His helpers in this field are: Zoltan Harkanyi, György Balazs, Kálmán Hüttl, István Szikora, Csaba Dzsinich, Gyula Jámbor, Attila Szabó and Imre Bihari.

12. JUST A BIRTHMARK OR THE TIP OF THE ICEBERG? DIAGNOSTIC IMAGING OF VENOUS MALFORMATIONS

György Balázs
Budapest, Hungary

Low flow venous vascular malformations may manifest in various anatomic forms from minimal cutaneous changes to gross disfiguring masses. Therapeutic planning requires accurate anatomic mapping and hemodynamic characterisation. Circumscribed lesions may be resected while extensive soft tissue involvement often prevents curative treatment and only palliative surgery or intervention can be considered if symptoms necessitate it. Phlebography either by direct puncture or by catheter introduction was the only imaging option until the 1980s. Angiography can reveal valuable information on the blood supply and outflow of such lesions; however, the full extent of the lesions is usually underestimated as complete contrast filling of the cavernous venous channels is hard to achieve. Diagnostic imaging is currently based on non-invasive techniques such as ultrasonography and MRI. 2D ultrasound can detect irregular compressible blood vessels and often soft tissue architecture is altered. Color Doppler proves the presence of slow blood flow and can help differentiate lymphatic cystic components. Sonographer morphology however is not specific and the exact delineation of lesion contours is not possible. Doppler analysis supports the low flow nature of a lesion and most importantly, Doppler can rule out the presence of arterio-venous shunts which is characteristic of high flow arterio-venous malformations.

For the assessment of anatomic involvement MRI is the most reliable modality. Venous malformations demonstrate high signal character on T2 weighted a sequence which is best appreciated when additional fat suppression technique is applied. Whether the lesion is confined to the superficial subcutaneous tissues or invades deep compartments is confidently assessed on multiplane T2 weighted images. Contrast enhancement of the lesions is usually inhomogeneous and develops relatively late after the injection which is attributed to the slow spontaneous blood flow. Usually lesion delineation is more conspicuous on T2 weighted sequences than on post-contrast images, therefore routine use of Gadolinium is not necessary.

Imaging features of venous malformations, however, are not fully specific, thus whenever clinical and/or radiological data raise the possibility of a soft tissue lesion of different nature, biopsy is warranted.

13. CONSERVATIVE AND SURGICAL TREATMENT OF LYMPHATIC MALFORMATIONS

Attila Szabo[1], Geza Tasnadi[2]
[1]Semmelweis University Vascular Surgery Clinic, Budapest, Hungary
[2]Heim Pal Children's Hospital, Budapest, Hungary

Objectives. We can prevent the serious sequelae of lymphatic defects by starting a well-planned treatment at the appropriate time. We summarize the conservative and surgical treatment possibilities of lymphatic malformations.

Methods. In the last 20 years we have treated hundreds of children and adults with congenital lymphatic or lymphovenous malformation at the Heim Pal Children's Hospital and at the Vascular Surgery Clinic of Semmelweis University in Budapest, Hungary. In this paper we present pictures of interesting cases and summarize the conservative and surgical treatment possibilities of lymphatic malformations.

Results. The form of treatment of lymphatic malformations depends on the type and localisation of the congenital defect: (1) truncular forms: aplasia or hypoplasia – conservative therapy as early possible, (2) dilatation of the lymphatics, soft lymphoedema – manual and instrumental lymphdrainage, (3) in cases of chylous reflux - ligation of refluxing vessels and/or lymphovenous shunt, (4) chylous ascites – diet and/or direct lympho-venous shunt or Denver shunt, (5) congenital chylothorax – thoracic drainage, diet, (6) if drainage persists, intrapleural bleomycin 1 mg/kg injection repeated weekly, (7) extratruncular forms: (a) lymphangiomas – partial resection and ultrasound guided sclerotherapy, (b) cystic hygroma – staged resection and sclerotherapy are recommended.

Conclusion. With precise diagnostics and planning and with respect to the type and localizations of the disease we can successfully treat congenital lymphatic malformations. Retreatment is required frequently, life-long follow-up and care is essential with these patients. Multidisciplinary teamwork and a conservative attitude helps us to achieve the best results.

14. NEW TREATMENT APPROACH FOR DIFFUSE ARTERIO-VENOUS MALFORMATIONS OF THE LOWER EXTREMITIES

Zbigniew Rybak
Department for Experimental Surgery and Biomaterials Reaserch
Wrocław Medical University, Poland

Objectives. The aim of the study was to assess the effectiveness of lauromakrogol foam obliteration of the venous side of AVM and liposuction on improvement of symptoms and on appearance of the extremity.

Method. Arteriovenous malformations (AVM) are classified as high-flow anomalies. Most often such disorders are treated with initial obliteration or embolization of arterial side of abnormality. On the other hand, diffuse subcutaneous AVM lasting years resulted in the overgrowth of the affected part of the extremity. In the years 2005-2013 a series of five female patients (age range 23 to 58) were treated due to AVM. All patients were diagnosed with angiography. Sclerotherapy was performed according to the Tessari method using 1% or 2% of foam with a dose of 0.2 mL/kg. The treatment was repeated up to seven times within two years. After the enlarged venous network disappeared following sclerotherapy, technique liposuction to wet technique using Klein tumescent protocol was performed. Graduated compression hosiery was applied after surgery for at least six weeks. Effectiveness of the procedure was assessed with analogy pain score and quality of life according to CIVIQ questionnaire. The appearance of the extremity was assessed by photos, patient and surgeon.

Results. The pain score after treatment in all patients decreased an average from 8 to 0. The quality of life on average improved in 70%. The final look of the treated extremity was satisfying both for patients and surgeon.

Conclusion. Presented novel treatment of diffuse AVM of the lower extremities is profitable for the patients with one restriction. This is not definitive treatment. It needs to be repeated.

15. CASES OF KNEE BEND AND THIGH ANEURYSMS IN THE SUBFASCIAL SPACE. IS IT A TYPE OF VENOUS MALFORMATION?

I Bihari, A Apor, G Tasnadi
Budapest, Hungary

Introduction. This is a series of case reports. In 8 cases venous aneurysms were found in the knee bend and thigh and in many regards these were similar. These aneurysms were in a circumscribed region. In half of the cases varicosity appeared at a young age, and some were prone to recurrency. We looked for the reason for this similarity. Considering the fact that in every case the dilatations were along the course of embryonic veins, it seems to be the most acceptable interpretation that the aneurysms are remnants of embryonic veins.

Patients. The varicosity appeared in one case in childhood, in 3 cases in teenagers. In 3 cases, patients came with recurrent varicosity. We have no history data from one case. In 6 of the 8 cases the aneurysms were found in the lateral half of the knee bend as part of a perforator vein. The most dilated part was under the fascia level. Aneurysms were within the Giacomini vein in a further 2 cases. In none of these limbs were there deep vein circulatory disturbances. There were no differences between the length of the limbs. There was no thrombosis or edema in any case history. It is not known if these aneurysms would be a risk factor for thromboses.

Methods. To occlude the aneurysms an unusual intervention seemed to be the most reasonable: to close

them under the fascia level. Classic varicose vein surgery would have been too serious an intervention, but endovascular occlusion was not demanding and less risky. In the knee bend the nerves are in the vicinity of the veins so heat delivery had to be performed carefully.

Results. Occlusion of the aneurysm was successful in 5 cases. In these cases there was no recurrent varicosity. In 2 cases where we could not close the aneurysm, the varicosity treatment was not successful. One case was not treated and followed.

Conclusion. In similar cases it is recommended to think of embryonic remnant veins. In the treatment of these varicose veins and aneurysms, endovenous intervention seems to be the method of choice. It seems the occlusion of these subfascial aneurysms is beneficial.The limitations of this study are the small number of cases and the short follow-up time; therefore we regard this as a preliminary report.

16. MORPHOLOGY OF PERIPHERAL VENOUS MALFORMATIONS: ARE THEY ALL SIMILAR?

Raul Mattassi, Luca Crespi, Walter Pozzoli
Milan, Italy

118 patients affected by peripheral venous malformations in different parts of the body treated surgically by the resection of the dysplastic vessel area, were included in this study. The removed specimen was analyzed macroscopically and after section in order to evaluate the internal structure. An evaluation was done about the treatment selection according to morphology.

6 different types of venous malformations were recognized: **Type I**: Tortuous dilated veins, mainly sited superficially (23, 20%), **Type II**: Mass of dysplastic small or medium sized veins (65, 55%), **Type III:** A sponge-like structure filled with venous blood with no vessels recognizable (3, 3%) **Type IV**: A mass of fat tissue with some dysplastic vessels inside (18, 15%) **Type V**: A compact, dark colored mass with no large vessels inside but only capillary structure (4, 3%) **Type VI**: very small subcutaneous limited venous areas extremely painful at pression (5, 4%).

Peripheral venous malformations has six different types of morphology. Type I, II and III can be treated by sclerosis or also by surgery. Type IV and V requires surgically resection because sclerosis is not able to remove the whole non vascular mass. Type VI respond little to sclerosis or laser because of the small size; precise surgical removal after clinical and echographic recognition is the best treatment solution

17. STEAM ABLATION OF GSV

René Milleret
Montpellier, France

According to the results from a French multi-centre clinical trial and our three-year experience, steam ablation is a safe and effective method of treating the greater saphenous vein (GSV).

The principle of using steam ablation utilises the condensation of steam into water which releases lot of energy in a short time and thereby produces a therapeutic effect with a wide margin of safety. Steam is delivered in a pulsed mode to allow evacuation of the heat between consecutive pulses. Water is pumped under high pressure through a micro tube of 100µ internal diameter. An electrical current heats the micro tube and the steam is emitted at a temperature of 150° (at the tip of the catheter it decreases to 120°C).

Multi-centre trial. In the multi-centre trial, 80 patients were treated in four centres (University Hospital of Besançon (Prof G Camelot), private clinics in Lyon (Dr P Nicolini), Montpellier (Dr R Milleret) and Nancy (Dr D Creton)). Milleret report the one year results from data available from 73 patients.

Treatment protocol included treatment of the GSV only and the centre was free to use general, local or tumescent anaesthesia. The mean length treated was 42cm for a mean diameter of 8mm at mid-thigh. Immediate post-operative pain was 1.7 (median value) and at eight days was 0.75 (median value). There were no instances of deep vein thrombosis, pulmonary embolism or infection. There were no instances of pigmentation and one instance of parethesia at eight days and one month. Also at one month, one patient presented with thrombosis of the GSV under the puncture level (this subsided without complications after low-molecular-weight heparin treatment), another with a haematoma at the puncture point and another with matting at the femoral canal level. At six months, one patient presented with hypoesthesia of the lower leg.

Partial results at one year showed an absence of reflux in 98.5% of 75 patients. The SF-12 quality of life score was improved in both physical and mental terms: 49.99 versus 51.27 (p=0.049) and 46.01 versus 52.05 (p=0.001) at six months. The improvements in symptoms can be seen in Table 1.

Single centre experience. We report our personal experience after 164 patients between 2007 and 2010. One hundred and seventeen GSVs and 47 SSV were treated.

	Pre-operation	Six months
Pain	25	12
Heaviness	21	5
Oedema	16	2
Impatience	11	2
Itching	5	0

Table 1: *Improvement in symptoms*

	No. treated	No, follow-up	Obliterated	Per cent
One year	164	129	120	93
Two years	95	77	71	92
Three years	22	16	15	93

Table 2: *Obliteration rates*

General anaesthesia was used in 78 operations and local tumescent anaesthesia in 76. No major complication was observed. One patient had calf vein DVT which healed after low molecular- weight heparin treatment for two weeks. Three patients had minor skin burns at the entry point which healed in four to six weeks. The obliteration rates can be seen in Table 2.

Conclusion. Steam obliteration of saphenous trunks is effective and safe.

The possibility to occlude large calibre veins is an advantage over laser and radio-frequency**.**

18. COMPARATIVE ANALYSIS OF METHODS FOR THERMAL AND NON-THERMAL OBLITERATION OF VARICOSE VIENS

Vladislavs Semenuks

Baltic Vein Clinic, Riga, Latvia

The Baltic Vein Clinic is located in Riga (Latvia) and today works with all known techniques of thermal obliteration of varicose veins, as well as from non-thermal – biological glue and ultrasound guided foam sclerotherapy. Annually more than 1500 operations are conducted on varicose veins. Experience was accumulated with different techniques of obliteration of varicose veins, data was collected on the advantages and disadvantages of these methods.

Endovenous laser ablation (radial fiber, 1470ηm), Benefits: fast, painless, occludes truncular varicose veins (GSV, SSV). Limitations: high operating temperature can cause unwanted skin burns and saphenous nerve damage. Rigid probe cannot pass through the curved and twisted veins.

Radiofrequency ablation (VNUS Closure FAST), Benefits: fairly easy to learn. Gentle temperature control reduces the risk of skin burns. Possibility of obliteration of perforating veins. Limitations: rigid probe cannot pass through the curved and twisted veins. For occlusion the perforating veins need a rather expensive optional accessory – a stilett.

Steam Venous Sclerosis (SVS), Benefits: gentle temperature control reduces the risk of skin burns. Thin and flexible probe passes through the curved and twisted veins. Possibility of obliteration of posttrombotic (recanalized) veins and of the side branches. Limitations: difficulty very accurately calculate the initial zone of obliteration (in the SFJ or SPJ)

Biological glue („Venaseal"), Benefits: not necessary for local tumescent anesthesia, sedation and compression stockings. Best choice for truncular varicosities with a minimum of side branches. Limitations: relatively high costs limits its widespread use.

Foam sclerotherapy (under US), Benefits: relatively cheap. Will close both truncular veins and perforating and side branches. May be used in addition to thermal methods of obliteration. Limitations: high risk of dermatomelasma. With increasing diameter of the vein occlusion efficiency decreases.

Conclusions, Experience shows that today there is no single best method for varicose vein occlusion. The best choice is the ability to use different technologies. It gives freedom of choice and allows you to solve difficult tasks.

19. ENDOVENOUS SAPHENOUS ABLATION USING EVRF RADIOFREQUENCY DEVICE AND CR45i CATHETER. EXPERIENCE OF 515 CASES.

Attila Szabo

VP-Med Health and Education Center, Budapest, Hungary.

Objective. We evaluated the effectiveness of EVRF treatment and analyzed the early and middle-term results using the EVRF device with a CR45i catheter for the endovenous ablation of GSV and/or SSV.

Methods. From July 2011 to March 2014 we treated 515 patients (avareg age 45 years) with saphenous reflux and varicosity using EVRF. The output power was 25 Watts, the catheter removal rate was 6 sec/cm at the beginning 2 cm back from the sapheno-femoral (sapheno-popliteal) junction. In every case we used tumescent local anesthesia with some superficial sedation in the presence of an anesthesiologist. Patients' clinical data, the data of the pre- and postoperative ultrasound examinations, the total power emitted and the diameters and flow of the treated veins measured by ultrasound were been recorded. Photo documentation was prepared in each case. Clinical evaluation was performed one day, one week and one to two months after surgery using a scale of postoperative pain, patient satisfaction and outcome ultrasound procedure outcome.

Results. The procedures were performed on 515 limbs - 438 GSV, 60 SSV, 17 GSV+SSV; 487 patients belonged to CEAP 2,3, 28 patients to CEAP 4,5; 466 primary cases, 49 recurrent varicosity. Crossectomy was performed in 6 cases due to GSV larger than 20 mm at the junction. Tributaries were treated in the same session in all of the cases. The mean diameter of the GSV was 6.2 and of the SSV 4.8 cm; consequently, reflux more than 0.5 sec was detected with duplex scan in all patients. The length of the treated vein segment ranged from 15 cm to 82 cm, using an amount of 7200 Joules total energy emitted on average. The average duration of surgery was 45 minutes, including the treatment of the enlarged tributaries. Complete occlusion was found in 99 % at the one month ultrasound control, 1 year ultrasound control showed 97.2 % occlusion rate. Postoperative pain reported by the patients on a visual

analogue scale was 2/10, the average patient satisfaction was 149/150 (99%). There were no cases of deep vein thrombosis, skin burns, neuritis or bleeding, we found minimal bruising at the treatment site of the tributaries in some cases, 2 patients had mild inflammation, treatable conservatively.

Conclusion. The EVRF saphenous ablation is a safe, painless procedure for the treatment of the GSV and/or SSV - high patient acceptance and minimal postoperative discomfort allows a quick return to work and normal life. The procedure under local tumescent anesthesia is simple, the disposable devices are easy to use. In our practice the EVRF treatment with CR45i catheter was superior to conventional varicectomy or to laser ablation using a 2nd generation device with bare laser fiber.

20. ANTERIOR ACCESSORY GREAT SAPHENOUS VEIN TREATED WITH ENDOVENOUS LASER

Svatopluk Kaspar

Flebocentrum Hradec Kralove and Faculty of Medical Studies, University of Pardubice and Department of Surgery, Pardubice General Hospital, Pardubice, Czech Republic

Introduction. Endovenous laser ablation of the great saphenous vein (GSV) represents a well-established technique of radical therapy of the 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 micron bare fibre. In the follow-up (1month to 10 years post op) patients were assessed clinically and with duplex ultrasound.

Results. Neither deep venous thrombosis, nor pulmonary embolisms were recorded. In the 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%.

Conclusion. 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 the GSV.

21. ASSESSMENT OF SAFETY AND OUTCOME FOLLOWING RADIOFREQUENCY ABLATION OF INCOMPETENT PERFORATING VEINS

Gabor Menyhei

Department of Vascular Surgery, University of Pecs, Pecs, Hungary

Objective. To assess safety and early outcome following radiofrequency ablation of incompetent perforating veins for treating patients with venous ulcer.

Patients and methods. Radiofrequency ablation of 27 incompetent perforating veins was performed on 21 patients with venous ulcer. Most patients had a long-term history of ulceration which did not heal on compression therapy. More than half the patients had post thrombotic deep venous incompetence. Saphenous vein stripping as an additional treatment was carried out only on 5 patients.

Results. The primary occlusion rate was 67% and a secondary procedure increased this number to 82%. The venous ulcer healed in 72% of the patients and recurred in 6 % of the cases during the average follow-up period of 5 months. The complication rate was very low and included only minor dysaesthesias and a wound healing disturbance in one case.

Conclusion. Radiofrequency ablation of incompetent perforating veins as a minimally invasive endovenous procedure proved to be a safe method which provides a favourable short-term outcome in patients with venous ulcer.

22. ENDOVENOUS LASER ABLATION 1470 NM: RADIAL OR BARE FIBERS? EXPERIMENTAL AND CLINICAL STUDY

Slavin D.A.[1], Parikov M.A.[2], Chugunov A.N.1,

[1] Kazan State Medical Academy, Kazan, Russia,

[2] Innovative Vascular Centre, Saint-Petersburg, Russia

Introduction. Despite the excellent performance of endovenous laser ablation (EVLA) the exact mechanism is still not fully identified and the procedure is not yet standardized. This lack of knowledge leads to controversies in optimal laser wavelength, energy parameters and types of fibre.

Aim of the study. To research the laser-tissue interaction in vivo and compare the postoperative course after EVLA 1470 nm using radial and bare fibres within one treatment protocol.

Methods. For experimental part of our study we performed EVLA in 20 patients with S-type great saphenous vein (GSV) insufficiency, CEAP C2-C3, without previous phlebitis or sclerotherapy. In 10 patients we used bare fibers and in others radial fibers. After EVLA we took just the treated part of the extrafascial vein (2-4 cm) on the thigh using Varady's miniphlebectomy for examination. We evaluated the macroscopic aspects of the treated segments such as color, caliper, consistency, carbonization and perforations.

In the clinical part of our study we evaluated the postoperative course after EVLA using bare (Group A, 18 patients) and radial (Group B, 18 patients) fibres. The inclusion criteria were: GSV insufficiency over the thigh, CEAP C2-C3, puncture point at the knee level and absence of concomitant miniphlebectomy or sclerotherapy on the thigh. In the postoperative period we evaluated the occlusion rate, the size of the stump, visual-analogue scales of the pain (day 1-5) and duration of analgesics.

Endovenous laser ablation was performed on an ambulatory basis with tumescent anaesthesia and diode laser 1470 nm. We used continuous mode with power range 5-8 Watts, automatic pull-back speed 0;7 mm/sec and LEED 84-112 J/cm.

Results. The macroscopic aspects of the veins treated with radial fibres were constant. The segments became grey-colored, not compressible, with reduced caliper and gummy consistency, without signs of carbonization or perforation. Significantly more energy was needed to achieve the same changes in the vein wall using bare fibre. Because of the direct contact between hot bare fibre tip and the vein wall, we always saw perforations and carbonization in all segments. These findings correlate with clinical results of our study. In Group B (radial fiber) we saw significant reduction of postoperative pain (more than twice) and duration of analgesics, the absence of smell of burning during EVLA in all patients. The occlusion rate was 100% in both groups and there were no complications.

Conclusions. EVLA 1470 nm with radial fibre does not cause contact damage, perforation and carbonization of the vein wall compared to the bare fibre. This leads to significant reduction of postoperative pain.

23. RANDOMIZED CONTROLLED STUDIES COMPARING ENDOVENOUS THERMAL, OPEN SURGICAL AND CHEMICAL VEIN ABLATION

Vladimir Sefranek,
Bratislava, Slovakia

Objectives. Our concept of the etiopathogenesis of venous diseases (CVD) and chronic venous insufficiency (CVI) has evolved very rapidly during last decades and years. The management of CVI has seen revolutionary change. This new knowledge and experience has been reflected in the changing point of view as to the natural course of chronic venous diseases, therapeutic indications, and the selection and timing of an optimal method of treatment. Thus the hierarchy of treatment modalities used for the management of CVD and CVI, particularly in advanced stages, has been radically modified. During the last decade the number of surgical methods of treatment has increased and absolutely new treatment modalities have been introduced, e.g. minimally invasive endovenous thermal methods of GSV ablation (EVTA), ultrasound guided foam sclerotherapy of varicose veins (USGFS), cryoablation of GSV etc.

Methods. New randomized controlled trials (RCT) evaluate the position of these modalities in the management of CVI. We present a review of recent publications comparing particular methods of surgical treatment of varicose veins.

Results. More studies have verified an extremely high effectiveness and safety of various methods of GSV ablation. More than 90% of patients in these trials have sustained closed GSV at the 5 year follow-up. Complications and adverse effects are very rare.

Conclusions. Introducing methods of endovenous thermal ablation of GSV has changed the approach of phlebologists and vascular surgeons in the management of varicose veins and CVI. Nowadays EVTA modalities have considerably improved the conventional surgical ablation of GSV and crossectomy. In majority of trials radiofrequency ablation has undoubtedly achieved the best results compared to other treatment modalities.

24. LASER ABLATION OF UNWANTED HAND VEINS

Alexander J.C.Flor[1], Asad R. Shamma[2],
[1]*Vienna International Medical Clinic, Vienna, Austria*
[2]*Aesthetic Science Institute, Boca Raton, USA*

Background. Many patients express their dissatisfaction with prominent and bulging hand veins. The decreased elasticity and loss of adipose tissue that occur with aging accentuate these tortuous veins. Removing these hand veins with sclerotherapy requires the use of higher concentrations of sclerosing agents than is used for leg veins and often results in a tender phlebitic cord. Phlebectomy is another treatment option for patients with cosmetic concerns.

Endovenous occlusion and shrinkage techniques have been successfully employed in the treatment of varicose veins of the lower extremities. Our objective is to demonstrate Laser Ablation of Unwanted Hand Veins (LAUV) and our experience.

Methods. Under light sedation and EMLA Crème, a local dermal anaesthetic, the veins of the hand are punctured by a 16G grey venous catheter (Venflon). On average four to six Venflons are placed in each hand/forearm. Over a roll pump tumescent anaesthesia is infiltrated into the subcutaneous tissue of the hand and the forearm. A SLIM radial fiber is then inserted .Using a power of 6-8 Watts, 40-50 Joule per centimetre is then applied by a 1470 Diode Laser with a continuous modus. Hand and forearm are bandaged for 24 hours.

Results. No major side effect or thrombosis had yet occurred. Hand swelling can occur for some days. Sometimes a hardened string can be observed after the treatment yet in average less than after sclerotherapy. Sometimes an additional treatment by sclerotherapy might be required.

All patients were satisfied with their results during their follow up, which ranged from two weeks to two months.

Conclusions. In different to the US, the treatment of unwanted hand veins is not such a big subject until now. Few patients seek our institute for the treatment of their hand veins. Yet according to the US the number of people wanting LAUV treatment might rise in the near future. Our experience shows additionally to the US Experience that this technique, which can be performed ambulatory results in an outstanding aesthetic result and brings a high degree of satisfaction to these cosmetically very conscious patients.

25. THE EAST EUROPEAN ENDOVASCULAR METHOD – 1000 CASES IN 7 YEARS

Imre Bihari[1], Frantisek Zernoviczky Jr[2]., Petar Dragic[3], Svatopluk Kaspar[4], George Ayoub[1], Peter Bihari[1]

[1]Vein Center Budapest, Hungary,
[2]NUSCH, Bratislava, Slovakia,
[3]Kardio Centar, Novi Sad, Serbia,
[4]Flebocentrum Hradec Kralove, Czech Republic

Objective. 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.

Patients. 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. A high percentage (43%) of our material were so-called „non-study cases": recurrent varicosity (9.2%), double saphenous stem (4.8%), ectasia above 20 mm (1.5%), acute varicophlebitis (2.6%), BMI >35 (5.3%), later pregnancy (1.0%), older than 70 (10.6%), CVI (C4-5 10.7%), crural ulcer (C6 3.4%). VCSS was 7.1. Other treated diseases were present in 21.9%.

Method. 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 3 years classical varicose vein surgery has not been performed, which means every saphenous stem varicosity case without selection was included in this survey.

Results. Every treated vein occluded (100%) and there was a 2.8% recurrent varicosity rate in this 7 year period (mean 3.1 years). Perforators could be closed in 82.4%. VCSS became 2.3. 68% of recurrent cases were from the following cohorts: earlier operated, overweight, sports people, CVI and neovascularisation cases. Only 1 of our patients developed saphenous vein recurrency during pregnancy. A questionnaire was completed in 60 cases regarding post-operative complaints: 79% of patients did not take any painkillers, and 68% of them were back at work within a week. There were some suffusions in 88% and in 7.2 % there were some minor and temporary neurological complaints after 3 months. Heparin prophylaxis was not given in the first 216 cases, but after 2 slight pulmonary embolisms without deep venous thrombosis, LMWH was administered in every subsequent case.

Conclusion. According to our study, EEEM is recommended instead of classic surgery in every saphenous vein varicosity.

26. WHICH ENDOVENOUS TREATMENT AND HOW?

T Proebstle
Germany

27. LASER ASSISTED FOAM SCLEROTHERAPY (LAFOS)

Alessandro Frullini
Studio medico flebologico, Figline Valdarno-Florence, Italy
Damiano Fortuna Photobiolab El.En. Calenzano, Florence. Italy

In order to enhance the treatment of the 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 the sclerosing foam injection. This laser pre-treatment is capable of significantly reducing vein diameter thus less foam volume is necessary to ablate the vein with lower chance of complications. The procedure is performed in an ambulatory setting as anaesthesia is not required. We are presenting the short-term results of the first 50 cases treated by LAFOS.

The laser system we used had a 5W max average power with max 500 mJ per pulse. The LAFOS treatment was performed on 38 with insufficient Greater Saphenous Vein (GSV) and 12 Lesser Saphenous Veins (LSV) LAFOS. The mean of the maximum diameter of GSV was 9, 17 and 7,91 for LSV. Two GSV were previously unsuccessfully treated twice with two sessions of echo guided foam sclerotherapy.

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, even in the two cases resistant to conventional treatment with sclerosing foam. No complications due to foam sclerotherapy were observed with the exception of minor bruising that resolved uneventfully. Echo guided

aspiration of intraluminal clots was routinely performed. No pain was mentioned during the laser procedure and no patients required anesthesia. In 8 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 the treatment of large veins (over 1, 4 mm), with sclerosing foam. This was a true coartation proven by histologic study (not a vasospasm).

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

28. PREVENTION OF ENDOTHELIN RELATED SIDE EFFECTS OF SCLEROTHERAPY WITH AMINAFTONE PRE-TREATMENT

Alessandro Frullini[1], Eleonora Da Pozzo[2], Silvia Burchielli[3], Francesca Felice[2], Rossella Di Stefano[2]

[1]Studio medico flebologico Figline e Incisa Valdarno, Florence,
[2]University of Pisa,
[3]CNR Pisa, Italy

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-ET1 action of Aminaftone (AMNA).

We studied 3 groups of rats treated with polidocanol (POL) sclerotherapy: group C, the control, and groups G1 and G2, that received respectively a 30mg/kg/day or a 150mg/kg/day of AMNA for 15 days before sclerotherapy. In vitro studies were performed on HUVEC cells: cell survival was analyzed in presence of AMNA and POL at different concentrations, and ET 1 level measurement was performed through an immunoenzymatic assay.

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% of cases 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.

This study confirms ET 1 release after sclerotherapy, and lower in vivo mortality in G1 and G2 groups gives us an indication of ET-1 possible role in generating side effects. Aminaftone has been proven to be effective in the 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.

29. MECHANOCHEMICAL ABLATION FOR ENDOVENOUS OCCLUSION - FIRST RESULTS

Attila Szabo

VP-Med Health and Education Center, Budapest, Hungary

New methods for the ablation of varicose veins have changed the treatment concept of the disease. The late results after endothermal ablation or chemical ablation techniques are comparable to coventional surgery, with significantly fewer side effects, less pain, much faster recovery and improvement of the quality of life.

Mechanochemical ablation uses a rotating wire tip to induce spasm and cause superficial endothelial damage of the varicose vein segment while administering a sclerosant drug to occlude the vessel. The procedure is completely painless, no anesthesia is needed.

We treated 91 patients with the ClariVein catheter between 11.05.2013 and 28.06.2014 in Budapest, Hungary. Patients' data: 31 male, 60 female, mean age: 45.6 years. 83 GSV and 8 SSV, CEAP: 2 or 3 in almost all cases. Vein diameter: 6.7 mm, treated segment: 44,5 cm. We used 7.4 ml 2% polidocanol per treatment (0.17 ml/cm) in average. The mean procedure time: 13.5 minutes. All patient received class 2 compression stockings after the procedure. Patients did not receive anesthesia.

At the 1 month control all the treated veins were occluded. The measured diameter reduction of the veins was about 20%. Postoperative phlebitis was found in 7 cases, the symptoms improved quickly with conservative treatment. Patient satisfaction was 100% at 1 month.

Mechanochemical ablation procedure for the treatment of truncal reflux seems to be a reasonable alternative for endothermal procedures with great advantages: it does not require anesthesia, eliminates the risk of nerve or skin damage or paresthesia through thermal energy, provides a high level of comfort and acceptance for the patients.

30. ULTRASOUND-GUIDED FOAM-SCLERO-THERAPY AS THE SOLE METHOD OF TREATING SUPERFICIAL VENOUS REFLUX

Malay Patel

First Choice Vascular, Ahmedabad, India,

Ultrasound-guided foam sclerotherapy is a convenient, thorough and minimally invasive method of delivering sclerosant most effectively, safely, and economically, into the lumen of the refluxing/incompetent veins, to produce endothelial damage leading to thrombosis and sclerosis of the diseased vein. Many treat superficial venous reflux disease by surgery, endoablation by laser, radiofrequency or steam, either as the sole method or in combination.

For the last five years we have injected foamed sclerosant, under ultra sound guidance, into superficial refluxing/incompetent veins. As our experience grew we increased its use to treat all superficial venous

reflux/incompetence, irrespective of size or extent and now employ ultrasound-guided foam sclerotherapy as the sole method of treating superficial venous reflux.

After an initial colour Doppler mapping of the superficial venous system, the refluxing/incompetent veins are injected, under ultrasound-guidance, with foamed sclerosant produced by the Tessari method. We use one part 3% Polidocanol or Sodium tetra decyl sulfate, mixed with 4 parts of carbon dioxide gas to make 5 cc of sclerosant foam. We inject foam at multiple sites in a caudo-cranial/-antegrade direction and use multiple sessions to achieve the desired result of sclerosing all refluxing/incompetent veins. We use compression only in selective cases, mainly in patients with ulcers.

Our method can be easily adopted even in remote or impoverished areas, and does not require the use of expensive equipment or disposables, except for the good imaging provided by an ultrasound machine. Our method will be discussed in detail.

31. RATES OF DUPLEX-DETECTED RECANALISATION 5 YEARS AFTER ULTRASOUNDGUIDED FOAM SCLEROTHERAPY AND RELATIONSHIP WITH CLINICAL, HAEMODYNAMIC AND PATIENT-REPORTED OUTCOMES

Darvall KAL, Bate GR, Bradbury AW
Department of Vascular Surgery, University of Birmingham, Birmingham UK

Aim. To assess: rates of duplex-detected recanalisation following ultrasoundguided foam sclerotherapy (UGFS); the relationship between recanalisation and clinical, haemodynamic and patientreported outcomes (PROMs).

Materials and methods. Consecutive patients undergoing UGFS between April 2004 and May 2007 were invited for review after 5 years. Patients underwent duplex ultrasound (DUS) to assess occlusion of the treated veins. The degree of occlusion was graded as "fully occluded" (no areas of recanalisation or reflux), "partially occluded" (<50% of treated vein recanalised with or without reflux) or "open" (>50% of treated vein recanalised with reflux). Veins were considered to be secondarily occluded when further successful treatment had been undertaken for previous recanalisation.

CEAP clinical grade, venous clinical severity score (VCSS) and venous refilling time (VRT) on digital plethysmography were recorded. Disease specific quality of life (AVVS) and satisfaction questionnaires were completed.

Results. 381 limbs (278 patients) were reviewed (80% response) at a median (IQR) of 71 (67 – 78) months following UGFS.

Primary and secondary occlusion rates of the great saphenous vein (GSV) (n=318) were 58% and 67% respectively. 26% were "partially occluded" with reflux; and 6% were "open". In addition two GSVs were "partially occluded" without reflux.

For the small saphenous vein (SSV) (n=78) primary and secondary occlusion rates were 51% and 62%, 18% were "partially occluded" with reflux, 15% were "open" and four were "partially occluded" without reflux.

Mean (SD) CEAP C improved from 2.75 (1.12) pre-treatment to 1.68 (1.42) at 5 years ($p<0.0005$, paired t-test); VCSS improved from 5.12 (2.66) to 1.83 (2.16) ($p<0.0005$).

Limbs with recanalisation had worse CEAP C, VCSS, VRT and AVSS than "fully occluded" limbs. However, even in the limbs with recanalisation at 5 years there was significant ($p<0.0005$, paired t-test) improvement from baseline in these parameters. "Partially occluded" or "open" limbs had significantly worse disease at baseline than "fully occluded" limbs. Mean change in VRT from baseline was the same regardless of recanalisation. AVSS improvement from baseline was higher in patients with recanalisation. CEAP C and VCSS were significantly worse in limbs with recanalisation, mainly due to the presence of visible varicose veins.

Mean patient satisfaction was slightly lower as the degree of recanalization worsened (8.8 "fully occluded" to 7.9 "open"; p= 0.006, ANOVA)

Conclusion. Recanalisation was present in 42% of GSV and 49% of SSV five years after UGFS. However, the majority of the recanalisation seen affects <50% of the treated length of vein and appears to be less severe (CEAP C, VCSS), less haemodynamically significant (VRT) and less symptomatic (AVSS) than the original venous disease. Patient satisfaction was still high despite recanalisation. Patients with "worse" disease at baseline appear more likely to get recanalisation.

32. TUMESCENCE - ASSISTED SCLEROTHERAPY IN VARICOSE VEIN TREATMENT – THE FACTORS INFLUENCING THE TREATMENT RESULTS.

Piotr Hawro, Tomasz Urbanek, Wojciech Mikusek
Center of Phlebology ANGELIUS, Katowice, Poland

Tumescence-assisted echosclerotherapy (TAE) is an interesting modification of traditional sclerotherapy leading to sclerosant volume decrease as well as to potentially better sclerosant efficacy in cases of large vein sclerotherapy. In this paper, the authors present their experience based on 40 TAE cases concerning great and small saphenous vein as well as perforating vein sclerotherapy. The maximum diameter of the treated vein was 15 mm and the maximum length of the treated vein up to 40 cm. In all the patients, traditional tumescence solution (including lidocain, epinephrin, natrium bicarbonate and physiological saline) was used. As the sclerosant solution 2-3% Aethoxysclerol was used. The patients were followed up from 1 to 4 years. The authors present their early and long-term results as well as the potential treatment difficulties and the suspected reasons for the treatment

failure. Despite the conflicting results published in the recent literature, TAE seems to be a promising, relatively easy and cheap method of large vein sclerotherapy.

33. WAYS OF IMPROVEMENT OF THE SCLEROTHERAPY OF RETICULAR VEINS AND TELEANGIECTASIAS

Parikov M.A.[1], Slavin D.A.[2], Kalitko I.M.[1], Astafieva E.V.[1], Gavva E.A.[1], Dolidze U.R. [1], Stepnov I.A.

[1]*Innovative Vascular Centre, Saint-Petersburg, Russia*
[2]*Aesthetic and laser technologies clinic, Kazan, Russia*

Background. The basic problems of sclerotherapy of reticular veins (RV) and telangiectasias (TAE) are efficacy, high rate of pigmentation, matting after procedure, and the long time of cosmetic rehabilitation. Increasing the efficacy of treatment and decreasing the time of cosmetic reabilitation are possible by using a new approach to sclerotherapy.

In our practice we do sclerotherapy with our modification, which is based on the following principles:

1. Using a device for visualization of RV – Veinviewer - before and during procedure. Using a compression manual test for determining of reflux in RV. We do injections only into insufficient RV with retrograde flow. We can determine ways of filling of TEA with the Veinviewer.

2. Using tumescent anesthesia after injection for strong intradermal compression and emptying TAE from blood (Ramelet's technique START, 2012).

3. After a few minutes we did micro incision with a micro scalpel in cases with blood-filled TEA (Varady's technique of microsurgery).

Patients. From March to June 2014 30 patients were treated, 54 legs, 100% female, CEAP class C1. We performed 54 sclerotherapy sessions with this technology.

Methods. In the study we included 1 region of the leg that was treated during 1 session (thigh or calf). We used Fibrovein 0.3% (liquid) for reticular veins and 0,1-0,2% for TAE (liquid). After injections we used tumescent anesthesia with pump (0.05% lidocain with bicarbonat) to effect "lemon peel". In cases with blood-filled TAE we used microscalpel «Mani» 15 degrees for microincisions. After this procedure we used compression stocking till night.

After 4 weeks we evaluated results – efficacy, rate of matting, pigmentation, coagulum.

Results: Phlebitis – 0%, skin necrosis – 0%, small coagulum – 13% (n=7), matting – 11% (n=6), pigmentation – 11% (n=6).

Discussion. We found that strong tumescent pressure in the derma and subderma empties the veins and TAE of blood and leads to better results. Microincisions leads to additional prophylaxis of coagulum and hyperpigmentation.

Conclusions. This variant of sclerotherapy showed high efficacy in the treatment of RV and TAE. The terms of aesthetic reabilition is shorter.

34. USING RADIOSURGERY IN THE THERAPY OF SPIDER NAVI AND THREAD VEINS WITH THE HELP OF POLARIZED LIGHT

Gábor Titkay
Józsefvárosi Eü. Szolgálat, Budapest

The lecture shows the reasons and occurrence of spider navi and thread veins; the possibility of the therapy with the help of radiosurgery; the principle and use of the polarized light in the treatment; the technique of the therapy.

142 patients received the therapy. The number of sessions was 1-8. The RF equipment was the Ellman Surgitron IEC II 100W, the polarised light was given by the Syris V600 type instrument.

In this type of therapy there is no general success, and all the patients were satisfied after the therapy finished.

35. WHAT ARE THE DIFFERENCES BETWEEN C1 AND C2, ONLY THE SIZE?

Imre Bihari
Budapest, Hungary

There are many differences between C1 and C2.

Epidemiological data. About one third of varicosities are spider or reticular veins. This means according to our survey that 10-15 % of the adult population have C1 varicosity. Further epidemiologic data are that C1 varicosity is in almost 80 % and C2 in about 40 % in both sides. Patients have spider and reticular varicosity in their family history in 80 % and common varicosity in only 20 %.

Findings. Spider and reticular veins are on the side and the back of the leg, mainly around the knee bend. Truncal and perforator veins are typically on the inner side of the leg. The shape of the truncal varicosity is like a tree trunk and its branches, the shape of reticular and spider veins is like a patch.

Flow patterns of spider veins. There is a higher circulation in spider veins than in the surrounding skin. This means that in one third of spider veins, open AV shunts are present. In spite of this, in truncal varicosities the flow of blood is very slow, manouevres are necessary to see flow characteristics in them.

Recurrency rate. In spider vein cases there is a high recurrency rate of about 80 % in 5 years. In truncal varicosities this figure is about 5 %.

Conclusion. Are C1 and C2 two different diseases, or the same disease in two forms?

36. EIGHTEEN MONTH SINGLE CENTRE EXPERIENCE ON CYANOACRYLATE EMBOLIZATION OF N = 200 INCOMPETENT GREAT AND SMALL SAPHENOUS, TRIBUTARY AND PERFORATOR VEINS

Thomas Proebstle
Dept. of Dermatology, University of Mainz, Germany

Aim. A novel endovenous embolization technology based on N-Butyl-Cyanoacrylate (CA) has been approved in Europe in September 2011. Clinical experience in treatment of routine cases has been very limited until now. Particularly the treatment of small saphenous veins (SSVs), larger tributaries like accessory saphenous veins and perforator veins has not been reported.

Methods. Routine patients with clinically relevant venous reflux willing to cover the costs of this new technology were treated with CA embolization. Tumescent local anesthesia and post-interventional medical compression stockings were not used. Additionally visible varicose veins either were left untreated or were subject to adjunct foam sclerotherapy with 1% polidocanol.

Results. Two hundred incompetent veins were treated in 107 patients. In detail, n=144 GSVs, n=30 SSVs, n=18 accessory saphenous veins and n=8 other veins, consisting of smaller tributaries and perforators received CA embolization. Patients median age was 55 years [range 24-87], median treatment length was 37cm [1-70], corresponding to a median delivered CA volume of 1.26 ml [0.09-2.25]. Median follow-up was 6 month [0-18].

Immediate successful closure of all treated veins was demonstrated by duplex control ultrasound at 24h, no glue or thrombus extensions into the deep vein system were noted. In general, side effects were moderate, no paraesthesia and no severe adverse events were observed.

Conclusions. Endovenous CA embolization for incompetent saphenous, tributary and perforator veins proved to be safe and effective for routine patient treatment.

37. HEMODYNAMIC ASSESSMENT OF THE SAFETY OF VARICOSE VEIN REMOVAL IN THE PRESENCE OF DEEP VEIN OBSTRUCTION

Fedor Lurie
Jobst Vascular Institute, USA

Purpose: to present an algorithm of physiological testing to assess the potential impact of varicose vein removal in the presence of deep vein obstruction.

Material and methods: 35 healthy volunteers, and146 patients with femoral or popliteal vein occlusion who were studied with duplex ultrasound and APG, including the assessment of the GSV flow rate and the impact of the GSV occlusion. Each ultrasound scan included the assessment of flow ratios. The first series of 48 patients demonstrates changes in values during recanalization of acute thrombosis. The second series of 92 patients demonstrates safety of varicose veins removal when a physiological test prior to treatment predicted success. The third series of 6 patients demonstrates complications when removal of varicose veins was performed despite the results of physiological test suggesting hemodynamic disadvantage.

Conclusions: A combination of duplex ultrasound and APG provides sufficient information for decisionmaking in patients with varicose veins and deep vein occlusion.

38. VENOUS LEIOMYOMA –A RARE CAUSE OF VENOUS OBSTRUCTION

Cs Dzsinich, G Vallus, Gy Tóth, L Barta, G Darabos, G Nyíri
Department of Cardiovascular and Thoracic Surgery, Central Military Hospital, Budapest

Vascular leiomyomas may develop from smooth muscle cells of arteries and veins. This rare tumour of the venous wall has been published as single case reports or short series since its first description in 1871. The number of reported cases is estimated at about 350 cases in our days. The slowly developing solid mass may compromise the vicinity, stenose or obliterate the lumen of affected veins. Most the cases develop silently and are diagnosed incidentally. Surgical resection is superior to oncological treatment. Over the decades we have seen 5 cases, two in the inferior vena cava, two of the iliac veins and one of the common femoral veins. Only two tumours were palpable, others were detected by CT. Every patient underwent surgery and the tumours were removed with the affected venous segment. IVC was replaced by Gore graft tube in two and the external iliac and femoral vein each in one case. In one case the external iliac vein was replaced by a spiral venous graft created from a greater saphenous vein segment. All patients were put on long-term anticoagulation. There was no operative mortality. The occlusion of the reconstructed iliac vein segment occurred in one case. Local recurrence of tumour without obliteration was seen in one of the IVC patients 1 year after surgery without clinical signs or symptoms. Until now all of our patients are alive and are being followed carefully.

Although venous leiomyomas grow slowly , based on previous reports they are prone to recur even after many years, and finally may lead to a fatal outcome.

39. MY OWN EXPERIENCE IN THE USE OF SCLEROTHERAPY AND MINIPHLEBECTOMY AS AN ADDITIONAL PROCEDURE USED TO REMOVE VARICOSE VEINS DURING EVLT

Jaroslaw Kalemba
Izbicko, Poland

Background. EVLT needs additional procedures to remove varicose veins side branches. We can use sclerotherapy or miniphlebectomy.

Aim. The aim of the study is to present my own experience in the use of additional procedures after EVLT. The analysis is designed to help physicians who are starting to use the method to shorten *the period of the EVLT learning curve.*

Method. I analyzed EVLT treatments carried out in the period 2008-2014 and additional procedures used during surgery to remove varicose veins. I used sclerotherapy and miniphlebectomy in the same session.

Results. Initially, almost all patients had foam sclerotherapy performed. After the initial observations I started to use miniphlebectomy. When I compared the results, I decided to use miniphlebectomy as the the method of choice during EVLT.

Conclusions. Miniphlebectomy is the method of choice used during EVLT. A surgeon who begins EVLT does not have use sclerotherapy too often. The method of choice for the removal of varicose veins side branches is miniphlebectomy.

40. TREATMENT OF CAPILLARIES AND SPIDER VEINS

ZoltánVárady, Zoltán Böhm

Frankfurter Spezialklinik für Beinleiden, Frankfurt, Germany

Forms of spider veins: diffuse, straight, star-shaped, tree-branch, spider-shaped, venous-micro aneurysm.

Therapy 1. The usual treatment of capillaries is sclerotherapy with Polidocanol 0.25 – 0.5 %. Advantages: minimum expense, low costs, fast, "easy to proceed". Disadvantages: can ulcerate – reasons: too high concentration, injection beside the vein, faster injection, AV shunts.

Therapy 2. laser treatment. Problems with laser therapy: depigmentation, scarring and recurrent formation.

Therapy 3. Fotoderm treatment. Problems with fotoderm: ulcer after therapy.

Therapy 4. Micro-extirpation, multi-micro-incisions by the micro-surgical method according to Várady. Advantages: minimum expense, low costs, fast, "easy to proceed".

"Operation" technique. Incisions very close to each other, capillaries will be cut up, capillaries collapse and will become reabsorbed. Important: veins have to be cut completely through to little fragments with micro blades; do not puncture them irregularly but cut across the capillary veins. After few minutes the bleeding stops and the tiny capillary fragments are bloodless, empty, collapsed, without connection and pressure. For residual capillaries use sclerotherapy. The treatment can made just with micro blades 3 and 4 mm without anaestesia because these blades are very thin.

Results. Through the combination of sclerotherapy and "operative" procedures special capillaries with a large diameter can be treated in a better cosmetic way, with less pain and more effectively.

41. A PROSPECTIVE STUDY TO COMPARE CRYOSTRIPPING AND CONVENTIONAL STRIPPING

Gábor Menyhei, Endre Arató, Gábor Kasza, László Sinay, László Benkő, Gábor Fazekas

Department of Vascular Surgery, University of Pecs, Hungary

Objective. To assess the improvement in quality of life and complication rates in patients undergoing great saphenous vein (GSV) stripping using two different techniques, a single centre prospective randomized trial was carried out.

*Patients and methods.*160 patients with primary varicose veins and GSV incompetence were randomized to either conventional stripping or cryostripping combined with phlebectomy of varices. Quality of life was assessed as the primary outcome measure prior to surgery and 6 months later, using the SF-36 questionnaire. Operative data, pain score and procedure-related complications were evaluated as secondary outcome measures. We assessed the area of bruising and symptoms attributable to saphenous nerve injury.

Results. The number of completely analysed patients was 77 in the conventional stripping group and 69 in the cryostripping group. When comparing the preoperative SF-36 scores to the results after 6 months, there was an improvement in all eight domains, which reached statistical significance in six domains in both groups. The mean area of bruising measured in the thigh was significantly greater in the conventional stripping group (161cm^2 versus 123 cm^2, p=0.010). The number of patients with paraesthesia due to saphenous nerve injury was numerically lower in the cryostripping group at one week [15 (22%), versus 28 (34%), N.S.] but no difference was observed at 6 months. Postoperative pain score evaluation in the evening and 24 hours after the operation revealed no significant difference.

Conclusions. The study confirmed significant improvement in quality of life measured by SF-36 questionnaire after both conventional and cryostripping with no difference between the two stripping techniques. Cryostripping results in less bruising than conventional stripping.

42. EVLA vs MINI-PHLEBECTOMY OF THE EXTRAFASCIAL VEINS – WICH IS BETTER?

Parikov M.A.[1], Slavin D.A.[2], Kalitko I.M.[1], Astafieva E.V.[1], Gavva E.A.[1], Dolidze U.R.[1], Stepnov I.A.[1]

[1] *Innovative Vascular Centre, Saint Petersburg, Russia*

[2] *Aesthetic and Laser Technologies Clinic, Kazan, Russia*

EVLA is one of the most effective methods for the treatment of varicose veins. But in cases with the S-type of GSV incompetence of the thigh to avoid phlebitis and pigmentation, it was considered better to use mini-

phlebectomy. EVLA of these extrafascial veins leads to pigmentation, painful cord on the thigh and treated veins resolve very long. We suppose that this can be attributed to insufficient damage of the external layer of the vein (the incompletely damaged vasa vasorum). In our previous study we demonstrated that for full damage of the vein it is necessary for LEED more than 72 J/cm and EFE more than 33 J/cm^2.

Aim of the study. To compare results of EVLA and mini-phlebectomy of the extrafascial segments of GSV of the thigh.

Methods. In the study 40 patients (40 legs) were included with S-type of incompetence of the GSV. In all cases the extrafascial segment of GSV was straight and passed from the middle third of the thigh to the knee. In group A (N=20, f=14, m=6, mean age 43.4±10.2 y) was performed EVLA of GSV and EVLA of extrafascial segment on the thigh. The mean diameter of extrafascial part was 7.5±2,2 mm (6-14), length 25.3±6.2 cm (10-38 cm). In group B (N=20, f=15, m=5, mean age 42.1±12.1 y) was performed EVLA of GSV and mini-phlebectomy of extrafascial mean diameter of the extrafascial was 7.0±1.3 mm (5-10), length of segment 26.2±5.8 cm (18-39 cm). EVLA was performed on an ambulatory basis with tumescent anesthesia and diode laser 1470 nm (Ceralas 15E, Biolitec) and radial fibers (1 Ring, 2 Rings). We used continuous mode and automatic pull back speed 0.5-0.7 mm/sec. Before each procedure we measured the real level of power (powermeter «Ophir»). For the treatment of the intrafascial GSV we used standard parameters in both groups – power 6.0-8.0 W, speed 0.7 mm/sec, LEED 85-114 J/cm, EFE 32-56 J/cm^2. In group A for treatment of the extrafascial segment we used different power modes. The 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/cm^2 (32-56). In postoperative period we evaluated visual-analogue scales of the pain (days 1, 7, 30), hematomas, paresthesias, pigmentations, occlusion rate.

Results. In Group A (EVLA) we found significant reduction of postoperative pain and haematomas compare to Group B. The occlusion rate was 100%. There was no significant difference between groups in paresthesia and pigmentation rates. There were no serious complications in either group.

Conclusions. EVLA 1470 nm and radial fiber of extrafascial segments of the GSV with LEED more than 85 J/cm and EFE more 32 J/cm^2 was accompanied by significant reduction of postoperative pain and hematomas compared to mini-phlebectomy.

43. QUALITY OF LIFE ASSESSMENT IN PATIENTS AFTER ENDOVENOUS LASER THERAPY AND CONVENTIONAL SURGERY FOR GREAT SAPHENOUS VARICOSE VEINS

Robert Vlachovsky

2nd Department of Surgery, St. Anne's University Hospital, and Medical Faculty, Masaryk University, Brno; *Vein Surgery Center VASCUMED Ltd., Prague and Brno, Czech Republic*

Objective. Reduction of the symptoms associated with chronic venous insufficiency remains the main goal of conventional or endovenous varicose vein ablation. The venous clinical severity score (VCSS) was proposed in 2000 to assess the usefulness of an intervention in patients with chronic venous insufficiency. The validity of the score system was later evaluated and was confirmed by different groups and studies, and in 2007 was refined. Our prospective study was designed to compare quality of life outcomes following endovenous laser treatment (EVLT) and conventional surgery (CS) using the venous clinical severity score (VCSS).

Methods. Between September 2010 and December 2013, 194 patients were enrolled on the study and underwent surgery for varicose veins (97 laser ablations and 97 traditional surgical procedures). In both groups, preoperative VCSSs were recorded and clinical and duplex examinations were performed at 7 days, 4 weeks and 6 months after the procedure. VCSS scoring was repeated at follow-up visits. All endovenous procedures were perfomed with tumescent local anesthesia with 1470 nm laser (Biolitec Ceralas E 1470 nm/15W/400, CeramOptec GmbH, Bonn, Germany).

Results. In the CS group, the respective preoperative, 7 day, 4 week and 6 month VCSS scores were as follows, 8.1 ± 2.3 in 97 limbs, 6.0 ± 1.9 in 89 limbs, 5.4 ± 2.1 in 79 limbs and 3.5 ± 1.4 in 75 limbs. In the EVLT group, the respective preoperative, 7 day, 4 week and 6 month VCSS scores were 8.2 ± 2.4 in 97 limbs, 4.8 ± 1.9 in 91 limbs, 3.8 ± 2.0 in 84 limbs and 3.3 ± 1.4 in 79 limbs. VCSS scores were significantly better in the EVLT group than the CS group at 7 days and at 4 weeks ($P < 0.001$). At 6 months, no significant differences between the groups were evident.

Conclusion. Treatment of saphenous vein reflux with either procedure results in clinical improvement of symptoms but, in the early postoperative period, endovenous laser therapy removes quality of life limitations associated with conventional surgery. We found the VCSS to be an efficient tool in outcome assessment after varicose vein procedures.

44. IMPROVING THE DURABILITY OF VEIN TREATMENTS

Thomas L Eaton
Mequon, WI, USA

We are aware that thermal ablation techniques are superior to saphenectomy. Several studies have demonstrated the obliteration of the great saphenous vein more than 5 years after treatment.

Perrin et al. documented the disappointing surgical results in the Recurrent Varices After Surgery (ReVAS) document. Having specialized in the reconstructive treatment of the post-surgical vein patient, the author concludes that any vein treatment is subject to failure, and suggests the more appropriate abbreviation, ReVAT: Recurrent Varices After Treatment.

Saphenous reflux disease is a complex, progressive and mostly invisible condition. It is not simply a diseased organ, but a complex network of interconnected vessels representing both normal and pathological hemodynamics. The obliteration of several veins, either by stripping, phlebectomy or thermal ablation, does not necessarily correlate with treatment success, especially as determined by the patient.

This presentation will review the anatomical, hemodynamic and technical problems that may lead to early treatment failure, and the author's diagnostic and treatment protocol designed to increase durability of results and improve patient satisfaction.

45. HAEMODYNAMICS OF VARICOSITY AND CONSERVATIVE SURGERY.

F Passariello
Italy

46. VARADY'S MINISURGICAL CONCEPT.

Z Varady
Frankfurt am Main, Germany

Minisurgery on the one hand is a phlebectomy technique, and on the other hand a concept of atraumatic varicose vein treatment.

The first part is the phlebectomy technique. Many colleagues had thought of removing varicose veins through micro-incisions. Using more or less appropriate small hooks, doctors tried to extract varicose veins, without considering that veins are fixed in their surrounding tissue. Therefore neither the technique nor the instruments used were suitable to get any further with this problem. The modified instruments, the hook and the spatula, can be understood quickly and are easy to use, so could spread all over the world with great success. As a phlebectomy method, it can be used to treat adequate veins properly.

The second part is the minisurgical concept. This means it replaces stripping and sclerotherapy. The majority of patients suffering from varicose veins are women, and this implies that not only medical but also cosmetic aspects have to be considered in therapy. Often stripping is combined with fairly large and numerous cuts to extract branches. In many cases scars after traditional surgery are more annoying for the patient than the varicose veins were before the intervention. Besides that, many of them develop edema because of the destruction of lymphatic vessels. Therefore it is of the greatest importance to have one method in mind which contains both aspects.

More than 30 years ago I developed this method and instruments with the company, Aesculap. They were able to gain their place in surgery.

Thus more than 30 years ago a method was offered to specialists throughout the world which we cannot imagine being without. It was the first method based on surgical principles, together with matching surgical instruments, the Phlebextractor and the Phlebodissector, by which the modern mini-surgery of varicose veins could be established.

Only one doctor, who did not know my simple concept and method of phlebectomy, has developed the same thing under a new name. He believed he had discovered something new that the whole world has been using for over 30 years.

47. ASVAL METHOD: TECHNICAL ASPECTS AND EVIDENCE

P Pittaluga, S Chastanet
Riviera Veine Institut, Monte-Carlo (Monaco) France

Therapeutic principle. The ASVAL method (Ambulatory Selective Varices Ablation under Local anaesthesia) is based on the ascending theory for the evolution of venous insufficiency with two consequences:

– If there is no saphenous reflux, early treatment of varicose veins (VVs) would be useful in order to prevent extension of the reflux to the saphenous vein (SV).

– If there is saphenous reflux, and up until a certain stage of the disease, the first line therapy should include ablation of the varicose reservoir (VR) and not the ablation of the SV for which the reflux is potentially reversible.

Saphenous stripping or endothermal ablation would only be indicated in cases for which saphenous reflux seems to be irreversible. ASVAL rejects the systematic crossectomy and stripping and promotes the removal of the VR by phlebectomy, in order to preserve the physiological role that the SV can play in superficial drainage.

Evidence. The medium-term results of a cohort of 303 lower limbs treated by ASVAL showed a major improvement in saphenous hemodynamics in 90% of cases compared to the preoperative values up to 4 years of follow-up, with an improvement or a disappearance of symptoms in 80 to 90% of cases, a cosmetic benefit in 90% of cases, and a varicose recurrenc rate of 11.5% at 4 years. The recurrenc rate for the ASVAL method is not higher than for techniques which involve removal of the SV, when there is

only partial SV reflux and when the SV is only moderately dilated.

Two prospective studies have shown the significant effect of phlebectomy for the reduction of the diameter and for the abolition of the reflux of the SV. In addition, the benefit of ASVAL for nullipara patients has been reported for the reduction of complexity, signs and symptoms in the event of VVs recurrenc after pregnancy. A retrospective study of 1,010 lower limbs treated by ASVAL and followed-up for a mean period of 36.6 months found that the limbs with recurrent VVs had a preoperative VR which was significantly larger, especially below the knee.

This observation supports the theory of the ascending development of varicose disease which is increasingly gaining ground in the scientific community. However, the indications of ASVAL treatment need to be made more precise by longer follow-up periods and randomized controlled trials.

48. LONG-TERM RESULTS OF EXTERNAL VALVULOPLASTY WITH THE VENOPATCH® IN THE TREATMENT OF GREATER SAPHENOUS VEIN INSUFFICIENCY

C Dresler, V Bauer

Lymph- und Venenzentrum Northeim, Germany

Introduction. External banding valvuloplasty (EV) of the great saphenous vein (GSV) in patients with varicose veins is an alternative procedure to classic surgery or endovenous ablation therapy. The present study evaluated the effectiveness of external valvuloplasty in selected patients with an insufficiency of the GSV after a mean follow-up 47.5 months.

Methods. 412 EV were performed on 320 patients between 1.1.2009 and 31.12.2013. All operations were combined with stab avulsions if an accompanying non-saphenous varicosity was present. The operations were performed by 2 surgeons. Patients with a terminal or preterminal valvular incompetence of the GSV due to a valvular annulus dilatation and a normal valvular cusp on duplex ultrasound were included. One subgroup were patients with postthrombotic syndrome. Excluding criteria were congenital vascular malformation or active phlebitis. All operations were performed under spinal anaesthesia or tumescent anaesthesia. All patients received postoperative antibiotics. Follow-up examinations were performed with duplex ultrasound after 1 month, 6 months, 1 year and later on an annual basis.

Results. Between the operation and the final follow-up 35 limbs (8,5%) showed recurrent varicosity. In one patient a reoperation was necessary so far. The diameter of the GSV at 15 cm distal from the influence into the femoral vein was reduced from 5.8 to 4.4 mm. At 5 cm proximal from the knee the diameter was reduced from 4.9 to 4.2 mm. Clinical symptoms of venous insufficiency improved in 92% of the patients. No intraopertive complications occurred in any of the operations. Major complications like deep venous thrombosis, pulmonary embolism or graft infection did not occur.

Conclusion. GSV-sparing surgical procedures with external banding valvuloplasty is a safe and effective surgical method with acceptable rates of recurrent varicosity in selected patients. EV improves the symptoms of venous insufficiency and venous functions. Additionally it preserves the GSV for future use as a conduit of bypass surgery.

49. A NEW VENOUS VARICOSITY MODEL IN RAT: COMBINED EFFECTS OF ORTHOSTASIS AND CHRONIC PARTIAL OCCLUSION OF SAPHENOUS VEIN

Dörnyei G.[1], Sevcsik O.[1], Jäckel M.[2], Monos E.[3] and Nádasy G. L.[3]

[1]Department of Morphology and Physiology, Institute of Basic Health Sciences, Semmelweis University,
[2]National Health Center, Department of Pathology,
[3]Institute of Human Physiology and Clinical Experimental Research, Faculty of Medicine, Semmelweis University, Budapest

Background. With prevalence of up to 40% in females, 17% in males, chronic venous disease is among the most frequent pathological states in Western societies. Many components of the underlying pathomechanism, however, are still not well understood. We report here, how a new varicosity model was developed in the rat in which the chronic partial occlusion of the main branch of the saphenous vein (to induce hemodynamic disturbance) was combined with maintaining the animals in tilted tube-like cages (to elevate venous pressure in the leg).

Methods. In male Wistar rats (190-210 g), silicon clips (restricting outer diameter to 500 m) were placed around the main branch of the left saphenous veins. The right saphenous veins were considered as controls. Chronic partial occlusion of the saphenous vein was carried out for 4-8-12 weeks either separately or in combination with chronic orthostatic load during the last 4 weeks of occlusion. In order to elevate gravitational load rats were kept in tube-like cages tilted at 45 degrees head-up position. In separate groups of animals, 4-week orthostasis was applied either without occlusion or right after wound healing following occlusion surgery. At termination of study Batson 17 plastic fluid was injected into a popliteal side branch which refilled the saphenous vein and its collateral vessels. After consumption of the hind limb tissues (2 weeks, 10% KOH) the collateral network became visible. Surface of frontal projection of the coloured plastic network casts was measured (Leica QWinV3 software) to elucidate the size of the collateral vessel network.

Results. A remarkable collateral vessel network developed upstream in the vicinity of the chronic stricture leading away from the saphenous vein in response to

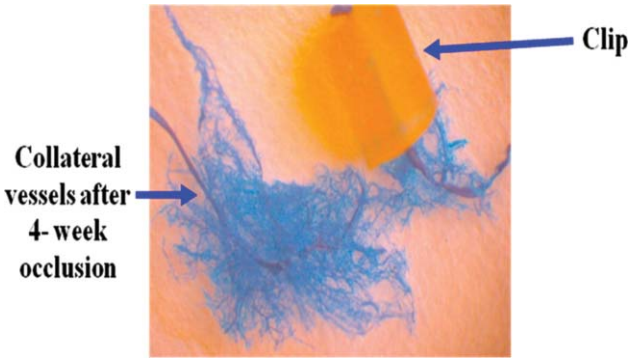


Fig. 1. *Batson's cast after 4-week occlusion*

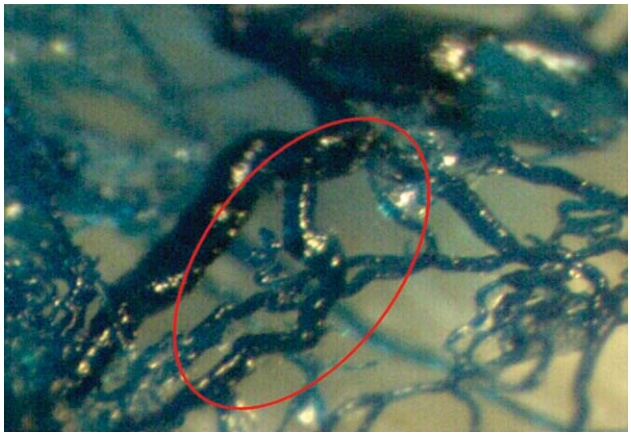


Fig. 2. *Tortuous, dilated venous segments resembling human varicosity specimens.*

4-week occlusion (frontal projectional area, 9.5± 2.9 x10^6µm^2 Fig. 1.). After 8-and 12-week occlusion, the size of the venous network was significantly enhanced (21.9±9.7 and 41.5 ± 12.7 µm^2x10^6, respectively). Maintenance in tilted cages alone did not result either in the development of collaterals or the appearance of a varicose morphology also the combination of venous occlusion with 4-week orthostasis also did not affect the extension of the collateral network either in the earlier- (4-8-week) or in the later (8-12-week) phase of vessel development.

However, gravitational load applied right after the venous occlusion induced the development of significantly greater collateral network compared with occlusion itself (occlusion: 10±3 vs. occlusion+tilt: 205±60×10^6 µm^2). Moreover, already after 4 weeks, tortuous, dilated venous segments appeared, resembling human varicosity specimens (Fig.2.).

Conclusion. Our studies show that the double requirement of adapting to altered flow and to altered pressure at the same time results varicose remodeling in the superficial venous system of the rat leg. Simultaneously appearing pressure and flow loads, exceeding genetically inherited adaptation limits, might be responsible for the development of the disease in humans.

50. INTRODUCTION TO THREE-DIMENSIONAL REGENERATIVE AMBULATORY PHLEBOTHERAPY (TRAP)(VIDEO)

Sergio Capurro
Genova, Italy

Current treatments for varicose disease, the most common disease on earth, are not rational. Varicose veins, venules and telangiectasias must not be excised, obliterated, ligated or burnt; they simply have to be treated. Sclerotherapy, phlebectomy, saphenectomy, laser therapy, treatment with high-frequency current and functional ligature all damage the integrity of the venous circulation. Moreover, they fail to achieve the patient's objectives: functional restoration of the circulation and the permanent disappearance of visible vessels. These traditional therapies – sclerotherapy, phlebectomy, saphenectomy and laser therapy – act on the effect of the disease, not on its cause. Removing or obliterating the effect without treating the anatomical cause of the varices cannot cure varicose disease. Indeed, obliterating or removing dilated superficial veins, as the traditional methods do, simply means eliminating the "escape valve" of haemodynamic hypertension that the traditional techniques are unable to cure. Removing or obliterating this escape valve will merely generate further varicose veins and telangiectasias. Obviously then, the patient is not cured. In order to cure varicose veins, we must consider that varicose disease is caused by a congenital weakness of the venous wall, which involves all the veins of the perforating and superficial circulation. Thus, in order to cure varicose disease, the venous walls have to be treated. This treatment must not be limited to a localised area. A genuine cure for varicose disease must involve strengthening the walls of all the veins of the superficial and perforating circulation. Only a three-dimensional treatment that extends to all the vessels of the superficial and perforating circulation in the three regions of the limb can be effective: visible vessels disappear from view; the legs no longer feel heavy; progression of the varicose disease is halted, and ulcers caused by stasis and haemodynamic hypertension heal within a few sessions. In addition, all this is achieved without the complications caused by the traditional methods.

Three-dimensional Ambulatory Regenerative Phlebotherapy (TRAP) is not a mechanistic treatment, but a biological one. Mechanistic treatments are unsuited to biological matter.TRAP is based on simple, rational physiopathology and on a new concept. A solution of sodium salicylate in a buffered hydroglycerine vehicle is used to regenerate the veins. Sodium salicylate is an ancient and safe active principle. This regenerative solution travels in the opposite direction to the formation of the varices. The solution is injected into the dilated veins that are visible to the naked eye or through the new means of illumination and reflection and absorption that are now available, and into the capillary telangiectasias. The solution spreads more

easily through the most dilated or dilatable vessels and exerts its therapeutic action on the endothelium of the non-visible perforating veins, which are the most frequent cause of varicose disease. Indeed, dilation of the perforating veins is responsible for the formation both of the superficial varices that are visible to the naked eye and of those which are visible only by means of the new optical diagnostic techniques. The walls of the "regenerated" veins are strengthened and their function is restored. Regeneration means restoration of the structure and function.

Current phlebological treatments do not work because they do not address the true cause of varicose disease; they only treat the effect of the disease, while neglecting its anatomical cause, which is the dilation of some of the 200/300 perforating veins of the lower limb. This dilation leads to valvular incontinence and haemodynamic hypertension in the superficial circulation. Another reason why current phlebological treatments do not work is that they only treat small portions of the circulation. All the veins of the lower limbs are interconnected and the weakening of the vessel walls extends to the entire superficial, perforating and communicating circulation. It therefore follows that the entire circulation must be treated.

Some concepts

– We do not treat the varices but the hemodynamic hypertension.

– If we treat the haemodynamic hypertension, we also treat the increase in hydrostatic thrust (which causes stasis ulcers).

– The main causes of varicose disease are prolonged standing and congenital weakness of the walls of the superficial and perforating veins.

– TRAP treats the venous walls, thereby regenerating the veins of the superficial and perforating circulation.

– Regeneration means restoring the structure and function

– According to TRAP, ectatic veins must not be stripped out or obliterated, but simply treated.

– A large varix is not a local phenomenon; rather, it represents the point of greatest weakness of a three-dimensional system that extends to all three regions of the limb.

– It is obvious that stripping out or obliterating veins cannot cure varicose disease.

– The mechanistic approach, with all its haemodynamic studies, is clearly unsuited to the treatment of a complex biological apparatus which, precisely because it is biological, can easily be regenerated. In this way, its native function is restored.

– A three-dimensional disease cannot be treated by two-dimensional methods.

– The visible vessels are the gateways through which the regenerative solution reaches the perforating and communicating veins.

– The classical phlebological culture is not only unnecessary; in certain cases, it may hinder the proper execution of TRAP, owing to the errors that have been handed down from one generation to the next.

– Varicose disease must be looked at from the biological, not mechanistic, point of view.

– The superficial veins disappear from view once we have corrected the incontinence of the perforating veins in all three of the regions into which the leg is divided.

– The saphenous vein is innocent. Many people are born without valves in the saphenous vein, and yet they do not develop varicose disease.

– TRAP is able to cure venous disease of any severity.

– TRAP is difficult to understand if one does not realize that there is no etiopathogenic difference between a large varix and a telangiectasia.

– Standing erect has caused the lower limbs to become a pump that is destined to work badly. For this pump to function properly, the veins absolutely must not be visible. Man can correct nature's imperfections.

The technique. TRAP utilises a non-obliterative solution of 3% sodium salicylate in a buffered hydroglycerine vehicle. The solution is injected into all the "gateways" that are visible to the naked eye or by means of transillumination and the new optical means of near-infrared reflection and absorption. These so-called gateways are reticular veins, truncal veins, perforating veins, venules and telangiectasias. In practice, the regenerative solution flows in the opposite direction to that of the formation of varices and telangiectasias. The operator must always bear in mind that even the smallest telangiectasia is the result of hemodynamic hypertension and, as such, must be injected.

How much solution should be injected? About 50 ml. The regenerative solution should act upon the largest possible endothelial surface. Thus, if the plunger of the syringe does not encounter resistance, a maximum of 10 ml of solution may be injected during each single injection. By contrast, if resistance is felt, a small amount of solution will be injected. The solution enters the circulation of the superficial vessels and travels in depth through the most dilated vessels, strengthening their walls and reducing their calibre until continence is restored. If the plunger of the syringe encounters little resistance, the quantity of solution injected must be sufficient to act upon the walls of the non-visible veins and the perforating and communicating veins and to reach the deep veins. If there is a large varix in a region of the lower limb, this region must be treated after the other regions. You must consider the escape valves! Elastic compression is very important in order to stabilise the anatomical result.

Discussion. In a complex circulation, such as that of the lower limbs, what better approach could there be than to administer treatment through the superficial vessels, so that it can spread in pyramid fashion throughout the miopragic circulation, thereby regenerating it? Naturally, this therapy must not only be three-dimensional; it must also be extended to the entire limb: i.e. to the superficial, perforating and communicating circulation in all three

regions. If treatment is limited to an area where the veins are visible to the naked eye and does not involve the whole circulation, it will be inefficacious. If hemodynamic hypertension is not eliminated in all three regions of the limb, the result will not be stable over time. All three regions are interconnected. The instability of a treatment that is limited to one area stems from the fact that the untreated hypertension in other regions prevents the proper regeneration of the portion of the circulation that has been treated.

The lack of effectiveness of sclerotherapy and phlebectomy lies not only in the fact that they act on the effect and not on the anatomical cause of the disease, but also in the fact that they act upon a limited portion of the circulation and that this portion remains subject to the pressure exerted by the untreated regions. Then again, we cannot obliterate or strip out all the veins; what we can do is treat them. For these anatomical and hemodynamic reasons, TRAP treats one limb at a time normally, the limb with the most evident disease is treated first. The reason for this is that it is advisable to achieve valvular continence in the shortest possible time. Indeed, no more than five weeks should elapse between one treatment session and the next. Furthermore, when the limb that displays the most evident disease is treated first, the result can, if necessary, be perfected when treatment of the contralateral limb is started.

What does the regenerative solution do when it comes into contact with the endothelium? First, it causes a lesion of the venous wall this is a perfectly calibrated lesion which stimulates endogenous currents. This phase is followed by inflammation, which is a key event in the regenerative process. The inflammatory cells, neutrophils and M1 macrophages already present in the ectatic venous wall are activated and very soon cleanse the tissue of necrotic cells. By contrast, the M2 macrophages produce anti-inflammatory cytokines and activate the stem-cell component. Sodium salicylate strongly inhibits COX-2 synthesis, thereby eliciting a potent stimulatory action on the stem cells and strengthening the connective framework; this latter action has recently been demonstrated.

Conclusion. Now that we have seen some of the key concepts of TRAP, it is time to look at the treatment itself and the tricks of the trade which enable success to be achieved. What does achieving success mean? It means eliminating the sensation of heavy legs and healing any ulcers that may be present within a few sessions. All the visible vessels must disappear from view, without complications and without too much discomfort for the patient; moreover, the result must be stable over time. First of all, it must always be borne in mind that TRAP is a method of regenerating the venous walls it is able to treat any pathology. In addition TRAP is also able to prevent the onset of varicose disease – and prevention is always better than the cure. When treating mild disease, TRAP plays both a curative and a preventive role. We must remember that we are using a sclerosing solution diluted to a non-obliterative concentration: a 3% solution of sodium salicylate which does not give rise to post-sclerotherapy pigmentation or ulcers.

In summary, TRAP treats varicose disease in a holistic manner. In our view, focusing on the individual vein or varix is limiting. Indeed, we do not aim to treat the varices themselves, but to eliminate the haemodynamic hypertension in the limb this is done by treating the walls of the veins of the superficial, perforating and communicating circulation. A large "escape valve" should not be injected during the first treatment sessions; it should be injected when the hypertension of the circulation has already been alleviated and the varix is less tense. Varicose disease should be regarded as a "disease", or rather a dysfunction that is present in 100% of elderly people. The lower limbs contain 80% of the blood in the body. As we get older, the capacity of the venous circulation increases, the velocity of circulation slows down and the lateral thrust is increased. The blood that stagnates reduces the oxygenation and trophism of our organs at a time of life when we have the greatest need. By reducing the capacity of the circulation, TRAP restores proper venous return.

Reducing venous hypertension also has an impact on the arterial microcirculation, thereby eliciting beneficial effects on the circulation of the blood in the entire organism. Naturally, this benefit is also local. For example, even diabetic ulcers heal rapidly, though they require more treatment sessions than ulcers due to hydrostatic thrust, which can be cured in only two sessions.

51. LONG-TERM RESULT OF SAVING THE GREAT SAPHENOUS VEIN

Imre Bihari
Budapest, Hungary

Aim. The GSV is recommended to be preserved to be kept for a possible bypass operation in the future and to minimise varicose vein surgery. Has it been successful in the last 30 years?

Methods. Our methods were: complete and incomplete ligature of the SFJ and distant sclerotherapy.

Results. Our methods were effective for about 5 years.

Conclusion. The main aim of great saphenous vein preservation is its usage as a bypass material. Treatment of the great saphenous vein is recommended only if it is varicose, the normal vein must be kept untouched. It seems that the timespan, about 20 years between varicose vein and bypass surgery, is too long to save a non-healthy vein in a patient who is prone to varicose vein disease. It seems the subject of debate is the femoral part of the great saphenous vein, because the crural part in most cases is healthy. Femoral part preservation is recommended if the patients's atherosclerosis is known at the time of varicose vein surgery. A question for the future is whether new methods such as different medicines and angioplasty or stent implantation will be used instead of bypass surgery?

Hands-on course
Endovascular Varicose Vein Treatment

Venue: Novotel Budapest Centrum, Hungary, Another Phlebology Symposium

Time: 2.00 – 5.45 pm, 10 October 2014

Organiser: Gabor Menyhei, MD, PhD, President of the Hungarian Society of Angiology and Vascular Surgery, Professor and Head of the Vascular Surgical Clinic at the University of Pécs, Hungary

Maximum **number of students** is 20. They are ranked into 4 person groups and go around the tables instruments where the instruments are displayed

The aims of this course are:
- to demonstrate the new instruments for treating varicose veins
- to study these devices
- to know the mechanism of their action and the details of their application
- to have the opportunity to practise using them with the guidance of a tutor
- to get answers to different questions about their short and long-term results and so on

Program
Introduction
- Ultrasound examination – Tutor: **E Dosa**
- Laser surgery of varicose veins – Tutor: **F Sandor**
- Radiofrequency endovascular treatment – Tutor: **F Zernoviczky**
- Foam and liquid sclerotherapy of varicosity – Tutor: **L Boros**
- ClariVein occlusion of varicose saphenous stems – Tutor: **A Szabó**

Price: 150 Euros

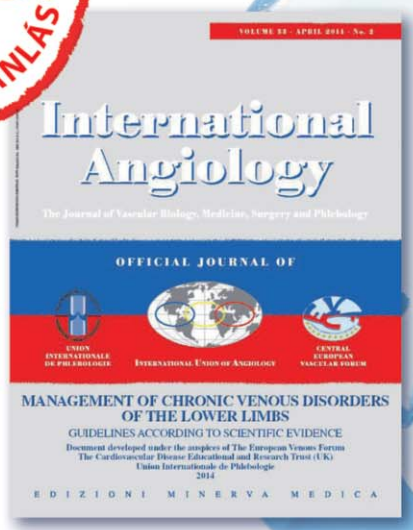
ÉRBETEGSÉGEK • *THE HUNGARIAN JOURNAL OF VASCULAR DISEASES*

A Magyar Angiológiai és Érsebészeti Társaság, valamint a Magyar Cardiovascularis és Intervenciós Radiológiai Társaság tudományos folyóirata
Scientific Journal of the Hungarian Society for Angiology and Vascular Surgery and of the Cardiovascular and Interventional Radiological Society of Hungary
FŐSZERKESZTŐ: DR. BIHARI IMRE • ISSN 1218-36-36

Kiadja az ANGIOLÓGIAI Kft. Felelős kiadó: az ANGIOLÓGIAI Kft. ügyvezető igazgatója.
Szerkesztőség címe: 1081 Budapest, Népszínház u. 42-44. Tel./Fax: 3345-468.
Tervezőszerkesztő: Kincses Gábor • Nyomdai munkák: Printmedia Com Kft.
Honlap: http://www.erbetegsegek.com/

Gyors, hatékony tünetcsökkentés és tartós vénavédelem[2-6]

EGYEDI ERŐS SZAKMAI AJÁNLÁS[1]



ÖSSZETÉTEL EGYEDI MIKRONIZÁLT FORMA[4,6,7]

A vezető vénavédő gyógyszer[1]

Magyarország átfogó egészségvédelmi szűrőprogramja 2010 – 2020
Egészségvédelmi Szűrőprogram
Egészség mindenek előtt...

Magyarország átfogó egészségvédelmi szűrőprogramjának Főtámogatója

SERVIER

1 – IMS Dataview 2014. máj. LC Sales Ex-MNF **2** – Nicolaides AN, et al. Management of Chronic Venous Disorders of the Lower Limbs. Guidelines According to Scientific Evidence. *Int Angiol*. 2014;33:87-208. **3** – Cospite M. *Angiology*. 1994;45(6):566-573. **4** – Lyseng-Williamson KA, Perry CM. *Drugs*. 2003; 63(1):71-103. **5** – Kristóf V. *Praxis*. 2010;19(1):61-66. **6** – Pascarella L. *Curr Pharmaceutical Design*. 2007;13:431-444.

Detralex 500 mg filmtabletta

Hatóanyag: 500 mg tisztított és mikronizált flavonoid frakció (amely 450 mg diozmint és 50 mg heszperidinben kifejezett egyéb flavonoidot tartalmaz) filmtablettánként. **Terápiás javallatok:** Az alsó végtag krónikus vénás elégtelenségének kezelésére az alábbi esetekben: nehézláb érzés, feszülés, fájdalom, éjszakai lábikragörcs. Akut haemorrhoidalis krízis tüneti kezelése. **Adagolás és alkalmazás:** Napi 2 tabletta, délben és este, 1-1 tabletta étkezés közben. *Haemorrhoidális krízis esetén:* 4 napon keresztül napi 6 tabletta, majd további 3 napon keresztül napi 4 tabletta, két részletben bevéve, étkezés közben. **Ellenjavallatok:** A készítmény hatóanyagával vagy bármely segédanyagával szembeni túlérzékenység. A Detralex tabletta szedése 18 év alatti gyermekeknél és serdülőknél nem ajánlott, mert a biztonságosságra és hatásosságra vonatkozóan nem állnak rendelkezésre adatok. **Különleges figyelmeztetések és az alkalmazással kapcsolatos óvintézkedések:** Akut haemorrhoidalis epizódban a gyógyszer adása nem helyettesíti az analis betegségekben alkalmazott egyéb specifikus gyógyszerek adását. Ha a tünetek a rövid távú kezelés hatására nem javulnak, proctologiai vizsgálatot kell végezni, és a terápiát felül kell vizsgálni. **Gyógyszerkölcsönhatások és egyéb interakciók:** gyógyszerkölcsönhatásokat nem jelentettek. **Termékenység:** részletek a teljes alkalmazási előírásban. **Terhesség és szoptatás:** Kezelés kerülendő, nem javallt. **A készítmény hatásai a gépjárművezetéshez és gépek kezeléséhez szükséges képességekre:** részletek a teljes alkalmazási előírásban. Nemkívánatos hatások, mellékhatások: *Gyakori:* hányinger, hányás, hasmenés, emésztési zavarok. *Ritka:* fejfájás, szédülés, rossz közérzet, bőrkiütés, viszketés, csalánkiütés. *Nem gyakori:* colitis. Nem ismert: hasi fájdalom, izolált arc-, ajak-, szemhéjödéma. Kivételes esetben Quincke-ödéma. **Túladagolás:** túladagolásról nem számoltak be. **Farmakodinámiás tulajdonságok:** A Detralex tabletta a vénásrendszerre érvédő és értónus javító hatású: gátolja a vénák kitágulását és csökkenti a vénás pangást. A mikrocirkuláció területén csökkenti a kapilláris permeabilitást, és növeli a kapilláris ellenállást. **Kiszerelés:** Detralex 500mg filmtabletta 30x, 60x. Alkalmazási előírás OGYI-eng. száma: OGYI/50749/2013 (2014.02.04). Kiadhatóság: I.csoport. Orvosi rendelvény nélkül is kiadható gyógyszer (VN). A Detralex 500 mg filmtabletta 30x javasolt bruttó fogyasztói ára: 2991 Ft (2014.04.01-től). A Detralex 500 mg filmtabletta 60x javasolt bruttó fogyasztói ára: 5093 Ft (2014.04.01-től). Rövid alkalmazási előírás. A készítmény alkalmazása előtt tanulmányozza a teljes alkalmazási előírást! Ez az információs anyag kizárólag gyógyszer, gyógyászati segédeszköz rendelésére, használatának betanítására és forgalmazására jogosult egészségügyi szakemberek részére készült.

15 DETLX 1 AH 1/20140725

Servier Hungária Kft.
1062 Budapest, Váci út 1-3. • Telefon: 238-7799 • www.servier.hu