



EUROPEAN VENOUS FORUM

16TH ANNUAL MEETING

July 2-4, 2015

Venue: Holiday Inn Moskovskoye Vorota

SAINT PETERSBURG

SCIENTIFIC PROGRAMME AND BOOK OF ABSTRACTS

under the Presidency
of Prof. Evgeny Shaydakov

www.europeanvenousforum.org



SPSP

Saint-Petersburg
Venous Forum



Association
of Phlebologists
of Russia

EDIZIONI MINERVA MEDICA



16th Meeting of the European Venous Forum

2-4 July, 2015
St. Petersburg, Russia

Holiday Inn St. Petersburg Moskovskye Vorota,
Moskovsky Prospekt 97,
St. Petersburg 196084
Russia

**SCIENTIFIC PROGRAMME
AND BOOK OF ABSTRACTS**



EDIZIONI MINERVA MEDICA

Under the auspices of:

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Union Internationale de Phlébologie – International Union of Phlebology

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WELCOME MESSAGE

Dear friends and colleagues,

On behalf of European Venous Forum and Saint-Petersburg Venous Forum we welcome you to the EVF 2015, which is held in the historical centre of Saint-Petersburg, universally recognized as the cultural and scientific capital of Russia.

The dynamic progress of phlebology in the last decades impelled us to speak almost all languages. The European Venous Forum (EVF) harmoniously fits into the list of the most important international meetings devoted to venous disorders and gather not only phlebologists but many other doctors and specialists. Trauma surgeons, gynaecologists, internists, general surgeons, haematologists, morphologists, general practitioners and cosmetologists become more and more interested in the pathophysiology, diagnosis and treatment of venous disorders. At the beginning of July during the famous white nights of Saint-Petersburg will share with you the magnificence of its palaces and parks, Hermitage Brilliant Hall and the unique Amber Room. We are planning to organize cultural events for participants as well as for their relatives and friends who are often unfairly forsaken at the time of hot scientific discussions. Saint-Petersburg's beautiful suburbs and tours through rivers and channels will present you the fascinating world where stones, water and classical music represent a unique harmony. We expect about 500 delegates from all over the world. Debates in all fields of modern phlebology are anticipated.

The scientific committee has selected valuable studies advancing our understanding of the pathogenesis and treatment of venous disorders. Certainly, the best studies from national phlebology associations will be included. This year, we have included electronic presentations to the scientific programme. The presentations will be available to view on screens situated within the exhibition area. On Friday 3 July at 15.30, the electronic presentations will be viewed by the judging panel and a prize awarded to the top presentations.

Presentations in the following sections will be subjected to a stimulating discussion and constructive criticism:

- acute venous thrombosis and postthrombotic syndrome;
- minimally invasive endovascular techniques in phlebology;
- conservative treatment of deep vein thrombosis;
- deep vein reconstructive surgery;
- venotonic drugs;
- compression therapy.

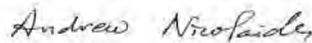
Didactic sessions will be combined with lectures by leading specialists in the field. The Key-Note lecture of Professor Bo Eklof who has been leading our attempts to develop phlebology in the world for many years will become the bright quintessence of the scientific programme.

The traditional gala-dinner will take place in Peterhof. After the tour of the Great Palace the beautiful world of Peter the Great fountains will open for us to the sound of classical music. At the end of the evening, two gold medals established by the Saint-Petersburg Society of Phlebologists will be granted for the "Best achievements in phlebology". Dear friends, we live in the wonderful time of changes when the world becomes more democratic and multipolar. I truly believe that the art of medicine should gather people of all races and nations for the sake of peaceful progress. We hope you enjoy EVF-2015 and have plenty of opportunity to discuss major problems of phlebology, communicate in informal atmosphere and become imbued with the beauty and glory of one of the most beautiful cities in the world.

Sincerely,



Evgeny Shaydakov
President-Elect



Andrew Nicolaidis
Chairman

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DATE FOR YOUR DIARY!

6th EVF HOW - Hands-on Workshop on Venous Disease
 Krakow, Poland, 22-24 October 2015
www.evfvip.com

17th annual meeting of the European Venous Forum
 London, UK, 7-9 July 2016
 under the Presidency of Professor Andrew Bradbury
www.europeanvenousforum.org

ANNUAL MEETINGS/PAST PRESIDENTS

Inaugural Meeting, 29 June – 1 July 2000	Lyon, France	Michel Perrin
2nd Meeting, 13-14 September 2001	Rome, Italy	Claudio Allegra
3rd Meeting, 14-16 June 2002	Berlin, Germany	Ulrich Schultz-Ehrenburg
4th Meeting, 27-29 June 2003	Lisbon, Portugal	Jose Fernandes e Fernandes
5th Meeting, 25-27 June 2004	Warsaw, Poland	Arkadiusz Jawien
6th Meeting, 24-26 June 2005	Crete, Greece	Asterios Katsamouris
7th Meeting, 29 June-1 July 2006	London, UK	Alun Davies
8th Meeting, 29 June-1 July 2007	Istanbul, Turkey	Mehmet Kurtoglu
9th Meeting, 26-28 June 2008	Barcelona, Spain	Marc Cairols
10th Meeting, 5-7 June 2009	Copenhagen, Denmark	Neils Baekgaard
11th Meeting, 24-26 June 2010	Antwerp, Belgium	Marianne DeMaeseneer
12th Meeting, 30 June-3 July 2011	Ljubljana, Slovenia	Pavel Poredos
13th Meeting, 28-30 June 2012	Florence, Italy	Giovanni Mosti
14th Meeting, 27-30 June 2013	Belgrade, Serbia	Dragan Milic
15th Meeting, 26-28 June 2014	Paris, France	Jean-Luc Gillet

EUROPEAN VENOUS FOUNDATION

The European Venous Foundation, a UK registered charity (number 1100372) has been established to promote research into the causes, effects, treatment and management of venous disease and to support the work of the European Venous Forum. Further details can be found from the EVF Office.

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CONGRESS INFORMATION

CONGRESS DATES AND TIMES

Thursday 2 July, Friday 3 July, Saturday 4 July 2015

CONGRESS VENUE

Holiday Inn St. Petersburg Moskovskye Vorota,
Moskovsky Prospekt 97°,
St. Petersburg 196084
Russia

REGISTRATION DESK

The Registration Desk will be open at the following times:

Wednesday 30 June	16.00 - 18.00
Thursday 2 July	07.30 - 18.00
Friday 3 July	07.30 - 18.30
Saturday 4 July	07.30 - 16.30

ON SITE REGISTRATION

On site Registration will be available.

EVF Member	£450
Non Members of the EVF	£550
Trainees	£300
Congress Dinner	£120

Refreshments and lunch

Coffee breaks and lunch will be held in the Exhibition Areas

Registration Fee includes:

Congress bag, Welcome Reception, Refreshments and Lunch, Certificate of Participation

SOCIAL PROGRAMME

Opening Ceremony and Welcome reception

Thursday 2 July 2015: 18.00

Exhibition Area,

Holiday Inn St Petersburg Moskovskye Vorota

Join us and your friends, colleagues and exhibiting companies at the Welcome Reception in the Exhibition Area. This event is free of charge for all registered delegates and exhibiting companies.

GALA DINNER

Friday 3 July 2015

Peterhof Palace

Cost: £120 per person (inclusive of transfers, tour, dinner, and entertainment).

The Gala Dinner will take place in Peterhof Place.

The evening will commence with a tour of the Great Palace and the beautiful Great Fountains of Peter the Great.

The dinner will be followed by the award ceremony of two gold medals established by Saint-Petersburg Society of Phlebologists for the "Best achievements in phlebology".

Departure will be at 17.00 from the hotel.

Dress: Informal.

CONGRESS LANGUAGE

The official language of the congress is English. Simultaneous translation will not be provided.

CERTIFICATE OF ATTENDANCE

A certificate of attendance will be available at the registration desk upon completion of the Evaluation Form.

ACCREDITATION

An application has been made to the EACCME® for CME accreditation of this event

BADGES

Please wear your badges at all times.

MOBILE TELEPHONES

For the courtesy of the speakers and fellow delegates, please ensure that your 'phone is switched off during lectures.

LIABILITY AND INSURANCE

Neither the Organisers nor the Conference Secretariat will assume any responsibility whatsoever for damage or injury to persons or property during the Conference.

Participants are recommended to arrange their personal travel and health insurance.

CHANGES

The Organisers reserve the right to adjust or change the programme as necessary.

USEFUL PRACTICAL INFORMATION

CURRENCY

By law, you can only use rubles to pay for goods and services in St. Petersburg. There are many currency exchange offices in the center of the city, though you should pay attention to the fixed commission being charged and consider the special rates offered for the exchange of large sums. As a rule, the worst rates are available at large banks and Sberbank in particular. Do not exchange money with private individuals. Bank offices are open from 9 am till 8 pm.

CHEMISTS

Chemists are usually open from 9am till 9pm.

Some are closed on Sundays and some Mondays. However, details of the nearest open chemist is displayed on the door.

EMERGENCY SERVICES

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Fire Brigade:	01 (from a mobile phone +7 812 01)
Ambulance:	03 (from a mobile phone +7 812 03)
Medical help:	003 (from a mobile phone +7 812 003)
Accidents, extreme situations:	+7 812 380-9119
Lost and found:	+7 812 278-3690
Rescue service	112 (for mobile phone subscribers)

ELECTRICITY

The city's electric system provides the 220 Volt/50 Hertz voltage.

At some hotels, however, you may require a "European" plug, as many of the more modern buildings or hotels that have undergone major renovations have switched to European sockets.

An adapter is also advisable.

TIME ZONE

During summer in St Petersburg the time is GMT + 2.

TOURIST INFORMATION

<http://visit-petersburg.ru/en/>

MEDICAL AND TECHNICAL EXHIBITION

A trade exhibition of medical and pharmaceutical products will be staged in the Exhibit Area, Refreshments will be served in the exhibition area.
(Please see exhibition plan on page XXI).

ACKNOWLEDGEMENTS

The organisers of the meeting would like to thank the sponsors and exhibitors for their generous support of the meeting.

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SCIENTIFIC PROGRAMME INFORMATION

The scientific programme commences on Thursday 2 July with joint didactic sessions from the EVF and Deep Venous Reconstructive Club (DVRC) and the St Petersburg Venous Forum and Russian Society of Phlebology.

The EVF Invited Lecture will be given by Professor Bo Eklof, Sweden. The title of the presentation is "Call for excellence in the management of venous disease - role of the European Venous Forum".

The first abstract session will take place on Thursday 2 July at 15.30 and will continue throughout the programme. Thirty abstracts of high scientific quality will be presented. These were selected from the 150 abstracts submitted.

This year, in addition to the oral presentations, electronic presentations have been included in the scientific programme. The presentations will be available to view on screens situated within the exhibition area. On Friday 3 July at 15.30, they will be viewed by the judging panel and a prize awarded to the top presentations.

The presentations from the AVF Servier Award Travelling Fellowship winners 2015, the Japanese Society of Phlebology winners 2015 and the ACP Abstract Award 2014 will take place on Friday 3 July.

All presentations must be formatted using PowerPoint. All presenters must bring their PowerPoint presentations on memory stick to the Slide Preview Desk at least 4 hours prior to presentation (or the previous evening for morning presentations).

Floor microphones are available in the Lecture Theatre. Delegates wishing to join in the discussion should stand by the nearest microphone and wait to be acknowledged by the Chairmen.

The official language of the symposium is English. All presentations, questions and discussion will be held in English.

Abstracts of the presentations can be found at the rear of the book.

CPD/CME

An application has been made to the EACCME® for CME accreditation of this event

EVF PRIZE

The EVF prize will be awarded to the best 10 minute communication according to originality and quality. Prizes will be awarded to 1st, 2nd and 3rd place.

The winners of the 1st and 2nd prize are awarded travelling grants to attend the annual meeting of the American Venous Forum in 2016. The three abstracts of the winners are sent to the American College of Phlebology who will select one, and award a grant; to present at the ACP meeting in November 2015 and the Japanese Society of Phlebology who will select two, and award a grant for presentation at the meeting in July 2016.

SCIENTIFIC PROGRAMME

Oral Presentations

THURSDAY 2 JULY 2015

- 09.00-10.30 **DIDACTIC SESSION 1: JOINT SESSION ORGANISED BY THE EVF AND DEEP VEIN RECONSTRUCTIVE CLUB (DVRC)**
 (10 minute presentations followed by 5 min discussion)
 Chair: Oscar Maleti (Italy), Anatoly Pokrovsky (Russia)
- 09.00 **From Vedensky spiral to modern concepts.**
 Evgeny Shaydakov (Russia)
- 09.15 **History of deep venous reconstructive surgery and the DVRS-Club.**
 Oscar Maleti (Italy)
- 09.30 **Relief of obstruction and abolition of reflux.**
 Marzia Lugli (Italy)
- 09.45 **Ideal vein stent: Present reservations and future perspectives.**
 Athanasios Giannoukas (Greece)
- 10.00 **Post-thrombotic syndrome after iliofemoral DVT: can it be prevented?**
 Anthony Comerota (USA)
- 10.15 **Does prescription of elastic compression prevent PTS after proximal DVT?**
 Michel Perrin (France)
- 10.30 **Refreshments and visit Exhibition**
- 11.00-12.30 **DIDACTIC SESSION 2: FROM EARLY VEIN SYMPTOMS TO SURGERY: AN UPDATE**
 (Industry sponsored symposium – See Page XXIII)
 Chair: Evgeny Shaydakov (Russia), Andrew Nicolaides (Cyprus)
- 12.30 **Lunch and visit Exhibition**
- 13.30-15.00 **DIDACTIC SESSION 3: JOINT SESSION ORGANISED BY THE ST PETERSBURG VEIN FORUM AND RUSSIAN SOCIETY OF PHLEBOLOGY**
 (6 10 min presentations followed by 5 min discussion)
 Chair: Evgeny Shaydakov (Russia), Aleksandr Kirienko (Russia), Yury Stoyko (Russia)
- 13.30 **Radiofrequency ablation (RFA) as a part of multimodality treatment in patients with congenital vascular malformations.**
 SV Sapelkin, A Pokrovsky, VN Dan, IE Timina, NV Tarbaeva, SN Krupochkin, AS Karabaeva, TA Erkenov.
 Moscow, Russia
- 13.45 **Control of anticoagulation for predication and personalised treatment using thrombodynamics assay.**
 I Serebriyskiy, A Krylov, A Shulutko, F Ataulkhanov.
 Moscow, Russia

- 14.00 **Technical aspects of the blood reflux elimination on the vena femoralis in case of the varicose of lower extremities.**
 OA Alukhanyan, EV Shaydakov, DS Aristov, Kh G Martirosyan. Krasnodar, St Petersburg, Russia
- 14.15 **Laboratory support of new oral anticoagulants in present and future.**
 T Vavilova, O Beliavskaia, A Bekoeva, E Vasilieva, V Yudina.
 St Petersburg, Russia
- 14.30 **Subfascial endoscopic perforator surgery: do we still need to do?**
 S Belentsov, A Fokin, S Leontiev.
 Ekaterynburg, Chelyabinsk, Russia
- 14.45 **Invited Presentation: Getting experts to reach an agreement on venous symptoms: the SYM Vein consensus document.**
 M Perrin.
 Lyon, France
- 15.00-15.30 Refreshments and visit Exhibition
- 15.30-16.30 **ABSTRACT SESSION 1: EPIDEMIOLOGY AND QUALITY OF LIFE (QOL)**
 Chair: M Perrin (France), Vadim Bogachev (Russia).
 (10 minute presentations, 10 minute discussion)
- 15.30 1.1 **The influence of age on chronic venous disease. An epidemiological survey in Belgium and Luxembourg.**
 F Matthys, M Vuylsteke, R Colman, S Thomis, G Guillaume, E Degrande, I Staelens.
 Sint-Andries ziekenhuis, Vascular Surgery, Tielt, Belgium
- 15.50 1.2 **Quality of life after varicose vein treatment in England: A multilevel model of 24,460 patient reported outcome measures.**
 J El-Sheikha.
 Hull York Medical School, University of Hull, Hull Royal Infirmary, Hull, UK
Submitted in consideration for the EVF Prize.
- 16.10 1.3 **Patient reported outcome measures (PROMs) in varicose veins interventions.**
 S Onida, J Shalhoub, HM Moore, KS Head, TRA Lane, AH Davies.
 Imperial College London, London, UK
Submitted in consideration for the EVF Prize.
- 16.30-18.30 **ABSTRACT SESSION 2: RCT AND NOVEL THERAPIES**
 Chair: B Eklof (Sweden), Aleksey Fokin (Russia)
 (10 minute presentations, 10 minute discussion)
- 16.30 2.1 **Use of cyanoacrylate adhesive for treatment of incompetent great saphenous veins: 12 month results of the VeClose trial.**
 N Morrison¹, K Gibson² on behalf of the VeClose investigators.
¹ Morrison Vein Institute, Scottsdale, AZ, USA
² Overlake Medical Center, Bellevue, WA, USA
- 16.50 2.2 **Six month clinical outcomes of a randomised controlled trial comparing mechanochemical ablation to radiofrequency ablation: the Multicentre Venefit versus ClariVein for varicose veins (VVVVV) trial.**
 R Bootun¹, TRA Lane¹, B Dharmarajah¹, CS Lim^{1,2}, M Najem², S Renton², K Sritharan¹ and AH Davies¹.
¹ Academic Section of Vascular Surgery, Imperial College London, London, UK.
² Department of Vascular Surgery, North West London Hospitals NHS Trust, Harrow, UK
Submitted in consideration for the EVF Prize.

- 17.10 2.3 **Clinical and technical five year outcomes of a randomised clinical trial comparing EVLA vs surgery for varicose veins.**
 J El-Sheikha, S Nandhra, D Carradice, T Wallace, N Samuel, I Chetter.
 Hull York Medical School / Hull University, Academic Vascular Surgery Unit,
 Hull Royal Infirmary, Hull, UK
Submitted in consideration for the EVF Prize.
- 17.30 2.4 **Influence of aspirin in patients with chronic venous insufficiency and ulcer associated.**
 C Vaquero, L del Rio, J Antonio, Gonzalez-Fajardo, E San Norberto, N Cenizo, JA Brizuela
 Division Vascular Surgery. University Hospital of Valladolid. Spain
- 17.50 2.5 **MPFF and sclerotherapy: friends or opponents?**
 VY Bogachev, AN Kuznetsov, OV Golovanova, PV Yershov.
 Russian. National Research Medical University, Moscow, Russia
- 18.10 2.6 **Thermal analysis of vein radiofrequency ablation ex vivo.**
 Y Shevchenko ¹, YM Stoyko ¹, MN Yashkin ¹, CV Masayshvili ¹, AV Tsyplyashchuk ¹,
 SE Kharitonova ¹, SS Akimov ¹, NY Ignatieva ² OL Zakharkina ³.
¹Pirogov National Medical and Surgical Center, Moscow, Russia
²M.V. Lomonosov Moscow State University, Moscow, Russia.
Submitted in consideration for the EVF Prize.
- 18.30 Welcome Reception (Exhibition Area)

FRIDAY 3 JULY 2015

- 08.00-10.00 **ABSTRACT SESSION 3. MISCELLANEOUS**
 Chair: A Giannoukas (Greece), Victor Barinov (Russia).
 (10 minute presentations, 10 minute discussion)
- 08.00 3.1 **Multi-sequence non-contrast MRI can predict the lysability of experimental venous thrombi and could be used to help plan deep venous reconstruction in man.**
 P Saha, A Phikaridou, M Andia, A Patel, S Grover, A Bajwa, S Black, B Modarai, R Botnar, A Smith.
 Academic Department of Vascular Surgery, Cardiovascular Division & Division of Imaging Science, BHF Centre of Excellence, King's College London and NIHR Biomedical Research Centre at Guy's & St Thomas' NHS Foundation Trust, London, UK
Submitted in consideration for the EVF Prize.
- 08.20 3.2 **Neutralisation of bleeding induced by non-vitamin K oral anticoagulants by prothrombin complex concentrates alone and in combination with antifibrinolytic agents.**
 E Kalodiki ^{1,2}, W Jeske ¹, V Escalante ¹, B McGeehan ¹, JM Walenga ¹, R Wahi ¹, J Fareed ¹, M Bakhos ¹.
¹Ealing Hospital and Imperial College, London UK
²Departments of Pathology and Pharmacology, Loyola University Health Systems, Maywood, IL, USA.
- 08.40 3.3 **The novel venous drainage index is impaired in patients with the post thrombotic syndrome.**
 CR Lattimer, E Kalodiki, M Azzam, V Ibegbuna, A Nicolaidis, G Geroulakos
 Josef Pflug Vascular Laboratory, Ealing Hospital & Imperial College, London, UK
Submitted in consideration for the EVF Prize.
- 09.00 3.4 **Quantification of microcirculatory and inflammatory parameters in the evaluation of chronic venous disorders: regulation with MPFF.**
 CEV Magalhaes, BS Barros, MR Mayall, MC de Souza, E Bouskela.
 State University, Rio de Janeiro, Brazil.

- 09.20 3.5 **Compliance with conservative treatment in symptomatic patients with chronic venous disorders: first results from the Vein Act Program in Russia.**
 DE Lishov ¹, AI Kirienko ², AA Larionov ¹, AI Chernookov ³.
¹Center of Phlebology,
²N.I. Pirogov's Russian National Research Medical University,
³I.M. Sechenov First Moscow State Medical University, Moscow, Russia.
- 09.40 3.6 **Adjustable Velcro compression devices are more effective than inelastic bandages to reduce venous oedema: A randomised, controlled pilot study.**
 G Mosti ¹, A Cavezzi ², H Partsch ³.
¹Angiology Department, Clinica MD Barbantini, Lucca, Italy.
²EuroCenter VenaLinfA, S. Benedetto del Tronto, Italy.
³Professor Emeritus, Wien University, Wien, Austria
- 10.00-10.30 Refreshments and visit Exhibition
- 10.30-13.00 **PRESENTATIONS OF PRIZE WINNING PAPERS**
 Chair: Andrew Bradbury (UK), Gamid Askerhanov (Russia)
 (10 minute presentations followed by 5 minute discussion).
- American Venous Forum*
- 10.30 **Equivalent outcomes between ultrasound-assisted thrombolysis and standard catheter directed thrombolysis for the treatment of acute pulmonary embolism.**
 NL Liang, ED Avgerinos, LK Marone, MJ Singh, MS Makaroun, RA Chaer.
 University of Pittsburgh Medical Centre, Pittsburgh, PA, USA
- 10.45 **Prospective long term comparison of anticoagulation treatment versus thrombolysis in patients with acute iliofemoral thrombosis.**
 G Spentzouris ¹, N Labropoulos ¹, P Foegh ², A Gasparis ¹, A Tassiopoulos ¹, N Baekgaard ².
¹Stony Brook University Hospital, Stony Brook NY, USA.
²Vascular Clinic, Gentofte Hospital and Rigshospitalet, University of Copenhagen, Copenhagen, Denmark
- Japanese Society of Phlebology*
- 11.00 **Changing surgical procedures for Budd-Chiari syndrome (a single centre experience of 66 cases).**
 H Inafuki, S Higa, Y Totsuka, M Ando, R Arakaki, T Maeda, Y Kise, T Nagano, S Yamashiro, Y Kuniyoshi.
 Department of Cardiovascular Surgery, Division Department of Bioregulatory Medicine, University of Ryukyus, Ryukyus, Japan
- 11.15 **Indocyanine green lymphography and lymphaticovenous anastomosis for generalised lymphatic dysplasia with pleural effusion and ascites in neonates.**
 M Mihara.
 Department of Vascular Surgery, Saiseikai Kawaguchi General Hospital, Saitama, Japan
- American College of Phlebology*
- 11.30 **The refluxing anterior accessory saphenous vein (ASSV) demonstrates greater clinical severity when compared to the refluxing great saphenous vein**
 M Schul.
 Lafayette Regional Vein and Laser Center, Lafayette, IN, USA
- 13.00-14.00 Lunch
- 13.00 - 14.00 **Richter Room, 3rd floor**
 (Industry Sponsored Symposium – See Page XXIII)
DIDACTIC SESSION 4: COMPLIANCE WITH MEDICAL COMPRESSION STOCKINGS (MCS) FOR THE TREATMENT OF CVI
 Chair: Eberhard Rabe (Germany), Vasil Fattakhov (Russia)

Chair: Andrew Nicolaides (Cyprus), Evgeny Shaydakov (Russia)

- 14.00-14.30 **EVF KEY NOTE LECTURE:
CALL FOR EXCELLENCE IN THE MANAGEMENT OF VENOUS
DISEASE - ROLE OF THE EUROPEAN VENOUS FORUM.
BO EKLOF (SWEDEN)**
- 14.30-14.45 **Microcirculatory dysfunction in chronic venous disease.**
E Bouskela (Brazil)
- 14.45-15.30 **Tribute to Asterios Katsamouris (Past- President, 2005).**
A Giannoukas (Greece)
- 15.30-16.00 *Annual General Meeting (EVF Members only)*
- 15.30 Review of Electronic Presentations by Judges
- 16.00-16.30 Refreshments and visit Exhibition
- 17.00 Depart for Congress Dinner to Peterhof Palace

SATURDAY 4 JULY 2015

- 08.00-09.00 **DIDACTIC SESSION 5: VENOUS MARKERS AND THEIR
CLINICAL USE**
(Industry sponsored Symposium – See Page XXIV)
(10 min presentations followed by 5 min discussion)
Chair: Jawed Fareed (USA), Tatyana Vavilova (Russia)
- 09.00-11.00 **ABSTRACT SESSION 4. VENOUS THROMBOEMBOLISM**
(10 minute presentations followed by 5 minute discussion)
Chair: Andrew Nicolaides (Cyprus), Aleksandr Shimanko (Russia)
- 09.00 4.1 **Association of primary chronic venous disease with the incidence of deep vein thrombosis.**
ME Shaydakov, AJ Comerota, F Lurie.
Jobst Vascular Institute, ProMedica Toledo Hospital, OH, USA
Submitted in consideration for the EVF Prize.
- 09.20 4.2 **Neuromuscular electrical stimulation (NMES) for prevention of venous thromboembolism (VTE).**
R Ravikumar¹, KJ Williams¹, A Babber¹, TR Lane¹, M Moore¹, J Shalhoub¹, AH Davies¹
¹Academic Section of Vascular Surgery, Department of Surgery and Cancer, Imperial College London, UK
Submitted in consideration for the EVF Prize.
- 09.40 4.3 **Mean platelet volume as a predictor of venous thromboembolism: A systematic review and meta-analysis.**
C Wilasrusmee¹, B Siribumrungwong², S Horsirimanont¹, N Proprom¹, A Thakkinatian³
¹Department of Surgery, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand,
²Department of Surgery, Faculty of Medicine, Thammasat University Hospital, Thammasat University, Pathumthani, Thailand.
³Section for Clinical Epidemiology and Biostatistics, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.
- 10.00 4.4 **Blood hypercoagulation assessed with a thrombodynamics test predicts postoperative venous thrombosis in high risk patients.**
K Lobastov, G Dementieva, N Soshitova, V Barinov, L Laberko, G Rodoman, V Boyarintsev.
The Pirogov's Russian National Research Medical University, Moscow, Russia

- 10.20 4.5 **Incidence of hospital associated thrombosis (HAT) over a two year period in a venous thromboembolism (VTE) exemplar centre.**
T Ghatwary, H Teague, A Brice, C Humphreys, S Dimitri.
Vascular Surgery Unit and VTE Exemplar Centre, Countess of Chester NHS Foundation Trust, Chester, UK
Submitted in consideration for the EVF Prize.
- 10.40 4.6 **Drug interactions of new oral anticoagulants dabigatran, rivaroxaban and apixaban with routinely used non-anticoagulant/anti-platelet drugs.**
S Sayani¹, E Kalodiki^{1,2}, O Iqbal¹, D Hoppensteadt¹, J Fareed¹.
¹Departments of Pathology and Pharmacology, Loyola University Health Systems, Maywood, IL
²Ealing Hospital and Imperial College, London, UK
- 11.00 Tea and visit Exhibiton
- 11.30-12.15 **DIDACTIC SESSION 6: “HOT” TOPICS**
(Industry sponsored symposium – See Page XXIV)
(10 min presentations followed by 5 min discussion)
Chair: Mehmet Kurtoglu (Turkey), Sergey Belentsov (Russia)
- 12.15-13.15 **ABSTRACT SESSION 5: HERITABILITY, ROBOTIC SURGERY AND AVM**
Chair: Giovanni Mosti (Italy), Andrey Shevela (Russia)
(10 min presentations followed by 10 min discussion)
- 12.15 5.1 **Assessment of the heritability of chronic venous disease.**
A Fiebigl^{1,2}, P Krusche³, A Wolf³, M Krawczak^{2,4}, B Timm², S Nikolaus¹, N Frings³, S Schreiber¹.
¹Institute for Clinical Molecular Biology, Christian-Albrechts-University, Kiel, Germany
²Biobank ‘popgen’, Section Epidemiology, Institute for Experimental Medicine, Christian-Albrechts-University, Kiel, Germany
³Capio Mosel-Eifel-Clinic, Bad Bertrich, Germany
⁴Institute of Medical Informatics and Statistics, Christian-Albrechts-University, Kiel, Germany
- 12.35 5.2 **Robotic Inferior Vena Caval Surgery.**
SR Money, VJ Davila, R Fowl, W Stone, E Castle.
Mayo Clinic, Arizona, USA.
- 12.55 5.3 **The basic approaches in the treatment of diffuse congenital vascular malformations with the presence of arteriovenous microfistulas.**
LM Chernukha, OV Kashyrova, AO Guch, GG Vlaykov, IV Altman, VA Kondratuk.
National Institute of Surgery and Transplantology n. a. O.O. Shalymov under NAMS of Ukraine, Kiev, Ukraine
- 13.15 Lunch
- 14.15-16.15 **ABSTRACT SESSION 6: GUIDELINES, STENTING, VALVULOPLASTY, EMBOLISATION AND VENOUS DRAINAGE**
Chair: Mark Malouf (Australia), Andrey Karpenko (Russia)
(10 min presentations followed by 10 min discussion)
- 14.15 6.1 **The impact of new national guidelines on the management of lower limb venous disease in Birmingham, UK.**
H Davies, M Popplewell, K Darvall, G Bate, L Kelly, A Bradbury.
University of Birmingham Department of Vascular Surgery, Heart of England NHS Foundation Trust, Birmingham, UK
Submitted in consideration for the EVF Prize.
- 14.35 6.2 **Follow up results of iliofemoral vein stenting in patients with post thrombotic syndrome.**
M Kurtoglu, M Aksoy, F Yanar, I Azamat.
Department of General Surgery, Istanbul Medical Faculty, Istanbul University, Istanbul, Turkey

- 14.55 6.3 **One-year outcomes following deep venous reconstruction for thrombotic disease using dedicated endovenous stents.**
P Saha, N Karunanithy, K Breen, A Patel, B Hunt, B Modarai, S Black.
Academic Department of Vascular Surgery, Cardiovascular Division & Department of Thrombosis and Haemostasis, BHF Centre of Excellence, King's College London and NIHR Biomedical Research Centre at Guy's & St Thomas' NHS Foundation Trust, London, UK
Submitted in consideration for the EVF Prize.
- 15.15 6.4 **A new modality in vein treatment: Extraluminal valvuloplasty by interventional injection of hyaluronic acid gel.**
JC Ragg.
Angioclinic Vein Centers, Interventional Phlebology, Berlin, Germany
- 15.35 6.5 **Pelvic pain syndrome: Venographic manifestation of ovariocele involvement and endovascular correction of venous congestion.**
V Ryzhkov, A Karev, S Verezgova, S Melnik.
Central Regional Clinical Hospital, North-West Medical University, St-Petersburg, Russia
- 15.55 6.6 **Increasing thigh compression pressure correlates with a reduction in the venous drainage index of air plethysmography.**
CR Lattimer, S Doucet, E Kalodiki, M Azzam, V Ibegbuna, G Geroulakos,
Josef Pflug Vascular Laboratory, Ealing Hospital & Imperial College, London, UK
Submitted in consideration for the EVF Prize.
- 16.15 **End of meeting and Presentation of EVF Prizes**

INDUSTRY SPONSORED SYMPOSIA

THURSDAY 2 JULY 2015

- 11.00-12.30 **DIDACTIC SESSION 2: FROM EARLY VENOUS SYMPTOMS TO SURGERY: AN UPDATE**
(Supported by an educational grant from Servier)
Chairmen: Evgeny Shaydakov (Russia), Andrew Nicolaides (Cyprus)
- 11.00 **Introduction.**
Evgeny Shaydakov
(Russia)
- 11.05 **Better understanding of chronic venous disease (CVD).**
Nicos Labropoulos
(USA)
- 11.25 **Surgical procedures: clinical implications.**
Marzia Lugli
(Italy)
- 11.45 **Treatment of CVD from Cos to surgery: new evidence with Daflon.**
Armando Mansilha
(Portugal)
- 12.05 **Panel discussion.**
Moderator: Andrew Nicolaides
(Cyprus)
- 12.25 **Closing remarks.**
Andrew Nicolaides
(Cyprus)

FRIDAY 3 JULY 2015

- 13.00-14.00 **Rihter Room, 3rd Floor, Holiday Inn Hotel**
(Supported by an educational grant from Bauerfeind)
- DIDACTIC SESSION 4: COMPLIANCE WITH MEDICAL COMPRESSION STOCKINGS (MCS) FOR THE TREATMENT OF CVI**
Chair: Eberhard Rabe (Germany), Vasil Fattakhov (Russia)
- 13.00 **What we can learn about compliance from Bonn Vein Studies 1 & 2?**
Eberhard Rabe
(Germany)
- 13.15 **Low-level compression to treat vein symptoms.**
Werner Blaettler
(Switzerland)
- 13.30 **Improvement of blood flow by MCS.**
Vasil Fattakhov
(Russia)

- 13.45 **Taking leg measures with the BT600 guarantees best fit of MCS.**
HansJ Thomae
(Germany)

SATURDAY 4 JULY 2015

- 08.00-09.00 **DIDACTIC SESSION 5: VENOUS MARKERS AND THEIR CLINICAL USE**
(Supported by an educational grant from Alfa-Wasserman)
(10 min presentations followed by 5 min discussion)
Chair: Jawed Fareed (USA), Tatyana Vavilova (Russia)
- 08.00 **Biomarkers of venous thromboembolism.**
Thomas Wakefield
(USA)
- 15.15 **Biomarkers of chronic venous disease.**
Ferdinando Mannello
(Italy)
- 08.30 **MMP12 and VEGF as genetic risk factors for varicose veins.**
Andrey Shevela
(Russia)
- 08.45 **Commentary and practical applications.**
Jawed Fareed
(USA)
- 11.30-11.45 **DIDACTIC SESSION 6: "HOT" TOPICS**
(10 min presentations followed by 5 min discussion)
(Supported by an educational grant from Medtronic)
Chair: Mehmet Kurtoglu (Turkey), Sergey Belentsov (Russia)
- 11.30 **Current status of graduated elastic and intermittent pneumatic compression stocking in the prevention of DVT.**
Joseph Caprini
(USA)
- 11.45 **New data from the use of cyanoacrylate adhesive in GSV closure.**
Thomas Proebstle
(Germany)
- 12.00 **Algorithm for management of axillary vein thrombosis.**
George Geroulakos
(UK)

ELECTRONIC PRESENTATIONS

THURSDAY 2 JULY 2015 - SATURDAY 4 JULY 2015

Electronic presentations can be viewed on the screens situated on both floors of the exhibition.

STATION A: VENOUS THROMBOEMBOLISM

- A1 Efficacy of anticoagulation in patients with deep venous thrombosis**
RE Kalinin, IA Suchkov, AS Pshennikov, AA Tsaregorodtsev, GAPuchkova, AB Agapov, ND Mzhavanadze
Ryazan State Medical University, Ryazan, Russia, Ryazan Regional Clinical Cardiological Dispensary, Ryazan, Russia
- A2 Deep venous thrombosis and quality of life**
R Kalinin, I Suchkov, A Pshennikov, A Agapov, A Tsaregorodtsev, N Mzhavanadze
Ryazan State Medical, University, Ryazan, Russia
- A3 Prevalence of venous thromboembolism in all cancer patients hospitalised in French public and private hospitals during 2010-2011**
FA Allaert^{1,2}, E Benzenine², C Quantin^{2,3}
¹Medical Evaluation Chair and Angiology Cenbiotech Dijon, France
²University Hospital Dijon, France
³INSERM U866, Burgundy University, Dijon, France
- A4 The genetic risk of venous thromboembolism events at orthopaedic patients**
II Prostov, II Katelnitsky, AV Alabut, AV Ivashchenko, VD Sikilinda, OV Katelnitskaya
GBOU VPO, Rostov State Medical University, Minzdrav of Russia, Rostov-on-Don, Russia
- A5 Treatment of deep vein thrombosis of inferior vena cava system, complicated with pulmonary embolism - opportunities and outcomes**
LM Chernuha¹, OM Skupii², OI Mitiuk³, YV Khrebtiiy³
¹National Institute of Surgery and Transplantology AMS of Ukraine named by O.O. Shalimov, Kiev, Vinnitsa Ukraine
²Vinnitsa Regional Hospital named by N.I. Pirogov, Kiev, Vinnitsa Ukraine
³Vinnitsa National Medical University named by N.I. Pirogov, Kiev, Vinnitsa Ukraine
- A6 Common genetic basis of chronic venous insufficiency and thromboembolic disease**
JM Soria¹, JM Romero², JC Souto³, JFite-Matamoros², A Martinez¹, J Román Escudero²
¹Unit of Genomic of Complex Diseases. Sant Pau Biomedical Research Institute (IIB-Sant Pau), Barcelona, Spain
²Angiology, Vascular Surgery and Endovascular Department. Hospital de la Santa Creu i Sant Pau, Barcelona, Spain
³Unit of Thrombosis and Hemostasia. Hospital de la Santa Creu i Sant Pau, Barcelona, Spain
- A7 The forms of clinically non-significant occlusion of vena cava inferior**
AV Tsypliyaschuk, YM Stoiko, KV Mazayshvili, MN Yashkin, VV Shchhebryakov, VD Semkin, SS Akimov, SE Kharitonova, JL Shevchenko
Pirogov National Medical and Surgical Center, Moscow, Russia
- A8 Choice of method of antithrombotic prophylaxis stomach and colorectal cancer patients**
OV Katelnitskaya, OI Kit, II Katelnitskiy, NK Guskova, KA Tumanova, II Prostov, AV Ivashchenko
Rostov Scientific Research Oncology Institute, Rostov State Medical University, Rostov-na-Donu, Russia

- A9 Comparison between Asian Venous Thrombosis Forum (AVTF) and Caprini Venous Thromboembolism Risk Assessment Models in hospitalized surgical patients**
L Lee, NC Liew, FY Lee
Department of Surgery, University Putra Malaysia, Serdang, Malaysia
- A10 Thrombotic and bleeding complication of anticoagulation treatment. Coagulation test opportunities for risk assessment**
II Serebriyskiy¹, LA Parunov¹, NN Topalov¹, AN Balandina², AV Cherniakov³, AY Krylov⁴, AI Bernakevich⁵, IV Zotova⁶, AP Momot⁷, AM Shulutko⁴, DA Zateyshchikov⁶, FI Ataullakhanov²
¹HemaCore, Moscow
²Research Center of Pediatric Hematology Oncology Immunology, Moscow
³Pirogov Russian National Research Medical University, Moscow
⁴Sechenov First Moscow State Medical University, Moscow
⁵Central Research Centre for Trauma and Orthopedics, Moscow
⁶Federal State Institution "Educational Scientific Medical Center" of the General Management Department of the President of Russia, Moscow
⁷Altay branch of Research Centre for Hematology, Barnaul, Russia
- A11 INDIVIDUALIZED APPROACH IN PROPHYLAXIS FOR THROMBOTIC AND BLEEDING COMPLICATION OF LONG-TERM \ EXTENDED ANTICOAGULATION**
AM Shulutko¹, AY Krylov¹, FI Ataullakhanov², II Serebriyskiy³
¹Sechenov First Moscow State Medical University, Moscow, Russia
²Research Center of Pediatric Hematology Oncology Immunology, Moscow, Russia
³HemaCore, Moscow, Russia
- A12 Improved results venous thromectomy in patients with floating iliofemoral thrombosis**
V Zolkin, A Melnichenko, I Bogomazov
City Hospital 57, Moscow, Russia
- A13 Non-lipid-lowering effect of statins in experimental venous thrombosis**
E DeRoo, AE Hawley, NE Ballard-Lipka, SK Wroblewski, DD Myers, TW Wakefield, JA Diaz
Department of Surgery, Section of Vascular Surgery, Conrad Jobst Vascular Research Laboratories, Unit for Laboratory Animal Medicine, University of Michigan, Ann Arbor, USA

STATION B: VENOUS ABLATION

- B1 Study of parameters and efficiency of a new system of radiofrequency temperature controlled segmental ablation of great saphenous vein**
C Lebard, F Ziccarelli
Clinique Internationale du Parc Monceau, Paris, France
- B2 Restructuring of the venous stream below knee after short stripping of the GSV trunk in primary varicose veins**
EP Burleva, OA Smirnov, SA Tyurin, RR Fashkhev, NA Kravchenko, EY Osipova
Ural State Medical University, Ekaterinburg, Russia
- B3 Sclerofoam assisted laser therapy (SFALT) for saphenous refluxes: a possible tumescence-free solution**
F Zini¹, LTessari², R Torre³
¹Surgical Department Casa di Cura Città di Parma, Parma, Italy
²Fondazione Glauco Bassi, Trieste, Italy
³Casa di Cura Privata Piacenza, Italy
- B4 Clinical experience of combined use of VNUS Closure FAST radiofrequency ablation and foam sclerotherapy in patients with lower limb varicose vein**
NS Abushov, ZM Aliyev, EJ Zakirjayev, FE Abbasov, MM Kerimov, GN Abushova
Scientific Centre of Surgery named after M.A. Topchubashov, Azerbaijan Medical University, Baku, Azerbaijan

- B5 Endovenous laser ablation in major diameter saphenous veins. Prospective follow-up study. Immediate to short term results**
OP Mandzhikian, DN Morenko, IA Kutidze
Clinical Hospital #61, Moscow, Russia
- B6 What happens after endovenous laser, radiofrequency and steam ablations in the vein wall: a comparative ex-vivo histopathological study**
U Bengisun¹, A Cetinkaya¹, A Kirmizi², O Bozdemir¹
Department of Peripheral Vascular Surgery¹ and Pathology², Ankara University, Ankara/Turkey
- B7 Five year results of a randomized clinical trial of endovenous laser ablation versus conventional surgery for great saphenous varicose veins**
J El-Sheikha, S Nandhra, D Carradice, T Wallace, N Samuel, I Chetter
Hull York Medical School, Hull University, Academic Vascular Surgery Unit, Hull Royal Infirmary, UK
- B8 EVRA (Early Venous Reflux Ablation) ulcer trial: a randomised clinical trial to compare early versus delayed endovenous treatment of superficial venous reflux in patients with chronic venous ulceration**
F Heatley¹ on behalf of the EVRA participants²
¹Imperial College, London
²AW Bradbury, University of Birmingham; RA Bulbulia, University of Oxford;
N Cullum, University of Manchester, AH Davies, Imperial College, London; D Epstein, University of Granada;
M Gohel, Cambridge University Hospitals NHS Foundation Trust;
KR Poskitt, Gloucestershire Hospitals NHS Trust; J Warwick, Imperial College, London, UK
- B9 Varicose vein treatment with foam sclerotherapy - a historical cohort study**
RS Marbin^{1,2}, S Urbonavicius¹, C Behr-Rasmussen^{1,2}, JS Lindholt^{1,3}, J Sandermann¹
¹Vascular Research Unit, Department of Vascular Surgery, Viborg Hospital, Denmark
²Graduate School of Health, Aarhus University, Denmark
³Department of Cardiovascular- and Thoracic Surgery T, University Hospital of Odense, Denmark
- B10 Endothermal ablation of truncal veins - Is concomitant treatment of tributaries necessary?**
A Golder, P Thompson, M Onwudike
Department of Vascular Surgery, Royal Bolton Hospital NHS Foundation Trust, Bolton, UK
- B11 Foam sclerotherapy of saphenous veins comparing the effect of injection via needles and catheters of different size**
JC Ragg
Angioclinic Vein Centers - Interventional Phlebology, Berlin, Germany
- B12 Initial and permanent vein lumen minimization obtained with endovenous occlusion techniques by using hyaluronan solution instead of tumescent fluid**
JC Ragg
Angioclinic Vein Centers - Interventional Phlebology, Berlin, Germany
- B13 A new gluing modality for insufficient veins**
JC Ragg
Angioclinic Vein Centers - Interventional Phlebology, Berlin, Germany
- B14 Implementation of a new two-ring radial fibre combined with 1470 nm diode laser as promising standard treatment for great saphenous vein insufficiency of more than 8 mm and evaluation of the wellbeing and of your quality of life (QOL) by using the VCSS and CIVIQ questionnaires**
A¹ Fiebig, K² Rass, N³ Frings, A⁴ Greiner
¹Kompetenznetz Chronische Venenkrankheiten, Kiel, Germany
²Eifelklinik St. Brigida, Simmerath, Germany
³Capio Mosel-Eifel-Klinik, Bad Bertrich, Germany
⁴Capio MVZ Venenzentrum, Bad Bertrich, Germany

STATION C: SYMPTOMS, CLASSIFICATION OF CVD, COMPRESSION, QOL

- C1 The profile of symptomatic patients seeking care for chronic venous disorders: first results from the Vein Act Program in Russia**
 VY Bogachev¹, AL Sokolov², MM Lutsenko²
¹N.I. Pirogov's Russian National Research Medical University
²Center of Treatment and Rehabilitation, Moscow, Russia
- C2 The "Venous Age": a new tool to sensitize patients to their venous disease**
 V Crebassa¹, FA Allaert²
¹Clinique du millénaire, Montpellier, France
²CEN Biotech/CEN Nutriment, Dijon, France
- C3 Post-thrombotic syndrome - Do we really know any predictive factors?**
 T UrbaneK, M Kucharzewski, G Biolik, D Ziąja, K Ziąja
 Department of General and Vascular Surgery, Medical University of Silesia, Katowice, Poland
- C4 Instrumental confirmation of venous diseases classification criteria**
 NG Khorev, DV Kuznetsova, VP Kulikov
 SBEI HPE Altai State Medical University MH RF, Barnaul, Russia
- C5 Calling for an improvement in chronic venous disease classification**
 NC Liew, L Lee. Department of Surgery, University Putra Malaysia, Serdang, Malaysia
- C6 Are patients able to apply adjustable velcro-band compression devices with adequate pressure?**
 H Partsch¹, R Damstra², E Brouwer³
¹Medical University of Vienna, Austria
²Dermatologist, Dutch Expertise Centre of Lympho-vascular Medicine, Nij Smellinghe Hospital, Drachten, The Netherlands
³Self management teacher SLCN, Drachten, The Netherlands
- C7 An understocking plus superimposed leggings: adjustable and easy-to-use leg compression**
 C Luder¹, N Omid¹, A-L Radetzki¹, C Lang¹, M Hübner², J Hafner¹
¹Department of Dermatology, University Hospital Zurich, Switzerland;
²Sigvaris AG, St. Gallen, Switzerland
- C8 Cartridge-applied silicone pads for eccentric compression of varicosities after sclerotherapy: popliteal, saphenal and spider vein application**
 JC Ragg
 Angioclinic Vein Centers - Interventional Phlebology, Berlin, Germany
- C9 Patients' satisfaction with methods of treatment of advanced chronic venous disorders (CVD) in outpatient clinical settings**
 J Chudek¹, J Mikosiński², A Kobielski³, A Hering⁴, T Aleksiejew-Kleszczyński⁵, T UrbaneK⁶, J Umiński⁷, T Zubilewicz⁸, W Kobusiewicz⁸, M Iżdecki⁸, A Wojtak⁸, J Stec⁹
¹Department of Pathophysiology, Medical Faculty in Katowice, Medical University of Silesia in Katowice, Katowice, Poland.
²Outpatient Clinic of Vascular Surgery, Nonpublic Health Care Clinic MIKOMED in Łódź, Łódź, Poland.
³Department of General and Bariatric Surgery and Emergency Medicine in Zabrze, Medical Faculty with Medical-Dental Division in Zabrze, Medical University of Silesia in Katowice, Katowice, Poland.
⁴Department of Internal Medicine and Angiology, Hospital of the Brothers Hospitaliers Order of St. John Grande in Kraków, Kraków, Poland.
⁵Outpatient Clinic of Vascular Surgery, Nonpublic Health Vascular Surgery Centre in Kraków, Kraków, Poland.
⁶Department of General and Vascular Surgery, Medical Faculty in Katowice, Medical University of Silesia in Katowice, Katowice, Poland.
⁷Outpatient Clinic of Vascular Surgery, Medical Centre, Wrocław, Poland.
⁸Department of Vascular Surgery and Angiology, Medical University in Lublin, Lublin, Poland.
⁹Outpatient Clinic of Vascular Surgery, Medical Centre Kol-Med of the Public Health Care Centre in Tarnów, Tarnów, Poland

- C10 Patient perspective of service provision for the management of varicose vein disease**
 R Bootun, A Busuttil, CS Lim, TRA Lane, C Bicknell, K Sritharan, IJ Franklin, AH Davies
 Imperial College London, London, UK
- C11 Epidemiology and genetic impact of the phlebitis**
 A^{3,4}Fiebig, A¹Greiner, P¹Krusche, CA³Kopetsch, M³Gawlick, C³Conrad, L³Tittmann, B³Timm,
 M²Nothnagel, S⁴Schreiber, M²Krawczak, N¹Frings, S⁴Nikolaus
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⁴Institut für Klinische Molekularbiologie, Christian-Albrechts-Universität, Kiel, Germany
- C12 Online guideline development**
 A¹Fiebig, L²Klemm, T²Karge, E²Wohlfarth, K²Fitzke
¹Kompetenznetz Chronische Venenkrankheiten, Kiel, Germany
²User Group - Med. Leitlinienentwicklung e. V., Kiel, Germany

STATION D: PERFORATING VEINS, HAEMODYNAMICS, DEEP VEIN RECONSTRUCTION, PATHOLOGY, COST, VENOACTIVE DRUGS, HYGIENE

- D1 Anatomical description of the perforator veins (PV) of the foot and ankle**
 JF Uhl, C Gillot
 Urdia Research Unit EA4465, Department of Anatomy, University Paris Descartes, France
- D2 Subfascial endoscopic perforator surgery: do we still need to do?**
 S Belentsov¹, A Fokin², S Leontiev²
¹MC Angioline, Ekaterinburg
²SUSMU, Chelyabinsk, Russia
- D3 Iliac valve incompetence as a risk factor for sapheno-femoral reflux recurrence**
 S Giansini, S Occhionorelli, E Menegatti, P Spath, ME Vannini, M Zuolo, M Tessari, P Zamboni
 Vascular Disease Center, University of Ferrara, Ferrara, Italy
- D4 Blood flow disturbances and endovenous treatment of the Giacomini vein varicosities**
 DA Rosukhovskiy^{1,2,3}, EV Shaidakov¹, EA Ilyukhin², VL Bulatov^{1,2}, AG Grigoryan^{1,2}
¹Institute of Experimental Medicine of the North-West Branch of the RAS, St-Petersburg, Russia
²«Medalp» Clinic, Saint-Petersburg, Russia
³«Akson» Clinic, Viborg, Russia
- D5 Long-term results of the formation of the single-cusp valve in the common femoral vein of the patients presenting with a valvular deep veins of the lower extremities**
 I Igor, R Akhmetzianov, R Bredikhin
 Interregional Clinical Diagnostic Center, Kazan State Medical University, Kazan, Russia
- D6 Pelvic congestion syndrome due to stenosis of the left renal vein (nutcracker syndrome): diagnosis and treatment. Our experience**
 RA Bredikhin, AG Gaptravanov, RV Akhmetzianov, EE Fomina
 Interregional Clinical Diagnostic Center, Kazan State Medical University, Kazan, Russia
- D7 Collagen IV and VI expression in the deep and superficial leg veins wall with varicose veins of the lower limb**
 SA Sushkou, IV Samsonova, MV Golishevich EE
 Vitebsk State Medical University*, Vitebsk, Republic of Belarus
- D8 Cost comparison of concomitant versus sequential phlebectomy with endovenous laser ablation: a Monte Carlo economic simulation of 10,000 patients**
 J El-Sheikha, D Carradice, S Nandhra, IC Chetter
 Hull York Medical School/ University of Hull, Hull Royal Infirmary, Hull, UK

- D9 Clinical acceptability study of micronised purified flavonoid fraction 1000 mg tablet, compared to micronized purified flavonoid fraction 500 mg tablet in symptomatic chronic venous disease**
Pr Kirienko¹, D Radak²
¹ Department of Faculty surgery #1 of Medicinal Faculty1, Moscow, Russia
² Institute for cardiovascular diseases Dedinje Heroja Milana Belgrade, Serbia
- D10 Use of Elatec (MPFF) as a monotherapy for the control of postoperative symptoms after endovenous radiofrequency ablation**
D Piñón Holt, CR Gómez, CA Gutiérrez Díaz, MM Ramírez, ML Silva
Fundacion Para La Investigacion De Padecimientos Vasculares, Hospital Angeles Mocel, Mexico City, Mexico
- D11 Effects of Ruscus extract on the microcirculation are mediated by muscarinic receptors**
E Bouskela, State University of Rio de Janeiro, Brazil
- D12 Improved interventional hygiene using a novel disinfectant ultrasound couplant spray**
JC Ragg
Angioclinic Vein Centers - Interventional Phlebology, Berlin, Germany

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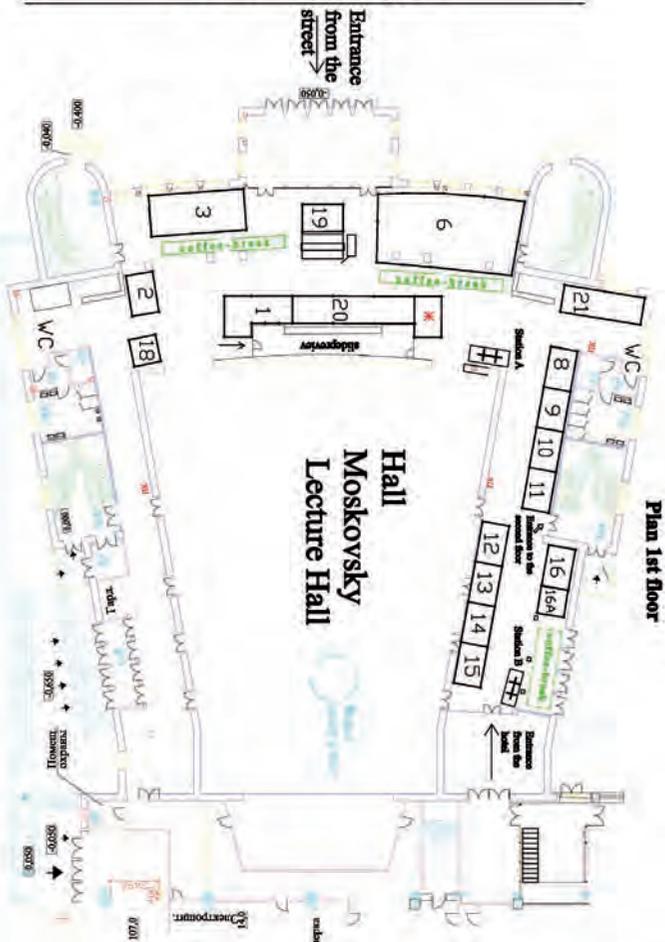
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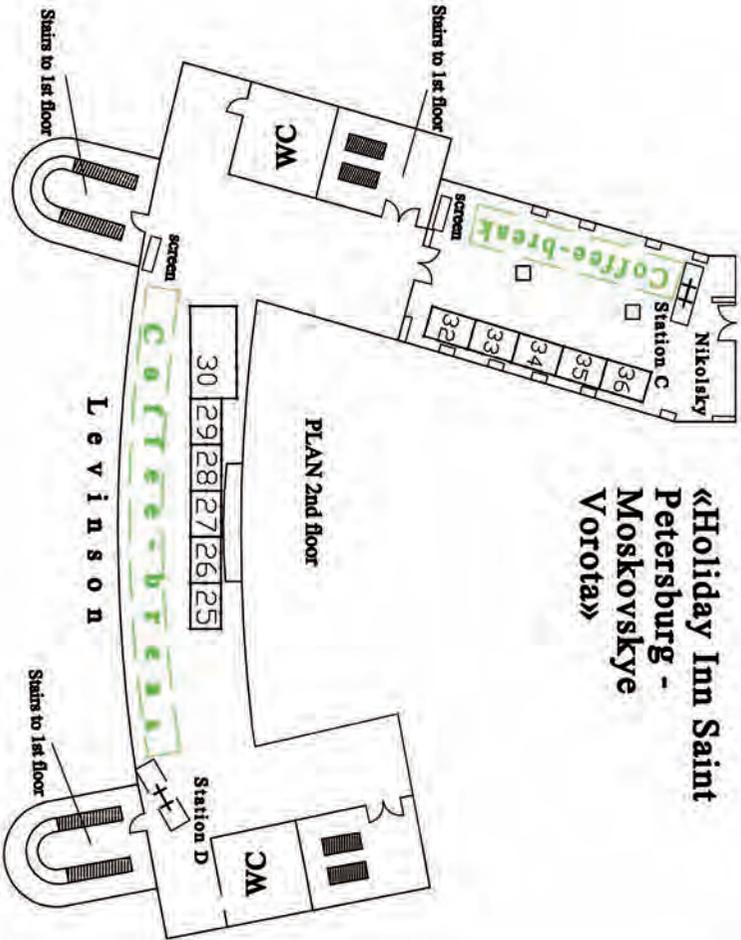
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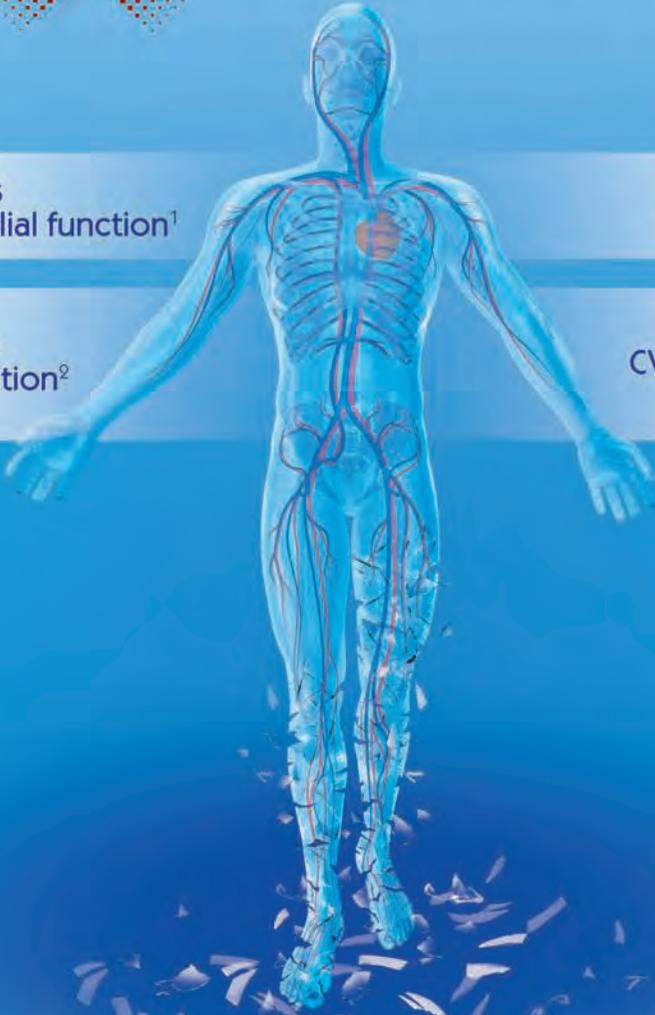
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1. Andreozzi GM. Sulodexide in the treatment of chronic venous disease. Am J Cardiovasc Drugs. 2012 Apr 1;12(2):73-81. doi: 10.2165/11599360-000000000-00000.

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BOOK OF ABSTRACTS

1.1 THE INFLUENCE OF AGE ON CHRONIC VENOUS DISEASE. AN EPIDEMIOLOGICAL SURVEY IN BELGIUM AND LUXEMBOURG

Matthys F, Vuylsteke M, Colman R, Thomis S, Guillaume G, Degrande E, Staelens I
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AIM The aim of this study is to measure the incidence of the symptoms in patients with chronic venous disease (CVD) and to look for the influence of age on the severity of symptoms for both genders.

MATERIALS AND METHODS A survey was carried out in Belgium and Luxembourg between May and September 2013. Patient recruitment was done by 406 general practitioners (GPs). Each GP screened 10-20 consecutive patients older than 18 years. Inquiries were made regarding the presence of symptoms and possible signs. Patients with diagnosed CVD filled out a questionnaire including a quality of life score (QoL) (CIVIQ-14). These data were converted into a Global Index Score (GIS). Statistical analysis, including ordinal and logistic regression was performed in order to calculate the effect of age and gender on the number of symptoms and to calculate the estimated probabilities of having CVD and chronic venous insufficiency (CVI).

RESULTS 6009 patients were included in this survey. The mean age was 53.4 years. 61.3% of the patients have CVD(C1-C6). 64.7% of the patients were symptomatic. Age and female gender were major risk factors for developing CVD. Most common symptoms were "heavy legs" (70.4%), pain (54.0%) sensation of swelling (52.7%) and night cramps (46.5%). Of all the symptomatic patients (n=3,889), 25.5% had only one symptom, 23.0% had 2 symptoms, 19.8% had 3 symptoms and 31.7% had more than 3 symptoms. The estimated probability for 4 or more symptoms is 3.5 times greater in the oldest age group (>65 years, 28,4%) compared to the youngest age group (18-34 years, 8,1%). Female patients had significantly more symptoms in comparison with male patients. However, the effect of age group (in terms of odds ratio) is more important for males than for females. C-classification was significantly higher for females than for males (P<0.001). The estimated probability of having CVD (C1-C6) and CVI (C3-C6) could be calculated for each gender and age group and was significantly higher for women compared to men. Among women, there is a significant correlation between the number of pregnancies and the C-classification. In both females and males, age is negatively correlated with GIS score (P<0.001). Also a higher C-classification correlates with lower QoL.

CONCLUSION CVD is a progressive disease with a high prevalence. Age proves to be a major risk factor. Increasing age results in a higher C-classification, more symptoms and a lower GIS-score (Quality of Life). Female gender interacts significantly with age and results in a more advanced stage of CVD.

1.2 QUALITY OF LIFE AFTER VARICOSE VEIN TREATMENT IN ENGLAND: A MULTILEVEL MODEL OF 24,460 PATIENT REPORTED OUTCOME MEASURES

El-Sheikha J

Hull York Medical School/ University of Hull, Hull Royal Infirmary, Hull, UK

AIM The relationship between patient and hospital characteristics on quality of life (QoL) following varicose vein treatment is little understood. Patient reported outcome measures (PROMs) can measure postoperative outcomes but directly comparing PROMs between hospitals can be misleading when the clustered nature of varicose vein care is overlooked. Multilevel models are designed to accommodate hierarchical data and can give a more accurate reflection of the actual relationships between patients and hospitals.

MATERIALS AND METHODS A multilevel model investigating PROMs was developed to analyse the relationship of patient characteristics (gender, age), outcomes (complications, satisfaction, treatment success) and hospital characteristic (size and if private or NHS) with the subsequent change in Aberdeen Varicose Vein Score (AVVQ) six months after primary varicose vein treatment in England.

RESULTS Between April 2010 and July 2014 some 24,460 PROMs from 162 hospitals were included. Whilst the majority of variance in AVVQ improvement was due to patient factors ($\sigma^2\mu_0 = 94.300, 97.24\%$), a small but statistically significant amount of variance remained due to differences between hospitals $\sigma^2\mu_0 = 2.598, 2.76\%$. Multilevel regression suggested that females saw greater improvement in AVVQ, as did those who reported greater levels of treatment success and satisfaction. Patient age, postoperative complications, subsequent re-intervention and readmission did not influence AVVQ change. In addition, neither the hospital size nor type of hospital (NHS or private) was seen to affect subsequent AVVQ score. In the final model and in holding all other variables constant, females on average improve 0.586 AVVQ points more than males, patients “excellently” satisfied improve on average 5.235 AVVQ points more than those with “bad” satisfaction and those with “much better” success improve on average 11.320 AVVQ points more than those left “much worse” after treatment.

CONCLUSION Intervention for venous disease is associated with a significant improvement in patient QoL. Despite QoL being intrinsically tied to an individual, a small but potentially important influence in patient QoL is determined by the healthcare institution. A patient centred approach is recommended to optimise patient outcomes.

1.3 PATIENT REPORTED OUTCOME MEASURES (PROMS) IN VARICOSE VEIN INTERVENTIONS

Onida S, Shalhoub J, Moore HM, Head KS, Lane TRA, Davies AH
Imperial College London, London, UK

AIM Varicose veins are a common condition associated with significant morbidity. Individuals with varicose veins have reduced quality of life and a reported prevalence of depression that is significantly higher than that of the general population. In England, Patient Reported Outcome Measures (PROMs) questionnaires are offered both pre- and post-operatively to National Health Service patients undergoing varicose vein interventions. These questionnaires assess quality of life, procedural success and satisfaction, and the presence of anxiety or depression. The designated assessment tools are the Euroqol 5D (EQ-5D), the Euroqol Visual Analogue Scale (EQ-5D VAS) and the Aberdeen Varicose Veins Questionnaire (AVVQ). The aim of this study was to examine PROMs on a large-scale basis in individuals undergoing varicose vein interventions.

MATERIALS AND METHODS PROMs data is available for access and analysis from the Hospital Episode Statistics (HES) data warehouse. Data for varicose vein procedures compiled from June 2009 to July 2011 were extracted. Univariate and multivariate statistical analyses was performed using IBM SPSS (version 21).

RESULTS A total of 35,093 patient episodes were identified. Of those recording gender, 63% were from females. 49.6% of patient episodes had both pre- and post-operative data sets for generic quality of life measures (EQ-5D and EQ VAS), whilst 52.1% had complete datasets for disease-specific quality of life measure (AVVQ). Self-reported pre-operative anxiety or depression was highly prevalent in our cohort (24.1%). Both EQ-5D and AVVQ results improved significantly post intervention ($P < 0.001$) compared with pre-intervention. There was a statistically significant association between pre-operative depression or anxiety and post-operative success ($P < 0.001$) and satisfaction ($P < 0.001$). The multinomial logistic regression models assessed for variables predictive of self-reported success or satisfaction. They revealed that higher pre-operative quality of life scores, general health and male sex were significantly associated with more positive post-operative outcomes. Higher pre-operative depression and anxiety scores were associated with a higher probability of reporting the procedure in a positive light compared to those with no anxiety or depression.

CONCLUSION This study underlines that depression is highly prevalent in patients with varicose veins, and provided further evidence that varicose vein intervention improves quality of life, anxiety and depression. Pre-operative self-reported depression or anxiety levels and quality of life scores affect perception of post-procedural success and satisfaction. Operative intervention for varicose veins has a positive effect on patients' self-reported levels of anxiety or depression.

2.1 USE OF CYANOACRYLATE ADHESIVE FOR TREATMENT OF INCOMPETENT GREAT SAPHENOUS VEINS: 12-MONTH RESULTS OF THE VECLOSE TRIAL

Morrison N¹, Gibson K², on behalf of the VeClose investigators

¹ Morrison Vein Institute, Scottsdale, AZ, USA

² Overlake Medical Center, Bellevue, WA, USA

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

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

RESULTS Complete vein closure at 3 months was 95.4% RFA and 98.9% CAE (P<0.0001; non-inferiority); at 6 months was 94.3% RFA and 98.9% CAE (P<0.0001) and at 12 months 96.8% RFA and 96.8% CAE. Peri-procedural pain was similar between the groups. Significantly less ecchymosis was observed in the CAE group than RFA (P=0.0013) at day 3. Serious adverse events were observed in 2.8% CAE *versus* 3.5% RFA treated subjects none of which we deemed related to the index device or procedure.

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

2.2 SIX MONTH CLINICAL OUTCOMES OF A RANDOMISED CONTROLLED TRIAL COMPARING MECHANOCHEMICAL ABLATION TO RADIOFREQUENCY ABLATION: THE MULTICENTRE VENEFIT VERSUS CLARIVEIN FOR VARICOSE VEINS (VVCVV) TRIAL

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¹Academic Section of Vascular Surgery, Imperial College London, London, UK

²Department of Vascular Surgery, North West London Hospitals NHS Trust, Harrow, UK

AIM Endovenous techniques are currently the recommended choice for truncal vein treatment. However, thermal techniques require tumescent anaesthesia, which can be uncomfortable during administration. Non-tumescent non-thermal techniques would therefore have potential benefits. We have previously reported the peri-procedural outcomes for a randomised controlled trial comparing the patients experience while receiving mechanochemical ablation (MOCA) or radiofrequency ablation (RFA). This study reports the longer term clinical outcomes.

MATERIALS AND METHODS Patients attending for primary varicose vein treatment were randomised to receive MOCA (ClariVein) or RFA (Covidien Venefit). The most symptomatic limb was randomised. The primary outcome measure was intra-procedural pain using a validated visual analogue scale. Secondary outcome measures included were change in quality of life and clinical scores.

RESULTS One hundred and seventy patients have been randomised (51% in the MOCA group). All the baseline characteristics, including demographics, CEAP classification, clinical scores and quality of life (QoL) scores were similar. At month 1 and 6, the clinical and quality of life scores for both groups had similar improvements. The VCSS score at 1 month was 2.7 for the MOCA group compared to 3.3 for the RFA group ($P=0.279$), while, at 6 months, the corresponding scores were 2.3 for MOCA and 2.5 for RFA ($P=0.614$). The EQ-5D scores were 0.810 for MOCA at 6 months compared to 0.714 for RFA ($P=0.103$). The 6 month AVVQ was again similar between the two groups at 6 months (12.7 for MOCA compared to 14.1 for RFA; $P=0.611$).

CONCLUSION The previously reported results show that MOCA is less painful than RFA procedure. However at 6 months the clinical and quality of life scores were similarly improved in both treatment groups.

2.3 CLINICAL AND TECHNICAL FIVE YEAR OUTCOMES OF A RANDOMISED CLINICAL TRIAL COMPARING EVLA VS. SURGERY FOR VARICOSE VEINS

El-Sheikha J, Nandhra S, Carradice D, Wallace T, Samuel N, Chetter I
Hull York Medical School / Hull University, Academic Vascular Surgery Unit, Hull Royal Infirmary

AIM Little is currently known about the long term consequences of superficial venous insufficiency (SVI) treatment using endovenous laser ablation (EVLA) or conventional surgery. The aim of this study was to investigate the clinical and technical outcomes of a large randomised trial comparing these two methods.

MATERIALS AND METHODS Some 280 patients with primary, symptomatic, unilateral superficial venous insufficiency, due to isolated saphenofemoral junction incompetence, and great saphenous vein reflux were randomised equally to receive EVLA or surgery. Outcomes included clinical recurrence, duplex ultrasound recurrence and Quality of Life (AVVQ). Assessments were at 1, 6, 12, 52, 104 and 260 weeks.

RESULTS Of 218 (79%) patients followed up at five years, 152 (69.7%) patients were free of any clinical recurrence at five years. The five-year recurrence rate was higher after surgery (surgery 37.3% vs. EVLA 23.1% $P=0.027$), with a relative risk of 0.620 (95% confidence interval 0.408-0.946 $P=0.264$). The underlying cause of recurrence on duplex ultrasound was different between the groups with neovascularisation in the groin detected more frequently after surgery (surgery 42% vs. EVLA 0% $P<0.001$) and recurrent SFJ incompetence detected more after EVLA (surgery 3% vs. EVLA 44% $P<0.001$). Disease progression in the upper thigh was high in both groups, with incompetent groin tributaries seen in about half of the clinical recurrences (surgery 49% vs. EVLA 52% $P=1.000$) and the anterior accessory saphenous vein (AASV) involved in a third of cases (surgery 20% vs. EVLA 40% $P=0.091$). Disease progression distal to the knee was also significantly associated with clinical recurrence (surgery 59% vs. EVLA 48% $P=0.452$) although this was often related to recurrent upper thigh disease. The estimated number of patients needed to treat with EVLA to avoid one recurrence at five years was 8 (95% CI 3.8-47.9). In addition, clinical recurrence was associated with a significantly worse patient Quality of Life (AVVQ: Recurrence 7.858 (3.106-13.970) vs. No recurrence 4.000 (0.172-8.874) $P=0.001$).

CONCLUSION In avoiding the long term complications of recurrent venous disease this study supports the recent NICE guidance placing EVLA above conventional surgery.

2.4 INFLUENCE OF ASPIRIN IN PATIENTS WITH CHRONIC VENOUS INSUFFICIENCY AND ULCER ASSOCIATED

Vaquero C, del Rio L, Gonzalez-Fajardo JA, San Norberto E, Cenizo N, Brizuela JA
Division Vascular Surgery, University Hospital of Valladolid, Spain

AIM To determine the effect of aspirin on ulcer healing rate in patients with chronic venous insufficiency, and to establish prognostic factors that influence ulcer evolution.

MATERIALS AND METHODS Between 2001 and 2005, 78 patients with ulcerated lesions of diameter >2 cm and associated with chronic venous insufficiency were evaluated in our hospital. Of these, 51 patients (22 men, 29 women) with mean age of 60 years (range: 36-86) were included in a prospective randomized trial with a parallel control group. The treatment group received 300 mg of aspirin and the control group received no drug treatment; in both groups, healing was associated with standard compression therapy. During follow-up, held weekly in a blinded fashion, there was ulcer healing as well as cases of recurrence. Results were analyzed by intention-to-treat approach. Cure rate was estimated using KaplanMeir survival analysis, and the influence of prognostic factors was analyzed by applying the Cox proportional hazards model.

RESULTS In the presence of gradual compression therapy, healing occurred more rapidly in patients receiving aspirin *versus* the control subjects (12 weeks in the treated group *vs.* 22 weeks in the control group), with a 46% reduction in healing time. The main prognostic factor was estimated initial area of injury ($P \frac{1}{4}$ 0.032). Age, sex, systemic therapy, and infection showed little relevance to evolution.

CONCLUSION The administration of aspirin daily dose of 300 mg shortens the healing time of ulcerated lesions in the chronic venous insufficiency (CVI). The main prognostic factor for healing of venous ulcerated lesions is the initial surface area of the ulcer.

2.5 MPFF AND SCLEROTHERAPY: FRIENDS OR OPPONENTS?

Bogachev VY, Kuznetsov AN, Golovanova OV, Yershov PV
Russian National Research Medical University, Moscow, Russia

AIM To investigate local and systemic changes in proinflammatory cytokines and endothelial factors in patients undergoing sclerotherapy with, or without, adjunctive micronized purified flavonoid fraction (MPFF).

MATERIALS AND METHODS A total of 30 female patients with reticular and spider veins, CEAP clinical class C1EpAsPr, localized on the medial face of the thigh were included in the study. To determine the basal level of proinflammatory markers: VEGF, TNF- α , IL-1, histamine, and hsCRP, blood samples were taken from the leg saphenous vein and arm cephalic vein at the inclusion visit. Patients were then randomized into two groups (15 patients in the MPFF-treatment group and 15 in the control group) using a random number generator. Patients of the treatment group received MFPP 1000 mg/day for 2 weeks prior to the standard sclerotherapy session and 4 weeks following the procedure. The standard sclerotherapy procedure consisted of administration of 0.2% sodium tetradecyl sulfate (STS, Fibrovein) in a single 5-mL dose, associated with class II compression stockings. In the control group, patients underwent standard sclerotherapy without adjunctive treatment. At 10 days after sclerotherapy, blood sampling was repeated in leg and arm veins. In addition to laboratory tests, the local status (photography), pain intensity, and rate of short-term and long-term adverse events were assessed after sclerotherapy.

RESULTS AND DISCUSSION The baseline levels of VEGF, TNF, IL-1, histamine, and hsCRP did not differ significantly between blood samples taken from leg and arm veins. At 10 days after sclerotherapy, patients from both treatment and control groups showed a significant ($P < 0.0001$) increase in all parameters in blood samples taken from leg vein vs. baseline values (VEGF, 261.3 ± 24.0 vs. 331.1 ± 46.1 pg/mL; TNF- α , 5.8 ± 0.9 vs. 8.6 ± 0.4 pg/mL; IL-1, 5.6 ± 0.3 vs. 7.8 ± 0.5 pg/mL; histamine, 84.2 ± 6.8 vs. 163.9 ± 28.9 pg/mL; hsCRP, 5.4 ± 0.6 vs. 8.3 ± 1.0 mg/L). However, the assessed parameters were significantly ($P < 0.0001$) lower in the MPFF group vs. the control group. As for samples taken from the cephalic vein, there were no significant differences in assessed parameters before and after sclerotherapy in both groups of patients. Clinical evaluation of the results and analysis of short-term and long-term adverse events will be presented after completion of the study.

CONCLUSION Sclerotherapy, using 0.2% STS, results in a significant increase in the local levels of proinflammatory cytokines and neoangiogenesis factors, while systemic levels remain unchanged. The MPFF treatment, in a daily dose of 1000 mg, provides a significant reduction in activity of proinflammatory cytokines and some endothelial factors, and eventually can decrease the rate of typical adverse effects of compression sclerotherapy for varicose veins.

2.6 THERMAL ANALYSIS OF VEIN RADIOFREQUENCY ABLATION EX VIVO

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Kharitonova SE¹, Akimov SS¹, Ignatieva NY², Zakharkina OL³

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³ Institute of Laser and Information Technologies of the Russian Academy of Sciences,
Moscow, Russia

AIM In routine clinical practice methods of ablation veins are intensively used for varicose veins treatment. Unfortunately, the rate of such methods introduction to clinic practice is sometimes is far ahead of their scientific justification. The purpose of the study is to determine the optimal energy parameters of radiofrequency obliteration for complete denaturation of the main component of the venous wall-collagen.

MATERIALS AND METHODS The experiments were carried out on 38 fragments of 10 cm length and 2 fragments of 18 cm length of the great saphenous vein taken from short stripping of 7 patients (46.7±10.7 years old) with varicose disease (CEAP class C2). The veins diameter of was 7.2±0.8 mm. Radiofrequency ablation was performed by VNUS (ClosureFAST). Experimental model provides intimate contact of the vein walls with the heating element of the catheter. The temperature of the veins surface was controlled by thermograph IRTIS (LLC IRTIS, Russia). The degree of collagen denaturation (α) was determined by differential scanning calorimetry apparatus DSC204F (Netzch, Germany).

RESULTS The initial heating of the vein wall during radiofrequency ablation is not uniform along the length of the fragment. In the first cycle by the end of the second phase the ablation temperature is aligned to the processed part and becomes uniform in the second cycle of exposure. In the first cycle, the temperature continuously increases and reaches 85±3 °C. In the second cycle after 10 seconds the temperature reaches a plateau 91±2 °C. After thermal treatment the diameter of the veins was reduced twice, what is related to shrinkage of the fabric due to the denaturation of collagen. The single cycle of vein heating didn't lead in any case to the complete destruction of the collagen skeleton of the venous wall ($\alpha=77.2\pm4.7\%$). After two cycles of ablation the venous wall was usually destroyed ($\alpha=94.9\pm3.1\%$). The remains of intact macromolecules disappear after three cycles of treatment ($\alpha=100\%$). During the hydrothermal vein treatment within 20 seconds the full denaturation of collagen occurs at temperature above 88 °C. This condition occurs after two standard cycles of radiofrequency ablation.

CONCLUSION The one standard cycle of radiofrequency ablation of the veins in the experiment does not bring to complete denaturation of collagen skeleton of the venous wall. For complete denaturation of collagen venous wall, it is advisable to perform at least two cycles of thermal effects on each segment of the vein.

3.1 MULTI-SEQUENCE NON-CONTRAST MRI CAN PREDICT THE LYSABILITY OF EXPERIMENTAL VENOUS THROMBI AND COULD BE USED TO HELP PLAN DEEP VENOUS RECONSTRUCTION IN MAN

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AIM Non-contrast MRI using magnetisation transfer rate (MTR), apparent diffusion coefficient (ADC) and T1 mapping can characterise the organisation of a resolving venous thrombus. We now investigate whether the combination of these non-contrast agent MRI sequences can be used to identify thrombi suitable for lysis in an experimental model and examine if they are able to help guide interventional therapy in man.

MATERIALS AND METHODS Magnetisation transfer, diffusion weighted images and T1 mapping were measured at days 2, 4, 7, 10, 14, 21 and 28 after venous thrombus induction in 8-10wk old male BALB/C mice (n=8/gp). Tissue plasminogen activator (10 mg/kg) was administered through tail vein injection immediately after imaging at each time point and mice scanned 24 hours later to evaluate the effect of lysis. Murine imaging sequences were combined and optimised to image the pelvic veins in man using healthy volunteers in order to produce a clinically useable imaging card. MSTI sequences were validated using phantoms before application to 4 patients with ilio-femoral deep vein thrombosis (DVT) undergoing lysis and or venous stenting.

RESULTS ROC curve analysis shows that the combination of MTR smaller than 2,900 (%/cm³), ADC larger than 0.93(x10⁻³ mm²/s) and T1 shorter than 784 ms has a sensitivity of 88% and specificity of 97% to identify experimental thrombi amenable to lysis. MSTI is feasible in man, with optimisation leading to successful characterisation of ilio-femoral DVT in under 25 minutes. In all 4 patients, MSTI was able to accurately predict which segments of the deep venous system would respond to lysis compared with those that required venous stent placement.

CONCLUSION Non-contrast MR imaging, using a combination of MTR, ADC and T1 mapping, accurately identifies experimental venous thrombi susceptible to lysis. These MSTI sequences can also be readily translated to man where may find utility in stratifying patients suitable for venous thrombolysis and/or the need for a venous stent.

3.2 NEUTRALIZATION OF BLEEDING INDUCED BY NON-VITAMIN K ORAL ANTICOAGULANTS BY PROTHROMBIN COMPLEX CONCENTRATES ALONE AND IN COMBINATION WITH ANTIFIBRINOLYTIC AGENTS

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AIM Concerns remain over bleeding with direct factor Xa and thrombin inhibitors in cases of overdose or medical emergency. This study tested the ability of prothrombin complex concentrates (PCCs) to reverse bleeding induced by Non Vitamin K oral anticoagulants such as apixaban, rivaroxaban or dabigatran in a standardized rat tail resection model.

MATERIALS AND METHODS Individual groups of anesthetized rats (8-10) were anticoagulated with apixaban, rivaroxaban or dabigatran and subsequently treated with vehicle, 3-factor (Profilnine), 4-factor (Beriplex) or activated 4-factor PCC (FEIBA). Five minutes post-PCC administration, a tail snip was performed and bleeding time was measured. Upon cessation of bleeding, a blood sample was collected for ex vivo analysis and the rat was humanely euthanized.

RESULTS In comparison to saline control (6.8±1.1 s) apixaban (300µg/kg) prolonged bleeding time (17.1±5.6; $P=0.024$). Beriplex at doses ≤10U/kg did not shorten bleeding time while 10U/kg Profilnine did. The FEIBA prolonged bleeding beyond that seen with apixaban alone (22.6±11.4 and 37.5±5.2 min for 5 and 10U/kg doses; $P<0.001$ apixaban + 10U/kg FEIBA vs. apixaban). 100 and 300µg/kg rivaroxaban prolonged bleeding time (20.8±2.5, $P=0.002$ vs. saline; 25.0±10.0 min, $P<0.001$ vs. saline). Profilnine was more effective than Beriplex or FEIBA in reversing rivaroxaban-induced bleeding. Dabigatran-induced bleeding was prevented by Beriplex or Profilnine but enhanced by FEIBA (50.3±8.3 vs. 15.9±1.2 min; $P<0.001$). Treatment of apixaban or rivaroxaban anticoagulated rats with FEIBA + 10mg/kg epsilon aminocaproic acid (EACA), produced bleeding times comparable to those of non-anticoagulated rats (apixaban: 6.7±5.0 min; rivaroxaban: 7.7±6.4 min). Ex vivo analysis of blood samples did not show any relevance with the observed bleeding or its modulation.

CONCLUSION PCCs appear useful for neutralizing bleeding induced by direct factor Xa and thrombin inhibitors, but each PCC exhibits a distinct neutralization profile. Co-administration of a fibrinolytic inhibitor such as EACA or transexamic acid may enhance effectiveness of the non-vitamin K oral anticoagulants associated hemorrhage reversal by PCCs.

3.3 THE NOVEL VENOUS DRAINAGE INDEX IS IMPAIRED IN PATIENTS WITH THE POST-THROMBOTIC SYNDROME

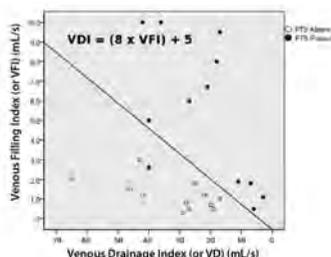
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AIM The post-thrombotic syndrome (PTS) is characterised by venous obstruction and/or venous reflux. These may involve different segments at different times leading to a mixed pattern of disease. This makes it difficult to reconcile the relative contributions of obstruction and reflux with the clinical symptoms and signs of the patient. The venous filling index (VFI) of air-plethysmography is established in estimating global reflux in the leg. The aim of this study was to validate the new venous drainage index (VDI) alongside the VFI in 12 patients with PTS *versus* 12 controls.

MATERIALS AND METHODS Venous filling and drainage tracings were obtained using elevation to dependency and dependency to elevation manoeuvres, respectively. A rapid reduction in calf volume with elevation indicated good drainage. The patients with PTS were: age 52 (37-76) years, 8 male, 8 right, $C_3=1$, $C_{4a}=4$, $C_{4b}=7$, median Villalta scale 11 (6-23). Duplex identified 1 iliac occlusion, 1 normal, 7 reflux & obstruction and 3 reflux alone. The femoral/popliteal vein was diseased in 9/12 patients. The controls, age 30 (24-59) years, 8 male, 10 right, had no clinical evidence of venous disease. The VDI and VFI share the same units of measurement in mL/s. The VDI was calculated like the VFI from the venous filling tracing: $VDI = 90\%$ venous drainage volume (90VDV)/venous drainage time to 90% (VDT90). This study was approved by the regional ethical committee.

RESULTS The median (inter-quartile range) VFI and VDI in the patients were 5.4 (1.7-9.1) and 18.5 (7.4-37.9) mL/s, respectively. The corresponding values in the controls were 1.1 (0.5-1.6), $P=0.002$ and 27.1 (20.1-42.7), $P=0.078$ (Mann-Whitney U test). As shown in the chart, PTS could be defined haemodynamically when $VDI < (VFI \times 8) + 5$. The patient with the lowest VDI (2.3 mL/s) was the patient with iliac occlusion and a normal VFI (1.1 mL/s). The 2 patients with the highest VDI (41.8 and 39.5 mL/s) had no evidence of obstruction on duplex.

CONCLUSION The VDI is a novel APG parameter derived from a dependency to elevation manoeuvre. In combination with the VFI the relative contributions of obstruction and reflux can be estimated in patients with PTS. This information may be of value in directing treatment towards alleviating obstruction with stenting or bypass *versus* the correction of reflux with ablation or valve repair.



3.4 QUANTIFICATION OF MICROCIRCULATORY AND INFLAMMATORY PARAMETERS IN THE EVALUATION OF CHRONIC VENOUS DISORDERS: REGULATION WITH MPFF

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AIM To assess the morphological capillary changes and the increase of plasma inflammatory markers that are both involved in the progression of chronic venous disorders (CVD), before and after treatment with micronized purified flavonoid fraction (MPFF).

MATERIALS AND METHODS Women with regular menstrual cycles and classified as C₂ to C₄ of the clinical, etiological, anatomical, and pathological (CEAP) classification were included in the trial. This was a double-blind, placebo-controlled study, with 100 patients in the MPFF treatment group, 1000 mg a day for 4 consecutive cycles, and 100 in the placebo group. Measurements of functional capillary density (FCD; number of capillaries with flowing red blood cells/mm²), capillary morphology (CM; % of abnormal capillaries/mm²), and diameters (μm) of dermal papilla (DDP), capillary bulk (DCB), and capillary limb (CD) were obtained from the noninvasive Cyto-scan method before and after treatment and analyzed using the CapImage software. At the same time, several inflammatory markers known to be involved in CVD were assessed.

RESULTS A total of 198 women aged 34±5 years were enrolled (64 in C₂, 68 in C₃ and 66 in C₄) and randomly assigned to either the MPFF or placebo group. The majority reported having had CVD signs for at least 9 years. Both DCB and DDP increased with CEAP class in the study population, reflecting the morphological changes seen in CVD. The FCD decreased with a higher CEAP classification, indicating a loss in functionality and number of capillaries with disease progression. MPFF reduced DCB and DDP compared with placebo, mainly in patients over 40 years of age or in overweight C₂ and C₃ patients, maintained FCD in a subgroup of patients (C₃ with a body mass index <26), and decreased CD, indicating a preservation by MPFF of capillary morphology and an ability to prevent leaks. Results did not reach statistical significance. Regarding biological markers, there was a tendency for MPFF to reduce sP- and sL-selectins in C₄ patients, proteins implicated in venous inflammation.

CONCLUSION These first results on the protective effects of MPFF on capillary morphology should be confirmed at a larger scale.

3.5 COMPLIANCE WITH CONSERVATIVE TREATMENT IN SYMPTOMATIC PATIENTS WITH CHRONIC VENOUS DISORDERS: FIRST RESULTS FROM THE VEIN ACT PROGRAM IN RUSSIA

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AIM The Russian VEIN Act Program is an observational, prospective survey, carried out under the auspices of the European Venous Forum that was designed to assess compliance with non-operative treatments (lifestyle advice, venoactive drugs [VAD], and compression therapy [CT]) of chronic venous disorders (CVD) in the framework of ordinary specialized consultations.

MATERIALS AND METHODS Adult patients complaining of venous pain associated with signs of CVD, agreeing to take part in the program, not consulting for an emergency and free of concomitant diseases underwent a leg examination. Once the CVD diagnosis was confirmed, a case report form was completed with patient's clinical presentation and history; reported symptoms; and prescribed nonoperative treatment(s), listing all treatment characteristics. Patients were advised to come for a follow-up visit at which compliance with prescribed treatment(s) was assessed.

RESULTS A total of 1607 patients were enrolled by 82 phlebologists in Russia. The time gap between the first visit (V0) and the follow-up visit (V1) was 8 months. At V1, patients who were prescribed a VAD reported that they had correctly followed both the dosage and duration in 98% of cases, and 91% of patients given lifestyle advice reported that they had stuck to the prescription. Only 75% of patients with a CT prescription went to the V1 appointment wearing the compression hosiery correctly, and 45% reported that they had worn the hosiery as prescribed. The majority did not follow the prescription and wore the hosiery either most days (30%), intermittently (19%), or not at all (6%). The reasons for not wearing hosiery were "too difficult to put on" in 47%; "not comfortable" in 32%; "too warm" in 22%; "itches" in 18%; and "not esthetic" in 12%. Age group, sex, body mass index, symptom intensity, and clinical, etiological, anatomical, and pathological (CEAP) classification were variables that influenced the compliance to either treatment.

CONCLUSION More educational efforts are needed to raise awareness among physicians, patients, and the scientific community about the necessity of better treatment compliance, since CVD is a chronic and progressive disease.

3.6 ADJUSTABLE VELCRO COMPRESSION DEVICES ARE MORE EFFECTIVE THAN INELASTIC BANDAGES TO REDUCE VENOUS OEDEMA: A RANDOMIZED, CONTROLLED PILOT STUDY

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AIM To reduce leg oedema inelastic bandages (IB) are usually recommended for the initial treatment phase. Disadvantages are that they lose pressure quickly and need to be applied by costly trained staff.

The aim of the present study was to assess if Adjustable Velcro Compression Device (AVCD) which can be readapted by the patient to the changing leg volume, could be an alternative in the therapy phase of chronic leg edema.

MATERIALS AND METHODS 40 legs of 36 patients (17 males; 19 females aged 71.4±10.2; range 52-85 years) affected by chronic venous leg oedema were randomized to receive two different compression treatments for 7 days: group A) IB applied with a supine pressure of about 60 mmHg, group B) AVCD applied to exert a pressure of 40 mmHg in supine position and re-adjusted by the patient when the device became loose because of edema reduction.

Leg volume was assessed after 1 and 7 days by tape measurements of leg circumferences and volumetry was calculated according to the truncated cone formula.

The compression pressure (CP) was measured by means of a pneumatic pressure transducer in supine and in standing position at application and removal of compression devices. The patient's wearing comfort of the compression device was assessed at time 0 and day 7 by a Visual Analogue Scale (VAS).

RESULTS Both compression systems achieved a significant reduction of total leg volume after 1 and 7 days compared to baseline ($P<0.0001$). AVCD achieved a volume reduction by -19% after 1 day and -26% after 7 days significantly greater than IB both after 1 day, -13% ($P<0.01$), and after 7 days -19% ($P<0.01$).

At application compression pressure was much higher with IB than with the AVCD, both in supine (median values 62 vs. 43 mmHg) and in standing position (median values 72 vs. 52 mmHg) ($P<0.01$). IB-pressure dropped down significantly to a range of 20-30 mmHg in supine and to 30-40 mmHg in standing position, both one and seven days later. Compression pressure with AVCD remained unchanged or was even higher, both after 1 and 7 days. Comfort was good with both devices. Shoe wearing was significantly easier with VD ($P<0.0001$).

CONCLUSION In patients with chronic venous leg edema, adjustable velcro compression devices exerting a supine pressure around 40 mmHg, consistent overtime, are more effective than inelastic bandages in reducing edema. They are equally tolerated and make shoes wearing easier. AVCDs make self management of chronic leg edema possible allowing considerable cost-savings.

4.1 ASSOCIATION OF PRIMARY CHRONIC VENOUS DISEASE WITH THE INCIDENCE OF DEEP VEIN THROMBOSIS

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AIM A number of studies found a strong association between varicose veins and deep vein thrombosis (DVT). It has also been demonstrated that every third patient recovering from DVT has reflux in the noninvolved lower extremity associated with an increased risk of postthrombotic syndrome in the affected limb. Despite these data primary chronic venous disease (PCVD) has never been considered as a possible risk factor for DVT. The aim of the study was to evaluate the prevalence of reflux as a universal sign of PCVD in patients with first-time DVT.

MATERIALS AND METHODS This nested case-control study used a prospective cohort of 1024 patients suspected for the first-time DVT of the lower extremity. The diagnosis of DVT and valvular competency in deep and superficial veins were evaluated by venous duplex at the time of presentation. Fifty-seven patients with confirmed first-time DVT consisted study group. Non-DVT patients were matched by age and gender at a ratio of 1:6 to form the appropriate control group (n=348). Two groups were compared for the prevalence of reflux in 3 deep (popliteal, femoral and common femoral) and 6 superficial (SFJ, GSV thigh, GSV knee, GSV calf, SPJ, SSV) venous segments.

RESULTS Patients with acute DVT were 4.7 times more likely to have reflux in any studied venous segment compared to controls (65.5% vs. 29.0%, $P < 0.000001$; 95% CI 2.8-7.7). The rate of reflux was similar in symptomatic and asymptomatic legs of controls (19.0% vs. 18.1%, $P = 0.09$). Superficial reflux was present in 28.7% of unaffected legs of DVT patients, compared to 9.8% of symptomatic ($P = 0.000029$) and 8.3% of asymptomatic legs ($P = 0.000002$) of controls. Overall, patients with symptomatic DVT were 4.6 times more likely to have superficial reflux than controls (43.7% vs. 14.4%, $P < 0.0000001$; OR=4.62, 95% CI 2.75-7.77). Deep reflux was present in 36.8% of unaffected legs in the study group, compared to 12.9% of symptomatic legs ($P = 0.000001$; OR=3.92, 95% CI 2.29-6.70) or 14.4% of asymptomatic legs of patients in the control group ($P = 0.00001$; OR=3.47, 95% CI 2.04-5.88). DVT patients also had a higher prevalence of combined deep and superficial reflux (13.8% vs. 6.6%, $P = 0.044$; OR=2.3, 95% CI 1.08-4.75).

CONCLUSION A significantly higher prevalence of both deep and superficial reflux in patients with first-time DVT compared to controls indicates that reflux as a novel risk factor for venous thrombosis. A higher than in general population prevalence of primary disease in patients with DVT suggests that pre-existing primary disease contributes to incidence and severity of symptoms in patients after an acute DVT.

4.2 NEUROMUSCULAR ELECTRICAL STIMULATION (NMES) FOR PREVENTION OF VENOUS THROMBOEMBOLISM (VTE)

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AIM Venous thromboembolism (VTE), consisting of deep vein thrombosis (DVT) and pulmonary embolism (PE), is a significant healthcare burden. It affects 1 in 1000 adults per year, resulting in death, recurrence, post thrombotic syndrome and pulmonary hypertension. Current modes of primary and secondary prevention involve pharmacological agents, which carry a risk of bleeding. Neuromuscular electrical stimulation (NMES) is the transcutaneous application of electrical impulses to elicit muscle contraction, preventing venous stasis. This review aims to investigate the evidence underlying the use of NMES in thromboprophylaxis.

MATERIALS AND METHODS The Medline and Embase databases were systematically searched, adhering to PRIMSA guidelines, for articles relating to electrical stimulation and thromboprophylaxis. Articles were screened according to *a priori* inclusion and exclusion criteria for qualitative analysis. Articles with imaging proven diagnosis of VTE were included in quantitative analysis.

RESULTS Sixteen articles were included in the qualitative analysis and ten in the quantitative analysis. Trials were grouped according to protocol: 4 trials compared NMES to control, favouring NMES (OR 0.26, 95%CI 0.10-0.72; $P=0.009$); 2 trials compared NMES to heparin, favouring heparin (OR 1.88, 95%CI 0.92-3.84, $P=0.09$); 4 trials compared NMES as an adjunct to heparin *versus* heparin only, favouring combination therapy (OR 0.25, 95%CI 0.08-0.79, $P=0.02$). Intra-operative NMES conferred a 14% absolute risk reduction (ARR) of PE compared to no prophylaxis. Postoperative NMES as an adjunct to heparin in high risk surgical patients resulted in a 5% ARR compared to controls receiving heparin alone.

CONCLUSION NMES significantly reduces the risk of DVT compared to no prophylaxis controls. It also significantly reduces the incidence of DVT when used as an adjunct to heparin. Pharmacological anticoagulation carries a risk bleeding, whilst conferring a 7% risk of recurrent VTE. Consideration should be made for the use of mechanical agents as an adjunct to thromboprophylaxis, particularly in high risk patients.

4.3 MEAN PLATELET VOLUME AS A PREDICTOR OF VENOUS THROMBOEMBOLISM: A SYSTEMATIC REVIEW AND META-ANALYSIS

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AIM Platelet activity is a major devilish in atherothrombotic events. Mean platelet volume (MPV), which is widely available as a routine parameter of the complete blood count, is a potentially useful biomarker of platelet activity in the setting of venous thrombosis. The aim is to determine whether an association exists between MPV and VTE.

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

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

CONCLUSION The available evidence suggests that elevated MPV is associated with VTE. An updated meta-analysis and further elucidated mechanistic study are required in order to use in practice or guide therapy.

Figure 1. Meta-analysis mean platelet volume in venous thromboembolism.

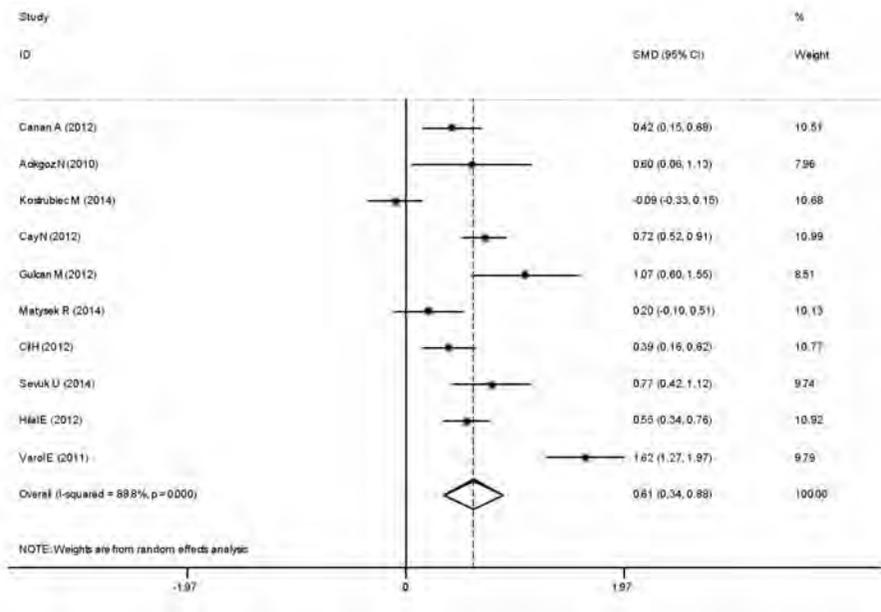


Table I.

Mean platelet volume (fl)	P-value
Control-varicose veins vs. VTE = 7.0±0.6 vs. 8.2±1.0	0.04
Control-varicose veins vs. VTE with cancer = 7.0±0.6 vs. 9.0±0.9	<0.001
VTE vs. VTE with cancer = 8.2±1.0 vs. 9.0±0.9	0.04

4.4 BLOOD HYPERCOAGULATION ASSESSED WITH A THROMBODYNAMICS TEST PREDICTS POSTOPERATIVE VENOUS THROMBOSIS IN HIGH-RISK PATIENTS

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AIM We assessed the ability of the Thrombodynamics test to predict venous thromboembolism (VTE) in standard prophylaxis in high-risk patients.

MATERIALS AND METHODS This prospective observational study involved 40 patients undergoing elective major surgery for colorectal cancer. The patients were 45-85 years old (mean: 70.6 ± 7.8 years), and included 14 men and 26 women. According to the Caprini model, the patients had a mean score 9.4 ± 2.1 (range: 5-13). Our standard prophylaxis for VTE consisted of above-knee graduated compression stockings with pressure 18-21 mm Hg and low-molecular weight heparin (LMWH) injections initiated 12 hours before surgery, continuing 6 hours after surgery, and then every morning after the first postoperative day (POD). Before LMWH administration, the Thrombodynamics test was performed at 8 time points: (1) one day before surgery (before the first LMWH injection); (2) the morning of the day of surgery (12 hours after the first injection); (3) 2-4 hours after surgery (before the second injection); (4) the morning of the first POD (12 hours after the second injection); (5,6) 2 and 4 hours after the third injection on the first POD; (7) 24 hours after the third injection in the morning of the second POD; (8) the morning of 5-7th PODs before the next injection. A duplex ultrasound was performed at baseline one day before surgery and then on the 5-7th PODs to assess the lower limb venous system up to the inferior vena cava. The endpoint of the study was ultrasound verification of deep vein thrombosis (DVT).

RESULTS Postoperative DVT was found in 10 patients (22.9%). Logistic regression showed that a blood hypercoagulation against the standard pharmacoprophylaxis revealed with the Thrombodynamics test was a strong predictor of DVT. The following Thrombodynamics parameters significantly predicted venous thrombosis ($P < 0.05$): initial velocity of clot growth (V_{in}) at time points 4, 5, and 7; stationary velocity of clot growth (V_{st}) at time points 3, 5, and 6; and clot size at time points 4, 5, and 6. The maximal area under the ROC curve was 0.962 (95% CI: 0.872-1.000, $P = 0.007$) for V_{st} at time point 3 and 0.962 (95% CI: 0.870-1.000, $P = 0.007$) for V_{in} at time point 7. The cut-off point for V_{st} at time point 3 (with sensitivity 83.3% and specificity 87.5%) was $32.5 \mu\text{m}/\text{min}$ (normal range: 20-29 $\mu\text{m}/\text{min}$). The cut-off point for V_{in} at time point 7 (with sensitivity 75% and specificity 75%) was $63.5 \mu\text{m}/\text{min}$ (normal range: 36-56 $\mu\text{m}/\text{min}$).

CONCLUSION Despite the standard pharmacoprophylaxis, some high-risk surgical patients can experience blood hypercoagulation that is associated with postoperative DVT.

4.5 INCIDENCE OF HOSPITAL ASSOCIATED THROMBOSIS (HAT) OVER A TWO YEARS PERIOD IN A VENOUS-THROMBOEMBOLISM (VTE) EXEMPLAR CENTRE

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AIM In 2005, it was reported that, in the United Kingdom (UK), around 25,000 people die annually from preventable hospital-acquired venous thromboembolism (VTE). Following this, a major parliamentary action was taken and a program of exemplar centres was launched to reduce the incidence of this preventable death. A survey showed 71% of medium and high risk patients of developing VTE did not receive any form of VTE prophylaxis. This study aimed to evaluate the impact of the implementation of a mandatory VTE prophylaxis on reducing hospital associated thrombosis (HAT)

MATERIALS AND METHODS This study analysed a prospectively collected data for all hospital admissions in two successive years (April 2012 - March 2014) to compare the incidence of HAT and the proportion of preventable events of VTE. The mandatory VTE prophylaxis was applied in the second year. Patients' demography, the incidence of total and preventable VTE and assessment of the VTE prophylaxis measures were all measured.

RESULTS Documented VTE risk assessment improved from 88% to 96% in Between April 2013-March 2014. In the period from April 2012 to March 2013, there were 76337 hospital new admissions, 272 (0.4%) cases developed VTE of them 97 (0.13%) were HAT. In the period between April 2013 and March 2014, there were 77852 hospital new admissions, 220 (0.3%) cases developed VTE of them 72 (0.09%) cases were HAT. In the first year, 12.4% of the HAT did not have a correctly completed VTE risk assessment and 9.3% of them were not given their thromboprophylaxis in a timely manner. In the second year, 11.1% of the HAT did not have a correctly completed VTE risk assessment and 6.9% of them were not given their thromboprophylaxis in a timely manner. A significant reduction in the incidence of HAT was observed following sustained achievement of 96% risk assessment as overall HAT incidence reduced from 36% to 32% of all developed VTE cases.

CONCLUSION Strict implementation of VTE risk assessment and administration of the appropriate thromboprophylaxis have significantly reduced the incidence of preventable HAT and thereby improve patient safety. A multi-disciplinary team of physicians, vascular surgeons and specialist nurses should lead a thrombosis group and root-cause analysis panel to maintain compliance with guidelines and reduce the incidence of this preventable death.

4.6 DRUG INTERACTIONS OF NEWER ORAL ANTICOAGULANTS DABIGATRAN, RIVAROXABAN AND APIXABAN WITH ROUTINELY USED NON-ANTICOAGULANT/ANTI-PLATELET DRUGS

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AIM The newer oral anticoagulants (NOACs) such as dabigatran (D), apixaban (A) and rivaroxaban (R) are now commonly used in patients who are under polypharmacy. We hypothesized that some of the commonly used drugs may modulate the anticoagulant effects of NOACs. This study aims to determine the antiplatelet, anticoagulant, and bleeding effects of the NOACs at varying concentrations with such drugs as alendronate sodium, chondroitin sulfate, hydrocodone-acetaminophen, klonopin, penicillin, tacrolimus, tramadol chlorhydrate, and tranexamic acid (TA).

MATERIALS AND METHODS The above drugs were supplemented into citrated plasma at projected therapeutic ranges. Tests included prothrombin time (PT), activated partial thromboplastin time (APTT), dilute Russell viper venom time (dRVVT), thrombin time (TT), Heptest, anti-Xa and anti-IIa. Agonist induced platelet aggregation studies were performed on the platelet aggregation profiler-8 (PAP-8) (Biodata Corporation) with D, A and R alone and with the above drugs. For the in-vivo bleeding studies a model of rat tail transection was used with D alone and D followed by TA. Blood was drawn by cardiac puncture for ex vivo analysis.

RESULTS In the in vitro studies, all of the NOACs produced assay dependent anticoagulant and antiprotease effects. R and A did not exhibit any interactions at the projected therapeutic dosage range when combined with any of the routinely used drugs. However D at a fixed concentration of 1 µg/mL combined with the commonly used drugs at a fixed concentration of 0.1 µg/mL or 1 µg/mL produced augmented assay-dependent anticoagulant and antiprotease activity. The most pronounced interaction was noticed with tacrolimus (111% difference in PT, 231% difference in APTT, and 46% difference in anti-IIa assay), followed by tramadol (57% difference in PT and 54% difference in Anti-IIa assay). Platelet aggregation studies revealed no modulation of antiplatelet effects (<10%) with the addition of the commonly used drugs and the NOACs. In the rat tail transection bleeding model, there was a significant difference ($P=0.03$, $\alpha=0.05$) between the bleeding time with D (100 µg/kg) alone (13.1 ± 1.5 minutes) intravenously compared to D with TA (10 mg/kg) (10.3 ± 1.8 minutes). Ex vivo analysis showed a reduction in PT and Heptest assay responses with D and TA by 38% and 80%, respectively, and minimal change (5%) in APTT. D exhibited interactions with the commonly used drugs. Tacrolimus and tramadol showed the strongest interactions. Interestingly, TA reduced the anticoagulant effect of D in the in vivo and ex vivo studies.

CONCLUSION A post-marketing surveillance on the reported bleeding in patients treated concomitantly with NOACs and the above or other commonly used drugs is needed.

5.1 ASSESSMENT OF THE HERITABILITY OF CHRONIC VENOUS DISEASE

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AIM Genetic risk factors are thought to play an important role in the aetiology of chronic venous disease (CVD). We evaluated the genetic impact upon CVD by estimating the heritability.

MATERIALS AND METHODS All index patients were classified using the CEAP classification (C2 to C6 included). All interventions were performed on stationary patients in a specialized vein center in Germany. All patients suffered from severe injury of their great saphenous vein and had stayed in the clinic for at least 4 days. We have enrolled 2,701 patients. Preoperative diagnostic tests included Doppler evaluation of the great and small saphenous veins as well as venous duplex sonography. Duplex examination was done in line towards the UIP consensus document. The genetic contribution was assessed by estimating the heritability of the disease using a pedigree-based likelihood approach as implemented in the SOLAR software package. The statistical significance was assessed by means of a likelihood-ratio-test.

RESULTS Family information was provided by all 2,701 index patients which generated 4,033 nuclear families, comprising 16,434 individuals from all over Germany. The narrow-sense heritability of CVD equals 17.3% (standard error 2.5%. likelihood ratio test $P = 1.4 \times 10^{-13}$). The proportion of disease risk attributable to age and sex, the two main risk factors for CVD, was estimated as 10.7% (Kullback-Leibler deviance R^2). The mean ascertainment age of our patients was 56.2 years (SD) 11.1 years, range 18-years. No significant age difference was observed between the two sexes.

CONCLUSION The heritability of CVD is high. Suggesting a notable genetic component in the aetiology of the disease. Heritability was found to vary only little with disease severity (from 18.5% (C2) to 16.7% (C4)). We revealed a statistically significant association between a higher CEAP grade and an older current age of patients. An inverse relationship was observed between a higher CEAP grade and an older current age.

5.2 ROBOTIC INFERIOR VENA CAVAL SURGERY

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AIM Vascular surgeons are often consulted for renal cell carcinomas extending into the inferior vena cava (IVC) and for complications of inferior vena cava filters. Robotic surgery is increasingly utilized for minimally invasive complex surgery resulting in faster recovery time and less postoperative pain. Since data using robotic surgery involving the inferior vena cava is lacking, we have reviewed our experience at a single institution with this technique.

MATERIALS AND METHODS We performed a retrospective review of all inferior vena caval operations using minimally invasive robotic technology between 2011 and 2014 at our institution.

RESULTS Ten patients (6 male) were treated with robotic inferior vena caval surgery. The mean age was 56 years (range, 24-73 years). The indications for operation included renal cell carcinoma with tumor thrombus invasion into the IVC (n=7) and complications related to inferior vena cava filters (n=3). Radical nephrectomy with tumor thrombus removal was successfully performed in all cases involving renal cell carcinoma. Median tumor thrombus length was 5 cm (range, 0-8). All patients with IVC filters had a previously failed endovascular attempt at removal. All procedures were completed robotically. The average length of procedures was 240 minutes (range, 131-382). The average estimated blood loss was 375 mL (range, 150-1200 mL). Patients resumed a regular diet at an average of 1.9 days postoperatively (range, 1-4 days). Ambulation occurred on postoperative day 1 in all but one patient. Complications included retroperitoneal hematoma (n=1), anemia requiring blood transfusion (n=2), and a transverse colotomy with primary repair (n=1). The average length of stay was 3.5 days (range, 1-8 days). There were no surgical site infections. There were no deep vein thromboses. There were no deaths within 30 days and one long term death. Mean follow up was 181 days (range, 15-671 days).

CONCLUSION Use of robotic surgery is increasingly common. Renal tumors are more frequently being treated with this modality. Previously, extension of tumor thrombus from renal cell carcinoma into the IVC has limited the use of this minimally invasive technique. After failure of endovascular removal of inferior vena cava filters, traditional open surgery is often required for filter removal. We present ten cases of IVC surgery performed robotically. Our limited experience with robotic surgery of the IVC shows that this is a promising surgical approach and incorporates the benefits of minimally invasive surgery.

5.3 THE BASIC APPROACHES IN TREATMENT OF DIFFUSE CONGENITAL VASCULAR MALFORMATIONS WITH THE PRESENCE OF ARTERIOVENOUS MICROFISTULAS

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AIM The incidence of congenital arteriovenous (AV) forms of vascular malformations (CAVM) in the general population ranges from 1.5% to 10%, while in 53.2% of children with high-speed rail disease is detected at birth, and to 7 years - at 86.8%. The share of CAVM is from 36% to 43.3%.

The aim is to improve patient outcomes with CAVM based on the study of etiological and pathogenetic aspects of pathology and implementation methods of combined treatment with embolization, surgical, endovascular, and sclerosing laser techniques.

MATERIALS AND METHODS A group of 80 patients with AV microfistulous and mixed forms (venous and microfistulous) was examined for the period 2005-2013, the male to female ratio of 1:1.15. Age range from 3 to 69 years. The algorithm of diagnostics included: clinical examination, ultrasound duplex scanning (USDS), angiography, spiral computed tomography, ECG, echocardiography. Microfistulous were observed in 25 (32.5%) patients (42 operations) and mixed forms - in 16 (20%) patients (26 operations).

RESULTS The use of endovascular occlusion (EO) of AV branches of 3, 4, 5 order, which are the source of microfistulous blood shunting, in the preoperative period and intraoperative embolisation in the case of indirect AV shunts, can reduce the intraoperative blood loss. Performing endovascular laser coagulation (EVLC) of embryonic veins before removing of ectatic trunks of large and small saphenous veins helps to minimize surgical trauma.

The main treatment strategy:

1. Individualized staged approach which includes the use of endovascular techniques in the preoperative period and the combination of surgery, embolization, laser and sclerotherapy techniques in intraoperative period (combined treatment);
2. AV shunting correction as the first step (30 operations, 44.1%) or in combination with venous hypertension correction (22, 32.4%): magistralization of blood flow in the vascular segment (artery skeletization, vascular resection with prosthetic repair in the presence of aneurysms, angiomatous tissues excision);
3. Correction of secondary venous hypertension (16, 23.5%) in the superficial and deep venous systems (reconstructive surgery in combination with phlebectomy, EO, embolization techniques and EVLC, elastic compression), plastic steps (angiomatous tissue excision, autodermoplasty).

The nature of interventions in patients with mixed forms distinguished by the presence of localized venous aneurysms of sapheno-femoral or sapheno-popliteal junctions, where the local microfistulas were present; that require simultaneous or staged venous hypertension correction in superficial and / or deep venous systems.

CONCLUSION The optimal treatment for patients with microfistulous forms is pathogenetically substantiated differentiated stage treatment. Simultaneous use of surgical and mini-invasive techniques (EVLC, sclerotherapy) increases the radical treatment and allows to achieve satisfactory long-term results in 87% of patients.

6.1 THE IMPACT OF NEW NATIONAL GUIDELINES ON THE MANAGEMENT OF LOWER LIMB VENOUS DISEASE IN BIRMINGHAM, UK

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AIM Lower limb venous disease (LLVD) is very common and a source of significant morbidity and disability. Despite this, historically, the UK National Health Service (NHS) has sought to “ration” treatment for LLVD in an attempt to save money. Many private medical insurance companies have used this public policy as an excuse to deny their insured reimbursement for LLVD. This public and private rationing is non-evidence based and widely regarded as inappropriate. In July 2013 the National Institute for Health and Care Excellence (NICE) published new clinical guidelines (CG168) on the diagnosis and treatment of LLVD in order to promote evidence-based management of LLVD across the UK. The aim is to evaluate the impact of UK NICE CG168 on the management of LLVD at Heart of England NHS Foundation Trust (HEFT), Birmingham, UK.

MATERIALS AND METHODS A prospectively gathered database of all patients undergoing treatment for LLVD at HEFT since 1 January 2012 was interrogated. Patients treated before (group 1) and after (group 2) publication of NICE CG168 in July 2013 were compared.

RESULTS There were 253 patients, 286 legs (48% male, mean age 54 SD15.7 [20-91] years) treated in group 1 and 417 patients, 452 legs, treated (46% male, mean age 54 SD15.8 [14-90] years) in group 2, an increase of 65%. Publication of NICE CG168 was associated with a significant reduction in surgery (131 patients [52%] group 1 vs. 127 patients [30%] group 2, $P=0.0003$, Chi^2), no change in endothermal ablation (30 patients [12%] group 1 vs. 45 patients [11%] group 2), a significant increase in ultrasound guided foam sclerotherapy (102 patients [40%] group 1 and 245 patients [59%] group 2, $P=0.008$, Chi^2), and an increase in treatment for C2/3 disease (62% group 1 and 76% group 2).

CONCLUSION Publication of UK NICE CG168 in July 2013 has been associated with a significant increase (65%) in the number of patients treated for LLVD at HEFT. In line with NICE recommendations, patients are being referred at an earlier (CEAP) stage and the numbers of patients being offered endovenous treatment, as opposed to surgery, has significantly increased. Publication of NICE CG168 has already been associated a highly beneficial impact on the management of LLVD in Birmingham, the UK’s second largest city.

6.2 FOLLOW-UP RESULTS OF ILIOFEMORAL VEIN STENTING IN PATIENTS WITH POST-THROMBOTIC SYNDROME

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AIM Venous balloon dilatation and stent therapy have been proposed as effective treatments for chronic iliofemoral thrombosis.

In this study, we reported the 2 years follow up results and efficacy of balloon angioplasty and stenting for the treatment of post-thrombotic syndrome (PTS) in iliofemoral vein segments.

METHODS 52 consecutive patients with chronic PTS between June 2011 and June 2012; 59 limbs; 75% women; median age 58 years; range: 23-76 years were involved in this study and 2 years follow up results were recorded. Treatment effects were assessed using Villalta scale, Venous Clinical Severity Score (VCSS) and Chronic Venous Insufficiency Questionnaire (CIVIQ)-20 for PTS, CEAP (clinical, etiological, anatomical and pathological elements) grading and measurement of leg circumference, before and after intervention.

RESULTS Stenting was successfully accomplished in all patients. Coagulation abnormality was identified in 21 subjects (40.3%). CEAP grades were as follows: C3 in 19 patients, C4 in 24 patients, C5 in one patient and C6 in eight patients. According to Villalta scores, three patients were mild, seven patients were moderate and 42 patients were severe PTS. VCSS, Villalta scale and CIVIQ-20 showed a significant decrease in the severity of PTS signs and symptoms ($P=0.001$). The calf and middle thigh circumferences decreased significantly on both sides ($P=0.001$). In the follow up period, 25% of patients with stenting was occluded. The main reason for occlusion was inadequate inflow and hypercoagulability. The rest of the patients were remained without any occlusion. All patients received long life period of anticoagulation therapy.

CONCLUSION Treatment of iliac venous obstruction with balloon angioplasty and stenting appears to be a minimally invasive and safe therapeutic approach in patients with PTS offering quick symptomatic relief, good patency, minimal morbidity and also good long term results.

6.3 ONE-YEAR OUTCOMES FOLLOWING DEEP VEIN RECONSTRUCTION FOR THROMBOTIC DISEASE USING DEDICATED ENDOVENOUS STENTS

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AIM Deep vein reconstruction is a minimally invasive therapy for the treatment of venous outflow obstruction in both the acute and chronic setting. We have recently set up a tertiary multi-disciplinary service for deep vein reconstruction and we now report our one-year patency results using dedicated venous stents.

MATERIALS AND METHODS A prospective database of elective and urgent patients who underwent percutaneous deep vein reconstruction (2012-2014) was analysed. Patients were assessed intraoperatively using IVUS and duplex ultrasound one day following intervention. Duplex was then performed at two weeks, six weeks and six monthly intervals. Imaging was reviewed for stent patency, with the need for adjunctive procedures recorded.

RESULTS 209 venous stents were placed in 85 patients (median age 38 years) with a median follow-up of 12 months (range 2-31months). 23 patients had a documented thrombophilia and all patients received therapeutic anticoagulation following surgery. 46 patients had stenting of a residual stenosis following catheter-directed-thrombolysis for acute iliofemoral DVT. Primary patency was 92% and secondary patency 96% at one-year. 39 patients were treated for post-thrombotic occlusive disease. Primary patency at one year was 71% with secondary patency of 79%. 30% of patients required reintervention for stent occlusion (partial or complete). This was most common in the first 56 days following intervention.

CONCLUSION Dedicated venous stents can be effectively used to relieve outflow obstruction at one year following thrombotic disease in both the acute and chronic setting. Regular duplex ultrasound surveillance is however required to maintain stent patency following surgery with reintervention most common in the first six weeks. Further research is required to identify factors that cause stent occlusion and prevent this complication in the long-term.

6.4 A NEW MODALITY IN VEIN TREATMENT: EXTRALUMINAL VALVULOPLASTY BY INTERVENTIONAL INJECTION OF HYALURONAN GEL

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AIM Vein-preserving treatment of proximal saphenous insufficiency has been attempted by surgical means like extraluminal stenting or grafting, or with partial closure of the vein (CHIVA). Laser-induced vein shrinking while keeping the vein patent seems to be feasible, but is not yet reliable concerning endothelium damage and long time results. As a new modality, the idea to shape veins by extraluminal injection of crosslinked hyaluronan now presented in 2013, using fast-resorbable hyaluronan. Now the first use of more durable hyaluronan was investigated.

MATERIALS AND METHODS In a pilot study 2-5/2014, 20 patients (12w, 8 m; 38-67 J.) with proximal valve incompetence of the GSV (diameter 7.0-11.4 mm, mean 8.6) were selected to receive a diameter reduction of the diseased valve zone by circumferential injection of a NA-SHA gel, 2% solution, crosslink degree: 2%. Gel injections were performed by use of a safety system consisting of a relocatable cannula with triple-cut tip, and a flexible outer metal catheter (IntraShape). Gel injections were performed under continuous ultrasound imaging, aiming at a strictly perivenous placement. The injection was finished when reflux was no longer observed during Valsava maneuver. There was no external compression applied. Clinical and ultrasound examinations including video recordings were performed after 2, 12, 26 and 52 weeks.

RESULTS An orthograde flow could be established in 19/20 cases (95%) using gel volumina of 14-35 mL (mean: 21.3 mL). The treated segment length was 4-8 cm, mean: 5.1 cm. After 12 weeks orthograde flow was present in 18/19 cases (83.3%), and after 26 weeks in 15/19 cases (78.95%) and after 52 weeks in 13/19 cases (68.4%). All cases with remaining or recurring reflux (n=6) received a second gel injection of 4-7 mL with hemodynamic success up to week 52 or beyond. There were no adverse reactions. Observations are continued.

CONCLUSION External valvuloplasty by perivenous gel injection is feasible and effective and thus provides a genuine vein-preserving option. In spite of the clinical success, distribution patterns still seem to be quite irregular. After a further learning curve in placement technique and depending on substance longevity, long term observations will have to show, if years of restoration can be accomplished without re-treatment.

6.5 PELVIC PAIN SYNDROME: VENOGRAPHIC MANIFESTATION OF OVARIOCELE INVOLVEMENT AND ENDOVASCULAR CORRECTION OF VENOUS CONGESTION

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AIM The purpose of this study was to evaluate efficacy multisegmental endovascular correction of reversal blood flow in dilated ovarian veins in patients with pelvic venous congestion.

MATERIALS AND METHODS Phlebogram of ovarian veins with subsequent transcatheter occlusion were performed in 57 patients aged 21-48 years old with clinical symptoms of pelvic venous congestion. Duplex scan with Valsalva test had been routinely used as preoperative investigation in all cases, pelvic varicose veins were diagnosed by a laparoscopy in 27 women. Interventions were performed through the right internal jugular vein in 52 women and by the right femoral approach in 5 patients under local anaesthesia. Phlebogram and occlusion through the right transjugular approach were performed with use a single 5,0 Fr. vertebral catheter ("Cordis" Europe N.V.). The distal major pelvic branches at the level sacroiliac joint were embolized by coils with subsequent injection up to 1,0 mL ethyl alcohol. The coils were also inserted at the places venous confluences of pelvic tributaries of gonadal veins and the final embolization was performed at the caudal portion of the main trunk ovarian vein.

RESULTS Bilateral significant dilation the left and right gonadal veins with marked tortuosity pelvic branches were noted in 46 women (80,7%). The left side ovariocele was diagnosed in 9 cases (15,8%) and 2 patients had isolated the right side involvement. The complete or partial pain relief had been achieved in 47 of 57 women (82,5%). The short term symptom resolution or no effect after embolization experienced 10 patients.

CONCLUSION The use of multisegmental endovascular embolization is effective method correction of reversal blood flow in ovarian veins. The transjugular approach facilitates manoeuvrability of catheter and correct positioning of metallic coils with lowering risk of their dislodgement.

6.6 INCREASING THIGH COMPRESSION PRESSURE CORRELATES WITH A REDUCTION IN THE VENOUS DRAINAGE INDEX OF AIR-PLETHYSMOGRAPHY

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AIM Venous drainage from the leg is poorly understood and measuring it is difficult to implement in haemodynamic terms. Attempts have been made using duplex scanning and venous occlusion air-plethysmography (APG). However, they have limited value in day-to-day clinical practice. This is because venous drainage measurements have never been validated successfully against increasing obstruction pressures. The hypothesis is that the novel venous drainage index (VDI) in mL/s reduces in response to increasing venous obstruction, and the aim was to measure this, using step-wise inflations of a thigh-cuff.

MATERIALS AND METHODS Venous drainage tracings were obtained with APG using a dependency to elevation manoeuvre on the right legs of 21 volunteers (9 female) without venous disease. The test was performed once without a thigh-cuff, and then with the contoured thigh-cuff (18 cm wide) inflated in steps at 20, 30, 40 and 50 mmHg just prior to elevation. The drainage volumes were obtained once the tracing from the elevated cuffed leg decreased to a steady baseline when arterial inflow = venous outflow. The VDI was calculated in the same way the venous filling index (VFI) is obtained from the venous filling tracing (elevation to dependency manoeuvre). Namely $VDI = 90\%$ venous drainage volume (90VDV)/venous drainage time to 90% (VDT90). The drainage reserve volume (DRV) represents the undrained volume at each inflation pressure. Significant change in the VDI and DRV from the previous inflation step was assessed using the Wilcoxon test.

RESULTS The median (inter-quartile range) age, height, weight, mid-thigh circumference and VFI were 30 (22-47) years, 173 (168-182) cm, 75 (64-87) kg, 51 (48.3-55.8) cm and 1.4 (0.9-2.1) mL/s, respectively. The VDI and DRV correlated significantly ($P < 0.0005$) with increasing obstruction pressure at $r = -0.69$ and $r = 0.793$, respectively (Spearman).

Pressure (mmHg)	Median VDI (mL/s)	P value (Wilcoxon)	Median DRV (mL)	P value (Wilcoxon)
0	26.1 (17.8-44.8)	--	0	--
20	24.1 (16.9-31.1)	0.027	5.3 (-4.6-11.3)	0.305
30	12.1 (8.4-19.6)	<0.0005	15.4 (9.3-38)	<0.0005
40	7.8 (3.5-13.5)	0.004	45.5 (23.2-66)	<0.0005
50	5.4 (3.4-11.4)	0.131	62.6 (42.7-81.6)	<0.0005

CONCLUSION The VDI and DRV are novel APG parameters derived from a dependency to elevation manoeuvre. They are responsive to and correlate with increasing venous obstruction pressures. They may have clinical value in assessing the haemodynamic significance of an iliac/femoral stenosis thereby reducing the number of invasive investigations in the screening and selection of patients requiring iliac stenting and follow-up.

A1 EFFICACY OF ANTICOAGULATION IN PATIENTS WITH DEEP VENOUS THROMBOSIS

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AIM To evaluate changes in the proximal part of thrombi in patients with deep venous thrombosis (DVT) receiving different types of anticoagulants according to echographic findings.

MATERIALS AND METHODS The study included 17 patients (10 men, 7 women) with acute DVT who underwent conservative treatment in the department of vascular surgery at Ryazan State Medical University and Ryazan Regional Clinical Cardiologic Dispensary, Russia. All patients underwent duplex ultrasonography immediately after admission, at 4-5, and 8-10 days after admission. The patients were divided into two groups: group one received 15mg of Xa factor inhibitor rivaroxaban b.i.d. for 21 days with following dosage of 20 mg od; patients in group 2 received UFH 5000 IU subcutaneously q.d.s. with following warfarin therapy. All patients received NSAID, antiplatelets, phlebotonics, and elastic compression.

RESULTS The initial length of the floating part of thrombus in group 1 was 2.55 cm (± 0.76). At 4-5 days after the onset of treatment the length of the floating part reduced to 1.5 cm (± 0.1). At 8-10 days the floating part of the thrombus was completely dissolved. Similar changes were observed in group two: the initial length of the floating part of thrombus was 4.21 cm (± 0.43); at 4-5 days after the onset of treatment the length of the floating part reduced to 3.22 cm (± 0.39). At 10 days the floating part of the thrombus was also completely dissolved. According to echographic findings the floating part of thrombi completely dissolved at 8 days after the onset of treatment. After 1 month of treatment patients in group 1 had a complete dissolution of the floating part of thrombus, thickened venous wall at the level of DVT, and homogenous recanalization. Patients in group 2 had heterogenous recanalization of thrombi. Thus, recanalization was similar after 10 days of treatment with either rivaroxaban or warfarin. Long-term treatment with rivaroxaban lead to a more active recanalization in comparison with warfarin.

CONCLUSION

1. A precise evaluation of the floating part of the thrombi in patients with DVT using duplex ultrasonography is a reliable method to evaluate the efficacy of anticoagulation.
2. Patients who receive rivaroxaban have a more active recanalization of thrombi as compared with those who receive warfarin.

A2 DEEP VENOUS THROMBOSIS AND QUALITY OF LIFE

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AIM To evaluate the quality of life in patients with deep venous thrombosis according to localization of thrombus and course of disease.

MATERIALS AND METHODS The study included 33 male and 23 female patients with deep venous thrombosis (DVT) who underwent treatment in the university department of vascular surgery. Duration of disease was 1 to 15 days. CIVIQ questionnaire was used to evaluate the quality of life in patients. The CIVIQ comprises 20 questions in four quality-of-life domains: physical, psychological, social, and pain. The questionnaire generates a score ranging from 20 to 100, with higher scores indicating the severely impaired quality of life.

Patients were divided into 3 groups. Group 1 included 15 patients with proximal localization of thrombus at the level of common iliac and inferior cava veins. Group 2 included 25 patients with proximal localization of thrombus at the level of common femoral and external iliac veins. Group 3 included 16 patients with proximal localization of thrombus distal to deep femoral vein. All 3 groups were divided into subgroups according to duration of disease: A - up to 5 days, B - 5 to 15 days, C - more than 15 days.

RESULTS The CIVIQ scoring among the groups was as followed: group 1 - 61.08 (± 10.10), group 2 - 62.04 (± 9.64), group 3 - 67.43 (± 12.90). All patients had impaired quality of life. There was no statistically significant difference between the groups, presumably due to a small number of patients included in the study.

According to disease duration the CIVIQ scoring was as followed: subgroup A - 63.96 (± 8.15), subgroup B - 64.95 (± 15.26), subgroup C - 57.22 (± 13.15). Thus, quality of life was severely impaired in early onset DVT with following improvement after 15 days.

CONCLUSION

1. All patients with deep venous thrombosis have impaired quality of life.
 2. Patients with disease duration of more than 15 days have better quality of life than those with early onset deep venous thrombosis.
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A3 PREVALENCE OF VENOUS THROMBOEMBOLISM IN ALL CANCER PATIENTS HOSPITALISED IN FRENCH PUBLIC AND PRIVATE HOSPITALS DURING 2010-2011.

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AIM The objective was to describe the prevalence of venous thromboembolism (VTE), pulmonary embolism (PE) and deep vein thrombosis (DVT) among patient having a diagnosis of malignant tumor (MT).

METHODS Diagnosis Related Group used for the financial management of French hospital gave now the opportunity to investigate the frequency of venous thromboembolism (VTE) and cancer. Statistics are issued from the national PMSI MCO databases encoded using the ICD10. We focused our study in patient having already a diagnosis of MT. Any stay with an ICD-10 code selected was considered as a hospital-occurred thrombosis unless it was the Principal Diagnosis of the first Medical Unit Summary. To eliminate outpatient consultations or in day care, stays of <48 hours were excluded.

RESULTS The results pertain to the 18 683 603 hospital stays in 2010-2011 and among them 1 070 108 were related to a MT (5.72%). Among these patients, the incidence of hospital stays came to 4.95% (n=53 037) for VTE vs. 1.09% in the total hospital stays population, with 2.31% (n=24751) for DVT without PE vs. 0.543% and 2.64% (n=28286) vs. 0.548% for PE with or without DVT. Preliminary results suggest that among them, more than two third (69.9%) could have occurred during the hospital stay.

CONCLUSION These results the high prevalence of VTE among cancer patients and question the quality of prevention and/or its effectiveness in this population.

A4 THE GENETIC RISK OF VENOUS THROMBOEMBOLISM EVENTS AT ORTHOPEDIC PATIENTS

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Among the various factors of high risk of venous thromboembolism events great attention is drawn to the congenitive thrombophilia. Among the surgical procedures the greatest risk of thrombosis appears during replacement of large joints. To reveal hereditary coagulopathy and prevent thrombosis, 128 orthopedic patients were screened before hospitalization for the presence of thrombophilia (genetic form). Mutations of 8 basic coagulation factors were studied. As a result various combinations of them were identified. The patients received anticoagulant therapy after the replacement of large joints. Follow-up period lasts 6 months. In total the venous thrombosis of the lower limbs was diagnosed in 26 cases (20%).

In the early postoperative period (3-7 days) thrombosis occurred in 12 (9%) cases. Analyzing the results of genetic testing the following mutations were revealed: F2 A/A, F5 A/A, ITGA2, FGB. In a month after surgery thrombosis occurred in 7 (5.4%) cases. Analyzing this situation the following mutations were dominated: F2 A/A, A/G; F5 A/A, A/G; ITGV2, FGB. In the longer term (more than 3 months), venous thrombosis of the lower limbs occurred in 7 (5.4%) cases. After analysis of this cases another mutations were revealed: F2 A/G; F5 A/G; ITGA2, PAI-1.

In conclusion should be noticed, that definition of genetic mutations of coagulation factors in cases, when patients are preparing for arthroplasty, allows to: - appraise the risk of early and delayed thrombotic complications; - timely and fully implement individual preventive measures of thrombotic complications; - select anticoagulant or disaggregant therapy in the postoperative period according to the genetic characteristics;- avoid mistakes in the appointment of therapy.

A5 TREATMENT OF DEEP VEIN THROMBOSIS OF INFERIOR VENA CAVA SYSTEM, COMPLICATED WITH PULMONARY EMBOLISM - OPPORTUNITIES AND OUTCOMES

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AIM The aim of our study was to develop based on our own experience differentiated surgical tactics in patients with deep venous thrombosis, complicated with pulmonary embolism, in accordance with data evidence-based medicine.

MATERIALS AND METHODS The results of treatment of 58 patients with deep venous thrombosis, complicated with pulmonary embolism, were analyzed. Patients with high risk of early death for the classification of the European Society of Cardiology was observed in 9 cases (15.5%), intermediate risk in 14 cases (24%), with low risk in 35 cases (60.5%). DVT proximal localization was observed in 46 (79%) cases. In 55 cases (94%) cause of pulmonary embolism was DVT, in 3 cases (6%) the cause of pulmonary embolism could not be found. Therapeutic tactics depended on the massiveness of the defeat of the pulmonary artery and the level of risk of early death related to pulmonary embolism.

Systemic thrombolysis of deep venous thrombosis, complicated with pulmonary embolism, conducted in patients with high and moderate risk of early death in 16 (69.5%) cases.

Catheter-directed thrombolysis was performed in patients with iliofemoral DVT, complicated with pulmonary embolism, in patients with a low risk of early death and in terms of thrombosis up to 7 days in 10 (28.5%) cases.

RESULTS The choice of an adequate treatment strategy in patients with DVT, complicated with pulmonary embolism, get us possibility of satisfactory results and significant clinical improvement in 82% of cases.

No fatalities were reported. During the study period, recurrent pulmonary embolism has not been ascertained.

CONCLUSION Systemic thrombolysis of DVT, complicated with pulmonary embolism, is indicated in the group of patients with high and moderate risk of early death.

Catheter-directed thrombolysis is indicated for iliofemoral DVT, complicated with pulmonary embolism, in patients with a low risk of early death and in terms of thrombosis up to 7 days.

Anticoagulant therapy is indicated for distal occlusive DVT, complicated with pulmonary embolism, in patients with a low risk of early death.

A6 COMMON GENETIC BASIS OF CHRONIC VENOUS INSUFFICIENCY AND THROMBOEMBOLIC DISEASE

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AIM Chronic venous insufficiency (CVI) is an extremely common disease with a multifactorial and complex basis, where the interaction between genetic and environmental factors creates a predisposition to disease development and progression. Despite the high prevalence of CVI, the hereditary component is still unknown. The purpose of this study is to quantify the genetic basis (heritability) of the CVI and its relationship to other clinically important thromboembolic diseases.

MATERIAL AND METHODS The study included 895 individuals in 35 extended families. 52 individuals had CVI using the CEAP classification and 86 with venous thrombosis. Although 13 of them were classified as C0-C1, they were considered as patients with CVI because they underwent surgery for varicose veins. For statistical analysis individuals, the individuals were classified as C0-C1 (non-CVI) or C2-C6 (CVI). Heritability (h^2 ; the relative proportion of the phenotypic variation that is attributable to additive genetic effects) of the trait studied (CVI) and correlations with other clinical parameters were estimated using maximum likelihood methods based on Variant Component Analyses. To genotype known genetic risk factors for thrombosis we use Thromboincode kit.

RESULTS Our study estimates that 97% ($h^2=0.97$, $P=3.6 \times 10^{-11}$) and 67% ($h^2=0.67$, $P=1.6 \times 10^{-06}$) of the variation in susceptibility to the CVI and venous thrombosis, respectively, are attributable to genetic factors. More importantly, the risk of developing CVI showed a significant genetic correlation ($\rho_g=0.72$, $P=0.01$) with venous thrombosis, indicating that genes that influence susceptibility to CVI also influence the risk of venous thrombosis. In this sense, we identified some prothrombotic genetic risk factors that are also involved in the predisposition to CVI.

CONCLUSION The high heritability of the risk of CVI justifies the search for genetic factors predisposing to this disease. On the other hand, we would stress that our results demonstrate a common genetic basis between the CVI and thromboembolic disease. More importantly, this is the first study that has identified genetic risk factor involved in the predisposition to both venous pathologies (CVI and venous thrombosis).

A7 THE FORMS OF CLINICALLY NON-SIGNIFICANT OCCLUSION OF VENA CAVA INFERIOR

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AIM Post-thrombotic occlusion of the vena cava inferior, usually accompanied by the most severe post-thrombotic syndrome. The symptoms of venous insufficiency - edema, trophic skin changes, appearance or worsening of varicose veins, leg pain, stasis ulceration, is understandable and explainable in such situation. However, there are patients whose occlusion of the vena cava inferior does not cause any clinically significant venous insufficiency. These cases are still poorly understood.

The aim is to reveal the outflow tract for patients with postthrombotic occlusion of the inferior vena cava, without clinically significant venous insufficiency

MATERIAL AND METHODS Between 2012 and 2014 in Pirogov National Medical and Surgical Center, was identified 6 patients with post-thrombotic occlusion of the inferior vena cava with no signs of venous insufficiency. All of them performed selective computed tomography venography or magnetic resonance venography or contrast venography.

RESULTS It was revealed the predominance of 3 tracts:

1. preperitoneal - through porto-caval and cava-caval anastomoses -vv. paraumbilicales coming in lig.teres hepatis to the portal vein, v. epigastrica superior system of v.cava superior and v. epigastrica inferior- from the system v. cava inferior;
2. intraperitoneal- porto-caval shunt through the pelvic organs, v. rectalis superior, which flows through v.mesenterica inferior in the portal vein and vv. rectales media;
3. retroperitoneal - cava-caval anastomosis through the posterior abdominal wall, vv.lumbales (from the system v.cava inferior) and v. lumbalis ascendens, which is the beginning of vv. azygos (right) and v.hemiazygos (left) of v. cava superior.

The intraperitoneal form of venous outflow, was prevailed in this group of patients.

CONCLUSION For patients with clinically non-significant occlusion of vena cava inferior the intraperitoneal form of outflow is prevail.

A8 CHOICE OF METHOD OF ANTITHROMBOTIC PROPHYLAXIS STOMACH AND COLORECTAL CANCER PATIENTS

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AIM Thromboembolism complications are the direct cause of death in postoperative period among cancer patients.

The aim of our research is to increase the efficiency of anticoagulant prophylaxis in oncological patients.

MATERIALS AND METHODS There were 216 patients undergoing elective surgery for stomach and colorectal cancer. We divided them into three groups. The 1st group (control group of 75 patients) didn't have any anticoagulant prophylaxis (75 patients). The 2nd group of 77 patients had standard dose of LMWH (low molecular weight heparins) - enoxaparin 40 mg per day. The choice of an individual dose of LMWH (in the 3rd group of 64 patients) was based on the results of the thrombodynamic test made with a device called "Registrator thrombodynamic 2".

RESULTS The results were assessed according to the evolution of clotting rates, registration of thrombotic events and bleeding complications. The research in the 3rd group has been expanded by adding the examination changes in thrombodynamic rates on the 1st and 7-10th days of postoperative period. Originally patients in the 3 groups showed the tendency of hypercoagulation, which resulted in an increase of average rates of fibrinogen, D-dimer and soluble fibrin monomer complex (SFMC).

Surgery caused the increase of fibrinogen level and its derivative substances. This process is more distinct in the control group. By the 7-10th day of postoperative period the 1st group showed the deficiency of antithrombin activity (79.32%). The 2nd group (40 mg enoxaparin per day) showed high level of SFMC (12.63 mg/mL) and D-dimer (1,12 µg/mL), but less than in the 1st group.

It's common knowledge that the decrease of SFMC is the result of adequate heparintherapy. Our conclusion is that this dose of LMWH is not very effective to reduce hypercoagulation syndrome. The 3rd group with individual dose of LMWH showed statistically true preservation of antithrombin activity (87.34%) during postoperative period, with little increase in SFMC level (6.66 mg/mL).

Incidence of venous thrombosis in the 1st group was 30.67% and with the usage of standard dose of LMWH - 16.88%. The best results were in the 3rd group - 6.25%.

So the level of thrombinemia markers corresponds to the frequency of thrombotic complications.

CONCLUSION This study suggests that cancer surgical patients have thrombinemia despite the usage of standard dose of LMWH. The 26.56% of them have hypercoagulation. The correction of the LMWH dose (up to 50%) allows to reduce thrombotic events to 6.25%.

A9 COMPARISON BETWEEN ASIAN VENOUS THROMBOSIS FORUM (AVTF) AND CAPRINI VENOUS THROMBOEMBOLISM RISK ASSESSMENT MODELS IN HOSPITALIZED SURGICAL PATIENTS

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AIM It is recognised that venous thromboembolism (VTE) incidence is slightly lower in Asia as compared to the Western countries. While the reasons for the differences are debatable, the recommended perioperative VTE prophylaxis regime are different. Caprini risk assessment model stratifies risk levels according to the American College of Chest Physicians (ACCP) guidelines. We have created a new risk assessment model with low, moderate and high risk categories based on the Asian VTE guidelines. This retrospective study aims to study the applicability of AVTF score in VTE prevention and compare it with the Caprini model.

MATERIALS AND METHODS All patients aged 18 years and above admitted to surgical ward between 1 January 2013 and 30 June 2013 were included. Non-Asian patients such as Caucasians, Middle Easterners and Africans were excluded. VTE risks in each of these patients were recorded using both the AVTF and Caprini risk assessment models. Medical records were reviewed for thromboprophylaxis given and evidence of symptomatic VTE during and within 60 days of hospital admission. Descriptive analysis on the percentage of patients in each risk categories, individual risk factors and incidence of VTE was performed.

RESULTS A total of 488 patients were admitted to surgical ward in the six-month study period. Twenty-three patients aged below 18 years were excluded. Based on AVTF risk assessment model, 69% of them were categorized as low risk, 15% were in moderate risk group and 16% were in the high risk category. Using the Caprini risk assessment model, 17% were categorized as very low risk, 39% were in low risk group, 23% were in moderate risk and 21% were in high risk level. A total of 28 patients who were stratified as high risk in both risk assessment models were given prophylaxis. One patient who was categorized as high risk on both models had deep vein thrombosis during admission.

CONCLUSION The incidence of symptomatic VTE was low during the study period. Using Caprini model, 83% of patients would require thromboprophylaxis whereas only 31% would require thromboprophylaxis using AVTF model. AVTF score was effective in identifying the at-risk groups of patients that required thromboprophylaxis. Caprini model appeared to have over-categorised the risk. There will be potential cost savings in VTE prophylaxis if we can validate this prospectively in multicenter studies in Asia.

A10 THROMBOTIC AND BLEEDING COMPLICATION OF ANTICOAGULATION TREATMENT. COAGULATION TEST OPPORTUNITIES FOR RISK ASSESMENT

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Despite the experience in using anticoagulants (a/c) in prophylaxis and treatment of thrombotic complications, the problem of efficiency and safety interrelation in risk assessment for individual patient is still not clear. The probable solution of the problem is using of laboratory hemostasis tests.

Settled number of tests is used to estimate the effect of anticoagulant drugs. It is INR for warfarin, APTT for UFH, anti-Xa for LMWH, fondaparinux and rivaroxaban, diluted thrombin time (dTT) and ecarin time for dabigatran. Significant feature of these tests is high correlation with anticoagulant concentration in plasma (antiXa, dTT), or good correlation with bleeding or thrombotic complication (APTT, INR) for the average population. However, there is great evidence that presence of associated diseases and/or critical condition of patient could lead to a disagreement between anticoagulant concentration and its clinical effect as well as bleeding and thrombotic complications. Global coagulation tests such as thrombin generation and thrombodynamics seem to be helpful for estimating of an individual risks of thrombotic and hemorrhagic complications during a/c therapy for these groups of patients.

The following groups of patients were included in the analysis: 220 hip arthroplasty patients (140 on LMWH, 80 on rivaroxaban), 165 DVT patients (100 on UFH, 65 on warfarin), 205 atrial fibrillation patients on warfarin. Comparative analysis, ROC and meta-analysis were performed in order to determine test's sensitivity to registration of hemostasis condition during a/c prophylaxis and treatment. For the specified anticoagulants identification of an Inefficient patients using routine tests had a sensitivity below 60% while sensitivity of thrombodynamics achieved 90%. For warfarin therapy it was shown that thrombodynamics assay has 94% predictive value for inefficient therapy group determination.

CONCLUSION Global coagulation tests having concurrent sensitivity to both the procoagulant impacts of associated diseases as well as the anticoagulant drugs effect is capable for more accurate estimation of hemostasis condition during anticoagulant therapy. Such test potentially could be used for a risk assessment of bleeding and thrombotic complications during anticoagulant treatment.

A11 INDIVIDUALIZED APPROACH IN PROPHYLAXIS FOR THROMBOTIC AND BLEEDING COMPLICATION OF LONG-TERM \ EXTENDED ANTICOAGULATION

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Long-term anticoagulation (a/c) despite permanent control still often complicated by bleeding (3-10% per year) and thrombosis that may achieve 3% per year while anticoagulation and 15% per year after anticoagulant therapy is stopped. Significance of this problem doesn't reduce. Despite the widespread of low molecular weight heparins (LMWH) and new oral anticoagulants (NOAC) the rate of mortal hemorrhages and thrombotic complications decreases insufficiently.

One of the techniques for determination of the risk groups requiring enhanced control is scaling of risk factors. Some of the scales have an effort to determine the groups with enhanced hemorrhagic risk when standard doses of a/c could be excess and lead to dramatic increase of bleeding. Another scales consider factors which could potentially cause the lacked effect of standard doses of a/c which could increase thrombotic risk despite continuing a/c therapy. However such kind of estimation is indirect and is incapable of considering all factors influencing patient hemostasis. Scaling could determine the group requiring enhanced control and individualization of treatment but it's incapable for personal dose correction in order to achieve the optimal effect.

The other technique for estimation the adequacy of a/c effect and determination of the groups with enhanced risk of bleeding or thrombosis is using the coagulation tests. Every test has it's features. Routine test such as INR, APTT or anti-Xa are good in estimation changes in factors concentrations or activity influenced by a/c but in an only part of the coagulation system. Global tests such as thrombodynamics or thrombin generation test characterize the general integral condition of blood coagulation system taking into account both a/c effect and the impact of associated diseases which raise or lower patient's threshold of sensitivity to the a/c. Comparison analysis of sensitivity and predictive capability for determining the risk groups between routine and global tests showed that capabilities of global tests are 1.5-1.7 folds higher than them of routine tests.

Using the methods admitting personal estimation of risk factors of bleeding and thrombotic complications during a/c therapy is the way to enhance the safety and efficiency of a/c therapy. Consistent application of the scales to determine the risk groups of bleeding or thrombotic complications and global tests to determine the sufficiency of anticoagulant effect in the selected risk groups appears to be the promising way to reduce the rate of complications during long-term anticoagulation.

A12 IMPROVED RESULTS VENOUS THROMBECTOMY IN PATIENTS WITH FLOATING ILIOFEMORAL THROMBOSIS

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AIM Evaluate the efficacy of thrombectomy supplemented overlay arteriovenous fistula (AVF).

MATERIALS AND METHODS From 2000 to 2014 we made 296 thrombectomy from iliac-femoral vein segment. After 24 venous thrombectomies from iliac-femoral segment we made AVF. The average age of the patients was 48.2 (\pm 16.7). 18 men (75.0%), 6 women (25.0%). Relative indications for the imposition of the AVF is limitation of venous thrombosis than 7 days. Absolute indication to the imposition of the AVF are:

1. deep femoral vein (DFV) thrombosis;
2. inflammatory changes in the wall of the common femoral vein;
3. partial retention of venous thrombus to the wall.

Absolute contraindication to the imposition of the APS is involvement the great saphenous vein thrombosis in sapheno-femoral junction.

All patients underwent ultrasound duplex scanning of (USDS) with the objectives of:

1. set the thrombosis level;
2. to determine the nature of the thrombus;
3. assess the condition of the DFV at their confluence with common femoral vein.
4. assess the condition of GSV.

Angiography performed in 4 patients (16.6%), when USDS not possible to determine the upper limit of the thrombus. For suspected pulmonary embolism used angiography (in 2 patients) and echocardiography (in 4 patients). All patients in the postoperative period used anticoagulant therapy, including low molecular weight heparin (37.5%) with transition to warfarin (INR 2.0-2.5 control). In the early postoperative period was performed ultrasound duplex scanning of the operation zone: 1-2 days, 4-5 days and at discharge.

RESULTS Rethrombosis in the early postoperative period was detected in one patient (4.2%) who underwent thrombectomy from common iliac vein with the imposition of an AVF. The cause of thrombotic reocclusion served arteriovenous fistula thrombosis due to the initial thrombosis great saphenous vein used as AVF. In 2 patients (8.3%) in the early postoperative period, there was lymphorrhea of postoperative wound. There were no deaths.

Up to 3 years tracked 17 people. There were not rethrombosis after operation. In 14 patients AVF closed yourself during 3 months. In 2 patients AVF closure performed by open operation. One patient underwent endovasal AVF embolization.

USDS control was carried out in terms of 3, 6, 12 months.

CONCLUSION Overlay arteriovenous fistula can restore patency of iliac-femoral segment with a floating venous thrombosis in 95.7% of cases. Performance of arteriovenous fistula is an effective prevention retrombosis after venous thrombectomy.

A13 NON-LIPID-LOWERING EFFECT OF STATINS IN EXPERIMENTAL VENOUS THROMBOSIS

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AIM Inflammation contributes importantly to all stages of deep vein thrombosis (DVT), including the onset of acute thrombotic process. In addition, statins have been shown to possess several pleiotropic properties independent of lipid lowering in experimental settings including effect on the fibrinolytic system and inflammation. Also, in the JUPITER Trial, the rate of DVT was significantly decreased in those patients treated with rosuvastatin compared to placebo in non hyperlipidemic individuals. However, the mechanism behind this effects in DVT remind unclear. Based on these premises, we investigated the anti-inflammatory and pro-fibrinolytic properties of rosuvastatin in vivo, testing its effect using a mouse model of DVT.

MATERIALS AND METHODS Inferior vena cava (IVC) ligation below the level of the renal veins was performed to create a stasis DVT on C57BL/6 (WT) mice. The groups included rosuvastatin treated (5 mg/k) and saline treated (controls) starting 2 days before the surgery. Mice were harvested at very early time points (acute DVT) 3, 6 hours and day 2 after surgery. At euthanasia, the IVC and its thrombus were evaluated for thrombus weight (TW). Blood samples were collected for plasmin activity assay, and PAI 1 activity. In addition, Gene expression of PAI-1 and inflammatory markers (IL-6, CCL2, CRP, IL-1b, TNF α) were measured in vein wall (to study local effect of rosuvastatin) and liver (to study systemic effect of rosuvastatin).

RESULTS Thrombus weight was significantly decreased at day 2 in the rosuvastatin group ($P < 0.05$). PAI-1 gene expression was significantly decreased in the rosuvastatin group as early as 3hours in vein wall ($P < 0.05$). Also in the rosuvastatin group, circulating active PAI-1 was significantly decreased at 6 hours post DVT ($P < 0.05$). Inflammatory markers IL-6 and CCL2 were significantly decrease in vein wall as early as 3 hours only in the rosuvastatin group ($P < 0.05$). IL-1b and CRP were also decreased by rosuvastatin but not significant in the vein wall. We did not found differences in TNF α between groups. Inflammatory markers in the liver shown IL-6, CRP and TNF α were significantly decrease in vein wall at 6 hours only in the rosuvastatin group ($P < 0.05$). CCL2 was also decreased by rosuvastatin but not significant in the liver. We did not found differences in liver gene expression of IL-1b between groups (Table I).

Table I. Rosuvastatin treated mice compared to control mice results.

	Thrombus weight	PAI-1 Circulating	PAI-1	IL-6	CCL2	CRP	IL-1b	TNF α
			Gene expression					
3 H	NS	NS	↓(P<0.05) Vein wall	↓(P<0.05) Vein wall	↓(P<0.05) Vein wall	NS ↓Vein wall	NS ↓Vein wall	NS NS
6 H	NS	↓(P<0.05) Plasma	NS	↓(P<0.05) Liver	↓NS Liver	↓(P<0.05) Liver	NS	↓(P<0.05) Liver
2 D	↓(P>0.05)	NS	NS	NS	NS	NS	NS	NS

CONCLUSION Thrombus weight was significantly decreased 2 days after surgery. Also, rosuvastatin increased fibrinolysis and decreased inflammation. The pro-fibrinolytic effect was observed through the levels of PAI-1 in both locally and systemically. Also an anti-inflammatory effect was observed locally or in the vein wall at 3 hours followed by an anti-inflammatory effect on the liver (or systemic effect) at 6 hours. In this model of DVT, we found early anti-inflammatory and pro-fibrinolytic effects due to administration of rosuvastatin that decrease thrombus weight at day 2 post IVC ligation.

B1 STUDY OF PARAMETERS AND EFFICIENCY OF A NEW SYSTEM OF RADIOFREQUENCY TEMPERATURE CONTROLLED SEGMENTAL ABLATION OF GREAT SAPHENOUS VEIN

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AIM Greater saphenous vein (GSV) radiofrequency (RF) ablation is largely indicated (grade 1A) and performed with high rate occlusion.

A new system of RF temperature controlled segmental ablation (RFTSA) is now available: RF medical catheter VEINCLEAR and V1000 generator whose parameters and effects have never been published.

The aim is to appreciate the aptitude of this new RF generator to deliver efficient energy in the GSV, to assess quality of thermoregulation and adaptation with local anatomic conditions: saphenous diameter and tumescence.

MATERIAL AND METHODS Since November 2014 to January 2015, 18 limbs with significant GSV reflux were treated for ablation by the RF catheter VEINCLEAR and V1000 generator. This catheter is almost similar to Vnus Medical catheter including a 7 cm heating element and a thermocouple. V1000 generator rules cycles of 20 seconds, regulates temperature at 120° and displays 3 major data easily visible directly on the generator screen: energy, temperature, impedance, letting to check immediately ablation quality.

All limbs treated were C2 or C3 CEAP clinical class.

Energy has been delivered along the GSV as classical RFTSA protocol: 2 cycles on the proximal junction and one cycle on the lowest saphenous segments. Sometimes one cycle has been added on abnormal very large segments.

126 cycles were collected giving more than 6000 data, with a mean heating time of 2 minutes 20 by leg. The average vein length treated was 26 cm.

RESULTS 100% immediate vein obliteration was observed.

Mean total energy delivered on sapheno-femoral junction was 746 joules /7 cm. Mean LEED was 107 J/cm.

Mean total energy delivered on saphenous truncular segments was 380 joules /7 cm.

When a second cycle is applied on one segment, energy delivered is lower than during the first cycle (20%) demonstrating efficiency of temperature feedback. Larger tumescence obliges the generator to deliver more energy. However, RF generator cannot deliver more than 490 joules /7 cm in one cycle. So, one RF cycle is safe and efficient for ablation of diameters inferior to 7 mm. Larger vein requires a second energy cycle and even a third cycle if diameter is more than 12 mm.

Ablation parameters are recorded in real time and downloaded to a USB key. Then, analysis of the graphs of energy, temperature and impedance is discussed, improving comprehension of quality of ablation.

CONCLUSION The new RF Medical thermal ablation is safe, efficient and very adapted to check successful ablation of GSV.

B2 RESTRUCTURING OF THE VENOUS STREAM BELOW KNEE AFTER SHORT STRIPPING OF THE GSV TRUNK IN PRIMARY VARICOUS VEINS

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AIM To assess options of ultrasound changes of the venous stream below knee after short stripping of the GSV trunk in primary varicose veins of C2-3 CVD classes within 5 years.

MATERIALS AND METHODS Retrospective analysis of histories according to the inclusion criteria (n= 474). Preliminary data have shown the changes of average diameter of GSV trunk (mm) depending on CVD classes: C2-3 -7.2 ± 0.2 ; C4 -9.07 ± 0.12 ; C5 -10.6 ± 1.2 ; C6 -12.5 ± 1.22 . The ultrasound assessment was conducted in 45 patients (C2-3 classes): at 3 years (n=15), 4 years (n =15) and 5 years (n=15) after high SFJ resection and short stripping. General characteristics of venous stream, diameters of the GSV trunk below knee, diameters of the SSV trunk, number, diameters and localization of the perforating veins, presence or absence of the pathological refluxes were described.

RESULTS At 3 years (n=15) the pathological GSV stump with reflux and reflux through medial tributary have not been revealed. The lateral tributary reflux have been registered in 4 cases (26.7%), reflux through GSV trunk below knee - in 6 (40%). The PV insufficiency has been detected in 6 cases (40%) including 2 with drainage into the trunk. The average PV diameter was 4.4 mm.

At 4 years (n=15) the pathological GSV stump with reflux has been revealed in 1 case. The lateral and medial tributary segmental refluxes have been recorded (during compression maneuvers) in 8 cases (53,3%), the reflux through GSV trunk below knee - in 3 (20%). The PV insufficiency has been detected in 6 cases (40%), including 3 with drainage into the trunk. The average PV diameter was 4.5mm.

At 5 years (n=15) the pathological GSV stump with reflux has not been revealed. The medial tributary segmental reflux has been registered in 2 cases (13.3%), the reflux through GSV trunk below knee - in 5 (33.3%). The PV insufficiency has been detected in 6 cases (40%), including 3 with drainage into the trunk. The average PV diameter was 4.5 mm.

CONCLUSION The pathological reflux through GSV trunk below knee and the perforating veins insufficiency are registered in almost 40% of patients 3 years after short stripping of the GSV trunk in primary varicose veins of C2-3 CVD classes, and remain stable in the following years.

B3 SCLEROFOAM ASSISTED LASER THERAPY (SFALT) FOR SAPHENOUS REFLUXES: A POSSIBLE TUMESCENCE-FREE SOLUTION

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AIM Endovenous laser (EL) and radiofrequency (RF) devices have continuously increased their appealing in the last decade, so much to be recommended with a 1B grade in the most recent guidelines.

Even if mini-invasive, such a procedure still requires multiple high volume injections of tumescent anesthesia (TA): a medical act that is not totally complications-free. Aim of the present investigation is to evaluate the feasibility of a hybrid technique (so called sclerofoam assisted laser therapy, SFALT) combining foam sclerotherapy (FS) and EL in a tumescence free approach.

MATERIALS AND METHODS 20 primary CVD patients (4 males, 16 females, C2-4EpAsPr; mean age 53±8 yo) presenting a sapheno-femoral reflux both at the Valsalva and Compression/Relaxation manoeuvre underwent a SFALT procedure.

It consists in a EL fiber introduction into the great saphenous vein (GSV), shrinking it for a single cm at 200 J/cm. After a shrunk plug is created, keeping the fiber stuck in it, 5-10 cc of foam sclerotherapy (Tessari Method), 1% polidocanol (POL) or 1% sodium tetradecyl sulfate (STS)) are injected through the same 6 Fr EL introducer.

The consequent spasm allows a following EL mediated shrinkage by means of a significantly reducing the fluence to - 20%.

A mild sedation, without tumescence, allowed a proper pain control.

A pre-operative GSV diameter assessment was performed just below the superficial epigastric vein, at the mid thigh and at the lowest thigh third, both in standing and in a supine position.

The same measurements were repeated after the FS injection and at one month follow-up.

Clinical and sonographic follow up were performed at one week and one month.

RESULTS At the one month follow up all the 20 cases presented a shrunk GSV, without recanalization signs.

The standing up pre-operative GSV diameter values were 8±2 mm below the superficial epigastric vein, 6±2 mm at the mid-thigh, 6±1 mm at the lowest thigh third.

The average GSV diameter reduction after the FS injection was 56% at the junction, 61% at the middle thigh, 65% at the lowest third (P<0.05).

VCSS improved from an average of 8 to 2 at the one month follow-up.

Neither major nor minor complications were reported.

CONCLUSION SFALT approach is feasible, safe and effective.

More investigations are needed in order to define the proper fluence parameters and the chance of eliminating the even mild sedation.

This technique offers the chance of a possible tumescence free GSV treatment, even in case of major calibres vessels.

B4 CLINICAL EXPERIENCE OF COMBINED USING OF VNUS CLOSURE FAST RADIOFREQUENCY ABLATION AND FOAM SCLEROTHERAPY IN PATIENTS WITH LOWER LIMB VARICOSE DISEASE

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AIM Superficial venous hypertension has been cited as the putative etiologic factor in chronic venous insufficiency (CVI) (CEAP C 3/6). Endovenous radiofrequency thermal ablation (ERFA) of the great saphenous vein (GSV) is a new method, which has been described as a less invasive and cost-saving alternative to stripping for the treatment of refluxing GSV. The aim is the estimation of combined using of VNUS Closure FAST ERFA and foam sclerotherapy in patients with lower limb varicose disease (LLVD).

MATERIALS AND METHODS We analyzed the results of ERFA in 42 patients (72 extremities, diameter of GSV-5 to 15 mm) with LLVD (C2-C6), 10 (23.8%) males and 32 (76.2%) females (aged from 20 to 75 years). C2 was noted in 6 (8.3%), C3-12 (16.7%), C4-35 (48.6%), C5-10 (13.8%), C6-9 (12.6%) limbs. Coronary heart disease was noted in 2 (4.8%), arterial hypertension-9 (21.4%), diabetes mellitus-5 (11.9%), PAD-2 (4.8%) patients. In 52 (72.2%) limbs (basic group) ERFA of the GSV was combined with intra- and postoperative foam sclerotherapy of distal below knee segment of GSV, incompetent perforating veins (ICPVs) and tributaries (0.5%-3% polidocanol) under control of duplex angioscanning (DA). Control group in 20 (27.8%) limbs was performed by VNUS Closure FAST ERFA without sclerotherapy. Tumescence anesthesia was used in 100%, in 76% with combination of spinal anesthesia. The venous status was evaluated by objective examination and DA.

RESULTS Persistent occlusion was documented in all cases. There were no neuritis, infection, inguinal neovascularization and deep vein thrombosis. One patient (2.4%) had skin burn, 3 (7.1%) - paresthesia, 4 (9.5%) - skin pigmentation. 100% of patients returned to the habitual activity on the 1-2 day of operation. Long term results (3 month-1 year period) were evaluated by clinical signs and DA. In basic group GSV ablation was associated with 96% reduction in the number of ICPVs, in control-74% ($P<0.05$). Within 3 months after ERFA in basic group CVI (CEAP C3/6-edema, skin changes, ulcers) were regressed in 91%, in control group-67% of cases ($P<0.01$).

CONCLUSION The combined using of VNUS Closure FAST ERFA and foam sclerotherapy represents a real alternative to saphenofemoral junction ligation and saphenous vein stripping. Application of these methods improves the ERFA treatment results, aesthetic effect and quality of life in patients with LLVD.

B5 ENDOVENOUS LASER ABLATION IN MAJOR DIAMETER SAPHENOUS VEINS. PROSPECTIVE FOLLOW-UP STUDY. IMMEDIATE TO SHORT TERM RESULTS

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AIM Endovenous laser ablation (EVLA) is effective method for treatment in varicose veins disease. No clear recommendations and evidence-based data available regarding EVLA efficacy and complication rates in major veins, large diameter veins (≥ 1 cm). There is debate about indications of EVLA, it's efficacy and safety, energetic parameters. Study describes possibility and features of EVLA in major diameter saphenous trunks.

METHODS Prospective follow-up study designed with 94 EVLA procedures in 2 groups. The grouping criteria was diameter (minor or major 1 cm) of proximal part (maximal diameter in 5 cm length to junction) of saphena - great (92%) and small (8%) saphenous veins, difference in two groups was not significant (NS).

The first group included 50 procedures, with mean diameter of vein 1.45 cm [1.0-2.2 cm], 38% (19 procedures) of this veins had diameter ≥ 1.5 cm, mean 1.7 [1.5-2.2 cm]. Mean age of patients was 46.4 ± 14.3 , male 19 (38%) and female 31 (62%).

In 2nd group (control group) we have 44 procedures with mean diameter of vein 0.72 cm [0.6-0.9 cm]. Mean age 49.0 ± 12.5 , male 10 (23%) and female 34 (77%).

Groups were comparable by age, clinical class of chronic venous disease, prevalence of co-morbidities (NS differences). There were no significant differences.

The ELVA procedure performed according to well-known technique with the 1470 nm diode laser and radial fibers by 3 practicing surgeons. EVLA energy parameters were the same in two group: impulse mode (990 ms), power 5-5.8 watt, linear endovenous energy density (LEED) 70-80 J/cm, continuous automatic pullback with speed 0.7 cm/s.

Clinical outcomes, complications and duplex ultrasound of the GSV were assessed on follow-up visits within 1 day, 1 month, 3 month and 6 months after EVLT.

RESULTS Technical success of EVLA was 100% in both group. After 1-day and 1-month ablation rates were 100% in both group. Ablation rates after 3 and 6 month were 98% (1 GSV recanalization) in 1st group and 100% in 2nd group. Detected partial recanalization of GSV length 7 cm in proximal segment (patient with natural history of previous GSV phlebitis, primary diameter of vein 15 mm) clinically was not significant (no clinical signs or complains). No general and local complications were detected in whole term of follow-up in both groups.

CONCLUSION EVLA procedure is effective and safe method for treatment minor and major diameter varicose veins. Ablation rates for major veins do not differ from the cohort of patients with small diameter. LEED levels need-to-ablation are not differ regarding to vein diameter. Necessity of high energetic intervention for major diameter saphena is controversial.

B6 WHAT HAPPENS AFTER ENDOVENOUS LASER, RADIOFREQUENCY AND STEAM ABLATIONS IN THE VEIN WALL: A COMPARATIVE EX-VIVO HISTOPATHOLOGICAL STUDY

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AIM In the last decade, endovenous thermal ablation has become the first line treatment for incompetent saphenous veins. Endovenous laser and radiofrequency (RF) are well known minimal invasive procedures which have changed the position of traditional saphenous surgery whereas steam ablation is a new thermal ablation method. The aim of this study is to compare the histopathological change after endovenous laser, RF and new steam ablation in the stripped saphenous veins ex-vivo.

MATERIAL AND METHODS After approval of the ethical committee, 32 stripping procedures were performed in patients with incompetent saphenous vein between 7-12 mm in diameter. Freshly removed veins were divided into three parts as about 10 cm long segments and we had one control sample about 1 cm long. Laser (radial fiber and 980 nm Biolitec, Germany), RF (ClosureFast catheter, VNUS, California) and steam (CERMA, France) ablations were done 60 joule per centimeter (cm) for Laser, 1 cycle of 20 s for segmental RF and three pulses of steam per cm, respectively. After thermal ablations were completed, the fixed veins and control samples were evaluated and scored for vein wall damage from 0 to 4 by an experienced pathologist in a blinded fashion. The results were evaluated by SPSS 11.5 for statistical analyses.

RESULTS Histological evaluation of 96 vein segments treated by Laser, RF and steam revealed significant vein wall destruction on the intima, media and adventitia layers of vein but no significant difference among the groups was found. RF induced medial damage was higher than Laser (2.43 vs. 1.65 and *P=0.007). Evaluation of perivascular tissue damage showed no significant difference among the groups. However steam ablation caused less perivascular damage. Table below shows results of vein wall damage after laser, RF and steam ablation.

	<i>Intimal damage</i> Score (0-4)	<i>Medial damage</i> Score (0-4)	<i>Adventitial damage</i> Score (0-4)	<i>Perivascular damage</i> Score (0-4)	<i>Vein wall thickness</i> (mm)
Laser (n=32)	2.46±0.28	1.65±0.21*	1.28±0.23	0.25±0.10	0.67±0.03
Steam (n=32)	2.90±0.26	2.09±0.20	1.50±0.20	0.21±0.09	0.66±0.03
RF (n=32)	3.12±0.22	2.43±0.17*	1.68±0.21	0.43±0.13	0.64±0.03
	ns	*P=0.007	ns	ns	ns

CONCLUSION The steam ablation of saphenous vein is as effective as Laser and RF which are the most commonly preferred endovenous ablation methods. It could be also argued that steam induced limited perivascular damage could explain more satisfaction and less pain post-procedurally in patients who are treated with steam ablation.

B7 FIVE YEAR RESULTS OF A RANDOMIZED CLINICAL TRIAL OF ENDOVENOUS LASER ABLATION VERSUS CONVENTIONAL SURGERY FOR GREAT SAPHENOUS VARICOSE VEINS

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AIM Endothermal venous ablation (EVLA) is an increasingly popular treatment for superficial venous insufficiency (SVI) and in July 2014 became recommended by NICE above conventional surgery and sclerotherapy. However long term data is lacking. The aim of this study was to investigate the five year outcomes of a large randomised trial comparing the treatment of SVI using EVLA or conventional surgery.

MATERIALS AND METHODS Patients with primary, symptomatic, unilateral superficial venous insufficiency, due to isolated saphenofemoral junction incompetence, and great saphenous vein reflux were randomised to receive EVLA or surgery. Outcomes included: Venous Clinical Severity Score (VCSS), Disease specific Quality of Life (QoL) using Aberdeen Varicose Vein Questionnaire (AVVQ), Generic QoL using SF-36 and EQ-5D and requirement for secondary procedures

RESULTS Of 276 randomised patients, follow-up was completed by 218 (79%) patients. Both treatment groups were similarly represented (Surgery n=110 EVLA n=108 P=0.658). While VCSS was reported lower (better) among the EVLA group (0 (0-1) vs. 1 (0-2) P=0.031) no intergroup difference was detected in AVVQ (EVLA 3.374 (0.172-7.077) vs. Surgery 4.623 (1.625-10.294) P=0.057), EQ5D (EVLA 1.000 (0.796-1.000) vs. Surgery 1.000 (0.805-1.000) (P=0.559) nor any SF-36 QoL domain aside from Social Function whereby the surgery group typically reported worse scores. Additional procedures over the five years were performed similarly in both groups (Surgery n=20 vs. EVLA n=24 P=0.605).

CONCLUSION The long-term durability of EVLA strengthens its utilisation as the primary treatment option for superficial venous insufficiency.

B8 EVRA (EARLY VENOUS REFLUX ABLATION) ULCER TRIAL: A RANDOMISED CLINICAL TRIAL TO COMPARE EARLY VERSUS DELAYED ENDOVENOUS TREATMENT OF SUPERFICIAL VENOUS REFLUX IN PATIENTS WITH CHRONIC VENOUS ULCERATION

Heatley F¹ on behalf of the EVRA participants²

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

MATERIALS AND METHODS This is a multi-centre, prospective, randomised controlled trial funded by the National Institute for Health Research (NIHR HTA) Programme (project number 11/129/197).

The sample size calculation for this study was based on the primary outcome of ulcer healing. According to previous published literature, the 24-week healing rate in patients randomised to the standard treatment of compression alone was approximately 60%, while the 24-week healing rate of early treatment of superficial venous reflux may be as high as 82%. To calculate a sample size for this study, we estimated a benefit associated with early treatment of around 15%. 208 subjects per group are required to identify a difference in 24-week healing rates of 15% between the two groups (60% vs. 75%) with 90% power (log-rank test). Incorporating a 10% drop out rate, plus further allowances for protocol violations and unexpected dropouts, the target sample size for the trial is calculated at 500 patients.

Patients are randomised to either early endovenous treatment of superficial venous reflux in addition to standard care compared to standard care alone. All patients are seen in an out-patient clinic at 6 weeks and examined clinically (with a duplex taken in the early group), in addition to monthly telephone follow-ups to document resource use for the health economic analysis and monitor patient safety. 4, weekly ulcer healing verification visits are performed upon notification of healing. Quality of life is measured at baseline, 6 weeks, 6 and 12 months.

RESULTS The primary endpoint of this study is time to ulcer healing (from date of randomisation to date of healing). Randomisation commenced in October 2013, and is ongoing until February 2016, with 207 patients randomised to date. Screening data with respect to generalisability of future results will be presented. Of every 9 patients screened one is eligible for recruitment.

CONCLUSION This study will be the first large randomised multicentre trial to report on the clinical, quality of life and cost effectiveness of treating patients with venous ulcers by early superficial venous intervention.

B9 VARICOSE VEIN TREATMENT WITH FOAM SCLEROTHERAPY - A HISTORICAL COHORT STUDY

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AIM Ultrasound-guided foam sclerotherapy (UGFS) is increasing in popularity as a method to treat varicose veins (VV) of the lower extremities. In 2008, we began using UGFS as an alternative treating therapy. The outcomes are described in this study.

MATERIALS AND METHODS Seven hundred nineteen legs were treated with UGFS over a 5-year period, from January 2008 to December 2013, at Viborg Regional Hospital. The average age, sex, occlusion rates and effect of different sclerosing agents were calculated. The outcomes were studied retrospectively. 14 days and 12 months after treatment, the primary and secondary success rates were analyzed using Duplex Doppler.

RESULTS 566 (78.7%) women and 153 (21.3%) men with the average age of 52 years (20-85) were included. The total success rates were 561 in 694 (80.84%) closed VV at 14 days, and 362 in 456 (79.4%) closed VV at 12 months. The success rate at 12 month follow-up was 52.63% (10 VV) in the year 2008 and increased to 87.24% (171 VV) in 2013.

Twenty-eight patients had recurrent VV 12 months after the primary treatment, 20 in 27 (74%) were closed 14 days after UGFS recurrent-treatment and 7 in 9 (78%) limbs were still closed after 12 months. The most common side effects seen at twelve months control were hyperpigmentation (24.1%), pain (9.5%), swelling (8.4%) and skin ulceration (1.3%). One treatment was complicated with both lung embolism and deep vein thrombosis (DVT), which resulted in a longer hospitalization. One other leg reported DVT alone. No strokes were reported. Median leave of absence from work was 0 days (range 0-5 weeks). We found no difference in the effect of the sclerosing agents.

CONCLUSION The occlusion rates and post treatment complications were similar as those of other published data. In summary, UGFS can be easily and effectively performed in an outpatient clinical setting.

B10 ENDOTHERMAL ABLATION OF TRUNCAL VEINS – IS CONCOMITANT TREATMENT OF TRIBUTARIES NECESSARY?

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AIM Endothermal ablation (ETA) is now an established cost-effective treatment for varicose veins with significant improvement in quality of life. A worldwide survey has shown significant variations in choice of treatment modalities particularly with regard to concomitant treatment of tributaries. Both treatment strategies have been shown to be equally effective with endothermal laser ablation (EVLA). This is a single centre experience of radiofrequency ablation without concomitant treatment of tributaries.

MATERIALS AND METHODS All patients listed for radiofrequency ablation (RFA) of varicose veins between October 2008 and December 2012 were followed up for at least 12 weeks. Each patient had a pre-operative clinical assessment, Aberdeen Varicose Vein Severity Score (AVSS) and duplex scan. Treatment was ambulatory under tumescent anaesthesia with no concomitant avulsions or foam sclerotherapy. Every patient had a post-operative clinical review, duplex scan and AVSS between 10 and 12 weeks after the treatment and also received a non-validated post treatment satisfaction questionnaire. Data were recorded prospectively and analysed retrospectively.

RESULTS A total of 271 patients attended for RFA during the study period out of which 265 (97.8%) received the planned treatment. 60% were female and the age range was from 22-86 years with a mean age of 52. 78% of the patients had C2 disease. 83% of the target veins treated were Great Saphenous vein (GSV). Of the 265 who received the planned treatment, 197 (74.43%) completed the review process by attending for follow up scans and outpatient clinical review. Of the 68 who did not complete the review process, 40 were satisfied with the outcome of their treatment and did not bother to attend for post-treatment assessment. The final outcome of the remaining 28 is not known. We have not included the 68 patients in the analysis. In 98.98% of the 197 patients that completed the review process, the target vein was completely occluded. Only 33 (16.7%) required further treatment - mostly foam sclerotherapy. The AVSS reduced from a pre-op mean of 18.65 to a post treatment mean of 11.7. More than 95% were very satisfied with their treatment and would recommend the treatment to their friends and family.

CONCLUSION This study demonstrates both objective and subjective evidence that majority of patients are satisfied by a treatment protocol of radiofrequency ablation without concomitant treatment of the tributaries. Only a very small proportion require subsequent treatment in the outpatient clinic with significant cost-benefit to both the patient and the hospital. We recommend this approach as being most suited to office practice and suggest a wider randomised study to evaluate our conclusion.

B11 FOAM SCLEROTHERAPY OF SAPHENOUS VEINS COMPARING THE EFFECT OF INJECTION VIA NEEDLES AND CATHETERS OF DIFFERENT SIZE

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AIM For physical reasons, an injection tool for foam sclerotherapy should be as large as possible to provide complete blood displacement by the foam and thus uniform and calculable effects on the endothelium. The use of smaller tools leads to floating phenomena and thus reduced effectiveness and frequent relapse. On the other hand, smaller tools are easier to insert through the skin and into the vein, and the access site will close easier. In this study, the effect of foam injections via catheter, microcatheter and injection needles was evaluated.

MATERIALS AND METHODS In this comparative study, 30 patients (12 m, 18 f, 28-72 years) with insufficiency of the GSV, diameter D=6-12 mm, were randomized to mode A: foam application via catheter (PhleboCath, PTFE, L=65 cm, outer/inner diameter OD/ID 2.1/1.7 mm), mode B: Microcatheter (L=4.5 cm, OD/ID: 1.5/1.2 mm), or mode C: Injection needle (L=4 cm; OD/ID: 0.9/0.65 mm). In every case, a GSV segment of 50 cm length was treated by three foam injections when using needles or microcatheters, or in drawback mode when using large catheters (Aethoxsklerol 1%, 1+4 with air, total amount: 4-7.5 mL, mean: 5.8 mL). All injections were performed under ultrasound monitoring in the lying patient without incline, after one minute leg elevation. Follow-up examinations including ultrasound and, if required, additional foam applications were performed after 2 and 8 weeks and after 6 months.

RESULTS Total occlusion of the target segment was observed after 2 weeks in 10/10 cases of group A (catheter), in 8/10 cases in group B (microcatheter) and 6/10 cases of group C (needle). While mode A did not require additional foam treatments, these had to be performed in 2/10 cases of mode B (3 sessions) and 4/10 cases treated with mode C (6 sessions). At 6 months follow-up all target segments were occluded. The total time consumption of treatments including additional injections was mean 5.7 min. (A), 7.6 min (B) and 9.8 min (C). There were no adverse reactions, in particular no bleedings from the puncture sites.

CONCLUSION Foam sclerotherapy of saphenous veins is more reliable when catheters are used, compared to microcatheters or injection needles. Although catheter interventions require more effort (guide wire, sterile coverings), in the final time analysis they even present as time saving as all procedures were "one-step" to success.

B12 INITIAL AND PERMANENT VEIN LUMEN MINIMIZATION OBTAINED WITH ENDOVENOUS OCCLUSION TECHNIQUES BY USING HYALURONAN SOLUTION INSTEAD OF TUMESCENT FLUID

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AIM Tumescence anaesthesia is usually applied prior to thermo-occlusive methods, but the benefit of vein lumen reduction is lost within hours to days due to rapid fluid resorption. This particular drawback is the main reason for painful inflammatory reactions and brownish discolorations frequently developing during the post-interventional period. We examined a new modality to establish an initial and lasting vein lumen reduction by perivenous injections of hyaluronic acid.

MATERIALS AND METHODS In a comparative study, 48 patients (33 f, 15 m, 46-74 years) with insufficiency of the GSV, diameter 7.2-23.9 mm, receiving endovenous laser treatment (1470 nm, n=24) or catheter microfoam (n=24) were randomized for lumen reduction A) using a 2% hyaluronan solution (NASHA) with a crosslink ratio of 1.0%, or B) tumescent fluid (modified Klein' solution). In laser - treated areas, local anaesthetic was added. The application of hyaluronan gel was performed using a coaxial safety system (IntraShape) consisting of a 200 mm cannula, diameter 0.8 mm, with triple-cut tip and a flexible PTFE catheter, outer diameter 1.3 mm. The system is introduced in local skin anaesthesia and advanced along the diseased vein with approx. 1 mm distance under ultrasound monitoring. Hyaluronan gel is distributed during withdrawal of the catheter aiming at a lumen reduction of 50-75%. Tumescence anaesthesia was conventionally injected. No external compression media were used. Clinical and sonographic follow-up was performed after 2, 8, 16 and 26 weeks.

RESULTS The application of gel was technically successful in the first attempt in 45/48 cases (93.7%), while 3 cases required additional injections. The initial diameter reduction obtained after gel application was 50-81%, mean: 68.2%. Clinical follow-up showed a complete absence of symptomatic phlebitic reactions and as well of discolorations in gel-treated segments (A), while in segments with tumescent anaesthesia there were inflammations requiring oral analgetics in 13/48 cases (27.1%) or mini-thrombospirations (8/48, 16.7%). Visible hematoma were present in 2/24 (8.3%) in group A versus 17/24 (70.8%) in group B. No other adverse events were observed. Laser and catheter microfoam did not differ in postinterventional behaviour.

CONCLUSION Instead of gradual regression over months, initial and permanent vein lumen reduction can be obtained by using hyaluronan solution instead of tumescence fluid. The procedure is safe and effective. The increase in comfort for the patients is significant. For a routine use, the industry is challenged to provide reasonably priced hyaluronan with a half-life of 6-8 weeks. Probably the method also increases the long term success of occlusive methods, which will be subject to further investigations.

B13 A NEW GLUING MODALITY FOR INSUFFICIENT VEINS

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AIM While today's thermo-occlusive or sclerosing techniques achieve just a gradual vein regression requiring weeks to months to obtain invisible and symptom-free residuals, an initial and permanent minimization of vein diameters can be obtained by gluing. However, gluing has so far been attempted by continuous placement of larger amounts of hardly resorbable acrylates. It was limited to saphenous veins below 12 mm in diameter, and to locations approachable by external manual compression. These drawbacks could be overcome by a new modality which combines catheter sclerotherapy and pointwise gluing.

MATERIALS AND METHODS 32 non-branched vein segments of 10-20 cm length and 6-12 mm in diameter (mean: 8.4 mm) were defined during phlebectomy. The segments were closed by ligature at one end and provided with a vascular access sheath at the other end. A novel coaxial catheter system (ScleroGlue) was introduced and foam sclerotherapy (Aethoxysklerol 1%, 1+4 with air) performed. After 1 minute the foam was evacuated and pointwise gluing in 5 cm intervals performed using butyl-cyanoacrylates under negative pressure to keep the vein walls tightly closed. After 5 minutes the treated vein segment was removed from its in-situ position and preserved for histological evaluation.

RESULTS In 29/32 vein segments histology showed total denaturation of the endothelium, while in 3/32 vein segments denaturation was 93 - 99%. 72 of 81 glued spots (88%) were strongly cohesive when exposed to forces of up to 10 N. The amount of glue used was 3-6 mg (mean: 4.8 mg) per cm vein.

CONCLUSION The ScleroGlue project seems to provide reliable denaturation and economical gluing, independent from external compression. It furthermore offers the option to simultaneously include side branches and perforator veins in the foam treatment to prevent additional punctures. Some parameters, like glue properties, size of glue spots and length of glue-free intervals will need further investigation prior to clinical application.

B14 IMPLEMENTATION OF A NEW TWO-RING RADIAL FIBRE COMBINED WITH 1470 NM DIODE LASER AS PROMISING STANDARD TREATMENT FOR GREAT SAPHENOUS VEIN INSUFFICIENCY OF MORE THAN 8 MM AND EVALUATION OF THE WELLBEING AND OF YOUR QUALITY OF LIFE (QOL) BY USING THE VCSS AND CIVIQ QUESTIONNAIRES

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AIM The purpose of our study is to implement the new two-ring radial-fiber in combination with a 1470 nm diode laser as promising standard treatment for great saphenous vein insufficiency (diameter 3 cm distal to junction) of more than 8 mm. Secondly, we combine in our study good clinical practice and patient focus evaluation such as clinical, etiologic, anatomic and pathophysiologic data, venous clinical severity score (updated version) and CIVIQ (including the subscores: pain, physical condition, social and sicological scores).

MATERIALS AND METHODS Patients suffering from a great saphenous vein insufficiency were assigned to ELT using two-ring radial-fiber in combination with 1480 nm diode laser. All interventions were performed on ambulatory patients in a specialized vein center in Germany. The study with a planned examination of 300 patients has started in March in 2013. Up to now, we have enrolled 275 patients. Performance characteristics of each ELT are evaluated, including length of the treated vein, diameter of the vein and LEED. Duplex examination was done in line towards the UIP consensus document.

RESULTS Comparison of patients with a diameter ≥ 8 mm (subgroup A) versus < 8 mm (subgroup B). Patients with an average age of 48 years with a range from 20 to 72 years (SD=17.5). Observation subgroup A mean (SD) diameter = 9.4 mm (0.9) and subgroup B mean (SD) diameter = 6.0 mm (1.1). Occlusion-rate of 100 % for both subgroups. The length of the treated GSV was 43.5 cm (SD=10.0). Laser treatment was continuously carried out with a power of 13.1 watts (10-15: SD=1.2) 3cm around the SFJ resulting in a LEED of 91.5 J/cm (SD=8.5) and an EFE of 52.6 J/cm² (SD=14.1). After the laser treatment the average diameter was 4.7 mm (51.6%) and 2.6 mm (43.3%) for subgroup A and B respectively (3cm from the SVJ). Data result from 1.2 days after the ELT. Modified CEAP severity score dropped down from 2.1 C classes to 0.5 C classes. It was possible to establish significant improvements in regard of the evaluation of VCSS questionnaire as well as of CIVIQ questionnaire.

CONCLUSION We demonstrated an effective method to treat large insufficient GSV (diameter above 8 mm) by using the two-ring radial-fiber laser. This new design needs less energy and results in an optimal homogenous radiation. The patient satisfaction was high. In our study we will still demonstrate additional results: modified CEAP severity, Venous Clinical Severity Score and CIVIQ was much better after 1.2 days, 3 and 6 months. Patient satisfaction rate was high.

C1 THE PROFILE OF SYMPTOMATIC PATIENTS SEEKING CARE FOR CHRONIC VENOUS DISORDERS: FIRST RESULTS FROM THE VEIN ACT PROGRAM IN RUSSIA

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AIM The Russian VEIN Act Program (VAP) is an observational, prospective survey, carried out under the auspices of the European Venous Forum. Its aim is to report the type of prescribed treatment according to the profile of patients seeking care for chronic venous disorders (CVD) in the framework of ordinary specialized consultations, and to assess compliance with treatments.

MATERIALS AND METHODS Adult patients complaining of symptomatic CVD, agreeing to take part in the program, not consulting for an emergency and free of concomitant diseases underwent a leg examination. Once the CVD diagnosis had been confirmed, a case report form was completed with: patient's clinical presentation and history; reported symptoms; clinical, etiological, anatomical, and pathological (CEAP) class; and prescribed nonoperative treatment(s).

RESULTS A total of 1607 patients, predominantly female (80%), aged 45.7±14 years, slightly overweighted with mean a body mass index (BMI) of 26.02±5.02 kg/m², were enrolled by 82 phlebologists in Russia. A total of 92% of patients reported that they had experience venous symptoms over the last 4 weeks. For most symptoms, the intensity assessed using the visual analogue scale (VAS) was greater than 5 cm. More women than men complained of venous symptoms and the symptom prevalence increased with age in women (not in men), but sex did not influence the intensity of symptoms. Symptom intensity increased with a higher BMI and CEAP class in both sexes.

Regarding signs, patients reported that they had telangiectases (65%), varicose veins (63%), edema (52%), skin changes (11%), and/or venous ulcers (2%). Women and men equally reported edema (P=NS), but more women than men complained of telangiectases (72% vs. 33%; P<0.0001); while more men than women came with varicose veins (82% vs. 57%; P<0.0001), skin changes (13% vs. 8%; P<0.0001), and venous ulcers (4% vs. 1.5%; P<0.0001). All signs increased with age in either sex, except telangiectases, which were more often reported by younger women (P<0.0001).

Most patients (78%) received a treatment combining lifestyle advice, venoactive drugs (VADs), and compression therapy (CT), 10% received a combination of VADs+CT, and 5% received a combination of VADs+lifestyle advice. A few received a single treatment (<3%). Type and combination of treatment did not vary according to patient profiles.

CONCLUSION The VAP is a snapshot of Russian patients seeking consultation with phlebologists.

C2 THE “VENOUS AGE”: A NEW TOOL TO SENSITIZE PATIENTS TO THEIR VENOUS DISEASE

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AIM Many years ago, cardiologists developed on the basis of the Framingham study an “arterial age” which is very useful to sensitize patients to their cardiovascular risk. The purpose of the study was to develop a “venous age” to make people more aware of their venous disease and to better adhere to lifestyle improvement and venous disease treatments.

MATERIALS AND METHODS The score calculation was based on an international epidemiological study conducted in 24 countries in the daily practice of general practitioners. The data base included patients with or without venous disease, whatever the reason for which they were consulting and whatever the level of their venous disease which was systematically described according to the elements of the international CEAP classification.

RESULTS The study covers 124 235 patients aged of 52 among whom 69.4% were female. Among them 18.8% had no sign of venous disease (C0), 22.9% had only functional symptoms (C0s), 40.6% had Telangiectasies or reticular veins, 34.8% varicose, 24.9% edema, 14.0% skin changes, 7.3 healed ulcers and 4.3% active ulcers. The statistical analysis has determined the number of years which must be added to the real age to get the “venous age” by comparison of the age of somebody who has no venous functional symptoms or physical signs. The results provide that number for women and men according to the different venous symptoms and signs they present.

CONCLUSION This first attempt of creating a “venous age” will be certainly improved in the next future, using more complex analysis based on risk factors or other criteria, but it seems already efficient to make people aware of their venous risk and to better adhere to lifestyle improvement and venous disease treatments.

C3 POST-THROMBOTIC SYNDROME - DO WE REALLY KNOW ANY PREDICTIVE FACTORS?

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AIM Despite the performed studies there are still no possibilities to predict who of the patients will develop post-thrombotic syndrome (PTS) after lower extremity deep vein thrombosis (DVT) episode. The aim of the study was an evaluation of the PTS potential predictive factors in the group of 100 DVT patients followed at least 12 months after DVT onset.

MATERIAL AND METHODS 100 consecutive patients admitted to the vascular medicine clinic and investigated after more than 12 months after DVT episode were evaluated. In all the patients the previous proximal DVT episode was confirmed and in all the patients the anticoagulant treatment as well as early mobilization in the compression stocking class II was applied. The duration of the anticoagulation dependent on the DVT risk factor presence and the median of the follow up was 58 months (from 12 months to 342 months). In the patient evaluation the physical examination as well as duplex Doppler ultrasound were used. In the postthrombotic syndrome assessment the Villalta score was used. Additionally, in the chronic venous disease assessment, venous clinical severity score, venous disability score and venous segmental disease score were used. The PTS predictive factors including patient, disease and treatment related factors were evaluated.

RESULTS The post-thrombotic syndrome defined according to the Villata scale concerned 74% of the patients and in 6% of cases severe PTS was diagnosed. In 10% of the patients, the persistent occlusion of the deep vein system was observed in the follow up period. The occurrence of PTS correlated mostly with the presence of the pathological reflux (69%) as a single finding in US examination. The age of the patients, BMI, kind of the anticoagulant treatment, DVT episode recurrence as well as the presence of the concomitant disease and DVT risk factors (including trombofilia and cancer) did not influence on the PTS occurrence. The continuous wearing of the compression stocking at the time of the investigation was noticed more commonly in the patients with more severe complains related to the chronic venous disease. On the other hand there were no influence of the continuous use of the compression stocking on the post-thrombotic syndrome occurrence assessed by the means of Villalta scale in the follow-up period.

CONCLUSION The rate of PTS as well as the rate of chronic venous insufficiency in the patients with previous DVT episode treated by the means of anticoagulation remains still very high. Despite the previous literature based suggestions, in the investigated cohort we could not confirm the role of the potential PTS predictive factors in post-trombotic syndrome development.

C4 INSTRUMENTAL CONFIRMATION OF VENOUS DISEASES CLASSIFICATION CRITERIA

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AIM To compare instrumental and clinical criteria of chronic venous insufficiency (CVI) using CEAP classification.

MATERIALS AND METHODS Patients with chronic vein diseases of the lower limbs were included into the study. The first group included 90 patients aged 48 ± 14 with primary venous disease (varicose vein disease - VVD). The second group included 22 patients aged 40 ± 13 with secondary venous disease (post-thrombotic syndrome - PTS). The third group - 21 patients aged 52 ± 18 with after-effects of proximal venous thrombosis in the period of 1-3 months. Venous photoplethysmography was performed, venous recovery time (VRT) and venous recovery half-time ($\frac{1}{2}$ VRT) were estimated. Deep venous patency (obstruction) was examined using venous occlusive plethysmography, % of venous outflow was assessed. Statistical analysis was performed using nonparametric Kruskal-Wallis ANOVA, Mann-Whitney U-test, Spearman's rank correlation coefficient. Data were presented as medians (Me) and quartiles (25 and 75%).

RESULTS VRT and $\frac{1}{2}$ VRT were, correspondingly, 15 (12;18) and 6 (4;7) seconds in the 1st group, 13 (10;16) and 5 (4;6) seconds in the 2nd, and 14 (10;18) and 5 (5;6) seconds in the 3d. No statistical significance was detected between VRT and $\frac{1}{2}$ VRT groups. Patients with VVD had venous outflow index 100 (100;100)%, which was significantly higher as compared with PTS patients - 93 (83;98)% ($P < 0.0001$) and patients with phlebothrombosis - 90 (82;95)% ($P < 0.0001$). A strong correlation ($r = -0.76$, $P = 0.0034$) between VRT and clinical class of venous disease was detected in patients with VVD, in patients with PTS the correlation was moderate ($r = -0.55$, $P = 0.021$). $\frac{1}{2}$ VRT correlated with clinical class of venous disease ($r = -0.52$, $P = 0.016$) in patients with VVD, whereas in PTS patients no correlation was displayed. $\frac{1}{2}$ VRT correlated with venous outflow disturbance index ($r = 0.59$, $P = 0.028$) in patients with phlebothrombosis. Significant impact of clinical class upon total venous reflux indices was detected in objects with VVD. In groups from C₁ to C_{5,6} sequentially VRT was 28 (22;33), 20 (19;31), 15 (13;18), 14 (10;16), and 8 (7;10) seconds correspondingly. Significant differences were between all the groups except C₁, C₂ and C₄, C₅. $\frac{1}{2}$ VRT index in groups from C₁ to C_{5,6} sequentially was 10 (8;12), 6 (6;12), 5 (5;7), 5 (4;6), 4 (4;4) seconds correspondingly. $\frac{1}{2}$ VRT had the same regularities as VRT, except that there were no differences between C₃, C₄ and C_{5,6}.

CONCLUSION Objects with VVD and PTS displayed interconnection between intensity clinical class of the diseases and reflux index. VRT and $\frac{1}{2}$ VRT are integrative indices of venous reflux and reflect clinical class of CVI.

C5 CALLING FOR AN IMPROVEMENT IN CHRONIC VENOUS DISEASE CLASSIFICATION

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CEAP classification of chronic venous disease (CVD) was introduced in 1994 and had been revised once about 10 years ago. A venous disease classification allows for uniformity at describing the stage of disease at presentation, the aetiology and pathogenesis and allows for comparison of management strategy. It is widely accepted that the C (clinical) classification is useful for day to day outpatient documentation and the E (etiologic), A (anatomic) and P (pathophysiologic) components are more useful for research purposes. We have applied the C- classification to our consecutive series of 1,239 legs with chronic venous disease. We find that the classification is lacking in the aspect that it does not include patients with complications from chronic venous insufficiency such as bleeding, superficial thrombophlebitis, cellulitis and eczema. These complications are classified as C4 but a classification that is able to discriminate these varied presentations in C4 will be more useful. Clinical classification should also be pragmatic and should allow for management decision.

We propose a new category of C-classification based on problems at presentation. This is useful in developing countries where patients with CVD present late and busy clinics are staffed by junior doctors. Hopefully this will complement the other categories of CEAP classification.

<i>Clinical presentation</i>	<i>Investigation</i>	<i>Management options</i>
1. Telangiectasia/ Venular ectasia	Clinical examination (Duplex scan if symptomatic)	*Conservative/sclerotherapy
2. Asymptomatic varicose veins	Clinical examination	
3. Varicose veins- with mild swelling, pain, cramps	Clinical examination, hand held Doppler, Duplex scan	Conservative/ Compression/ **endovenous therapy/ open surgery
4. Varicose veins with bleeding	Clinical examination, hand held Doppler, Duplex scan	Compression/ open surgery/ endovenous therapy
5. Superficial thrombophlebitis		Need to rule out deep vein thrombosis, post thrombotic syndrome and deep vein incompetence. Management option as in 4 but antibiotics and anticoagulants may have to be considered.
6. Eczema, cellulitis, lipodermatosclerosis/ gross oedema	Mandatory Duplex scan, supplemented with other investigations if in doubt	
7. Healed ulcer		
8. Active ulcer		

*Conservative therapy- include counseling and/or medical therapy

**Endovenous therapy- include endovenous laser, radiofrequency ablation, ultrasound guided foam sclerotherapy and non-thermal endovenous therapy

C6 ARE PATIENTS ABLE TO APPLY ADJUSTABLE VELCRO-BAND COMPRESSION DEVICES WITH ADEQUATE PRESSURE?

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AIM Compared to compression stockings inelastic bandages provide higher pressures and are hemodynamically more effective. Main disadvantages are that trained staff is needed for proper application and that they lose pressure. Velcro band devices are the only inelastic compression products which can be handled and readjusted by the patients. However, it is questionable if such products are put on with proper pressure when self-applied.

The aim is to measure the compression pressure under first time self-applied, adjustable Velcro compression (AVC) devices compared to the pressures achieved by experienced staff after theoretical instruction.

MATERIALS AND METHODS At the occasion of training courses for nurses experienced in conventional leg bandaging in the Netherlands two groups of measurements have been performed after theoretical instructions emphasizing that an initial pressure of 50-60 mmHg would be desirable.

A. 34 nurses applied Juxta fit (CircAid medi) to the lower legs of colleagues.

B. In a second course two years later 36 nurses applied Juxta fit to their own legs, without previous practical instruction.

Interface pressures were measured using a Picopress transducer (Microlab Italia) in the relaxed sitting and in standing position at positions B1 (transition of medial gastrocnemius muscle into the tendon) and at C (largest calf circumference).

RESULTS Median resting values at B1 and C were 58, 5 and 43, 5 mmHg respectively in group A. The corresponding values in group B were 61, 5 and 42 mmHg. Pressures at B1 ranged between 31 and 137 mmHg in group A (variation coefficient VC 37, 1%) and between 35 and 102 mmHg (VC 28, 9%) in group B. Pressures exceeded 90 mmHg in 5 individuals of group A and in 2 of group B. Pressures equal or below 40 mmHg were obtained in 5 cases of group A and in 5 of group B. Only the few cases with an initial pressure of more than 100 mmHg loosened the straps because of discomfort, all other applications were well tolerated and qualified as "firm, but not painful".

CONCLUSION After theoretical instruction emphasizing the importance of a strong initial compression the self-applied adjustable Velcro band device revealed more consistent pressures and fewer outliers compared to the application by another person. Compared to reported pressure measurements from studies checking the quality of conventional bandage-application by experienced staff, self-management with AVC- products fulfills the requirements of appropriate compression pressure more reliably.

C7 AN UNDERSTOCKING PLUS SUPERIMPOSED LEGGINGS: ADJUSTABLE AND EASY-TO-USE LEG COMPRESSION

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AIMS Forty percent of patients with advanced chronic venous insufficiency do not comply with compression therapy. Difficulties in donning the prescribed compression stocking represent the most common cause of non-compliance. The objective of this monocentric, comparison study was to test a novel compression stocking system with regard to donning success, resting interface pressure (RI) and dynamic stiffness index (DSI).

MATERIALS AND METHODS The study consisted of two parts:

- A prestudy in which three different modified compression systems (2CS-1, 2CS-2 and 2CS-3, each composed of a sock and footless legging) were compared with a standard class 3 (40 mmHg) compression stocking (strongS). 2CS-1, 2CS-2 and 2CS-3 were composed of a light understocking of 19.5 mmHg (2CS-1) or 10 mmHg (2CS-2 and 2CS-3) interface pressure and a superimposed footless legging of 30 mmHg (2CS-1 and 2CS-2) or 25 mmHg (2CS-3) interface pressure.
- The "STOCKNLEGGINGS" study where a novel compression system "STOCKNLEGGINGS" (4CS"SNL", a light understocking and three tighter footless leggings) was compared with a standard class 3 (40 mmHg) compression stocking (strongS). 4CS"SNL" was composed of four layers of stockings: one understocking of 19.5 mmHg and three footless leggings, one with 15 mmHg and two with 10 mmHg interface pressure.

Donning success, resting interface pressure and dynamic stiffness index were evaluated in both studies. 20 healthy volunteers and 20 elderly patients with advanced chronic venous insufficiency (CEAP C4 or C5) were included in the prestudy and the "STOCKNLEGGINGS" study.

RESULTS Prestudy:

Donning success: In the prestudy 100% of healthy subjects (n=20) were able to don the complete compression systems 2CS-1, 2CS-2 and 2CS-3. All but one were able to don the comparator stocking (strongS). Of the patients (n=20) all but one were able to don 2CS-1 and 2CS-2 (P=0,016 vs. control). All but 2 were able to don 2CS-3 (P=0,031 vs. control). 60% of patients were able to don the comparator stocking. This results in an advantage for successful donning when comparing 2CS-1, 2CS-2 and 2CS-3 to strongS.

"STOCKNLEGGINGS" study:

Donning success: 100% of healthy subjects (n=20) were able to don the complete compression system 4CS"SNL". All but one were able to don the comparator stocking (strongS). 100% of the patients (n=20) were able to don 4CS"SNL" (P=0,019 vs. control), only 60% were able to don the comparator stocking (strongS).

CONCLUSIONS

Two-component or four-component compression stockings composed of a light understocking and one or several medium pressure leggings are easier to don by elderly patients than a high pressure single layer compression class 3 stocking. Similar resting interface pressure values and dynamic stiffness indices can be achieved with these stockings.

C8 CARTRIDGE-APPLIED SILICONE PADS FOR ECCENTRIC COMPRESSION OF VARICOSITIES AFTER SCLEROTHERAPY: POPLITEAL, SAPHENAL AND SPIDER VEIN APPLICATION

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AIM Eccentric compression may support symptom-free healing periods after venous surgery or endovenous treatment, in particular sclerofoam. However, home-made compression media show several drawbacks: Friction and skin irritations are frequent, long-term wearing is not well tolerated, daily renewal is exhausting but otherwise personal hygiene will suffer. We evaluated three modalities of Venartis silicone gel pads (SGP).

MATERIALS AND METHODS The SGP system applies silicone gels from a cartridge along the vein to compress, placed on an underlying self-adhesive film and covered with a second film, working as a functional unit firmly but removably attached to the skin.

The SGP uses three silicon gels with different hardness, A) SGP 22 (Shore-A 22) for use along saphenous veins of 10 – 22 mm diameter, B) SGP 14 (Shore-A 14) for use in regions close to joints, in particular the popliteal region, and C) SGP 24 fh (Shore-A 24, fast hardening) for use on spider veins of 0.2-1 mm diameter. SGP was applied in patients undergoing microfoam sclerotherapy, n=20 each group. Randomized parts of the varicosities were covered with SP for two weeks, while other parts were left to external compression by medical stockings German class 2 only. Daily showers and sports were allowed. Treatment and follow-up were recorded by ultrasound video and photography (2-4-8-12 weeks) and evaluated by independent investigators.

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

CONCLUSION Venartis SGP is a safe, effective and comfortable modality to support vein diameter regression after sclerotherapy of varicosities. In particular, the use after saphenal sclerotherapy, in the sensitive popliteal region and even on spider veins proved clinically successful.

C9 PATIENTS' SATISFACTION WITH METHODS OF TREATMENT OF ADVANCED CHRONIC VENOUS DISORDERS (CVD) IN OUTPATIENT CLINICAL SETTINGS

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AIM Little is known about patients' satisfaction from the therapy of CVD, an important factor that may affect the compliance to conservative methods of treatment.

The aim of this study was to assess patients' satisfaction from the therapy of advanced CVD in everyday clinical practice. Large group of patients with active ulcers offered the opportunity to compare the efficacy of venoactive drugs (VADs) in the healing process.

MATERIALS AND METHODS 780 adult patients with active (N=441) or healed (N=339) venous ulcers participated in this non-interventional observational 6-week survey.

RESULTS Compression therapy and VADs were utilized by 81.5% and 89.2% of patients, respectively. 31.2% underwent surgical procedures. Patients with active ulcers were 5.89-time more frequently using bandages than stockings. 61.3% of patients were satisfied with surgical methods, 43% with compression therapy, and 32.6% with VADs [especially *Ruscus aculeatus* and HMC and ascorbic acid (Ra) - 51.4%].

The prevalence of lower limbs edema in the morning was similar regardless of used VAD, while, in the evening, it was lower in patients on Ra than on diosmin/MPFF therapy. Patients receiving Ra or hors chestnuts seed extract (HCSE) were less frequently reporting cramps and pain, contrary to those on diosmin/MPFF.

Of 377 patients with active venous ulcers smaller than 200 cm², adherent to VADs, 68 (18.0%) have been cured, and 251 (66.6%) have improved. Multiple logistic regression analysis revealed that the compliance with compression therapy [OR=2.74], the size of ulcer ≤10 cm² [OR=2.70] were increasing the change of ulcer healing. No VAD was better than the other.

CONCLUSION

1. Compression therapy and VADs are highly utilized by patients with advanced CVD.
 2. Patients are more satisfied with surgical than conservative treatment.
 3. More patients taking Ra than other frequently used VADs is satisfied with the obtained improvement due to greater efficacy in reducing edema, sensation of pain and cramps.
 4. *Ruscus aculeatus* and HMC and ascorbic acid is similarly effective as other frequently used VADs in venous ulcer healing.
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C10 PATIENT PERSPECTIVE OF SERVICE PROVISION FOR THE MANAGEMENT OF VARICOSE VEIN DISEASE

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AIM Varicose veins are common, affecting approximately one third of the population of the United Kingdom. We set out to evaluate patients' perception of provision of the varicose vein service and future developments.

MATERIALS AND METHODS Between March to June 2014, patients attending the Vascular Outpatient Clinic with a venous complaint at a London Hospital were asked to fill an anonymous questionnaire about the service offered for varicose vein disease.

RESULTS One hundred and six patients completed the questionnaire. Most were females (62%) with a mean age of 51 ± 15 years. Patient's most common complaint for attending the clinic was pain, varicosities, swelling and heaviness. Three in four patients felt their varicose veins had a moderate or significant effect on their quality of life. More than 90% stated that the waiting time between a vascular appointment and venous scan should be no more than 1 month and 85% believed varicose vein procedures should be received within 1 month of their appointment. Ninety percent of patients expressed their assent when asked whether they would consider attending a 'one-stop' vein clinic offering same day diagnosis and treatment. Most patients were generally accepting of the fact that most procedures would be carried out under local anaesthetic.

CONCLUSION This study illustrates that patients with symptomatic varicose veins preferred less time from referral to treatment and having fewer vascular outpatient appointment prior to their treatment. The potential 'one-stop' vein clinic appears to be a preferred option from a patient perspective and this concept needs exploring further.

C11 EPIDEMIOLOGY AND GENETIC IMPACT OF THE PHLEBITIS

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AIM Phlebitis is an important characteristic of chronic venous disease defined as an inflammation. Due to the fundamental advance by studying other inflammation diseases we started an observational case-control study by genotyping genetic makers.

MATERIALS AND METHODS All included patients were classified using the CEAP classification. We have enrolled 2,388 patients with a CEAP classification of C2 to C6 in the study. All patients suffered from severe injury of their great saphenous vein and had stayed in the clinic for at least 4 days.

All interventions were performed on stationary patients in a specialized vein center in Germany. Preoperative diagnostic tests included Doppler evaluation of the great and small saphenous veins as well as venous duplex sonography. Duplex examination was done in line towards the UIP consensus document.

Beside broad epidemiological analysis about the risk factors we genotyped 2,388 cases with a phlebitis and 835 controls with same genetic background from Germany. We have used 7 assays from 7 different loci: F5 (Blood clotting factor / F5 Leiden mutation), F2 (Blood clotting factor / prothrombin (G20210A Mutation)), F11 (Blood clotting factor / resulting in a activated factor XIa), GP6 (Glycoprotein / activating of collagen and aggregation blood platelets), KLKB1 (Glycoprotein / activating of the coagulation, fibrinolyse), CYP4V2 (Cytochrome / oxidized several substrate in different metabolic pathways), SERPINC1 (Protease inhibitor / protein super family of serpins, regulation of the blood-clotting cascade). The genetic contribution was assessed by estimating the association with disease versus a likelihood approach as implemented in the PLINK software package. The statistical significance was assessed by means of a likelihood-ratio-test. Logistic regression analyzes was performed using R and PSPP software.

RESULTS We observed gender as a risk factor for phlebitis. The genotyping results showed a clear significant association $pLRA < 0.05$ by the marker F2, F5 and F11. F5 showed under a multiplicative model a p-value after logistic regression analysis (LRA) (correction for Bonferroni and multiple testing) of 0.62×10^{-2} by an OR 1.53 (1.13-2.06). F2 for a dominant model; P-value LRA = 0.87×10^{-3} ; OR 2.39 (1.43-4.01) and F11 for a dominant model; p-value LRA = 0.39×10^{-3} ; OR 1.4 (1.16-1.69).

CONCLUSION We identified a statistically significant association for three genetic makers towards phlebitis. An additional relationship was observed between a higher CEAP grade and female sex and the phlebitis. By around 15% of our patients the identified F11 genetic maker could be found. More histological experiments are warranted.

C12 ONLINE GUIDELINE DEVELOPMENT

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“Clinical Practice Guidelines” play an important role in daily work to support the decision of medical treatment. Modern clinical guidelines identify, summarize and evaluate the highest quality evidence and most current data about prevention, diagnosis, prognosis, therapy including dosage of medications, risk/benefit and cost-effectiveness. Due to the rising of the knowledge in phlebology as well in all medical fields an online based portal could be an effective and time saving solution for developing new guidelines for any international medical forum. As the process of guideline development is very complex, the portal ONLINE GUIDELINE DEVELOPMENT offers tools, which support the individual requirements of the guideline development. The focus is on the improvement of medical research in quality by developing, expanding and providing IT infrastructures which lead to an efficient use of limited personnel, time and financial resources. The UserGroup e. V. has been offering its tools since 2009 with the support from the Federal Ministry of Education and Health, Germany. In 2012 an independent evaluation of the portal focused on the 3 aspects quality, methodology and costs. The aspect methodology examines whether the process of guideline development follows special regulations. The last aspect includes a cost-benefit analysis and the establishment of potential user. The results of the evaluation lead to an improvement of the tools and increased the scientific reputation of the portal. Analytical methods such as heuristic evaluation and cognitive walk-through were used. An independent usability expert analysed the usability of the portal, based on a set of criteria and specific requirements of the target groups. A qualitative survey and the evaluation of questionnaires resulted in further improvement. Potential problems were listed and solutions for emerging problems have been developed for an enhanced usability, a better integration of modules in the work flow of guideline development and a better process orientation through standardized tools, such as: (1) A discussion forum for debatable matters, where all discussions are filed, and an illustration of the consensus progress. (2) Online surveys which increase efficiency and transparency of the guideline development. (3) A navigation bar to reflect the work flow of a guideline development.

All in all there is an improved support of study group organization and administration of documents including evaluation of literature, discussion of recommendations, online surveys and the standardized methodical report. The optimization brought an added value for user and medical societies. The portal ONLINE GUIDELINE DEVELOPMENT is fully compatible with existing IT-infrastructure, available in German and English and is in use by an increasing number of various national and international medical societies.

D1 ANATOMICAL DESCRIPTION OF THE PERFORATOR VEINS (PV) OF THE FOOT AND ANKLE

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AIM The anatomy of the perforator veins (PV) of the foot is not well known. For this reason they are often under-investigated when managing patients with chronic venous disorders. And yet, they have a unique function in the venous system of the lower limb: they drain the blood from the deep veins to the superficial network.

The aim is to describe the anatomy of these PV and to illustrate their role in the systolic ascending flux in both saphenous systems as well as their contribution to the origin of the deep veins of the leg.

MATERIAL AND METHODS The PV were investigated by 3 techniques:

- Anatomical dissection: 400 limbs of 200 fresh cadavers were injected with green Neoprene latex followed by a dissection; by this method a colored segmentation of the venous system was achieved.
- 3D reconstruction by a series of 200 CT venographies
- USD investigation in a large series of patients with saphenous reflux.

RESULTS The foot venous pump is located in the lateral plantar veins and also in the medial ones. One outflow of this foot pump is into the posterior tibial veins via the calcanean cross connections.

Another outflow is into the anterior tibial veins via the dorsal communicating veins of the foot.

But the most interesting outflow connections of the foot pump are via the foot PV into both saphenous systems:

- The great saphenous vein originates above the medial malleolus from 3 roots: the medial marginal vein, the sub-malleolar PV and the dorsal PV of the foot. The PV of the first metatarsal space gives rise to the medial marginal vein which receives 2 medial PV: the navicular and cunean PV. These medial PV together with the medial plantar veins constitute the medial complex of the foot.
- The small saphenous vein and its achilles tributary and between the muscles attached to the distal fibula. These are the main outflow of the lateral plantar veins, truly constituting a second venous complex of the foot, located laterally.

CONCLUSION These anatomical findings and imaging data explain the ascending systolic flux recorded by US in the distal part of both saphenous trunks during the foot pump systole. An in-depth US examination of the foot and ankle PV should be performed during the anatomical and hemodynamic venous mapping of any patient with a venous disorder.

D2 SUBFASCIAL ENDOSCOPIC PERFORATOR SURGERY: DO WE STILL NEED TO DO?

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AIM Incompetent perforant veins (IPV) is the one of reasons of chronic venous insufficiency (CVI). Interruption of IPVs is the important part of treatment. Subfascial Endoscopic Perforator Surgery (SEPS) and new methods (Endovenous Laser Treatment (EVLT), Radiofrequency Ablation (RFA), Ultrasound Guided Foam Sclerotherapy (UGFS)) are using to close IPVs.

MATERIALS AND METHODS We have analyzed our experience of treatment of patients with C4-C6 (CEAP). 1st group: 264 patients (264 lower extremities, 715 IPVs), who were underwent SEPS. 2nd - 287 patients (316 lower extremities, 648 IPVs) with EVLT. 3rd - 354 patients (427 lower extremities, 590 IPVs) with UGFS. 4th - 10 patients (11 lower extremities, 15 IPVs) were treated with the using RFA. The groups were comparable on basic parameters. The diameter of IPVs was 2.5-8 mm. Mean hospital length of stay in the first group was 8.3±2.9 days. The treatment of patients of 2nd, 3rd and 4th groups was on outpatient basis and they weren't in need of sick-list.

RESULTS All patients of the 1st group had more intensive pain after treatment compared to 2nd - 4th groups. Trophic changes (eczema, skin irritation) regressed in 2-4 days in all groups, ulcers healed in some weeks.

Two IPVs (0.3%) were patent in 2 weeks after SEPS. We didn't SEPS again, and the patients had VVs and eczema in 1.5 years. There were 6 patent IPVs in 2nd group, we repeated EVLT successfully. 572 (96.9%) IPVs were closed after session of UGFS. Finally, all IPVs were found closed after RFA.

24 (9.1%) patients of the 1st group had complications. Two complications (skin burn) occurred in the 2nd group, 8 (1.9%) occurred in the 3rd group (7 Deep Vein Thrombosis and 1 abscess after extravasation of sclerosant). There were no any complications after RFA. No postoperative mortality was seen.

CIVIQ-2 was used to assess Quality Of Life (QoL) before treatment, next day after treatment and two weeks after treatment. There was deterioration in the 1st group on next day after treatment (+18.1±6.2 compare with basic level before treatment) with positive dynamics in two weeks (-2.2±0.8 compare with basic level before treatment). QoL next day after treatment demonstrated improvement in 2nd, 3rd, and 4th groups (-6.8±2.4), (-7.2±2.1), (-11.1±3.6) accordingly. Two weeks after treatment the improvement was (-11.2±3.2), (-11.2±4.6), (-12.1±3.6) compare with basic level.

CONCLUSION SEPS played very important role in the past to minimize surgical invasion for treatment patients with CVI. We are of opinion that the method has only historical significance now. Recent methods, like UGFS and particularly EVLT, RFA provides better results and more safe.

D3 ILIAC VALVE INCOMPETENCE AS A RISK FACTOR FOR SAPHENO-FEMORAL REFLUX RECURRENCE

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AIM Varicose veins recurrence remains a common, costly and frustrating event complicating up to 80% of procedures in a 20 years follow up. The sapheno-femoral junction (SFJ) can be involved in even more than 50% of cases, leading to the need of a “redo” procedure, that in turn was reported to fail in 30 to 80% of cases. No clear pathophysiological, diagnostic and therapeutic evidences have been produced so far.

A correlation among iliac vein (ILV) obstruction/reflux and chronic venous disease has been recently postulated.

Aim of the present work is to evaluate the eventual role of iliac vein incompetence in favouring SFJ recurrences.

MATERIALS AND METHODS A retrospective evaluation was performed on 74 primary chronic venous disease patients (18 M-56 F; mean age 63+6 yo; CEAP C2-4EpAsPr) who underwent a “redo” surgical SFJ treatment in the form of a Lì procedure in the previous 10 years.

An accurate echo-color-Doppler (ECD) SFJ scanning was performed at 1, 3, 5 and 10 years, reporting iliac reflux at the compression/relaxation and Valsalva manoeuvre, pelvic congestion syndrome and neoangiogenesis eventual presence.

RESULTS Sixteen SFJ (36.3%)(4 M/12 F) recurrences were detected, presenting an ILV reflux in 13 of them (81%) at the 5 years follow up (OR 37.5; 95% CI 8.2 TO 170.6; P<0.0001). An ILV incompetence was present also in 6 SFJ (2.9%)(M0/F6) competent cases.

Pelvic congestion syndrome was detected in only 3 cases of SFJ incompetence and in 15 SFJ competent cases, while a not refluxing neoangiogenesis was identified in 24 SFJ competent cases (41%)(8M/16F).

CONCLUSION Despite many technical diagnostic and therapeutic refinements, the varicose veins recurrence remains a frequent event.

The mechanism leading to reflux reappearance seems to involve not just venous segments remnants, neoangiogenesis and pelvic congestion syndrome.

The present investigation points out a possible involvement of the deep venous system pressure gradients in SFJ recurrence. Despite the need of further investigations in a wider study population, the presented data paves the way for future investigations, eventually involving also second level diagnostic assessments as phlebography and/or IVUS.

D4 BLOOD FLOW DISTURBANCES AND ENDOVENOUS TREATMENT OF THE GIACOMINI VEIN VARICOSITIES

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AIM Antegrade diastolic blood flow (ADBF) is described as a pathological pattern of blood flow in the Giacomini vein (GV), leading to varicose transformation. Surgical correction of disturbances of venous outflow through the GV is difficult. Endovascular results are not well studied.

METHODS The GV incompetence as a source of pathological reflux in varicose veins was identified in 61 legs (4.8%) out of 1265 legs treated for varicose veins from 2010 to 2014.

The following three types of GV incompetence can be distinguished, depending on the features of blood flow disturbances:

- Sapheno-femoral junction (SFJ) incompetence with great saphenous vein (GSV) reflux before confluence to GV and then through the GV, with varicosities on the posterior thigh or with transition to small saphenous vein with varicosities on the posterior calf (n=9).
- Sapheno-popliteal junction (SPJ) incompetence with ADBF throughout the entire GV before confluence to GSV and reflux through the GSV below GV confluence (with SFJ competence) and varicosities on the posterior thigh and/or calf, located typically for GSV disorder. (n=37).
- A combination of reflux and ADBF in the GV was found in 15 legs. During Valsalva's manoeuvre the SFJ was found intact in those patients. We found classic reflux during manual compression of the calf muscle without compressing the varicose veins and ADBF during compression of lower leg varicose veins.

Follow-up examinations were performed after 3, 6 and 12 month respectively after the treatment and included duplex scanning. Primary endpoint was the absence of pathological reflux in GV. Secondary endpoints were VCSS score and clinical severity by CEAP. Interventions were as follows: endovenous laser, radiofrequency ablation or ultrasound-guided scleroobliteration of the GV. All the procedures were accompanied by phlebectomy and sclerotherapy of tributaries.

RESULTS The GV obliteration was observed in 60 (98%) cases one day after the procedure. There were no severe complications. There was no significant difference between endovenous laser, radiofrequency ablation and ultrasound-guided scleroobliteration results

1-year follow-up (n=47): we revealed one case of GV recanalization after scleroobliteration. Mean VCSS=1.67 (SD 1.552; SE 0.201) was significantly lower than before treatment ($P<0.0001$); decrease of clinical severity by CEAP observed in 45 legs (96%).

3-year follow-up (n=13): GV ablation 100%; decrease of clinical severity by CEAP (compared to 1-year results) observed on 3 legs.

CONCLUSION Blood flow disturbances of the GV with clinical manifestations is present in 4.8% of legs with varicose veins (C2-C6, CEAP). The ADBF through the GV is observed in 60.7% of them. Thermal ablation and scleroobliteration allow correction of GV reflux reliably with good follow-up results.

D5 LONG-TERM RESULTS OF THE FORMATION OF THE SINGLE-CUSP VALVE IN THE COMMON FEMORAL VEIN OF THE PATIENTS PRESENTING WITH AVALVULAR DEEP VEINS OF THE LOWER EXTREMITIES

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AIM The objective of the study was to evaluate the long-term results of the formation of the single-cusp valve in the common femoral vein (CFV) of the patients presenting with avalvular deep veins (ADV) of the lower extremities.

MATERIAL AND METHODS A total of 28 patients at the age varying from 42 to 58 years were given surgical treatment during the period from 2008 to 2012. Six patients presented with primary ADV while in the remaining 22 ADV was a consequence of the post-thrombotic lesion in the valves with the complete recanalization and manifested deep venous axial reflux. In terms of the CEAP classification, the patients were categorized into the following groups: C4b (n=8), C5 (n=16), C6 (n=4). All the patents underwent ultrasonic duplex scanning (USDS). Twelve patients were additionally examined by retrograde phlebography. Kistner grade III-IV reflux was diagnosed in all the patients included in the study. Twenty two patients had undergone surgical interventions on superficial and perforant veins before inclusion in the study. The severe (C4b-C6) forms of chronic venous disease with manifested axial reflux in deep veins were regarded as an indication for the surgical operation in the patients refractory to traditional and conservative treatment. The method described by J. Opie was employed to construct the single-cusp venous valve in the common femoral vein.

RESULTS AND DISCUSSION The long-term results of the treatment were evaluated in 16 patients followed up during the period from 18 to 36 (mean 26.3 ± 6.4) months. The clinical improvement was documented in 14 (87.5%) of them including three subjects with persistent healing of the ulcers and 9 showing reduced severity and area of trophic changes in the crural soft tissues. USDS demonstrated the functional ability of the newly-formed valves and elimination of pathological venous reflux in 12 (75%) patients. The evaluation based on the VCSS scale revealed the reduction in the severity of the manifestations of chronic venous insufficiency ($P < 0.05$). Moreover, the quality of life was improved, its index decreased from 60.6 ± 18.7 to 40.7 ± 12.8 ($P < 0.05$). The malleolar volume decreased from 271.1 ± 4.7 to 231.5 ± 5.7 mm ($P < 0.001$).

CONCLUSION Formation of the single-cusp valve in CFV makes it possible to eliminate pathological blood reflux from the inferior vena cava to deep veins of the lower extremities that is known to play the main role in the evolvement and progress of chronic venous insufficiency. The high effectiveness of this operation is confirmed by the well apparent clinical improvement in the state of the affected lower extremity and the quality of life of the patients.

D6 PELVIC CONGESTION SYNDROME DUE TO STENOSIS OF THE LEFT RENAL VEIN (NUTCRACKER SYNDROME): DIAGNOSIS AND TREATMENT. OUR EXPERIENCE

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AIM The evaluation of long-term results of treatment of patients with pelvic congestion syndrome (PCS) due to stenosis of the left renal vein (LPV).

MATERIAL AND METHODS The study is based on the results of diagnostic assessment and treatment of 23 women with PCS. In all cases the etiology of the PCS was left ovarian vein incompetence due to stenosis of the LPV (Nutcracker syndrome). The mean age was 36.2 years range 24-56 years old and average of 1.78 children. All were suffering from PCS with chronic pelvic pain in 21, heaviness in 20, dyspareunia in 17. Lower limb symptoms were present in 18 cases. This was a prospective study carried out in a single centre.

RESULTS The LRV stenosis in all cases diagnosed by transabdominal duplex angioscanning and confirmed by CT venography (20 studies) and phlebography with evaluation of the reno-caval gradient (23 studies).

We installed some ultrasound criteria of LRV stenosis: the average diameter of the LRV between the aorta and superior mesenteric arteries less than 0.22 cm; the difference between the maximum and minimum diameter of LRV more than 3.5 times; the average flow velocity of more than 110 cm/s; ectasia of the LRV in the proximal more than 0.87 cm;

The main hemodynamic criterion of LRV stenosis was reno-caval gradient, installed on venography, which amounted to 7.84 ± 0.92 mmHg.

We performed 21 operations forming of ovarian-iliac anastomosis and 2 of the left renal vein transposition. We had no serious postoperative complications.

Long-term results were available for assessment in 19 patients. Median follow-up was 34 month (range 3-72).

Patency of ovarian-iliac anastomosis verified by 16 patients.

The scale of the symptoms pre/post operation are shown below: Pain 7.8/1.94 ($P < 0.00$); heaviness 7.62/2.2 ($P < 0.00$); dyspareunia 5.4/1.47 ($P < 0.00$).

CONCLUSION PCS is rarely cases due to stenosis of the LRV, but can be treated by reconstructive venous surgery safely and with good clinical results.

D7 COLLAGEN IV AND VI EXPRESSION IN THE DEEP AND SUPERFICIAL LEG VEINS WALL WITH VARICOSE VEINS OF THE LOWER LIMB

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AIM To study collagen IV and VI expression in the vena saphena magna and posterior tibial veins wall at lower limbs varicose disease.

MATERIAL AND METHODS We investigated specimens of vena saphena magna and posterior tibial veins of 18 patients suffering from lower limbs varicose disease, who were operated by phlebectomy and resection of posterior tibial veins. Distribution by clinical classes (CEAP) was as follows: C 3 - 8 patients, C 4 - 10 patients. Before operation all patients were investigated by ultrasound scintiangiography with color Doppler mapping, and; posterior tibial veins valves insufficiency was diagnosed.

Control group included 7 specimens of vena saphena magna and posterior tibial veins from people, died and having no varicose disease. To estimate collagen IV and VI expression according to main structural components of vein wall we used immunohistochemical staining with lyophilised concentrated monoclonal antibodies to Collagen Type IV and Collagen Type VI (Novocastra).

RESULTS In primary varicose veins of the lower limbs as the superficial veins (vena saphena magna) as the deep veins (posterior tibial veins) showed the expression pattern changes of the collagen types IV and VI.

Specimens of vena saphena magna showed decreased area of collagen IV positive expression - 0,000760 (0,000566; 0,001177) mkm². Control specimens characterized by more high degree of collagen IV expression - total area of expression was 0,000973 (0,000789; 0,001420) mkm². At the same time in posterior tibial veins wall area of positive expressed collagen IV fibers was less (0,000577 (0,000411; 0,000863) mkm²) then in control group (0,000696 (0,000574; 0,000827) mkm²).

With varicose disease area of collagen VI positive expression in the vena saphena magna wall was 0,006037 (0,004729; 0,007869) mkm². In control group it was reliably less - 0,003538 (0,002516; 0,004647) mkm². Specimens of posterior tibial veins at varicose disease showed increased degree of collagen VI positive expression - 0,004395 (0,002775; 0,006437) mkm² comparing with control group 0,003259 (0,002634; 0,0044197) mkm².

CONCLUSION With varicose disease and insufficiency of the deep veins valves patients show decrease of collagen IV and increase of collagen VI contents in the vena saphena magna and posterior tibial veins wall comparing with the normal samples. Revealed changes in the collagen types IV and VI content in the wall of the superficial and deep veins may have an important role in the violation of the venous wall elastic properties.

D8 COST COMPARISON OF CONCOMITANT VERSUS SEQUENTIAL PHLEBECTOMY WITH ENDOVENOUS LASER ABLATION: A MONTE CARLO ECONOMIC SIMULATION OF 10,000 PATIENTS

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AIM Debate regarding the optimum treatment of varicose tributaries at the time of endovenous laser ablation (EVLA) continues. Although a five-year randomised clinical trial reported enhanced early clinical outcomes with fewer secondary procedures in those undergoing concomitant phlebectomy, proponents of sequential phlebectomy argue that a higher threshold for secondary treatment makes this option more cost effective. An economic simulation of various treatment thresholds was therefore performed to compare to the costs of concomitant or delayed tributary management and therefore determine which is more likely to be cost effective.

MATERIALS AND METHODS 50 patients with isolated, unilateral, symptomatic great saphenous insufficiency were equally randomised to EVLA with concomitant phlebectomy (EVLAP) or EVLA alone with sequential phlebectomy (EVLA) of symptomatic varicose tributaries (if required) after a minimum delay of six weeks. All procedures were performed under local anaesthesia in an outpatient environment. Costs were calculated using prospective data estimating the actual resource requirement in each case over 5 years.

A computer generated population of 10,000 patients was simulated to receive a treatment allocation with costs of the initial procedure randomly drawn from the observed distribution of costs from the trial. The patients in either group were then randomly allocated to receive secondary procedures according to a threshold level for re-intervention. For those undergoing further treatment, the cost was again drawn from the observed cost distribution in the trial. Finally the total costs of the two groups were compared for each threshold level to calculate the probability that EVLA being more cost-effective than EVLAP.

RESULTS EVLA alone was performed significantly quicker and subsequently incurred lower initial procedural costs compared to EVLAP. However, inferior initial quality of life improvements in the EVLA alone group acted as a driver for secondary interventions (67% vs. 4%). This equalised the clinical effectiveness but inflated the costs in the EVLA alone group at one year and this gap was maintained over five years.

Economic simulation of the re-intervention threshold observed in the clinical trial suggested that the probability of EVLA alone being more cost-effective than EVLAP was only 0.25. Accordingly, the re-intervention threshold in the EVLA alone group must be increased to such a degree as to reduce the observed re-intervention rate to less than 29% to give the EVLA group a probability of at least 0.50 to be more cost effective than EVLAP.

CONCLUSION Concomitant phlebectomy with endothermal ablation is the more likely cost effective management of varicose tributaries in addition to its early clinical benefits.

D9 CLINICAL ACCEPTABILITY STUDY OF MICRONISED PURIFIED FLAVONOID FRACTION 1000 MG TABLET, COMPARED TO MICRONISED PURIFIED FLAVONOID FRACTION 500 MG TABLET IN SYMPTOMATIC CHRONIC VENOUS DISEASE

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AIM The aim was to compare the clinical acceptability between two dosages of micronized purified flavonoid fraction (MPFF) (1000 mg tablets and 500 mg tablets) administered at the same daily dose (1 gram / day) in patients suffering from symptomatic chronic venous disease (CVD).

MATERIALS AND METHODS In an international, randomised, double-blind, parallel-group study treatments were administered for 8 weeks after a run-in period (2 weeks). Adverse events were recorded by patient in a diary. Leg pain was assessed by visual analogue scale (VAS).

RESULTS 174 patients (87 in each arm), classified from C0s to C4 according to CEAP class were included. No serious Adverse Event (AE) occurred. 30 emergent AE (EAE) were reported (15 in each group). Three EAEs, in the MPFF 1000 group (constipation, dyspepsia, dermatitis allergic) of mild intensity, were related by the investigator, and recovered after treatment period. Leg pain score significantly reduced after 8 weeks of treatment in both tablet dosage arms: with a slight greater effect in MPFF 1000 mg group - 4.21 cm ($P<0.01$) than in MPFF 500 mg group - 4.01 cm ($P<0.01$). The reduction of leg pain was noted after 2 weeks of treatment and continuously throughout the treatment.

CONCLUSION After 8 weeks of treatment at the same daily dose of MPFF 1000 mg, leg pain was reduced significantly for both tablet dosages. The new 1000 mg tablet dosage was well tolerated and presents a safety profile comparable to MPFF 500 mg tablet, with the advantage of one intake per day.

D10 USE OF ELATEC (MPFF) AS A MONOTHERAPY FOR THE CONTROL OF POSTOPERATIVE SYMPTOMS AFTER ENDOVENOUS RADIOFREQUENCY ABLATION

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AIM The micronized purified flavonoid fraction (MPFF) Elatec, a phlebotonic agent consisting of 90% diosmin and 10% flavonoids expressed as hesperidin, diosmetin, linarin, and isorhoifolin, protects the microcirculation from damage secondary to increased ambulatory venous pressure. It has anti-inflammatory properties that decrease the interaction between leucocytes and endothelial cells. Elatec also attenuates postoperative pain and hematoma formation and increases exercise tolerance in the early postoperative period.

Radiofrequency ablation uses a specific catheter for segmental ablation. This catheter treats a 7-cm vein segment in a 20-second energy cycle. The radiofrequency method of venous closure primarily acts by inducing collagen contractions in the vein wall through heat-induced denaturation of the collagen matrix, followed by fibrotic sealing of the vessel lumen due to injury and inflammation of the vein wall. The radiofrequency method for venous closure can cause postoperative pain, hematoma, induration of the treated vein, and swelling. Elatec's vein specific anti-inflammatory action can be useful in limiting postintervention symptoms and complications.

METHODS We conducted a randomized, nonblinded trial comparing two groups of patients: a control group (endovenous radiofrequency ablation alone) and an Elatec-treated group (endovenous radiofrequency ablation with Elatec 500 mg, 2 tablets once daily, from the day of surgery to the follow-up appointment at 2 to 3 weeks postsurgery). The primary outcomes were the impact of vein ablation in association with Elatec on the severity of the disease, patient's symptoms, and quality of life as determined using the Venous Clinical Severity Score (VCSS), the visual analogue scale (VAS), and the Chronic Venous Disease Quality of Life Questionnaire (CIVIQ-14), respectively.

RESULTS The study included 200 female patients treated with endovenous radiofrequency ablation plus Elatec taken postoperation. The preoperative VCSS was 8.2 and 8.3 points in the Elatec group and control group, respectively. The postoperative VCSS was 2.4 and 4.6 points in the Elatec group and control group, respectively ($P < 0.05$). The VCSS and CIVIQ-14 quality of life questionnaires improved in several domains in both groups, but the scores improved significantly in the Elatec group ($P < 0.05$). The majority of patients in the Elatec group had complete relief of their symptoms (i.e., less pain, itching, heaviness, swelling, and hematoma formation) at a mean follow-up of 3 weeks ($P < 0.05$).

CONCLUSION The addition of Elatec in the postoperative period offers a simple, single-drug management of postablative symptoms. The treatment improves the benefits of the surgery by reducing pain, heaviness, swelling, and hematoma formation with no drug side effects.

D11 EFFECTS OF RUSCUS EXTRACT ON THE MICROCIRCULATION ARE MEDIATED BY MUSCARINIC RECEPTORS

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AIM To investigate the importance of muscarinic receptors on the effects of *Ruscus* extract on the microcirculation, namely on macromolecular permeability increase induced by either histamine or ischemia/reperfusion (I/R), arteriolar and venular diameters, functional capillary density and leukocyte rolling and sticking induced by I/R.

MATERIAL AND METHODS Male hamsters (*Mesocricetus auratus*), aged 7-10 weeks, were treated orally for 2 weeks, twice a day, with 50, 150 and 450 mg/kg/day or placebo and experiments were performed on the cheek pouch preparation. Histamine (1 μM) and atropine (different concentrations) were applied topically. Ischemia (30 min duration) was induced by an inflatable latex tubing placed around the neck of the pouch, where it leaves the mouth. The preparations were placed under an intravital microscope coupled to a closed circuit TV system. The TV monitor display was used to obtain arteriolar and venular diameters by an image shearing monitor; macromolecular permeability was determined using an i.v. injection of FITC-dextran (molecular weight 150,000 Dalton) and leukocyte rolling and sticking by an i.v. infusion of rhodamine G.

RESULTS *Ruscus* extract elicited a dose-dependent decrease of (1) histamine and ischemia/reperfusion induced macromolecular permeability increase; (2) venular diameter and (3) leukocyte rolling and sticking. No significant effects could be observed on arteriolar diameters. These effects could be completely or partially blocked with atropine (10^{-8} , 10^{-7} or 10^{-6} M).

CONCLUSION Our results have confirmed anti-inflammatory and venotonic effects of *Ruscus* extract and showed that they were mediated by muscarinic receptors.

D12 IMPROVED INTERVENTIONAL HYGIENE USING A NOVEL DISINFECTANT ULTRASOUND COUPLANT SPRAY

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AIM During endovenous procedures the use of conventional ultrasound gel goes along with several problems: Gel deposits will delay punctions and catheter handling, gel will require intense wiping for complete removal, color markings can hardly be applied on gel covered skin, and even sterile gel will be contaminated with bacteria mobilized from skin pores and wrinkles by transducer movements. In this study, a new disinfectant ultrasound couplant spray (DUCS) containing Octenidin and Phenoxyethanol was evaluated.

MATERIALS AND METHODS The study included 20 healthy individuals aged 35 to 75 years. Simultaneous endovenous treatment was simulated in both legs, with access location to the LSV below knee level and two other locations (thigh and lower leg). The legs were randomized to two procedures: (A) standard, consisting of mapping using conventional ultrasound gel, removal of all gel, 2 x disinfection according to surgical requirements, sterile covering of ultrasound transducer, and simulated intervention using sterile ultrasound gel; or (B): mapping using DUCS, sterile covering, simulated intervention using DUCS. After removal of all remnants of gel or spray with sterile tissue, samples were taken at symmetric locations (potential puncture sites) using contact plates (RODAC) containing inhibitors to the disinfectant. The number of colony forming units (CFU) was determined, furthermore the group of growing species and the procedural time.

RESULTS The evaluation of 20 cases (40 legs, 162 samples) showed bacterial growth for group A (standard) after completed hygienic preparation with a mean of 10.5 CFU (0-46) and for group B (DUCS) of 2.4 CFU (0-10). After simulated treatment, A showed increased growth with 17.5 CFU (2-180) while B showed even improved hygiene with just 2.1 CFU (0-8). Comparing corresponding locations, UCS - treated areas were superior or equal to standard in 93.8% of the samples. The spectrum of detected resident and transient germs did not give evidence of any activity gap of DUCS. Mean procedural time was 18:15 min. for standard and 13:00 for DUCS. Gel consumption was 32-75 mL (mean: 54) for standard, and 4-7 mL (5.6 mL) for DUCS.

CONCLUSION The use of the novel DUCS according to the reported protocol seems to provide similar or even better hygienic conditions than by conventional alcoholic disinfection. The application may help to simplify endovenous procedures and to significantly reduce intervention time.



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