Registration is open, Meet the Experts!

Register for this unique course with Experts in the field of Management of Venous Leg Ulcers!!

Main Objective:
To ensure sufficient skills by providing detailed theoretical and clinical knowledge with hands on clinical experience in treating Venous Leg Ulcers: Composition – Foam – Shaving – Fasciectomy – Mesh-graft

Is this course for you?
Yes, if you wish an update in modern management of venous leg ulcers based on hands-on interactive activities with experienced experts. Previous attendance in EVF HOW is an advantage. We will only accept 10 learners for this course.

Course Directors: Alfred Obermayer and Hugo Partsch
Course Dates: Thursday 29 – Friday 30 September 2016
Venue: Medical Office Dr. Obermayer and St. Josef KH Hospital, Vienna, Austria

Course Fee: €500.00 including:
All learning events – (see detailed programme at www.evfvip.com)
Hands-on workshops on:
• diagnosis using duplex scanning, “sourcing”
• ABPI, pulse oscillography
• compression therapy using bandages and stockings
• ultrasound guided foam sclerotherapy
• surgical management of venous ulcers including abolition of reflux, shaving, fasciectomy and mesh grafts.

Refreshments, lunches and Dinner.

For further information and a registration form please visit www.evfvip.com or contact Dawn Bond at: exhibition@europeanvenousforum.org
Under the auspices of:
International Union of Angiology and Union Internationale
de Phlébologie – International Union of Phlebology

Senior Corporate Members
The European Venous Forum is extremely grateful to the following companies for their continued generous support

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Dear Friends and Colleagues,

On behalf of the European Venous Forum (EVF) and the Venous Forum (VF) of the Royal Society of Medicine (RSM) it is our great pleasure to welcome you to the jointly organised congress held in the heart of London.

The meeting will offer a varied, high quality scientific programme comprising didactic sessions and original research that will be of interest to phlebologists and a wide range of other medical and nursing disciplines.

The course dinner will be held at the Royal College of Surgeons of England in Lincoln’s Inn Fields and attendees will have the opportunity of touring the world famous Hunterian Anatomical Museum.

Previous conferences have attracted in excess of 400 delegates from all over the world.

The scientific committee is working hard to ensure that delegates have the very best scientific, social, and cultural experience.

Areas to be covered will include:

- Venous thromboembolism
- Post thrombotic syndrome
- Minimally invasive endovenous procedures for deep and superficial disease
- Pharmacological and compression therapy

We hope you enjoy your time in London and at the EVF/VF 2016 congress.

Very best wishes,

Professor Andrew Bradbury
President, European Venous Forum

Professor Gerry Stansby
President, Venous Forum

Professor Andrew Nicolaides
Chairman of the Board, European Venous Forum

**CONGRESS PRESIDENT:**
Professor Andrew Bradbury, President, European Venous Forum

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VENOUS FORUM COUNCIL MEETING
There will be a meeting of the Council of the Venous Forum of the Royal Society of Medicine on Thursday 7 July 2016 at 1.00pm in the Marcus Beck Library, 3rd floor. Lunch will be provided during the Council meeting.

ABOUT THE ROYAL SOCIETY OF MEDICINE
The Royal Society of Medicine is one of the country’s major providers of accredited postgraduate medical education. Each year, the RSM organises over 400 academic and public events, spanning 60 areas of special interest providing a multi-disciplinary forum for discussion and debate. Videos of many key lectures are also available online, increasing access to the Society’s education programme. The RSM is home to one of the finest medical libraries in the world, with an extensive collection of books, journals, electronic journals and online medical databases.

As well as providing medical education, the Society aims to promote an exchange of information and ideas on the science, practice and organisation of medicine, both within the health professions and with responsible and informed public opinion. The Society is not a policy-making body and does not issue guidelines or standards of care.

EVF DATES FOR YOUR DIARY

7th EVF HOW - Hands-on workshop on venous disease
Limassol, Cyprus, 27-29 October 2016

18th meeting of the European Venous Forum
Porto, Portugal, 29 June – 1 July 2017
under the Presidency of Professor Armando Mansilha

PREVIOUS ANNUAL MEETINGS AND PAST PRESIDENTS – EUROPEAN VENOUS FORUM
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
16th Meeting, 2-4 July 2015 • St Petersburg, Russia • Evgeny Shaydakov

EUROPEAN VENOUS FORUM
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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FREE EVENING LECTURES AT THE RSM

The RSM holds a range of events which are not just specialty focused. Covering more general interest topic areas, they are relevant to those who are interested in healthcare topics.

UPCOMING LECTURES INCLUDE:

Thursday 15 September
Hewitt award and lecture: Shrinking the malaria map - the long journey to eradication, 1900-2040
by Sir Richard Feachem, Director of the Global Health Group at UCSF Global Health Sciences and Professor of Global Health at the University of California

18 October 2016
Ellison Cliffe lecture: Services and support for olfactory disorders
by Mr Carl Philpott, Honorary Consultant ENT Surgeon and Rhinologist, James Paget and Norfolk and Norwich University Hospitals

Thursday 3 November 2016
Darwin lecture: Reducing the burden of neglected tropical diseases - an evolutionary perspective
by Professor David Rollinson, Merit Research Scientist, Department of Life Sciences, The Natural History Museum

For more events visit: www.rsm.ac.uk/public
Videos from the past lectures can be found online at https://videos.rsm.ac.uk

CONGRESS INFORMATION

DATES
Thursday 7 July, Friday 8 July and Saturday 9 July 2016

CONGRESS VENUE
Royal Society of Medicine,
1 Wimpole Street,
London W1G 0AE
www.rsm.ac.uk

REGISTRATION DESK
The registration desk will be open at the following times, however, lunch may not be guaranteed for those who register on the day of the conference.

Thursday 7 July 07.30 - 18.00
Friday 8 July 07.30 - 18.30
Saturday 9 July 07.30 - 13.30

ON SITE REGISTRATION
Places may be available to register on the day.

EVF Member / RSM Fellow (3 days) £350
Consultant / GP (3 days) £450
BAS Member / SVT Member (3 days) £350
Trainee / Nurse / Sclerotherapists (3 days) £275
RSM / EVF Trainee (3 days) £200
Consultant / GP (1 day) £225
EVF Member / RSM Fellow (1 day) £175
EVF Trainee Member / RSM Trainee (1 day) £100
BAS Member / SVT Member (1 day) £175
Trainee / Nurse / Sclerotherapists (1 day) £100
Gala Dinner £100

Registration fee includes: Congress pack, welcome reception, refreshments and lunch, certificate of participation.

REFRESHMENTS AND LUNCH
Coffee breaks and lunch will be held in the exhibition areas on the Ground floor and Lower ground floor.

SOCIAL PROGRAMME
There are many exciting places to visit and things to do during your stay in London, a tour of London and Greenwich, Westminster, Royal London and The Abbey and more. Please direct your enquires to hugh@huge-help.co.uk.

OPENING CEREMONY AND WELCOME RECEPTION
Join us and your friends, colleagues and exhibiting companies at the welcome reception in the Exhibition Area on Thursday 7 July at 18.00. This event is free of charge for all registered delegates and exhibiting companies.

CHANGES
The organisers reserve the right to adjust or change the programme as necessary.
CONGRESS INFORMATION

GALA DINNER - FRIDAY 8 JULY 2016
TIME: 7.00PM
Royal College of Surgeons,
34-43 Lincoln’s Inn Field,
London WC2A 3PE
www.rcseng.ac.uk

BY UNDERGROUND
The nearest Tube station is Holborn (Piccadilly and Central Lines). It takes about 10 minutes to walk from the station to the museum.
Temple (District and Circle Lines) and Charing Cross stations (Northern and Bakerloo Lines) are a 10-20 minute walk or short taxi ride away.

COST: £100 PER PERSON
(inclusive of reception, dinner and entertainment)

DRESS: INFORMAL
The congress dinner will be held in the historic Royal College of Surgeons situated in the heart of London.
Enjoy pre-dinner drinks in the Hunterian Museum with an introduction by the Museum’s Curator. The Hunterian Museum is home to over 3000 unique preserved anatomical specimens (www.rcseng.ac.uk/museums/hunterian). The reception will be followed by dinner in the oak panelled Edward Lumley Hall.
Entertainment, with dancing will be provided by the Official Receivers Soul Band

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.

CPD/CME
An application has been made to the RCP for CPD credits and to the EACCME® for CME accreditation for this event.

BADGES
Please wear your badges at all times

MOBILE TELEPHONE
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.

USEFUL PRACTICAL INFORMATION

WIFI
WiFi password will be available at the registration desk.

CURRENCY
Currency is pound sterling

EMERGENCY SERVICES
Police, Fire Brigade, Ambulance: 999

ELECTRICITY
The UK’s electric system provides the 230 Volt/50 Hertz voltage.

TIME ZONE
BST (British Summer Time)

TOURIST INFORMATION
www.visitlondon.com

TRANSPORT/TRAVEL
By London Underground
The RSM is a ten minute walk from Oxford Circus (Victoria, Bakerloo and Central lines) and a five minute walk from Bond Street Station (Central and Jubilee lines).
Oxford Circus is a five minute tube journey from Victoria, five minutes from Marylebone and twelve minutes from King’s Cross St Pancras. From Waterloo, Bond Street is a five minute tube journey on the Jubilee line.
By bus
Nearest bus routes are: 6, 7, 10, 13, 15, 23, 25, 30, 55, 73, 94, 98, 113, 137, 139, 159, 175, 189, 274, 390 and are all within walking distance to the RSM.
Get help planning your visit to the RSM with Transport for London’s Journey Planner
For up to date travel information visit Travel for London
By car
RSM is in the congestion charging zone. Wimpole Street is a one-way street, approached from Henrietta Place.
Parking near the RSM
Car parks are located in Cavendish Square and Marylebone Lane, both five minutes walk away. For more information visit the City of Westminster website.
RSM members receive a discount off parking rates when using Cavendish Square Q-Park Car Park. Ask for a discount voucher (saving you 15%) from Domus reception or prebook and save up to 50% on their usual rates via the members’ only part of our website (click here).
By foot
1 Wimpole Street is located behind House of Fraser, off Oxford Street.
Meetings at the RSM you might be interested in

View the full programme of events at www.rsm.ac.uk/events

Surgical perspectives in rheumatology
Date: Wednesday 5 October 2016
Organised by the RSM's Rheumatology & Rehabilitation Section
Hear the different surgical options that are available to patients presenting with symptoms and diagnoses relating to their hands, feet and ankles, as well as the management of vertebral fractures.
Call 0207 390 3918 or email rheumatology@rsm.ac.uk to find out more.
Book online at: www.rsm.ac.uk/events/rrh01

Early intervention in hip surgery 2016
Date: Wednesday 5 October 2016
Organised by the RSM's Orthopaedics Section
The meeting aims to provide core information regarding the indications and surgical techniques of hip joint preservation surgery, as well as covering some of the more controversial aspects of current surgical approaches.
Call 0207 390 3918 or email orthopaedics@rsm.ac.uk to find out more.
Book online at: www.rsm.ac.uk/events/orh01

Round the clock: Working together to make 24/7 palliative care a reality
Date: Wednesday 19 October 2016
Organised by the RSM's Palliative Care Section and Marie Curie Cancer Care
Find out more about 24 hour palliative care provision, including out of hours services, in both primary and acute settings.
Call 0207 290 2984 or email palliative@rsm.ac.uk to find out more.
Book online at: www.rsm.ac.uk/events/plh01

Life-threatening asthma, epilepsy, diabetes and sepsis in children
Date: Wednesday 9 November 2016
Organised by the RSM's Anaesthesia Section and The Royal College of Anaesthetists
Receive an update on treatments from experts on how to assess what is best for severely ill children (and adults) under your care.
Call 0207 290 3947 or email anaesthesia@rsm.ac.uk to find out more.
Book online at: www.rsm.ac.uk/events/anh03

RSM Professionals courses to help further your career
See all courses and register at: www.rsm.ac.uk/events/rsm-professionals

Critical appraisal and research methods
Dates available: Friday 23 September 2016 and Friday 25 November 2016
A day course to teach you critical appraisal skills and effective research methods.

Expert witness skills masterclass – how to avoid the pitfalls
Dates available: Thursday 27 - Friday 28 October 2016 and more dates in 2017
Organised with the BPP School of Health
A practical two-day course to help you gain a clearer understanding of the role of an expert witness.

MEDICAL AND TECHNICAL EXHIBITION

A trade exhibition of medical and pharmaceutical products will be staged in the exhibition areas on the ground floor (please see exhibition plan on page 32).

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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WALK VASCULAR
The scientific programme commences on Thursday 7 July with a session on risk prediction and superficial vein thrombosis. This will be followed by a didactic session on sulodexide. The UK Venous Forum session on Acute DVT will commence at 12.00. The afternoon will open with a joint session of the UK Venous Forum and the British Association of Sclerotherapy.

The EVF invited lecture will be given by Professor Lovell Kabnick, President of the American Venous Forum. The title of the presentation is "The state of art, and the future of truncal ablation".

Over forty abstracts of high scientific quality will be presented in the oral sessions. These were selected from the eighty abstracts submitted.

In addition to the oral presentations, there will be electronic presentations added to the scientific programme. The presentations are available to view on screens situated in the Seminar Suite, lower ground floor of the venue. On Friday B July at 13.00 the electronic presentations will be viewed by the judging panel and a prize awarded to the top presentation.

The presentations from the AVF Servier Award Travelling Fellowship winners 2016, the Japanese Society of Phlebology winners 2016 and the ACP Abstract Award 2015 will take place on Friday B July.

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.

EVF PRIZE

The EVF prize will be awarded to the best ten 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 2017. The three abstracts of the winners are sent to the American College of Phlebology who will select one and award a grant, for presentation at the ACP meeting in November 2016 and the Japanese Society of Phlebology who will select two, and award a grant, for presentation at the meeting in July 2017.

MEETING ROOMS

Lectures will be held in the Guy Whittle Auditorium and the overflow rooms will be in the Max Rayne Auditorium and Naim Dangoor Auditorium. All auditoriums are linked by audio and video, delegates will be able to participate in discussions and ask questions to speakers using microphones available in all three auditoriums.

THURSDAY 7 JULY 2016

07.30 Registration, refreshments, e-presentations and exhibition stands

Chairs:

08.30
Paper 1.1
Mean platelet volume (MPV) as a predictor of venous thromboembolism (VTE) in colorectal cancer
C. Walsumsmie, B. Birinmumrongyong, N. Poprom
1. Department of Surgery, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand
2. Department of Surgery, Faculty of Medicine, Thammasat University Hospital, Thammasat University, Pathumthani, Thailand

08.45
Paper 1.2
The agreement between Caprini and Department of Health venous thromboembolism risk scores in urological patients
S. Orda, M. Karla, Alun H Davies
Department of Surgery and Cancer, Imperial College London, Charing Cross Hospital, London, UK
Submitted for the EVF Prize

09.00
Paper 1.3
Risk adjusted DVT prophylaxis for ambulatory varicose vein procedures: How useful is the Caprini risk assessment model?
A. Wapstraft, S. Godfrey, H. Nygren
The Vascular Unit, Worcestershire Royal Hospital, UK
Submitted for the EVF Prize

09.15
Paper 1.4
VTE assessment scoring in patients undergoing superficial venous intervention - US and UK perspectives on risk stratification
S. Orda, M. Kuri, Y. Grant, R. Booam, M. Naim, J. Sahibah, A. H Davies
1. Section of Vascular Surgery, Department of Surgery and Cancer, Imperial College London, UK
2. North West London Hospitals NHS Trust, UK
Submitted for the EVF Prize

09.30
Paper 1.5
Patterns in the management of superficial vein thrombosis
C. Karanounis, K. Sparas, V. Lachanas, A. Athanasoulias, A. Giannoukas
1. Department of Vascular Surgery, Faculty of Medicine, School of Health Sciences, University Hospital of Larissa, University of Thessaly, Larissa, Greece
2. Department of Vascular Surgery, University Hospital of Patras, Patras, Greece
3. Department of Vascular Surgery, University Hospital of Ioannina, Ioannina, Greece

09.45
Paper 1.6
Rivaroxaban for thrombosis prophylaxis in endovenous laser ablation with and without miniphlebectomy: A multicentre experience
H. Uthoff, M. Huerzler, C. Schmidt, V. Brinz, D. Staub
1. Department of Angiology, University Hospital Basel, Basel, Switzerland
2. Geesligenstrasse am See, St. Anna im Bahnhof, Lucerne, Switzerland
3. Vascular Clinic, Rapperswil, Switzerland
4. Department of Angiology, Hospital of Limmattal, Limmattal, Switzerland
Submitted for the EVF Prize

10.00
Paper 1.7
Treatment of superficial vein thrombosis with intermediate doses of tinzaparin. The Seven study
1. Department of Vascular Surgery, University Hospital of Larissa, Greece
2. Department of Vascular Surgery, University Hospital of Patras, Greece
3. Department of Vascular Surgery, University Hospital of Alexandroupolis, Greece
4. Department of Vascular Surgery, "KAT" Hospital, Athens, Greece
5. Vascular Surgery Unit, Department of Surgery, University Hospital of Ioannina, Greece
6. Department of Vascular Surgery, University Hospital of Heraklion, Crete, Greece
7. Department of Vascular Surgery, "ATTIKON" University Hospital, Athens
8. Vascular Surgery Unit, Department of Cardio-Thoracic Surgery, "Papanikolaou" Hospital, Thessaloniki, Greece

10.15
Paper 1.8
Deep venous stenting: A single centre experience
M. Huerzler, A. Busuttil, N. Burfitt, R. Thomas, A. H Davies
1. Imperial College Healthcare NHS Trust, London, UK
2. Imperial College London, UK
Submitted for the EVF Prize
### SCIENTIFIC PROGRAMME

#### FRIDAY 8 JULY 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>07.30</td>
<td>Registration, refreshments, e-presentations and exhibition stands</td>
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<tr>
<td>08.30</td>
<td>Abstract session 2: Varicose vein ablation</td>
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<tr>
<td></td>
<td>(10 minute presentation, 5 minute discussion)</td>
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<td></td>
<td>Chairs: Marianne Vandendriessche, Belgium and Ian Franklin, UK</td>
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<tr>
<td>08.30</td>
<td><strong>Paper 2.1</strong> Endovenous heat-induced thrombosis after endovenous laser ablation with 1470 NM laser and radial fibres</td>
</tr>
<tr>
<td></td>
<td>OP Mandzhikian1,2,3,4, EA Letunovskiy1, IA Kutidze3,4, AV Zherdev1, KA Kaperi1, AM Isaev2,3</td>
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<tr>
<td></td>
<td>1 “Center of Laser Surgery”, Moscow, Russia</td>
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<td>2 “Garant Clinic”, Moscow, Russia</td>
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<td></td>
<td>3 Moscow State First Medical University Hospital #4, Moscow, Russia</td>
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<td>4 “Plastic-C”, Kirov, Russia</td>
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<td>Submitted for the EVF Prize</td>
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<tr>
<td>09.00</td>
<td><strong>Paper 2.2</strong> Percutaneous ligation of the GSV with ultrasound guided foam sclerotherapy and miniphlebectomies</td>
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<td>L Rasumussen, J Lawatzit, Thy Danish Vein Centres, Copenhagen, Denmark</td>
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<td>09.00</td>
<td><strong>Paper 2.3</strong> Novel biomatrix sclerofoam compared to endovenous laser – initial results and one year follow up</td>
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<td>JC Ragg, Angioclinic Vein Centres, Interventional Phlebology, Berlin, Munich, Germany, Zurich, Switzerland</td>
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<tr>
<td>09.15</td>
<td><strong>Paper 2.4</strong> The impact on residual venous reflux and varicose vein at one month follow-up on the development of recurrence of varicose vein after 5 years saphenous ablation for primary varicose vein</td>
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<td>T Ogawa, S Hoshiba, Cardiovascular Surgery, Fukushima Daich Hospital, Fukushima, Japan</td>
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<td>09.30</td>
<td><strong>Paper 2.5</strong> A comparison of five year treatment outcomes in patients with and without complications of superficial venous insufficiency</td>
</tr>
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<td>J ElSheikh, S Nandhra, C Leung, T Wallace, D Carradice, I Chetter, Academic Vascular Surgical Unit, Hull York Medical School, Hull, UK</td>
</tr>
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<td>Submitted for the EVF Prize</td>
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<tr>
<td>09.45</td>
<td><strong>Paper 2.6</strong> Mechanohemial ablation (MOCA) in patients with severe superficial vein incompetence. A prospective report</td>
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<td></td>
<td>M Akeson, A Lundell, Venous Centre, Malmö, Sweden</td>
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<tr>
<td>Time</td>
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<tr>
<td>10.00</td>
<td>10.00 Refreshments, e-presentations and exhibition stands</td>
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<td>10.15</td>
<td>10.15 Discussion</td>
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<td>10.30</td>
<td>10.30 Department of Vascular Surgery, University Hospitals Leuven, Belgium</td>
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<td>10.45</td>
<td>10.45 Abstract session 3: Cost-benefit studies, epidemiology and anticoagulation complications (15 minute presentation, 5 minute discussion)</td>
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<tr>
<td>11.00</td>
<td>11.00 Didactic session 5: The place of ruscus extract + HMC + VitC in the management of chronic venous disease Andrew Nicolaides, Cyprus and Pavel Poredos, Slovenia</td>
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<tr>
<td>11.15</td>
<td>11.15 Chronic venous disease pathophysiology update (10 minute presentation, 5 minute discussion)</td>
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<tr>
<td>11.30</td>
<td>11.30 Didactic session 6: Update on Ruscus extract + HMC + VitC comprehensive mode of action and efficacy Andre-Francois Allier, France</td>
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<tr>
<td>11.45</td>
<td>11.45 Chairs: Marianne De Maeseneer, Belgium and Keith Poskitt UK</td>
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<tr>
<td>12.00</td>
<td>12.00 A cost comparison of treating those with and without the complications of SVI J El-Shahia, S Nandra, C Leung, T Wallace, D Carradice, I Chetter (10 minute presentation, 5 minute discussion)</td>
</tr>
<tr>
<td>12.15</td>
<td>12.15 The relationship between social deprivation and referral to a vascular service for the assessment and diagnosis of varicose veins and leg ulcer before and after publication of NICE Clinical Guidelines 168 H Davies, M Popplewell, A Kostouloupoulou, G Bate, ABradbury University of Birmingham, Department of Vascular Surgery, Heart of England NHS Foundation Trust, Birmingham, UK</td>
</tr>
<tr>
<td>12.30</td>
<td>12.30 The prevalence of chronic venous disease worldwide. An epidemiological analysis. The final results of the vein consult programme D Vanquickenborne, R Colman, S Thomas, G Guillaume, I Staelens, ME Vuytselaar (10 minute presentation, 5 minute discussion)</td>
</tr>
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<td>12.45</td>
<td>12.45 Bleeding risk of anticoagulants in the prevention of venous thromboembolism among Asians NC Lee, L Lee Department of Surgery, University Putra Malaysia, Selangor, Malaysia</td>
</tr>
<tr>
<td>13.00</td>
<td>13.00 Lunch, e-presentations, exhibition stands and Annual General Meeting of EVF (members only)</td>
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</table>
16.45 Paper Pr 2
Is routine follow-up surveillance of iliac vein stents for ilio caval venous obstruction necessary?
R Abdur-Rahz, Z Novak, B Pearce, T Matthews, M Patterson, W Jordan, M Passman
University of Alabama, Birmingham, Alabama, USA

17.00 Presentation from American College of Phlebology (ACP)

17.00 Paper Pr 3
Improvement in varicose vein symptoms: Quantifying with the VVSSymQ, an electronic patient-reported outcome (ePRO) instrument
IM Khurram
Interventional Radiology, NY Presbyterian Hospital-Wall Cornell Medical College, New York, USA

17.15 Presentations from Japanese Society of Phlebology (JSP)

17.15 Paper Pr 4
Thin-slice enhanced computed tomography for delineating the right adrenal vein before adrenal venous sampling
S Ono, Y Hashimoto, M Tanaka, T Nakazaki, T Itoh
Department of Radiology, Nippon Medical School, Tokyo, Japan

17.30 Paper Pr 5
Involve ment of myofibroblasts in the pathophysiology of secondary lymphoedema
M Sano, N Umino, N Yamamoto, K Inuzuka, T Saito, R Sugisawa, K Kaba hashi, T Yata, T Kayama
Second Department of Surgery, Vascular Surgery, Hamamatsu University School of Medicine, Hamamatsu, Japan

17.45 Completion of evaluation forms and close of day two

19.00 Congress Dinner, Royal College of Surgeons
For those who have pre-registered only

SATURDAY 9 JULY 2016

07.30 Registration, refreshments, e-presentations and exhibition stands

Chairs:
Mark Malouf, Australia and Abdusalam Abu-Own, UK

08.30 Paper Pr 6
Interface pressure, stiffness and haemodynamic effectiveness of a new compression device
G Mosti1, H Parschi1, J Damm1, T Lundh1
1 Angiology Department, Clinica MD Barbantini, Lucca, Italy
2 Medical University of Vienna, Vienna, Austria
3 Pressolisa AB, Helsingborg, Sweden.
4 Chalmers University of Technology, Gothenburg, Sweden

08.45 Paper Pr 7
A method to increase working compression pressure without changing resting pressure
J Damm1, T Lundh1, H Parschi1, G Mosti1
1 Angiology Department, Clinica MD Barbantini, Lucca, Italy
2 Medical University of Vienna, Vienna, Austria
3 Pressolisa AB, Helsingborg, Sweden
4 Chalmers University of Technology, Gothenburg, Sweden

09.00 Paper Pr 8
Compression film bandage added to medical compression stockings improves comfort and results of foam sclerotherapy
JC Riggi
Angiol Clinic, Venetia, Interventional Phlebology, Berlin, Munich, Germany; Zurich, Switzerland

09.15 Paper Pr 9
Recalcitrant venous leg ulcers may heal by conservative outpatient treatment of venous disease even in the presence of concomitant arterial occlusive disease
G Mosti1, A Cavo1, H Parschi1
1 Angiology Department, MD Barbantini Hospital, Lucca, Italy
2 Eurocenter Venetia, San Benedetto del Tronto, Italy
3 Medical University of Vienna, Vienna, Austria

09.30 Paper Pr 10
Characteristics of isolated calf vein thrombosis in current clinical practice
Y Hosoi, M Nishiwaka, T Ikizoe, Y Ninsho, H Kubota
Department of Cardiovascular Surgery, Kyorin University, Tokyo, Japan

09.45 Paper Pr 11
Comparison between frequency of calf DVT after earthquakes in Japan and Italy
K Iwashita, T Ohiwada, K Aoki, D Namura, T Tsukihara, S Saito1, M Lug0
1 Ibaraki University Graduate School Of Medicine, Ibaraki, Japan
2 Finalis Emilia, Modena, Italy
3 Hospiaera Hospital, Modena, Italy

10.00 Paper Pr 12
Prevalence of chronic venous disease (CVD) and restless leg syndrome (RLS) in general population (epidemiological study)
A Sufianov, V Mazharov, T Khlebistova, V Angelova, S Akimov, V Samkin, R Manadov
Philologica Centre Antirefux, Moscow, Russia

10.15 Refreshments, e-presentations and exhibition stands

Chairs: Abstraction session 6: Deep venous reconstruction
Michel Perrin, France and Stephen Black, UK

10.45 Paper Pr 13
Pelvic vein embolisation under local anaesthetic is feasible and safe in an outpatient clinic setting. 18 months experience of a new service
SJ Bishop, EL Davis, TF Fernandez-Hart, P Divakar, D Beckett, MS Whitley
The Whiteley Clinic, London, UK

11.00 Paper Pr 14
Neovalve construction surgery in postthrombotic syndrome and primary deep vein insufficiency
Y Hashimoto1, S Hashimoto2
1 Fukusha Sanno Hospital, Vascular Surgery, Fukusha, Japan
2 Fukushima Dichi Hospital, Fukushima, Japan

11.15 Paper Pr 15
Venous stent stability index (VSSI): A guide for iliac vein stent sizing and prevention of migration in the treatment of symptomatic iliac compression
PE Thorpe, AP Chintaith
Arizona Heart Hospital, Phoenix, Arizona, USA
Vanit Inc., Fremont, California, USA

11.30 Paper Pr 16
Systematic review of open and endovascular treatment of superior vena cava syndrome of benign aetiology
GS Stavros1, CN Antongiorgi1, G Mantas1, KG Moulakakis1, JD Kakisis1, E Brountzos2, CR Lattimer3, G Geroulakos1,2
1 Department of Vascular Surgery
2 2nd Laboratory of Radiology, University of Athens Medical School, Attikon University Hospital, Athens, Greece
3 Department of Surgery and Cancer, Imperial College, London, UK

11.45 Assessing outcome after venous stenting – quality of life is more important than patency
Manji Gohal, UK

11.55 Haemotological management post stenting – what anticoagulant and for how long
R KRah, UK

12.05 Deep venous valve technologies: horizon scanning
Hayley Moore, UK

12.15 Popliteal vein entrapment: a forgotten entity
AJ Davies, UK

12.25 Discussion

12.45 Completion of evaluation forms and close of meeting
A1 A novel surgical technique for deep venous reflux suppression in femoral vein duplication.
S Ganesini, E Maneutti, M Tessari, MG Sibilla, P Spadari, P Zamboni
Vascular Diseases Center and Unit of Translational Surgery, University of Ferrara, Ferrara, Italy

A2 How do we prevent tributary vein recurrence near the sapheno-femoral junction after endovenous ablation of the great saphenous vein?
H Kusagawa
Matsusaka Ohga Clinic, Matsusaka, Japan

A3 Risk factors of endovenous heat induced thrombosis after endovenous laser ablation
I Kawada
Chiwa Clinic for Varicose Veins, Chiba, Japan

A4 Edoxaban in the prevention of endovenous heat induced thrombosis after endovenous laser ablation for varicose veins
T Sinmuro, A Chaiwah
1 Department of Cardiovascular Surgery
2 Department of Clinical Laboratory and Pathology, Nagano Matsumoto General Hospital, Nagano, Japan

A5 Evaluation of occlusion rate of a great saphenous vein and its tributaries by ultrasound scan after varicose veins treatment with radiofrequency ablation
T Imai
Department of Vascular Surgery, Nishinokyo Hospital, Nara, Japan

A6 Pilot study of the use of cyanocrylate in the treatment of varicose veins
P Botsch, TNA Lane, AH Davies
Section of Vascular Surgery, Imperial College London, Charing Cross Hospital, London, UK

A7 A more comfortable method for tumescent anesthesia
GR Coates
Vascular Therapies of Chattanooga, Chattanooga, Tennessee, USA

A8 Clinical trial comparing endovenous radiofrequency thermal ablation and crosssectional stripping for great saphenous varicose veins
NS Abushova, EI Zakriyakiev, MM Karimov, ZM Aliyev, FE Abbasov, FF Hasanov, GN Abushova
Scientific Centre of Surgery named after M.A. Topchubashov, Azerbaijan, Baku, Azerbaijan

A9 Sclerotherapy and vein gluing combined as a single procedure for saphenous veins
JC Ragg
Angeloclinic® Vein Centers, Interventional Phlebology, Berlin, Munich, Germany; Zurich, Switzerland

A10 Endovenous laser treatment with 940 nm: Estimation of efficiency for ablation of saphenous veins
MDF Karimov, NS Abushova, EI Zakriyakiev, AB Hasanov, FF Abbasov, GT Tagizade, SM Karimov
Azerbaijan Medical University, Scientific Centre of Surgery named after M.A. Topchubashov, Baku, Azerbaijan

A11 The new steam ablation of saphenous vein
U Bangliyan, A Cetinkaya, O Bozdemir
Department of Peripheral Vascular Surgery, Ankara University, Ankara, Turkey

B1 Prediction of radiofrequency ablation treatment outcome using plethysmography in great saphenous vein insufficiency
O Nisola, J Skolja, C Lasnik, T Langer, H Zachrisson
Department of Thoracic and Vascular Surgery and Department of Medical and Health Sciences, Linköping University, Linköping, Sweden

B2 Isolated EVLA as a first stage treatment of varicose veins
A Kellis, A Vanags, S Prave, R Vigen, J Rim, U Maurin
Dr Maurins Vein Clinic, Riga, Latvia

B3 Early outcomes after radiofrequency ablation and mecanochemical ablation in the treatment of great saphenous vein incompetence
C Luong, D Canadice, IAT Chater
Hull York Medical School, Hull Royal Infirmary, Hull, UK

B4 Surgical procedure for incompetent perforators – VAST technique
V Cibatariu
Flebestet Medical Clinic, Bucharest, Romania

B5 A specifically designed aquatic exercise protocol to reduce chronic lower limb oedema
S Dessalvi, F Boccardo, CC Campisi, G Villa, C Campisi
1 Vascular Diseases Center, Unit of Translational Surgery, University of Ferrara, Ferrara, Italy
2 Idrokinetik Clinic, Ferrara, Italy
3 Department of Neurosciences and Rehabilitation, S. Gregorio Hospital, University of Ferrara, Italy

B6 How to prevent lymphatic injuries in venous surgery
S Dessalvi, F Boccardo, CC Campisi, L Molinari, S Spinaci, C Comacchia, C Campisi
Department of Surgery, Unit of Lymphatic Surgery, IRCSS S. Martino – IST Institute for Cancer Research, University of Genoa, Genoa, Italy

B7 Lymphatic technique to prevent extremity lymphedema following cancer treatment
1 Department of Surgery, Unit of Lymphatic Surgery, S. Martino Hospital, National Cancer Institute, University of Genoa, Italy
2 Department of Surgery, Unit of Nuclear Medicine, S. Martino Hospital, National Cancer Institute, University of Genoa, Italy
3 Department of Obstetrics and Gynecology, S. Martino Hospital, National Cancer Institute, University of Genoa, Italy
4 Department of Surgery, Unit of Oncologic Surgery, S. Martino Hospital, National Cancer Institute, University of Genoa, Italy

B8 Our simplified SEPS (Subfascial Endoscopic Perforator Surgery) have considerable advantage in treatment of severe refractory stasis ulcers
N Haruta, R Shinhara, M Kouchi, T Yano
1 Departments of Vascular Surgery and Endoscopic Surgery, Takamatsu Central Hospital, Jirokoviki Medical Corporation, Hiroshima, Japan
2 Department of Surgery, Mitsubishi Mihara Hospital, Mihara, Japan

B9 Measurement of blood flow in the deep veins of the lower limb using the Geko™ neuromuscular electrostimulation device
M Griffin1,2, Dawn Bond1, AN Nicolaides1,2,3
1 Department of Surgery, Unit of Oncologic Surgery, S. Martino Hospital, National Cancer Institute, University of Genoa, Genoa, Italy
2 Department of Thoracic and Vascular Surgery and Department of Medical and Health Sciences, Linköping University, Linköping, Sweden
3 Department of Medical and Health Sciences, Linköping University, Linköping, Sweden; Department of Clinical Physiology and Department of Medical and Health Sciences, Linköping University, Linköping, Sweden

B10 Recurrent pulmonary emboli from popliteal vein aneurysm
A Shepherd, A Thapar, P Jasani, V Gadhvi
Basilion Hospital, Basildon, Essex, UK
C1 The results of treatment of patients with inferior vena cava thrombosis
V Krynychnovich, N Klimchuk, S Kalinin
Belarusian State Medical University, Minsk, Republic of Belarus

C2 Retrospective analysis of deep vein thrombosis incidence in patients with superficial vein thrombosis of the lower extremities
V Krynychnovich
Belarusian State Medical University, Minsk, Republic of Belarus

C3 Long-term results of standard treatment of deep vein thrombosis
V Krynychnovich, S Kalinin
Belarusian State Medical University, Minsk, Republic of Belarus

C4 Inferior vena cava (IVC) filters: Current district general hospital practice
T Ghahvavy, C Ballier, R Coppack, S Dinh
The Countess of Chester Vascular Unit and VTE Exemplar Centre, Chester, UK

C5 Catheter directed thrombolysis for acute ilio-femoral deep vein thrombosis: A retrospective single centre observational study
M Kazouli, P Toalda, U Shaik, V Chai, RHM Scru
1 Liverpool Vascular and Endovascular Service (LIVES), Royal Liverpool University Hospital, Liverpool, UK
2 Interventional Radiology, Royal Liverpool University Hospital, Liverpool, UK

C6 Recurrent thrombosis secondary to heparin-induced thrombocytopenia following venous recanalisation and stenting
A Wigham
Oxford University Hospitals NHS Foundation Trust, Oxford, UK

C7 Venous thromboembolism risk assessment model proposal for surgical patients
L Lee, NC Liehr, M Griffin, AN Nicolaides
1 Department of Surgery, University Putra Malaysia, Serdang, Malaysia
2 Vascular Diagnostic and Screening Centre, Nicosia, Cyprus and Imperial College, London, UK

C8 A tri-block polymer vepoloxamer-188 potentiates action of heparin and tissue plasminogen activator in animal models
E Kafodis, D Daskalakis, J Bavelje, W Jeske, D Hoppenscheidt, M Emanuele, J Fareed, M Lee, D Hope
1 Oxford University Hospitals NHS Foundation Trust, Oxford, UK
2 Liverpool Vascular and Endovascular Service (LiVES), Royal Liverpool University Hospital, Liverpool, UK

C9 Inflammatory and metabolic syndrome biomarker analysis of vascular outcomes in end-stage renal disease
E Kafodis, V Banai, PZ Sweigert, D Hoppenscheidt, J Saluk, D Syed, J Fareed
Departments of Nephrology and Pathology, Loyola University Medical Center, Maywood, IL, USA

C10 New insights into structure and pathogenic reactivity of the human saphenous vein wall: focus on pericytes and influence of venotropic flavonoids
S Nees, T Fischlein, S Millard, D Juchem
1,3,4 University of Munich (LMU), Departments of Physiology, Anatomy and Cardiac Surgery, Munich, Germany
2 Paracelsus University Nuremberg, Department of Cardiac Surgery, Munich, Germany

C11 Venous intima reconstructed in vitro: Influence of simultaneously activated platelets and PMN in absence and presence of polyphenols from red wine leaves
G Juchem, T Fischlein, S Millard, S Nees
1,2,4 University of Munich (LMU), Departments of Cardiac Surgery, Anatomy and Physiology
3 Paracelsus University Nuremberg, Department of Cardiac Surgery, Munich, Germany

C12 Transdermal application of therapeutic compounds targeting venous endothelial and smooth cells attenuates varicose and spider vein development
H Kui, M Hackel, T Kuhl
1 Institute of Physiology and Pathophysiology, Heidelberg University, Germany
2 Institute of Physiology and Pathophysiology, Division of Cardiovascular Physiology, University of Heidelberg, Germany

State of the art in cardiovascular disease

Tuesday 27 September 2016
Time: 8.15 am - 4.00 pm
Venue: The Royal Society of Medicine, London
CPD: 5 credits (Applied for)

For the second time in its history the Cardiology Section will be hosting a non

www.rsm.ac.uk/events/cdg30
**EXHIBITORS**

We are very grateful to the following companies for their support of our meeting. Please make sure that you visit their stands. Plenty of time has been allocated in the programme.

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<th>Company</th>
<th>Stand number</th>
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<td>Alfa Wassermann</td>
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PAPER 1.1
MEAN PLATELET VOLUME (MPV) AS A PREDICTOR OF VENOUS THROMBOEMBOLISM (VTE) IN COLORECTAL CANCER
C Wilasrusme1, B Siribumrungwong2, N Poprom2
1 Department of Surgery, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand
2 Department of Surgery, Faculty of Medicine, Thammasat University Hospital, Thammasat University, Pathumthani, Thailand

BACKGROUND
MPV, CBC-parameter, is potential biomarker of platelet activity in cancer and VTE. However, recent CATS-study showed that high-MPV levels associated with a decreased VTE risk.

AIM
To investigate the role of MPV in VTE and colorectal-cancer.

METHODS
A retrospective study was performed to analyze differences of MPV between patients with VTE, VTE and colorectal-cancer, and control.

Two reviewers independently extracted data for meta-analysis. Differences in MPV were expressed as unstandardized mean difference.

RESULTS
Among 170 patients, 58-control, 54-VTE, and 58-VTE with colorectal-cancer, MPV was significantly higher in VTE groups (table 1).

From 403 articles, 10 studies (5 cohorts and 5 case-controls) comprising 2,265 patients. MPV was significantly higher in those with VTE (mean difference 0.61 fL, 95% CI 0.34-0.88, P<0.001). Elevated MPV increased the relative risk of VTE (RR 1.319, 1.061-1.641, I²=82.5%)(figure 1).

CONCLUSIONS
Our evidence suggests that elevated MPV is associated with VTE and VTE with colorectal-cancer. A mechanistic study and RCT are required in order to use antplatelet therapy.

PAPER 1.2
THE AGREEMENT BETWEEN CAPRINI AND DEPARTMENT OF HEALTH VENOUS THROMBOEMBOLISM RISK SCORES IN UROLOGICAL PATIENTS
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AIMS
1 to 5% of patients undergoing major urological surgery experience symptomatic venous thromboembolism (VTE), with pulmonary embolism (PE) the commonest cause of post-operative death. Numerous scoring systems exist to assess patients’ risk of thromboembolism, dictating thromboprophylaxis regimes. These include the Caprini score and Department of Health (DoH) VTE score. The aim of this study was to assess agreements between these two assessment tools in pre-operative urology patients.

METHODS
100 patients undergoing elective urological procedures were prospectively risk assessed using the Caprini score and DoH VTE score and categorized accordingly into low, medium or high risk. Inter-rater agreement was assessed using Cohen’s Kappa coefficient. Sub-group analysis was performed on patients with and without a diagnosis of cancer.

RESULTS
There was a 71% agreement between the two scoring methods. Cohen’s kappa coefficient was 0.516 indicating ‘moderate agreement’. Of the 29 patients demonstrating a disagreement 18 were classified as medium risk by Caprini scoring and high risk by DoH standard. Three patients were classified as low risk by DoH standards and medium or high risk by DoH standard. 37 patients had a diagnosis of cancer of which no patient was classified as low risk by either scoring method. There was 92% agreement between the two scoring methods for cancer patients and kappa coefficient was 0.528. For the 63 patients without cancer the level of agreement was 58.7% with a kappa coefficient of 0.409 indicating fair agreement.

CONCLUSIONS
We demonstrate a ‘moderate agreement’ between scoring methods in urological patients. The disagreement is most frequent in patients classified as high risk by DoH standards, where patients are considered medium risk using the Caprini score. Given that in both groups patients will be prescribed thromboprophylaxis this is unlikely to be of clinical relevance. However, the six patients scoring low in one group and medium or high in the second group would have only been prescribed thromboprophylaxis depending on which scoring method was used. All patients with a diagnosis of cancer were scored as medium or high with both scoring methods and would have received thromboprophylaxis whether the Caprini or DoH scoring methods were used. Patients without a diagnosis of cancer, however, had poorer agreement between scoring methods. It is in these patients that discrepancies in thromboprophylaxis prescription are likely to occur. Considering the morbidity and mortality associated with VTE and PE following urological surgery further work to assess the long term cost and health implications of using different scoring methods in these patients is needed.

<table>
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<tr>
<th>Mean platelet volume (fL)</th>
<th>P-value</th>
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<tr>
<td>Control-varicose veins vs. VTE = 7.0±0.6 vs. 8.2±1.0</td>
<td>0.04</td>
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<tr>
<td>Control-varicose veins vs. VTE with cancer = 7.0±0.6 vs. 9.0±0.9</td>
<td>&lt;0.001</td>
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<tr>
<td>VTE vs. VTE with cancer = 8.2±1.0 vs. 9.0±0.9</td>
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INTRODUCTION

Postoperative deep vein thrombosis (DVT) is associated with significant morbidity and mortality. DVT rates of 0-16% are reported after local anaesthetic ambulatory varicose vein (LA-AVV) thermal ablation. This has led to inconsistent provision of low molecular weight heparin (LMWH) thromboprophylaxis in this high volume area of vascular practice. LMWH administration is best tailored to an individual’s DVT risk however there are no specific risk assessment models (RAMS) for this patient group. The Caprini score is a validated RAM for patients undergoing major surgery. This study aims to establish whether the Caprini score can be a useful predictive tool for DVT in patients undergoing LA-AVV procedures.

METHODS

Pre-operative ‘Caprini risk-factors’ for patients undergoing LA-AVV radiofrequency ablations were retrospectively extracted from a prospectively maintained database and electronic patient records, and collated to obtain patients’ Caprini scores. The incidence of post-procedure DVT/endovenous heat induced thrombosis (EHIT) on routine six-week duplex imaging and the clinical decision to administer LMWH were also recorded. We assessed correlation between Caprini scores and i) incidence of DVT/EHIT and ii) the preoperative clinical decision to give post-operative LMWH using statistical methodology.

RESULTS

186 patients underwent radiofrequency ablation in the 12 months from 1st November 2014. Caprini classification for ‘highest risk’ (score ≥5); ‘high risk’ (score 3-4); ‘moderate risk’ (score 2) and ‘low risk’ (score 0-1) were 17 (9%), 71 (38%), 57 (31%) and 41 (22%) patients respectively. No DVTs occurred in this study however two patients developed non-occlusive EHITs. One had a Caprini score of 4 (age ≥75 + VVs) and the other had a score of 1 (VV). There was no correlation between incidence of DVT/EHIT and Caprini score (coefficient -0.009). Of 17 patients (9%) with ‘highest risk’ Caprini score only one (prior DVT history) was given LMWH and none developed DVT. It was notable that the two patients who developed EHIT had reduced mobility.

CONCLUSION

We have found no correlation between Caprini scoring and DVT/EHIT or clinician’s decision to give LMWH in patients undergoing LA-AVV procedures. The Caprini score is a poor predictive tool for DVT in patients undergoing LA-AVV procedures. Limited mobility (not a Caprini risk factor) may be an important predictor of DVT/EHIT in patients undergoing LA-AVV procedures and merits further study.
PAPER 1.5  
PATTERNS IN THE MANAGEMENT OF SUPERFICIAL VEIN THROMBOSIS
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2 Department of Otorhinolaryngology, Faculty of Medicine, School of Health Sciences, University Hospital of Larissa, University of Thessaly, Larissa, Greece.

OBJECTIVES
The objective of this study was to highlight the current practice patterns in management of superficial vein thrombosis (SVT).

METHODS
An electronic survey was conducted using the mailing lists of the Mediterranean League of Angiology and Vascular Surgery and European Venous Forum regarding SVT diagnosis, investigation and treatment.

RESULTS
The response rate was 41% (175/430) and the majority of the participants were vascular surgeons practicing in a hospital. More experienced physicians considered SVT, as a medical issue of moderate seriousness (rs=.170, p<0.05) and perform duplex ultrasound for confirmation of diagnosis (rs=.158, p<0.05). Elastic stockings were recommended by 87% of the physicians and 57% prescribed nonsteroidal anti-inflammatory drugs. Eighty six percent advised anticoagulation, although a large disparity was showed regarding the regime, dose and duration. The majority of the physicians prescribed anticoagulation regardless the presence of varicose veins and location of SVT. Forty two percent considered that the administration of Fondaparinux for 45 days is a reasonable treatment regardless the thrombosis location. In contrast, 30% of the physicians prescribed anticoagulation only when SVT was confined to above knee segment. Most of vascular surgeons advised low molecular weight heparin in therapeutic doses (rs=.197, p<0.05), while more experienced physicians prescribed 2.5 mg Fondaparinux for 45 days (r=.216, p<0.01). Thrombophilia test was regularly suggested by 19% of the physicians. Ligation of the sapheno-femoral junction was the treatment of choice by those suggested intervention in the acute phase of SVT.

CONCLUSION
A great disparity exists in the management of SVT. The current guidelines have not been adopted by the physicians and more focused education and training is needed for those involved in the management of venous diseases.

PAPER 1.6  
RIVAROXABAN FOR THROMBOSIS PROPHYLAXIS IN ENDOVENOUS LASER ABLATION WITH AND WITHOUT MINIPHLEBECTOMY: A MULTICENTER EXPERIENCE
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OBJECTIVES
Endovenous heat-induced thrombosis (EHIT) is a well described complication of endovenous laser ablation (EVLA). We report our centers experience on the efficacy to prevent EHIT (EHIT level ≥2 according to Kabnick classification) and the safety (observed major and minor bleeding events) of rivaroxaban for EHIT prophylaxis in EVLA with and without miniphelebectomy.

METHODS
Demographic, procedural and outcome data of all patients with EVLA of the great, accessory and/or small saphenous vein and EHIT prophylaxis with 10mg/d rivaroxaban between 2012 and 2014 were reviewed and analysed in this investigator-initiated multi-center retrospective observational single-arm study.

RESULTS
During a median (interquartile range) follow-up duration of 51 (41;68) days complete vein occlusion was achieved in 98.4% of 438 EVLA procedures in 306 patients. One patient had an EHIT level 2. No major and 6 (1.4%) minor bleedings were observed.

CONCLUSION
Rivaroxaban (10mg/d) for 5-10 days seems to be an efficient and safe alternative for EHIT prophylaxis in EVLA with and without miniphelebectomy.
INTRODUCTION
The role of low molecular weight heparins in the treatment of superficial vein thrombosis (SVT) is recommended but with low grade of evidence.

AIM
To assess the treatment outcomes in patients with acute SVT with Tinzaparin in intermediate dose.

DESIGN
Retrospective analysis of medical records collected from 8 hospitals in Greece.

METHODS
Inclusion criteria: Out-patients aged ≥18 years, with acute SVT ≥5cm in length, confirmed with ultrasound, with symptoms ≤10 days, without any treatment prior to initial diagnosis. Exclusion criteria: history of deep vein thrombosis (DVT) or pulmonary embolism (PE) in the past 6 months, SVT after sclerotherapy or indwelling catheters in the past 1 month or history of any intervention in the past 3 months, thrombus close to sapheno-femoral or -popliteal junction (>3cm), BMI >35 Kgr/m2, and known bleeding diathesis. Selected patients who treated with intermediate dose of Tinzaparin 0.5 ml (10.000IU) for duration that was at the treating physician’s discretion were analysed. All patients had to have a follow-up of at least 12 weeks after treatment.

RESULTS
296 patients (189 females) with a mean age of 57.4 years were included. Overweight or obese were 203 (68.5%), long-standing or restricted mobility was reported in 96 (32.4%), varicose veins were present in 240 (81%) and history of treatment for vein thrombosis beyond the past 6 months from the index event was reported in 65 (22%). The majority of the patients (191/296, 64.5%) received treatment for about a month (mean 36.9 days) while the remaining patients (105/296, 35.5%) received short-duration treatment (mean 16.2 days). No difference was observed in patients’ characteristics between the two treatment groups. Presence of thrombus above the knee (p=0.002) and restricted daily activity (p=0.005) were the only factors associated with prolonged treatment. Within the 12-week period after initiation of treatment recurrence of SVT occurred in 14 (4.7%), DVT in 3 (1%) and thrombus progression in the superficial veins in 1 (0.3%). Recurrence occurred in 4% of those with short treatment duration and in 8% of those with prolonged treatment (p=0.48). Presence of varicose veins/valvular incompetence was associated with a trend (p=0.09) towards recurrent thrombosis.

CONCLUSION
Tinzaparin in intermediate dose seems to be an effective treatment for SVT. The location of thrombus (above the knee) and the status of patients’ mobilisation may be related to the duration of treatment. These observations require confirmation from larger prospective randomized studies.
ENDOVENOUS HEAT-INDUCED THROMBOSIS AFTER_ENDOVENOUS LASER ABLATION WITH 1470 NM LASER AND RADIAL FIBERS

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2 Garant Clinic, Moscow, Russia
3 Moscow State First Medical University Hospital #4, Moscow, Russia
4 Plastic-C, Korolev, Russia

BACKGROUND
Endovenous thermal ablations are efficacy and safe for varicose vein treatment. Sometimes detected thermal coagulant protrusion (TCP) into deep vein described as endovenous heat-induced thrombosis (EHIT).

OBJECTIVES
To study the incidence, risk factors, management and clinical outcome of EHIT after endovenous laser ablation (EVLA) with radial fibers.

METHODS
Observational case-control study provided from Jan 2011 to Dec 2015. The ELVA procedure performed with the 1470-nm diode laser and “Radial”, “Slim”, “2-Ring” (“Biolitec” AG) radial fibers. Energy parameters were - continues mode, Power 5-7 watt, linear endovenous energy density (LEED) 70-90J/cm, continuous automatic pullback with speed 0,7mm/sec. Clinical outcomes assessed with duplex investigations within 1-day, 1-month, 3-month and 6-months after EVLA.

RESULTS
2176 patients with 2819 legs (69% women and 31% men) suffering superficial venous disease got EVLA of the great saphenous vein (GSV)-73%, small saphenous vein (SSV)-16%, accessory saphenous vein (ASV)-11%. Technical success was 100%. No pulmonary embolism registered. In 40 cases (1.41%) clinically non-symptomatic EHIT were detected by duplex at 1-day after EVLA of GSV (39 cases) and SSV (1 case). In case of EHIT detection LMH or NOAC and 1-week duplex control regimen prescribed. After 1 month all EHIT were resolved. Age, sex, vein diameter, radial fiber type had no significant influence (p>.05) on EHIT formation.

CONCLUSION
EVLA with radial fibers is effective and safe with rare and clinical non-symptomatic complication rates. Despite of safety resolution of EHIT, more knowledge and experience needs to determine the main risk factors of EHIT formation.

PERCUTANEOUS LIGATION OF THE GSV WITH ULTRASOUND GUIDED FOAM SCLEROTHERAPY AND MINIPHLEBECTOMIES

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INTRODUCTION
Ultrasound guided foam sclerotherapy (UGFS) is widely used for ablation of the saphenous veins. The treatment is minimal invasive, safe and inexpensive. However, recanalization is more frequent compared to thermoablation and needs to be reduced. A novel minimal invasive technique is described, which combines 3 modalities for the treatment of the great and small saphenous vein (GSV, SSV) varicose veins, namely ultrasound guided foam sclerotherapy (UGFS) percutaneous ligation (PL) and miniphlebectomies.

MATERIAL AND METHODS
Foam was prepared using Polidocanol 3% in a concentration of 1 mL + 4 mL of air. This was injected into the refluxing saphenous trunk using Venflons®. This was followed by percutaneous ligation performed through a 5 mm incision approximately 2 cm below the sapheno-femoral junction in local anaesthesia with Lidocaine and adrenaline. Ultrasound was used to locate the terminal segment of the GSV. This was lifted up through the skin incision with an Oesch® phlebectomy hook. Then the GSV was ligated with a non-absorbable nylon tie. Finally, mini-phlebectomies were performed to complete the treatment. The patients wore a postoperative compression bandage for 24 hours and a full length compression stocking thereafter for 5 days.

RESULTS
One hundred consecutive patients with varicose veins (95 GSV, 5 SSV), C2-C4 were treated and reviewed at 3 months. The duration of the procedure was approximately 10 minutes.

Success was achieved in terms of saphenous closure in 94%. The remaining 6% were partly closed, patient satisfaction was 99% and absence of venous symptoms was seen in 96%. Complications were few and minor. Two patients developed infection in the groin incision, 5 developed superficial phlebitis. 1 developed numbness at base of the 1st toe and 1 developed a blister from the postoperative compression bandage.

CONCLUSION
Foam sclerotherapy with saphenous ligation is a promising treatment modality which has the potential to reduce the recurrence rate of varicose veins. It can be performed on the SSV and accessory veins as well as the GSV. The procedure of PL is simple and quick. The results are similar to glue or thermo-ablation, but the procedure is much cheaper and still minimal invasive. Longer term follow up for at least one year is mandatory before a randomized trial should be considered.
PAPER 2.3

NOVEL BIOMATRIX SCLEROFOAM COMPARED TO ENDOVENOUS LASER – INITIAL RESULTS AND ONE YEAR FOLLOW UP

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BACKGROUND

Common sclerofoams (Cabrera type including Varithena/BTG) are inferior to thermooclusion in regard to primary and long-term results. Common foams are of low viscosity and stability, they will collapse rapidly within 60 – 240 seconds and lose effect. With increasing vein diameters common foams will less displace blood but float on it with zones of uncertain effects. A novel viscous microfoam using a biomatrix based on denatured autologous blood proteins with an in-vitro half life of > 60 minutes and fast disintegration within flowing blood was evaluated in the GSV using a safety setting to prevent foam migration via the junction.

METHODS

120 patients (78 f, 42 m, 32 – 81y.) with GSV insufficiency, diameters 6 – 24 mm (mean: 10.3 mm), were randomized to two modalities of treatment: A) combination of endovenous laser in coaxial perivenous anesthesia (EVL 810 nm, ball tip; junction + segment below, length 3 – 20 cm) and a novel biomatrix sclerofoam (BSF) using 1% Aethoxysklerol (Kreussler) for the adjacent GSV segment (28 – 35 cm, n = 60), or B) EVL alone for comparison, treated segment length 38 – 55 cm (n = 60). Both modalities used the same PTFE vein catheter (PhleboCath, 2.0 – 2.3 mm, OTW). BSF was deployed in case of proven proximal closure during catheter withdrawal. Postinterventional examinations with ultrasound were performed after 2 weeks and 2 - 6 - 12 months by independent investigators.

RESULTS

Initial vein occlusion was obtained in all cases (120/120). There were no adverse events, in particular no thoracic or cerebral symptoms in the group receiving BSF. The patterns of echogenicity were similar in both groups at all presentations. Vein diameter regression was the same for EVL and BSF (+/- 5%). Concerning group A, the investigators were not able to discriminate any borderline of the methods. During one year follow-up, junction segments showed reperfusion in 2/60 cases (A, 3.33%) resp. 1/60 (B, 1.6%). The thigh-to-knee segments showed reperfusion in 5/60 cases (B,33%) after BSF and in 6/60 cases (10%) after EVL alone.

CONCLUSION

Apart from the GSV junction segment, BSF seems to provide a similar quality of vein occlusion like gold standard EVL. BSF is more convenient as no tumescence is required. As a next step, studies using BSF also in the junction with blocking devices (e.g. Vblock) or hyaluronan vein compression (IntraShape project) will follow.

PAPER 2.4

THE IMPACT ON RESIDUAL VENOUS REFLUX AND VARICOSE VEIN AT ONE MONTH FOLLOW-UP ON THE DEVELOPMENT OF RECURRENCE OF VARICOSE VEIN AFTER 5 YEARS SAPHENOUS ABLATION FOR PRIMARY VARICOSE VEIN

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PURPOSE

In the long term follow up after the ablation of saphenous vein for varicose vein, the rate of recurrent varicose vein is high. The venous reflux sites of recurrent varicose vein is identified, however, fundamental reasons of recurrent varicose vein after correct saphenous ablation are still unclear. Persistent venous reflux after procedure may be considered as a primary reason of recurrence. This study was conducted to identify the impact of residual venous reflux and varicose veins at post-operative early periods for recurrent varicose veins after saphenous ablation with phebectomy of varicose veins.

MATERIAL AND METHODS

484 (595 legs) consecutive patients (C2:230, C3:137, C4a:82, C4b:27, C6:8) underwent saphenous ablation (High ligation + stripping: 343 legs or Endovenous ablation: 252 legs, all endovenous ablations were performed using 980 nm diode bare fiber laser) with phebectomies for primary varicose veins from 2009-2010 were included in this study. Ablation was performed of 538 great saphenous veins and 57 small saphenous veins.

The patients underwent clinical assessment and duplex ultrasound scanning for venous reflux before surgery and 1month and 5 years after surgery. 31 % cases had complete follow-up up to 5 years after surgery, while 69 % of the cases lost to follow-up after 1 month operation were interviewed for varicose veins by phone at 5 years post operation. The residual varicose veins are defined as more than 3 mm visible varicose veins at one month follow-up. Recurrent varicose vein are defined as more than 3mm size new varicose vein s compared to the state of visible varicose veins at post-operative 1 month.

RESULTS

378 of 595 legs had venous reflux or residual varicose veins at postoperative 1 month (Residual varicose vein without detection of venous reflux: 39 legs, Saphenous venous reflux alone: 273, Saphenous + deep venous reflux: 20, Deep venous reflux alone 46). 104 legs were diagnosed recurrent varicose vein until post-operative 5 years in this group. However, in no venous reflux and no residual varicose veins group (217 legs), 12 legs were found recurrent varicose vein.

CONCLUSION

Persistent and residual venous reflux and varicose veins after saphenous ablation become a big risk of recurrent varicose vein.
OBJECTIVES
Superficial venous insufficiency (SVI) can present on a spectrum of clinical severity ranging from telangiectasia, uncomplicated varicose veins to soft-tissue changes and, ultimately, venous ulceration. The long-term significance of pretreatment disease severity is unclear, although rationing often restricts treatment to only those with more advanced states on the CEAP classification system. This study investigates the outcomes of those with soft tissue changes in comparison to those with uncomplicated symptomatic varicose veins.

METHODS
Two cohorts were taken from the HELP-1 study, a randomized clinical trial of open surgical ligation, stripping and phlebectomy versus endovenous laser ablation (EVLA) plus concomitant phlebectomy for the treatment of symptomatic Great Saphenous venous insufficiency. Patients with pre-treatment C2 disease were compared to those with soft tissue complications (C3-4). Outcomes measured up to 5 years included clinical recurrence and the requirement for additional procedures, and quality of life (QoL) [short form 36 (SF36), EuroQol (EQ5D), and Aberdeen Varicose Veins Questionnaire (AVVQ)]. Multivariable regression analysis was used to control for confounding factors.

RESULTS
213 patients (154 C2 and 59 C3-4) attended five-year follow-up and were analysed. Recurrence of clinically-evident varicosities was significantly lower in the C2 cohort (43%) than in the C3-4 cohort (70%), RR 0.62 (0.48-0.79), NNT = 4. This translated into a lower requirement for additional procedures in the C2 cohort (OR 0.256 (95% CI 0.103-0.635) p=0.003)

Baseline QoL scores were similar in both groups, with significant improvements after treatment. AVVQ scores were significantly lower (better) in the C2 group than the C3-4 group up to two years (p=0.008), but by five years this difference was lost (C2 median (q1): 3.9(0.3-8.9) vs C3-4: 4.61(1.8-9.6) p=0.402).

SF-36 physical health domain scores were significantly higher (better) in the C2 cohort than the C3-4 group over the first two years, with sustained Physical Functioning and General Health scores to five years. Improved EQ5D scores were maintained in the C2 group over 5 years, whereas the C3-4 group returned to pre-treatment values by 2 years.

Multivariate regression analysis, controlling for patient demographics and treatment type (surgery or EVLA), revealed that treatment of C2 disease was associated with reduced long-term clinical recurrence (OR 0.289 (95% CI 0.142-0.588) P=0.001), and requirement for additional procedures (OR 0.256 (95% CI 0.103-0.635) P=0.003), and benefits in QoL improvement.

CONCLUSION
More severe states of SVI are associated with higher rates of clinical recurrence after treatment, a greater requirement for additional procedures and worse QoL outcomes. Intervention before the onset of skin changes is recommended.
OBJECTIVES

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. This randomised controlled trial was carried out mainly to compare the degree of pain patients experience while receiving mechanochemical ablation (MOCA) or radiofrequency ablation (RFA). An early report of this trial has previously been published. The 6 months clinical outcomes are reported here.

METHODS

Patients attending for primary varicose vein treatment were randomised to receive MOCA (ClariVein®) or RFA (Covidien® VenaSeal™). The most symptomatic limb was randomised. The primary outcome measure was intra-procedural pain using a validated visual analogue scale. Secondary outcome measures were change in quality of life and clinical scores, time to return to normal activities as well as the occlusion rate.

RESULTS

One hundred and seventy patients were randomised (51% in the MOCA group). Baseline characteristics, including demographics, CEAP classification, clinical scores and quality of life (GolQ) scores were similar.

The maximum pain score was significantly lower in the MOCA group (24.3mm±22mm) compared to the RFA group (34.8mm±24mm, p=0.005). Average pain score was, however, similar in the MOCA group (17.8mm±21mm) and the RFA group (24.0mm±18mm, p=0.053).

Seventy-six percent of the patients attended follow-up at one month and 71% attended at six month. The VCSS score at 1 month was 2.7 for the MOCA group compared to 3.3 for the RFA group (p=0.278), while, at 6 months, the corresponding scores were 2.5 for MOCA and 2.7 for RFA (p=0.571). The EQ-5D scores were 0.807 for MOCA at 6 months compared to 0.691 for RFA (p=0.039). The disease specific AVVQ scoring system was, however, not significantly different between the two groups at 6 months (12.9 for MOCA compared to 16.3 for RFA, p=0.247).

The time to return to normal activities and to work was again comparable between the two groups. The complete or proximal occlusion rate at 6 month was 87.1% for the MOCA group and 93.2% for the RFA group (p=0.483).

CONCLUSION

The results show that MOCA is less painful than RFA procedure. However, at 6 months, the clinical and specific quality of life scores showed similar improvement in both treatment groups, with comparable occlusion rates.
Early treatment is associated with greater QoL gain and ultimately reduced expense. It is more cost effective to treat patients early with less advanced disease than to delay until disease has progressed.

**CONCLUSION**

INB at £30,000 around £5,916. than 90% as determined on a CEA curve. A similar pattern was repeated using the SF6F, with an ICER of -£450 and an AUC of 4.652 versus 4.393. This was not the case with the SF6D utility however (C2 4.096 vs 3.902). The ICER and well within the accepted threshold for cost effectiveness. The probability of this being cost-effective was greater (£/QALY) using the EQ5D was measured at £-510, with an INB at £30,000 (the typical value set by NICE) around £5,316.

**RESULTS**

The primary treatment costs for both groups was similar (C2 £1137 (£133) vs C3-4 £1128 (£135) p=0.633). Over five years the proportion of those requiring further treatment was higher among those with C3-4 disease (C2 n=25 C3-4 n=25 p<0.001) and, despite similar costs for additional interventions, drove the mean costs significantly higher among the C3-4 group by five years. QALY health outcomes in those with C2 disease were better than those with C3-4 disease, with a greater AUC of 4.682 versus 4.393. This was not the case with the SP6D utility however (C2 4.096 vs 3.902). The ICER (EQALY) using the EQ5D was measured at £5,010, with an INB at £30,000 (the typical value set by NICE) around £5,316 and well within the accepted threshold for cost effectiveness. The probability of this being cost-effective was greater than 90% as determined on a CEA curve. A similar pattern was repeated using the SF6F, with an ICER of -£450 and an INB at £30,000 around £5,916.

**CONCLUSION**

It is more cost effective to treat patients early with less advanced disease than to delay until disease has progressed. Early treatment is associated with greater QoL gain and ultimately reduced expense.
Chronic venous disease is very common and the prevalence differs between the different geographical areas. However after correction for risk factors, only in the older female age group (>65y) a significant difference in probabilities could be retained.
BOOK OF ABSTRACTS – ORAL PRESENTATIONS

PAPER 4.1
POSTURAL CHANGE OF THE SAPHENOUS DIAMETER IN CHRONIC VENOUS DISEASE
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OBJECTIVES
The aim of this study was to analyze the correlation between the extent of diameter change from standing to supine position, ['postural diameter change', PDC], and patient or duplex ultrasound (DUS) characteristics in lower limbs with and without saphenous trunk (ST) reflux.

METHODS
Measurements were carried out in 193 limbs with primary great saphenous vein, anterior accessory saphenous vein or small saphenous vein reflux and 48 control limbs without ST reflux. The inner diameter of the ST was measured with DUS in standing and lying position. The PDC, calculated as percentage, followed the formula: (standing diameter - lying diameter)/standing diameter x 100. Clinical findings (according to the highest 'C'- of the CEAP classification), venous clinical severity score, body mass index (BMI), time of visit, inside and outside temperature were documented. Limbs were divided into two groups using the median value of PDC as cut-off to increase interpretability of the analysis.

RESULTS
The median PDC of the ST was 19% in limbs with ST reflux compared to 24% in control limbs (p=.16). In limbs with and without ST reflux, only older age and increased BMI were independently associated with a low PDC of the ST (R-Squared 0.13). In limbs with ST reflux, median PDC was significantly lower in C4-C6 (16%, IQR 8 to 21) than in C0-C1 (23%, IQR 12 to 35) or C2-C3 limbs (21%, IQR 11 to 33) (p=.016). In addition, PDC was significantly lower in veins with a large diameter (>7 mm) than in those with a small diameter (p=.003).

CONCLUSION
Low PDC of the ST correlates with older age and increased BMI. Whether PDC might become a useful additional DUS tool to classify the severity of chronic venous disease and thereby influence the management strategy should be further investigated.

PAPER 4.2
A BODY WEIGHT TRANSFER MANOEUVRE WITH MINIMAL ANKLE MOVEMENT SIGNIFICANTLY OUTPERFORMS THE TIP-TOE MANOEUVRE IN ASSESSING CALF MUSCLE PUMP FUNCTION
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AIM
The tip-toe manoeuvre (TTM) has been promoted as the gold standard plethysmography test for measuring calf muscle pump (CMP) function for several decades. In common with the dorsiflexion manoeuvre (DFM), both rely on ankle range of movement to cause venous ejection. In contrast, body weight transfer manoeuvres (BWTMs), like the Paranà and Vasculab manoeuvre, rely on the weight of the body to cause venous ejection. The aim was to compare the TTM, DFM and a BWTM using the ejection fraction (EF) of air-plethysmography (APG) and evaluate which has the best pumping effect.

METHODS
Twenty-two legs from 11 healthy volunteers were tested with APG. The working venous volume (wVV) was established by the total increase in calf volume from 70 degrees elevation drainage to standing dependency with most of the weight on the other leg. At the point of maximum filling volume from the trace, prior to each manoeuvre, the subject was asked to perform x3 TTM, x3 DFM and finally x3 BWTMs. The TTM was performed with both legs, approximated together, and the subject’s weight distributed equally. The DFM was performed non-weight bearing, by pivoting on the leading heel. The BWTM was a gentle rock forwards onto the leading foot and back again, simulating a walking step. The EF was calculated as the ejected volume/wVV and expressed as a percentage.

RESULTS
Expressed as median [inter-quartile range], BWTMs resulted in a significantly greater % of EF than TTM at 59.7[53.5-63.9] vs 42.6[30.5-52.6], P <.0005 (Wilcoxon). There was no significant difference in the EF between the TTM vs DFM, P =.615. Adjusted to a common median to detect only the variance between the x3 tests, the repeatability (CI: 95%) of 66 EF tests was excellent: TTM (41.44-43.76)%; DFM (36.94-39.46)%; BWTM (58.14-61.26)%.

CONCLUSION
The BWTM appears to be a better method of measuring the full potential of the CMP with a 40.1% relative increase in the EF compared to a TTM. Exercises which involve body weight transfers from one leg to the other may be more important in optimising calf muscle pump function than ankle movement exercises.
PAPER 4.3
QUANTIFICATION OF REFLUX VOLUME ON THE GREAT SAPHENOUS VEIN BY DUPLEX ULTRASOUND IN PATIENTS WITH PRIMARY VARILOCITIES
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AIM
To quantitatively assess the reflux volume (RVo) on the great saphenous vein (GSV) by duplex ultrasound (DUS) and to evaluate the correlation between the RVo, severity of disease and quality of life in patients with primary varicosities.

METHODS
This was an observational cross-sectional study involving 80 patients (22 men and 58 women) with primary varicosity of the GSV and blood reflux that extended no less than mid-thigh. The patients were 18-81 years old (mean – 48.8±12.7); 32 had C2, 33 had C3, five had C4, two had C5 and eight had C6 class according to CEAP classification.

All patients were assessed with VCSS and they filled disease-specific quality of life questionnaires CIVIQ-20 and VEINES Qol/Sym. The patients were then examined with DUS and Doppler. All measurements were made by one physician in upright position and repeated three times, and the average value was used. The measurements were made at three points of GSV: terminal valve of sapheno-femoral junction (SFJ), pre-terminal valve (PTV) and middle third of the thigh (MTT). The time and the flow volume of blood reflux were assessed during the Valsalva maneuver at SFJ and during the distal compression maneuver at PTV and MTT. The RVo (ml) was calculated as product of flow volume (ml/min) and time (sec/60) of blood reflux.

RESULTS
The VCSS score was 2-20 (mean 6.9±4.3), the CIVIQ score was 19-83 (41.6±15.3), and the VEINES score was 30-104 (81.4±16.1). The RVo decreased from SFJ through PTV to MTT (median, 25th and 75th percentile): 24 (13;55), 11 (5;30), and 7 (3;18) ml, p<0.0001.

A low-strength significant correlation between RVo at SFJ and CEAP class (0.346, p=0.005), VCSS score (0.385, p=0.002), CIVIQ score (0.332, p=0.008) and VEINES score (-0.295, p=0.019) was found. A weak but significant correlation was found between CEAP class and RVo at PTV (0.254, p=0.029) or MTT (0.277, p=0.013).

It was found that RVo at all points significantly changes in accordance with CEAP class. From C2 to C4 it increases and then from C4 to C5-6 decreases. At MTT, the difference was most significant: 4 (2;11) ml in C2, 9 (5;13) ml in C3, 86 (23;123) ml in C4 and 5 (4;24) ml in C5-6 (p=0.003).

CONCLUSION
There is a significant weak correlation between volume of blood reflux and CEAP class, VCSS, CIVIQ or VEINES score. The value of reflux volume depends on CEAP class and it is maximal at C4. Thus, blood reflux on GSV is not the only reason for the severe forms of chronic vein disorders or low quality of life.

PAPER 4.4
COMPARISON OF MAGNETIC RESONANCE VENOGRAPHY AND DUPLEX SCANNING IN THE EVALUATION OF POST-THROMBOTIC LESIONS OF ILIOFEMORAL VENOUS SEGMENT
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OBJECTIVES
To investigate the results of an MRI venography on 1.5 Tesla scanner (1,5T) and duplex scanning in patients with post-thrombotic lesion of iliofemoral venous segment

METHODS
From January 2014 to December 2015 were investigated 42 patients (33 women, 9 men, aged from 20 to 66 years) with unilateral post-thrombotic lesion of iliofemoral venous segment. There were C2-C5 patients under CEAP classification. All patients underwent duplex scanning and MRI venography of iliofemoral segment on 1.5 T scanner

RESULTS
According to the duplex scanning occlusion of iliofemoral segment was detected in 19 (45,2%) patients. After MRI venography occlusion of this segment was revealed in 11 (26,2%) patients and in the other cases had been diagnosed stenotic lesions.

CONCLUSION
MRI venography on 1.5 T scanner allows more precise than duplex scanning to visualize the degree of post-thrombotic lesions of iliofemoral venous segment.
PAPER 4.5

CONNEXIN EXPRESSION IN VENOUS DISEASE: A BIOMARKER FOR VENOUS ULCERATION

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AIM

Leg ulceration is a feared complication of venous insufficiency. Cellular communication via gap junctional proteins, specifically Connexins (Cx), are crucial in wound healing, upregulation of which is associated with poor wound healing. It is not known if patients with varicose veins are prone to poor wound healing. This study aims to determine and compare the principle epidermal Cx levels across stages of venous disease and further determine if Cx can be used as a biomarker for risk of venous ulceration.

METHODS

Patients undergoing varicose vein intervention from four main stages of the CEAP classification were enrolled: C0 (n=12), C2 (n=12), C4 (n=12), and C6 (n=12). Paired 4mm punch biopsies were taken from the avulsion site above the ankle (pathological) and the endovenous catheter insertion site above the knee (control). Tissues were stained for H&E and Immunohistochemistry for Cx43, Cx30 and Cx26 and imaged by confocal microscopy.

RESULTS

H&E staining revealed progressive epithelial hyper thickening, increased depth and number of rete pegs, increased inflammatory cells, and loss of dermal architecture with disease progression in the diseased skin. Cxs were expressed increasingly and further down the epidermis with disease progression in the diseased skin as compared to the control. Cx43 had the highest mean expression (C2:2061.13, C4:4061.08, C6:11639.60, p<0.0001). Cx26 had lesser expression in C2 and C4 but increased significantly in C6 (C2:120.21, C4:558.79, C6:11561.54, p<0.001), similarly Cx30 (C2:145.16, C4:268.88, C6:8286.29, p<0.0001). Significant increased expression of all Cx was seen early in the disease; C2 versus C6(p<0.005) and C4 versus C6(p<0.005).

CONCLUSION

Cx proteins were expressed increasingly with venous disease progression and the overexpression starts early in the disease, suggesting that skin is preconditioned in varicose veins for poor wound healing. The molecular and structural changes correlate with the clinical stage of the disease. Cx can hence be used as a biomarker for venous ulceration and poor wound healing.

PAPER 4.6

DIFFERENCES IN LEVELS OF MARKERS OF INFLAMMATION AND ENDOTHELIAL DAMAGE BETWEEN THE BLOOD FROM VARICOSE VEINS AND SYSTEMIC BLOOD

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BACKGROUND

Varicose veins represent one of the most frequent vascular diseases and are in most cases benign. However, advanced disease is frequently associated with complications such as chronic venous insufficiency and thrombosis of the superficial veins. The pathogenic mechanisms are not well understood. Beside increased venous pressure probably local blood constitutively triggers various mechanisms responsible for the progression of the disease and its complications.

METHODS

The study included 50 patients with primary varicose veins. Local blood samples were taken from the leg, obtained from the tortuous and dilated varicose great saphenous vein and systemic blo0d samples from the cubital vein.

RESULTS

The values of basic biochemical findings were comparable between blood samples (varicose vs. systemic). In varicose veins, the following markers of inflammation and endothelial damage were significantly increased in comparison to systemic blood: hsCRP (2.05 ± 1.84 mg/L vs. 1.96 ± 1.90 mg/L, p =0.05), IL-6 (3.62 ± 2.74 ng/L vs. 2.30 ± 1.80 ng/L, p<0.001), IL-8 (21.15 ±15.28 ng/l vs. 18.74±12.30 ng/L, p=0.025), vWF (118.4±27 % vs. 83.2±22 %, p<0.05), NGAL (316.93±88.68 mg/mL vs. 299.18 ±107.33 mg/mL, p<0.002), TNFR1 (0.52±0.13ng/mL vs. 0.50 ± 0.15 ng/mL, p=0.021. The levels of D-dimer (247.56 ±410.24 ng/mL vs. 67.66 ±325.74 ng/mL, p =0.019) and PAI-1 (3.32±3.56 IU/ml vs 2.99 ± 3.36 IU/ml, p=0.043) were also significantly higher in blood samples taken from the leg varicose veins.

Most of the levels of inflammatory and endothelial dysfunction markers (hsCRP, D-dimer, TNFR-1) were significantly correlated with their levels in the systemic blood.

CONCLUSION

In the blood of varicose veins, some inflammatory markers and indicators of endothelial dysfunction are increased. This is most probably the consequence of deteriorated blood flow in dilated and tortuous superficial veins and increased venous pressure. Damage to the venous wall, which causes a chronic inflammatory response, together with the procoagulant properties of local blood may promote further progression of the disease and thrombotic complications.
CANCER-RELATED VEIN THROMBOSIS: PREVALENCE, CAUSES AND DIAGNOSIS

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OBJECTIVES
To analyze the predictors underlying a possible malignancy and to determine an optimal strategy of cancer screening in all patients with venous thromboembolism (VT).

METHODS
379 patients who suffered deep VT and were treated in the period between 2010 and 2013 in the General Surgery Units of the Minsk emergency clinical hospital were retrospectively analyzed. All patients with VT were divided into two groups: idiopathic deep VT group without a known malignancy, and secondary deep VT group with a known malignancy. A diagnostic screening workup including a clinical history, physical examination, laboratory tests, prostate-specific antigen, a chest X-ray and an abdomen-pelvic ultrasonography was performed in all patients with idiopathic deep VT.

RESULTS
Among 379 patients with deep VT malignancy was detected in 42 (11.1%) cases. 26 (61.9%) patients were elder than 60 years. 36 (85.7%) from 42 patients with deep VT had history of malignancy, 10 (27.8%) of them had recurrent VT. In 6 (12.5%) patients with idiopathic VT a malignancy was diagnosed at the first time. VT was most often associated with neoplastic process, localized in the stomach, uterus and prostate. In 13 (31%) patients with VT occurred advanced neoplastic process (IV clinical group). VT that occurs in unusual sites is more frequently associated with malignancies.

CONCLUSION
VT can not be considered as an early manifestation of cancer. A diagnostic screening strategy has the capacity to identify the majority of the malignancies in patients with idiopathic VT. All persons with idiopathic VT need follow-up on the conventional algorithm.

Keywords: Venous thromboembolism; malignancy; diagnostic screening.

WOUND HEALING DISORDERS FOLLOWING ENDOPHLEBECTOMY OF THE COMMON FEMORAL VEIN AND ITS IMPACT ON THE PATENCY RATES OF VENOUS RECANALISATION

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INTRODUCTION
The post thrombotic syndrome, as one of the most important consequences of a deep vein thrombosis, is underestimated in literature regarding its clinical importance. A few years ago the medical treatment was restricted to anticoagulation and compression with stockings. Since a decade the interventional treatment of the post thrombotic changed iliac and femoral veins developed, presenting good results concerning patency and quality of life. If the common femoral vein with its inflow vessels is involved, the open surgical desobliteration or endophlebectomy has been described as an appropriate treatment in few case series. We present our results after venous recanalization including an endophlebectomy focussing on its complications.

MATERIAL AND METHODS
A retrospective analyse of prospective record data of all patients who underwent a hybrid procedure for chronic obstruction of iliac and femoral veins or inferior vena cava between 2010 and 2015 in our two centres was performed. The patients received recanalization via stent-angioplasty of the iliac veins and/or the inferior vena cava and endophlebectomy with creation of an arteriovenous fistula. Data assessment focussed on complications and patency rates.

RESULTS
This study includes 96 patients, thereof 58 females with a mean age of 44.1 years. The mean procedure time was 344±140 minutes (range 124 to 663). Median follow-up time was 12.6 months, with a range from two till 33 months. Primary patency was 62.5 % (60/96) and secondary patency 89.5 % (86/96). Re-Intervention due to early occlusion within the first 30 days of the venous reconstruction was necessary in 27.5 % (36/96) of all cases. Besides bleeding complications, wound healing disorders, mainly classified as Szilagyi I, occurred in 33 % of all patients. No single risk factor could be identified in the presented cohort of patients. A significant correlation with a reduced secondary patency as well as an elongated length of stay after development of wound healing disorders could be confirmed.

CONCLUSION
The combined approach of the interventional stent angioplasty with an endophlebectomy of the femoral vein is a safe and feasible treatment method for the chronic venous obstruction. Till now, no study of this magnitude reflects the complications of this hybrid technique. Wound healing disorders are the most challenging problem occurring in this young group of patients.
PAPER PR 1
HYBRID OPERATIVE THROMBECTOMY IS NON-INFERIOR TO PERCUTANEOUS TECHNIQUES FOR THE TREATMENT OF ACUTE IlioFemoral Deep Vein Thrombosis
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PURPOSE
Hybrid operative thrombectomy (HOT) is a novel technique for the treatment of acute iliofemoral deep vein thrombosis (IFDVT) and is an alternative to percutaneous techniques (PT) that utilize thrombolytics. In this study, we compare perioperative and intermediate outcomes of HOT versus PT as interventions for early thrombus removal.

METHODS
From August 2008 to May 2015, 71 consecutive patient were treated with either PT (n=31) or HOT (n=40) for acute/subacute single limb IFDVT. HOT consisted of surgical thrombectomy, with balloon angioplasty +/- stent. PT included catheter directed thrombolysis (CDT) +/- pharmacomechanical thrombectomy (PMT) using the Trellis-8 system. Patients that presented with bilateral DVT, IVC involvement, or phlegmasia cerulea dolens were excluded. Perioperative outcomes, quality measures, and thrombus resolution were analyzed between the two treatment groups. CEAP classification, Villalta score, and venous duplex at intermediate follow up were also analyzed.

RESULTS
The left limb was the most common site of the IFDVT overall. Technical success (>50% resolution) was 100% for both groups, and greater than 80% resolution was achieved in all patients treated with HOT. There were 8 major bleeding events in the PT group as compared to 3 in the HOT group (p=0.04). PT patients had a significantly longer length of stay (13.3 vs 10 days, p=0.028) when compared to HOT. At 2 year duplex there was no difference between HOT vs PT in mean reflux times at the femoral-popliteal segment. At a mean follow up of 1.5 years the clinical CEAP classifications were lower for HOT (x2=6.34; p= 0.01). There was no difference between the groups in Villalta score (2.1 vs 1.9, p= 0.8).

CONCLUSION
In our experience, PT and HOT have both demonstrated very good outcomes in the perioperative and intermediate periods. HOT is non-inferior to PT as a technique for early thrombus removal, and has the advantage that thrombus resolution is established in one operation and LOS is significantly decreased. HOT avoids thrombolytic therapy, which may reduce major bleeding events.

PAPER PR 2
IS ROUTINE FOLLOW-UP SURVEILLANCE OF ILIAC VEIN STENTS FOR ILIOCAVAL VENOUS OBSTRUCTION NECESSARY?
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OBJECTIVES
While iliac vein stenting has emerged as effective treatment for iliocaval venous obstruction (ICVO), the role of surveillance imaging remains unclear. The purpose of this study is to evaluate outcomes of iliac vein stents placed for ICVO and to determine if routine follow-up surveillance is warranted based on timing of stent failure.

METHODS
All patients who underwent iliac vein stenting from 2003-2015 were identified from a prospectively maintained registry. Patient demographics, venous risk factors, prior venous interventions, indications, imaging, operative findings, procedural success, complications, and clinical follow-up were recorded. Ultrasound surveillance was performed at first postoperative follow-up and at routine subsequent intervals. Continuous data was analyzed with Student t-tests or Mann Whitney U test, and frequency data was analyzed with chi squared analysis or Fisher’s exact test where appropriate. Life-table analysis was used to determine primary patency.

RESULTS
Seventy patients (74 limbs) were identified who underwent iliac vein stenting for ICVO. Thirty-six limbs (48.6%) were stented for nonthrombotic venous compression (Stent-VC), and 38 limbs (51.4%) were stented for venous thrombosis (Stent-VT). Twenty-four limbs (63.2%) of the Stent-VT group were treated for acute venous thrombosis requiring lysis with stent for underlying venous lesions. The median number of follow-up visits for the Stent-VC and Stent-VT groups were 2 (IQR=1-4) and 2 (IQR=1-3), while the mean length of follow-up was 19.6 ± 29.5 months and 19.8 ± 26.5 months (P=0.972), respectively. During the first 6 months, one limb (3.1%) in the Stent-VC group occluded, while 42.8% of the limbs in the Stent-VT group occluded. Fifty-seven percent of patients in the Stent-VT group with acute venous thrombosis requiring thrombolytic therapy had limb occlusion at greater than 6 months (median 59.1 months, IQR 34.1-107.2). Overall primary patency for the Stent-VC and Stent-VT groups were 96.9% and 68.7% at 36 months (S.E. ≤10%, P=0.001), respectively.

CONCLUSION
Patients with iliac vein stents placed for nonthrombotic iliac vein compression had statistically higher patency than those placed for venous thrombosis, with all stent failures occurring within 6 months. Iliac vein stents placed for venous thrombosis continued with stent failure after 6 months and may benefit from extended surveillance.
PAPER PR 3
IMPROVEMENT IN VARICOSE VEIN SYMPTOMS: QUANTIFYING WITH THE VVSymQ, AN ELECTRONIC PATIENT-REPORTED OUTCOME (EPRO) INSTRUMENT
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ABSTRACT
Purpose (Original Scientific Research) Learning Objectives (Educational Exhibit): Symptom relief is a patient-centric way to assess treatment success for varicose veins. The VVSymQ® instrument is an electronic PRO instrument that assesses duration of 5 varicose vein symptoms (heaviness, aching, swelling, throbbing and itching) on a scale of 0 to 5 each day. It was developed following FDA PRO guidelines by modifying the VEINES-QoL/Sym (VQS) and was evaluated for content validity, reproducibility, and ability to detect change.

MATERIALS AND METHODS
(Original Scientific Research) Background (Educational Exhibit): Content validity for the VVSymQ® instrument was first established by focus group and patient interviews. Psychometric properties were assessed by use in C2-5 patients along with VQS, VCSS, PA-V3 and CIVIQ-20 before/after treatment to ablate great saphenous veins (GSV). The tool was used before/in follow up in a 40-patient validation study and subsequently as a daily electronic diary in two Phase 3 (n=511) randomized trials of polidocanol foam for GSV ablation. VQS and PA-V3PROs as well as CEAP and VCSS were also compared.

RESULTS
(Original Scientific Research) Clinical Findings/Procedure Details (Educational Exhibit): The VVSymQ® instrument demonstrated excellent reproducibility (ICC=0.96) and suitable internal consistency reliability (Cronbach’s alpha=0.78) in the validation study. It discriminated among known groups created from VCSS (p<0.05), and demonstrated moderate to strong construct validity with CIVIQ-20 at baseline. Pre- and post-treatment change scores for the VVSymQ® instrument yielded moderate to strong correlations (r =0.56) with the CIVIQ-20 total score. Compliance with the VVSymQ® daily diary in the validation study was high (≥97%) for each of the 3 assessment periods.

CONCLUSION
(Original Scientific Research) Conclusion and/or Teaching Points (Educational Exhibit): Taken together, these data demonstrate the construct validity of the VVSymQ® PRO instrument, which performed well with respect to reliability, construct validity, and ability to detect change when assessing response to treatment for varicose veins.

PAPER PR 4
THIN-SLICE ENHANCED COMPUTED TOMOGRAPHY FOR DELINEATING THE RIGHT ADRENAL VEIN BEFORE ADRENAL VENOUS SAMPLING
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PURPOSE
This study compared anatomical variations between the presumed right adrenal vein (CT-RAV) on thin-slice enhanced computed tomography (TSCT) and the biochemically defined right adrenal vein (BD-RAV) detected by CT during angiography (Interventional-CT). Estimated rates of correct cannulation during right adrenal venous sampling (AVS) before interventional-CT were compared between cases with and without useful TSCT.

MATERIALS AND METHODS
TSCT was performed in 72 of 151 consecutive patients undergoing AVS with interventional-CT. Successful right adrenal vein (RAV) cannulation during AVS with interventional-CT was defined biochemically by cortisol concentration. TSCT identification of the RAV was classified as certain, probable, and unclear, and studies with a certain or probable RAV identification were classified as useful. Anatomical features of the CT-RAV and BD-RAV were compared, including their position along the inferior vena cava (IVC), vertebral level, and the distance between the RAV and right kidney. Rates of successful RAV cannulation were compared between cases with and without useful TSCT before AVS.

RESULTS
A total of 66 of 72 TSCT exams were classified as useful (50 certain, 16 probable). There was good correlation of anatomical features between the CT-RAV and BD-RAV (position along the IVC: r = 0.725, P < 0.001; vertebral level: r = 0.656, P < 0.001; distance to upper pole of right kidney: r = 0.687, P < 0.001). Rates of correct cannulation with and without useful TSCT were 92.4% and 82.4%, respectively.

CONCLUSION
TSCT identified the right adrenal vein before AVS and may be useful for promoting successful right AVS.
PAPER PR 5

INVOVLEMENT OF MYOFIBROBLASTS IN THE PATHOPHYSIOLOGY OF SECONDARY LYMPHEDEMA.

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BACKGROUND

Secondary lymphedema arises as a consequence of surgical, radiation, inflammatory, or traumatic disruption of lymphatic vessels. The frequency of lymphedema after pelvic and genital cancer surgery was reported to be 20 to 40%. In chronic lymphedema, increased numbers of fibroblasts, inflammatory cells and increased amounts of collagen fibers were observed. However, the pathophysiology of secondary lymphedema remains unclear. Research progress in secondary lymphedema has been hampered by the lack of a suitable experimental animal model; therefore, we developed a novel animal model of secondary lymphedema in the rat hind limb. The objectives of this study were to evaluate our rat model and to investigate the pathophysiology of secondary lymphedema.

Methods: We used 12-week-old, male, Sprague-Dawley rats. A circumferential incision was made in the right groin, and lymph nodes dissection and ligation of lymphatic vessels were performed. Skin biopsy was performed on day 3, 7, 14, 28, 56, 84, 112, 140, and 168. Immunohistochemical staining and real-time PCR analysis were performed. We enrolled 5 patients with unilateral leg secondary lymphedema. Skin tissues were obtained from bilateral legs from the patients. Primary culture of skin fibroblasts from rat and human skin were also performed.

RESULTS

The number of subcutaneous lymphatic vessels and macrophages increased in acute phase, and decreased in chronic phase. In acute phase, the mRNA expression of VEGF-C in skin tissues increased and infiltrated macrophages expressed VEGF-C. In chronic phase, the mRNA expression of collagen type I and III increased. Fibroblasts primarily cultured from lymphedema model expressed α-smooth muscle actin (α-SMA), TGF-β1, type I and III collagen. Fibroblasts cultured from secondary lymphedema patients also expressed α-SMA, TGF-β1, type I and III collagen.

CONCLUSION

We focused on myofibroblasts and TGF-β1. Myofibroblasts and TGF-β1 are considered to be involved in the control of extracellular matrix synthesis and in fibrotic diseases such as liver cirrhosis and pulmonary fibrosis. TGF-β1 differentiates fibroblasts to myofibroblasts. Myofibroblasts express α-smooth muscle actin and produce collagen. Myofibroblasts also release TGF-β1 and stimulate fibroblasts in an autocrine fashion. We found out a novel pathogenesis of secondary lymphedema. In acute phase, infiltrated macrophages produce VEGF-C and stimulate fibroblasts to myofibroblasts. Myofibroblasts express TGF-β1 and stimulate fibroblasts in an autocrine fashion. We found out a novel pathogenesis of secondary lymphedema. TGF-β1 are considered to be involved in the control of extracellular matrix synthesis and in fibrotic diseases such as liver cirrhosis and pulmonary fibrosis. TGF-β1 may be a new therapeutic strategy to prevent the development of secondary lymphedema.

PAPER 5.1

INTERFACE PRESSURE, STIFFNESS AND HEMODYNAMIC EFFECTIVENESS OF A NEW COMPRESSION DEVICE

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4 Chalmers University of Technology, Gothenburg, Sweden

BACKGROUND

Ejection fraction (EF) from the lower leg is severely impaired in patients with venous insufficiency and is improved by compression therapy. Inelastic compression (IC) is characterized by a high difference between supine and standing pressure and a strong massaging effect produced by a high difference between diastolic and systolic pressure during walking. IC is significantly more effective in increasing EF than elastic compression (EC), characterized by a low difference between supine and standing pressure and by a weak massaging effect.

METHODS

EF was measured by means of strain gauge plethysmography in 18 patients with severe venous reflux in the great saphenous vein (CEAP C2-C5). The procedure was performed three times in a randomized sequence: 1) in baseline conditions, 2) with the elastic device applied to the leg with a pressure of 20 mm Hg and 3) after attaching the stiff patches to the elastic bandage.

The interface pressure of each bandage was measured using an air-filled pressure transducer in supine and standing position and in muscle systole and diastole during exercise. Static Stiffness Index (SSI) was calculated by subtracting supine by standing pressure. Walking Pressure Amplitude (WPA) was calculated by subtracting diastolic from systolic pressure.

RESULTS

The patches produced a significant increase of standing and peak pressure during walking, with a very slight increase of the resting pressure which results in a significant increase of stiffness as reflected by a significant increase of SSI and WPA. This led to a significant improvement of the EF, which was severely impaired in our group of patients with great saphenous vein insufficiency, compared both to baseline conditions and elastic bandage (Tab. I).

CONCLUSION

Attaching stiff patches to the elastic bandage turns it into a stiff device which is able to significantly improve hemodynamic effectiveness. The improvement of EF into its normal range is due to the increase of standing and peak pressure produced by the stiff patches maintaining, at the same time, a very low and comfortable resting pressure.

<table>
<thead>
<tr>
<th></th>
<th>R.P. (mm Hg)</th>
<th>S.P. (mm Hg)</th>
<th>SSI</th>
<th>WPA</th>
<th>EF</th>
</tr>
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<tbody>
<tr>
<td>Baseline</td>
<td>34.2 (31.6-41.6)</td>
<td></td>
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<tr>
<td>Elastic bandage (EB)</td>
<td>20 (18.5-22)</td>
<td>21 (19-23)</td>
<td>1 (0-1)</td>
<td>1 (1-2)</td>
<td>49 (37.3-57.8)</td>
</tr>
<tr>
<td>EB + stiff patches</td>
<td>27 (23.5-29.5)</td>
<td>56 (49.58.5)</td>
<td>28 (24-34.5)</td>
<td>23 (21.5-25)</td>
<td>62 (51.4-71.4)</td>
</tr>
</tbody>
</table>

Median values (Interquartile ranges). R.P.= resting pressure, S.P.= standing pressure, SSI= Static Stiffness Index, WPA= working amplitudes; EF= ejection fraction (%)

*LundaTex™ / ** PressPatch™
Both LundaTex™ and PressPatch™ are manufactured by PressCise AB.
**PAPER 5.2**

**A METHOD TO INCREASE WORKING COMPRESSION PRESSURE WITHOUT CHANGING RESTING PRESSURE**

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**BACKGROUND**

An ideal compression device is characterized by low, well tolerable resting pressure and a high working pressure. It has been found that compression products with a stiff, non-elastic material, are essential for an improved haemodynamic effect, indicating that low resting pressure and high working pressure is vital, in order to achieve the most effective and well tolerated compression treatment. However, one great challenge is that by applying a stiff bandage, either as a single component or as a part in a multi-component product, one always adds, a not so easily quantified, resting pressure. In order to achieve the most effective treatment it is easy to apply the bandage in a too tight and uneven manner, often resulting in painful resting pressures.

**AIM**

The goal is to find a method that increases working pressure without changing the resting pressure.

**METHODS**

Several patches (PressPatch™ by PressCise AB) made in a hook and loop material and with an optimal shape, were attached over an elastic compression bandage providing and maintaining a certain pressure level, as well as over a medical compression stocking. The patches adhere directly to the bandage/stocking material without increasing the resting pressure. Interface pressures were measured on point B1 on a leg-model whose diameter can be enlarged by 1 cm in order to measure stiffness (n=9) and on human legs during lying and standing (n=30). The pressure-measuring device used was PicoPress® (by Microlab Italia).

**RESULTS**

The patches add the stiffness to the underlying material (bandage or stocking) and increases only the working pressure, resulting in a hemodynamic effect during movement. With the patches, resting pressure is close to the same pressure as before, however working pressure increases to significantly, leading to a greater static stiffness index (SSI).

**CONCLUSION**

The presented method is of considerable practical interest especially for those patients who should have a low controlled resting pressure, as e.g. patients with mixed arterial venous disease and for whom hemodynamically active pressures are desirable as soon the patient starts walking.

---

**PAPER 5.3**

**COMPRESSION FILM BANDAGE ADDED TO MEDICAL COMPRESSION STOCKINGS IMPROVES COMFORT AND RESULTS OF FOAM SCLEROTHERAPY**

JC Rag

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**PURPOSE**

Foam sclerotherapy is a basic modality in phlebology, in particular for superficial varicosities. However, in spite of adequate wearing of medical compression stockings (MCS) inflammatory symptoms, inductions and stainings may occur in above 40% of the cases. Two main reasons are: 1) Compression stockings are not worn continuously, allowing refilling of the varices and 2) concentric pressure may not be sufficient. A novel self-adhesive compression film bandage (CFB) which is put on once and allowed to stay continuously for two weeks in addition to MCS could potentially solve both problems. Aims of evaluation were patient comfort, symptoms and effect on vein regression.

**METHODS**

In a prospective study, a novel compression film bandage (Venartis/3M) comprising a self-adhesive, elastic and breathable polymer film of d < 20m was evaluated. 62 consecutive patients (26 - 78 y.) with 80 legs selected for foam sclerotherapy (Aethoxysklerol 1%) for superficial varicosities of 5 - 12 mm Ø were randomized to receive medical compression stocking only (MCS, n = 40, 28d) for day over wearing, or MCS and CFB (n = 40, film 14d + stocking 28 d). Vein diameters in both groups were equal (+/-10%). Follow-up included ultrasound and photography after 2, 4 and 8 weeks.

**RESULTS**

Wearing time of both media (CFB, MSC) was completed adequately in all cases. Comfort was rated on a 10 degree scale (10 = best) by the patients 6.6 after CFB+MCS and 4.3 after MCS alone (week 2). Symptoms like pain, inductions or reddening along the treated vein were found in 22/40 (55%) in the MCS group, while in the group receiving additional CFB the incidence was 2/40 (5.0%; week 2). At week 8 examinations, the incidence of unwanted local side effects was 26/40 (65.0%) for the MCS group and 6/40 (15.0%) in the CFB+MCS group. Closure rates were 95.0 (38/40) after CFB+MCS and 87.5 (35/40) after MCS alone (week 8). Vein diameters were reduced by 31 - 68% (mean: 51.5%) with CFB+MCS and 28 - 52% (mean: 38.1%, week 8) with MCS.

**CONCLUSION**

The novel compression film bandage added to medical compression stockings significantly improves comfort and results of foam sclerotherapy of superficial varicosities. The reduction of vein diameter, inflammatory symptoms and esthetic side effects achieved with CFB is highly significant. Continuous wearing for two weeks is well tolerated.
PAPER 5.4

RECALCITRANT VENOUS LEG ULCERS MAY HEAL BY CONSERVATIVE OUTPATIENT TREATMENT OF VENOUS DISEASE EVEN IN THE PRESENCE OF CONCOMITANT ARTERIAL OCCLUSIVE DISEASE

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3 Medical University of Vienna, Austria

INTRODUCTION
In patients with Venous Leg Ulcers (VLU) a coexisting peripheral arterial occlusive disease (PAOD) is reported in about 15-20%. In such cases arterial recanalization is often recommended as first therapeutical step and compression therapy is often considered a contraindication when Ankle-Brachial Pressure Index (ABPI) is < 0.8.

AIM
to compare the clinical outcomes of patients with recalcitrant VLU, both “pure” (pVLU) or associated with a moderate PAOD (“mixed leg ulcers” (MLU) by treating the venous disease with compression therapy and foam sclerotherapy of incompetent superficial veins without any surgical treatment of the arterial component.

MATERIALS AND METHODS
Between January 2011 to July 2014 we retrospectively analyzed the records of 180 outpatients (43 men and 137 females; mean age was 74±11.5 years; age ranged between 31-92 years) with recalcitrant ulcers (ulcer surface up to 100 cm² showing no healing tendency after a 6 months treatment). 109 were affected by pVLU and 71 by MLU with moderate PAOD defined by a reduced Ankle-Brachial Pressure Index (ABPI) between 0.5 and 0.8. In addition to the same local wound dressing the patients received foam sclerotherapy (sodium Tetradecyl sulfate 3%) of the superficial veins with reflux directed to the ulcer area and a modified inelastic compression applied with a pressure ≤ 40 mm Hg. No patient was referred to arterial revascularization. The patients were followed over more than one year and the healing rate was registered.

RESULTS
Patients with pVLU and MLU showed comparable demographic characteristics in terms of sex, age, venous pathophysiology, ulcer surface, duration, wound-bed conditions and recurrence. 25 patients were lost at follow-up and the outcomes were analysed in the remaining 155 patients (93 patients with pVLU (85.4%) and 62 patients with MLU (87.4.%)).

The maximal time for complete healing was 48 weeks in pVLU and 52 weeks in MLU (P=.009). The median healing time of patients with pVLU (23 weeks) was significantly shorter than that of patients with MLU (28.5 weeks) (P < 0.03).

Multiple linear regression analysis showed the factors which influenced the healing time: deep venous disease (P<.001), ulcer surface (P<.001), arterial disease (P=.002), and ulcer duration (P<.01).

CONCLUSION
In patients with mixed ulcers and moderate arterial disease, treating vein disease by means of foam sclerotherapy and modified compression may heal the ulcers.
We suggest this conservative treatment protocol to patients with mixed ulcers not complicated by severe arterial disease restricting arterial revascularization procedures to cases which will not heal.

PAPER 5.5

CHARACTERISTICS OF ISOLATED CALF VEIN THROMBOSIS IN CURRENT CLINICAL PRACTICE

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AIM
As public and medical concern for the risk associated with deep vein thrombosis (DVT) has risen, the number of cases detected to have calf vein thrombosis (CVT), including asymptomatic condition, has increased in recent years. The aim of this study was to investigate the characteristics of isolated CVT and to determine the patterns and distribution of calf vein thrombi in the current clinical practice.

METHODS
Between January and December 2014, 1591 consecutive patients underwent duplex ultrasonography to seek definitive diagnosis of DVT. All deep veins from groin to ankle, excluding anterior tibial veins, were imaged and the location and extent of thrombi was verified by duplex scanning. Of the deep veins in the calf, the peroneal, the posterior tibial, the gastrocnemial, and the soleal veins were routinely examined.

RESULTS
DVT was confirmed in 537 patients. Isolated CVT was detected in 590 limbs of 427 patients (150 men and 277 women; mean age 74 years). Of these, 341 (80%) were asymptomatic, 263 (62%) were surgical patients, and 239 (56%) were inpatients. Moreover, 184 patients (43%) had malignant disease. There was no significant difference in the limb preference (302 left vs 288 right). The soleal veins were most frequently involved, with 536 limbs (91%) affected, followed by the peroneal veins in 103 limbs (18%). Although thrombus confined to a single vein were found in 165 patients (39%), 77 cases (18%) had 5 or more veins involvement.

CONCLUSION
This study revealed that there was a high prevalence of asymptomatic cases in our cohort, and a substantial number of the cases was associated with malignancy. The majority of calf vein thrombi was located in the soleal veins. Although the most frequent pattern was a single vein involvement, a considerable number of patients had several thrombi in the calf.
**PAPER 5.6**

**COMPARISON BETWEEN FREQUENCY OF CALF DVT AFTER EARTHQUAKES IN JAPAN AND ITALY**

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2 Finale Emilia, Modena, Italy
3 Hesperia Hospital, Modena, Italy

**PURPOSE**
We have reported that calf DVT increased after earthquake in Japan. We attempted to investigate calf DVT after Italian earthquake and compared the frequency of it after Japanese earthquake.

**AIM**
To compare the clinical outcomes of patients with recalcitrant VLU, both “pure” (pVLU) or associated with a moderate PAOD (“mixed leg ulcers” (MLU) by treating the venous disease with compression therapy and foam sclerotherapy of incompetent superficial veins without any surgical treatment of the arterial component.

**SUBJECTS AND METHODS**
We examined calf DVT in Modena province in Italy from 2013 to 2014 using ultrasound. Modena province had great earthquake (Emilia Earthquake) in 2012. We had examined it 2 years after Middle Niigata Prefecture Earthquake 2004. We compared the data from these. We also attempted to examine calf DVT by same methods in the area without earthquake in Japan (Yokohama) and Italy (Trento).

**RESULTS**
We examined 447 residents (mean age; 54±13 y.o.) in Finale Emilia, San Flice Sull Panallo, Cavezzo, Mirandola, Sorriola, Guastalla, Concordia and Modena. 65% of these (297) slept in own small car after quake (car shelter). 49-calf DVT were recognized in these (10.7%). The frequency of DVT correlated with that of car shelter. We had examined 435 residents in Ojiya and Tokamachi 2 years after Mid Niigata Prefecture Earthquake 2004. 60% of these (259) slept in own small car. 44-calf DVT were recognized in these (10.1%). The frequency of calf DVT in the area without earthquake in Italy (Finale Emilia) was 4.3% (64/1498) and 5.0% (2/40), respectively.

**CONCLUSION**
Frequency of Calf DVT after earthquake was the same as Japan and Italy. That may increase after earthquake in all over the world. In particularly, sleeping in small car after earthquake may have a risk of DVT. Further study is needed to clarify the mechanism of DVT increase after earthquake (large disaster).

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**PAPER 5.7**

**PREVALENCE OF CHRONIC VENOUS DISEASE (CVD) AND RESTLESS LEG SYNDROME (RLS) IN GENERAL POPULATION (EPIDEMIOLOGICAL STUDY)**

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Overweight, pregnancies, stress, depression, anatomical venous features and other factors influence the occurrence of CVD, thus requiring constant research in order to find the best treatment solutions.

Most of the phlebologic patients have discomfort in the lower extremities as a general symptom, being described as a blunt pain, heaviness, burning sensation. Some of them proceed to feel the same regardless the treatment they have had especially those with suspected depression or restless leg syndrome (RLS).

**OBJECTIVES**
To determine CVD distribution according to CEAP, prevalence of RLS and depression, prevalence and nature of patient’s complaints.
The total of 169 participants were enrolled into the study.

**METHODS**
used were patient’s interview (complaints and disease history), clinical and duplex examination. Depression and RLS were defined using RLS and HADS questionnaires.

**RESULTS**
Gender - 19% male , 81% female, average age – 56 years, mean duration of complaints – 7 years, mean height and weight -165 cm and 75 kg respectively.

C1 class was dominant according to CEAP (57%), C0-17%, C2 -13%, C3 -12 %, C4 - 1 %.
Depression (clinical and subclinical forms) accounted 53%. RLS patients accounted 34%.
Dominant complaints mentioned were pain (19%), swelling (19%), cramps (19%) and heaviness (33%) in the legs.
We observed elevated amount of C2, C3, and C4 forms after pregnancies (deliveries) and in persons with elevated body mass index (BMI).
In a group of C0, C1 patients with positive leg symptoms depression was detected in 60% of cases, RLS was revealed in 38% of cases, whereas in the same group the absence of depression and RLS was marked in 40% of cases, and 62% of cases respectively.

**CONCLUSION**
Distribution of C- classes complies with the data from other epidemiological studies.
The high prevalence of depression and RLS in a C0, 1 class suggests their impact on the complaints nature. Pain, swelling, cramps and heaviness are the most prevalent symptoms among phlebologic patients.
PELVIC VEIN EMBOLISATION UNDER LOCAL ANAESTHETIC IS FEASIBLE AND SAFE IN AN OUTPATIENT CLINIC SETTING - 18 MONTHS EXPERIENCE OF A NEW SERVICE

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The Whiteley Clinic, London, UK

INTRODUCTION
Pelvic vein embolisation (PVE) is becoming increasingly used in venous practice for the treatment of pelvic venous reflux (PVR) causing pelvic congestion syndrome, varicose veins of the vulva, vagina, buttock or perineal area, or para-vulval veins refluxing into leg varicose veins.

In July 2014 we introduced a new “walk-in walk-out” outpatient service situated in a vein clinic remote from a hospital using local anaesthetic only and no sedation or other anaesthesia.

METHODS
A prospective audit was kept of all patients treated with PVE. All patients had presented with symptoms of signs of conditions caused by, or associated with, PVR. All had been assessed with Transvaginal Duplex Ultrasound (TVS).

Pre-procedure assessment was a blood test for urea and electrolytes. Coils used were Interlock Embolisation Coils (Boston Scientific, USA) as they can be repositioned after deployment and before release. Previously published series of PVE had been in hospitals, using anaesthesia or sedation. Hence we analysed:

- Safety
- Complications both during and post procedure
- Number of veins (territories) treated and number of coils used

RESULTS
In 18 months, 92 patients underwent PVE. The number of veins (territories) and coils used were:

<table>
<thead>
<tr>
<th>Veins (Territories)</th>
<th>Coils (Mean)</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>7.5</td>
<td>33</td>
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<td>3</td>
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<td>4</td>
<td>13.0</td>
<td>17</td>
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There were no major complications during or after the procedure and no patients were admitted or attended accident and emergency. The procedure was abandoned in 2 patients, one due to length of time and the other after 3 of 4 veins were embolised and the 4th vein had abnormal anatomy. The first patient had the procedure completed on another occasion and the second had symptomatic relief and refused further embolisation.

One patient had a bradycardia necessitating intravenous Atropine but proceeded successfully. One coil was removed during the procedure using a snare as it did not detach properly and it trailed into the common iliac vein.

Post operatively, many patients reported early discomfort in the pelvis. Non-steroidal anti-inflammatory drugs were effective in most cases. Some patients reported a “post-embolisation syndrome” feeling exhausted or “flu-like” for 2-5 days after the embolisation.

CONCLUSION
We report PVE in a remote out-patient facility outside of a hospital, using local anaesthesia only and no sedation or other anaesthesia. Despite being our learning curve, there were no major complications and only 2 cases were abandoned. PVE appears to be feasible and safe under local anaesthetic in a walk-in, walk-out outpatient facility.
VENOUS STENT STABILITY INDEX (VSSI): A GUIDE FOR ILIAC VEIN STENT SIZING AND PREVENTION OF MIGRATION IN THE TREATMENT OF SYMPTOMATIC ILIAC COMPRESSION

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VENITI, Inc., Fremont, California, USA

OBJECTIVES
Left common iliac veins can have a significant anterior-posterior compression from the right common iliac artery, an exaggerated transverse diameter, at the same level, and pre-stenotic dilatation of the vein proximal to the lesion. Multiple values of maximum and minimum diameter and area calculations contribute to the selection of stent size. We derived a methodical way to utilize IVUS measurements to facilitate sizing and mitigate stent migration in limbs with symptomatic iliac vein lesions. The Venous Stent Stability Index (VSSI) should assist all physicians in safely and effectively stenting iliac lesions of any type.

METHODS
Symptomatic patients with lower extremity edema and/or pain were examined with duplex. Non-thrombotic patients with iliac stenosis or those with evidence of acute or chronic DVT were referred to a single endovascular physician for further evaluation and treatment. Venography and IVUS, utilizing 6F-8F Visions catheters (Volcano) were performed on all treated limbs. Maximum and minimum diameters plus area calculations were obtained at determined points; the proximal/distal common and external iliac veins. When the diameter was less than the selected stent diameter at 5/8 sites, the wall apposition quotient was great enough to assure stability. This calculation helps determine the stent diameter and length to use.

RESULTS
Between Jan 2014 and February 2016, 53 patients, 47L/1R (5 bilateral) underwent iliac stenting. Eighteen had acute iliac stenosis or those with evidence of acute or chronic DVT were referred to a single endovascular physician for further evaluation and treatment. Venography and IVUS, utilizing 6F-8F Visions catheters (Volcano) were performed on all treated limbs. Maximum and minimum diameters plus area calculations were obtained at determined points; the proximal/distal common and external iliac veins. When the diameter was less than the selected stent diameter at 5/8 sites, the wall apposition quotient was great enough to assure stability. This calculation helps determine the stent diameter and length to use.

CONCLUSION
Endovascular is the first line of treatment for SVCS caused by intravenous devices, while surgery is most often performed for mediastinal fibrosis. There is a high incidence of reoperations before discharge after surgery. Both treatments show good results regarding regression of the symptoms. Mid-term primary patency is similar with a significant incidence of secondary interventions. Secondary interventions after initial endovascular treatment are mainly endovascular.

SYSTEMATIC REVIEW OF OPEN AND ENDOVASCULAR TREATMENT OF SUPERIOR VENA CAVA SYNDROME OF BENIGN ETIOLOGY

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BACKGROUND
The increased use of central venous catheters, ports, pacemakers and defibrillators raised the incidence of benign superior vena cava syndrome (SVCS). The aim of this study is to review the results of open and endovascular treatment of SVCS.

METHODS
A MEDLINE search using PRISMA guidelines was performed for studies reporting the results of open and endovascular treatment of benign SVCS. Pooled primary patency with 95% confidence intervals (95% CIs) for open and endovascular treatment were calculated using fixed or random effects models after assessing between-study heterogeneity.

RESULTS
Nine studies presented the results of endovascular treatment of SVCS including 139 patients. Causes of SVCS were: central venous catheters and pacemakers (80.6%), mediastinal fibrosis (13.7%), and other causes (5.6%). Technical success was 95.6%. Angioplasty (PTA) and stenting was performed in 73.6%, PTA only in 17.3%, and thrombolysis, PTA and stenting in 9%. Thirty-day mortality was 0%. Regression of the symptoms was reported in 97.3%. Patients were followed up for a mean of 11 to 48 months. Thirty two patients (26.6%) underwent 58 secondary procedures, 47 PTAs, 6 PTAs and stenting, 3 thrombolyses and 2 bypass grafts. Pooled estimated primary patency at 1, 12, 26 and 36 months was 90.7%, 71.2%, 58.1% and 48% respectively.

Four studies including 87 patients reported the results of open repair of SVCS caused by mediastinal fibrosis (58.4%), catheters and pacemakers (28.5%) and other causes (13%). Operations performed included SVC reconstruction with a spiral saphenous interposition graft, other vein graft, PTFE graft and human allograft. Thirteen patients required reoperations (15%) before discharge mainly for graft thrombosis. Thirty day mortality was 0%. Regression of the symptoms was reported in 93.5%. Follow up period was 30 months to 10.9 years. During follow up 24 patients (31.1%) underwent a total of 33 secondary procedures including 10 PTAs, 11 PTAs+stenting, 3 thrombectomies, 2 graft replacements and 1 thrombolysis. Pooled estimated primary patency at 1, 12, 26, 36, 48 and 60 months was 85.3%, 66.6%, 65.8% 65.3%, 58.4% and 58.4 respectively.

Primary patency was similar for open and endovascular treatment of SVCS at 1,12,26 months. Pooled primary patency of open repair was higher than patency of endovascular repair at 36 months (p=0.05).

CONCLUSION
Endovascular is the first line of treatment for SVCS caused by intravenous devices, while surgery is most often performed for mediastinal fibrosis. There is a high incidence of reoperations before discharge after surgery. Both treatments show good results regarding regression of the symptoms. Mid-term primary patency is similar with a significant incidence of secondary interventions. Secondary interventions after initial endovascular treatment are mainly endovascular.
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A NOVEL SURGICAL TECHNIQUE FOR DEEP VENOUS REFLUX SUPPRESSION IN FEMORAL VEIN DUPLICATION

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BACKGROUND

Femoral Vein (FV) duplication is a higher prevalent anatomical variant than what generally thought, being present in up to 55% of cases.

In primary and post-thrombotic reflux patterns the duplication feeds a closed circuit where an incompetent vessel constitutes the leaking point, while the other conduit represents the anterograde draining route.

OBJECTIVES

To evaluate feasibility and effectiveness of a simple technique for managing deep venous reflux in case of FV duplication, consisting in the surgical closure of the leaking point.

METHODS

The technique was initially tested on five patients, aged 59±4, 3 males and 2 females. They all signed an informed consent form. An indication for surgery was given in presence of a venous leg ulcer older than 6 months, not healing, in stall (mean ulcer onset: 9±2 months). Three patients were C6EsAdPr, and two C6EpAs-dPr. They underwent to echo-color-Doppler (ECD) assessment of deep venous reflux along the accessory femoral vein (AFV), with the leaking point at the vessel bifurcation with the FV. Better anatomical detail was preoperatively obtained by the means of MRV.

The technique consists in closing the refluxing femoral branch by a titanium clip. All the procedures were performed in Day Surgery.

RESULTS

Air-plethysmography was performed in 3 of the 5 cases operated on. The treatment proposed herein led to a significant improvement in venous refilling time, venous volume and residual volume fraction. The ejection fraction remained unchanged.

Neither major nor minor complications were reported in any of the 5 cases.

CONCLUSION

The lower limb deep venous system constitutes one of the most fascinating but challenging topics in vascular surgery. Nowadays, therapeutic options such as valvuloplasty, transpositions and translocations are used in a limited number of cases and just in highly specialized Centres. The technique herein proposed, thanks to the high prevalence of FV duplication, gives the chance to treat a wider number of cases affected by primary or post-thrombotic deep venous reflux.

HOW DO WE PREVENT TRIBUTARY VEIN RECURRENCE NEAR THE SAPHENO-FEMORAL JUNCTION AFTER ENDOVENOUS ABLATION OF THE GREAT SAPHENOUS VEIN

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BACKGROUND

Since being approved for health insurance coverage in Japan, endovenous ablation (EA) has become widely used for the treatment of primary leg varicose veins, an area in which it has made a major contribution. A few in-depth studies have examined long-term postoperative follow-up, but a higher incidence of tributary vein recurrence (TVR) after EA of the great saphenous vein (GSV) without high ligation (HL) was noted in some papers. From my experience with the surgical treatment of recurrent varices after surgery (REVAS), to prevent TVR, I considered that the view around the sapheno-femoral junction (SFJ) may not be suited to EA without HL, and HL+EA or stripping (S) may be better.

MATERIALS AND METHODS

REVAS (after HL+S) that originated near the SFJ was surgically treated in 16 limbs (1.0% of all varicose vein surgeries) between January 2008 and June 2015, and the cases were divided into 12 TVRs and 4 neovascularizations (NVs). In 9 TVRs (75%) and 4 NVs (100%), tributary varicose veins in the thigh were found before the first surgery. In 10 TVRs (83%), the tributary veins connected within 1.5 cm from the SFJ, which could be a cause of REVAS if EA without HL was conducted. Based on these results, the treatment strategy for GSV reflux was decided based on the appearance of the SFJ (aneurysmal change, severe destruction of the terminal valve) and tributary veins (aneurysmal change, dilatation, reflux which connect within 1.5 cm from SFJ) and on the patient’s general condition (obesity, anticoagulants, anti-platelet agents), and 318 GSV-radiofrequency ablation (RFA) candidates were divided into 275 EA without HL, 11 HL+retrograde EA, and 32 HL+S between September 2014 and December 2015. Tributary varicose veins and tributary veins with reflux in the thighs were resected in all limbs in which HL was performed.

RESULTS

TVR and NV have not been observed in these 3 groups so far, though this is only the early result. In 275 limbs in the RFA without HL group, 251 (91%) limbs had tributary veins without reflux, whereas reflux of tributary veins was found in only one limb of this group.

CONCLUSION

Although this was a preliminary trial, this approach to preoperative classification would be effective for preventing tributary vein recurrence from the SFJ. Further discussion of the type of patients for whom HL+EA or S rather than EA without HL should be chosen is needed, and further long-term follow-up regarding recurrence is also required.
PAPER A3
RISK FACTORS OF ENDO-VENOUS HEAT INDUCED THROMBOSIS AFTER ENDO-VENOUS LASER ABLATION
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OBJECTIVES
Since endo-venous heat-induced thrombosis (EHIT) is decreasing and seldom inducing severe outcomes, the necessity of post-operative ultrasound evaluations is somewhat questioned. But, it may still cause venous thromboembolism. This study is to evaluate the incidence of heat-induced thrombosis and risk factors that may contribute to its formation after endo-venous laser ablation.

METHODS
From September 2015 through January 2016, 281 endo-venous laser ablations were performed by single surgeon. 240 cases were done by 1470 nm laser with two-ring radial fibers, and 41 cases were done by 980 nm laser with bear-tip fibers. Ablation starting points were same for all cases. Type of laser, age, gender, operation time, linear endo-venous energy density, conditions about phlebectomy, and diameter of saphenous veins were analyzed. Duplex ultrasound was done for all patients preoperatively, and 1-3 days, 2-3 weeks, and 2-3 months after operations.

RESULTS
No operative mortality was recorded. No class 3 or 4 EHIT, deep vein thrombosis, or pulmonary emboli occurred. The incidence of EHIT class 2 was 2.8 % (8 cases) and class 1 was 3.6 % (10 cases). By comparing groups with class 1 or 2 EHIT and without EHIT using student t-test, mean age was 74.0±7.5 years old and 65.6±12.3 (p=0.0002), mean operation time was 47.1±18.7 minutes and 36.0±16.5 (p=0.024). By comparing groups with class 2 EHIT and without class 2 EHIT (no EHIT or class 1 EHIT), mean age was 77.4±7.5 years old and 65.8±12.2 (p=0.0029), mean operation time was 48.9±22.0 minutes and 36.3±16.6 (p=0.152). Using Fisher’s exact test, class 2 EHIT was found with 5 patients (2.1%) in 1470 nm laser group and with 3 patients (7.3%) in 980 nm laser group (p=0.096). Age and operation time were significant risk factors for EHIT. Using 980 nm laser showed a tendency to make more severe EHIT compared by using 1470 nm laser. In this study, other factors did not show any significant differences between the groups with EHIT and without EHIT, or between the groups with class 2 EHIT and with no or class 1 EHIT.

CONCLUSION
The older age and longer operation time could be the associated risk factors for EHIT. The usage of 980nm laser showed a possibility to produce more severe EHIT than 1470 nm laser. Additional studies are required to analyze these and other factors that may predict EHIT.

PAPER A4
EDOXABAN IN THE PREVENTION OF ENDOVENOUS HEAT-INDUCED THROMBOSIS AFTER ENDOVENOUS LASER ABLATION FOR VARICOSE VEINS
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OBJECTIVES
Endovenous heat-induced thrombosis (EHIT) or deep vein thrombosis (DVT) is well recognized as a complication of endovenous laser ablation (EVLA) for varicose veins. The aim of this study was to evaluate the efficacy of edoxaban, an oral factor Xa inhibitor, for the prevention of EHIT or DVT after EVLA.

METHODS
We reviewed 326 limbs in 304 patients undergoing EVLA (980-nm diode laser) between April 2013 and December 2015. Duplex ultrasound scanning was performed one day after EVLA. EHIT was classified into 5 classes; class 0: thrombus below junction, class 1: thrombus extending flush with junction, class 2: thrombus extending beyond junction with cross-sectional diameter of <50%, class 3: thrombus extending beyond junction with cross-sectional diameter of >50%, class 4: totally occlusive DVT. EHIT class 0 was followed up without anticoagulation (group A). EHIT class 1 was divided into two subgroups (group B); the EHIT was treated with edoxaban (edoxaban group), the EHIT was followed up without anticoagulation (control group). EHIT class 2 or 3 was treated with anticoagulation (group C). Patients were evaluated clinically and by ultrasound at 1 week, 1, 3, 6, and 12 months after EVLA.

RESULTS
In the group A (259 limbs), the EHIT class significantly (p<0.001) increased at one week (class 0 in 250, class 1 in 26, class 2 in 12 and 3 class in 1 limb) after EVLA. In the group B (29 limbs), the median EHIT class at one week was significantly (p=0.003) lower in the edoxaban group (11 limbs, class 1.5) than in the control subgroup (18 limbs, class 0). The incidence of EHIT class 2 or greater was lower in the edoxaban group than in the control group (0.9% vs 50%, p=0.0426). The pain level and the bruising level at one week after EVLA did not differ between the groups. In group C (8 limbs), EHIT was treated with edoxaban in 4, warfarin in 2, others in 2 limbs. EHIT class 2 or 3 after one week was also treated with edoxaban or other oral anticoagulants. The EHIT class 2 or 3 resolved by 1 month in all limbs. No EHIT class 4 or DVT was detected after EVLA. No recanalization was observed in the limbs treated with edoxaban.

CONCLUSION
These data suggest that EHIT progression in one week is common after EVLA and edoxaban can control the progression of EHIT early postoperatively. Edoxaban may be beneficial in the prevention of EHIT or DVT after EVLA.
PAPER A5
EVALUATION FOR OCCLUSION RATE OF A GREAT SAPHENOUS VEIN AND ITS TRIBUTARIES BY ULTRASOUND SCAN AFTER VARICOSE VEINS TREATMENT WITH RADIOFREQUENCY ABLATION

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INSTRUCTION
We evaluated for occlusion rate of a great saphenous vein (GSV) and its tributaries by ultrasound scan after varicose veins treatment with Radiofrequency Ablation (RFA). Purpose: When the surgery is performed the catheter tip is usually advanced to 20mm from the sapheno-femoral junction (SFJ) regardless of the presence or absence of superficial epigastric vein. However, there are cases when the blood flow is found in the tributaries near SFJ by ultrasound scan after surgery although GSV itself become occluded. The dissection of the tributaries near SFJ has some variations, but normally, there are five divergence: superficial epigastric vein, external pudendal vein, superficial circumflex iliac vein, medial accessory saphenous vein and lateral accessory saphenous vein. It can be presumed that we can reduce the recurrence rate if the 4 tributaries are occluded except the superficial epigastric vein which flows into the center. The purpose of this research is to reduce recurrence risk after surgery based on this evaluation results.

SUBJECT AND METHODS
The subject of this study is 300 treated cases (average age 65.5±11.6 years / 90 males and 210 females) using Endovenous Closure™ from May to November 2015. In all cases, the catheter tip was positioned 15mm from the SFJ. On the next day of surgery ultrasound scan was performed for evaluation.

RESULTS
After RFA, the distance from SFJ to the occlusion was 13.8±6.8 mm on the average. The occlusion rate of main trunk of GSV was 100%. As for tributaries, the cases which the blood flow was found were regarded as positive. The cases which became occluded and which was not able to identify itself were regarded as negative. The average number of tributaries was 0.62±0.63 which the blood flow was found. The breakdown is as follows: 0:139cases/1:137cases /2:24cases /3:0cases /4:0cases.

DISCUSSION
It is considered that occlusion rate of tributaries is affected by the catheter tip position, shape of GSV around starting point for ablation and the positional relationships among tributaries. Therefore, the preoperative confirmation (evaluation) by ultrasound scan for SFJ is considered very important.

CONCLUSION
Here we report evaluation results for occlusion rate of main trunk and tributaries of GSV using ultrasound scan after varicose veins treatment with RFA. In this research we explored relationship between the occlusion rate and recurrence of varicose veins.

PAPER A6
PILOT STUDY OF THE USE OF CYANOACRYLATE IN THE TREATMENT OF VARICOSE VEINS

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BACKGROUND
The treatment of varicose vein disease has changed significantly over the past decade. Endovenous ablation, especially using thermal methods, has become the new norm. However, it is often associated with patient discomfort during tumescent infiltration and the ablative procedure. The non-thermal, non-tumescent (NTNT) techniques are believed to be more advantageous as they eliminate these potential adverse events. In this study, the use of a new cyanoacrylate compound (Variclose vein sealing system, Biolas®, Ankara, Turkey) for the treatment of varicose vein disease is assessed.

METHODS
Patients with symptomatic varicose veins were invited to have their truncal saphenous incompetence treated using the new cyanoacrylate glue. Intraoperatively, their level of discomfort was assessed using a visual analogue scale (VAS) and categorical scale. Patients also had their clinical status (using VCSS) and quality of life (EQ-VAS, EQ-5D, AVVQ and CIVIQ-14) assessed at baseline and post-operative at 1 month as well as duplex scan at one month.

RESULTS
Eighteen patients were recruited, eleven (61%) were females and the mean age was 52 years (range: 28 to 91 years). The mean maximum pain score using the VAS was 36.8mm (standard deviation: ±8mm) and 4.2 (±0.8) on the categorical number scale. The mean average discomfort was 26.8 ± 6mm (VAS) and 3.2 ± 0.6 (categorical number scale). There was a marginal improvement in the clinical scores (VCSS improving from 3.5 to 3.4). Improvements were also noted in the generic quality of life scores (+3.9 in the EQ-VAS and +0.012 in the EQ-5D). The AVVQ improved from 16.6 to 10.3 (-6.3) and CIVIQ-14 (from 31.4 to 20.0; -11.4). All veins were occluded at the end of the procedure, but to date at the one month follow-up, one of the veins had opened up (this patient was on long-term anti-coagulation which was not stopped peri-operatively). There were no serious adverse effects.

CONCLUSION
These preliminary results suggest that endovenous ablation using cyanoacrylate was safe and results in what appears promising improvement in quality of life similar to that seen in studies evaluating thermal techniques along with a low degree of intra-operative pain. Larger comparative studies are, however, required to confirm its effectiveness.
A MORE COMFORTABLE METHOD FOR TUMESCENT ANESTHESIA

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ABSTRACT

Some papers have described significant patient discomfort with current methods of tumescent anesthesia. We describe our method which usually only requires three 27 gauge skin wheals through which the rest of the anesthesia is delivered. The initial injection site is at the proposed catheter introducer site, which is normally near the proximal calf (C). After the guide wire is introduced, another skin wheal is made at the distal thigh (DT) and at the proximal thigh (PT). After the catheter is introduced and positioned, chilled tumescent anesthesia is placed around the catheter in both a proximal and distal direction from the previously placed skin wheals in the thigh (DT and PT) and proximally from the calf skin wheal (C) using either a 5 inch spinal needle or a special blunt tipped trocar with side discharge openings. This normally requires 5 or 10 minutes. Proximal temperature at the saphenofemoral junction is usually recorded at 20°C (using the radiofrequency catheter).

This method significantly reduces patient discomfort and requires no additional time than the standard method of tumescent anesthesia delivery, which uses multiple needle sticks with the spinal needle and only in the proximal direction.

We have had excellent patient satisfaction in over 2000 cases.

CLINICAL TRIAL COMPARING ENDOVENOUS RADIOFREQUENCY THERMAL ABLATION AND CROSSECTOMY WITH STRIPPING FOR GREAT SAPHENOUS VARICOSE VEINS

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PURPOSE

Endovenous radiofrequency thermal ablation (ERFA) have comparable efficacy to surgery, but was associated with an earlier return to normal activity and improved quality of life. The aim: analysis of treatment results in patients with lower limb varicose disease (LLVD) according to a comparative study of short-term (<1 year) outcomes of VNUS Closure FAST™ ERFA and crossectomy with stripping of great saphenous vein (GSV).

METHODS

157 patients with LLVD (C2-C6) were under observation. Basic group was introduced by ERFA in 82 patients (139 limbs), 19(23.2%) males, 63(76.8%) females (aged 20-75 years). Diameter of GSV-7.9±1.7 mm. C2-9(6.5%), C3-41(29.5%), C4-58(41.7%), C5-14(10.1%), C6-17(12.2%). Coronary heart disease (CHD) was noted in 4(4.9%), arterial hypertension (AH)-22(26.8%), diabetes mellitus (DM)-6(9.8%), obesity-10(12.2%), peripheral arterial disease (PAD)-4(4.9%) patients. Tumescent anesthesia was used in 100%. Control group (75 patients-94 limbs) was performed by crossectomy, stripping of GSV, ligation of incompetent perforating veins (ICPVs) by spinal anesthesia. 23(30.7%) males and 52(69.3%) females (aged 18-69 years). C2-8(8.5%), C3-30(31.9%), C4-46(48.9%), C5-6(6.4%), C6-4(4.3%). CHD-4(5.3%), AH-10(13.3%), DM-7(9.3%), obesity-3(4%) PAD-2(2.8%) cases. Quality of life determined by the Aberdeen Varicose Vein Severity Score (AVVSS), clinical improvement - by Venous Clinical Severity Score (VCSS).

RESULTS

Comparison of results show more regression of chronic venous disease attributes (edema, skin changes, ulcers) in ERFA group: 94% vers. 62% (p<0.05). Return to habitual activity: ERFA-1.0±1.6, crossectomy with stripping-7.4±1.8 days. In basic group the average pre-procedure VVCS was 7.8±2.6 (range 2-18), AVVSS-23.1±6.2 (range 10-48), in control-7.2±2.5 (range 2-16) and 22.7±6.4 (range 11-44) resp., post-procedure decrease (during 1 year) was 0.28±0.64 vers. 1.1±0.44 and 3.1±2.2 vers. 5.7±1.8 resp. (p<0.05). Pain scores on visual analogue scale (on 0 to 100 mm) for first 14 days after treatment show the best dynamics of pain decrease in ERFA group: 100% vers. 62% (p<0.01). Complications in basic and control group: neuritis-0% vers. 4.4%, infection-0% vers. 7.1%, inguinial neovascularization-0% vers. 5.6%, deep vein thrombosis-0% vers. 2.4%, skin burn-1.4% vers. 0%, paresthesia-4.9% vers. 13.2%, skin pigmentation-5.4% vers. 14.2%, hematoma-0% vers. 11.1%. GSV ablation with reduction of ICPVs in basic and control group: 96% vers. 78% resp. (p<0.08).

CONCLUSION

ERFA in comparison crossectomy with stripping of GSV demonstrated early return to habitual activity on 1-2 day, painless post-procedure period, regression of CVI symptoms, improvement of life quality and better cosmetic effect.
SCLEROTHERAPY AND VEIN GLUING COMBINED AS A SINGLE PROCEDURE FOR SAPHENOUS VEINS

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INSTRUCTION

Gluing of veins is discussed as being superior to thermo-occlusive methods or sclerotherapy. However, approved gluing methods use continuous placement of larger amounts of aggressive and hardly resorbable cyanoacrylate (VenaSeal, VariClose). The effect depends on external manual compression. These drawbacks could be overcome by a new modality which combines pointwise gluing and catheter sclerotherapy (ScleroGlue® project).

MATERIALS AND METHODS

18 patients (11f, 7 m, 42 – 69 y) with GSV insufficiency and diameters of 8 - 24 mm Ø (mean: 9.4 mm) underwent combined sclerotherapy (Aethoxysklerol 1%, 1+4 with air) and gluing, using a double catheter access including the VariClose gluing system (Biolas Inc.). Besides the GSV, auxiliary associated targets (refluxive side branches > 6 mm Ø, n = 22, and perforator veins > 6 mm Ø, n = 12) were included in the treatment plan. First sclerofoam was applied with a PTFE catheter (PhleboCath, 1.9/2.3 mm Ø) during withdrawal and then cyanoacrylate glue was injected during the spasm phase of the target vein while continuously withdrawing the gluing catheter (1.2/1.6 mm Ø). No manual compression was applied. There were no external compression media (stockings, bandages) used after the treatment.

RESULTS

All cases (18/18) showed immediate saphenous occlusion and elimination of reflux. All auxiliary targets (34/34) were successfully reached by microfoam and occluded. The amount of glue used for saphenous veins was 10 - 33 mg (mean: 19.7 mg) per cm vein. Procedural time from first puncture to patient mobilization was 12 – 23 min. (mean: 16.5).

CONCLUSION

The ScleroGlue® method seems to provide reliable denaturation and effective GSV gluing, achieved without any external compression and using low quantities of glue. The procedure is very fast and requires no anesthesia except for the puncture site. Further studies will be performed 2016 with non-acrylate glues.
ENDOVENOUS LASER TREATMENT WITH 940 NM: ESTIMATION OF EFFICIENCY FOR ABLATION OF SAPHENOUS VEINS

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PURPOSE
In the last decade, minimally invasive techniques, such as endovenous laser ablation (EVLA), radiofrequency ablation, and ultrasound guided foam sclerotherapy displayed noteworthy features including shortening hospitalization, early ambulant activity, and excellent cosmetic results. EVLA is an improved method to treat varicose great (GSV) and small saphenous veins (SSV) with a high satisfactory rate. The aim: to examine the effectiveness and feasibility of EVLA in patients with lower limb varicose disease.

METHODS
461 patients (543 limbs) with lower limb varicose disease (LLVD), including primary and secondary (after deep vein thrombosis-DVT) varices, treated with EVLA (940 nm) were retrospectively studied. There were 376(81.6%) females and 85(18.4%) males (aged from 21 to 83, median-43.6±15.5 years). C2-C3 was noted in 367(79.6%), C4-C6 was observed in 94(20.4%) cases. EVLA of GSV was used in all patients (100%), SSV- in 72(15.6%) persons. EVLA of incompetent perforating veins (ICPVs) was used in 76 cases (above knee-4, below knee-72) at 53(11.5%) patients. EVLA with foam sclerotherapy of incompetent varicose inflows by ultrasound controlled was used in 96 cases. Clinical improvement was determined by Venous Clinical Severity Score (VCSS).

RESULTS
GSV and SSV ablation with reduction of ICPVs up to 3 years period were observed in 532(98.0%) limbs. There were 11(2.0%) cases of proximal GSV recanalization, including partial recanalization in 8(1.5%) and full recanalization in 3(0.5%) legs, which were successfully treated by re-EVLA and sclerotherapy. The cause of GSV recanalization was the development of obesity and incorrect use of compression bandaging. Complications: paresthesia-4.9%, skin pigmentation-5.6%, paravasal hematoma-4.5%, skin burn-0.6%. There were no cases of DVT and pulmonary embolism. The average VCSS score was 3.6±1.2 at 3 days, 2.1±1.6 at 3 months, 1.2±1.8 at 6 months, 0.9±1.2 at 12 months compared with 5.2±2.0 preoperatively.

CONCLUSION
EVLA (940 nm) procedure has high immediate technical success, a short recovery time, and good cosmetic results. EVLA is an efficient treatment method for the treatment of the varicose GSV and SSV, achieving good short-term and long-term results, improves quality of life in patients with lower limb varicose disease.

THE NEW STEAM ABLATION OF SAPHENOUS VEIN

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BACKGROUND
Cosmetically better, less invasive and more successful minimal invasive treatment are essential in the treatment of varicose veins. Nowadays, endovenous Laser and RF are most commonly preferred thermal ablation treatment for incompetent saphenous veins. The steam ablation is a new thermal ablation method and it works by heating the vein wall with steam of 120 celsius.

OBJECTIVES
The aim of this study was to analyse the clinical results of the steam ablation in patients with saphenous vein insufficiency.

PATIENTS AND METHODS
Since February 2013 to January 2016, forty-eight endovenous steam ablation procedures were performed in patients with incompetent saphenous vein (23-80 years old, 21 female and 9 male, C2-4EpAsPr, 43VSM, 4VSP, 1Accessory S). The technique of steam ablation (CERMAVEIN, France) is the same as Laser and RF ablation. After cannulation of the GSV, the steam ablation catheter is positioned 2-3 cm distal from the SFJ. Ultrasound-guided tumescent anesthesia was applied along the length of GSV to reduce the pain, to cool the peri-venous tissues and to decrease the vein diameter. The steam dose delivered to the vein is 3-6/10uses per centimeter as the catheter is withdrawn in 1 centimeter increments. Before and after steam ablation, venous clinical severity score (VCSS) and Quality of life (QoL) assessment were recorded. All data of patients has been collected prospectively. Outcomes were studied retrospectively.

RESULTS
Fortyine steam ablation procedures were successfully completed in thirty patient. All veins were obliterated with steam at the postoperative first day and one month follow-up. VCSS and QoL assessment improved from 3.81 to 0.27 and 42 to 22, respectively, at the one month follow-up. No relevant complication except minimal bruising and one entry point burn were reported.

CONCLUSION
The new endovenous steam ablation is an effective and safe thermal ablation technique in the treatment of saphenous vein.
PAPER B1
PREDICTION OF RADIOFREQUENCY ABLATION TREATMENT OUTCOME USING PLETHYSMOGRAPHY IN GREAT SAPHENOUS VEIN INSUFFICIENCY
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OBJECTIVES
To evaluate whether the outcome of radiofrequency ablation treatment of great saphenous vein insufficiency may be predicted using strain-gauge plethysmography with selective occlusion of the superficial venous system.

DESIGN
Experimental study

MATERIALS AND METHODS
17 patients (20 limbs) underwent endovenous radiofrequency ablation treatment for great saphenous vein insufficiency (C in CEAP, C2 - C5). Colour duplex (CDU) and strain-gauge plethysmography were performed with selective occlusion of superficial veins below the knee before and after radiofrequency ablation. Selective occlusion was validated in a control group (C-group) of 12 patients (14 legs) with ascending phlebography. In the radiofrequency ablation group time to reach 50% and 90% (T50, T90) of complete venous restitution was measured as well as relative maximal reflux rates (%EV/min). The methodological error and coefficient of variation (CV) were assessed.

RESULTS
19 of 20 legs had complete postoperative obliteration using CDU and refilling times were improved after RFA (T50 11±3 vs. 19±3 sec, P<0.0001; T90 27±5 vs. 47±6 sec, P<0.001). The methodological error as well as CV for T50 was 4 sec and 16 % respectively.

With SGP, equivalence between preoperative superficial occlusion and postoperative baseline measurements was achieved in 15 of 17 legs for T50 and 12 of 17 for T90 (C50, T90) of complete venous restitution was measured as well as relative maximal reflux rates (%EV/min). In the group (C-group) of 12 patients (14 legs) with ascending phlebography. In the radiofrequency ablation group time to reach 50% and 90% (T50, T90) of complete venous restitution was measured as well as relative maximal reflux rates (%EV/min). The methodological error and coefficient of variation (CV) were assessed.

CONCLUSION
Strain-gauge plethysmography with standardized superficial venous occlusion seems to be a reliable method for identifying venous reflux. It may be useful to predict results of successful radiofrequency ablation treatment.

PAPER B2
ISOLATED EVLA AS A FIRST STAGE TREATMENT OF VARICOSE VEINS
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AIM
To demonstrate the outcome and side effects after isolated endovenous laser ablation (EVLA) of refluxing great saphenous vein (GSV) with a 1470 nm diode laser (Ceralas E 1470 nm, biolitec) and the 2ring radial fiber (ELVeS Radial 2ring™, biolitec).

METHODS
Between November 2011 and March 2013, 150 legs in 150 consecutive patients where treated by EVLA for GSV incompetence using a 2ring radial fiber. All patients were randomized into 3 groups. Group A had no postoperative compression. Group B used postoperative compression with a thigh-length graduated compression stocking (23-32 mmHg) for 7 days and Group C used the same kind of stocking for 28 days postoperatively. Investigations where performed clinically and by duplex ultrasound by an experienced phlebologist prior to intervention (Screening visit), day of intervention (D0) and at follow-up visits at day 7 (D7) and 28 (D28) after the procedure for side effects, complications and occlusion.

RESULTS
At day 28 4 patients were lost to follow-up, 2 in group A and 2 in group B. All GSVs showed complete occlusion without early recurrence of reflux within 28 days. The pain score in group A reduced from 1.4 on the day of the intervention to a mean of 0.9 at days 1-7 and to 0.5 at days 8-28. In group B and C the corresponding values were 1.0, 0.4, 0.4 and 1.5, 0.6, 0.4. The difference between groups A and B for D1-7 was significant (p<0.001). The resolution of varicose vein tributaries without additional treatment was observed 76%, 69% and 88% in groups A to C. No significant differences between the groups appeared for return to normal activity, return to work, satisfaction with the treatment, leg circumference and for the improvement in VCSS and Villalta scales.

CONCLUSION
EVLA of GSV with a radially emitting 2ring laser fiber using a 1470 nm diode laser is a safe and efficient treatment option. In comparison with other studies using a bare fiber and lower wavelengths postoperative pain and ecchymoses are reduced. Wearing a compression stocking after the procedure only slightly reduces pain within the first week and couldn’t be obligatory. Isolated EVLA as the first stage of treatment lowers operation trauma, possible postoperative complications and restrictions. Two staged strategy for varicose vein treatment can be recommended.
EARLY OUTCOMES AFTER RADIOFREQUENCY ABLATION AND MECHANOCHEMICAL ABLATION IN THE TREATMENT OF GREAT SAPHENOUS VEIN INCOMPETENCE

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OBJECTIVES
Thermal ablation treatment of varicose veins has become the first line treatment for superficial venous insufficiency. Never, non-thermal ablation treatments have potential benefits for patient acceptability and decreased risk of heat-related complications, including peri-procedural pain and nerve injury. This study evaluated intra-procedural and post-procedural pain and quality of life after radiofrequency ablation (RFA) and mechanochemical ablation (MOCA) for great saphenous vein (GSV) incompetence.

METHODS
Fifty-two patients with unilateral GSV incompetence were treated with either RFA or MOCA in this prospective observational study. Pain experienced during the procedure and for the first 7 post-procedural days was recorded on a 100mm validated visual analogue scale (VAS). Clinical assessment was measured by clinical-etiology-anatomy-pathophysiology (CEAP) class and venous clinical severity score (VCSS). Patients had duplex ultrasound assessment of the leg and also completed general (Short Form 36, EuroQol) and disease-specific (Aberdeen Varicose Vein Questionnaire) quality of life questionnaires before and at 1, 6 weeks after treatment.

RESULTS
52 patients were treated, 26 in each group, and all completed their 6-week follow-up. There were no significant differences between the groups regarding demographic data, CEAP classification, preoperative VCSS, and initial AVVQ. Patients treated with MOCA reported significantly less intra-procedural pain than patients treated with RFA (25.3 ± 18.6 mm vs 38.3 ± 25.8 mm; p = 0.04). At each of the first 3 post-procedural days, the difference between the groups was statistically significant. There was no significant difference between groups for return to normal activities (RFA median 2, IQR 1-7 vs MOCA median 3, IQR 1-7, p = 0.8). At 6 weeks, patients in both groups perceived an improved change in health status and disease-specific quality of life, and technically showed similar occlusion rates.

CONCLUSION
MOCA is associated with significantly less intra-procedural and post-procedural pain compared with RFA in the treatment of GSV incompetence. Both MOCA and RFA are related to improvement in clinical severity and general and disease-specific quality of life.
A SPECIFICALLY DESIGNED ACQUATIC EXERCISE PROTOCOL TO REDUCE CHRONIC LOWER LIMB OEDEMA

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AIMS
Despite the fact that muscle pump activation is known to positively impact chronic lower limb edema, objective measurements of standardized exercises for venous-lymphatic rehab are lacking. Moreover, water protocols are becoming extremely popular, claiming to promote also venous drainage, even if not enriched by evidence based-data. The aim of this investigation is to determine the objective effectiveness of an addressed physical activity exploiting the advantages of an aquatic environment.

METHODS
Thirty-two lower limbs of 16 patients affected by bilateral chronic leg swelling were included (12 females, 4 males). All the patients underwent a protocol of 5 sessions of physical exercises specifically conceived inside a pool.

RESULTS
One week after the end of the protocol water plethysmography reported a significant reduction in all lower limbs volume, with an average reduction of 303.13 ± 69.72ml (p=0.00002) and of 334.38 ± 62.50ml (p=0.000003) in the right and left leg respectively.

No significant differences were reported regarding the venous hemodynamics. The anatomical relationship between lymphatic collectors and veins plays an important role for preventing lymphatic complications during venous surgery and in treating combined lymphatic and venous insufficiency.

CONCLUSION
A specifically designed aquatic protocol is able to positively and objectively impact chronic leg swelling, offering a first line rehab for this medical condition.
PAPER B7
LYMPHA TECHNIQUE TO PREVENT EXTREMITY LYMPHEDEMA FOLLOWING CANCER TREATMENT
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PURPOSE
Inguinofemoral lymphadenectomy carries a high risk of lower limb lymphedema. Following our experience in preventing arm lymphedema after breast cancer treatment, we assessed the feasibility of performing multiple lymphatic-venous anastomoses after inguinofemoral lymph node completion (LYMPHA technique) and the possible benefit of LYMPHA for preventing lymphedema.

METHODS
Between February, 2011 and October, 2014, 11 patients with vulvar cancer and 16 patients with melanoma of the trunk requiring inguinofemoral lymphadenectomy underwent lymph node dissection and LYMPHA technique. Blue dye was injected into the thigh 10 minutes prior to surgery. Lymphatics afferent to the blue nodes were used to perform multiple lymphatic-venous anastomoses (MLVA) using a collateral branch of the great saphenous vein.

RESULTS
The mean age of patients in the vulvar cancer group was 52 years (range 48 to 75 years). In the melanoma group, there were 7 men and 9 women with a mean age of 41 years (range 37 to 56 years). Five patients with vulvar cancer underwent bilateral inguinofemoral lymphadenectomy, while the other 6 patients with vulvar cancer and all 16 patients with melanoma of the trunk had unilateral node dissection. All patients were treated by the LYMPHA technique. No lymphocele or infectious complications occurred. Transient lower extremity edema occurred in 1 melanoma patient (6.25 %) which resolved after 2 months, and permanent lower extremity edema occurred in 1 patient (9 %) with vulvar cancer.

CONCLUSION
Besides having previously showed positive results in avoiding arm lymphedema following breast cancer treatment, the LYMPHA technique appears feasible, safe and effective also for the prevention of lower limb lymphedema, thereby improving the patient’s quality of life and decreasing healthcare costs.

PAPER B8
OUR SIMPLIFIED SEPS (SUBFASCIAL ENDOoscopic PERFORATOR SURGERY) HAVE CONSIDERABLE ADVANTAGE IN TREATMENT OF SEVERE REFRACtORY STASIS ULCERS
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PURPOSE
As a new method for treating refractory leg ulcer cases with chronic venous insufficiency due to IPVs (insufficient perforating veins), SEPS (Subfascial Endoscopic Perforating Vein Surgery) was proposed in the 1990s in Europe and America. But now PAPs (percutaneous ablation of perforators) and sclerotherapy are provided instead. The major reasons of a decline of SEPS are as follows; the first reason is technical difficulties of SEPS itself, and the second reason is that SEPS cannot be done as a day surgery. However, it is well known that SEPS can handle IPVs surely, and long-term results are superior and less complications of maneuver than the other methods. Our SEPS procedures have been so simplified over the last 12 years by Japanese society for endoscopic therapy of venous disease (JSEPS), and the most important key point was to change the access port. The name of this port is Endo TIP® cannula, which was developed by the Karl Stortz Company in Germany. All of the installments, which we use for our Two Port System SEPS, were originally designed for laparoscopic cholecystectomy operation. Another point was the increase of choice for energy devices such as ultrasonic coagulation and cutting devices or vessel sealing system to sever IPVs. Consequently, SEPS was authorized as the national advanced medical treatment by the Japanese Ministry of Health, Labor and Welfare in May, 2009 for the chronic venous insufficiency of C4b-C6 patients, according to the CEAP classification. From April 2014, SEPS has been fully covered by the national insurance system in Japan.

The aim of this study is to show our “simplified SEPS” operation procedures, which point out the differences from the original method by Peter Gloviczki and to report about the present condition of IPV (insufficient Perforating Vein) treatments in Japan.
**PAPER B9**

**MEASUREMENT OF BLOOD FLOW IN THE DEEP VEINS OF THE LOWER LIMB USING THE GEKO™ NEUROMUSCULAR ELECTROSTIMULATION DEVICE**

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**OBJECTIVES**

A previous study using electrical stimulation of the common peroneal nerve (geko™) to activate the venous muscle pump measured blood flow in both the femoral and popliteal veins. Increased blood flow by as much as 70% was demonstrated in the femoral vein. Such an increase is assumed to be as a result of an increase in venous flow from the deep calf veins; however this has yet to be confirmed. The aim of this study was to conduct direct measurements to determine velocity and flow increase in individual calf veins in healthy individuals.

**METHODS**

This was a single centre open-label intra-subject healthy volunteer comparison of blood flow in the peroneal, posterior tibial and gastrocnemial veins with and without the geko™ disposable device. The device was applied on the skin over the peroneal nerve in 18 volunteers. Peak venous velocity (PV) and ejected volume per individual stimulus (VS) and volume flow (VF) was determined using ultrasound.

**RESULTS**

Peak velocity (PV) increased by 216% in the peroneal vein, 112% in the posterior tibial vein and 137% in the gastrocnemial vein (P < 0.001). Ejected volume per stimulus increased by 113% in the peroneal vein, 38% in the posterior tibial vein and 50% in the gastrocnemial vein (P<0.003). Associated volume flows during the muscle contraction were increased by 36%, 25% and 17% respectively (P = 0.05).

**CONCLUSION**

This is the first time that neuromuscular electrostimulation (NMES) has been shown to be an effective method of increasing flow in the axial deep veins of the calf. Although stimulation was via the peroneal nerve, significant increases in velocity and volume flow occurred in all three axial calf veins. Enhancements of both blood velocity and volume flow are key factors in the prevention of venous stasis and ultimately deep vein thrombosis (DVT). Further studies are justified to determine the efficacy of the device in the prevention of DVT.

**PAPER B10**

**RECURRENT PULMONARY EMBOLI FROM POPLITEAL VEIN ANEURYSM**

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**INTRODUCTION**

We report a rare case of recurrent massive pulmonary emboli arising from a popliteal vein aneurysm, which was subsequently surgically repaired with good results to 2 years.

**CASE**

A 23 year old female was referred to the vascular service with recurrent bilateral pulmonary emboli. Four years earlier she had suffered a cardiac arrest from a pulmonary saddle embolus and had received thrombolysis. Prior to this she had become non-compliant with warfarin. Thrombophilia screen was normal. Lower limb imaging was performed revealing a 45 x 27 mm saccular left popliteal aneurysm with no thrombus in the sac. The patient was offered repair of the aneurysm or lifelong anticoagulation. She underwent surgical repair via a medial popliteal approach 3 months after her second pulmonary embolism. The aneurysm was tangentially resected and a lateral venorrhaphy performed. She was anticoagulated with rivaroxaban indefinitely and a class II compression stocking applied for 3 months. She remains free of symptoms 2 years follow up and has recently run the London marathon.

**LITERATURE REVIEW**

More than 100 cases of popliteal vein aneurysms have been reported since 1976(Bergqvist et al., 2006), with presentation ranging from incidental to limb swelling(Spanos and Giannoukas, 2015), deep venous thrombosis(Gillman et al., 2008), pulmonary embolism or paradoxical embolic stroke(Manthey et al., 1994). The incidence is approximately 0.2% of those undergoing venous duplex imaging(Labropoulos et al., 1996). The largest aneurysm reported measured 9cm in diameter (van der Voort and De Maeseneer, 2012)and morphology can be either saccular or fusiform. Conventional indications for repair are thromboembolism, thrombus in the sac, or limb swelling. Open surgical repair for saccular aneurysms involves clamping across the neck of the aneurysm, rejecting the sac and a lateral suture repair. Fusiform aneurysms are treated with either resection and end to end anastomosis or ligation and vein bypass. There are no reports of endovascular repair. There is one report of recurrence (Gasparis et al., 2010)and one report of recurrent pulmonary embolism after repair(Donald and Edwards, 1982).

**LEARNING POINTS**

Patients with unexplained pulmonary emboli commonly receive imaging of their chest, abdomen and pelvis. We highlight the need to perform a venous duplex of both lower limbs if the embolic source remains cryptogenic. Popliteal vein aneurysm can also mimic a Baker’s cyst, requiring Doppler for differentiation. Surgical repair has a good short term safety profile. The long-term results of surgery and the optimum duration of post-operative anticoagulation are unknown.

**FIGURE**

Anterior-posterior view of ascending venogram showing saccular popliteal vein.
PAPER C1
THE RESULTS OF TREATMENT OF PATIENTS WITH INFERIOR VENA CAVA THROMBOSIS
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OBJECTIVES
To determine the main causes, frequency of thromboembolic events (PE), results of diagnostic and treatment of thrombosis of the inferior vena cava (IVC).

Methods. A retrospective study in 22 inpatient patients with thrombosis of the IVC was carried out. The average age of twenty two patients who took part in the study was 53±2 years. In cases of suspicion for a deep vein thrombosis (DVT) in the IVC system its causes, character, localization, prevalence and complications were determined by ultrasonography and phlebocavigraphy. IVC thrombosis management included anticoagulants, elastic compression, phlebotonics in all cases. Four (18.2%) patients with embologenic thrombosis had undergone surgical procedures – thrombectomy from the IVC with its plication (2 cases), isolated IVC plication, cava-filter implantation.

RESULTS
In twenty one of 22 patients the IVC thrombosis was associated with iliofemoral DVT due to malignancy (35%), inflammatory diseases (10%), surgery and parturition (10%). In two (10%) cases, there was a DVT of the lower extremities in history. In six (30%) cases causes of IVC thrombosis has not been established. Infrarenal, renal and suprarenal IVC thrombosis was diagnosed in 19 (86%), 2 (9%) and 1 (5%) patients respectively. Thrombus flotation in IVC with 2-8 cm head length was identified in 4 cases. PE occurred in three (13.6%) patients. Such complication as cava-filter thrombosis occurred in one case.

CONCLUSION
In all patients with proximal DVT of the lower extremities IVC involvement in the thrombotic process should be suspected. Early diagnosis and proper treatment IVC thrombosis can guarantee a favorable outcome of the disease and prevent complications. It’s necessary to continue an evaluating of elastic compression and phlebotonics in rehabilitation of patients after IVC thrombosis.

PAPER C2
RETROSPECTIVE ANALYSIS OF DEEP VEIN THROMBOSIS INCIDENCE IN PATIENTS WITH SUPERFICIAL VEIN THROMBOSIS OF THE LOWER EXTREMITIES
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OBJECTIVES
To evaluate the occurrence of deep vein thrombosis (DVT) in patients with superficial vein thrombosis (SVT).

METHODS
A retrospective study in patients with sonographically proven SVT was carried out in Minsk center of vascular surgery. 93 patients with superficial vein thrombosis were enrolled. Every patient underwent color-coded duplex sonography of both lower extremities at the beginning of the study. Important risk factors (e.g., history of thromboembolic events, recent immobilization, active malignant disease, and the use of hormonal drugs) were investigated.

RESULTS
In 18% of our patients, a concomitant, mostly asymptomatic DVT was found. In all of these patients, the DVT occurred in the affected leg. DVT of contralateral leg was not observed. The common femoral vein was most commonly involved (58.8%). In all patients with DVT, the SVT was located on the lower leg.

CONCLUSION
Superficial vein thrombosis is not a lifethreatening disease, but the risk of concomitant DVT cannot be ignored. Color-coded duplex sonography should be performed in patients with SVT to rule out DVT. Patient’s age and body mass index are not statistically proven risk factors.
OBJECTIVES
To investigate the apparent risk factors for post-thrombotic disease (PTD) and long-term outcomes of standard non-surgical treatment of patients with lower extremity deep vein thrombosis (DVT).

METHODS
From 137 patients who had DVT, 48 patients participated in the study. The median age was 59.1 (34-76) years. DVT of proximal localization was detected in 18 (37.5%) of respondents, distal – in 30 (62.5%). To identify PTD Villalta scale was used. Depending on the patients compliance to recommendations they were distributed as follows: eight (16.7%) patients followed full outpatient recommendations, partially – 27 (56.3%), did not follow the recommendations – 13 (27%).

RESULTS
PTD has developed in 30 (62.5%) of 48 patients with DVT. In 7 (23%) patients PTD characterized by severe gravity, in 3 (10%) cases with the formation of trophic ulcers. At the age of 60 years and older PTD occurred in 17 (70.8%) cases. In the group of patients with DVT of proximal localization rate of PTD was 72.2%, with distal – 56.7%. From 30 patients with PTD overweight or obesity were found in 24 (80%) patients. In the group of patients with a history of DVT suffering <3 years PTD has been noted in 47%, from 3 to 6 years – 64%, >6 years – 89%. With regular use of elastic compression PTD was observed in 60% patients, without use of – 33%.

CONCLUSION
The incidence of PTD among patients with DVT history has no tendency to decrease. Patients with DVT of proximal localization is in greater risk of PTD. Elimination of risk factors (overweight, varicose veins), prevention of DVT and its recurrence – the most appropriate PTD preventive strategy.

BACKGROUND AND OBJECTIVES
Insertion of inferior vena cava (IVC) filter is a well-known procedure to safeguard lethal pulmonary embolism (PE). The most common indication for its usage is in patients with proximal deep venous thrombosis (DVT) and contra-indication for anti-coagulation.

There are other indications used in our local trust but no clear-cut guidelines on who should be the decision makers and its application for other indications. Recommendations in the literature guide the clinicians on how and when to use it. This study reviewed the practice in our hospital to assess if we follow these guidelines.

METHODS
This retrospective study reviewed all the patients who had IVC filter insertion over a two-year period between January 2014 and January 2016. Patients’ demographics and comorbidities were collected. The indications for insertion, type of filter, retrieval data, complications and the grade and clinical specialty of the team who requested the procedure were all reviewed. The British committee for standards hematology’s guidelines was used as a reference for usage of IVC filter.

RESULTS
50 patients (1:1 male to female, with average age of 64 years) were referred to have IVC filter insertion. One patient failed the procedure due to the load of thrombus in the IVC. Various medical and surgical (1:1) specialties had referred patients to interventional radiologists (IR). 34(69%) of the inserted filters were temporary and only less than half 16(47%) were retrieved. 3(9%) of these filters had a failed retrieval. 22% of these filters were inserted for prophylaxis against PE in patients without acute DVT. 25% of patients had their IVC filter inserted against current BHS guidance. One (2%) patient had acute desaturation and bradycardia during the insertion of the filter but settled after the procedure.

CONCLUSION
IVC filters are relatively simple and safe device for protection against PE. A significant number of patients had their filters inserted outside current guidance. Literatures recommend removal of IVC filter as soon as there are no more contraindications for anti-coagulation. Our Hospital lacked clear guidelines for IVC filter usage and retrieval, which led to a number of patients requiring unnecessary long-term anticoagulation. We are in the process of developing guidelines and will be followed by prospective monitoring.
CATHETER DIRECTED THROMBOLYSIS FOR ACUTE Ilio-Femoral Deep Vein Thrombosis: A RETROSPECTIVE SINGLE CENTRE OBSERVATIONAL STUDY

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INTRODUCTION
The National Institute for Health and Care Excellence (NICE) recommends that catheter directed thrombolysis (CDT) should be considered in selected patients with extensive acute ilio-femoral deep venous thrombosis (DVT). We present our early experience with CDT in acute ilio-femoral DVT.

METHODS
This was a retrospective, single center, cohort observational study on patients treated with CDT between September 2012 and December 2015. The main outcome measures were treatment success defined as a patent ilio-femoral segment on imaging.

RESULTS
30 patients were referred for consideration of CDT following a diagnosis of unilateral acute ilio-femoral DVT. Ten patients did not receive CDT. Four were treated conservatively (1 declined CDT, 3 were deemed unsuitable: one with congenital inferior vena cava (IVC) occlusion, one with resistance to warfarin and low molecular weight heparin and one with an iatrogenic injury to the left common iliac vein after rectopexy) and six underwent open surgical thrombectomy (five because thrombolysis was contraindicated and one with thrombus extending into the IVC). 20 patients (10 women and 10 men) were treated with CDT, ten had thrombolysis alone and ten had CDT with stenting. The median age was 50 (range 16 to 68) years. Initial diagnosis was by ultrasound, which was followed by CT venography and pulmonary angiography for procedural planning. All patients underwent unilateral intervention and the left lower limb was involved in fourteen (70%). An inferior vena cava filter was used in all patients. No major bleeding or symptomatic pulmonary emboli occurred. CDT failed to recanalise the ilio-femoral segment in two patients. All successfully treated patients reported symptomatic relief. The median inpatient stay was 11 (range 1 - 44) days. At a median follow up of 6 (1-12) months 12 (66%) patients had patent ilio-femoral segments confirmed on ultrasound. Three patients suffered re-occlusion of the iliac venous system and three others were lost to follow up.

CONCLUSION
CDT with selective adjunctive stenting is an effective method of treating acute ilio-femoral DVT.

RECURRENT THROMBOSIS SECONDARY TO HEPARIN-INDUCED THROMBOCYTOPENIA FOLLOWING VENOUS RECANALISATION AND STENTING

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CASE
A 37 year-old male presented with exertional left swelling and pain. He had been treated with Rivaroxaban for an acute left leg DVT and PE 6 months previously. Magnetic resonance venography demonstrated occlusion of the left common iliac vein and external iliac vein. Venous recanalisation and stenting was performed with placement of two Veniti Vici stents (14 x 120 mm and 14 x 90 mm). Post procedure he was anticoagulated with treatment dose Dalteparin. At day 2, US Doppler demonstrated complete thrombosis of the stented segment with extension into the common femoral vein and superficial femoral vein. He underwent thromboaspiration followed by catheter-directed lysis (Alteplase 1 mg/ml). After 8 hours of thrombolysis check venography demonstrated good thrombus clearance but a residual common femoral vein stenosis, therefore the stent was extended to the profunda origin with a 14 x 90 mm Veniti Vici stent. Completion venography demonstrated excellent flow. Post procedure the patient was placed on a heparin infusion aiming for an APTT of 90–120, given the early extensive thrombosis. It was noted that obtaining an adequately therapeutic APTT was difficult. After two days the patient reported leg swelling and US again demonstrated stent thrombosis. CT confirmed no evidence of stent collapse or constraint. Mechanical thrombectomy was performed using the Aspirex device and catheter-directed lysis (Alteplase 1 mg/hr) was recommenced. At this stage it was noted that the patient’s platelet count was dropping, following consultation with hematology and further investigations, type 2 heparin-induced thrombocytopenia (HIT) was diagnosed. All heparin was discontinued. Check venography demonstrated widely patent stents with excellent flow. Following discontinuation of thrombolysis, anticoagulation was changed to Fondaparinux for 14 days and the patient was then converted to Warfarin. No further episodes of thrombosis occurred. A 6-week US demonstrated widely patent stents with no evidence of thrombosis. At last review (5 months post procedure), the patient was completely asymptomatic and is currently in training for an iron-man event.

CONCLUSION
Heparin-induced thrombocytopenia is rare, <1%. This case highlights the need to consider the diagnosis in patients with recurrent stent thrombosis. In retrospect, the difficulty obtaining an adequately therapeutic APTT allied with the recurrent thrombosis suggested a hematological cause. The case underlines the importance of a multi-disciplinary team when performing endovascular venous intervention.
PAPER C7
VENOUS THROMBOEMBOLISM RISK ASSESSMENT MODEL PROPOSAL FOR SURGICAL PATIENTS
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2 Vascular Diagnostic and Screening Centre, Nicosia, Cyprus and Imperial College, London, UK

BACKGROUND AND AIM
Incidence of postoperative venous thromboembolism (VTE) in Asia is slightly lower than in European countries but its incidence is increasing in the recent literature. It is approaching the level reported in European patients not receiving prophylaxis in the early 1970s. Common risk factors reported to be associated with postoperative VTE in Europe have been compiled and analysed with the aim of producing a preoperative VTE risk scoring system for Asians.

METHODS
Using a database of 676 surgical patients screened with I-125 Fibrinogen and confirmed with venography in the absence of VTE prophylaxis in St Mary’s Hospital, London from 1971 to 1972, the predictive power of these common risk factors was tested. Logistic regression analysis was used to calculate odds ratios (OR) to determine VTE independent predictors and their individual power.

RESULTS
The incidences of deep venous thrombosis (DVT) and pulmonary embolism (PE) were 26.7% and 2.1% respectively. The significant independent predictors for DVT were age more than 60 years (OR=8.91; 2.08 – 38.06, p<0.01), previous history of DVT (OR= 5.53; 2.36 – 12.97, p<0.01), varicose veins (OR=2.79; 1.42 – 5.47, p<0.01), major operation (OR=2.37; 1.15 – 4.89, p<0.05), postoperative infection (OR=1.66; 1.01 – 2.73, p<0.05), premedication with opiates (OR=1.80; 1.11 – 2.93, p<0.05), hip replacement (OR=3.03; 1.18 – 7.82, p<0.05), malignancy (OR=1.64; 1.04 – 2.58, p<0.05) and obesity (OR=1.60; 1.01 – 2.55, p<0.05). DVT was the most significant predictor for PE (OR=32.52; 4.12 – 256.86, p<0.01).

CONCLUSION
On the basis of these significant DVT predictors, the following scoring system is proposed:

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age more than 60</td>
<td>3</td>
</tr>
<tr>
<td>Previous history of DVT</td>
<td>3</td>
</tr>
<tr>
<td>Hip replacement</td>
<td>2</td>
</tr>
<tr>
<td>Varicose veins</td>
<td>1</td>
</tr>
<tr>
<td>Major operation</td>
<td>1</td>
</tr>
<tr>
<td>Premedication with opiates</td>
<td>1</td>
</tr>
<tr>
<td>Postoperative infection</td>
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<td>Malignancy</td>
<td>1</td>
</tr>
<tr>
<td>Obesity</td>
<td>1</td>
</tr>
</tbody>
</table>

This proposed VTE risk scoring system needs to be validated in a prospective study in Asian patients.

PAPER C8
A TRI-BLOCK POLYMER VEPOLOXAMER-188 POTENTIATES ACTION OF HEPARIN AND TISSUE PLASMINOGEN ACTIVATOR IN ANIMAL MODELS
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AIM
Vepoloxamer 188 (P-188) is a synthetic, organic compound that acts as a surfactant by binding hydrophobic pockets in the circulation. The P-188 has been shown to have anti-adhesive properties within the circulation and is currently being tested in patients with microcirculatory insufficiency such as in sickle cell disease. The aim of this study was to investigate drug interactions between P-188 and heparin and tissue plasminogen activator (tPA).

MATERIALS AND METHODS
The following tests were performed:

1. Bleeding Time (BT): Under general anesthesia, saline or P-188 (25 mg/kg) was administered to Sprague Dawley Rats via a tail vein. After 5 minutes, the rats were treated with either saline, low dose heparin (LDH) 125 μg/mg, or high dose heparin (HDH) 250 μg/kg (n=6 each group). After 5 minutes, the distal 2 mm of the tail was cut and the bleeding time (BT) was measured. Statistical analysis was performed using the t-test.

2. Clot Lysis (CL): Mosquito forceps were used to induce thrombosis in the internal jugular vein via intermittent jugular clamping. Once thrombosis was confirmed by continuous wave Doppler, either saline or P-188 (25 mg/kg) was administered via the tail vein. After 5 minutes, the rats were treated with saline, low dose tPA (LD tPA) 500 μg/mg or high dose tPA (HD tPA) 1 mg/kg (n=6 each group). The time to clot lysis (detection of flow with Doppler) was recorded. No flow up to 15 minutes was recorded as no lysis. Statistical analysis was performed using the Fisher’s exact test.

RESULTS
The P-188 increased the tail BT by itself and with LDH (Table 1). With HDH, P-188 had no additive effects. The P-188 alone did not influence the CL (Table 2). However, with LD tPA, it tended to facilitate CL (p =0.06). With HD tPA, P-188 did not have an effect on CL.

CONCLUSION
The P-188 potentiates the action of heparin and tPA at low doses. The P-188 has potential as an anti-thrombotic and thrombolytic adjunct. As an adjunct, P-188 may improve drug efficacy and may decrease adverse effects and cost. More studies need to be done in order to fully elucidate the drug interaction between P-188 and both heparin and tPA.
PAPER C9
INFLAMMATORY AND METABOLIC SYNDROME BIOMARKER ANALYSIS OF VASCULAR OUTCOMES IN END-STAGE RENAL DISEASE
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AIM
The relevance of some biomarkers of inflammation and metabolic syndrome to vascular outcomes in end stage renal disease (ESRD) is not clear. In order to study these relationships, biochip array technology offers a method to profile the complex plasma biomarkers in the setting of various co-morbid outcomes such as stroke or transient ischemic attack (TIA), acute coronary syndrome (ACS), congestive heart failure (CHF), and coronary artery disease (CAD).

MATERIALS AND METHODS
Plasma samples were collected from 83 ESRD patients (mean age 65) prior to hemodialysis and were profiled using biochips for inflammatory and metabolic biomarker levels. Inflammatory cytokine arrays were used to profile the following: interleukins; IL1a, IL1b, IL2, IL4, IL6, IL8, IL10, vascular endothelial growth factor (VEGF), epidermal growth factor (EGF), interferon gamma (IFNα), tumor necrosis factor alpha (TNFα) and monocyte chemo-attractant protein-1 (MCP1). Metabolic syndrome arrays were used to profile C peptide, ferritin, insulin, leptin, resistin, plasminogen activator inhibitor-1 (PAI-1). A retrospective review was performed in order to group patients based on history of stroke or TIA, ACS, CHF, and CAD.

RESULTS
Of the 83 ESRD patients, 25 (30.1%) were found to have history of stroke/TIA, 14 (16.9%) were found to have history of ACS, 30 (36.1%) were found to have history of CHF and 39 (47.0%) were found to have history of CAD. Stroke/TIA patients were found to have decreased plasma IFNG levels (p=0.042) and elevated plasma resistin, IL1a, and leptin levels (p=0.008, 0.021, 0.026; respectively) when compared to patients without stroke/TIA. The ACS patients were found to have elevated plasma IL6 levels (p=0.040) when compared to those without ACS. The CHF patients were found to have decreased plasma leptin levels (p=0.031) and elevated plasma IL1b levels (p=0.042) when compared to patients without CHF. The CAD patients were found to have elevated plasma IL1a levels (p=0.049) when compared to ESRD patients without CAD.

CONCLUSION
Profiling of multiple inflammatory and metabolic syndrome biomarkers may aid in the risk stratification of ESRD patients for cerebrovascular and cardiovascular disorders. These studies demonstrate that biomarker profiling of vascular co-morbidities in ESRD may provide useful diagnostic and prognostic information in the management of ESRD patients.

PAPER C10
NEW INSIGHTS INTO STRUCTURE AND PATHOGENETIC REACTIVITY OF THE HUMAN SAPHENOUS VEIN WALL: FOCUS ON PERICYTES AND INFLUENCE OF VENOTROPIC FLAVONOIDS
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BACKGROUND
Extreme perfusion conditions in human leg veins (occasional high hydrostatic pressures; drainage of the intramural vasa venarum (VV) in the parent vein; venous reflux into VV, particularly during valve incompetence), endanger these vessels by inflammation, thrombosis and varicosities/sclerosis. Accumulating evidence implies that these illnesses are initiated and fostered by pathogenetic reactivity in especially the venous intima and the abundant VV. Although incompletely understood, this behaviour—together with platelet and PMN-activities—plays a key role in the progression of unfavourable hydrodynamic conditions to inflammatory and thrombotic processes. We conducted detailed cell-biological investigations of human saphenous vein bypass remnants (HSV) with the aim of a) elucidating this phenomenon further at the cell-biological level and b) collecting more evidence for the specific venotropic action of quercetin- and kaempferol-glucuronide (QG, KG; main flavonols in a red vine leaf extract (Antistax®)).

METHODS
Serial sectioning of HSV; selective histological staining methods and techniques (bright field-, fluorescence-, scanning- and transmission electron microscopy); identification, isolation and culture of endothelial cells and pericytes; determination of tissue factor (TF) concentration (activation of factor X) or prothrombinase assembly (PA, formation of thrombin) in the presence and absence of 10-100 μM QG or KG; histological examination of microvessel tightness via leakage of fluorescent plasma proteins; histological demonstration of accumulated flavonoids through their autofluorescence in confocal fluorescent light.

RESULTS
Common to healthy venous intima and the walls of all VV segments (pre-capillary arteries, capillaries, post-capillary venules) are a tight endothelial sheet (luminal surface) and a loose pericyte network (abluminal surface). The unique endothelium of the venules within the VV-system is contractile and rapidly becomes leaky in presence of inflammatory mediators. Whilst the antithrombotic endothelia of the intima and VV are characterized by the permanent absence of TF and PA, intimal and microvascular pericytes, in contrast, express enormous concentrations of TF and recruit additional amounts (up to the 25-fold concentration within 10 h) during preincubation with serum (29±6 pmol coagulation factor Xa·min-1·10-6 cells; n=28). Moreover, they readily assemble the prothrombinase complex (9±2 nmol thrombin · min-1·10-6 cells; n=28). This strongly proinflammatory and prothrombotic behaviour is almost abolished in presence of 100 μM QG and KG, which accumulate specifically in the intima and the VV walls during incubation (1 h). Additionally, these flavonoids prevent excessive leakage of plasma proteins from inflamed VV-venules in presence of simultaneously activated platelets and PMN.

CONCLUSION
The endothelial cells and pericytes of the intima and VV-system play a central role in the recruitment to and activation of zymogens of the hemostasis systems in the vein wall. Accumulated QG and KG intervene specifically and efficiently.
VENOUS INTIMA RECONSTRUCTED IN VITRO: INFLUENCE OF SIMULTANEOUSLY ACTIVATED PLATELETS AND PMN IN ABSENCE AND PRESENCE OF POLYPHENOLS FROM RED WINE LEAVES

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2 Paracelsus University Nuremberg, Department of Cardiac Surgery

BACKGROUND

Most venous disorders originate from pathogenetic processes within the thin intimal wall layer of the veins. This intima consists of a luminal sheet of tightly coupled endothelial cells (EC) with well-organized junctional complexes and a subendothelial pericyte network embedded in dense extracellular matrix. In case of a tight endothelial layer (healthy vein), its anti-aggregatory, anti-coagulatory, anti-inflammatory and pro-fibrinolytic activities keep the blood fluid and free of inflammatory mediators. Any event that induces breakdown of this endothelial barrier (e.g. pathophysiological contraction of EC or mechanical lesions), however, results in direct contact between the blood and the pericytes. The latter then act as virtual antagonists of the EC and become the hotspots of inflammatory, pro-thrombotic and sclerotic reactions, especially in cooperation with platelets and PMN. To elucidate such intimal barrier function in more detail and to test the efficacy of venotropic polyphenols, we developed a new in-vitro intima model by cultivating intimal EC and pericytes in a sandwich style. Methods: Establishment of pure EC and pericyte cell fractions from proteolytically isolated venous intima preparations, co-culture of both in Transwell cultures. Measurement of hydraulic conductivity (Lp) and the selectivity index for albumin permeability (SIAlb) using a specially developed filtration system. Specific histological staining methods and sensitive microscopic techniques. Microcinematographic demonstration of endothelial contraction in the presence of standardized supernatants of simultaneously activated platelets and PMN (SiPMN).

RESULTS

The customized intima exhibited typical histological and functional features in vitro. During incubation in plasma-like solution, Lp and SIAlb were 2.6±0.3·10⁻⁷ cm·s⁻¹·cmH₂O⁻¹ and 0.9±0.03, respectively. In contrast, incubation in Dulbecco culture medium supplemented by fetal calf serum (20 vol%), includes inflammatory mediators] changed these values to 1.4±0.1·10⁻⁶ cm·s⁻¹·cmH₂O⁻¹ and 0.5±0.04. SP+PMN induced rapid and maximal opening of EC-clefts and a maximal Lp within 30 min (Lp≈1.4±0.1·10⁻⁶ cm·s⁻¹·cmH₂O⁻¹ and 0.5±0.04. SP+PMN induced rapid and maximal opening of EC-clefts and a maximal Lp within 30 min (Lp≈1.4±0.1·10⁻⁶ cm·s⁻¹·cmH₂O⁻¹ and 0.5±0.04.

CONCLUSION

With the use of this new in-vitro model of the venous intima, systematic, detailed studies on the regulation of its barrier properties now appear feasible. Naturally occurring polyphenols, like the flavonols QG and KG in red wine leaf extracts, appear as potent anti-inflammatory drugs, which protect the intima and maintain their barrier function, thus obviating thrombotic and sclerotic processes.
PAPER C13

WOUND CIRCULATION SPEEDS UP IMMEDIATELY AFTER A HYPERBARIC OXYGEN TREATMENT

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1 Chalmers University of Technology, Gothenburg, Sweden
2 Stanford University School of Medicine, Stanford, USA

OBJECTIVES

It has been established that hyperbaric oxygen therapy (HBOT) can facilitate wound healing in diabetic lower extremity ulcers. However, it is still an open question what the underlying physiological mechanisms are. We will here focus on the possible impact HBOT has on the tissue perfusion and vascular flow rates.

METHODS

The above question was addressed by analysing the immediate effects of HBOT on the microvasculature of chronic wounds as assessed by fluorescent angiography. Patients underwent fluorescent angiography at four different time points: immediately prior and immediately after the first and second HBOT treatments. Photo imaging with infrared camera began concurrently with the initiation of the IC-Green™ injection and lasted for 150 seconds. The output data consisted of videos that were studied using image analysis tools. The wound edge was outlined manually by hand to create a mask for the wound bed, our main region of interest (ROI). The second ROI we analysed was the peri-wound defined algorithmically from the wound edge. We generated a time dependent intensity function by capturing the mean pixel intensities. Once we obtained this function we defined a number of features from it: the maximum intensity, the maximum inflow and outflow rates as well as four characteristic times measured from the injection time of the fluorescent. These times are: the first detection of a signal, when the intensity increased the fastest, when the max intensity occurred, the times when the intensity decreased the fastest.

RESULTS

In this pilot study, we demonstrated that HBOT results in an immediate increased vascular flow both in the wound and in the peri-wound.

CONCLUSION

It was shown in this pilot study that HBOT has an immediate impact on the flow rates in the vascular system in and in the vicinity of a wound. This finding in itself raises new questions on the underlying physiological reasons for this process, that could in turn generate new studies, in vivo and in vitro, to give a better understanding how and why the HBOT treatment affects the wound healing process from a fluid dynamic view point. Eventually, insights in these processes might better explain the benefit of HBOT and may expand the repertoire of diseases that may serve to benefit from this modality.

PAPER C14

IN VIVO AND IN VITRO EFFECTS OF RUSCUS EXTRACT ARE MEDIATED BY MUSCARINIC RECEPTORS

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1 Centre de Recherches Pierre Fabre, Castres, France
2 Laboratory for Clinical and Experimental Research on Vascular Biology (BioVasc), Biomedical Center, State University of Rio de Janeiro, Rio de Janeiro, Brazil

BACKGROUND

The venotonic properties of Ruscus aculeatus (butcher’s broom) are well established, but its mechanism of action is not completely understood. The goal of the present study was to evaluate a possible contribution of muscarinic receptors and therefore we have tested Ruscus extract in vitro for its binding and functional properties at recombinant muscarinic receptor subtypes and in vivo for its impact on the microvasculature in the hamster cheek pouch preparation.

MATERIALS AND METHODS

Ruscus extract was tested in competition binding experiments at recombinant human muscarinic receptors, heterologously expressed in CHO cells. Its activity was further evaluated in cellular assays measuring Ca2+ liberation and AP-1 reporter gene activation. The impact of muscarinic blockade on prolonged Ruscus treatment outcome was evaluated in the hamster cheek pouch microcirculation examining several parameters, namely macromolecular permeability increase induced by either histamine or ischemia/reperfusion (I/R), mean arteriolar and venular diameters, functional capillary density and leukocyte rolling and sticking induced by I/R.

RESULTS

Ruscus extract exhibited affinities to muscarinic receptor subtypes in a range of 50-100 μg/ml. It further behaved as an efficacious partial agonist at human recombinant M1 and M3 receptors for Ca2+ liberation, confirmed in an AP-1 reporter gene assay. In the hamster cheek pouch model, topical application of the muscarinic antagonist atropine completely or partially blocked Ruscus extract-induced reductions of (1) histamine and ischemia/reperfusion (I/R), mean arteriolar and venular diameters, functional capillary density and leukocyte rolling and sticking induced by I/R.

CONCLUSION

Our results show that Ruscus extract binds to different subtypes of muscarinic receptors and behaves as an efficacious partial agonist particularly of M1 and M3 receptor subtypes. In vivo, we have confirmed its anti-inflammatory and venotonic effects which were at least partially mediated via muscarinic receptors. Our findings constitute a new mechanism of action for this product, previously demonstrated to have adrenergic properties.
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VenaSeal™
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- edCOPS multicenter single arm study
- Feasibility single-center study

ClosureFast™
- Randomized multicenter post market evidence
- Several single and multicenter studies including 5 year follow-up
- Eight years of published clinical evidence

References:
2. Internal data on file.

ClosureFast long-term data is shown for perspective only and not a head-to-head comparison with the VeClose trial.

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CHAIR, DIDACTIC SESSION 1: SULODEXIDE
Andrew Nicolaides, Emeritus Professor of Vascular Surgery, University of Nicosia Medical School, Cyprus

BIOGRAPHY
Professor Andrew Nicolaides was the Professor of Vascular Surgery at the Imperial College School of Medicine and Consultant Vascular Surgeon at St Mary’s Hospital from 1983–2000. He is now Honorary Professor of Surgery at St George’s University of London/University of Nicosia Medical School, Nicosia, Cyprus. His research is now directed towards the genetic risk factors for cardiovascular disease, identification of individuals at risk and the development of effective methods of prevention of stroke and chronic venous disease. He is Past-President of the International Union of Angiology and Past-President of the Section of Measurement in Medicine of the Royal Society of Medicine.

CHAIR, DIDACTIC SESSION 1: SULODEXIDE
Giuseppe Andreozzi Maria, Professor Emeritus of Angiology, University Hospital of Padua, Italy

BIOGRAPHY
Giuseppe Andreozzi Maria lives in Italy, between Padua and Catania. He is Professor Emeritus of Angiology. He has taught as a Professor at Post-Graduate School in Medical Angiology and Vascular Surgery, University of Padua (1998-2010) and as Associate Professor of Angiology at the Faculty of Medicine and the Post-Graduate School in Medical Angiology, Cardiology and Vascular Surgery of University of Catania (1982-1997).

In November 2010, Professor Andreozzi received the Seal of the City of Padua for the incessant work as Chief of Angiology and great generosity, as President of the Italian Society for Angiology and Vascular Medicine, reserved for severely affected populations by the flood 2010.

He was Director of Angiology Care Unit of University Hospital of Padua (1997-2010) and Director of Angiology Care Unit of Garibaldi Hospital in Catania.

The main fields of research focused on the peripheral arterial disease, and chronic venous disease, which has contributed to the definition of the pathophysiology, clinical, diagnostic and treatment. Particularly original contributions on the use of exercise in the AOP, and its effects on endothelial function.

In the venous field, in the eighties, he has defined the early stages of chronic venous disease characterized by the presence of venous symptoms without anatomical changes (symptoms without varicose veins), proposing the definition of constitutional hypotonic phlebopathy.

He is the author of more than 400 (86 in the new index PubMed), over 10 chapters on vascular medicine textbooks, and 3 textbooks of Angiology and Vascular Medicine.

CHAIR, DIDACTIC SESSION 2: ACUTE DVT
Athanasios Giannoukas, Professor of Vascular Surgery, Faculty of Medicine, University of Thessaly, Greece

BIOGRAPHY
• Medical School, University of Ioannina
• Residency in General Surgery, University of Ioannina Medical School, Greece
• Qualified General Surgeon, Greek National Board Certificate
• Qualified Vascular Surgeon, Greek National Board Certificate
• Fellowship European Board Vascular Surgery (fEBVS) Lisbon, Portugal

FELLOWSHIP AND CLINICAL EXPERIENCE
• Vascular Clinical Research Fellow, St Mary’s Hospital, Imperial College Medical School, London, UK
• Registrar in Vascular and General Surgery, Department of Surgery, Colchester General Hospital, Essex, UK
• Lecturer/Senior Registrar in Vascular and General Surgery, Professorial Surgical Unit, St Bartholomew’s Hospital, London, UK
• Senior Vascular Clinical Research Fellow (part - time), St Mary’s Hospital, Imperial College Medical School, London, UK
• Registrar in Vascular Surgery, Department of Vascular Surgery, University Hospital of Crete, Greece (05/1995-07/2003),
• Consultant Vascular Surgeon, The Sheffield Vascular Institute, Sheffield Teaching Hospitals NHS Foundation Trust, Northern General Hospital, Sheffield, UK
• Consultant Vascular Surgeon, Department of Vascular and General Surgery, Norfolk and Norwich University Hospital NHS Trust, Norwich, UK
• Visiting Professor, Department of Surgery, Division of Vascular Surgery, Loyola University Medical Center, Maywood, Illinois, USA
• Vascular Surgeon, Heraklion, Crete (private sector)
• Associate Professor of Vascular Surgery, University of Thessaly, Greece Chairman, Department of Vascular Surgery, University of Thessaly, Greece
• Professor of Vascular Surgery, University of Thessaly, Greece
WHAT IS THE BEST TECHNIQUE OF SCLEROTHERAPY FOR TELANGIECTASIAE AND RETICULAR VARICES?
Albert-Adrien Ramelet, Department of Dermatology, Inselspital, University of Bern, Switzerland

NOMINATIONS
- Dr Honoris Causa, University of Bern, Switzerland (2012)
- Past President and Honorary Member, French-Speaking Dermatologists Association
- Past President and Honorary Member, Swiss Society of Dermatology
- Past President and Honorary President, Swiss Society of Phlebology
- Past President, Union of Swiss Vascular Societies
- Past Vice-President and Honorary Member, UIP (Union Internationale de Phlébologie)
- Honorary Affiliate Member, American Society for Dermatologic Surgery
- Honorary Member, Arbeitsgemeinschaft Dermatologische Angiologie (DDG)
- Honorary Member, French Society of Phlebology
- Honorary Member, Czech Society of Phlebology
- Honorary Member, German Society of Phlebology
- Emeritus Fellow, Australasian College of Phlebology

AWARDS
- ILDS (International League of Dermatological Societies) Certificate of Appreciation
- Australasian College of Phlebology, Award of Excellence for Pioneering Innovations in Phlebology
- Silver Pin (Officer) of the EADV (European Academy of Dermatology and Venereology)
- Ratschow Memorial Medal, Curatorium Angiologiae Internationalis, Deutsche Gesellschaft für Phlebologie

PUBLICATIONS
- 4 books and several editions
- More than 200 hundred book chapters and publications
- Invention of Ramelet’s phlebectomy books

ABSTRACT
Telangiectasiae and reticular varices (defined as C1 in the CEAP classification) are a common complaint in Phlebology, affecting up to 60% in an adult population.

A thorough clinical and echographic evaluation is mandatory to detect underlying reflux and feeding veins, which should be eliminated in a first step. Then, or concomitantly, mainly sclerotherapy, phlebectomy or laser may treat telangiectasiae and reticular veins. In refractory cases, some further techniques such as curettage and START therapy (Sclerotherapy in Tumescent Anaesthesia of Reticular Veins and Telangiectasiae) may be considered.

KEY REFERENCES
EVIDENCE FOR THE USE OF COMPRESSION AFTER SCLEROTHERAPY FOR TELANGIECTASIA AND FOR SAPHENOUS TRUCKS
Claudine Hamel-Desnos, MD, French Society of Phlebology, Caen, France

ABSTRACT
Sclerotherapy is a safe and efficient technique in the treatment of varicose veins of the lower limbs. Historically, three main techniques, founded on different tactics, have been used:

- The bottom-up technique (Swiss technique, by Sigg): which consists of treating distally first then proximally
- The Irish technique (Fegan technique), attaching primary importance to perforating veins
- The top-down technique (French technique by Tournay): which consists of treating the highest or largest leakage points first, including the proximal segment of the saphenous trunks. The tributary veins are not initially treated, and are only injected at a later time if necessary.

For the first two methods, a post-sclerotherapy compression is systematically applied and is considered to play a key role. For Tournay’s technique, which provokes fewer inflammations than the two other techniques, the compression only plays an accessory role and is not commonly applied.

Nowadays, the Tournay’s technique is the reference technique for sclerotherapy and the Swiss and Irish techniques have currently been abandoned. However some practitioners have kept their habits of applying post-sclerotherapy compression, even when using the Tournay’s technique.

OBJECTIVES
We have analysed the literature to identify evidence in favour of compression after sclerotherapy.

RESULTS
In the literature, we have only found two randomised controlled trials comparing sclerotherapy with or without compression: One targets C1 sclerotherapy (Kern et al.) and the other concerns sclerotherapy of the saphenous trunks (Hamel-Desnos et al.). Kern’s study found that female patients who wore compression stockings (23-32mmHg) for three weeks had enhanced vessel disappearance following liquid sclerotherapy of lateral thigh telangiectasias compared with the no-compression group. However, there was no difference with respect to side effects and patient satisfaction. In this trial, no information was provided regarding compliance to wear compression by patients.

In the Hamel-Desnos study, sixty patients with incompetent great or small saphenous veins underwent ultrasound-guided foam sclerotherapy and were randomised into two groups: the compression group (15-20mmHg stockings were worn for three weeks) and the no compression group. No difference was found between both groups when comparing efficacy, side effects, satisfaction scores, symptoms and QOL. The mean number of days for which compression was worn in the compression group, was 11 out of 21 days.

CONCLUSION
There is a lack of evidence on the benefits for the patient to wear compression stockings after sclerotherapy.

COMPLICATIONS OF FOAM AND LIQUID SCLEROTHERAPY AND HOW TO AVOID THEM
Jean-Jérôme Guex, MD, Specialist in Vascular Medicine, Nice, France

BIOGRAPHY
Dr Jean-Jérôme Guex is a graduate of the Medical schools of Paris and Nice. He is a Private Practitioner in Nice (France), registered also in Italy and Switzerland. He is specialist in Vascular Medicine, Fellow of the American College of Phlebology and Emeritus Fellow of the Australasian College of Phlebology. He is a Visiting Professor of the Pontificia Universidad Católica Argentina de Buenos Aires.

Dr Guex’s research focuses on treatment of varicose disease, sclerotherapy safety, post-thrombotic disease, patient-reported outcomes, burden of disease and quality of life assessment and vein-active drugs.

He is the author of more than 110 journal articles (40 of which are medline indexed), 3 books, and 16 book chapters. He is presently President of the Multidisciplinary Joint Committee Phlebology of the European Union of Medical Specialists, past president of the Société Française de Phlébologie, Member of the Board of Directors of the American College of Phlebology and Treasurer of the SFP and SFP foundation.

Dr Guex is International Editor of Journal of Dermatologic Surgery, Member of the Editorial Board of Phlebology, Venous Times, Veins Magazine, International Angiology, and Phlébologie-Annales Vasculaires. He is also a reviewer for several journals including Phlebology, European Journal of Vascular and Endovascular Surgery, British Journal of Surgery, Phlébologie-Annales Vasculaires, Angiologie, Venous Digest and Journal of Endovascular Surgery.

OBJECTIVES
To describe and determine the incidence of adverse reactions associated with sclerotherapy and sclerosing agents and to explain their mechanisms.

MATERIAL AND METHODS
Review of current literature and personal research with special attention to the French registry of 12,173 sclerotherapy sessions.

RESULTS
The nature and incidence of side effects of sclerosing agents vary according to the injection form: liquid or foam. They must be differentiated from complications of the method which are less specific and often related to an inappropriate technique. Severe adverse events are rare, especially in relation to the billions with injections administered.

CONCLUSION
Complications and side effects of sclerotherapy are uncommon; the method has demonstrated its safety, with 0.22% of complications per session with liquid sclerosant and 0.58% with foamed sclerosant, but several points remain unclear, and more research is needed. Patient’s informed consent can be better obtained thanks to the current knowledge herein summarized.
UPDATE OF CYCLO 3 FORT GLOBAL MODE OF ACTION AND EFFICACY
Francois-André Allaert, PR and Head, Medical Evaluation, Chair for Health Claim Substantiation, University of Burgundy, Dijon, France

QUALIFICATIONS
• Doctor in Medicine (Dijon)
• PhD in Pharmacy (Limoges)
• PhD in Biostatistics
• Master in Health Economics (Paris VII)
• Angiology qualification
• Specialist of public health qualification

ABSTRACT
This communication focuses on Ruscus aculeatus extract (Ruscus extract) and its combination with hesperidin methyl chalcone (HMC) and ascorbic acid (AA), which have been safely and effectively used in CVD treatment for more than 50 years in some European countries. It presents the effects of that drug on veins and on venous hypertension, its effect on microcirculation and on lymphatics demonstrated by preclinical studies and the clinical evidence issued from clinical trials supporting its use to relieve the symptoms of venous disease. In addition to its venoconstrictive effect on veins and lymphatic, its pharmacological action is on the microcirculation impairment caused by venous hypertension that is at the heart of the pathophysiological mechanism underlying venous disease.

DOCTOR, WHEN CAN I FLY?
Sarah Onida, Clinical Research Fellow in Vascular Surgery, Imperial College London, UK

BIOGRAPHY
Sarah Onida is a Vascular Surgical Research Fellow, currently completing a PhD on the epidemiology and mechanistic processes/biomarkers involved in the development of chronic venous disease. In addition to her main PhD topic, she has an interest in numerous aspects of venous disease, including quality of life measures, venous thromboembolic disease and the management of superficial venous pathology. She has authored numerous publications on these subjects, including contributing to the European Guidelines on the management of chronic venous disease.

Sarah also obtained a National Institute for Health and Care Excellence (NICE) scholarship to assess and improve NICE guideline implementation in England and to examine regional trends and differences in the delivery of care for patients with varicose veins.

ABSTRACT
Varicose vein surgery is increasingly a local anaesthetic day surgery procedure, resulting in limited interference with patient activities compared to high ligation and stripping. Because of this, patients are keen on returning to their day-to-day activities, including travel, whether for work or leisure.

The question ‘Doctor, when can I fly?’ is often heard on the day of procedure. The learned advice given to patients frequently relies on clinician preference, as opposed to evidence-based practice, reflecting the highly limited nature of the existing evidence. Surgery and hospitalisation have been reported as risk factors for the development of venous thromboembolism (VTE) however, the weight of these has shifted with the development of minimally invasive, day surgery techniques.

Air travel has been linked to an increased risk of venous thromboembolic (VTE) disease. Factors such as immobility leading to venous stasis, crowded conditions, fixed positioning, a hypoxic and hypobaric environment, in addition to individual patient risk factors, have been purported as possible mechanisms for the development of VTE, although the evidence is heterogeneous.

In this talk, the existing evidence regarding VTE risk will be presented, with the aim of developing a more standardised approach to answer the question: ‘Doctor, when can I fly?’

KEY REFERENCES
VENOUS SYMPTOMS AND THE SYMVEIN CONSENSUS
Michel Perrin, Vascular Surgery, Lyon, France

BIOGRAPHY
Dr Michel Perrin got his medical degree at the University of Lyon, France in 1957. After completing his internship, he continued with residency in General Surgery at the University of Lyon where he got his degree in Surgery in 1986. His subspecialty training focused on vascular surgery and he was qualified in vascular surgery in 1988. He was appointed Associate Professor in Grenoble in 1996.


He was in charge of writing and updating the French Encyclopedie Medico Chirurgicale Fascicules on venous disease. His work has resulted in 340 original articles, 85 book chapters, 11 books and more than 500 presentations. He was President of the French societies of Vascular Surgery and Phlebology, founding President of the European venous Forum in 2000 and member of the editorial board of Phlebologie-Annales Vasculaires, Journal des Maladies Vasculaires, Phlebology and European Journal of Vascular and Endovascular Surgery

INTRODUCTION
Venous symptoms remain a challenge to deal with for multiple reasons. First, few books or articles in the literature dedicated to chronic venous disorders give a precise description and definition of the so-called “venous symptoms”. In addition, a consensus document on symptoms is difficult to prepare because the symptoms are not pathognomonic. This point increases the difficulty for attributing them to a venous etiology or cause, knowing that all classes of venous disorders from clinical, etiological, anatomical, and pathophysiological (CEAP) classes C0 to C6 may be associated with the same venous symptoms. Second, there is a poor correlation between the presence of venous symptoms and signs, and between symptoms and routine instrumental investigations, particularly with duplex scanning. Furthermore, the pathophysiology of venous symptoms is not well established, particularly in C0s patients.

AIM OF THE CONSENSUS
To write a document on venous symptoms, including a definition and description, how to attribute leg symptoms to venous disorders, describe their possible physiopathology, how to score these symptoms, and what investigations may help for diagnosis and management.

METHODS
An international group of angiologists, phlebologists, dermatologists, neurologists, epidemiologists and vascular surgeons (23 in total) was constituted at the EVF meeting in Paris in June 2014 and divided into 5 groups. In each group, a coordinator, a writer, and a reviewer were nominated, knowing that all the members of the group revised and elaborated the text via email exchanges. A second meeting took place at the EVF meeting in St Petersburg in June 2015. The provisional document was read and commented on by all attendees for one full day.

RESULTS
The final document has been accepted for publication in International Angiology and will appear in 2016.

CONCLUSION
The publication of such a document aims to:
- Develop a new document specifically dedicated to symptoms,
- Determine if symptoms in absence of venous sign is an indicator for future occurrence of chronic venous disease,
- Stimulate the development of new investigations allowing the identification of anomalies in C0s patients
- Measure the benefits for patients in terms of symptoms relief after treatment
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