
evf
In collaboration with the
Hungarian Venous Forum
SCIENTIFIC PROGRAMME
AND BOOK OF ABSTRACTS
Virtual
21st
Annual Meeting of the
European Venous Forum
24-26 June 2021
www.europeanvenousforum.org

21st Meeting of the European Venous Forum

in collaboration with the Hungarian Venous Forum

Virtual

24-26 June, 2021

SCIENTIFIC PROGRAMME AND BOOK OF ABSTRACTS

EDIZIONI MINERVA MEDICA

Under the auspices of:

International Union of Angiology
Union Internationale de Phlébologie – International Union of Phlebology

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WELCOME MESSAGE

Welcome to the Virtual EVF, 24-26 June 2021

On behalf of the European Venous Forum (EVF) and Hungarian Venous Forum (HVF), we cordially invite you to our 21st EVF annual meeting. We were hoping to meet you in person in Budapest, but alas, because of the need to ensure your safety, that of your patients, colleagues and family, the EVF and the HVF had no option but to adopt the style of a virtual meeting.
Despite the virtual format, we are aiming to retain the main characteristic of this conference that provides a platform for presentation and discussion of all that is new in plebology. Thanks to technological advances we have been able to introduce several innovations that we hope will induce the feeling of 'real-life' person to person event as closely as possible and introduce new networking possibilities.

We had over 100 abstracts, from which the highest scoring 30 have been selected for oral presentations. "Poster" presentations will be in the form of 4-minute power-point videos. There will be the traditional key-note lecture and a joint session of the American and European Venous Forums demonstrating the increased activity between the two societies; also a session organised by the Balkan Venous Forum, didactic sessions organised jointly by the EVF and HVF, industry sessions and exhibition stands which will contain many interactive features including chats and virtual meetings with industry members.

This is one of the largest meetings devoted to phlebology and via our virtual platform you should be able to meet our experts, fellow delegates and Exhibitors at the sessions, video chat and network using the dedicated 'networking' rooms. CME certificates will be available for all attending delegates.

Never, since the birth of EVF 20 years ago, has an annual meeting proved so challenging. This marks a new chapter in its history. It will be different, but with change we evolve. We can now extend our knowledge and expertise to a wider audience across the globe.

The EVF meetings are successful because of the people that work all year round to make it happen, the faculty and our industry partners who provide their unstinting support. But ultimately what makes the meetings special is you, the loyal EVF members and delegates who attend.

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EVF President and Local Chairman

Andrew Nicolaides
Chairman of the EVF Board

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President, European Venous Forum

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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
17th Meeting, 7-9 July 2016	London, UK	Andrew Bradbury
18th Meeting, 29 June – 1 July 2017	Porto, Portugal	Armando Mansilha
19th Meeting, 28-30 June 2018	Athens, Greece	Athanasios Giannoukas
20th Meeting, 25-27 June 2019	Zurich, Switzerland	Dominik Heim

EUROPEAN VENOUS FOUNDATION

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

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CONGRESS INFORMATION

CONGRESS DATES AND TIMES

Thursday 24 June, Friday 25 June, Saturday 26 June 2021

REGISTRATION

EVF Member	£ 450
Physiain in Training	£ 350
Non EVF Member	£ 550
AVF Member	£ 460

Registration Fee includes:
- Admission to all areas of the virtual platform e.g. scientific presentations, exhibition area
- All congress material on site
- Access to Networking facilities
- Certificate of attendance with CME credits
- Access to recordings for one year
- VAT as applicable

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 upon completion of the Evaluation Form. CME points are also available for sessions viewed up to three months after the congress.

ACCREDITATION

Has been accredited by the European Accreditation Council for Continuing Medical Education (EACCME®) for a maximum of 18 European CME credits (ECMEC®s).

CHANGES

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

SCIENTIFIC PROGRAMME OVERVIEW

Welcome to the 21st EVF annual Virtual meeting. We had hoped to meet you in person in Budapest, but alas, as with so many other meetings, the EVF and the Hungarian Venous Forum had no option but to adopt the style of a virtual meeting.

We hope that the virtual format of the meeting retains the characteristics of our annual conference and that that it will induce a feeling on a 'live' meeting. This year there are 28 abstract (oral) presentations, selected from over 100 submitted abstracts, 4 didactic sessions organised by the Hungarian Venous Forum, Baltic Venous Forum and the American Venous Forum and 3 industry sessions. We have 27 poster presentations and this year, each poster presentation is in the format of a 4 minute video.

The scientific programme commences on Thursday 24 June with two abstract sessions on Venous Thromboembolism, Anticoagulation, Iliac Stenting, Villalta Scale and Thermal ablation, Cyanoacrylate, Sclerotherapy, Haemodynamics. The meeting continues over two and half days with the now well established EVF formula of the annual meetings.

All presentations will be recorded and be available to view by all registered delegates for one year.

Our 2021 EVF Invited Lecturer is Professor Peter Gloviczki. His presentation " The Best Vein Care is the Only Vein Care to be Considered. P Gloviczki (USA) " will take place on Friday 25th June at 12.00

CME credits

The conference has been accredited by the European Accreditation Council for Continuing Medical Education (EACCME®) for a maximum of 18 European CME credits (ECMEC®s). CME credits are awarded for attendance of the live presentations during the 3 days of the conference and for attendance of the recorded presentations viewed within three months of the event. CME credits are also available for sessions viewed up to three months after the meeting.

This is one of the largest meetings devoted to phlebology and via our virtual platform you should be able to meet our experts, fellow delegates and Exhibitors at the sessions, video chat and network using the dedicated 'networking' rooms. CME certificates will be available for all attending delegates.

Awards Ceremony

Join us for the Awards Ceremony on Friday 25 June at 18.00.
The EVF prize and EVF Poster prize winners will be announced as well as the new EVF Honorary members.

SCIENTIFIC PROGRAMME

Oral Presentations

THURSDAY 24 JUNE 2021

08.30-10.30 **Abstract Session 1**
(10 minute presentation, 10 minute discussion)

Venous Thromboembolism, Anticoagulation, Iliac Stenting, Villalta Scale
Chair: I Bihari (Hungary), A Nicolaides (Cyprus)

08.30 1.1 **Comparison of thrombus regression between direct oral anticoagulants and warfarin in patients with deep vein thrombosis**
Yutaka Hosoi, Masao Nunokawa, Yasuaki Mochizuki, Yohei Ichikawa, Hiroshi Sasajima, Keisuke Fujimaki, Hiroshi Kubota
Cardiovascular Surgery, Kyorin University, Tokyo, Japan

08.50 1.2 **Gender-related hemorrhagic events during rivaroxaban therapy**
Olga Dzhenina, Vadim Bogachev
First Phlebological Centre, Moscow, Russia

09.10 1.3 **Sulodexide may accelerate and promote deep vein thrombosis resolution**
Erasto Aldrett Lee[1], Alberto Fratti Munari[2]
[1]Grupo de Atención Vascular Integral, San Luis Potosi, Mexico; [2]Grupo de Atencion Vascular Integral, Mexico City, Mexico

09.30 1.4 **Risk factors and frequency of recurrent long-term venous thromboembolism after superficial vein thrombosis of the lower limbs**
Chrysanthi P Papageorgopoulou, Stavros Kakkos, Konstantinos M Nikolakopoulos, Ioannis Ntouvas, Spyros Papadoulas, Anastasia Kouri, Polyzois Tsantrizos
Vascular Surgery, University Hospital of Patras, Patras, Greece

09.50 1.5 **Quality of life outcomes after iliac vein stenting for chronic deep venous obstruction: a tertiary centre experience using the VEINES-QoL/SYM**
Rachael Morris, Anna Pouncey, Taha Khan, Adam Gwozdz, Belen Quintana, Prakash Saha, Stephen Black
Academic Department of Vascular Surgery, School of Cardiovascular Medicine and Sciences, St Thomas' Hospital, London, UK
Submitted for the EVF Prize

10.10 1.6 **Assessment of the Villalta tool in a population with primary chronic venous disease**
Kemal Kemal, Sarah Onida, Alun Davies
Imperial College London, London, UK
Submitted for the EVF Prize

10.30-11.00 **View ePoster Presentations and visit Virtual Exhibition**

11.00-13.00 **Abstract Session 2**
(10 minute presentation, 10 minute discussion)

Thermal ablation, Cyanoacrylate, Sclerotherapy, Haemodynamics
Chair: D Heim (Switzerland), A Szabo (Hungary)

11.00 2.1 **Randomised clinical trial of mechanochemical ablation versus cyanoacrylate adhesive for the treatment of varicose veins (MOCCA)**
Amjad Belramman[1], Tristan RA Lane[1], Roshan Bootun[1], Tjun Yip Tang[2], Alun H Davies[1]
[1]Imperial College London, London, UK; [2]Singapore General Hospital and Sengkang General Hospital, Singapore, Singapore, Singapore
Submitted for the EVF Prize

11.20 2.2 **Mid-term results of cyanoacrylate embolization for saphenous veins: efficacy, complications and their treatment**
Elena Murzina[1], Kirill Lobastov[2], Astanda Bargandzhiya[2], Leonid Laberko[2], Ivan Popov[3]
[1]Hospital «Neftyanik», Tyumen, Russia; [2]Pirogov Russian National Research Medical University, Moscow, Russia; [3]Tyumen State Medical University, Tyumen, Russia

11.40 2.3 **Mechanisms of damage to the venous wall and dissolving venaseal glue in an animal experiment**
SM Markin[1], KV Mazayshvili[2], RM Agalarov[2], YuA Gustelev[2], YaV Gitsuk[1], AI Mordovin[1]
[1]Federal State Budgetary Health Institution "St. Petersburg Clinical Hospital of the Russian Academy of Sciences, Saint-Petersburg, Russia; [2]Department of Faculty Surgery, Surgical University, Surgut State University, Surgut, Russia
Submitted for the EVF Prize

12.00 2.4 **Efficacy and safety of radiofrequency thermal ablation of great saphenous vein compared to saphenous-femoral junction ligature and stripping. A randomized exploratory study**
Lourdes Reina-Gutierrez[1], Jose Ignacio Fernández-Solares[1], Agnieszka Nowak-Tarnawska[1], Carlos Barrio-Rodriguez[1], Aurora Florez-Gonzalez[1], Ilsem Laime-Alvarez[1], Cristina Fernández-Pérez[2], AlfonsoSanjuanbenito-Reina[3]
[1]Vascular Department, Hospital Central de la Cruz Roja, Madrid, Spain; [2]Epidemiology Unit, Hospital Clinico San Carlos, Madrid, Spain; [3]Grade of Medicine, Autonoma University, Madrid, Spain

12.20 2.5 **The study of systemic hemodynamic disorders in patients with varicose veins and post-thrombotic syndrome**
Igor Suchkov, Roman Kalinin, Nina Mzhavanadze, Ivan Shanaev
Ryazan State Medical University, Ryazan, Russia
Submitted for the EVF Prize

12.40 2.6 **Ultrasound-guided foam sclerotherapy on larges great saphenous veins (over 8 mm diameter) with 1% *vs* 2% *vs* 3% polidocanol: a randomised trial**
Cláudia Amorim, Carlos Eduardo Virgini-Magalhães, Julia Bandeira
Vascular and Endovascular Surgery, University Hospital Pedro Ernesto, Rio de Janeiro, Brazil
Submitted for the EVF Prize

13.00-14.00 **View ePoster Presentations**
(4 minute presentations)
See page XX for programme

13.00-14.00 **Visit Virtual Exhibition**

14.00-15.00 **Industry Session 1: See page XXIII**

15.00-16.00 **Didactic Session 1**
(10 minute presentation, 5 minute discussion)

Messages from New Guidelines, Laser Crossectomy
Chair: Marianne De Maeseneer (Belgium), F Zernovicky (Slovakia)

15.00 **Highlights of Guidelines of DVT management**
Stavros Kakkos (Greece)

15.15 **Laser ablation, radiofrequency ablation, surgery and ultrasound guided foam sclerotherapy: what do the new guidelines say and how do we apply it in practice?**
A Giannoukas (Greece)

15.30 **Compression: Messages from the International Guidelines**
G Szolnoky (Hungary)

15.45 **Laser crossectomy. Twelve years and 2,300 cases**
I Bihari (Hungary)

16.00-16.30 **View ePoster Presentations**

Visit Virtual Exhibition

16.30-18.10 **Didactic Session 2**
(10 minute presentation, 10 minute discussion)

Advanced CVD, MOCA, Cyanoacrylate, New devices
Chair: Alun Davies (UK), G Szolnoky (Hungary)

16.30 **Endovenous procedures in patients with venous ulcers**
G Menyhei (Hungary)

16.50 **Cost-benefit of venous stenting**
C Rognoni (Italy)

17.10 **MOCA: is it here to stay?**
A Szabó (Hungary)

17.30 **Cyanoacrylate: Efficacy and Risks**
T Proebstle (Germany)

17.50 **Outlook into the future of VV therapy and the promise of new devices for telangiectasia**
Dominik Heim (Switzerland)

FRIDAY 25 JUNE 2021

08.30-10.30 **Abstract Session 3**
(10 minute presentation, 10 minute discussion)

Miscellaneous
Chair: Mark Malouf (Australia), Armando Mansilha (Portugal)

08.30 3.1 **The evolution of venous symptoms after interventional treatment for varicose veins**
Kirill Lobastov, Astanda Bargandzhiya, Leonid Laberko, Anton Dvornikov
Pirogov Russian National Research Medical University, Moscow, Russia

08.50 3.2 **V-move 2 V-care project: veines-QOL questionnaire was a valuable tool in assessing quality of life for patients presenting with venous ulcer in India over a 2 year period.**
Ravul Jindal[1], P Gupta[2], Devendra Dekiwadia[3]
[1]Fortis Hospital, Mohali, India; [2]Private, Mumbai, India; [3]Dekiwadia Hospital, Rajkot, India

09.10 3.3 **Evaluation of microvalve alteration and assessment of MPFF treatment in an experimental model of venous hypertension**
Eliete Bouskela[1], Fatima Zely Garcia de Almeida Cyrino[1], Vanessa Blanc-Guillemaud[2], Arnaud Lucien[2]
[1]Cardiovascular and Metabolic Diseases Center for Therapeutic Inn; Laboratory for Clinical and Experimental Research on Vascular Biology, Biomedical Center, State University of Rio de Janeiro, Rio de Janeiro, Brazil; [2]Institut de Recherches Internationales Servier (I.R.I.S.), Suresnes Cedex, France

09.30 3.4 **The impact of lower body compression garment on left ventricular rotational mechanics in patients with secondary leg lymphedema and lipedema**
Gyozo Szolnoky[1], Árpád Kormányos[2], Péter Domsik[2], Anita Kalapos[2], Lajos Kemény[1], Tamás Forster[2], Attila Nemes[2]
[1]Department of Dermatology and Allergology; [2]2nd Department of Medicine and Cardiology Centre, University of Szeged, Szeged, Hungary

09.50 3.5 **Factors, which are secreted by the venous endothelium upon exposure to oscillatory shear stress, affect adjacent cell layers of the vein wall**
Mariia Smetanina[1], Arina Shirshova[2], Igor Zolotukhin[3], Andrey Shevela[1], Maxim Filipenko[1]
[1]Laboratory of Pharmacogenomics, Institute of Chemical Biology and Fundamental Medicine (ICBFM), Novosibirsk State University (NSU), Novosibirsk, Russia; [2]Institute of Chemical Biology and Fundamental Medicine (ICBFM), Novosibirsk, Russia; [3]Faculty of Surgery, Medical Department, Pirogov Russian National Research Medical University (RNRMU), Institute of Chemical Biology and Fundamental Medicine (ICBFM), Moscow, Russia
Submitted for the EVF Prize

10.10 3.6 **Could it be effective? Non-inferiority randomised trial of new type of compression stockings**
Marina Demekhova[1], Igor Zolotukhin[2], Evgeny Ilyukhin[1], Igor Sonkin[3], Elena Zakharova[2], Ekaterina Kiseleva[3], Oksana Efremova[2], Evgenii Gavrilov[4]
[1]Medalp clinic, Saint Petersburg, Russia; [2]Pirogov Russian National Research Medical University, Moscow, Russia; [3]Road Clinical Hospital of Russian Railways, Saint Petersburg, Russia; [4]Military Medical Academy, Saint Petersburg, Russia
Submitted for the EVF Prize

10.30-11.00 **View ePoster Presentations and visit Virtual Exhibition**

11.00-12.00 **Industry Session 2: See page XXIII**

12.00-12.30 **EVF Invited Lecture**
Chair: I Bihari (Hungary)
Introduction by Imre Bihari

12.00-12.30 **The Best Vein Care is the Only Vein Care to be Considered**
P Gloviczki (USA)

12.30-13.00 **Didactic Session 3**
(10 minute presentation, 5 minute discussion)

New Messages on VTE
Chair: Stavros Kakkos (Greece), Athanasios Giannoukas (Greece)

12.30-12.45 **Efficacy of adjunctive IPC to standard prophylaxis of post-operative VTE in patients at extremely high risk**
Kirill Lobastov (Russia)

12.45-13.00 **Adverse Vascular Effects of COVID-19 and VTE**
Andrew Nicolaides (Cyprus)

13.00-14.00 **View ePoster Presentations**
(4 minute presentations)
See page XX for programme

13.00-14.00 **Visit Virtual Exhibition**

14.00-15.00 **EVF Annual General Meeting (Members Only)**

15.00-16.00 **Joint EVF/AVF Session**
(10 minute presentations, 5 minute discussion)

Current Controversies
Chair: Peter Gloviczky (USA), Z Pecsvarady (Hungary)

15.00 **Iliac vein stenting for patients with the PTS**
S Black (UK)

15.15 **Thrombolysis in the prevention of PTS**
N Baekgaard (Denmark)

15.30 **How can infra-inguinal duplex be optimized to detect proximal iliac vein obstruction?**
Elna Masuda (USA)

15.45 **Physician, Heal Thyself**
Brajesh Lal (USA)

16.00-16.30 **View ePoster Presentations Visit Virtual Exhibition**

16.30-17.30 **Industry Session 3: See page XXIII**

17.30-18.00 **Prize winning papers from the Japanese Society of Phlebology and American Venous Forum**
Chair: Bo Eklof (Sweden), Brajesh Lal (USA)
(10 minute presentation, 5 minute discussion)

17.30-17.45 PR1 **Definite diagnosis of lymphedema using lymphatic echography**
Hisako Hara, Makoto Mihara
Department of Lymphatic and Reconstructive Surgery, JR Tokyo General Hospital, Tokyo, Japan

17.45-18.00 PR2 **Investigating a role for platelets in venous in-stent stenosis in patients with post-thrombotic syndrome**
AM Gwozdz[1], SA Black[1], R Morris[1], S Messiha[1], M Ikram[1], AP Bye[2], JM Gibbins[2], ML Rand[3], AS Patel[1], BM Modarai[1], A Smith [1], P Saha[1]
[1]Academic Department of Vascular Surgery, Section of Vascular Risk and Surgery, School of Cardiovascular Medicine and Science, St Thomas' Hospital, King's College London, UK; [2]Institute for Cardiovascular and Metabolic Research, School of Biological Sciences, University of Reading, UK; [3]Division of Hematology/Oncology, The Hospital for Sick Children, Toronto, Canada

18.00 **Awards Ceremony**
Join us to find out the winners of the EVF Prizes and the EVF Poster Prize.
Two Honorary Memberships of the EVF will also be announced.

SATURDAY 26 JUNE 2021

08.30-10.30 **Abstract Session 4**
(10 minute presentation, 10 minute discussion)

Sclerotherapy, laser, Glue
Chair: Jean-Jerome Guex (France), I Rozsos (Hungary)

08.30 4.1 **The effect of the length and caliber of the needle on the stability of sclerosant foam**
Marian Simka, Jacek Hobot, Marcin Skuła
Department of Anatomy, University of Opole, Opole, Poland

08.50 4.2 **Endovenous laser ablation (EVLT) with simultaneous sclerotherapy as a comprehensive approach to superficial venous pathology treatment**
Aleksandra Jaworucka-Kaczorowska
Center of Phlebology and Aesthetic Medicine, Gorzów Wlkp., Poland

09.10 4.3 **Incidence of nerve injury after endovenous laser ablation for incompetent great saphenous veins**
Junichi Utoh[1], Mei Utoh[1], Yoshiharu Tsukamoto[2]
[1]Kumamoto Vascular Clinic, Kumamoto, Japan; [2]Kikuchi Central Hospital, Kikuchi, Japan

09.30 4.4 **Relevance of systematic vascular ultrasound evaluation post foam sclerotherapy procedures**
Carolina Heil Arostegui Pacheco, Marcos Arêas Marques, Ana Leticia de Matos Milhomens, Carmen Lucia Lascasas Porto, Cintia Santos Miller, Luisa de Oliveira Chimeli, Silva Aline Tiemi Kano, Lais Souza de Oliveira, Juliana de Miranda Vieira
State University of Rio de Janeiro, Rio de Janeiro, Brazil

09.50 4.5 **Comparison of laser and glue in perforator vein treatment**
Peter Bihari [1], George Ayoub [1], Imre Bihari [2]
[1]A+B Clinic, Budapest, Hungary; [2]A and B Clinic, Budapest, Hungary

10.10 4.6 **Reducing hyperpigmentation after sclerotherapy (RHYAS) study: results of a multicenter, controlled, randomized clinical trial**
Alejandro Gonzalez Ochoa[1], Joaquin Carrillo[2], Diana Manriquez[2], Alejandro Nuricumbo[3]
[1]Hospital General Zona #12 Instituo Mexicano Seguro Social, San Luis Rio Colorado, Mexico; [2]Vascular Surgery, Instituto Seguridad Social al Servicio de Trabajadores del Estado, Mexicali, Mexico; [3]Vascular Surgery, Instituto Seguridad Social al Servicio de Trabajadores del Estado de Baja California, Mexicali, Mexico

10.30-11.00 **View ePoster Presentations and visit Virtual Exhibition**

11.00-12.00 **Didactic Session 4**
(10 minute presentation, 5 minute discussion)

Varicose vein recurrence, Compression, DOAC
Chair: Marzia Lugli (Italy), G Menyhei (Hungary)

11.00 **A score system to predict varicose vein recurrence**
I Bihari (Hungary)

11.15 **Small saphenous vein treatment issues**
F Zernovicky (Slovakia)

11.30 **UEMS European Board of Phlebology**
JJ Guex (France)

11.45 **Phlebology training: instructions for trainers and trainees**
O Maleti (Italy)

12.00-13.00 **Abstract Session 5**
(10 minute presentation, 5 minute discussion)

Laser, Pathophysiology of CVD; Villalta Scale
Chairmen: Marianne Vandendriessche (Belgium), Eberhard Rabe (Germany)

12.00 5.1 **Russian sulfacrylate glue (Venogluerus). History, present and future**
E.V. Shaydakov[1], A.B. Sannikov[2], D.S. Sergeevichev[3]
[1]PetroState University, Petrozavodsk, Saint-Petersburg, Russia
[2]Medical Center “Palitra”, Vladimir, Russia
[3]National medical research center for Circulation Pathology n. E.N. Meshalkin, Novosibirsk, Russia

12.15 5.2 **Will padding the leg to a perfect circular shape give an even pressure during compression treatment?**
Torbjörn Lundh[1], Marcus Baaz[2], Andreas Nilsson[3]
[1]Mathmatical Sciences, Chalmers University of Technology and University of Gothenburg, Gothenburg, Sweden; [2]University of Gothenburg, Gothenburg, Sweden; [3]PressCise, Herrljunga, Sweden

12.30 5.3 **Post-thrombotic syndrome in patients with double popliteal vein**
Boryana Minkova[1], Svetoslav Dimitrov[2], Alexandar Daskalov[1], Chervenkoff Vassil[1]
[1]Vascular Surgery, Acibadem City Clinic Tokuda Hospital, Sofia, Bulgaria; [2]Vascular and Endovascular Surgery, Saint Ekaterina University Hospital, Sofia, Bulgaria

12.45 5.4 **Mathematical modeling of the venous walls’ and valves’ deformations.**
Elena Goranova[1], Nikola Nikolov[2]
[1]Medical institute, Sofia, Bulgaria; [2] Fluids Mechanic Department, Bulgarian Academy of Sciences, Sofia, Bulgaria

13.00-14.15	**Joint EVF/ Baltic Venous Forum (BVF) Session** (10 minute presentation, 5 minute discussion) Chair: Elena Goranova (Bulgaria), Athanasios Giannoukas (Greece)
13.00	**Update on the use of DOACs in cancer patients** Larisa Chernukha (Ukraine)
13.15	**Haemodynamic assessment of outflow obstruction** Andrew Nicolaides (Cyprus)
13.30	**Optimizing outcomes in acute DVT intervention** Efthymios Avgerinos (Greece & USA)
13.45	**The ideal treatment of iliofemoral DVT** Mehmet Kurtoglu (Turkey)
14.00	**Discussion**
14.15	**End of meeting.**
	Winners of the Venous Masters Golf Scavenger Hunt and Winner Venous Exhibition Quiz will be announced.
	Presentation of 2022 Meeting

POSTER PRESENTATIONS

P1 **A comparison of open *vs*. Closed-cell dedicated venous stents for treatment of chronic iliofemoral venous obstruction**

Rachael Morris[1], Taha Khan[1], Nicholas Jackson[1], Adam Gwozdz[1], Narayanan Thulasidasan[2], Stephen Black[3]
[1]Academic Department of Vascular Surgery, School of Cardiovascular Medicine and Sciences; [2]Interventional Radiology; [3]Academic Department of Vascular Surgery, School of Cardiovascular Medicine and Sciences, St Thomas' Hospital, London, UK

P2 **Evlo 1940 nm - A new step in the treatment of varicose veins**

Konstantin Kaperiz[1], Vadim Bogachev[2], Victor Lobanov[1]
[1]First Phlebological Center, Moscow, Russia; [2]Russian National Research Medical University named after N. I. Pirogov, Moscow, Russia

P3 **Proteomic profiling of varicose veins - new insight into old problem**

Reshaabi Srinanthalogen[1], Martinas Urbonavicius[2], Annette Høgh[1], Grazina Urbonaviciene[3], Mindaugas Valius[4], Sigitas Urbonavicius[1]
[1]Department of Surgery, Regionshospitalet Midt Viborg, Viborg, Denmark; [2]Department of Pharmacology, University of Copenhagen, Copenhagen, Denmark; [3]Department of Internal Medicine, Regionshospitalet Midt Viborg, Silkeborg, Denmark; [4]Proteomic Center, Institute of Biochemistry, Vilnius, Lithuania

P4 **Efficacy and feasibility of trans-luminal injection of foam sclerotherapy combined with endovenous laser ablation of varicose veins: comparison with ultrasound-guided foam sclerotherapy**

Satoshi Watanabe, Atsunori Okamura, Mutsumi Iwamoto, Hiroyuki Nagai, Masato Ishikawa, Akinori Sumiyoshi, Kota Tanaka, Satoshi Suzuki, Hirokazu Tanaka, Katsuomi Iwakura, Kenshi Fujii
Sakurabashi Watanabe Hospital, Osaka, Japan

P5 **Subordination of angles of the vein's confluence to roux's law in Murray's mathematical interpretation**

Muhammed Shushaev, A Sabina tavova, Nazim Mamedov, Constantine Mazayshvili, Nelli Urmantseva,
Surgut State University, Surgut, Russia

P6 **Shave-therapy with simultaneous autodermoplasty for patients with extensive trophic ulcers**

Ilya Sorokvasha[1], Sergey Yakushkin[1], Alexey Evsyukov[2], Olga Nedosekina[3]
[1]Phlebology, Semeynaya clinic, Moscow, Russia; [2]Phlebology, MSSU University clinic, Moscow, Russia; [3]Phlebology, Semeynaya clinic, Tula, Russia

P7 **The effectiveness of micronized purified flavonoid fraction in combination with compression therapy in the treatment of chronic venous edema**

Vadim Bogachev, Boris Boldin, Alexandr Samenkov
First Phlebological Centre, Pirogov Russian National Research Medical University, Moscow, Russia

P8 **Photodynamic therapy of venous ulcers**

Boris Boldin[1], Vadim Bogachev[1], Sergey Kuzmin[2], Pavel Turkin[1], Nikita Somov[1],
[1]Faculty surgery[2], Pirogov Russian National Research Medical University, Moscow, Russia; [2]Organic Intermediates and Dyes Institute (NIOPIK), Moscow, Russia

P9 **"Prevention of early recanalization after gsv sclerofoam: ligation of GSV below the injection site"**

Paolo Valle, Domenico Monetti
S. Eugenio Hospital Rome, Rome, Italy

P10 **Costs of radiofrequency thermal ablation of great saphenous vein compared to saphenous-femoral junction ligature and stripping. A randomized exploratory study**

Lourdes Reina-Gutierrez[1], Jose Ignacio Fernández-Solares[1], Agnieszka Nowak-Tarnawska[1], Aurora Florez-Gonzalez[1], Carlos Barrio-Rodriguez[1], Ilsem Laime Alvarez[1], Cristina Fernandez-Perez[2], Alfonso Sanjuanbenito-Reina[3]
[1]Vascular Department, Hospital Central de la Cruz Roja, Madrid, Spain; [2]Epidemiology Unit, Hospital Clinico San Carlos, Madrid, Spain; [3] Medicine Grade, Autonoma University, Madrid, Spain

P11 **Polidocanol foam sclerotherapy of lymphoceles after varicose vein surgery: an effective and safe first-choice treatment**

Lourdes Reina Gutierrez[1], Agnieszka Nowak Tarnawska[1], Jose Ignacio Fernández-Solares[1], Aurora Florez-Gonzalez[1], Carlos Barrio-Rodriguez[1], Ilsem Laime-Alvarez[1], Cristina Fernandez-Perez[2], Alfonso Sanjuanbenito-Reina[3]

[1]Vascular Unit, Hospital Central de la Cruz Roja, Madrid, Spain; [2]Epidemiology and Biostatistics Unit, Hospital Clínico San Carlos, Madrid, Spain; [3]Autonoma University, Madrid, Spain

P12 **Sulodexide improves capillary blood flow and the quality of life in patients with Raynaud syndrome**

Michal Juszynski[1], Grzegorz Madycki[1], Piotr Glinicki[2]

[1]Department of Vascular Surgery and Angiology; [2]Department of Endocrinology, Centre of Postgraduate Medical Education, Warsaw, Poland

P13 **Stripping *vs* radiofrecuency *vs* cyanoacrylate for treatment of varicose veins. Clinical results and cost effectiveness analysis.**

Sandra Vicente[1], Jose Hipola[1], Laura Balsalobre[1], Elena Perez[1], Silvia Limon[1], Luis de Benito[2], Juan Fontcuberta[1],

[1]La Zarzuela Hospital, Madrid, Spain; [2]Hospital Alcorcon, Alcorcon, Spain

P14 **Differentiation between GSV and AASV: new ultrasound criterion**

Oksana Riabinska

Institute of Veins, Kharkiv, Ukraine

P15 **Results of truncal endovenous mechano-chemical obliteration in varicose disease**

Vladimir Yanovich Khryshchanovich[1], Ivan Petrovich Klimchuk[2], Robert Proczka[3], Nikolay A Rogovoy[2], Sergey Sergeevich Kalinik[2], Stanislaw Mazur[3], Evgeniy V Nelipovich[4]

[1]2nd Department of Surgical Diseases, Belarusian State Medical University and City Clinical Emergency Hospital, Minsk, Belarus; [2]Department of Vascular Surgery, Belarusian State Medical University and 4th City Clinical Hospital named after N.E. Savchenk, Minsk, Belarus; [3]Department of Vascular Surgery, Centre of Cardiology and Vascular Surgery «Jozefow», Warsaw, Poland; [4]Department of Vascular Surgery, 4th City Clinical Hospital named after N.E. Savchenk, Minsk, Belarus

P16 **Sclerotherapy as a safe and valuable method of foot and ankle vein treatment**

Aleksandra Jaworucka-Kaczorowska

Center of Phlebology and Aesthetic Medicine, Gorzów Wlkp., Poland

P17 **Pathomorphologic characteristics of venous vessels after the application of different methods of endovascular eliminating of venous reflux - experimental study**

Sergey Markin[1], Konstantin Mazaishvili[2], Rishal Agalarov[2], Artem Mordovin[1], Yana Gitsuk[1]

[1]Saint-Petersburg Hospital of Russian Academy of Sciences, Saint-Petersburg, Russia; [2]Surgut State University, Surgut, Russia

P18 **Incidence and risk factors for great saphenous vein reflux in pregnant patients**

Yauhenya Tsikhanovich

Belarusian State Medical University, Minsk, Belarus

P19 **Leg lipodermatosclerosis tissue changes with and without compression therapy**

Marina Berezko, Evgeniy Silchuk, Olga Dubrovskaya, Dmitriy Lishov

Surgery, The center of phlebology, Moscow, Russia

P20 **Outcome in patients with venous tos treated by transaxillary first RIB resection**

Peter Dollinger, Hiltrud Haupenthal, Andreas Laipple

Klinik für vaskuläre und endovaskuläre Chirurgie, DRK Kliniken Berlin Mitte, Berlin, Germany

P21 **Epidemiological aspects of combination of hemorrhoidal disease and chronic venous disease: the results of Ukrainian study "hemo-detect"**

Volodymyr Andriiets, Myhailo Zakharash, Yuri Zakharash

Bogomolets National Medical University, Kyiv, Ukraine

P22 **Sulodexide combined with compression improves symptoms in patients with CEAP stages C0s and C1s.**

Nora Lecuona

ConCIENCIA Vascular, Mexico City, Mexico

P23 **Investigating the role of platelet-derived SGPVI in venous in-stent stenosis in patients with post-thrombotic syndrome**

AM Gwozdz[1], SA Black[1], R Morris[1], S Messiha[1], M Ikram[1], AP Bye[2], JM Gibbins[2], ML Rand[3], AS Patel[1], BM Modarai[1], A Smith[1], P Saha[1]

[1]Academic Department of Vascular Surgery, Section of Vascular Risk and Surgery, School of Cardiovascular Medicine and Science, St Thomas' Hospital, King's College London, UK; [2]Institute for Cardiovascular and Metabolic Research, School of Biological Sciences, University of Reading, UK; [3]Division of Hematology/ Oncology, The Hospital for Sick Children, Toronto, Canada

P24 **Effect of micronized purified flavonoid fraction treatment on microscopic venous valves reflux in C0s and C1s patients with chronic venous disease**

Marzia Lugli, Matteo Longhi, Sara Guerzoni, Oscar Maleti

Department of Cardiovascular Surgery, Hesperia Hospital, Modena, Italy

P25 **Understanding the journey of patients with CVI and their comorbidities, notably diabetes mellitus: a quantitative survey among physicians in different countries around the world**

Giacomo Gastaldi[1‡], Frédéric Glauser[2], Juan Rosas Guzmán[3], José Luis Salazar Garcia[4], Sherif M Sholkamy[5], Detelina Lukanova[6], Milena Staneva[7], Kürşat Bozkurt[8]

[1]Division of Endocrinology and Diabetology, Geneva University Hospitals, Geneva, Switzerland; [2]Division of Angiology and Hemostasis, Geneva University Hospitals, Geneva, Switzerland; [3]Instituto de Diabetes A.C. Celaya, Guanajuato, México; [4]Universidad del Valle de Atemajac, Guadalajara, México; [5]Ain Shams University Cleopatra Hospitals, Cairo, Egypt; [6]Angiology Department, National Heart Hospital, Sofia, Bulgaria; [7]Angiology Department, Acibadem City Clinic Tokuda Hospital, Sofia, Bulgaria; [8] Department of Cardiovascular Surgery, Istanbul University Cerrahpasa, Turkey

P26 **Veinstep: chronic venous disorders management and treatment effectiveness evaluation in chronic venous disease, an international observational prospective study. Results from Morocco**

Zoubida Tazi Mezalek[1], Jorge Hernando Ulloa[2]

[1]Clinical Hematology, Internal Medicine, Mohammed V University, Ibn Sina University Hospital, Rabat, Morocco; [2] Fundación Santa Fé de Bogotá, Colombia

P27 **Effects on inflammation and tissue perfusion of diferent routes of administration and doses of sulodexide on an animal model of low flow and high pressure in veins**

IB Leal, FZGA Cyrino, MGC Souza, E Bouskela

Laboratory for Clinical and Experimental Research on Vascular Biology (BioVasc), Biomedical Center, State University of Rio de Janeiro, Rio de Janeiro, RJ, Brazil

INDUSTRY SUPPORTED SESSIONS

THURSDAY, JUNE 24, 2021

14.00-15.00 Industry supported Session: Servier

Chronic or Not. A disorder for life?
Chair: M de Maeseneer (Belgium), I Bihari (Hungary)

14.00 **Introduction**

14.05 **At the heart of the microcirculation.**
Eliete Bouskela (Brazil)

14.20 **Reflux pattern in microvalves of tributaries.**
Marzia Lugli (Italy)

14.35 **New heamodynamic effects. Their applications with MPFF.**
Andrew Nicolaides (Cyprus)

14.50 **Questions and Answers**

FRIDAY, JUNE 25, 2021

11.00-12.00 Industry supported Session: Pierre Fabre

Oedema in CVD: Clinical Perspectives and Management
Chairmen: Imre Bihari (Hungary), Jean-Jérôme Guex (France)

11.00 **Pathophysiology of oedema.**
Gyozo Szolnoky (Hungary)

11.15 **Oedema from a clinical perspective: prevalence, level of risk of developing oedema, risk factors, differences/overlaps between sensation of swelling and oedema, signs/symptoms.**
Arkadiusz Jawien (Poland)

11.30 **Benefits of Ruscus on oedema.**
Jean-Jérôme Guex (France)

11.45 **Questions and Answers**

16.30-17.30 Industry supported Session: Alfasigma

Venous patients: Facing the current clinical challenges
Chairmen: A. Nicolaides, S Kakkos

16.30 **New perspectives on pathophysiology and investigation.**
A Nicolaides (Cyprus)

16.50 **Sulodexide in early stages of COVID-19 patients: A randomised controlled trial.**
A Gonzales Ochoa (Mexico)

17.10 **Challenges in the treament of symptomatic CVD patients in our daily practice.**
A.Mansilha (Portugal)

BOOK OF ABSTRACTS

1.1 COMPARISON OF THROMBUS REGRESSION BETWEEN DIRECT ORAL ANTICOAGULANTS AND WARFARIN IN PATIENTS WITH DEEP VEIN THROMBOSIS.

Yutaka Hosoi; Masao Nunokawa; Yasuaki Mochizuki; Yohei Ichikawa; Hiroshi Sasajima; Keisuke Fujimaki; Hiroshi Kubota
Cardiovascular Surgery, Kyorin University, Tokyo, Japan

AIM It has been recognized that thrombus regression and recanalization of venous lumen occur to various extent after an episode of deep vein thrombosis (DVT). However, whether the difference in drugs affect the degree of thrombus resolution has not been fully examined. The purpose of this study was to investigate the efficacy of direct oral anticoagulants (DOACs) in thrombus regression, compared with that of conventional warfarin.

MATERIAL AND METHODS Between January 2013 and December 2016, 79 limbs of 75 patients (33 men and 42 women; mean age of 63 years) with acute symptomatic DVT were retrospectively studied. Patients underwent follow-up duplex scanning at 1, 3, 6 and 12 months to assess the degree of thrombus regression. For practical purposes, the veins of the lower limbs were divided into four segments (iliac, femoral, popliteal and calf), and the individual segment was semiquantitatively scored as follows: 3, total occlusion throughout the length of segment; 2, subsegmental total occlusion; 1, (sub)segmental partial occlusion; 0, no thrombus. A total thrombotic score was obtained by summing up the scores in each segment. The decreasing rate of the total thrombotic score in each follow-up period was calculated, and compared between DOACs and warfarin groups.

RESULTS Of 79 limbs, 197 segments had venous thrombus; 31 in iliac, 47 in femoral, 55 in popliteal, and 64 in calf. As for anticoagulation therapy, 33 were treated with warfarin, whereas 42 with DOACs. There was no significant difference in the total thrombotic scores at the diagnosis of DVT between the warfarin group and the DOACSs group (5.8±3.1 *vs.* 5.7±2.6). The decreasing rates of the total thrombotic scores in the DOACs group were significantly higher than those in the warfarin group at 1 month (56 % *vs.* 39%, P=0.03), 3 months (71% *vs.* 56%, P=0.02), and 6 months (76% *vs.* 63%, P=*0.03*), although no significant difference was seen between the two groups at 12 months (83% *vs.* 72%, P=0.06).

CONCLUSION Our data revealed that DOACs showed a significant effect on thrombus regression in the early phase of treatment compared with conventional therapy with warfarin, which would contribute to reducing the development of post-thrombotic syndrome.

1.2 GENDER-RELATED HEMORRHAGIC EVENTS DURING RIVAROXABAN THERAPY.

Olga Dzhenina; Vadim Bogachev
First Phlebological Centre, Moscow, Russia

AIM Anticoagulant therapy of DVT involves the risk of hemorrhagic complications. However, the probability of gender-related hemorrhagic events such as hypermenorrhea and menometrorrhagia is rarely taken into account, although they reduce the women's quality of life and reduce adherence to anticoagulant therapy.
Objective is assess the incidence of uterine bleeding during Rivaroxaban therapy.

MATERIAL AND METHODS From 2017 to the present, we observe 75 women with DVT during Rivaroxaban therapy. All women are of reproductive age and have regular menstruation. The duration of VTE was from 2 months to 3 years. Upper extremity DVT was in 12 women; all have a single VTE. Women with lower extremity DVT had bilateral lesions in 6 cases, and recurrent VTE in 42.6%. All patients received Rivaroxaban 20 mg/day.
The 20 women had the complicated gynecological history such as endometriosis, uterus myoma and endometrial polyps. All denied the presence of active menometrorrhagia until the development of venous thrombosis. The history of heavy menstrual bleeding was in 7 women.
During Rivaroxaban therapy, 41 (54.7%) women didn't notice an increase in menstrual blood loss and the appearance of menometrorrhagia.
The 34 (45.3%) patients indicated the development or progression of hypermenorrhea and intermenstrual bleeding was developed in 8 of them (gynecological history was in 13 women).

RESULTS In 4 women with menometrorrhagia, the Rivaroxaban dose was reduced to 10 mg/day with a positive effect. In 16 women with hypermenorrhea, Rivaroxaban dose was reduced to 10 mg/day only for menstruation, and only 9 patients noted the decrease blood loss by flexible mode of anticoagulation.
The transition to other anticoagulants was suggested: in 2 patients – Apixaban 5mg/day, in 2 patients – Apixaban 10mg/day and in 1 case - Enoxaparin 40 mg/day. The reduced dose of alternative anticoagulant had a positive effect in all women. However, the stop of hypermenorrhea was in 1 case of Apixaban 10 mg/day only. There was no recurrence of DVT in these patients during the observation period.
The anticoagulation was completed prematurely in 9 patients with menometrorrhagia. After stop of Rivaroxaban therapy, DVT was repeated in 1 woman with recurrent thrombosis history. We proposed the LMWH and endovascular treatment of multiple myoma as the elimination of a potential source of recurrent uterine bleeding.

CONCLUSION The EINSTEIN DVT/PE subanalysis showed the development of uterine bleeding in 30.7% of women with VTE during Rivaroxaban therapy. The first results of "real practice" show a higher incidence of undesirable gender-associated hemorrhagic events (45.3%). In our opinion, it is necessary to continue accumulating data and to thorough control of hemorrhagic complications in women, possibly with the help of an appropriate register.

1.3 SULODEXIDE MAY ACCELERATE AND PROMOTE DEEP VEIN THROMBOSIS RESOLUTION.

Erasto Aldrett Lee[1]; Alberto Fratti Munari[2]
[1]*Grupo de Atención Vascular Integral, San Luis Potosi, Mexico*
[2]*Grupo de Atencion Vascular Integral, Mexico City, Mexico*

AIM Sulodexide represents a novel antithrombotic agent with multiple sites of action on blood coagulation and vascular processes, it even can exert anti-inflammatory actions on the endothelial lining. Sulodexide has been suggested as an antithrombotic and anticoagulant agent, also the anti-inflammatory effect is well known as it is an agent that helps to repair damaged glycocalyx. Recent data suggest DVT is part of a pro inflammatory vascular condition. During the venous thromboembolism, devastating damage is done to the venous endothelial layer. The glycocalyx is seriously damaged during this inflammatory process. Sulodexide is a potent endothelial anti-inflammatory agent and a promoter of the glycocalyx recovery. The concomitant use of sulodexide and one of the new oral anticoagulants, rivaroxaban, during the acute phase of venous thromboembolism should significantly accelerate the natural process of recovery and recanalization of the deep vein thrombosis process.

MATERIALS METHODS we made a study comparing two groups, 76 patients were included on the study. All patients had femoral, popliteal or below the knee DVT, confirmed by compression ultrasound. 36 patients received conventional treatment with Rivaroxaban 15 mg BID for the first 30 days plus 20 mmHg thigh high compression, the other group, 40 patients received same treatment plus Sulodexide 250 LRU BID for the first 30 days. Control ultrasound performed at 10, 20 and 30 days to all patients to evaluate progress of the thrombus process. We also measured circumference of the affected leg on 3 points at 10, 20, and 30 days, and QOL was measured thru CIVIQ-20 questionnaire.

RESULTS Both groups matched age, sex, and site of DVT. The group that received Sulodexide significantly reduced leg circumference at 20 days average of 1.9 cm above the control group, venous ultrasound was similar on both groups and CIVIQ-20 questionnaire was significantly better on the Sulodexide group 87 points pretreatment and 44 points at 20 days versus 88 points pretreatment and 56 points at 20 days on the Rivaroxaban only group.

CONCLUSION Sulodexide is an agent that has multiple antithrombotic, anti-inflammatory and anticoagulant actions, as well as reparative effects on venous endothelium and endothelial glycocalyx. This agent might significantly accelerate the thrombolytic process after the acute period of DVT and have some influence on the appearance and severity of post thrombotic syndrome. It seems to be a secure co adjuvant to new oral anticoagulants accelerating the recovery process of the patients with this problem.

1.4 RISK FACTORS AND FREQUENCY OF RECURRENT LONG-TERM VENOUS THROMBOEMBOLISM AFTER SUPERFICIAL VEIN THROMBOSIS OF THE LOWER LIMBS.

Chrysanthi P. Papageorgopoulou; Stavros Kakkos; Konstantinos M. Nikolakopoulos; Ioannis Ntouvas; Spyros Papadoulas; Anastasia Kouri; Polyzois Tsantrizos
Vascular Surgery, University Hospital of Patras, Patras, Greece

AIM Superficial vein thrombosis (SVT) of the lower limbs is associated with an increased risk of short-term and also long-term risk of recurrent venous thromboembolism (VTE), but risk factors and frequency of late VTE up to five years are unknown. The aim of the study was to identify risk factors and frequency of recurrent VTE in patients with lower limb SVT beyond the initial three-month period of high risk.

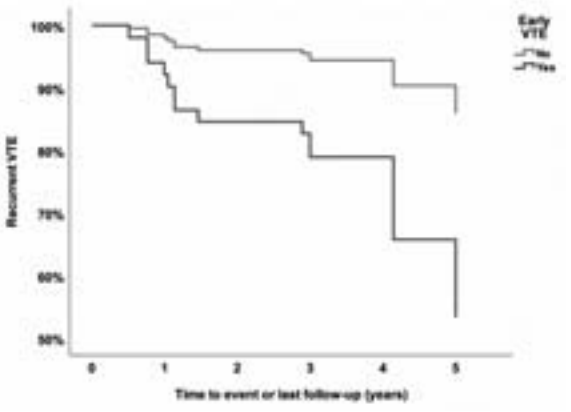
MATERIAL AND METHODS Consecutive patients with SVT were treated with subcutaneous tinzaparin (InnohepT, LEOPharma, Denmark) for up to three months. Patients with thrombi measuring less than 5 cm on Duplex or reaching the saphenofemoral junction (last 3 cm of the great saphenous vein) were excluded. The composite primary endpoint of this prospective cohort study was recurrent VTE, defined as occurrence of clinically evident SVT recurrence, deep-vein thrombosis or pulmonary embolism, developing after three months. Demographics, clinical and ultrasonic variables were recorded.

RESULTS A total of 147 patients with a median age of 58.2 years were treated. Two patients died of VTE during the first three months. The remaining 145 patients were followed-up for a maximum of five years, with 19 episodes of recurrent VTE occurring in 13/145 patients (9%), including 15 events of recurrent SVT, three events of deep-vein thrombosis and one event of pulmonary embolism. On univariable Cox regression, several factors showed association with recurrent VTE during the five-year follow-up period (Table, $p \leq 0.20$, selected for multivariable Cox regression analysis).

Variable	*Hazard ratio*	*p value*
SVT of the left leg	1.7	0.077
Presence of contralateral varicose veins	3.8	0.200
Dyskinesia at baseline	1.8	0.130
Dyskinesia at two weeks	2.1	0.151
Erythema over the thrombosis area at two weeks	1.8	0.053
Swelling of the leg at three months	3.2	0.028
Development of VTE events, including symptomatic recurrent SVT, during the run-in phase of three months	3.3	0.068

Only erythema over the thrombosis area at two weeks and development of VTE during the initial three-months (Figure 1) were independent predictors of recurrent VTE during long-term follow-up (hazard ratio 3.6 and 4.1, respectively, and $p=0.030$ and $p=0.035$, respectively).

Figure 1.



CONCLUSION The risk of recurrent VTE in patients with SVT continues for several years after the initial event. Erythema and early VTE seem to represent proinflammatory and prothrombotic conditions, respectively.

1.5 QUALITY OF LIFE OUTCOMES AFTER ILIAC VEIN STENTING FOR CHRONIC DEEP VENOUS OBSTRUCTION: A TERTIARY CENTRE EXPERIENCE USING THE VEINES-QOL/SYM.

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AIM Chronic venous disease has a debilitating impact on quality of life with significant psychological and economic burden. The VEINES-QoL/SYM is an extensively validated venous-disease specific quality of life assessment, which has been used in the outpatient clinic at St Thomas' since 2016 to measure disease severity pre- and post- stenting.

- measure change in venous disease-specific quality of life after iliac vein stenting for chronic deep venous obstruction;
- identify factors associated with improvement in quality of life post-stenting.

MATERIAL AND METHODS We performed a retrospective analysis of VEINES-QoL/Sym questionnaires completed in the outpatient clinic by patients at baseline and follow-up after iliac vein stenting (6-36 months). Item responses were re-coded using the intrinsic method to calculate a score out of 100. Additional patient data were obtained from electronic records.

RESULTS We identified 188 patients treated with iliac vein stenting who had completed one or more VEINES-QoL/Sym at baseline or follow-up (6-12-24-36 months, 388 questionnaires). Median follow-up was 12 months, 127 (68%) were female and 149 (79%) were treated for post thrombotic disease. Sixty patients (31%) required re-intervention and 6 (3%) had occluded stents that could not be recanalized.
Mean VEINES-QoL/Sym score at baseline was 36.75 [32.37-41.12]. Significant improvement was observed post-operatively and sustained at 6-, 12-, 24- and 36-month follow-up (61.47 [56.64-66.31], 59.03 [53.69-64.37], 57.35, [51.13-63.58] 59.36 [50.55-68.16] $P<0.05$). Median Villalta score decreased from 14 at baseline to 8.5 at 6 months, 7.5 at 12 months, 7 at 24 months and 6 at 36 months follow-up ($P<0.05$).
A subgroup analysis of patients with patent stents found that those with 35% in-stent on duplex ultrasound at follow-up had improved VEINES-QoL/Sym scores compared to patients with >35% stenosis (62.04 *vs.* 51.51, $P<0.05$). There was no statistically significant difference in VEINES-QoL/Sym score between patients who maintained primary patency and those who had a re-intervention prior to follow-up (59.92 *vs.* 54.19, $P=0.19$).

CONCLUSION Venous-disease specific quality of life improved significantly after deep venous stenting, and this was sustained at 6- 12 -24- and 36 months follow-up. Patients with 35% in-stent stenosis on duplex ultrasound at follow-up had better quality of life outcomes.

Submitted for the EVF Prize.

1.6 ASSESSMENT OF THE VILLALTA TOOL IN A POPULATION WITH PRIMARY CHRONIC VENOUS DISEASE.

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AIM The Villalta scoring system is recommended by international guidelines to be used as the gold standard assessment tool for the diagnosis of Post Thrombotic Syndrome (PTS) and has been employed in a number of important clinical trials, including the ATTRACT trial. This scoring system has come under criticism, as some of the assessed symptoms and signs are not specific to PTS and may be found in chronic venous disease (CVD). There are a number of validated tools to assess CVD, including (CEAP), venous clinical severity score (VCSS), Aberdeen Varicose Vein Questionnaire (AVVQ) and the VEINES-QOL/SYM questionnaire.
The aim of this study was to assess the relationship between the Villalta score and clinical and quality of life assessment tools in patients with primary venous disease.

MATERIAL AND METHODS Consecutive participants with primary venous disease and no history of deep vein thrombosis or post thrombotic syndrome were recruited from the vascular outpatient clinic in a tertiary unit. All participants were assessed by a trained physician with the Clinical Etiological Anatomical Pathophysiological (CEAP) staging system, the Venous Clinical Severity Score (VCSS) and the Villata tool. Quality of life was assessed with the Aberdeen Varicose Vein Questionnaire (AVVQ) and the VEINES-QoL/Sym Questionnaire. Spearman's correlation was performed to assess for any association between clinical severity and the quality of life scores. SPSS® software was used to perform the analysis.

RESULTS 110 patients (67 female) were recruited, with a median age of 59 (range 21-96). Correlations between the assessment tools are presented in the Table:

Correlations performed	*Spearman's rank correlation coefficient*
Villalta *vs.* CEAP	R=0.525
Villalta *vs.* AVVQ	R=0.526
Villalta *vs.* Veines SYM	R=-0.457
Villalta *vs.* Veines QOL	R=-0.012
Villalta *vs.* VCSS	R=0.655

The mean Villalta score in this patient cohort was 8. The values report a moderate correlation (R >0.4) between the Villalta scoring system and all clinical severity and quality of life tools except for the VEINES QoL.

CONCLUSION These results demonstrate that the Villalta tool has moderate correlation with chronic venous assessment tools and highlights that it is not disease specific for PTS. Pre-existing chronic venous disease may play a role in influencing the score. This may have implications when analyzing outcomes in clinical trials that employ Villalta tool to assess for the post thrombotic syndrome.

Submitted for the EVF Prize.

2.1 RANDOMISED CLINICAL TRIAL OF MECHANOCHEMICAL ABLATION VERSUS CYANOACRYLATE ADHESIVE FOR THE TREATMENT OF VARICOSE VEINS (MOCCA).

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AIM Endovenous thermal ablation has become the first line treatment for superficial venous reflux. Recently, Novel non-thermal techniques such as mechanochemical ablation (MOCA) and cyanoacrylate embolization (CAE) have been developed. Previous work has shown that MOCA is less painful than radiofrequency ablation (RFA). The RFA and CAE have been shown to have similar post-operative pain profile. This randomised clinical trial was undertaken to assess the degree of pain resulting from MOCA compared with CAE.

MATERIAL AND METHODS Patients with saphenous vein incompetence were randomised to either MOCA or CAE. The primary outcome measure was maximum and average pain score immediately following completion of truncal ablation, measured by a 100mm visual analogue scale (VAS) and number scale (0-10). The secondary outcome measures include entire treatment pain scores, clinical scores and quality of life scores. Additional assessments also include ecchymosis scores, occlusion rates, time to return to usual activities/work at two weeks. Patients are reviewed at 2 weeks, 3 months, 6 months and 12 months.

RESULTS One hundred fifty-six patients with unilateral truncal saphenous vein have been recruited. Fifty-eight percent of the patients were women with a mean age 56 years. The vein treated was the great saphenous vein (GSV) in 85% of cases and 49.4% of the cases were randomised to MOCA group. Both study groups were comparable at baseline. Maximum pain score using visual analogue scale (VAS) in CAE group did not differ significantly from MOCA group (CAE median 21 mm (interquartile range 8.28-43.2 mm) versus MOCA 26 mm (interquartile range 13-44.5 mm); P = 0.131) and number scale (CAE median 3 (IQR 1.47-5.1) versus MOCA median 4 (IQR 2.5-5.45); P=0.200). Average pain score also did not differ significantly between groups. No difference was observed in the post-procedure ecchymosis score, recovery time, and time return to normal activity at 2 weeks. Similar clinical and quality of life scores improvement at 2 weeks, 3, 6 and 12 months.

CONCLUSION There is no difference between the CAE and MOCA in terms of pain profile, quality of life and clinical score.

Submitted for the EVF Prize.

2.2 MID-TERM RESULTS OF CYANOACRYLATE EMBOLIZATION FOR SAPHENOUS VEINS: EFFICACY, COMPLICATIONS AND THEIR TREATMENT.

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AIM Here we evaluate the results of cyanoacrylate embolization (CAE) of the great (GSV) and small (SSV) saphenous trunks in patients with varicose veins (VVs) of the lower limbs.

MATERIAL AND METHODS this is an ongoing prospective observational study that started in 2017 at the Hospital Neftyanik, including patients with VVs who underwent CAE of the GSV and/or SSV by VenaSeal technology. Patients are being followed up with clinical and ultrasound evaluation at 1 week, 3, 6, and 12 months after surgery, and then every year. Efficiency criteria are the technical success of the vein occlusion; absence of recanalization; length of the GSV stump; vein involution; absence of reflux on the trunk; absence of reflux at the junction; no need to remove tributaries; no need for re-intervention on the trunk; clinical class by CEAP; and disease severity by VCSS. Safety criteria are the absence of adverse reactions (ARs).

RESULTS In the period of 2017-2020 CAE was performed on 138 limbs of 106 patients with VVs: 53 women and 53 men aged from 28 to 82 years (mean age, 45.4±10.5 years) with the CEAP clinical of C2 (50%), C3 (33%), C4 (16%), and C5 (1%). The GSV trunk (diameter of 4.5-18.0 mm; mean 9.1±2.7) was treated in 82% and the SSV (3.7-13.0 mm; mean, 7.2±2.5) in 18%. Technical success was achieved in all cases. The lengths of the GSV stump varied from 0 to 48 mm (mean, 19.4±9.9). Sclerotherapy for varicose tributaries during the first 3 months was performed in 78 legs (57%). Patients were followed up for between 1 week and 26 months. Additional sclerotherapy for varicose tributaries was required for 35 limbs (25%). Trunk recanalization was found in 13 limbs (9%) at 3-12 months after intervention and required second CAE (n=2), sclerotherapy (n=7), radiofrequency obliteration (n=3), laser ablation (n=1). Other AEs that did not require re-intervention were represented with phlebitis of GSV trunk (n=15; 11%) or tributaries (n=8; 6%), allergic reaction (n=5; 4%), cord sensation (n=8; 6%), glue propagation to the junction (n=2; 1%), glue propagation out of the junction (n=3; 2%), sensitivity disturbance (n=5; 4%).

CONCLUSION CAE is an effective method for saphenous veins ablation that is associated with an acceptable incidence of non-severe AEs with a low rate of re-interventions.

2.3 MECHANISMS OF DAMAGE TO THE VENOUS WALL AND DISSOLVING VENASEAL GLUE IN AN ANIMAL EXPERIMENT.

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AIM An increasing of quantity of adhesive obliterations for treating of varicose disease accompanied by growth of re-canalizations, allergic reactions, and by appearance of granulomas which are required a surgical treatment. At the same time, features of the reactive changes, occurring in the venous wall is not discovered enough yet. The further destiny of abandoned in the lumen of the vessel clot of glue is not known.

Aim: to research in the experiment the features of changes in the venous wall and reactions in response to contact with n-butyl cyanoacrylate (VenaSeal, USA) and to clarify the potential of the clot of glue to biodegradation.

MATERIAL AND METHODS There was provided a chronic experiment with 15 sheep. Ethical endorsements have been received and study conform to the Institutional Animal Care. It was carried out from July to November 2018. The adhesive obliteration was provided on one of the sheep's limbs of each animal using VenaSeal system. The methodology of the operation was based with the manufacturer's recommendation. All operations were carried out under the intravenous sedation. The animals were removed from the experiment equal groups on 1, 7 and 100 day with taking of the target vein for the histological exploration. The cuttings (3-5 μm thickness) were painted with hematoxylin and eosin, orcein in according with Mallory. Integrity of endothelium, intensity of necrosis, prevalent cellular process was evaluated in each step.

RESULTS On the first day of the experiment it showed the total destruction of endothelium, crystallization of the glue with cells clot, the absence of any macrophages and granulomas, in the future, severe leukocyte infiltration develops. The glue at the stage of 100 days from a single clot disintegrates into small parts. This stage demonstrated that, fragments of glue appears with the capture of particles by giant multinuclear (in some cases by mononuclear) cells of foreign bodies. The processes of clot canalization accompanied by parallel fibrous degeneration of the venous wall.

CONCLUSION Changes in the venous wall in response to adhesive obliteration develop at certain stages. On earlier stages the toxic influences are predominant. This is the basis for the development of hypersensitivity reactions of the first type. Subsequently, these reactions are replaced by an inflammatory response and then reactive venous fibrosis. At the same time there is biodegradation of glue clots occurs with the participation of giant multinucleated cells of foreign bodies. The granulomas forming at this stage can be a substance of the development of hypersensitivity reactions of the fourth type and provoke immune rejection reactions.

Submitted for the EVF Prize.

2.4 EFFICACY AND SAFETY OF RADIOFREQUENCY THERMAL ABLATION OF GREAT SAPHENOUS VEIN COMPARED TO SAPHENOUS-FEMORAL JUNCTION LIGATURE AND STRIPPING. A RANDOMIZED EXPLORATORY STUDY.

Lourdes Reina-Gutierrez[1]; Jose Ignacio Fernández-Solares[1]; Agnieszka Nowak-Tarnawska[1]; Carlos Barrio-Rodriguez[1]; Aurora Florez-Gonzalez[1]; Ilsem Laime-Alvarez[1]; Cristina Fernández-Pérez[2]; Alfonso Sanjuanbenito-Reina[3]

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[2] Epidemiology Unit, Hospital Clinico San Carlos, Madrid, Spain

[3] Grade of Medicine, Autonoma University, Madrid, Spain

AIM To evaluate if the radiofrequency ablation (RFA) of the great saphenous vein (GSV) with the catheter Closure Fast® is at least as effective and safe as the saphenous-femoral junction ligature and stripping (SFL/S).

MATERIAL AND METHODS The randomized 1:1 parallel open label unicenter study included patients with primary chronic venous disease (CVD) C2-C5 CEAP in unilateral lower limb with GSV insufficiency. The variables were demographic, clinical, echo-doppler findings. The outcome variables for efficacy: CEAP stage, Venous Clinical Severity Score (VCSS), Recurrence Varicose Veins After Surgery (REVAS), Quality of Life SF-36 and CIVIQ-20 questionnaires and days to return to job. The safety variables: analogical visual scale (VAS) for pain and complications. Patient study visits were inclusion, surgery, post 24-48 hours, 8 days, 1,3,6 and 12 months with clinical and duplex exam. Intention to treat analysis SPSS 20. Data expressed as mean and standard deviation (SD) or median and interquartile range (IQR) and percentage. IdiPaz HULP3601.

RESULTS Forty patients were randomized, twenty being allocated to RFA and twenty to SFL/S. The basal evaluation did not show any relevant differences. The CEAP stage of patients in both groups was similar (C2a 50% and C2,3 25% SFL/S; C2s 65% and C2,3s 20% RFA). The pain was for SFL/L 16 (16) and RFA 9 (18) (P=0.024) at 1 month, and SFL/L 11(16) and RFA 1 (5) (P=0.012) at 6 months. The SFL/S had a significantly higher incidence of complications, with thigh hematoma appearing in 14 out of 20 patients. The median analgesic intake was higher for SFJ/L 12 IQR 7-18 and 5 IQR 0-8 RF (P=0.011) and days it took them to return to work were significantly higher for SFL/S 24 IQR 11-37 and 7 IQR 0-17 for RFA (P=0.003). At 12 months, there was no difference between both groups regarding REVAS (16,7% LSF/S; 10% RFA, P=0.544), nor in CEAP stage (C0a 55%, C1a 25% for SFL/S; C0a 52,6%, C1a 21,1% for RFA, P=0.486). The VCSS at 12 months showed similar improvement with 1.0 (1.2) for LSF/S and 0.72 (1.3) for ARF (P=0.507). The quality of life measured by the SF-36 and CIVIQ20 questionnaires improved similarly in both groups, but improvement was again attained faster in the RFA group, with a significantly higher improvement at 1 month (P<0.017).

CONCLUSION The RFA of GSV ablation has showed to be at least as effective as SFL/S, while also achieving a lower number of complications, a lower analgesic intake, a lower time to return to work and a faster improvement of venous symptoms and signs and quality of life.

2.5 THE STUDY OF SYSTEMIC HEMODYNAMIC DISORDERS IN PATIENTS WITH VARICOSE VEINS AND POST-THROMBOTIC SYNDROME.

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AIM To assess cardiac function in subjects with varicose veins and post-thrombotic syndrome (PTS).

MATERIAL AND METHODS The study included 88 patients with varicose veins and 70 patients with PTS who underwent echocardiography.

RESULTS Most of the indicators of cardiac function in patients with varicose veins were within normal limits with a slight tendency to increased right heart sizes. In addition, there was an increase in the thickness of the interventricular septum (0.8 cm to 1.1 cm) and of the right ventricle (RV) anterior wall (0.3 cm to 0.5 cm) in patients with advanced varicose veins according to CEAP classification. Ejection fraction (EF) of both ventricles was also within normal limits with a tendency to decrease according to the increasing CEAP class (from a median 68.5% in C2 patients, to 64% in C6 patients). Higher CEAP classes were associated with an increase in the percentage of detection of non-restrictive blood flow through the tricuspid valve (TV). Restrictive type of blood flow in patients with varicose veins was not identified. Patients with PTS have also shown a tendency to increased size of the right heart. However, if the size of the RV, as a rule, did not exceed 3.0 cm, the size of the right atrium in subjects with clinical classes C4 and C5.6 was slightly higher (17.48 cm^2) as compared to normal values. EF of left ventricle was within normal limits in all patients, but slightly decreased in patients with advanced disease. EF of RV within the normal range was found only in patients with class C4. In 10.3% of patients with class C5/C6 and in 3.1% with class C3, EF was 48%. Diastolic dysfunction of the RV was detected in 84.4% of patients with class C3 and 100% with classes C4 and C5/C6. Moreover, PTS patients starting from class C4 and higher presented with a restrictive type of blood flow through TV in up to 20.68% cases in class C5/C6.

CONCLUSION Diastolic dysfunction of the right ventricle was the main hemodynamic disorder detected in patients with varicose disease and post-thrombotic syndrome.

Submitted for the EVF Prize.

2.6 ULTRASOUND-GUIDED FOAM SCLEROTHERAPY ON LARGES GREAT SAPHENOUS VEINS (OVER 8 MM DIAMETER) WITH 1% VS. 2% VS. 3% POLIDOCANOL: A RANDOMISED TRIAL.

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AIM To compare 1%, 2% and 3% Polidocanol (POL) foam in treating the great saphenous vein (GSV) by ultrasound guided sclerotherapy in large saphenous veins (over 8 mm diameter).

DESIGN Unicentre, prospective, randomised, double-blind trial.

MATERIAL AND METHODS 113 patients with GSV reflux (saphenous trunk diameter larger than 8 mm) were randomised to undergo ultrasound guided foam sclerotherapy using either 1%, 2% or 3% POL foam in a single session.
Duplex ultrasonography was used to assess the outcome after the treatment. The main criterion of success was the occlusion or disappearance of the venous reflux.

RESULTS 40 patients were included in group A (1% POL).
36 patients were included in group B (2% POL).
37 patients were included in group C (3% POL).
The mean volume of foam injected was 8 mL at each time.
Technical success was analyzed between the three different groups.
The number of sessions needed to conclude treatment in each patient was registered.
Clinical criteria, such as Visual Pain Scale (VPS) and clinical / anatomic criteria such as the Venous Clinical Severity Score (VCSS) were assessed before and after the treatment. Skin pigmentation after treatment was also analyzed.
The correlation between vein diameter, POL concentration used and the result of treatment in GSV occlusion were raised for statistical analysis.

STATISTICAL ANALYSIS There was no statistical difference regarding GSV occlusion when comparing the three different groups.
In group A (1% POL), the incidence of great pigmentation (10%), was significantly (P=0,033) greater than in groups B and C (both 0%). We can deduce that this greater pigmentation occurred due to the greater number of sessions of sclerotherapy needed in group A, and consequently greater local inflammation. There was no significant difference, at the level of 5%, between the other variables after the procedure, between the groups randomised in this subsample of large GSV. We highlight that the proportion of non-occluded GSV did not have significant difference between the three diferente groups of POL concentration (P=0,62).
There was a significant decrease in CEAP, VPS and VCSS after treatment in all three different groups, however the parameters improvement was not different between them.
Besides that, we noticed a reduction of 80% in the VPS, and of 90% in VCSS after completion of treatment.

CONCLUSION This study demonstrates no difference of efficacy for 1% POL, 2% POL and 3% POL foam in sclerotherapy of the GSV greater than 8 mm in diameter, but suggests higher risk of skin pigmentation in group A (POL 1%).

Submitted for the EVF Prize.

3.1 THE EVOLUTION OF VENOUS SYMPTOMS AFTER INTERVENTIONAL TREATMENT FOR VARICOSE VEINS.

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AIM This study aimed to assess the prevalence of symptomatic chronic venous disease (CVD) and specific venous symptoms before and after invasive treatment of varicose veins.

MATERIAL AND METHODS We performed a retrospective analysis of data obtained from the Russian Registry of Treatment of Chronic Venous Diseases (NCT03035747). We included records of patients with the symptomatic CVD (C0-6s by CEAP) who underwent any invasive treatment. The prevalence of venous symptoms was analyzed before and after the intervention. The Registry supports reporting of venous symptoms either within the CEAP classification or separately according to the definitions of SYM Vein consensus.

RESULTS The data were extracted in January 2020. Of 2649 records with reported outcomes, 1012 were eligible for analysis (723 women and 289 men, with a mean age of 48.0±13.6 years). The CEAP clinical class distribution was as follows: C2, 602 (59%); C3, 266 (26%); C4, 118 (12%); C5, 16 (2%); and C6, 10 (1%). Most of the patients underwent laser (n=653; 65%) or radiofrequency (n=317; 31%) ablation. The other procedures included open surgery (n=14), cyanoacrylate embolization (n=3), truncal sclerotherapy (n=2), and isolated miniphlebectomy (n=18) or foam sclerotherapy (n=5) for varicose tributaries. The time to follow-up ranged from 1 to 63 days (median, 3 days; interquartile range, 1-7 days) and was not identified in 49%.
According to the CEAP classification, the persistence of symptomatic CVD (C0-6s) after treatment was found in 141 of 1012 patients (13.9%; 95% CI, 11.9-16.2%). In 582 of 1012 records, the specific symptoms were reported. Before the treatment, the most common were pain (37%), heaviness (67%), fatigue (44%), and sensation of swelling (25%), with a mean personal number of symptoms of 2.1±1.1. After the treatment, any specific symptom was found in 65 of 582 patients (11.2%; 95% CI, 8.9-14.0%), and the prevalence of pain decreased to 1%, heaviness to 9%, fatigue to 8%, and the sensation of swelling to 4%, with a mean personal number of symptoms of 0.2±0.7. However, in the patients who reported individual symptoms before the treatment, their prevalence after the intervention was higher: heaviness persisted in 13%, fatigue in 18%, the sensation of swelling in 14%, and itching in 11%.

CONCLUSION From 11.2% to 13.9% of patients continue to suffer from venous symptoms after interventional treatment of varicose veins. The persistence of individual symptoms might reach 18%. There is a need for prospective studies to assess the evolution of patient-reported specific venous symptoms after venous interventions for varicose veins.

3.2 V-MOVE 2 V-CARE PROJECT: VEINES-QOL QUESTIONNAIRE WAS A VALUABLE TOOL IN ASSESSING QUALITY OF LIFE FOR PATIENTS PRESENTING WITH VENOUS ULCER IN INDIA OVER A 2 YEAR PERIOD.

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AIM To assess the utility of VEINES-QOL, a patient-reported questionnaire to evaluate quality of life in patients presenting with venous ulcers in Indian private practice centres over a 2 year period.

MATERIAL AND METHODS V-Move to V-Care Project was a multi-centric, observational, year on year assessment and surveillance program carried out in 3 centres in real world clinical practice settings.
144 patients above 18 years who were confirmed cases of venous ulcer less than 5 cm^2 with a duration of more than a year were asked to take the VEINES-QOL questionnaire.
The standard of care included a set management protocol of nutrition and lifestyle plan + dressings + topicals + debridement + systemic therapy in the form of venoactive drug MPFF + compression, as the patients were not willing to undergo any surgical intervention. Till date application of this tool in assessing quality of life year on year in Indian practice settings for a defined management protocol has not been evaluated and to our knowledge this is the first of its kind. Patient information and consent forms were well seeked and maintained.

RESULTS 144 out of the 144 patients filled the questionnaire completely. The average duration taken for patients to answer the questionnaire was 1 min and 54 s. The mean age (±SD) was 47.5±11.6 years. 51.3% of the patients were males. The most common problem reported was itching in 93% of patients and 61.19% (SD 0.75) suffered at least once in a week with 87.5% (SD 0.96). expressing their nature of complaints increasing at the end of the day.
65 (38.01%) of them although had to cut down the amount of time they spent on work or other activities and reported high on irritability one third of the times, however a majority of them 74.9% (SD 1.64) had either no or slight interference in their social activities .In comparison to the previous year about 78.47% (SD 1.20) patients mentioned that their complaints were 'much better now' and more than 90.1% (SD 1.64) of the patients reported no or mild leg pain.

CONCLUSION VEINES-QOL QUESTIONNAIRE could be an essential tool to help gauge clinicians the impact of their treatment protocols on patient's quality of life and help them quantify their improvement and plan their routine better. We referred patients for counselling sessions based on the level of 'irritability' quotient noted and if they reported significant limitation in their day to day activities. We also would like to make a key note that it is important to make the patients understand the questionnaire in their own language for appropriate utilisation.

3.3 EVALUATION OF MICROVALVE ALTERATION AND ASSESSMENT OF MPFF TREATMENT IN AN EXPERIMENTAL MODEL OF VENOUS HYPERTENSION.

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AIM The role played by the microvenous sytem in the progression of chronic venous disease (CVD) is now well admitted. Elevated venous pressure triggers inflammatory cascade in the microvascular compartment but it is unclear whether it is microvalve alteration that precedes or follows the venule wall changes.
The aim of the present work was to investigate the kinetic of microvalve inflammation in a model of hamster venous hypertension and to evaluate the effect of Micronized Purified Flavonoid Fraction (MPFF), a veno-active drug with venous anti-inflammatory properties.

MATERIAL AND METHODS Venous hypertension was induced in male hamsters by ligature of the common iliac vein. Kinetic of leukocyte-endothelium interaction was assessed by measuring the number of leukocytes sticking to the microvalve of a superficial venule, immediately after ligation and after 2, 3, 4, 5 and 10 hours, and 1, 2, 3, 4, 5, 7, 14, 21, 28 and 35 days (D). In a second set of experiments, hamsters were randomly distributed into 3 groups (n=10/group): MPFF 100 mg/kg/day per os, Vehicle or Sham. Treatment was started 2 days before induction of venous hypertension and, the number of leukocytes sticking to a selected microvalve at D5 was analyzed by a one-way analysis of variance with post hoc comparisons versus vehicle group.

RESULTS When compared with the sham-group, ligature of the iliac vein induced a rapid increase in the number of leukocytes sticking to the microvalve that reached statistical significance 2 hours after ligature ($P<0.0001$). A plateau was observed between 1 and 5 days ($P<0.0001$), followed by a decrease and a return to baseline values at D35. On D5, MPFF treatment almost completely prevented leukocyte adhesion to the microvalve when compared with the vehicle treated group (2.4 ± 0.24 *vs.* 13.68 ± 0.61, $P<0.0001$; sham 1.14 ± 0.09; number of leukocytes sticking as mean±SEM).

CONCLUSION Venous hypertension induces a rapid activation of an inflammatory cascade at the microvalve level, which can contribute to the course of CVD. MPFF treatment significantly prevents the initiation of microvalve inflammation and may play a protective role in the progression of venous insufficiency.

3.4 THE IMPACT OF LOWER BODY COMPRESSION GARMENT ON LEFT VENTRICULAR ROTATIONAL MECHANICS IN PATIENTS WITH SECONDARY LEG LYMPHEDEMA AND LIPEDEMA.

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AIM External lower body compression-related heart function changes are poorly investigated. We aimed to assess left ventricular (LV) rotational mechanics in the absence or presence of compression.

MATERIAL AND METHODS We applied three-dimensional speckle-tracking echocardiography (3DSTE) in lipedema (n=25), lymphedema (n=26) patient groups without and with lower body flat-knitted compression pantyhoses with age- and gender-matched healthy controls (n=54).

RESULTS LV apical rotation (9.61±4.25 degrees *vs.* 6.40±2.63 degrees, P<0.05) and LV twist (13.83±4.89 degrees *vs.* 10.04±3.56 degrees, P<0.05) are impaired in lipedema patients as compared to matched controls; similar alterations in lymphedema were not found at baseline.
Lipedema patients' LV basal rotation showed significant reduction (-4.45±1.65 to -2.79±1.84 degrees; P<0.05), while LV apical rotation presented notable increase (6.68±2.67 to 9.08±3.14 degrees; p<0.05) with unchanged LV twist after a 60-min use of compression garment (11.14±3.32 to 11.87±3.42 degrees; P>0.05).
Probands with bilateral secondary leg lymphedema showed significantly decreased basal rotation (-3.36±1.47 to -2.70±1.26 degrees; P<0.05) after 60-min application of compression hosiery while apical LV rotation (10.86±4.21 to 10.46±5.95 degrees; P>0.05) and twist (14.22±4.65 to 13.16±5.92 degrees; p>0.05) remained nearly unchanged.

CONCLUSION Our results suggest that lipedema-associated impaired LV apical rotation and twist assessed by 3DSTE could be a novel differential diagnostic point between lipedema and lymphedema. Unlike in case of secondary leg lymphedema, significant changes in LV rotational mechanics could be detected among women with lipedema after the use of compression garment.

3.5 FACTORS, WHICH ARE SECRETED BY THE VENOUS ENDOTHELIUM UPON EXPOSURE TO OSCILLATORY SHEAR STRESS, AFFECT ADJACENT CELL LAYERS OF THE VEIN WALL.

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AIM The inflammatory process plays a pivotal role in the pathogenesis of varicose veins and there is evidence that oscillatory flow present in incompetent veins is a main factor leading to proinflammatory cytokine release by endothelial cells. We aimed to identify factors secreted by the venous endothelium into the extracellular matrix upon exposure to oscillatory shear stress and affecting cells of adjacent layers of the vein wall.

MATERIAL AND METHODS The study was conducted according to the principles written in the Declaration of Helsinki and approved by our institutional committee. We obtained primary cultures of cells mainly forming the corresponding layers of the vein wall: endothelial cells (representing the inner layer-tunica intima), smooth muscle cells (representing the middle layer-tunica media), and fibroblasts (representing the outer layer-tunica adventitia), out of non-varicose vein segments left after surgery of 3 patients (CEAP clinical classes C2-C3). CD31-positive endothelial cells isolated by magnetic immunosorting were plated in EGM; CD31-negative cells were plated in SmGM and FGM, respectively. Endothelial cells were either exposed to oscillatory shear stress ("+") using Multitron Cell Incubation Shaker (INFORS HT) for 1 day or left at the static condition ("-shear stress"). Then, smooth muscle cells were treated with conditioned media from endothelial cells, and fibroblasts were subsequently treated with conditioned media from smooth muscle cells. After every exposure, some conditioned media were collected and frozen once at -70 °C. RNA was isolated from endothelial cells; the expression of the shear stress markers was evaluated using RT-qPCR. The conditioned media were simultaneously thawed to estimate cytokine profiles using the Human Bio-PlexProT 27-Plex-Cytokine Panel and Cytokine-Screening Panels for VCAM-1 and ICAM-1. The samples were processed following the manufacturer's instructions and read using Bio-Plex-200 Reader. The results were analyzed with Bio-Plex ManagerT Software and Microsoft Excel.

RESULTS Upon "+shear stress" exposure, endothelial cells secreted the cytokines such as VCAM-1, ICAM-1, IL-8, GM-CSF, MCP-1, MIP-1a, PDGF-BB (however, some on the cusp of statistical significance). The difference in those cytokine levels between "+shear stress" and "-shear stress" decreased as the subsequent cells representing the venous wall layers were sequentially treated. However, for VEGF (in the absence of a significant difference in case of media from endothelial and smooth muscle cells), a difference was observed upon "+shear stress" in media from fibroblasts.

CONCLUSION The endothelium appears to release factors that trigger sequential VEGF production by fibroblasts. Further experiments will focus on identifying factors at the transcriptional level.

Submitted for the EVF Prize.

3.6 COULD IT BE EFFECTIVE? NON-INFERIORITY RANDOMISED TRIAL OF NEW TYPE OF COMPRESSION STOCKINGS.

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AIM Compression stockings and bandages are widely used after invasive treatment in patients with varicose veins. The goals of compression after venous interventions are to reduce pain, bruising and ecchymosis. Nevertheless, patients often report about discomfort of using compression. This is one of the reason for poor adherence to compression, especially if the day and night compression is recommended. To make the post-procedural compression more tolerable foot-sparing bandages were tested proving its reliability.

AIM Comparison of the effect of class II foot-sparing compression sleeves for the full leg with class II conventional stockings on quality of life 30 days after thermal ablation with concomitant phlebectomy.

MATERIAL AND METHODS 187 patients with varicose veins and great saphenous vein incompetence were enrolled in randomized controlled non-inferiority trial. Patients were randomized to use class II foot-sparing compression sleeves for the full leg (Ecoten, Russia) or class II stockings after radiofrequency ablation with concomitant phlebectomy. Sleeves or stockings were put on immediately after intervention. Patients were instructed to use them day and night for first 7 days and then only during the day up to 30 days. The primary end-point of the study was quality of life measured by CIVIQ-20 questionnaire 30 days after intervention. Secondary end-points were pain in the leg and discomfort related to compression garment assessed by visual analogue scale (VAS) at 2, 7, 14 and 30 days.

RESULTS The global index score of CIVIQ-20 was 66.1 and 70.6 in sleeves and stockings group before (P=0.542) and 83.8 and 87.7 30 days after intervention (P=0.150). Pain score in the operated leg was slightly higher in the sleeves group next day after intervention (2.1 *vs.* 1.6, P=0.03). At 7, 14 and 30 days pain scores did not differ significantly (0.7 *vs.* 0.5, NS, 0.5 *vs.* 0.3, NS and 0.1 *vs.* 0.1, NS, resp.). Discomfort measured by VAS was also slightly higher in a study group next day (1.9 *vs.* 1.4, P=0.08) and after 7 days (0.9 *vs.* 0.6, P=0.008). No difference in discomfort was found between study and control group at 14 and 30 days (0.6 *vs.* 0.4, NS, and 0.4 and 0.4, NS, resp).

CONCLUSION Quality of life after thermal ablation with phlebectomy improved equivalently in patients who used class II compression sleeves for full legs comparing with those who used class II compression stockings. Pain and discomfort were slightly higher in sleeves group.

4.1 THE EFFECT OF THE LENGTH AND CALIBER OF THE NEEDLE ON THE STABILITY OF SCLEROSANT FOAM.

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AIM Obliterating agents administered as a foam are more efficient in comparison with liquid sclerosants, still there is a higher risk of neurological adverse event associated with this form of sclerotherapy. Administration of a stable foam seems to be the main measure aimed at reducing the risk of these complications. Although it is known than sclerosing foam administered through a small-caliber needle is less stable, very little is known how the length of such a thin needle affects its stability.

MATERIAL AND METHODS We measured the stability of sclerosing foam, which was made using standard Tessari method. Room air was used as the gas, and it was mixed with the sclerosant in the proportion of 4:1. Foam was made of 0.5%, 1%, 2% and 3% polidocanol, and 0.2%, 0.5%, 1% and 3% sodium tertadecyl sulfate. These foams were ejected through the needles with the length of: 4 mm, 6 mm and 13 mm, and diameter of: 0.26 mm, 0.3 mm and 0.4 mm. The time after which the foam started to disintegrate was measured. Measurements were conducted 5 times for each concentration of sclerosant, length and caliber of the needle.

RESULTS It was found that foams made of more concentrated sclerosant were more stable, which is in line with previous observations. Also, foams administered through a thicker needle were more stable. Interestingly, sclerosing foams made of polidocanol were more stable if ejected through a longer needle. On the contrary, foams made of sodium tertadecyl sulfate were usually more stable if ejected through a shorter needle, although this relationship was not as clear as in the case of polidocanol. Foams ejected through 0.26 mm (32G) needle were very unstable, especially regarding 0.5% and 1% polidocanol foams.

CONCLUSION In order to minimize the risk of neurological adverse events associated with foam sclerotherapy, the caliber and length of the needle should be taken into account. This is especially important if a small-diameter needle is used. If polidocanol is used as a sclerosing agent, it is better to use longer needles. On the contrary, foam sclerotherapy with sodium tertadecyl sulfate should rather be done with the use of short needles. Very thin needles produce unstable foam, therefore only small volumes should be used during one session.

4.2 ENDOVENOUS LASER ABLATION (EVLT) WITH SIMULTANEOUS SCLEROTHERAPY AS A COMPREHENSIVE APPROACH TO SUPERFICIAL VENOUS PATHOLOGY TREATMENT.

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AIM Endovenous thermal ablation is a treatment of choice for incompetent superficial truncal veins but timing of varicosity treatment is still controversial. Patients seek for treatment because of the symptoms but more often because of the cosmetic appearance. Especially in this second group, the fast and satisfactory result is expected, therefore the comprehensive approach to treatment of superficial venous pathology is nowadays mandatory. Moreover, the multiple sites of reflux are often found during the whole-leg duplex mapping. The aim of this study is to evaluate the safety and efficacy of EVLT with simultaneous sclerotherapy for superficial vein incompetence.

MATERIAL AND METHODS This is a 12-month prospective observation of 576 patients with superficial vein incompetence treated with simultaneous EVLA and sclerotherapy. Demographic information, distribution and extent of venous reflux, clinical and procedural data, treatment complications were collected on a customized database and analyzed. The occlusion rates of treated veins were evaluated with duplex ultrasound. Patients clinical improvement and satisfaction were assessed by CEAP classification, venous clinical severity score (VCSS) and on Visual Analogue Scale (VAS:1-10).

RESULTS Of 576 patients included at baseline, 76% were females, with median age of 47 years (IQR 18-88). The 1-month, 6-month, 12-month follow-up rates were 100%, 96.5% and 91.8%, respectively. The complete occlusion of truncal vein was found in 97.1%, 98.7% and 99.2% at 1-, 6- and 12-month follow-up, respectively. Additional sclerotherapy sessions were required in 32 patients (5.6%) due to residual varicosities (>3 mm) 5%, incompetent perforating veins 3.5%, partial occlusion of truncal vein 1.7% and fully patent truncal vein 1.6% and mostly in C5 (20%) and C6 patients (24.3%). 31.9% of patients requested additional sclerotherapy session due to C1 changes. The reported complications at a 1-month follow-up included visual disturbance 1.5%, migraine 0.7%, hyperpigmentation 13.9%, superficial thrombophlebitis 4.7%, peripheral edema 5.2%, paresthesia 1.7%, matting 2.9%, skin necrosis 0.7% and were mostly transient. Permanent hyperpigmentations were found in 2.1% at the 12-month follow-up. There was significant improvement in CEAP and VCSS ($P<0.001$) for all time intervals. Patient satisfaction of the treatment was high, with a median satisfaction of 9.5 on a VAS:0-10 scale. 98,3% said they would like to have this procedure again.

CONCLUSION One stage treatment is not only the patient preference but is also a valid, safe and effective treatment modality for superficial vein incompetence with significant clinical improvement and high posttreatment patient satisfaction. Hybrid approach does increase the treatment possibilities and its efficacy with acceptable risk increase.

4.3 INCIDENCE OF NERVE INJURY AFTER ENDOVENOUS LASER ABLATION FOR INCOMPETENT GREAT SAPHENOUS VEINS.

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AIM One of the most popular complications after endovenous laser ablation (EVLA) is a nerve injury. A relationship between the ablation length of great saphenous veins (GSV) and incidence of the complication was investigated. The time course of those symptoms was also studied.

MATERIAL AND METHODS A total 1513 legs of incompetent GSVs underwent EVLA for these 3 years in our day surgery clinic. Ablation was done by using Biolitec 1470 nm diode laser and 2-ring radial fibers. Tumescent local anesthesia was used with intravenous anesthesia. Nerve injury is defined as if a patient suffers any neurologic symptoms at the time of 1 month after the surgery. One year after the procedure, a phone interview was inquired to patients by asking any changes of their symptoms.

RESULTS Mean ablation length of GSVs was 36.6±11.7 cm, mean power was 8.3±0.9 Watts, and mean LEED was 59.6±19.5 J/cm. One month after EVLA, all patients were examined by ultrasonography and revealed complete occlusion of the treated GSVs.
Nerve injury occurred in 47 legs (3.1%). The main symptom was sensory nerve deficits of saphenous nerve area. The incidence by the ablation length was 1.3% (1/80) in less than 20 cm group, 0.5% (1/186) in 20-30 cm group, 1.7% (10/576) in 30-40 cm group, 4.7% (23/488) in 40-50 cm group, 7.1% (12/169) in 50-60 cm group, and 0% (0/14) in over 60 cm group.
By the phone interview at 1 year after EVLA, the symptoms disappeared in 44%, decreased in 48%, and unchanged in 8% of the patients.

CONCLUSION Nerve injury occurred in 3% of patients who underwent EVLA of incompetent GSVs. Incidence of nerve injury was 4 times higher in cases of ablation length more than 40 cm when compared to those below 40 cm (5.2% *vs.* 1.3%). One year after EVLA, more than 90% of the patients relieved neurological symptoms.

4.4 RELEVANCE OF SISTEMATIC VASCULAR ULTRASOUND EVALUATION POST FOAM SCLEROTHERAPY PROCEDURES.

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AIM Chronic venous insufficiency (CVI) of the lower limbs, secondary to varicose veins, has as one of the treatment options the ultrasound-guided foam sclerotherapy (UGFS), which although it is a safe method, is not exempt of risks and complications, such as deep venous thrombosis (DVT).
This study aims to demonstrate the importance of systematic performance of color Doppler ultrasound (CDU) venous of the lower limbs after seven days of UGFS aiming at screening for DVT in patients at Pedro Ernesto University Hospital of State University of Rio de Janeiro in the Vascular Medicine division outpatient clinic.

MATERIAL AND METHODS A prospective study was carried out at the HUPE/UERJ Vascular Medicine Unit, with a sample of 378 procedures performed in 187 patients with vein insufficiency: great saphenous vein (GSV), short saphenous vein (SSV) and/or tributaries veins, with calibers >6 mm in the CDU examination, during the period from January to June 2019. They were submitted to UGFS and oriented to the use of compressive therapy with elastic stocking continuously in the first 24h post-procedure, followed by daytime use for a period of one month. Information regarding site, number of punctures on the treated limb, volume and concentration of polydocanol used were recorded in the patients records. On the seventh day post-procedure, all patients were submitted to CDU with a protocol for investigation of DVT of the treated limb, independent of signs and symptoms.

RESULTS In the 378 procedures performed, 16 DVTs (4.2%) were diagnosed, three (0.79%) being proximal. Two patients (0.53%) presented EFIT (endovenous foam-induced thrombosis) III and one (0.26%), EFIT II. Only one of the patients diagnosed with DVT (0.13%) was symptomatic, demonstrating that the incidence of DVT would be underestimated if post-procedural systematic screening was not performed. In addition, in these patients, we observed the total recanalization of DVT of all (100%) patients after three months of anticoagulation, with reflux in the popliteal as a sequel in one.
With the increase in the use of the sclerotherapy technique UGFS, its complications have been increasingly studied. EFIT has different ecographic characteristics from classic DVT, being of more benign course and faster retraction. It is observed dilated vein, with hypoechoic luminal image for prolonged time in the treated vein, having eventually, hyperechoic image in target (in the center of the vessel).

CONCLUSION The review with venous CDU after seven days of the UGFS is fundamental in the diagnosis of DVT since most patients were asymptomatic aiming the minimization of possible complications of the technique.

4.5 COMPARISON OF LASER AND GLUE IN PERFORATOR VEIN TREATMENT.

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AIM Introducing laser crossectomy 10 years ago, fewer recurrencies were found from the SFJ. Following our patients after some year perforator vein recurrencies were experienced. this was the reason why we decided to treat insufficient perforator veins during our varicose vein laser surgeries.

MATERIAL AND METHODS Our patients treated between August 2018 and October 2019 were randomised into two groups: one was the laser and the other the glue group.
For laser occlusion 103-450 J (mean 296 J) was given for a perforator vein treatment. For glue treatment 0.1-0.6 mL (mean 0.26 mL) VenaBlock glue was given with direct puncture at the fascia level of the perforator vein. Saphenous stems were treated with lasers.

RESULTS 89 perforator veins were treated with laser, from them 64 were closed (72%) and 25 (28.0%) remained open. From these open perforator veins 17 are refluxive (19.1%).
102 perforator veins were treated with glue, from them 85 (83.4%) are closed and 17 (16.6%) remained open. From these open perforators 11 are refluxive (10.8%). The difference between the laser and glue groups is not significant.
As a complication paresthesia was experienced in laser surgery cases in 61 cases (68.5%). This was a temporary observation lasted usually for 3 months. There was no inflammatory response in glue treated perforator cases. Clinically there were no thromboembolic complications. There were no clinical signs of thromboembolic events. It was difficult to prove patency of deep veins with US in glue cases, because of the sound shadow of the glue.

CONLCUSION It seems that regarding the success rate glue treatment seems better (the difference is not significant). Glue treatment is recommended mainly because of fewer complications.

4.6 REDUCING HYPERPIGMENTATION AFTER SCLEROTHERAPY (RHYAS) STUDY: RESULTS OF A MULTICENTER, CONTROLLED, RANDOMIZED CLINICAL TRIAL.

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AIM The treatment of varicose veins with sclerotherapy it is useful, practical and low-cost, and considered one of the most common cosmetic procedures performed in the western world; but even in train hands, some complications can occur, although mostly minor and self-limited, they can take several months to resolve; one of the most frequent ones is hyperpigmentation with a reported incidence around 10-30%.
With the hypothesis that hyperpigmentation is related to residual thrombus formation, and also to a perpetuated endothelial inflammatory response, this study aims to evaluate if a venoactive drug with direct endothelium anti-inflammatory and antithrombotic effects, added to patients with varicose veins during the treatment period can reduce post-sclerotherapy pigmentation.

MATERIAL AND METHODS This is a prospective, multicentric, randomized, controlled clinical trial using a parallel-group design, including 720 patients with telangiectasia, reticular, or varicose veins who were candidates for sclerotherapy. 354 patients were assigned to group A who received a standard sclerotherapy protocol and 366 patients to group B who received the same sclerotherapy protocol + antithrombotic drug, beginning 7 days before initial sclerotherapy session and continued for 3 months. Polidocanol was use as a sclerosing agent, and 20-30 mmHg compression stockings indicated in both groups for 7 days. In each patient, the treated area was photographed, and follow-up was done at 1 and 3 months using computer software to compare variables of incidence of pigmentation, the total area of pigmentation, skin-tone increase in pigmented area, vein disappearance and presence of major bleeding. The Student t-test or the nonparametric Mann-Whitney test was used to compare continuous variables. The Fisher exact test or the $\chi 2$ test was used to compare categorical variables. The level of significance was set at less than 5%.

RESULTS A total of 609 patients completed the 3-month follow-up, n=297 in group A and n=312 in group B. the Incidence of pigmentation was 14.8% in group A *vs.* 8.7% in group B (P=0.01), group A develop an average area of pigmentations of 18.23% *vs.* 10.78% in Group B at 1-month (P=0.004) and persisted 5.4% *vs.* 3.6% at 3 months (P=0.002). The skin-tone of pigmentation was higher in group A compared to group B at 1 month (P=0.02). Overall, vein disappearance was similar in both groups. There was no major bleeding reported in any group.

CONCLUSION This analysis shows the benefit of using an antithrombotic drug after sclerotherapy by reducing hyperpigmentation without affecting the vein disappearance rate or increasing the risk of major bleeding.

5.1 RUSSIAN SULFACRYLATE GLUE (VENOGLUERUS). HISTORY, PRESENT AND FUTURE.

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AIM The Russian adhesive sulfacrylate was synthesized in 2000, in contrast to foreign analogues it is based on ethyl ether of α-cyanoacrylic acid, not butyl. Two additional plasticizers were added to the glue, which reduced the brittleness of the compound, while reducing the inflammatory reaction due to an additional substance. In 2010 it was registered and approved for use in clinical practice in Russia.

MATERIAL AND METHODS From May 2019 till January 2021 an endovasal catheter obliteration of the main trunks of the great (GSV) and small saphenous veins (SSV) was performed using the sulfacrylate glue in 56 patients with varicose disease (C2 – C4). The diameter of the target vein varied from 9 MM to 13 mm. The dose of VenoGlue depends on the diameter of the target vein. For vein diameter 0.8-1.0, 0.1 mL glue is used for every 5 cm treated. For vein diameter greater than 1.0 cm, 0.2 ml is used for every 5 cm treated.
We evaluated: pain, thrombophlebitis, local and general allergic reaction.
Ultrasound control was carried out on: the 3rd 60th days and 6 months. Immediately after the intervention and on the 1st day, the possible spread of the glue in the proximal and distal direction of the GSV and SSV, as well as along the communicating vein, was monitored. Histological study of morphological changes (*in vivo*) was performed with the consent of patients to conduct the study. We studied the parts of veins taken from 15 patients within the period from 7 to 180 days after the introduction of the glue into the lumen of the vein. In 11 cases – suprafacial segments of GSV, in 4 patients – SSV.

RESULTS Pain after 48 hours was observed in 31 patients (55%) VAS scores ranging from 0.86 to 2.2. In 6 cases (11%), patients reported moderate pain (VAS scores 4-5). Symptoms resolved after administering oral steroids and antihistamines. There were no cases of glue extension into deep veins and no allergic reactions in the patients. In 8 patients when the glue reached the subcutaneous fat there were signs of aseptic inflammation that did not require any treatment. During the histological examination starting from the 7th day, there was a gradually relieving aseptic inflammation in the vein wall. Within 180 days, the lumen of all veins was completely obliterated by mature connective tissue, in the absence of glue particles, which was indicative of its complete biodegradation. The anatomical success rate was 100% after respectively 3 months and 6 months follow-up.

CONCLUSION Cyanoacrylate adhesive embolization of incompetent truncal veins using the Russian glue Cyanoacrylate is a safe and effective procedure.
The high adhesive ability of the glue contributes to the absence of extension into the deep system. The glue is biodegradable.
The Russian glue is a low-cost treatment which can easily be performed as an office-based procedure.

5.2 WILL PADDING THE LEG TO A PERFECT CIRCULAR SHAPE GIVE AN EVEN PRESSURE DURING COMPRESSION TREATMENT?

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AIM Compression treatment is often reported as challenging for both patients and health care personnel. Furthermore, the theory behind compression treatment is, in part, poorly understood. The dosage of compression treatment is defined as applied pressure sustained over time. However, the actual dosage is rarely achieved. In theory, the law of Laplace governs applied bandage pressures. Since the curvature of the leg affects the applied bandage pressure, padding is frequently used not only to protect parts of the leg but also to obtain a more circular shape. The rationale behind this is that a known constant bandage tension, a circular shape with a known size will result in a known pressure on the leg. In theory, shaping the leg as a cone will result in a pressure gradient. But, is the basic assumption correct, that a circular shape achieved by added padding will result in a uniform pressure applied to the leg?
The aim was therefore to study pressure distribution on the lower leg via mathematical modeling and computer simulations for different types of padding geometries.

MATERIAL AND METHODS A two-dimensional cross section of the lower leg and a hyperelastic neo-hookean free-boundary model was set up. The leg was assumed incompressible, the padding-material compressible. The outer padding boundary was set to simulate a compression bandage of 50 mmHg, A finite element software was used to compute the resulting geometry configuration and the resulting pressure distribution on the epidermis layer.

RESULTS Constant pressure on circular paddings does not give a constant pressure on the leg (Figure 1, Table I) Furthermore, thicker padding results in lower pressure on the leg.

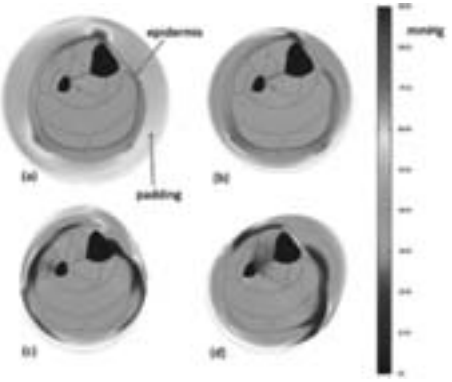

Figure 1. Comparison of the pressure distribution for different paddings. A bandage wrap of with constant tension was simulated resulting in a compressed geometry with its pressure level indicated by colour. Configuration (A) was padded into an outer profile of circular shape with a radius of 70 mm; (B) a radius 60 mm; (C) depicts a model of an increased level of padding on top of the tibia resulting in an overall profile of a so-called circlips. The circlips was rotated 45 degrees in (d) to cover the concave section of the leg.

Table I. Note from the table that the smallest maximal variation of the pressure on the epidermis is given by the larger circular padding. However, the pressure variation is quite significant.

Radius (mm)	*Pressure on epidermis (mmHg)*		
	Min	*Ma29x*	*Difference*
a. 70	34	49	15
b. 60	38	69	31
c. Circlips	1	65	64
d. Circlips45deg	13	61	48

CONCLUSION Padding the leg to a circular shape before applying compression bandages does not, even in theory, result in an even pressure on the leg. The optimal shape for paddings remains to be found.

5.3 POST-THROMBOTIC SYNDROME IN PATIENTS WITH DOUBLE POPLITEAL VEIN.

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AIM Post-thrombotic syndrome (PTS) is an assembly of symptoms and signs of venous insufficiency that occur after deep venous thrombosis (DVT). It can be seen in 20-50% of all people who had lived DVT. Accurate diagnosis and proper treatment reduce the incidence of PTS. Therefore, it is important to understand the normal anatomy of the lower limb system in order to establish the correct diagnosis and to provide appropriate medical behavior. Variations in the deep veins of the lower limbs are often found. The anatomical duplication of deep vein may be one of the potential causes for misdiagnosis of DVT and thereafter the severity of PTS.
Aim of the study we would like to present is to compare the severity and incidence of symptoms in patients with post-thrombotic syndrome who had double popliteal vein.

MATERIAL AND METHODS We examined 108 patients men and women at the age of 35-74 (mean age -52.8 years), who undergo clinical examination at the Clinic of vascular surgery for a period of 12 months with diagnosis of PTS. Clinical examination included anamnesis, medical history, quality of life questionnaires, status, color-coded duplex Doppler sonography and blood tests for thrombophilia. We also measured diameters of the calf and thigh on both legs.

RESULTS Our study showed 5.5% incidence of popliteal vein duplication. We found significant difference in the symptoms with which patients presented themselves during the exam. In the group of patients with double popliteal vein we found lower clinical incidence of symptoms such as swelling and tension at the end of the day in the affected limb and showed better (short-term) response to the phlebotonic and elastic therapy. There was no significant difference in frequency of thrombophilia in both groups.

CONCLUSION Variations of the lower limb venous anatomy system are indisputable. Knowing them and adequately handling of diagnostic and therapeutic methods help to better management of vascular disease and reduce to minimum the risk of PTS.

5.4 MATHEMATICAL MODELING OF THE VENOUS WALLS' AND VALVES' DEFORMATIONS.

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AIM The venous valve insufficiency is crucial for the Chronic Venous Disease. Researches in pathophysiology and biochemistry were successful in analyzing this complex process but the mechanical side of the issue is not studied in detail.
Mathematical analysis of the venous walls' and valves' deformations, undergoing due to mechanical reasons.

MATERIAL AND METHODS We excluded all neuropathological effects and inflammatory reactions in this area, aiming to focus on the fluids' lumen speed and pressure impacts on the blood vessel.
We considered statistically average values of a healthy Saphena Femoral junction with a single valve: vein radius = 3 mm; thickness 0.66 mm; lenght 100 mm; pressure on the vein elastic modules - two cases 30 kPa and 100 kPa. Re: the valve - 500 kPa equivalent for both cusps; density of 1050 kg/m^3; Poisson coefficient = 0.48. We applied the Finite Element method. Thus, the pressure is calculated at each point of the wall and the cusps. A prediction is produced on when the irreversible deformation could emerge.

RESULTS Pressure distribution and blood flow speed via the longitude axe of the pipe were established at points z = 0 м at the entrance 3700 Pa, and at the exit - 4800 Pa, performing an interval pulsation component (amplitude 0-36 mmHg) and a constant one (2400 kPa). Irreversible deformations are stepping on where the pressure of 3700 Pa is applied. As the pressure values run to more than 4200 Pa, the valves cannot close.

CONCLUSION The study confirmed that the venous wall has lower level of resistance than the valve. Its dilatation due to the constant intra-lumen pressure increase occurs earlier. The high pressure diversities below and above the valve define its function but also bring to its irreversible deformation.

PR1 DEFINITE DIAGNOSIS OF LYMPHEDEMA USING LYMPHATIC ECHOGRAPHY.

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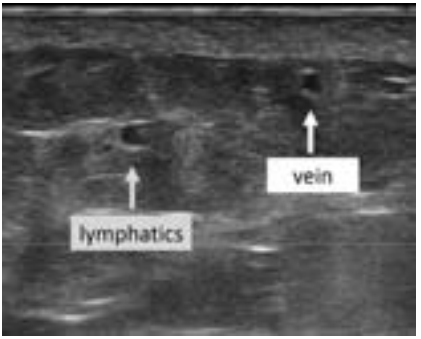
AIM We have reported the usefulness of echography as a preoperative examination for lymphatico-venous anastomosis (LVA). As venous echography became a standard in diagnosing venous diseases in the lower extremities, we consider that echography can also become the standard for diagnosing lymphedema.

MATERIAL AND METHODS Fourteen patients (28 lower limbs) who underwent LVA for lower limb lymphedema was investigated. In the preoperative examination, we performed echography to detect the lymphatic vessels, using 18 MHz linear probe. We evaluated the abnormal expansion or sclerosis of the lymphatic vessels in the medial side of the legs, which indicates the presence of lymphedema. Next, we performed indocyanine green (ICG) lymphography and diagnosed lymphedema. Then we compared the results of each examination.

RESULTS Staging of lymphedema was stage 1 in 9 limbs, stage 2a in 7 limbs, stage 2b in 8 limbs, and stage 3 in 4 limbs. The sensitivity and specificity of diagnosing lymphedema based on echography in the medial area were 95.0% and 93.8%, respectively. The accuracy rate was 94.6%. The sensitivity was 95% both in the thigh and the lower leg, though the specificity was higher in the thigh than in the lower leg (100% and 87.5%, respectively). We could detect the lymphatic vessels with echography in 39 out of 54 areas where we could not find them in lymphoscintigraphy or ICG lymphography (72.2%).

CONCLUSION The location and degeneration of the lymphatic vessels in the lymphedematous limbs could be evaluated with commonly-used echography. The low specificity may be because echography detects the expansion of the lymphatic vessels and diagnoses subclinical lymphedema. Echography has a to be used for the definitive diagnosis of lymphedema, instead of lymphoscintigraphy or ICG lymphography.

Figure 1. Image of echography indicating the dilated lymphatic vessel.



PR 2 INVESTIGATING A ROLE FOR PLATELETS IN VENOUS IN-STENT STENOSIS IN PATIENTS WITH POST-THROMBOTIC SYNDROME.

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AIM In-stent stenosis following venous intervention for post-thrombotic syndrome (PTS) occurs in ~30% of cases, but the mechanisms underpinning this pathology are poorly understood. The aim of this study was to investigate whether platelets have a role in this process.

MATERIAL AND METHODS Patients undergoing venous stenting were matched for the degree of anatomical involvement, duration and symptoms of PTS and prospectively recruited. Platelet-rich-plasma was prepared from blood samples taken before and after venous stent placement and the expression of CD41, CD42, and activation markers P-selectin and phosphatidylserine were determined by flow cytometry. Platelet aggregation was measured before and after stenting using a plate-based assay and compared with healthy controls. Soluble glycoprotein VI (sGPVI), shed from the platelet surface during activation, was measured in plasma samples by enzyme-linked immunosorbent assay. Platelet activation and function were then compared between PTS patients with in-stent stenosis requiring reintervention (>50% diameter reduction), and those who did not during follow-up.

RESULTS Forty-five patients with post-thrombotic occlusions extending from the common femoral vein to the common iliac vein, were recruited into the study (median age:43 years, range: 33-55 years; 65% female). Re-intervention was required in 19 patients (median time: 3 weeks, range: 1 day-3 months) for in-stent stenosis. There was no significant difference in platelet activation before and after stenting, but P-selectin exposure levels (in the absence of platelet agonists) in pre-stent samples were significantly higher in patients who developed in-stent stenosis (2.7%±0.4 *vs.* 1.7%±0.2; $P<0.05$).

There was no difference between groups in platelet sensitivity to any agonist following venous stenting, however, platelet sensitivity to collagen-related peptide, a GPVIspecific platelet agonist, was reduced in PTS patients before stenting (n=33) compared with healthy controls (n=14) (-7.1M±0.1 *vs.* -7.5M±0.1; $P<0.05$). Platelets from patients who developed in-stent stenosis were also less sensitive to collagenrelated peptide (-6.5M±0.3), than those from patients with patent stents (-7.2M±0.2; $P<0.05$). sGPVI levels before stent insertion were increased in patients who developed in-stent stenosis compared with those who did not (18.9±3.6ng/mL *vs.* 7.4±0.9ng/mL; $P<0.01$).

CONCLUSION Venous stenting does not appear to activate platelets or alter platelet function in patients with occlusive post-thrombotic disease. However, patients who developed instent stenosis exhibited greater levels of baseline platelet activation in blood taken before a venous stent was placed, which was consistent with higher circulating levels of sGPVI. sGPVI may therefore have potential to risk-stratify patients undergoing deep venous reconstruction and predict which patients may require closer surveillance.

Further studies to prospectively investigate if inhibiting platelet function in selected groups of patients can improve outcomes are also warranted.

P1 A COMPARISON OF OPEN VS. CLOSED-CELL DEDICATED VENOUS STENTS FOR TREATMENT OF CHRONIC ILIOFEMORAL VENOUS OBSTRUCTION.

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AIM Several dedicated self-expanding nitinol stents are now available for the treatment of iliofemoral venous obstruction. Closed-cell stents have the benefit of higher radial force and crush resistance, whereas open-cell stents have increased flexibility and conformability. Both have good patency and safety outcomes in clinical trials, but comparative data on how these stents perform in everyday clinical practice is lacking.

AIMS to compare long-term outcomes of open-cell *vs.* closed-cell stents for treatment of chronic iliofemoral venous obstruction; to compare outcomes for patients requiring stenting across the inguinal ligament *vs.* those in whom the stent ended above the ligament.

MATERIAL AND METHODS We performed a retrospective analysis of outcomes for all patients treated with dedicated venous stents for chronic iliofemoral venous obstruction between 2014-2019. Survival analysis was performed to compare patients treated with open-cell stents only vs closed-cell stents only. Sub-group analysis compared outcomes for patients who required stenting across vs above the inguinal ligament.

RESULTS A total of 187 patients were identified, 129/187 (69%) were female, 138/187 (74%) were treated for post-thrombotic disease, the median age was 45. Stenting across the inguinal ligament was required in 97/187 (52%) of patients. Open-cell stents only were used in 80/187 (43%) patients, 107/187 (57%) were treated with closed-cell only. There was no significant difference in overall primary, primary-assisted or secondary patency at 48-mths (open; 62%,73%,85%, closed; 59%,77%,89%, (P=0.8,0.9,0.6). There were 7 stent fractures, all occurred in closed cell stents. Stenting across the inguinal ligament was required in 42/80 (53%) patients treated with open-cell stents and 56/107 (52%) of patients treated with closed-cell stents. Open-cell stents had better patency for stenting across the inguinal ligament (open – 58%, 83%, 94% vs closed- 37%, 58%, 77% P<0.05). Closed-cell stents had better patency when stents ended above the inguinal ligament (closed – 76%,96%,100% *vs.* open- 69%, 73%, 80%, P<0.05).

CONCLUSION No difference was found between open and closed-cell stents for overall patency. Open-cell stents performed better for stenting across the inguinal ligament, whereas closed-cell had better patency for patients requiring stenting ending above the ligament. A combination of open and closed cell stent properties may provide better outcomes, but the mechanism of failure needs to be understood in more detail.

P2 EVLO 1940 NM - A NEW STEP IN THE TREATMENT OF VARICOSE VEINS.

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AIM Laser radiation with a wavelength of 1.94 μm is absorbed in the aqueous medium 5-12 times more than waves with a length of 1.47 μm and 1.55 μm, which are currently considered as reference when conducting EVLC. At the same time, in recent years, a number of studies have appeared that demonstrate the clinical advantages of using diode lasers generating radiation in the two-micron range for EVLC.

AIM to evaluate the nature and depth of damage to the wall of an isolated large saphenous vein when exposed to laser radiation with wavelengths of 1550 nm and 1940 nm at different linear energy densities.

MATERIAL AND METHODS In the work we used laser devices LSP-"IRE-Polus" (registration No. RZN 2013/850), generating laser light with wavelengths of 1.55 μm and 1.94 μm; Biolitec 2-ring radial fibers, automatic extractor from NTO "IRE-Polus". Segments of large saphenous veins (GSV) with a diameter of 4-6 mm and a length of 5 cm, taken during a traditional phlebectomy, were washed from the blood and fixed in a transparent cuvette filled with saline on two introducers. A fiber was inserted into the lumen of a fixed vein, the position of which was determined by the pilot beam, and after switching on laser energy, its automatic traction was performed. During the experiment, different power parameters were used, which in turn provided a different linear energy density. After performing EVLC, the vein segment was fixed in a 10% formalin solution for subsequent histological and histochemical studies. A total of 68 GSV segments were sampled, processed by 1.55 μm and 1.94 μm lasers.

RESULTS On the basis of histological and histochemical analysis, it was found that at an equally linear energy density, the wavelength of 1.94 μm provides deeper damage to the wall of an isolated segment of the large saphenous vein in coparison with 1.55 μm. The data obtained indirectly indicate the advantages of a wavelength of 1.94 μm when conducting endovasal laser coagulation. The clinical efficacy of a wavelength of 1.94 μm is studied in clinics.

CONCLUSION The use of a wavelength of 1.94 μm provides sufficient damage to the venous wall at a significantly lower linear energy density, this may have various clinical (reduction of pain syndrome, decrease in the frequency of paresthesias, etc.) and technical advantages (increased wear resistance of optical fibers, increased procedure speed, the possibility refusal from tumescent anesthesia, etc.). Whether or not the use of a wavelength of 1.94 μm becomes a new evolutionary step in the performance of EVLC will be shown by further clinical studies and collective experience.

P3 PROTEOMIC PROFILING OF VARICOSE VEINS- NEW INSIGHT INTO OLD PROBLEM.

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AIM The advent of proteomics techniques allows large-scale studies of gene expression at protein level. Although morphological and anatomical studies indicate that venous wall weakening and subendothelial fibrosis characterize varicose veins, the pathogenesis of varicose veins (VV) remains poorly understood. The aim of this study is to obtain protein expression profiles in patients with VV.

MATERIALS AND METHODS AND RESULTS Varicose saphenous veins removed during phlebectomy and normal saphenous veins obtained during vascular surgery were collected for proteomics analysis. The same layers of venous wall from varicose and non-varicose veins were incubated, and the proteins released were analyzed by ion mobility spectrometry (IMS-MS) with Synapt G2. Proteomic analysis of the human vein revealed totally 1387 proteins. 200 proteins demonstrated significant differences in their quantity (more than 1.5 fold) between the two types of venous tissue ($P<0.05$). Among the most differentially expressed proteins 10 were found significantly decreased in the VV tissue, and only two- increased. CXXC-type zinc finger protein (receptor for vascular endothelial growth factor) was more permanent (38- fold down regulated). All differentially expressed proteins and their pathways, coexpression and were analyzed in GeneMANIA and AmiGO databases.

CONCLUSION This study provides novel insights into the biochemical mechanisms of this disease and provides a basis for further studies. The identified proteins suggest that altered connective tissue proteins and increased proteolytic enzyme activity appear to be central to the pathophysiology of varicose veins.
Larger studies are required to confirm the potential and clinical role of the identified proteins.

P4 EFFICACY AND FEASIBILITY OF TRANS-LUMINAL INJECTION OF FOAM SCLEROTHERAPY COMBINED WITH ENDOVENOUS LASER ABLATION OF VARICOSE VEINS: COMPARISON WITH ULTRASOUND-GUIDED FOAM SCLEROTHERAPY.

Satoshi Watanabe; Atsunori Okamura; Mutsumi Iwamoto; Hiroyuki Nagai; Masato Ishikawa; Akinori Sumiyoshi; Kota Tanaka; Satoshi Suzuki; Hirokazu Tanaka; Katsuomi Iwakura; Kenshi Fujii
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AIM The combined treatment of truncal endovenous therapies with ultrasound-guided foam sclerotherapy (UGFS) for tributary vein is widely performed. However, this conventional technique tends to result in incomplete or non-sclerotic vessels. Otherwise, trans-luminal injection of foam sclerotherapy (TLFS) via the sheath might entirely cover the targeted tributary vein.

MATERIAL AND METHODS One-hundred forty-nine consecutive patients with 163 legs who underwent 1470 nm laser ablation (EVLA) for great saphenous varicose veins were enrolled. TLFS was performed as below; EVLA was temporarily stopped at 2 cm to 4 cm proximal to targeted tributary vein. The tip of the introducer sheath was placed 1 cm to 2 cm proximal to targeted tributary vein. Then, sclerosing foam was injected via the side port by compressing GSV above the targeted tributary vein. After injecting the agent, EVLA was restarted. UGFS was performed according to the conventional procedure. Patients were divided into two groups: EVLA and UGFS group (UG, n=71) and EVLA and TLFS group (TL, n=92).

RESULTS After 12 months of follow-up, all cases revealed the abolition of reflux. No major complications related with foam sclerotherapy were observed during the procedure. Thrombophlebitis was observed in 2 patients in the TL group (P=0.13). Additional second-stage sclerotherapy was significantly avoided in the TL group (n=8, 9%) when compared to the UG group (n=36, 51%, P<0.0001). The venous clinical severity score (VCSS) was significantly improved in TL group (UG; -3.3±1.5, TL; -4.2±1.1, P<0.0001). Univariate and multivariate analyses revealed that, among age, sex, Clinical-Etiology-Anatomy-Pathophysiology classification, linear endovenous energy density and TLFS, TLFS was the only significant factor of improved VCSS (hazard ratio=-0.48; 95% confidence interval=-0.68 to -0.27; P<0.0001).

CONCLUSIONS TLFS combined with EVLA may be an easy, safe and effective procedure, with acceptable complications when compared to UGFS combined with EVLA and may also reduce additional second-stage interventions.

P5 SUBORDINATION OF ANGLES OF THE VEIN'S CONFLUENCE TO ROUX'S LAW IN MURRAY'S MATHEMATICAL INTERPRETATION.

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AIM At the end of the 19 century, Wilhelm Roux formulated empirical law of the ramification of the blood vessels, basing from their function.
According this law, configuration of arterial bifurcation corresponds to the principle of minimal cost of energy and material. So far it is unknown if this law works for the veins.
Purpose of the article is to check if the Roux's law of the ramification of the blood vessels works for the veins of the anterior abdominal wall.

MATERIAL AND METHODS During the research we reviewed confluence of a 100 subcutaneous veins of the anterior abdominal wall of 50 patients (without venous pathology). Using the "RadiAnt DICOM Viewer 4.6.9" app we examined MRI results in DICOM format.
The algorithm of data preparation includes:
Diameters of subcutaneous veines and their tributaries was measured thrice near of confluence in order to get rid of the inaccuracy, image Rasterisation at the approach, artifacts on MRI scans.
The Actual angles were calculated with using the protractor tool in RadiAnt DICOM Viewer 4.6.9, where the angle between vein and its right inflow is indicated as -X and the left as Y).
The calculated angles of confluence for measured radiuses were received with formulas adapting to the principle of minimal cost work to the angles ramification of the arteries and offered by Murray in for mathematical interpretation Roux's law.
Received data was included to the table and divided to the appropriate groups (true angles X, Y and calculated angles Xc, Yc) founded relative for error (in percent).
After checking the original data on accordance normal law distribution these groups were compared by Students's parametric criterion. For two-way distribution with equals variances at P=0,05, as a result of which all 100 confluence comply with the Murray's law.

RESULTS The following confluence patterns for the veins. During the statistical analysis, no differences were found between the values of the groups of true and calculated angles for the right inflow (X) with a threshold value of the relative error of 45%. The same tendency was revealed for the left tributary (Y). Where there weren't statistically significant differences between the values of the same groups with a relative error 40%.
The tendency found in the research in the left tributary to a greater relative error in compare with the right, seems to be systematic. And, may also be a pattern of confluence of superficial veins of the anterior abdominal wall.

CONCLUSION In general, we found that the Roux branching law in Murray's mathematical interpretation is applicable to confluence of the veins.

P6 SHAVE-THERAPY WITH SIMULTANEOUS AUTODERMOPLASTY FOR PATIENTS WITH EXTENSIVE TROPHIC ULCERS.

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AIM Due to the recent increase of patient rate with large size trophic ulcers or conservative therapy ineffectiveness it's necessary to apply trophic ulcers invasive methods. One of such is a layered tangential suprafascial necrosectomy and fibrosectomy also known as Shave-therapy in combination with autodermoplasty.

MATERIAL AND METHODS During the last 24 months 38 patients with venous trophic ulcers were operated, 21 of them had ulcers against the background of the varicose veins and 17 suffered from post-thrombotic disease.
Patients' profile: 8 male and 30 female. Average age 63.7±8.9 years. Average trophic ulcer size 504.4±23.9 cm^2. Average trophic ulcer existence duration 4.67±4.8 years.
All patients were operated using method of layered tangential suprafascial necrosectomy and fibrosectomy also known as Shave-therapy in combination with autodermoplasty. 0.3 mm skin flap has been removed from the affected limb thigh using electrodermatome. Shave therapy has been applied for all patients, regardless of the wound process stage until the bleeding surface appearance, each removed layer thickness has been 0.2-0.4 mm. Surgical stapler has been used to staple skin flaps. In order to avoid under-flap hematomas formation several skin flap perforations has been done with a scalpel. For the lower extremities compression an inextensible bandage has been used. Surgical procedures has been performed in a round-the-clock hospital. In 6 cases patients were under endotracheal anesthesia and in 32 cases under spinal anesthesia. In 28 cases, in addition to other manipulations, EVLA (endovenous laser ablation) has been simultaneously performed in order to eliminate venous reflux.

RESULTS When evaluating the results, the skin flap adaptation on the wound was examined in the first 10 days, then in 20 and 30 days. On the 10^{th} day in all patients no skin flap lysis was observed. On the 20^{th} day, marginal lysis of the flap has been detected in 7 cases. On the 30^{th} day 36 patients had almost full healing of wounds, full lysis of the flap has been detected in 2 cases.

CONCLUSION Thus layered tangential suprafascial necrosectomy and fibrosectomy also known as Shave-therapy in combination with autodermoplasty is an effective, modern extensive venous ulcers patient treatment method, it allows you to close extensive wound defects without preliminary preparation.

P7 THE EFFECTIVENESS OF MICRONIZED PURIFIED FLAVONOID FRACTION IN COMBINATION WITH COMPRESSION THERAPY IN THE TREATMENT OF CHRONIC VENOUS EDEMA.

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AIM Chronic lower limb oedema is one of the complications of superficial or deep chronic venous disorders (CVD), ranked as C3 on the clinical, etiological, anatomic, pathophysiologic (CEAP) classification. The aim of this study was to evaluate the effectiveness and safety of micronized purified flavonoid fraction (MPFF) in patients with chronic venous edema.

MATERIAL AND METHODS This was a multicentre, prospective, observational study. Male of female patients 18 years old or above with CVD class C3 were treated by specialists with a combination of compression therapy and MPFF 1000 mg daily, with or without endovenous intervention. After a first visit (V0), patients returned for a follow-up visit (V1) after 2 weeks. The treatment effectiveness criteria were 1) CVE (lower leg volume) assessed using the disk model method, 2) vein-specific symptoms using 10 cm visual analogue scales (VAS), and 3) quality of life (QoL) using vein-specific questionnaire CIVIQ-14. Mean values were compared between V0 and V1 using paired t test. A P value <0.05 was considered significant. Adverse events reported by the patients over the treatment period were recorded.

RESULTS A total of 708 patients were included: 531(75%) female; age: 48,6±12,6 years. The mean CVE (primary endpoint) significantly decreased from 3.07±0.84 L at V0 to 2.78±0.80 L at V1 (P<0.001). A significant reduction in the leg volume from 3.03±0.87 L to 2.77±0.85 L (P<0.001) was also observed in 288 patients without endovenous intervention. Main symptoms related to CVD decreased significantly between V0 and V1: lower leg heaviness from 5.38±2.19 cm to 1.56±1.56 cm, leg pain from 4.24±2.39 cm to 1.12±1.37 cm, feeling of leg edema from 5.68±2.44 cm to 1.38±1.59 cm, night cramps from 2.46±2.30 cm to 0.43±1.01 cm, and skin itching from 1.46±2.06 cm to 0.43±1.01 cm (all P<0.001). The Global Index Score (GIS) of CIVIQ-14 was significantly improved from 32.4±18.5% at V0 to 9.9±9.9% at V1 (P<0.001). No adverse events were reported over the follow-up period.

CONCLUSION In real-life clinical practice, the use of MPFF in combination with compression therapy was associated with a significant reduction in the lower leg volume in CVD patients with CEAP class C3 and with a likely regression to class C2. The edema reduction was similar in patients with or without vein surgery. A decrease in the intensity of symptoms such as leg pain and night cramps as well as an improvement in quality of life was also observed over the treatment period. MPFF in combination with compression therapy is an effective and safe treatment strategy in the management of patients with leg edema.

P8 PHOTODYNAMIC THERAPY OF VENOUS ULCERS.

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Treatment of venous ulcers is prolonged and costly. It negatively affect life quality. Photodynamic therapy (PDT) can potentially advance wound healing.

AIM is to assess the effects of photodynamic therapy on venous ulcer treatment.

MATERIAL AND METHODS Open controlled clinical trial with 1-year follow-up. The sample consisted of 182 patients with venous ulcers randomly separated in two equal groups. In the trial group (98 patients), photodynamic treatment with hydroxyaluminium trisulfoophtalocianate was used along with wound sanitation. Control group had only conventional treatment without PDT. We avoided systemic antimicrobial therapy and local antibiotic application in trial as well as in control. Microbial contamination of ulcer, size and cell infiltration assessed in both groups. In addition, we monitored wound healing rate, reoccurrence rate and life quality by CIVIQ-20 and SF-36 scales.

RESULTS PDT group *vs.* control showed increased by 50% wound healing rate, decreased reoccurrence rate (5% *vs.* 25% in control) and better life quality. Data correlated with significant decontamination and active cell proliferation in trial group comparing with control.

CONCLUSION Photodynamic therapy is novel and potentially beneficial method of venous ulcers treatment. It can shorten treatment time and improve results. In addition it improves patients life quality and decrease treatment cost.

P9 PREVENTION OF EARLY RECANALIZATION AFTER GSV SCLEROFOAM: LIGATION OF GSV BELOW THE INJECTION SITE.

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AIM The specific complication after treatment of the incompetente GSV with foam are early recanalization (13-20%).

MATERIAL AND METHODS From 1 January 2016 to 31 December 2019 out of a total of 730 patients (CEAP C2-C3), 150 GSV (Great Saphenous Vein) and 25 SSV (Small Saphenous Vein) sclerofoam treatments were performed for varicose veins of the lower limbs. The indication to treatment was: sapheno-femoral reflux >2 sec., saphenous diameter 8-13 mm and at least 2 varicose thigh/leg collateral. To obtain the GSV, local surgical anesthesia was performed with a surgical access localized to the thigh, always above the end of the Hunter perforator and of the varicose collateral. The GSV is bound and sectioned and finally cannulated with an Arteriofix 8-mm catheter, through which, after washing with physiological solution, the sclerofoam with TDS 3% or Polidocanol 3% (ratio 1:4) for a maximum of 4cc of foam according to Tessari's technique. The remaining saphenous vein and collateral veins are removed with the Muller technique. Controls with ecocolordoppler are expected at 1.3.6 months and 2 year.

RESULTS Only in 5 patients (2,9%), however very thin, was found, in the first month, a superficial phlebitis of the thigh, between the surgical incision and the inguinal fold. In 2 cases there was a small superficial collateral with high concentration phlebitis of the sclerosing drug. Recanalization occurred after 30 months in only 13 patients (7,4%). In any case the diameter of saphenous veins was reduced by more than 50%, the saphenous walls were thickened, there was no reflux at the sapheno-femoral junction and clinically the patients reported no disturbances. In all other patients, GSV presented with obliterated and reduced caliber or fibrotic.

CONCLUSION From these first results we can state that this technique that includes the ligation of the GSV, makes the foam more stable than that which occurs with the direct injection of the GSV. The sclerosing drug between the barrier flow of the Superficial Epigastric Vein and the ligature keeps the foam state for longer and therefore the damaging action on the endothelium is stronger. Furthermore, a smaller amount of foam is sufficient, with no local and general phenomena and complications.

P10 COSTS OF RADIOFREQUENCY THERMAL ABLATION OF GREAT SAPHENOUS VEIN COMPARED TO SAPHENOUS-FEMORAL JUNCTION LIGATURE AND STRIPPING. A RANDOMIZED EXPLORATORY STUDY.

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AIM To evaluate the costs of great saphenous vein (GSV) radiofrequency ablation (RFA) with catheter Closure Fast® compared to saphenous-femoral junction ligature and GSV stripping (SFL/S).

MATERIAL AND METHODS The randomized 1:1 parallel open label unicenter study included patients from the Spanish Public Health System with primary chronic venous disease (CVD) C2-C5 CEAP in unilateral lower limb with insufficiency of GSV and paid employment. They were randomly allocated to RFA or SFL/S groups. Direct costs were calculated evaluating the structural and staff costs in the operating room (OR), hospitalization, ambulatory care and office and the consumable and drug costs. Indirect costs were calculated multiplying the number of days-off work by the day-off work cost. The monetary unit employed was euros (€). Intention to treat analysis SPSS 20. Data expressed as mean and standard deviation (SD). IdiPaz HULP3601.

RESULTS Forty patients were randomly allocated. Spinal anaesthesia was 78.9% for LSF/L and tumescent anaesthesia was 100% for RFA. The mean time of surgical procedure (min) was lower for RFA 25.3 (9) than for SFL/L 55,9 (17.3)(P<0.001), but there were no differences in OR time that was 96 (22.6) for RFA and 96.2 (10.6) for SFL/S. Hospitalization was more frequent in SFL/S (80% SFL/S; 5% RFA, P<0.001), as was ambulatory care in RFA (100% RFA; 25% SFL/S, P<0.001). The cost of consumables was higher for RFA (6.559€ RFA; 842€ SFL/S, P<0.001). The cost of drugs was higher for SFL/L (128€ RFA; 419€ LSF/S, P<0.001). The costs of staff and facilities were higher for SFL/S (19.934€ RFA; 42.196€ SFL/S P<0.001) because hospitalization was more frequent in this group. The global direct costs and direct costs per patient were similar (220.141€ and 11.007€ for RFA; 251.076€ and 12.553€ for SFL/S, respectively), without significant differences. The high catheter expenses in RFA group were compensated by the costs of hospitalization in SFL/L group. However, things change for indirect costs. The number of days off-work was lower for RFA 180 and 480 for SFL/S (P<0.001). Considering the costs per day-off work in Spain (27-44€), the median cost for RFA was 3.456-7.920€, and for SFL/L 12.960-21.120€ (P<0.001). Regarding global costs, similar direct and lower indirect costs made RFA cheaper than stripping. Global costs were 223,597,68-228,061.68€ for RFA, and 264,063.65-272,196.65€ for SFL/L(P<0.001). The monetary benefit for RFA group was -40,438.97 to -44,134.97€ when treating 20 patients.

CONCLUSION The GSV RFA has shown to be cheaper than SFL/S in patients with primary CVD C2-C5 CEAP with GSV insufficiency and paid employment thanks to lower indirect costs caused by lower numbers of days-off work.

P11 POLIDOCANOL FOAM SCLEROTHERAPY OF LYMPHOCELES AFTER VARICOSE VEIN SURGERY: AN EFFECTIVE AND SAFE FIRST-CHOICE TREATMENT.

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AIM Lymphoceles are a rare complication after varicose vein surgery. Traditional treatments as wait and see, compression, lymphatic drainage and single needle aspiration are the preferred choice. Although the evidence is very scarce, polidocanol foam sclerotherapy has showed to be a safe and effective treatment. We present the results of our preliminary experience with 2% polidocanol foam sclerotherapy of lymphoceles after varicose vein surgery. The aim of the study was to evaluate the safety and effectiveness of this treatment.

METHODS this was a retrospective case series study. There were four groups of treatment: group 1, compression; group 2, single needle aspirations and compression; group 3, single needle aspirations and compression and 2% polidocanol foam sclerotherapy if recurrence or poor evolution, and group 4, 2% polidocanol foam sclerotherapy with compression as first-choice treatment. The indication of the treatment was based on the physician´s criteria. The analyzed variables were demographic, symptoms and technical (initial aspirated volume, number of single needle aspirations, number of sclerotherapy sessions, time in between the sessions and total aspirated volume). Outcome variables were lymphocele treatment complications, post-surgery complications and time to regression. Statistical analysis were Fischer Test and Kruskal-Wallis test considering significant $P<0.05$. SPSS 20 used.

RESULTS Thirty-four lymphoceles in thirty-three patients that complicated 2.690 varicose vein surgery (1.6%) by radiofrequency ablation of great saphenous vein (GSV), GSV stripping and phlebectomy from March 2016 to December 2018. Five patients were treated in the group 1, fifteen patients in group 2, eight patients in group 3 and six patients in group 4.
The presence of symptoms was different, being groups 3 (6/8) and 4 (4/6) more symptomatic than groups 1 (0/5) and 2 (3/15) ($P=0.008$), and the median time to regression of lymphoceles, that was longer in group 3 (51 IQR 33-121) compared to group 1 (12 IQR 11-23) and 2 (21 IQR 14-28) ($P=0.003$). There were no statistically differences in the technical variables. In the global analysis, the results showed an association between the presence of symptoms and the size of the lymphoceles, but without statistical significance ($P=0.08$). All the lymphoceles regressed after the four treatments. Regarding complications secondary to vein surgery or lymphocele itself, there were no difference between the four groups. There was only one minor eczema secondary to medical stocking use in the group 4.

CONCLUSION The 2% polidocanol foam sclerotherapy could be a safe and effective treatment of lymphoceles after varicose vein surgery, not only in case of recurrence or poor evolution after conventional treatment with compression and single needle aspiration, but also as a first-choice treatment.

P12 SULODEXIDE IMPROVES CAPILLARY BLOOD FLOW AND THE QUALITY OF LIFE IN PATIENTS WITH RAYNAUD SYNDROME.

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AIM Raynaud Syndrome (RS) is one of the most common diseases of microcirculation. Calcium antagonists, ACE inhibitors and α1-blockers are the most commonly used in therapy of RS. The aim of this study was to estimate a potential usefulness of sulodexide in the treatment of RS, by evaluation of the drug influence on capillary blood flow and the quality of life in patients with RS.

MATERIAL AND METHODS 34 patients were recruited (24 females and 10 males). Prior to the administration of the drug, a baseline examination of capillary vessels in fingers of both hands was undertaken, and the quality of life (QOL) was assessed with a questionnaire. The dose of 1000 LSU of sulodexide (Vessel Due F, Alfasigma) was administered daily for 20 consecutive days. Between days 20 and 70 of the study, the daily dosage was reduced to 500 LSU. At the end of the day 70 the drug was discontinued. The assessment of capillary flow in middle fingers of both hands and the QOL evaluation were completed on days 1, 20, 70, and 100 of the study in all patients.

RESULTS Statistically significant (P<0.01) improved blood flow values were found in subsequent measurements at 10 °C. Perfusion in capillary vessels after administration of sulodexide was improved by 193% in the right hand and by 174% in the left one. The improvement of capillary blood flow in both hands was observed at room temperature (R 121%, L 145%) and at +44oC (R 106%, L 102%). However, differences between subsequent measurements taken at room temperature in both hands and at 44 °C in the left hand were not statistically significant, while differences between measurements taken in right hands at 44 °C were statistically significant (P<0.05). The dominating character of the right hand could be the reason. Frequency of RS episodes per week decreased from 2.03 before the first sulodexide dose to 1.47 at the end of the study. A significant QOL improvement (93.5%, P<0,05) was observed after 20 days of sulodexide therapy. Despite of the decrease of the drug dose on the day 20 of treatment and its discontinuation at the end of the day 70, the improved QOL (32.3%) was observed on the day 100, compared to baseline values.

CONCLUSION Our study indicates that the treatment of RS with sulodexide results in long-term improvement of capillary flow and reduces frequency of RS relapses. Moreover, a significant improvement of QOL was observed during the sulodexide therapy, including a decrease in recurrence of RS episodes as well as reduced pain sensitivity.

P13 STRIPPING VS. RADIOFRECUENCY VS. CYANOACRYLATE FOR TREATMENT OF VARICOSE VEINS. CLINICAL RESULTS AND COST EFFECTIVENESS ANALYSIS.

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AIM Disease of the venous system is an underestimated public health problem. Minimally invasive treatments based on Radiofrequency ablation (RFA) or cyanoacrylate adhesive ablation (CA) have replaced surgical stripping(SS).No studies have evaluated the results, complications and health economic implications of these treatments. The objective of our project is to compare the outcome 3 years after SS, RFA or CA by assessing complications, reintervention and a cost-effectiveness analysis.

MATERIAL AND METHODS February 2016-2019, all consecutive patients from the Vascular Department of La Zarzuela Hospital, with symptomatic varicose veins who were judged to be clinically and anatomically suitable for endovenous treatment (RFA or CA), were included in the study. During the same period, all consecutive patients from Vascular Department of Alcorcon Hospital who underwent SS were included too.
Learning curve of 6 vascular surgeons on CA was included.
Cost data for each individual procedure and complication during follow-up, were obtained from the financial services department. Detailed resource use was recorded for each procedure, and costs were calculated on three different ways: 1) the product of resource use and unit cost for each patient; 2) Diagnostic Related Groups (DRG); 3) Estimated Surgery Time (EST).All costs were normalized to February 2019 USA dollars, and euros. Analysis of data was by treatment received. All statistical tests were two-sided. And significance level was set at 5%. Values are expressed as median and interquartilic range and frequencies; mean and standard deviation, when appropriated.

RESULTS 271 patients were enrolled:90 SS (33.21%), 93 RFA (34.32%), and 88 CA (32.4%). There were no significant differences in age (mean,51 years old), sex (male 62%). Atherosclerotic risk factors were homogeneously distributed.
There were n=11 complications on stripping (12.22%) *vs.* N=3(3.26%) on RFA and n=4 (4.55%) on CA (P=0.035).
Level of reintervention was n=9 (10%) on CA group (level of reintervention was according to ultrasound were GSV was open for more than 10 cm, no for clinical worsening).
Median of Procedural and Overall Cost were lower on SS (493.8€ and 828.6€ respectively) and higher on CA (1058€ And 1240€). Ratio Cost/QALY for Overall Cost was: SS 314,7;RFA 379.8;CA 504.6.
Median of Procedural and Overall Cost comparing DRG were lower on RFA (794,7€ And 1001.8€) higher on SS (1031.8€ and 1325.4€). Ratio Cost/QALY for DRG was higher for CA 504,5 and lower for RF 379.4.
Median comparing EST were lower for SS 753.2€ and 1046.75€ *vs.* CA 1058€ and 1240.8€. Ratio Cost/QALY for EST was higher for CA 504.61 and lower for RF 379.84.

CONCLUSION Depending the way the financial services of each hospital we can compare which technique is cost-effectiveness.CA has the shortness time to come back normal activities and working, saving indirect cost.CA suppose FREE-SURGERY ROOM so on our case, we have duplicated the number of intervention with the same team.

P14 DIFFERENTIATION BETWEEN GSV AND AASV: NEW ULTRASOUND CRITERION.

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AIM The anatomy of superficial venous system is highly variable. Sometimes it is difficult to identify the saphenous trunk joining SFJ, especially in cases when it has an unusual course. The aim of our study was to find new ultrasound differentiation criteria between GSV and AASV, in cases where AASV substitutes hypoplastic GSV.

MATERIAL AND METHODS 118 varicose limbs with dilated single saphenous trunk (SST) joining SFJ were selected following the results of duplex ultrasonography. SST positioning relative to the deep femoral vessels axis was determined in transverse ultrasound scan. The length of SST was determined by a six-point scale, where one point equaled one third of the thigh or leg length. SST upper posterio-medial tributary (UPMT) was found and the distance from its entry to SFJ was identified.

RESULTS In 52 (44.1%) cases SST was positioned medially to the deep femoral vessels axis and was identified as GSV, in 55 (46.1%) cases - over the deep femoral vessels and was identified as AASV. In 11 (9.3%) cases SST was in-between, which prevented its unambiguous identification. No significant difference was found between the total lengths of GSV and AASV. SFJ to UPMT segment length comprised 56.9±19.8 mm for GSV and 15.1±7.0 mm for AASV ($P<0.00001$). We propose using the segment length between SFJ and UPMT as a SST differentiation criterion: the trunk would be defined as AASV at values beyond 40 mm and as GSV at larger values. Thus, we defined the SST in the group with SST in-between position as GSV in 6 (5.1%) cases and as AASV in 5 (4.2%) cases.

CONCLUSION SFJ to UPMT venous segment length allows distinguishing GSV from AASV in cases of upper GSV hypoplasia and is clinically valuable in 9.3±2.7% cases.

P15 RESULTS OF TRUNCAL ENDOVENOUS MECHANO-CHEMICAL OBLITERATION IN VARICOSE DISEASE.

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AIM This study assessed the long-term (12-month follow-up) results of endovenous mechano-chemical ablation (MOCA) with FlebogrifTM occlusion catheter system for varicose veins (VV) in three vascular centers.

MATERIAL AND METHODS A total of 139 patients underwent MOCA for VV (CEAP C2-C6) with vein occlusion catheter FlebogrifTM. All patients were qualified based on the ultrasound in a standing position confirming incompetence of the great saphenous vein or small saphenous vein. One hundred twenty three of them (88.5%) were treated for great saphenous vein (GSV) incompetence alone, 6 (4.3%) for bilateral GSV, 8 (5.8%) short saphenous vein (SSV), and 2 (1.4%) combined unilateral GSV and SSV reflux. The average diameter of GSV and SSV treated was 8.2±1.3 mm and 4.2±1.2 mm, respectively. The vein was punctured under ultrasound guidance in the distal part of the incompetent segment. The area of vascular access was anesthetized with 0.5 mL of 1% lidocaine. The compression therapy in the form of the 2nd grade medical elastic stocking was used after the surgery. Patients were reviewed at an interval of 1, 3, 6 and 12 months post procedure and underwent Duplex ultrasound with patient satisfaction assessment. Anatomical success of the procedure was defined as closure of the treated vein.

RESULTS The initial technical success of the surgery was achieved in all the patients. Immediate occlusion rate was achieved in 100% (139 patients). The ablation procedure was pain free and did not require local tumescent anaesthesia. All patients were discharged home a few hours after the procedure. At one month follow-up, the GSV was completely occluded in 132/136 (97.1%) veins and SSV completely closed in 10/10 (100%) veins. At six months of follow-up, the GSV was completely occluded in 99/111 (89.2%) veins and SSV completely closed in 5/6 (83.3%) veins. At one year, GSV and SSV occlusion rates were 72/85 (84.7%) and 5/6 (83.3%). There were no significant complications related to the procedure, *i.e.* pulmonary embolism, transient ischaemic attack, migraines, and nerve injury. Skin hyperpigmentation was found in 30/137 GSV treated (21.9%), and along the varicose tributaries in 22 legs (15.2%). Transient superficial phlebitis was reported in 7 of 145 (4.8%) legs. Ecchymosis from the puncture site was reported in 26/145 legs (17.9%).

CONCLUSION FlebogrifTM MOCA device is a safe and effective method of elimination of truncal venous reflux for VV, associated with low peri-procedural pain and minimal complication rate. Our preliminary, promising results are to be confirmed in long-term observation, after 12 months follow-up.

P16 SCLEROTHERAPY AS A SAFE AND VALUABLE METHOD OF FOOT AND ANKLE VEIN TREATMENT.

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AIM Due to the limited number of valves, foot and ankle veins are prone to reflux and therefore to several chronic pathologies, including corona phlebectatica, varicose veins and finally to venous ulcers. In fact, until recently, the treatment of these veins has been grossly overlooked and avoided for fear of complications. The purpose of this study is to evaluate the safety and efficacy of sclerotherapy in foot and ankle vein treatment.

MATERIAL AND METHODS This is a 12-month prospective observation of 682 patients with foot and ankle vein incompetence treated with sclerotherapy. The follow-up visits were 1, 3, 6 and 12 months after the procedure. Demographic information, clinical and procedural data as well as posttreatment complications were collected on a customized database and analyzed. The occlusion rate of treated veins was assessed with duplex ultrasound. Patients clinical improvement and satisfaction after treatment were evaluated by CEAP classification, venous clinical severity score (VCSS) and on Visual Analogue Scale (VAS:1-10).

RESULTS Of 682 patients with a mean age of 52 (IQR 36-92), 463 had corona phlebectatica, 180 foot varicose veins and 39 foot ulcers. 69.2% were female and 70.4% had primary varicose veins. The incompetent superficial veins of the affected limb were treated in one single procedure, from proximal part to distal. Ultrasound-guided foam sclerotherapy (UGFS) of incompetent saphenous vein (SV), perforating veins (PV), tributaries and foot and ankle veins was performed in 403 patients (58.1%) and hybrid procedure, that is EVLT of SV and UGFS of incompetent PV, tributaries and foot and ankle veins in 279 patient (40.9%). Additional sclerotherapy session due to residual incompetent foot and ankle veins was performed in 592 patients (86.8%). Post-procedure complications at 1-month follow-up included hyperpigmentation 21.4%, superficial thrombophlebitis 8.8%, edema 3.8%, DVT 0.1%, pain 8.1%, skin necrosis 2.8% and were mostly transient. Permanent hyperpigmentation was found in 2.9%. There was significant improvement in CEAP, VCSS ($P<.001$) for all time intervals. Patient satisfaction was high, with median satisfaction of 9.2 on a 0-10 scale.

CONCLUSION As some of the chronic venous disease patients report serious complaints related to incompetent veins of the foot and ankle region, treatment of these veins should not stop at the ankle level. It's suggested not only for cosmetic reasons, but also for medical aspect, to avoid possible complications like pseudo-Kaposi and foot ulceration. Sclerotherapy is safe method of treatment of foot and ankle veins with significant clinical improvement and high patient satisfaction at short term.

P17 PATHOMORPHOLOGIC CHARACTERISTICS OF VENOUS VESSELS AFTER THE APPLICATION OF DIFFERENT METHODS OF ENDOVASCULAR ELIMINATING OF VENOUS REFLUX -- EXPERIMENTAL STUDY.

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AIM Chronic venous disease is an important clinical, social and economic problem all over the world. New operation techniques, such as mechanochemical and cyanoacrylate obliteration, are becoming increasingly used in varicose veins treatment and might replace tumescent methods in some clinical cases. The aim of this study is to analyze changes in the venous wall appearing as a result of using thermal tumescent and nonthermal nontumescent (NTNT) methods of varicose vein treatment.

MATERIAL AND METHODS Seven sheep were included in the experiment. One of the following operation method was performed on each sheep's limb: EVLA with the use of cylindric fiber, EVLA with the use of radial fiber, mechanochemical obliteration with the use of Flebogrif system (MOCA), cyanacrylate obliteration with the use of VenaSeal. Treated veins were sampled for histological investigation after 1 day (3 sheep) and 7 days (4 sheep) of operation. Morphometric analysis was carried out using the quantitative scale, which contains next characteristics: the presence of the endothelium; depth of necrosis; degree of carbonization; the presence of the inner and outer elastic membranes; damage of the nearby structures (vasa vasorum); degree of leukocyte infiltration.

RESULTS On the day 1 and 7 after EVLA (both fibers) in 100% cases no endothelium was found. After Venaseal obliteration at day 1 in a few segments of the vein wall there was a presence of endothelium (4 %), and on the day 7 the result was similar to EVLA. The most of endothelium presence was found after Flebogrif: day 1-17%, day 7-46%. Most damage of elastic structures was found after EVLA and VenaSeal >75%. At the day 7 after MOCA in the half of all specimens the damage of the elastic membranes was between 50 to 70%, another half - more than 75%. Full vessel wall and vasa vasorum damage was mentioned only after EVLA with radial fiber. Even after using cylindric fiber the percentage of damage was only 75% at the day 7 of observation. There was practically no leukocyte infiltration in the vein wall after EVLA unlike the cases after MOCA and VenaSeal, where the granulation bank was formed in the media.

CONCLUSION The results may allow us to consider non-thermal non-tumescence methods as a possible alternative to thermobliteration methods available in clinical practice. It is necessary to continue observations with histological analysis of more samples and longer follow-up to understand the pathogenetic processes and obtain statistically reliable data.

P18 INCIDENCE AND RISK FACTORS FOR GREAT SAPHENOUS VEIN REFLUX IN PREGNANT PATIENTS.

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AIM Varicose veins are a common problem at pregnancy with no approved medical therapies. Should we perform varicose veins surgery before or after pregnancy and breastfeeding? The association between pregnancy and great saphenous vein reflux as well as the incidence of lower limb lymphoedema were examined.

MATERIAL AND METHODS 110 pregnant patients with varicose veins were included in this study, 33 healthy pregnant women have made the control group. Blood samples were obtained from dilated varicose tributaries of the great saphenous vein (GSV) and from the cubital vein before and after treatment as well as in postpartum period. Plasma concentrations of VEGF, endothelin-1, vWF, D-dimer, hs-CRP were determined. The GSV was assessed by duplex ultrasonography during pregnancy and postpartum period. Situational and constant GSV refluxes were analyzed.

RESULTS In varicose veins, the following parameters were significantly increased in comparison with systemic blood: VEGF (26 pg/ml *vs.* 23 pg/ml, P =0.04), vWF (118.4 ±4.7% *vs.* 100, 0±6.1, P=0.005), D-dimer (950 [396-955] ng/mL *vs.* 519 [344-755] ng/mL, P=0.04). A moderate positive correlation was revealed in women with varicose veins between hs-CRP level and VEGF(r=0,34, P=0,02, n=110) as well as between hs-CRP and BMI (r=0,4, P=0,01, n=110).GSV constant reflux was detected in 71 (64.5%) women and situational (changing) reflux in 17 (15.4%; P<0.001). Prevalence of GSV reflux was dependent on parity: 45% for nulliparous *vs.* 68% for parity 2 (P=0.01). Greater height was also associated with the GSV reflux (RR - 1, 71; CI 1.4 -2.2; P=0,001). 27 patients (24.5%) had varicose veins surgery before pregnancy; chronic venous disease was the cause of lower extremity lymphoedema in 26% patients with previous varicose veins surgery (P<0.001).

CONCLUSION Parity increases the risk of GSV reflux development in women with primary varicose veins. Some markers of endothelial dysfunction are increased in varicose vein blood that may promote further progression of the disease and thrombotic complications. Obesity correlates with a lymphoedema and the predisposition to bilateral limb involvement. Varicose disease with situational GSV reflux should not be necessarily treated before pregnancy.

P19 LEG LIPODERMATOSCLEROSIS TISSUE CHANGES WITH AND WITHOUT COMPRESSION THERAPY.

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AIM Redness, swelling, hyperpigmentation, skin induration and constriction, especially around the ankle are typical symptoms of the lipodermatosclerosis. Most frequent complaints: pain, constricted skin, visible skin changes. We know that compression therapy is the primary management of lipodermatosclerosis, it could reduce the symptoms of pain and edema, but do not improve the skin condition. The aim of the study is to determine the effect of compression therapy on the symptoms of the lipodermatosclerosis and tissues morphological changes.

MATERIAL AND METHODS We had 25 patients, most of them are female, mean age is 48,2±7,1. The diagnose is only varicose disease. VCSS average is 8,2±2,3, pain by visual analogue scale is 6,1±1,2. All patients wore compression garments during 1 month 5 days a week. We have 3 patients who were non-compliance for the compression stockings because of the pain. They used bandages (medium stretch). And also 10 patients have been receiving pneumatic compression with compression garments for 10 days. We took the biopsy before and after that treatment from the sites of lipodermatosclerosis. In addition, we measured subcutaneous fat thickness on the ultrasound and compare pictures before and after treatment to see the changes of lipodermatosclerosis square.

RESULTS We had a subcutaneous fat thickness decrease because of the edema redaction, pain reduction and scale VCSS improvement. On the biopsy, there are epidermis hypoplasia, collagen weaving disorder, lipogranuloma in fibrosed fat, nodular structures of thick collagen, lympho-macrophage infiltrate in the dermis, vessels with a thickened wall. After comparing biopsy results before and after treatment we saw epidermis thickens, the number of nodular formations decreases, longitudinal collagen fibers orientation normalizes, no lympho-macrophage infiltration in the dermis. On the pictures before and after the treatment, we found out the lipodermatosclerosis square reduction.

CONCLUSION Compression therapy could reduce the symptoms and the square of lipodermatosclerosis, change the morphological structure of the tissues.

P20 OUTCOME IN PATIENTS WITH VENOUS TOS TREATED BY TRANSAXILLARY FIRST RIB RESECTION.

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AIM Thoracic outlet Syndrome is a widely unknown and underdiagnosed complex disease with a wide spectrum of symptoms. Dependent on the mainly affected structure, TOS is usually differentiated in neurogenic, venous and arterial TOS. The majority of cases are neurogenic (80-85%), venous cases account for 10-15 % and 1-5% are arterial. Venous TOS may occur as intermittent compression of the subclavian vein without thrombosis or as complete thrombotic occlusion of the vein (Paget von Schrötter Syndrome). Pulmonary embolism occurs in 10-15 % of cases.
This study was undertaken to analyze the operative results of our venous TOS cases treated by transaxillary first rib resection during a nine year period.

MATERIAL AND METHODS We analyzed all patients with venous TOS retrospectively from 2011 to 2019, which were treated by transaxillary first rib resection in our institution. We included all cases with radiologically proven compression of the subclavian vein after successful thrombolysis, severe compression of collaterals in chronic cases, those with symptomatic intermittent compression and a small number of asymptomatic patients considered as high risk candidates for a thrombotic event.
Follow up investigations were routinely performed at 3, 6 and 12 months after discharge and then once a year.

RESULTS 43 patients met the inclusion criteria. Complication rate was very low. We saw no plexus injuries with persistent neurologic deficits in this series. A Horner's syndrome and a temporary paresis of the long thoracic nerve occurred in a few cases. Rare complications were temporary paresis of the phrenic nerve and secondary fractures of the second rib. All symptoms had disappeared at the time of the first follow-up check after 3 months.
Almost every patient recovered completely and returned to work.

CONCLUSION Remember TOS as a probable cause for thrombosis of the subclavian vein. Acute thrombolysis and first rib resection in acute cases and scheduled operation in subacute or chronic cases offer an excellent chance for complete recovery with excellent operative results and very low complication rates in this selected patient group.

P21 EPIDEMIOLOGICAL ASPECTS OF COMBINATION OF HEMORRHOIDAL DISEASE AND CHRONIC VENOUS DISEASE : THE RESULTS OF UKRAINIAN STUDY "HEMO-DETECT".

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AIM To determine the frequency of symptoms among patients with hemorrhoidal disease (HD) who apply to surgeons/proctologists and to evaluate a concomitant presence of chronic venous disease (CVD) in these patients.

MATERIAL AND METHOD This prospective observational study included patients with anal complaints, constipation who applied to surgeons/proctologists. Patient data related to HD (risk factors, symptoms, etc.) and CVD were recorded and classified according to Goligher's classification of HD (I-IV stage) and CEAP (C0s to C6 stages).
The relation between HD stages and HD symptoms was analyzed using the Fisher's exact test.

RESULTS 1998 patients aged from 18 to 92 years (average age:49 years; 54.5% of men and 45.5% of women) were analyzed. The diagnosis of HD was confirmed in 1933 patients.
Anal symptoms commonly reported by HD patients were: pain (80.8%), swelling (59.4%), itching (59.8%), node loss (48.6%), bleeding (43.0%). There was a statistically significant correlation between the HD stage and the presence of symptoms such as: any anal symptoms (any; P=0,025); pain (P=0.002), bleeding (P <0.001), swelling (P=0.031), node loss (P <0,001), itching (P=0.019). So, patients who didn't declare any of the anal complaints had I and II stage of hemorrhoids in a higher proportion (27.9% and 60.6%, respectively) compared to patients who declared the anal complaints (22.1% and 54.9% respectively). The opposite situation is observed for III stage. 20.2% of patients with III stage of hemorrhoids had the anal complaints, and in those who had no complaints only 11.2%.
A significant association was found between the following factors age (P <0.001), obesity (P=0.028), history of constipation (P <0.001), the fact of childbirth and use of contraceptives for women (P=0.006), smoking (P=0.015) and the HD stages.
More than half (51%) of HD patients had concomitant CVD. There was a statistically significant correlation between the presence of CVD and the HD stage (P <0.001). The risk factors for CVD were: age (P <0.001), increased BMI (P <0.001), childbirth and their number in history (P <0.001), female (P <0.001), prolonged sitting during the day (P <0.001), the presence of gastrointestinal diseases and constipation (P <0.001) and smoking (P <0.006).

CONCLUSION Results of the study proved pathogenetically unity of HD and CVD nosologies. There was a statistically significant correlation between the presence of CVD and the HD stage. Received data also demonstrate the commonality of risk factors for these nosologies and possibility for evidence-based pathogenetic treatment.

P22 SULODEXIDE COMBINED WITH COMPRESSION IMPROVES SYMPTOMS IN PATIENTS WITH CEAP STAGES C0S AND C1S.

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AIM Chronic venous disease (CVD), a frequent condition in Mexico, with up to 67.8% of the population, being C0s and C1, 2% and 34% respectively; according to VeinConsult program. It is well known the association of CVD with valvular dysfunction, venous hypertension and inflammation. The CEAP classification combines clinical signs, etiology, anatomical distribution and physiological conditions. The symptoms and management of early stages are sometimes underestimated, or solely treated with venoactive drugs hoping to give patients relief. Sulodexide, a mixture of glycosaminoglycans (80% of fast-moving heparin fraction and 20% of dermatan sulfate), well known to have a wide array of beneficial vascular effects: reduction of venous and arterial thrombogenesis, anti-inflammatory properties and endothelial cell protection is used in the treatment of CVD.

METHODS observational, longitudinal, descriptive, prospective, case study. Patients with CVD stage C0s and C1s seen in private practice from June to August 2019, follow-up visits at 3rd and 6th month. On initial visit a complete clinical history was taken, a venous ultrasound was performed in all patients, evaluating absence of venous reflux at sapheno-femoral and sapheno-popliteal junction and perforant veins. Patients filled out CIVIQ20 questionnaire at initial visit, 3rd and 6th months' visit. Receiving Sulodexide 250 LRU BID for 6 months and 15-20 mmHg compression stockings. Statistical methods. Descriptive: frequency tables, contingency tables, statistical summary measures. Inferential: parametric (Fisher) analysis of 2 and 3 factors, Fisher's multiple comparison tests and Pearson's chi-square independence tests. Software: Statistica 10, Minitab 16 and Freelance 2000. Database in Excel 2016.

RESULTS 16 patients, 62.5% female, 37.5% male. Mean age 48.6 yo, mean weight 74.5 kg, mean BMI 26.9. Evaluating the different dimensions of CIVIQ20 questionnaire, it is notable that the ones with remarkable improvement were pain (P=0.00001, CI0.95) and physical activity (P=0.00695, CI0.95), maintaining benefits for up to 6 months in all patients. Social dimension also showed improvement maintaining it (P=0.00970, CI0.95). The dimension less affected was the physiologic (P <0.00001, CI0.95). With overall improvement in QoL at 3 and 6 months (P <0.0001, CI0.95).

CONCLUSION Sulodexide interferes in the release of inflammatory markers associated with CVD, and as a recent systematic review and meta-analysis concluded it influences reducing the intensity of symptoms. Having a good level of evidence for advanced stages of CVD, nevertheless it also has good results in early stages as shown in this study for at least 6 months; making it a potential treatment in these ones. It will be necessary to follow-up patients for longer time and reassess benefits to prepare a multi-center study in the future.

P23 INVESTIGATING THE ROLE OF PLATELET-DERIVED SGPVI IN VENOUS IN-STENT STENOSIS IN PATIENTS WITH POST-THROMBOTIC SYNDROME.

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AIM In-stent stenosis following intervention for post-thrombotic syndrome (PTS) occurs in ~30% of cases, despite therapeutic anticoagulation. The aim of this study was to investigate whether platelets have a role in this process.

MATERIAL AND METHODS Patients undergoing venous stenting were matched for the degree of anatomical involvement, duration and symptoms of PTS and prospectively recruited. Venous in-stent thrombus specimens from the common femoral vein with and without stent material were excised and immunohistochemical analysis was performed to detect collagen I, collagen III, CD68 (macrophages) and CD41 (platelets). Blood samples were taken before and after venous stent placement, and platelet activation markers (P-selectin and phosphatidylserine) and reactivity were determined by flow cytometry and plate-based aggregation, respectively. Soluble glycoprotein VI (sGPVI), shed from the platelet surface during activation, was measured in plasma samples by enzyme-linked immunosorbent assay. Patients with in-stent stenosis requiring reintervention (>50% diameter reduction) were compared with those who did not during follow-up.

RESULTS Forty-five patients with post-thrombotic occlusions extending from the common femoral vein to the common iliac vein were recruited (median age: 43 years, range: 33-55 years; 65% female). Re-intervention was required in 19 patients (42%; median time: 3 weeks, range: 1day-3 months) for in-stent stenosis. Immunohistochemical analysis of in-stent thrombosis demonstrated a rich network of platelets, both early (collagen type III) and late (collagen type I) forms of collagen, and inflammatory cell infiltrates. There was no significant difference in platelet activation or reactivity after stenting, but P-selectin exposure levels (in the absence of platelet agonists) in pre-stent samples was significantly higher in patients who developed in-stent stenosis (2.7%±0.4 *vs.* 1.7%±0.2; P<0.05). sGPVI levels before stent insertion were increased in patients who developed in-stent stenosis (18.9±3.6ng/mL *vs.* 7.4±0.9ng/mL; P<0.01). Platelet reactivity to collagen-related peptide, a GPVI-specific platelet agonist, was reduced in patients who developed in-stent stenosis ($logEC_{50=}$-6.5M±0.3 *vs.* -7.2M±0.2; P<0.05; n=33).

CONCLUSION Our results demonstrate that although venous in-stent thrombi are rich in platelets, collagen, and inflammatory cells, venous stenting does not activate platelets or alter platelet function. However, patients who developed in-stent stenosis exhibited greater levels of pre-stent platelet activation, greater loss of platelet surface GPVI in the form of sGPVI and consequent reduction in reactivity to GPVI activation. sGPVI may have potential to risk-stratify patients undergoing deep venous reconstruction and predict who requires closer surveillance.

P24 EFFECT OF MICRONIZED PURIFIED FLAVONOID FRACTION TREATMENT ON MICROSCOPIC VENOUS VALVES REFLUX IN C0S AND C1S PATIENTS WITH CHRONIC VENOUS DISEASE.

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AIM Incompetence in the microscopic venous valves (MVV) of the lower extremities superficial veins and saphenous tributaries down from 2nd generation may be responsible for the occurrence of venous symptoms in patients with Chronic Venous Disease (CVD). We hypothesize that venoactive drugs should be effective in reducing reflux in MVV and/or in relieving venous symptoms. We aimed to investigate the effects of Micronized Purified Flavonoid Fraction (MPFF) on reflux and CVD related symptoms in C0s and C1s patients.

MATERIAL AND METHODS This was an open, single-arm study including patients with CVD of CEAP class C0s and C1s, with leg symptoms of venous origin and 1) with MVV reflux at the level of visible superficial veins and saphenous tributaries down from 2nd generation detected by continuous wave Doppler examination during tip-toe, using a 8 mHz adhesive flat probe ii) with no reflux in the Great Saphenous Vein and/or Small saphenous vein and their tributaries of first order or in the deep vein, using duplex scan investigation. All patients were prescribed MPFF 1000mg/day for 6 months. The detected reflux in MVV in one site on each leg, and patients' CVD symptoms by Visual Analog Scale (VAS) were recorded at inclusion (M0), after 3 months (M3) and 6 months (M6). The proportions of sites with reflux were compared at each time point *vs.* baseline using the Pearson's Chi-squared test. Mean values of symptoms intensity were compared between baseline and M6 using a paired Student t test.

RESULTS 30 symptomatic CVD patients (29 women/1 male), C0s (9%) and C1s (81%) were enrolled; mean age was 51.3±9.0 years and body mass index (±SD) was 24±3 kg/m^2. Refluxes were detected at investigated sites (both legs) of all 30 patients at baseline, in 31/60 (52%) sites at M3 and 21/60 (35%) sites at M6. The reduction *vs.* baseline was highly significant at M3 and M6 (both P<0.001). Mean values (±SD) for symptoms significantly decreased from baseline to M6 for pain: 5,46±0,99 and 3,53±0,49 respectively, heaviness: 5,39±0,88 and 3,47±0,52, respectively, and cramps: 4,86±0,90 and 4,03±0,59, respectively (all P values <0.001).

CONCLUSION After 6 months of treatment, MPFF was associated with a significant reduction in the proportion of sites with reflux in microvenous valves of the lower extremities and a significant relief in CVD-related symptoms such as pain, heaviness and cramps. To our knowledge, this is the first time an early treatment with a venoactive drug is associated with a substantial effect at the microvalve level.

P25 UNDERSTANDING THE JOURNEY OF PATIENTS WITH CVI AND THEIR COMORBIDITIES, NOTABLY DIABETES MELLITUS: A QUANTITATIVE SURVEY AMONG PHYSICIANS IN DIFFERENT COUNTRIES AROUND THE WORLD.

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ABSTRACT Chronic Venous Insufficiency (CVI) is a very concerning and debilitating condition which creates a significant burden on healthcare provision and wider society when getting to the most advanced stages. Among their co-morbidities, patients with CVI may present diabetes mellitus (DM) - and related micro- and macrovascular complications - which worsen their symptoms by placing additional stress on the veins. Understanding the CVI patient journey and their characteristics would help not only in their symptoms management, but also to identify underlying diseases such as DM (developed before CVI diagnosis or after as comorbidity).
A quantitative survey was performed through structured interviews with 300 physicians managing at least 10 patients with CVI per week from 6 countries (Switzerland, Bulgaria, Turkey, Egypt, Brazil and Mexico) who had access to a total of 900 medical records to better understand the CVI patients' journey.
The results show that among all interviewed physicians 30% of their patients had CVI (Subgroup 1), of which 53% had also DM (Subgroup 2) and 33% had diabetic microvascular complications (DMVC) (Subgroup 3). In Subgroup 2, DM seemed to be diagnosed on average 5 years prior to CVI in 74% of cases.
The typical CVI patient was a 60 years old woman, with comorbidities like hypertension (77% of patients), overweight (73%) and DM (52%). Diagnosis of CVI patients was usually done 2 years after first symptoms, mostly at CEAP C2-C3 levels, with treatment immediately prescribed in 79% of cases. 29% of patients engaged to self-medication initially. At physicians' level, 75% of the patients were taking a drug in 1st line treatment, mostly prescribed by General Practitioners and Internists.
In 41% of the patients with CVI & DM, a preventive treatment for DMVC was prescribed. When no treatment was prescribed to prevent DMVC, it was mainly because DM was considered controlled. Subgroup 2 showed the highest eligibility to a single medication (89%) that could prevent all microvascular and venous complications (*vs.* Subgroup 1 [75%] and Subgroup 3 [85%]).
First line treatment in patients with CVI was only modified in 27% of the cases, down to 21% in patients with CVI-DM/CVI-DMVC, about 2 years later and when patients mostly advanced to stages C3-C4.

Our research confirms that both CVI and DM can coexist in the same patient, to even a broader extend than initially thought, encouraging for an early detection of the common risk factors in

these two diseases. This possible coexistence is substantiated by several aspects of the pathophysiological process they have in common. Despite the paucity of data on the occurrence of CVI in the diabetic population as well as on the prevalence of DM in CVI patients, and controversies regarding which disease occurs first, our research shows that DM is diagnosed before CVI. In the future, new avenues could potentially arise to better manage these comorbid patients, with a venous disease concomitant to diabetes and microvascular complications. Further studies in these patient populations with CVI and with DM are still requested.

P26 VEINSTEP: CHRONIC VENOUS DISORDERS MANAGEMENT AND TREATMENT EFFECTIVENESS EVALUATION IN CHRONIC VENOUS DISEASE, AN INTERNATIONAL OBSERVATIONAL PROSPECTIVE STUDY. RESULTS FROM MOROCCO.

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AIM VeinStep is an international, observational, prospective study assessing the effectiveness of conservative treatments on CVD symptoms and their impacts on quality of life (QoL). Here, we present the results from centers in Morocco.

MATERIAL AND METHODS 122 centers participated between June and December 2020. Study involved adult outpatients consulting for symptomatic CVD. Patients underwent a clinical examination to identify CVD signs using CEAP classification, assess severity of disease using Venous Clinical Severity Score (VCSS), intensity of symptoms using a 10-cm VAS, patient global impression of change (PGIC) and CIVIQ-14. Follow-up lasted 8 weeks, with main assessment after 4 weeks (W4).

RESULTS Out of 3425 patients, 83.1% were female; mean age±SD was 49.5±13.3 years and mean BMI 28.5±4.7 kg/m^2. According to CEAP classification, 2.5 % were C_0, 23.0% C_1, 31.7% C_2, 34.8% C_3 and 8.0% C_4-C_6.
VADs were prescribed in 98.9% of patients, mainly Micronized Purified Flavonoid Fraction (MPFF) (75.7%), compression in 38.2% and topicals in 30.1%. VAD alone were prescribed to 31.7% of patients or combined to compression or topicals (12.9% and 6.1% respectively).
Non-adherence was reported in 15.0% of patients prescribed compression mainly because of discomfort and in only 2.3% of those prescribed VADs.
Over 4 weeks, mean global severity score decreased from 4.6±2.1 to 2.2±1.5 with any VAD alone, and from 4.7±2.0 to 2.2±1.3 with MPFF alone. When using a combination with compression, score was reduced from 5.1±1.9 to 2.7±1.6 with any VAD and from 5.0±2.0 to 2.5±1.5 with MPFF. When using a combination with topicals, it was reduced from 5.0±2.2 to 2.6±1.6 with any VAD and from 5.5±2.1 to 2.9±1.6 with MPFF.
Symptom intensity was reduced by 50.3% for pain, 51.8% for heaviness, 51.0% for cramps and 50.4% for swelling, with a slight variability among treatments whilst favorizing MPFF among VADs: *e.g.* for heaviness there was 52.3% reduction with any VAD and 56.2% with MPFF; for cramps, reduction was 48.7% with any VAD and 52.3% with MPFF. PGIC showed an improvement for 97.8% of patients at W4. VCSS decreased from 5.6±3.7 to 3.1±2.4 and CIVIQ-14 global index score from 36.4±19.4 to 16.9±13.6.

CONCLUSION This observational study provides large scale data from real-life setting with patient reported outcomes and focuses on the effectiveness of different treatments. Results in Morocco reinforced that treatment with VADs, mainly MPFF, is associated with an improvement in symptoms and QoL in CVD patients.

P27 EFFECTS ON INFLAMMATION AND TISSUE PERFUSION OF DIFERENT ROUTES OF ADMINISTRATION AND DOSES OF SULODEXIDE ON AN ANIMAL MODEL OF LOW FLOW AND HIGH PRESSURE IN VEINS.

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AIM To assess the effects of sulodexide, starting 6 weeks after the ligature of the right iliac vein of hamsters, given intramuscularly and subcutaneously, in different doses (1, 2 and 4 mg/kg/day during 2 and 4 weeks) on microcirculatory dysfunction (mainly inflammation and tissue perfusion) in a newly developed model of chronic venous hypertension with low blood flow.

MATERIAL AND METHODS Experiments were performed on 160 male hamsters (*Mesocricetus auratus*, Paulinea, SP, Brazil), divided in 4 groups (intramuscular, treated 2 weeks, intramuscular treated 4 weeks, subcutaneous treated 2 weeks, and subcutaneous treated 4 weeks). Each group was further divided in 5 subgroups (1, 2 and 4 mg/kg/day, placebo and sham operated). On the day to prepare the model, anesthesia was induced with 0.1-0.2 mL of xylazine and ketamine given intraperitoneally. Using extreme care to prevent skin irritation, the hindlimbs, forelimbs, throat and abdomen are sheared. The preparation was identical for the venous hypertension and the sham group. Groin incisions were made, and the common iliac vein was ligated. In the sham group, the exact same vascular dissections were performed except that ties were placed without ligation of the vein. Treatments with either sulodexide or placebo started 6 weeks after the ligature. Superficial (epigastric) and central (jugular) venous pressure evaluations were made during the whole period. Six or 8 weeks after the ligature the leg of the animal was dissected, and the circulation observed with the Laser Speckle (PeriCam, Perimed, Stockholm, Sweden) and the microcirculation with an intravital microscope (Leica, Wetzlar, Germany) for leukocyte rolling and sticking (to evaluate inflammation), functional capillary density (FCD, to evaluate tissue perfusion), and venular and arteriolar diameter (to evaluate vascular tonus) measurements.

RESULTS The ligature of the iliac vein significantly increased the epigastric pressure, the functional capillary density, the number of rolling and adhering leukocytes and decreased the blood flow to the right and left paws. For 2 and 4 weeks of treatment, the intramuscular route was more effective on the two most important parameters: number of adhering leukocytes and functional capillary density. It should be noted that, for 4 weeks of treatment, the subcutaneous route was also effective on improving functional capillary density but not on decreasing the number of sticking leukocytes. No significant changes on body weight, mean arterial pressure, heart rate, jugular pressure, arteriolar and venular diameters could be observed in any group.

CONCLUSION Treatment with sulodexide significantly decreased inflammation and improved tissue perfusion and the intramuscular route during four weeks was more effective in improving these microvascular variables.

AUTHORS' INDEX

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