AMERICAN VENOUS FORUM

19th ANNUAL MEETING
February 14-18, 2007

Rancho Bernard Inn, San Diego, California

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THE AMERICAN VENOUS FORUM FOUNDATION

The American Venous Forum Foundation was organized in 1988 to support the charitable, educational and scientific purposes of the American Venous Forum.

The Foundation provides the Venous Research Prize, the BSN Jobst Fellowship Award, the Sigvaris Traveling Fellowship Award, the Servier Fellowship Award and other significant educational grants to stimulate and recognize excellence in published writing on laboratory and clinical research in the study of venous diseases.

The Foundation also oversees the education and objectives of the Venous Education Institute of North America (VEIN).

www.venous-info.org

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THE AMERICAN VENOUS FORUM WAS ORGANIZED IN COOPERATION WITH MEMBERS OF:

The Society for Vascular Surgery
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The Canadian Society for Vascular Surgery

WITH THE SUPPORT OF MEMBERS OF

The International Union of Phlebology

The North American Society of Phlebology

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Sociedad Argentina de Flebologia y Linfologia

The Australian and New Zealand Society of Phlebology

THE AMERICAN VENOUS FORUM
ANNUAL MEETINGS/PAST PRESIDENTS

1989	Feb. 22-24	New Orleans, LA Fairmont Hotel	John J. Bergan, M.D.
1990	Feb. 21-23,	Coronado, CA Hotel Del Coronado	Norman M. Rich, M.D.
1991	Feb. 20-22	Ft. Lauderdale, Fl Marina Marriott Hotel	Lazar J. Greenfield, M.D.
1992	Feb. 26-28	Coronado, CA Hotel Del Coronado	Michael Hume, M.D.
1993	Feb. 24-26	Orlando, FL. Hilton Walt Disney World Village	George Johnson, Jr., M.D.
1994	Feb. 23-25	Maui, HI. Maui Inter-Continental Resort	James A. DeWeese, M.D.
1995	Feb. 23-25	Fort Lauderdale, FL Marriott Harbor Beach	Robert Hobson, M.D.
1996	Feb. 22-24	San Diego, CA Hyatt Regency Hotel	Robert L. Kistner, M.D.
1997	Feb. 20-23	San Antonio, TX Hyatt Regency Hill Country Resort	James S. T. Yao, M.D.
1998	Feb. 19-21	Lake Buena Vista, FL Walt Disney World Swan Hotel	D. Eugene Strandness, Jr., M.D.
1999	Feb. 18-21	Dana Point, CA Laguna Cliffs Marriott Resort	Thomas F. O'Donnell, Jr., M.D.
2000	Feb. 3-6	Phoenix, AZ Hilton South Mountain Resort	David S. Sumner, M.D.
2001	Feb. 22-25	Ft. Myers, FL Sanibel Harbor Resort	Anthony J. Comerota, M.D.
2002	Feb. 21-24	La Jolla, CA Hilton Torrey Pines La Jolla	Gregory L. Moneta, M.D.
2003	Feb. 20-23	Cancun, Mexico Hilton Cancun Beach Resort	Peter Gloviczki, M.D.
2004	Feb. 26-29	Orlando, FL Gaylord Palms Resort	Frank T. Padberg, M.D.
2005	Feb. 9-13	San Diego, CA Loews Coronado Bay Resort	Bo G. Eklöf, M.D.
2006	Feb. 22-26	Miami, FL InterContinental Hotel	Thomas W. Wakefield, M.D

AMERICAN VENOUS FORUM
D. EUGENE STRANDNESS JR., M.D.
MEMORIAL LECTURE

Each year, The American Venous Forum recognizes the significant contributions of an individual in research, education or clinical investigation in the field of venous diseases. The recipient of this distinction, chosen by the President of the American Venous Forum and confirmed by the Forum's Executive Committee, is named to the position of D. Eugene Strandness Jr., M.D. Memorial Lecturer and serves as the Keynote Speaker on a topic of his or her choice at the Annual Meeting of the Forum.

This honor, the highest given by the organization, has been bestowed to the following outstanding candidates in past years:

2006 Pan Ganguly, Ph.D., Bethesda, MD
"The Challenges in Venous Thrombosis"

2005 Michel R. Perrin, M.D., Chassieu, France
"The Importance of International collaboration for the Development of a Scientific Approach to Venous Disease"

2004 Professor Eberhard Rabe, M.D., Bonn, Germany
"Prevalence and Risk Factors of Chronic Venous Diseases: The Bonn Vein Study"

2003 Professor Claudio Allegra, M.D., Rome, Italy
"Involvement of the Microcirculation in Chronic Venous Insufficiency"

2002 Professor Alfred Bollinger, M.D., Professor Emeritus, University of Zurich
"Microcirculation in Chronic Venous Insufficiency and Lymphedema"

2001 Professor C.V. Ruckley, M.D., Edinburgh, Scotland
"Chronic Venous Insufficiency: Lessons from Scotland"

2000 Professor Sir Norman Browse, M.D., F.R.C.S., F.R.C.P.
"Forty Years On"

1999 David Robinson, PhD, Bethesda, Maryland
"A Journey to Complexity: The Continuing Evolution in Vascular Research"

1998 David Bergquist, M.D., Ph.D., Uppsala, Sweden
"A Chronic Leg Ulcer - The Impact of Venous Disease"

1997 Professor Kevin G. Burnand, London, England
"A Venous Thrombogene is and Thrombolysis"

1996 Ermenegildo A. Enrici, M.D., Buenos Aires, Argentina
"The Role of the Perforants' System in Deep Venous Chronic Insufficiency in its Different Stages: Surgical Indications, Tactics and Techniques"

1995 Philip D. Coleridge Smith, M.D., FRCS, London, England
"Venous Disease and Leukocyte Mediated Microcirculatory Injury"

1994 Andrew W. Nicolaides, M.D., FRCS, London, England
"Deep Vein Thrombosis: Aetiology and Prevention. The Legacies of the 70's, The promises of the 80's and the Challenges of the 90's"

1993 Olav Thulesius, M.D., Ph.D., Linkoping, Sweden
"Vein Wall Characteristics and Valvular Functions in Chronic Venous Insufficiency"

1992 G. W. Schmid-Schonbein, M.D., La Jolla, California
"Leukocytes as Mediators of Tissue Injury"

1991 Jack Hirsh, M.D., Hamilton, Ontario, Canada
"Development of Low Molecular Weight Heparin for Clinical Use"

1990 Hugo Partsch, M.D., Vienna, Austria
"Diagnosis of AV Fistulas in Vascular Malformations"

2007 D. EUGENE STRANDNESS JR., M.D. MEMORIAL LECTURE

"Foresight 2020: Creating the Venous Vision"
Robert L. Kistner, MD

Bob Kistner was born into a St. Louis, Mo. medical family in 1929. His father and two of his three brothers were physicians, as were others on his maternal side. His education was with the Jesuits at St. Louis University from high school through medical school and post-graduate residency in general surgery. Vascular fellowship at Cleveland Clinic followed two years in the U.S. Air Force and two years of private practice of General Surgery in Santa Barbara, Ca where he directed the Cottage Hospital multi-specialty training program.

Bob's vascular surgery career began in Hawaii with the Straub Clinic in 1966 immediately after the vascular fellowship. He remained there for 39 years until the end of 2004 after which he founded a small vein clinic specialty practice. His academic association has been with the University of Hawaii as a Clinical Professor of Surgery since 1986. A busy clinical vascular surgery practice has been supplemented by research and writing predominantly in the field of venous reconstructive surgery and venous diagnostics.

He has authored or co-authored over 100 journal articles and 40 book chapters, one book on venous surgery, and more than 120 presentations around the world. He has been a contributing member of multiple vascular societies in the United States.

The lecture will be presented on
Saturday, February 17, 2007 at 11:30 a.m.
Please plan to attend this featured presentation.

AMERICAN VENOUS FORUM FOUNDATION RESEARCH AWARD

Each year The American Venous Forum Foundation offers a cash prize for up to three (3) abstracts on clinical or experimental work in venous diseases performed by residents in training, fellows and young physicians and surgeons in practice for less than five years

THE BSN-JOBST RESEARCH FELLOWSHIP IN VENOUS AND LYMPHATIC DISEASE

In 1995, The American Venous Forum Foundation announced the establishment of the BSN-Jobst, Inc. Research Fellowship in Venous and Lymphatic Disease.

1995 Peter J. Papas, M.D., UMDNJ New Jersey Medical School

1996 Jae-Sung Cho, M.D., Mayo Clinic, Rochester, MN

1997 Andrew C. Stanley, M.D., Burlington, VT

1998 Klaus See-Tho, M.D., Stanford University Medical Center

1999 Joseph D. Raffetto, M.D., Boston Medical Center

2000 *No Award Given*

2001 Brajesh K. Lal, M.D., UMDNJ New Jersey Medical School

2002 Susan O'Shea, M.D., Duke University Medical Center

2003 Charles Fields, M.D., Mayo Clinic

2004 John Rectenwald, M.D., University of Michigan

2005 Allesandra Puggioni, M.D., Mayo Clinic

2006 Stephanie K. Beidler, MD, University of North Carolina

The BSN-Jobst, Inc. Research Fellowship provides a one-year, $25,000 grant to a research fellow chosen through a competitive peer-review selection process. A committee of distinguished vascular physicians, appointed by the American Venous Forum Foundation, determines the fellowship recipient and announces its selection during the Forum Finale.

SIGVARIS, INC. TRAVELING FELLOWSHIP IN VENOUS DISEASE

Sigvaris, Inc. initially established this $12,000 Traveling Fellowship to provide a selected candidate with the opportunity to visit medical centers throughout the United States, Europe and elsewhere which have established themselves as centers of excellence in the management of venous disease. In 2006, the Award criteria was changed to encourage fellows to submit abstracts, and attend the Forum's Annual Meeting, and broadened to include up to four (4) finalists, who would each receive up to $3,000 in travel reimbursement associated with attending the meeting. Finalists also receive free one-year candidate membership in the American Venous Forum.

1997	Mark H. Meissner, M.D., University of Washington Medical Center
1998	Paul R. Cordts, M.D., Triple Army Medical Center
1999	E. John Harris, Jr., M.D., Stanford University Medical Center
2000	Harold J. Welch, M.D., Lahey Clinic Medical Center
2001	David L. Gillespie, M.D., Uniformed Services University of the Health Sciences
2002	Joseph D. Raffetto, M.D., Boston Medical Center
2003	Audra Noel, M.D., Mayo Clinic
2004	Robert McLafferty, M.D., Southern Illinois University
2005	Antonios P. Gasparis, M.D., Stony Brook University
2006	Beverly Sharp, MD – Charing Cross Hospital Biju Aravind, MD – Charing Cross Hospital
2007	**Winners will be announced during the Forum Finale Saturday, February 17th**

SERVIER TRAVELING FELLOWSHIP

The Servier Traveling Fellowship provides two fellows an opportunity to travel to France and Turkey for the 2007 European Venous Forum to present his or her scientific research. Four (4) finalists are identified through a competitive peer-review process, and are invited to present their science during the AVF Meeting. Travel and accommodations for the four finalists are reimbursed as part of the grant. The finalists are judged by an appointed AVF committee. Two winners will be selected to present their work at the European Venous Forum

2006 Winners

Charles Stonerock, MD	Indiana University School of Medicine, Indianapolis, IN
Gustavo Oderich, MD -	Mayo Clinic, Rochester, MN

Best Posters

Each year a formal poster session is held where authors are invited to give a 3-minute synopsis of their work followed by a 2-minute Q & A with the audience in attendance. Posters are scored and prizes are awarded to the top presentations.

2006 Winners:

Co-localization of MMP-2 and MT1-MMP Expression in Smooth Muscle Cell-rich Areas in Varicose Veins

B. Aravind, MD, B. Sharp, Miss, T. Navin, Miss, C. Monaco, Miss, E. Paleolog, Dr., A. H. Davies, Mr., Charing Cross Hospital, Imperial College, London, UK, and Kennedy Institute of Rheumatology, London, UK

Endovascular Stenting of Ascending Lumbar Veins for Refractory IVC Occlusion

C. Healey, MD, N. Halin, MD, M. Iafrati, MD, New England Medical Center, Boston, MA

Coagulation and Fibrinolytic Changes after Major Trauma Do Not Predict DVT

M. H. Meissner, MD, University of Washington, Seattle, WA

Reflux in the Superficial and Deep Venous System of the Legs in the General Population – Results from the Bonn Vein Study

E. Rabe, MD, U. Maurins, B. Hoffmann, E. Bock, F. Pannier – Dermatological University Clinic, Bonn, Germany, Surgical Department, University of Riga, Riga, Latvia, University of Essen, Essen, Germany

2007 Winners will be announced during the Forum Finale Saturday evening.

GENERAL INFORMATION

REGISTRATION DESK

The Registration Desk will be located in the Mezzanine and will be open during the following hours:

Tuesday, February 13	2:00 p.m. - 6:00 p.m.
Wednesday, February 14	7:00 a.m. - 6:00 p.m.
Thursday, February 15	7:00 a.m. - 3:00 p.m.
Friday, February 16	7:00 a.m. - 1:00 p.m.
Saturday, February 17	7:00 a.m. - 6:00 p.m.

REGISTRATION INFORMATION

Full Registration Fee Includes: All Scientific Sessions, Postgraduate Course, Continental Breakfast, Coffee Breaks, and Boxed Lunches as well as entrance to Exhibits and the Welcoming Reception on Thursday as well as the new Forum Finale on Saturday evening.

Guest/Spouse Registration Fee Includes: Welcoming Reception, Continental Breakfast and Mid-Morning Refreshments daily in the Hospitality Suite, as well as the new Forum Finale on Saturday evening.

ANNUAL BUSINESS MEETING LUNCH (Members Only)

The Annual Business Meeting will be held on Friday, February 16 at 12:00 p.m. in the Santa Catalina Ballroom.

SPECIAL NEEDS

If you have a disability that requires special accommodations or assistance, please contact the AVF Administrative Offices. Please advise the AVF Administrative Offices if you have any food allergies or dietary restrictions.

INSTRUCTIONS TO AUTHORS

Audio Visual

All presentations must be formatted using PowerPoint. All presenters must bring their PowerPoint presentations on, CD Rom or Thumb (Flash) Drive to the Speaker Ready Room at least 2 hours prior to their presentation.

Manuscripts

The American Venous Forum has a publication agreement covering papers from this meeting, therefore, presenting authors of oral presentations must submit the full manuscript to the Journal of Vascular Surgery. You must conform strictly with their guidelines when preparing your manuscript. All submissions to the Journal must be made before the presentation date.

INDUSTRY PARTNERS

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FUTURE MEETING OF THE AMERICAN VENOUS FORUM

2008
February 20-23
Charleston Place Hotel
Charleston, SC

AMERICAN VENOUS FORUM

19th ANNUAL MEETING
February 14-18, 2007

Rancho Bernard Inn, San Diego, California

Wednesday, February 14th 2007

7:00 am — Continental Breakfasts

8:00 am — POST-GRADUATE COURSE:
THE ART AND SCIENCE OF VENOUS DISEASE: AN EVIDENCE-BASED APPROACH

8:00am — **Overview and Introduction to Evidence Based Medicine**
Mark Meissner, MD, Course Chairman

PG SESSION I: ACUTE DVT

Objective Outcome Measures in Acute Deep Venous Thrombosis
Brenda Zierler, MD

Evidence Based Diagnosis of DVT: The Role of Clinical Algorithms.
Joann Lohr, MD

Anticoagulation: How Long And Why
Anthony Comerota, MD

Thrombolytic Therapy for Acute DVT: What Do We Really Know?
Suresh Vedantham, MD

Panel Discussion

9:45am — Break

10:00am

PG SESSION II: CHRONIC VENOUS DISEASE

Why Do Varicose Veins Develop?
Joseph Raffetto, MD

Outcomes in Chronic Venous Disease: What is Important and How is it Measured?
Frank Padberg, MD

Compression Therapy: How Does It Work and When Is It Appropriate?
Hugo Partsch, MD

Superficial Venous Ablation: What is the Evidence Supporting the Options?
William Marston, MD

Dissecting Saphenous Ablation: What is Art? What is Science?
Lowell Kabnick, MD

11:30 Panel Discussion

12:00pm Lunch (Boxed Lunch to be provided)

1:00pm

SCIENTIFIC SESSION I – CHRONIC VENOUS INSUFFICIENCY

Moderators: Michael Dalsing, MD,
Steven Zimmet, MD

Educational Objectives: to appreciate clinical and patency outcome of venous stenting and identify factors predictive of outcome, to understand the effect of removal of superficial reflux and fasciotomy on co-existing deep reflux, to assess obesity and blood type as risk factors for development of chronic venous insufficiency.

1:00 – 1:20 **Long-term Symptom Relief, Quality of Life Improvement and Stent Patency following Venous Outflow Stenting**

P. Neglén, K. C. Hollis, S. Raju; River Oaks Hospital, Flowood, MS

1:20 – 1:40 **Factors Predictive of Outcome Following Interventional Treatment of Iliac Vein Compression Syndrome**

B. S. Knipp, E. J. Ferguson, D. A. Williams, N. Dasika, W. Cwikiel, P. K. Henke, T. W. Wakefield; University of Michigan, Ann Arbor, MI

1:40 – 2:00 **Post-Thrombotic or Non-Post-Thrombotic Severe Venous Insufficiency: Impact of Removal of Superficial Venous Reflux with or without Subcutaneous Fasciotomy.**

J. T. Christenson[1], S. Gueddi[2]; [1]Department of Cardiovascular Surgery, University Hospital of Geneva, Geneva, Switzerland, [2]Department of Angiology, University Hospital of Geneva, Geneva, Switzerland

2:00 – 2:20 **Chronic Venous Disease in Obese Population: Is Obesity a Risk Factor?**

J. Benigni[1], J. Uhl[2], D. Rastel[3]; [1]Hopital Begin, St Mandé, France, [2]Centre de Chirurgie des Varices, Neuilly, France, [3]Centre de Phlebologie, St Etienne, France

2 :20 – 2 :40 **A+ Blood Type is a Potential Determinant of Post Thrombotic Syndrome**

P. E. Thorpe[1], F. J. Osse[1], A. Yao[2];A. Kaul[3] 1Venaclinic, Sao Paulo, Brazil, [2]Rush, Chicago, IL, [3]Foxborough, MA

2:40 – 2:45 **Clinical Improvement after Endovenous Radiofrequency Obliteration of the Greater Saphenous Vein in Patients with Concomitant Deep Venous Insufficiency**

A. Oropallo, H. In, P. M. Shaw, J. Dorfman, W. Nasr, G. W. Gibbons; Boston Medical Center, Boston, MA

2:45 – 2:50 **National Venous Screening Update – Robert McLafferty, MD**

3:00pm Coffee Break

3:30pm

SCIENTIFIC SESSION II – SUPERFICIAL VENOUS INSUFFICIENCY (1)

Moderators: Peter Neglen, MD,
Michael Ricci, MD

Educational Objectives: to be exposed to and discuss different modes of saphenous vein ablation and surgical removal of the saphenous vein, to evaluate the clinical and hemodynamic impact of saphenous vein stripping.

3:30 – 3:50

Pattern of Energy Delivery During Endovenous Laser Treatment of Varicose Veins In Experimental Model

S. Kaspar[1], Z. Cervinkova[2] T. Danek[1] [1]Institute of Medical Studies – Pardubice General Hospital, Czech Republic, [2]Faculty of Medicine Hradec Kralove – Charles University, Prague, Czech Republic

3:50 – 4:10

Chemical Ablation of Primary Varicose Veins in a Bloodless Field is Safe, Low Cost and Effective

M. Trinidad, Sr.[1], M. Trinidad, Jr.[2], J. Villavicencio[3]; [1]Hospital del Carmen, Guadalajara, Mexico [2]Department of Surgery, University of Illinois, Chicago, IL, [3]USUHS, Bethesda, MD

4:10 – 4:30

A Novel Type of Endovenous Catheter for the Treatment of Great Saphenous Vein Reflux Combines Favorable Aspects of RF Closure and Endovenous Laser: First Clinical Experience

T. M. Proebstle[1], B. Vago[1], O. Goeckeritz[2], H. Wenzel[2], C. Lebard[3], C. Sessa[4], O. Pichot[4]; 1University of Heidelberg, Heidelberg, Germany, [2]Venenzentrum am Elsterpark, Leipzig, Germany, [3]Hospital St. Michel, Paris, France, [4]CHU Service de Chirurgie Vasculaire, Grenoble, France

4:30 – 4:50

Great Saphenous Vein Stripping With Preservation of Saphenous-Femoral Junction: Hemodynamic and Clinical Results

P. Pittaluga[1], S. Chastanet[2], R. Barbe[3], J. J. Guex[2]; 1Riviera Vein Institute, Cagnes-sur-mer, France, [2]Riviera Vein Institute, Nice, France, [3]Clinique Charcot, Lyon, France

4 :50 – 5 :10

Quality of Life and Venous Hemodynamics in Patients After Saphenous Venous Stripping with Stab Avulsion of Varicose Veins

T. Ogawa, S. Hoshino; Fukushima Daiichi Hospital, Fukushima, Japan

5:10 – 5:15

Quality of Life analysis in Varicose Veins treated With Endovenous Laser Therapy (EVLTS): Can the Short 70 Form 8 replace the Short Form 36?

M. N. A. Abdul Rahman, S. Gulati, A. Mekako, J. Hatfield, P. T. McCollum, I. C. Chetter; University of Hull, Hull, United Kingdom

5:15 – 5:20 **Coil Occlusion and Alcohol Ablation of Varicosed Saphenous Veins: A Novel Application of an Old Technique**
M. K. Barsoum[1], H. Bjarnason[1], T. W. Rooke[1], C. Felty[1], D. H. Pfizenmaier[1], J. C. Andrews[1], J. A. Heit[1]; [1]Mayo Clinic, Rochester, MN

5:20 – 5:25 **Arteriovenous Fistula Following Endovenous Laser Ablation (EVLT) of the Saphenous Vein and Spontaneous Venous Thrombosis: Attempt at Neovascularization?**
P. Lall, M. Kalra, P. Gloviczki, A. A. Duncan, B. Lewis, R. Lee, H. Hatz; Mayo Clinic, Rochester, MN

5:30 pm Adjourn

6:00 pm **Welcoming Reception**

7:30pm **DINNER SYMPOSIUM –** *(Registration Required)*
Supported through an educational grant provided by Bacchus Vascular & Sanofi-Aventis

THROMBOSIS PROPHYLAXIS AND TREATMENT: UPDATE 2007

Education Objectives:

1. *Understanding safe practice 17 and how it will impact clinical practice in 2008*
2. *Using risk assessment to guide selection, intensity and duration of post-operative anti-coagulation for thrombosis prophylaxis.*
3. *Understanding the strength and limitation of the low molecular weight heparin*
4. *Understand the role of newer modalities in the treatment of venous thrombosis*

7:30pm – 8:00pm Dinner/Buffet

8:00pm **Thrombosis Prophylaxis in Vascular Surgery: Complying with SCIP Measures and Future JCAHO Mandates.**
Joseph Caprini, MD

8:20pm **Low Molecular Weight Heparin: Where Do We Stand in 2007?**
Thomas Wakefield, MD

8:40pm **Integrating a Strategy of Thrombus Removal for the Treatment of Acute DVT**
Anthony Comerota, MD

9:00pm **Key Guiding Principles for the Management of Iliofemoral DVT.**
Stephen Kee, MD

9:20pm	**Case Scenarios with Audience Participation** *Drs. Caprini, Wakefield, Comerota & Kee*
10:00pm	Adjourn

Thursday, February 15th 2007

7:00am Continental Breakfast / Exhibits Open

8:00am **SCIENTIFIC SESSION III – CONSERVATIVE MANAGEMENT**

Moderators: Thomas Wakefield, MD, Bo Eklof, MD

Educational Objectives: to elucidate the effect and use of different types of compression therapy and conservative treatment for chronic venous disease, to discuss venous imaging and thrombolysis of superior vena cava thrombosis.

8:00 – 8:20 **Venous Flow Enhancement in the Calf with Intermittent Pneumatic Compression: Hemodynamic Role of the Plantar Venous Plexus and the Foot Venous Pump**

K. Delis[1], A. L. Knaggs[2]; [1]Imperial College (London) and Athens Medical Center, London and Athens, United Kingdom, [2]St. Mary's Hospital, London, United Kingdom

8:20 – 8:40 **Use of Compression Stockings in Chronic Venous Disease**

S. Raju[1], K. C. Hollis[2], P. Neglén[2]; [1]University of Mississippi Medical Center, Jackson, MS, [2]River Oaks Hospital, Flowood, MS

8:40 – 9:00 **Multi-layer Bandaging System with Tubulcus In The Treatment Of Difficult Venous Ulcers**

D. J. Milic[1], S. S. Zivic[1], M. Jovanovic[1], J. Paravina[1], R. Jankovic[1], A. M. Visnjic[1], Z. Maksimovic[2]; [1]Surgical Clinic, Clinical Centre Nis, Nis, Serbia and Montenegro, [2]Institute for Cardiovascular Diseases, Clinical Centre of Serbia, Belgrade, Serbia and Montenegro

9:00 – 9:20 **Inelastic Compression System Produces a Reverse-pressure Gradient and Significantly Higher Skin Surface Pressures as Compared to an Elastic Compression Legging**

C. N. Kline, E. Kraus, B. R. Macias, T. B. Neuschwander, N. Angle, J. Bergan, A. R. Hargens; University of California, San Diego, San Diego, CA

9:20 – 9:40 **Evaluation of Spa Therapy in Chronic Venous Disorders with Skin Changes: A Randomized Controlled Trial**

P. H. Carpentier, B. Satger, D. Poensin; University Hospital of Grenoble, Grenoble, France

9:40 – 9:45 **Extremity Venous Imaging - New Modalities for Trauma and Hemodialysis Access**

V. E. Rotella, Jr., J. Blebea, R. Choudry; Temple University Hospital, Philadelphia, PA

9:45 – 9:50

Success of Catheter-Directed Thrombolysis in Symptomatic Patients with Superior Vena Cava Thrombosis due to Malignant or Inflammatory Disease

E. Palchik, A. Bakken, J. Rhodes, K. A. Illig, D. Lee, D. Waldman, M. G. Davies; University of Rochester, Rochester, NY

9:50 – 10:00

Aneurysms In The Superficial Veins of The Lower Extremities

D. Varnagy[1], N. Labropoulos[1], J. Santaniello[2], P. J. Pappas1; [1]UMDNJ, Newark, NJ, [2]Loyola University Medical Center, Maywood, IL

10:00 am

Coffee Break / Visit Exhibits

10:30 am

Ask the Experts -Case Management - Acute Thrombosis and Chronic Occlusion

Moderator: Peter Neglén, MD

Educational objectives: to understand the technical aspects of femoro-ilio-caval stenting and its role in the treatment of chronic venous obstruction, to discuss early clot removal of acute DVT by mechanical thrombectomy and/or catheter-directed thrombolysis, to appreciate the treatment of acute superficial vein thrombosis

12:30pm

Lunch – Attendees On Own

12:30pm

AVF Update - Industry Only Lunch

1:30-5:30pm

Workshops (3 - 1 hour & 20 minute sessions)

Mechanical Thrombectomy and IVC Filter Insertion

Moderator: Robert McLafferty, MD

Educational Objectives:

1. *Gain knowledge about the available types of mechanical thrombectomy devices and IVC filters*
2. *Discover skills to properly use mechanical thrombectomy devices, insert IVC filters, and remove IVC filters*
3. *Have a better appreciation for how these devices can impact patients in the short and long term*

Intravascular Ultrasound and Venous Stenting

Moderator: Peter Neglen, MD

Educational Objectives:

1. *Understand the underlying technology of intravascular ultrasound.*
2. *Be able to use intravascular ultrasound and detect and recognize common venous lesions.*
3. *Know the inherent properties of stents to be place in the venous system.*
4. *Recognize the specific aspects of placing stent in the venous outflow tract.*

Percutaneous Ablation of the Saphenous Vein
Moderator: Jose Almeida, MD

Educational Objectives:

1.Use ultrasound guidance for venous access.

2.Use ultrasound guidance to position a catheter at the saphenofemoral junction.

3.Understand the modalities available for thermal ablation of the saphenous vein.

Ultrasound Investigations for Venous Disease
Moderador: Marc Passman, MD

Educational Objectives

1.Understanding of basic normal venous anatomy identified by venous ultrasound.

2.Understanding of diagnostic criteria for venous thrombosis using venous ultrasound.

3.Understanding of diagnostic criteria for venous insufficiency (deep, superficial, perforator) using venous ultrasound

Compression Therapy of Venous Disease
Moderator: Hugo Partsch, MD

Educational Objectives:

1.To understand the main principles of compression pressure and compression materials

2.To learn the application of high pressure, multilayer-bandages checked by interface pressure measurements

Or Concurrent SYMPOSIUM session

1:30 – 2:50pm

Investigations of Chronic Venous Disease
Moderator: Nicos Labropoulos, MD

Educational Objectives:

1.To describe the different patterns of venous obstruction and discuss the diagnosis.

2.To analyze the role of physiologic testing in chronic venous disease.

3.To demonstrate and discuss the use of duplex scanning in the diagnosis and treatment of acute and chronic venous disease.

Speakers: Nicos Labropoulos, MD
Frank Padberg, MD
Seshadri Raju, MD

3:00 – 4:20pm

Sclerotherapy-Liquid to Foam: Ask the ACP Experts

Moderator: Lowell Kabnick, MD

Educational Objectives:

1.To understand the indications, tecniques, and how to avoid complications for both foam sclerotherapy and liquid sclerotherapy

2.Risk of DVT in superficial venous interventions and treatment

3.To know the FDA approved sclerosants, to be familiar with the laws concerning compounders, importers, and foam sclerotherapy

Foam Sclerotherapy: Indications, Techniques,Review of the Literature, Personal Results, Complications
John Bergan, MD

Liquid Sclerotherapy: Indications, Techniques, Complications, Lessons Learned
Steve Zimmet, MD

Sclerotherapy Consensus
Nick Morrison, MD

Superficial Venous Interventions: Assessing the Risk of DVT
Suresh Vedantham, MD

Sclerotherapy and the Law
Lowell Kabnick, MD

4:30 – 5:50pm

The Business of Treating Superficial Venous Disease
Moderator: Nick Morrison

Coding and Reimbursement for the Phlebology Practice
Joe Zygmunt, RVT

Ultrasound and Vascular Lab in the Phlebology Practice
Diana Newhardt

Marketing a Phlebology Practice
Terri Morrison, RN

7:00 pm

Industry Sponsored Dinner Symposium -
(Registration Required)
The Next Generation of Endovenous Ablation
Sponsored by: VNUS Medical Technologies

Friday, February 16th 2007

7:00am Continental Breakfast / Exhibits Open

7:50am **SCIENTIFIC SESSION IV – ACUTE DVT**

Moderators: Joann Lohr, MD, Joseph Caprini, MD

Educational Objectives:To evaluate aspects of diagnosis of acute DVT, to assess treatment patterns of DVT in children, and to appreciate methods to prevent disability after acute subclavian vein thrombosis.

7:50 – 8:10 **Does Different D-Dimer Level Reduce The Use Of Venous Duplex Scanning To Rule Out Deep Vein Thrombosis In Patients With Symptomatic Pulmonary Embolism?**

T. Yamaki, M. Nozaki, H. Sakurai, M. Takeuchi, K. Soejima, T. Kono; Tokyo Women's Medical University, Tokyo, Japan

8:10 – 8:30 **A New Ultrasonographic Sign for Determination of Age of Venous Thrombosis**

N. Labropoulos[1], P. Neglen[2], P. J. Pappas[1]; 1UMDNJ, Newark, NJ, [2]River Oaks Hospital, Jackson, MS

8:30 – 8:50 **Treatment Patterns for Deep Venous Thrombosis in Hospitalized Children: Are Standardized Protocols Needed?**

J. A. Sandoval, M. P. Sheehan, C. E. Stonerock, S. Shafique, F. J. Rescorla, M. C. Dalsing; Indiana University School of Medicine, Indianapolis, IN

8:50 – 9:10 **Subclavian Venous Effort Thrombosis in Adolescents: Preventing Long-Term Disability**

A. W. Knott, A. A. Duncan, A. M. Hanna, H. Bjarnason, T. C. Bower, R. D. McBane, P. Gloviczki; Mayo Clinic, Rochester, MN

9:10am Coffee Break / Visit Exhibits

9:40am

SCIENTIFIC SESSION V – BASIC SCIENCE

Moderators: Joseph Raffetto, MD, David Gillespie, MD

Educational Objectives: to identify some chemical and structural changes of the wall of varicose veins, to be informed of early experience of percutaneous placement of autogenous vein valves.

9:40 – 10:00

Increased Expression of Matrix Metalloproteinase-2 and Decreased Contraction in Vena Cava Subjected to Prolonged Increases in Basal Tension. Implications in Varicose Veins

J. D. Raffetto[1], V. Koledova[2], R. Khalil[2]; [1]VA Boston Healthcare System, West Roxbury, MA, [2]Brigham and Women's Hospital, Boston, MA

10:00 – 10:20

Inhibitory Influence of TIMP Contributes to Morphological Changes of Varicose Vein Wall

B. Sharp[2], B. Aravind[1] T. Navin[1], C. Monaco[1], E. Paleolog[1], A. H. Davies[3]; [1]Kennedy Institute of Rheumatology, Imperial College, London, UK, United Kingdom, [2]Charing Cross Hospital, Kennedy Institute of Rheumatology, Imperial College, London, UK, United Kingdom, [3]Charing Cross Hospital Department of Surgery, Oncology and Anesthetics (SORA), Imperial College, London, UK, United Kingdom

10:20 – 10:40

Percutaneous Autogenous Venous Valve Transplantation in An Ovine Model

D. Pavcnik, Q. Yin, J. Kaufman, B. Uchida, H. Timmermans, F. S. Keller, J. Rosch; Oregon Health & Science University, Portland, OR

10:40

2006 Award Updates

Introduced by: Michael C. Dalsing, MD

2006 Sigvaris Fellowship – Announcement

Beverley Sharp, MD – Charing Cross Hospital, London

Role of TIMP-3 Induced Apoptosis in Morphological Variation In Varicose Veins

Biju Aravind, MD – Charing Cross Hospital, London

Co-Localization of MMP-2 and MT1-MMP Expression in Smooth Muscle Cell-Rich Areas in Varicose Veins

2006 BSN Jobst Winner - Report

Stephanie K. Beidler, MD – University of North Carolina – Chapel Hill

Alterations in Matrix Metalloproteinase Levels in Ulcers Associated with CVI before and after Compression Bandaging

2006 Servier Traveling Fellowship Winners - Reports

Gustavo Oderich, MD – Mayo Clinic – Rochester, MN
Open Endophlebectomy and Endovenous Stenting for Chronic Thrombosis of the Inferior Vena Cava and the Iliofemoral Veins

Charles Stonerock, MD – Indiana School of Medicine Indianapolis, Indiana
The Use of D-Dimer and Pretest Clinical Probability to Determine the Need for Duplex Ultrasonography in the Diagnosis of DVT

11:00 am

PRESIDENTIAL ADDRESS

The American Venous Forum: Inclusive, Innovative, Involved.
Michael C. Dalsing, MD
Introduction by Mark A. Meissner, MD

12:00pm MEMBER BUSINESS LUNCH

Free Afternoon: Golf & Tennis

Doin nuttin'!

Saturday, February 17th 2007

7:30 Continental Breakfast - Visit Exhibits

8:00am **SCIENTIFIC SESSION VI – SUPERFICIAL VEINS (2)**

Moderators: Lowell Kabnick, MD,
Marc Passman, MD

Educational Objectives: to evaluate a venous pressure method to quantify hemodynamic results and to asses the importance of antibiotic prophylaxis in varicose vein surgery and compare surgery to ablation, to discuss the connection between pelvic vein insufficiency and varicose veins and its treatment.

8:00 – 8:20 **Quantitative Measurement of Superficial Venous Surgery Using Continuous Ambulatory Venous Pressure Measurement (CAVPM)**
R. Eifell; Queen Elizabeth Hospital and University of Newcastle Upon Tyne, Tyne and Wear, United Kingdom

8:20 – 8:40 **Antibiotic Prophylaxis In Varicose Vein Surgery: A Double Blind Randomised Clinical Trial**
A. Mekako, P. Coughlin, J. Hatfield, R. Baker, P. McCollum, I. Chetter; Hull Royal Infirmary/University of Hull, Hull, United Kingdom

8:40 – 9:00 **Randomized Controlled Trial of Endovenous Laser Ablation and Stripping in Patients with Great Saphenous Vein Insufficiency: Short Term Result**
L. H. Rasmussen[1], L. B. Rasmussen[2], M. L. Rasmussen[1], B. Eklof[3]; [1]Venous Center Naestved, Naestved, Denmark, [2]Surgical Clinic, Roskilde, Denmark, [3]Raa, Sweden

9:00 – 9:20 **Pelvic Leaks as the Cause for Post Surgical Varicose Recurrence**
S. Zubicoa, J. Leal, L. Del Campo, A. Sanchez, F. Arroyo; Hospital Ruber Internacional, Madrid, Spain

9:20 – 9:40 **Treatment by Embolization of Pelvic Venous Insufficiency in Women Presenting with Non-Saphenous Perineal Veins And Clinical Symptoms (24 Cases, Three-Year Follow-Up)**
D. Creton, EC A Paré, Nancy, France; L Hennequin, Solime, Nancy, France; FA Allaert, Cenbiotec, Dijon, France

9:40 am Coffee Break / Visit Exhibits

10:10 am

SCIENTIFIC SESSION VII – TRAUMA AND IVC FILTERS

Moderators: Mark Meissner, MD,
Robert McLafferty, MD

Educational Objectives: to appreciate the complications of IVC filter placement and the frequency of irretrievability when placed in trauma patients, to evaluate eccentric compression of the saphenous vein after ablation.

10:10 – 10:30

Complications Related to Inferior Vena Cava Filters

M. M. Nazzal, E. Chan, M.D. Nazzal, J. Abbas, J. Boomer, G. Erikson, K. Khechen; University of Toledo, Toledo, OH

10:30 – 10:50

The Recovery Filter in Trauma Patients: Are They Truly Retrievable?

E. M. Zakhary, D. Franklin, S. Galt, J. Elmore; Geisinger Medical Center, Danville, PA

10:50 – 11:10

Vein Repair Is Not Associated with an Increased Risk of Venous Thromboembolic Events: A Review of Over One Hundred Traumatic Military Venous Injuries

R. W. Quan[1], D. L. Gillespie[1], C. J. Fox[1], R. P. Stuart[2], M. W. Cox[1], L. D. Cunningham[3], D. R. Whittaker[3], E. A. Adams[1], N. M. Rich[2]; [1]Walter Reed Army Medical Center, Washington, DC, [2]Uniformed Services University of the Health Sciences, Bethesda, MD, [3]National Naval Medical Center, Bethesda, MD

11:10 – 11:30

Effects of Eccentric Compression after EVLT of Great Saphenous Vein

M. Lugli, A. Cogo, S. Guerzoni, A. Petti, O. Maleti; Hesperia Hospital, Modena, Italy

11:30am

D. EUGENE STRANDNESS MEMORIAL LECTURE
"Foresight 2020: Creating the Venous Vission"

Robert L. Kistner, MD – Honolulu, Hawaii
Introduced by: Michael C. Dalsing, MD

12:30pm

Lunch (Boxed Lunch to be provided)

1:30pm

Ask the Experts - Case Management (Part 1) - Superficial Venous Disease

Moderator: Steve Elias, MD

Educational Objectives: To understand the management of superficial and perforator incompetence utilizing minimally invasive procedures; to lean how to minimize treatment complications to nerves, vessels and soft tissue; To discuss the concepts of primary, primary-assisted and secondary closure rates; to understand the unique anatomy and techniques to treat the small saphenous vein; to learn if perforators matter and what is the best method of treatment; to learn "salvage" methods of venous recannilzation.

2:30pm

Coffee Break / Visit Exhibits

3.00pm

Ask the Experts - Case Management (Part 2) - Superficial Venous Disease

Moderator: Steve Elias, MD

4.00pm

Moderated Poster Session

Moderators: Thomas Wakefield, MD
Frank Padberg & Bo Eklof, MD

Educational Objectives: The participants in the poster session will gain a wide range of knowledge expansion including chronic venous disorder, saphenous vein treatment, understanding risk factors and evaluation methods.

P-1 **High Peak Reflux Velocity in the Proximal Deep Veins is a Strong Predictor of Advanced Post-thrombotic Sequelae**

T. Yamaki, M. Nozaki, H. Sakurai, M. Takeuchi, K. Soejima, T. Kono; Tokyo Women's Medical University, Tokyo, Japan

P-2 **Subcutaneous Fasciotomy as Adjuvant Therapy Promotes Ulcer Healing in Patients with Chronic Venous Insufficiency and Therapy Resistant Ulcers.**

J. T. Christenson[1], C. Prins[2], S. Gueddi[3]; [1]Department Of Cardiovascular Surgery, University Hospital Of Geneva, Geneva, Switzerland, [2]University Hospital Of Geneva, Department of Dermatology, Geneva, Switzerland [3]Department of Angiology, University Hospital of Geneva, Geneva, Switzerland

P-3 **Veins Along The Course Of The Sciatic Nerve**

A. K. Tassiopoulos[1], N. Labropoulos[2], A. Gasparis[1], P. J. Pappas[2]; [1]Stony Brook University Hospital, Stony Brook, NY, [2]UMDNJ, Newark, NJ

P-4 **Laser-assisted repair of Venous Valves**

R. Milleret[1], S. Mordon[2]; [1]clinique St Jean, Montpellier, France, [2]inserm, Lille, France

P-5 **Hemodynamic And Clinical Impact Of The Lateral Embryonic Vein In Limbs With Klippel-Trenaunay Syndrome**

K. Delis, P. Gloviczki, P. Wennberg, T. Rooke, D. J. Driscoll; Mayo Clinic, Rochester, MN

P-6 **A New Optional Spiral-Shaped Inferior Vena Cava Filter: Evaluation Of Filter Behavior, Retrieveability, And Venous Response In An Ovine Model**

F. R. Arko, III[1], R. White[2], G. Kopchok[2], L. Lee[2], C. K. Zarins[3], D. Rosenthal[4], M. Razavi[5], T. J. Fogarty[3]; [1]University Of Texas Southwestern Medical Center, Dallas, TX, 2UCLA Harbor, Torrance, CA, [3]Stanford University, Stanford, CA, [4]Atlanta Vascular Specialists, Atlanta, GA, 5St. Joseph Vascular Institute, Orange, CA

P-7 **Withdrawn**

P-8 **The Clinical Outcome of Primary Lymphedema Belonging To Hemolymphatic Malformation**

J. Laredo, B. Lee, D. Deaton, R. Neville; Georgetown University, Washington DC

P-9 **Endovascular/Surgical Management of Pelvic Congenital Vascular Malformation**

J. Laredo, B. Lee, D. Deaton, R. Neville; Georgetown University, Washington DC

P-10 **Clinical Experiences With Venolymphatic Malformation - Combined Form of Congenital Vascular Malformation**

B. Lee[1], L. Villavicencio[2], J. Laredo[1]; 1Georgetown University, Washington DC, DC, [2]Uniformed Services University of The Health Sciences, Bethesda, MD

P-11 **Metalloproteinase Expression Is Increased In Venous Aneurysms**

C. Irwin, A. Synn, M. Griffin, L. Pounds, L. Killewich, G. C. Hunter; Univ. of Texas Medical Branch, Galveston, TX

P-12 **Local Anaesthesia With Adjuvant Relaxation Therapy For Varicose Vein Surgical Treatment**

S. Chastanet[1], P. Pittaluga[2], M. Zemor[3], A. Aime[3]; [1]Riviera Veine Institut, Nice, France, [2]Riviera Veine Institut, Cagnes-Sur-Mer, France, [3]Clinique Saint Jean, Cagnes-Sur-Mer, France

P-13 **Mid-Term Follow-Up After Pharmaco-Mechanical Thrombolysis For Lower Extremity Deep Venous Thrombosis**

A. P. Gasparis[1], N. Labropoulos[2], A. Tassiopoulos[1], B. Phillips[1], J. Pagan[1], C. Lo[1], J. J. Ricotta[1]; [1]SUNY Stony Brook, Stony Brook, NY, [2]UMDNJ-New Jersey Medical School, Newark, NJ

P-14 **Intermittent Compression of Leg Veins By Stiff Material During Ankle Movement**

H. Partsch[1], B. Partsch[2]; [1]Medical Uniersity Vienna, Vienna, Austria, [2]Private Practice, Vienna, Austria

P-15 **Multicenter Evaluation of The Diagnostic Criteria of The Corona Phlebectatica**

H. Partsch[1], B. Partsch[2]; [1]Medical Uniersity Vienna, Vienna, Austria, [2]Private Practice, Vienna, Austria
J. Uhl[1], P. Carpentier[2], A. Cornu-Thenard[3], P. Antignani4, H. Partsch[5]; [1]Varicose Veins Surgical Center, Neuilly Sur Seine, France, [2]University Center Of La Lechere, Grenoble, France, [3]Saint Antoine Hospital, Paris, France, 4St Giovanni Hospital, Roma, Italy, [5]Wilhelminenhospital, Wien, Austria

P-16. **Superimposition of Compression Stockings (CS) With An Increased Stiffness In The Treatment Of Open Venous Ulcer**
E. BLIN[1], J. BENIGNI[2], A. Cornu-Thénard[2], J. Uhl[2]; 1Hôpital BEGIN, St,Mandé, FRANCE, [2]French University Group For Medical Compression Study, Paris V, France

P-17 **Treatment of Chronic, Idiopathic Inferior Vena Cava Thrombosis With Endovascular Stents**
H. Bjarnason, S. R. Paulsen, W. E. Wysokinski, A. A. Duncan, M. Kalra, P. Gloviczki; Mayo Clinic, Rochester, MN

P-18 **Ergonomics of Female Employment and Venous Disease**
F. A. Allaert[1], M. Cazaubon[2], Y. Lecomte[3]; 1ceren Esc & University Hospital, Dijon, France, [2]american Hospital, Paris, France, [3]university Dijon, Dijon, France

P-19 **Treatment of Chronic Major Deep Venous Thrombosis With Excimer Laser Thrombolysis**
M. W. Moritz[1], H. Agis[1], L. S. Kabnick[1], M. Ombrellino[1], P. B. Haser[2]; [1]Vein Institute Of New Jersey, Morristown, NJ, [2]Monmouth Medical Center, Long Branch, NJ

P-20 **Abdomino Pelvic Venous Assessment with Duplex Ultrasound (Transvaginal snd Transparietal)**
A. Sanchez, J. Leal, S. Zubicoa, L. Del Campo, F. Sainz; Hospital Ruber Internacional, Madrid, Spain

P-21 **Withdrawn**

P-22 **New Limb Compression Device Increases Skin, Muscle, and Bone Microvascular Flows**
A. R. Hargens, B. R. Macias, T. B. Neuschwander, Q. Zhang; University of California, San Diego, San Diego, CA

P-23 **Experience in the Treatment of the Varicose Vein Using Endovenous Laser**
S. Shokoku, Varix Ambulatory Surgery Center, Okayama Daiichi Hospital, Okayama-Shi, Japan

P-24 **Comparison of a Combination Diode-Laser and Radiofrequency Device (Polaris;) And A Long-Pulsed 1064-Nm Nd:YAG Laser (Lyra) On Leg Telangiectases Histologic And Immunohistochemical Analysis**
N. Sadick; Weill Medical College Cornell University, New York, NY

P-25 **An Evaluation of Post-Sclerotherapy Laser Compression and Its Efficacy In the Treatment of Leg Telangiectasias**
N. Sadick; Weill Medical College Cornell University, New York, NY

P-26 **First Experience of Application of Laser Coagulation For Venous Malformations**
V. N. Dan, S. V. Sapelkin, G. I. Kuntsevich; A.V.Vishnevsky Institute Of Surgery, Moscow, Russian Federation.

P-27 **Radiofrequency Ablation of Incompetent Perforator Veins**
G. B. Nackman, K. Karag, R. Shafritz, L. Brevetti, A. Graham; UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ

P-28 **Impaired Cerebral Venous Haemodynamics In Multiple Sclerosis Patients**
P. Zamboni, E. Menegatti, A. Legnaro, S. Gianesini, E. Fainardi, A. Liboni; University Of Ferrara, Ferrara, Italy

P-29 **Hemodynamic Improvement As Assessed By Air Phlethysmography after Saphenous Preservation and Phlebectomy**
P. Pittaluga[1], S. Chastanet[2], R. Barbe[3], B. Rea[3], J. Guex[2]; 1riviera Veine Institut, Cagnes-Sur-Mer, France, [2]Riviera Veine Institut, Nice, France, [3]clinique Charcot, Lyon, France

P-30 **Predicting Superficial Venous Incompetence with Strain Gauze Plethysmography**
H. Kalsi, T. V. Heaser, P. W. Wennberg; Mayo Clinic, Rochester, MN

P-31 **Extrahepatic Porto-Mesenteric Venous Aneurysm: Operative Intervention and Outcomes**
P. Lall, Y. N. You, T. C. Bower, D. Nagorney, T. Mckenzie, B. Toomey; Mayo Clinic, Rochester, MN.

P-32 **Do Flow Dynamics and Histocytologic Reaction Impact On Stenting and Bypass In Venous Revascularization?**
V. S. Sottiurai; Advocate Lutheran General Hospital, Park Ridge, IL

P-33 **Evaluation of A Venous Symptoms Diagnostic Score In Primary Care Medicine**
A. Cornu-Thénard, P. H. Carpentier, I. Cazala, J. Uhl; University Hospital Of Grenoble, Grenoble, France

P-34 **Duplex Ultrasound - Guided Surgery For Small Saphenous Vein Incompetence**
D. B. Coleman, T.F. O'Donnell, K. Hannon, M. Iafrati; Tufts New England Medical Center, Boston, MA

P-35	**Does Endovenous Laser Treatment of The Saphenous Veins Correct Venous Insufficiency In Patients With Combined Superficial And Deep Venous Reflux?** *W. Brabham, D. Berndt, W. Marston, R. Mendes, B. Keagy; University Of North Carolina At Chapel Hill, Chapel Hill, NC*
P-36	**Endovenous Laser Small Saphenous Vein Ablation: Reasons, Risks, Results** *S. Elias, X. Wang, B. Moses; Englewood Hospital and Medical Center, Englewood, NJ*
5:30pm	Adjourn
7:00pm	**THE FORUM FINALE** *Awards, Dinner, Entertainment & More!*

Wednesday, February 14th 2007

8:00 am — POST-GRADUATE COURSE:

THE ART AND SCIENCE OF VENOUS DISEASE: AN EVIDENCE-BASED APPROACH

8:00am — **Overview and Introduction to Evidence Based Medicine**
Mark Meissner, MD, Course Chairman

PG SESSION I: ACUTE DVT

Objective Outcome Measures in Acute Deep Venous Thrombosis
Brenda Zierler, MD

Evidence Based Diagnosis of DVT: The Role of Clinical Algorithms.
Joann Lohr, MD

Anticoagulation: How Long And Why
Anthony Comerota, MD

Thrombolytic Therapy for Acute DVT: What Do We Really Know?
Suresh Vedantham, MD

Panel Discussion

9:45am — Break

10:00am — ## PG SESSION II: CHRONIC VENOUS DISEASE

Why Do Varicose Veins Develop?
Joseph Raffetto, MD

Outcomes in Chronic Venous Disease: What is Important and How is it Measured?
Frank Padberg, MD

Compression Therapy: How Does It Work and When Is It Appropriate?
Hugo Partsch, MD

Superficial Venous Ablation: What is the Evidence Supporting the Options?
William Marston, MD

Dissecting Saphenous Ablation: What is Art? What is Science?
Lowell Kabnick, MD

11:30 — Panel Discussion

1:00pm

SCIENTIFIC SESSION I – CHRONIC VENOUS INSUFFICIENCY

Moderators: Michael Dalsing, MD,
Steven Zimmet, MD

Educational Objectives: to appreciate clinical and patency outcome of venous stenting and identify factors predictive of outcome, to understand the effect of removal of superficial reflux and fasciotomy on co-existing deep reflux, to assess obesity and blood type as risk factors for development of chronic venous insufficiency.

1:00 – 1:20 **1. Long-term Symptom Relief, Quality of Life Improvement and Stent Patency following Venous Outflow Stenting**

P. Neglén, K. C. Hollis, S. Raju; River Oaks Hospital, Flowood, MS

Background: Stenting of the obstructed venous outflow tract started in earnest in 1997. Data sets are now available to perform long-term analysis of clinical and patency outcomes of this intervention.

Method: From 1997 to 2004, 973 chronic non-malignant obstructive lesions of the femoro-ilio-caval vein were treated. Median age 54 years, range:14-90; female/male = 2.5/1; left/right limb symptoms = 2.4/1; Clinical score of CEAP was 2 in 8%, 3 in 47%, 4 in 24%, 5 in 4% and 6 in 17%; primary (non-thrombotic iliac vein lesion, "May-Thurner syndrome") /secondary (postthrombotic) etiology = 515/458. The obstructed segment was balloon dilated and stented under IVUS guidance; 14% of postthrombotic limbs had occlusions requiring recanalization before stenting, the remainder had partial obstruction. In 188 limbs stenting was combined with additional anti-reflux procedures. Ulcer healing and ulcer recurrence were noted; the degree of swelling was assessed by physical examination (Grade 0: none; Grade 1: pitting, not obvious; Grade 2: ankle edema; and Grade 3: obvious swelling involving the leg); the level of pain was measured by the visual analogue pain scale (VAS); and quality of life (QoL) was assessed by the CIVIQ questionnaire prospectively before intervention and postopertatively. Stent patency and recurrenct in-stent restenosis were assessed by annual venography or ultrasound scanning (602 limbs).

Result: 89% of patients were followed for 1-104 months (mean 22 months) allowing cumulative long-term analysis. Median pain score and degree of swelling decreased significantly posttent. Severe leg pain (VAS >5) and leg swelling (Grade 3) decreasevd from 54% and 44% prestent to 10% and 17% posttent, respectively. At five years cumulative rates of complete relief of pain and swelling were 60% and 30%, respectively, and cumulative ulcer healing was 45%. The mean CIVIQ scores of QoL improved significantly (25-30%, $p<0.001$) in all categories.Primary, assisted-primary and secondary cumulative patency rates at 74 months were 71%, 90% and 91% (in non-thrombotic and thrombotic disease, 94%, 100%, 100% and 63%, 82%, 83%, respectively). Recanalized limbs reach primary and secondary patency rates of 62% and 71% at 48 months.

Cumulative rate of severe in-stent restenosis (>50%) occurred in 8% limbs at 48 months (in thrombotic limbs 14%, non-thrombotic limbs 1%).

Conclusions: Stenting of iliofemoral and caval venous obstructions resulted in excellent long-term patency with sustained subjective and objective symptom improvement. The venous system appears to accept stenting (as is the case with IVC filters) without high rate of thrombosis or severe in-stent recurrent stenosis.

1:20 – 1:40 **2. Factors Predictive of Outcome Following Interventional Treatment of Iliac Vein Compression Syndrome**

B. S. Knipp, E. J. Ferguson, D. A. Williams, N. Dasika, W. Cwikiel, P. K. Henke, T. W. Wakefield; University of Michigan, Ann Arbor, MI

Background: May-Thurner syndrome is a well-documented but uncommon clinical syndrome of iliac vein compression by the adjacent iliac artery against the pelvic rim. Current management consists of angioplasty and stenting. Although therapy is often initially successful, factors associated with outcome have been poorly defined. The purpose of the current study was to identify predictive factors for vein patency.

Methods: The medical records of 50 patients who underwent iliac vein angioplasty ± stenting from January 1996 to April 2006 for May-Thurner syndrome were reviewed retrospectively. Primary, assisted primary, and secondary patency rates were determined. Patient characteristics and clinical variables were evaluated to determine predictive value for vein patency.

Results: Fifty patients underwent angioplasty of the iliac vein during the study period, of which 84% were female, 86% presented with lower extremity swelling, and 44% with venous claudication or thigh discomfort. The majority (66%) had extensive left iliac and infra-inguinal thrombosis. Most patients (98%) had a stent placed; 32% also received pharmacologic thrombolysis. The primary, assisted primary, and secondary patency rates of angioplasty/stenting were 70.2%, 79.0%, and 91.5% at one year and 44.6%, 60.9%, and 83.8% at four years. Using a Cox proportional risk model, any hypercoagulable state (OR 5.63, 95% CI 1.18 to 26.98, P=.031), history of trauma prior to onset of symptoms (OR 4.54, 95% CI 1.50 to 13.78, P=.008), stent length greater than 20 cm (OR 3.92, 95% CI 1.26 to 12.19, P=.019), and male gender (OR 3.90, 95% CI 1.11 to 13.73, P=.035) were predictive of stent occlusion. In the absence of these risk factors, primary patency was 96.9% at 1 year and 91.0% at 4 years; primary patency rates fell below 7% at 1 and 4 years in patients with 3 or 4 risk factors (see Table). Of note, the use of thrombolytics had no impact on the patency rates. Risk factors for DVT, clinical presentation, and the extent of thrombosis were also not associated with patency rates.

Conclusions: Patency rates for iliac vein intervention in patients with May-Thurner syndrome can be predicted based on a multivariate model. Assessing risk factors allows for patient stratification and appropriate clinical decision making.

Primary Patency versus Time				
No. Risk Factors	1 yr	2 yr	3 yr	4 yr
0	96.9%	95.9%	94.5%	91.0%
1	87.0%	82.8%	77.4%	65.7%
2	54.0%	43.5%	32.5%	16.0%
3	6.9%	2.8%	0.8%	0%
4	0%	0%	0%	0%

1:40 – 2:00 **3. Post-Thrombotic or Non-Post-Thrombotic Severe Venous Insufficiency: Impact of Removal of Superficial Venous Reflux with or without Subcutaneous Fasciotomy.**

J. T. Christenson[1], S. Gueddi[2]; [1]Department of Cardiovascular Surgery, University Hospital of Geneva, Geneva, Switzerland, [2]Department of Angiology, University Hospital of Geneva, Geneva, Switzerland

Background: Severe venous insufficiency is often associated with therapy resistant or recurrent venous leg ulcers, either as a result of deep vein thrombosis (DVT)- [post-thrombotic syndrome (PTS)] or superficial venous insufficiency (SVI). Frequently present dermatoliposclerosis affects the skin as well as the subcutaneous and subfascial structures, which may impact tissue pressures and compromise skin perfusion. This study was undertaken to measure tissue pressures in PTS and SVI limbs and to evaluate the impact of removal of superficial venous reflux with or without concomitant subcutaneous fasciotomy.

Methods: In 8 patients with recurrent, therapy resistant venous leg ulcers, due to PTS (11 limbs, 12 ulcers) and 14 patients with severe SVI (14 limbs, 14 ulcers), subcutaneous fasciotomy was performed in addition to removal of superficial reflux. They were compared to 8 patients with PTS (11 limbs, 11 ulcers) and 10 patients with SVI (13 limbs, 13 ulcers) who did not have fasciotomy in addition to removal of their superficial venous reflux. Intramuscular (i.m.) and subcutaneous (s.c.) tissue pressures and transcutaneous oxygen tension (TcO2) was measured prior to, immediately after and 3 months following the surgical intervention. Healing of ulcer (spontaneous or by skin grafting) at 3 months was also observed.

Results: There were no statistical differences between the groups regarding sex and age distribution or ulcer age at the time of surgery. All patients had in addition to surgery compression stockings class II (30mmHg). The i.m. tissue pressure was higher in patients with PTS compared to SVI patients, while s.c. tissue pressure and TcO2 did not differ between the groups. When fasciotomy was performed i.m. and s.c. tissue pressures decreased and TcO2 increased significantly. Without fasciotomy only s.c. tissue pressure decreased first at 3 months postoperatively. In the SVI-group i.m tissue pressure was significantly decreased at 3 months in the group without fasciotomy.

Conclusions: Patients with severe chronic venous insufficiency with therapy resistant ulcer disease due to deep and superficial insufficiency have higher i.m. tissue pressures than patients with only superficial venous reflux, even though both groups have higher i.m. and s.c. tissue pressures compared to normal values. Eradication of all superficial reflux lowers s.c. tissue pressure, while additional fasciotomy lowers both i.m. and s.c. tissue pressures and increases TcO2, which seems to promote ulcer healing.

Table 1. Tissue pressures after superficial reflux removal w/wo fasciotomy in PTS and SVI						
	PTS with fasciotomy	p-values	PTS without fasciotomy	SVI with fasciotomy	p-values	SVI without fasciotomy
l.m.pressure Preop.	29.0 ± 7.0	n.s.	28.5 ± 6.6	20.0 ± 4.0	n.s.	19.7 ± 5.1
p-values	<0.001		n.s.	<0.001		n.s.
l.m.pressure Postop.	7.5 ± 3.8	<0.001	27.3 ± 5.9	4.3 ± 1.8	<0.001	19.3 ± 5.5
p-values	n.s.		n.s.		0.049	
l.m.pressure at 3 months	6.9 ± 3.6	<0.001	25.5 ± 7.8	4.0 ± 1.6	<0.001	16.3 ± 7.8
S.c.pressure Preop.	9.0 ± 3.4	n.s	8.9 ± 4.1	10.6 ± 2.8	n.s.	10.2 ± 3.3
p-values	<0.001		n.s		<0.001	
S.c.pressure Postop.	0.5 ± 0.9	<0.001	7.4 ± 3.2	0.5 ± 0.6	<0.001	5.9 ± 1.8
S.c.pressure at 3 months	1.4 ± 1.6	<0.001	5.0 ± 1.2	0.5 ± 0.7	<0.001	4.2 ± 0.6

Table 2. Venous ulcer healing with or without fasciotomy in PTS and SVI patients.				
Parameters	PTS with fasciotomy N=12 ulcers	PTS without fasciotomy N=11 ulcers	SVI with fasciotomy N=14 ulcers	SVI without fasciotomy N=13 ulcers
Venous ulcer healed by successful skin grafting	8/8 100%	2/4 50%	4/4 100%	2/4 50%
Venous ulcer healed without skin grafting	3/4 75%	2/7 29%	10/10 100%	5/9 56%
Total number of healed ulcers	11/12 92%*	4/11 36%*	14/14 100%**	7/13 53%**
	p-value *	0.049	p-value**	0.042

2:00 – 2:20 **4. Chronic Venous Disease in Obese Population: Is Obesity a Risk Factor?**

J. Benigni[1], J. Uhl[2], D. Rastel[3]; [1]Hopital Begin, St Mandé, France, [2]Centre de Chirurgie des Varices, Neuilly, France, [3]Centre de Phlebologie, St Etienne, France

Background : Obesity has been considered for a long time as a risk factor for chronic venous disease (CVD). But a few data on CVD are available among large series of obese patients. The aim of this study is to study the correlation between obesity and CVD in a large series of selected obese patients.

Method : Transversal observation survey with a descriptive aim . Each obese patient before a gastric surgery (gastroplasty or by-pass) has been investigated by an angiologist (clinical examination, duplex). 234 obese patients with a BMI from 32 to 59 have been included and analysed in the survey between October 2004 and December 2005.

Results 234 patients (84.1 % females, 15,9 % males). Mean age 36,9 + 10. 9 year-old. Mean BMI was 41.4 + 4.7. Obesity duration was more than 15 years. Pregnancies /woman: 1.9. 4,5% have had previous DVT and 44.8% a family background of CVD. All were active patients and for 47% of them, their working posture were considered at risk for the venous system. Repartition of the "C" CEAP classes:
C0= 41,4% C =30,5% C2=22?6% C3=4,9% C4-6=0,6%
There is no correlation between the BMI and the CEAP classes.

A significant relationship was found between the BMI and the foot static disorders ($p<0.001$) and also between the so-called "venous" symptoms and the foot static disorders ($p<0.01$)

Discussion : Two recent studies (1-2) showed that obesity could be considered as a risk factor for CVD.

At the opposite, two other authors (3-4) show that skin changes could occur without CVD, and be related to calf pump failure.

Conclusion: In an obese population, the prevalence of CVD is not high. It seemed that obese populations do not develop more severe forms of CVD than non obese populations. Foot static disorders were found to be highly correlated with the BMI. They seem to be responsible for the symptoms of the patients.

1- Rabe E. (Bonn vein study) Phlebologie 2003; 32:1-14

2- Allaert F.A Abstracts EVF 2005

3- Padberg F. J Vasc Surg. 2003 ; 37 :79-85

4- Sugarman H.J Annals of Surgery 2001 ; 234, 1:41-46

2:20 – 2:40 **5. A+ Blood Type is a Potential Determinant of Post Thrombotic Syndrome**

P. E. Thorpe[1], F. J. Osse[1], A. Yao[2];A. Kaul[3] 1Venaclinic, São Paulo, Brazil, [2]Rush, Chicago, IL, [3]Foxborough, MA

Background: Elevated factor VIII levels have been associated with poor resolution of thrombosis and post thrombotic syndrome (PTS) in pediatric patients, but no connection to blood type has been investigated. Individuals with non-O blood reportedly have higher levels of von Willebrand factor VIII activity. Whether ABO blood type is associated with a higher risk of PTS is unknown. The purpose of this study is to evaluate the blood type of patients with symptomatic post-thrombotic syndrome to see if this is a potential predictor of poor clinical outcome after deep vein thrombosis.

Methods: Between 1993-2005, 216 patients were treated for symptomatic PTS. Patients with acute deep vein thrombosis (DVT) who failed to clinically improve with conventional therapy were referred for consideration of catheter-directed thrombolysis. Patients with chronic signs or symptoms of post-thrombotic syndrome were referred for endovascular reconstruction. Patients were evaluated with baseline laboratory studies, duplex ultrasound and phlebography prior to intervention. History of VTE, use of compression and duration of anticoagulation were recorded. Blood type was documented in all patients at risk for bleeding with thrombolysis. With patient permission, blood type was requested as part of the hypercoagulability workup.

Results: ABO blood type was documented in 110/216(51%) patients, which included 47 men and 63 women with a mean age of 41.8 years (range 12-74 years). Mean duration of symptoms was 32.8 months (range 1-420 months). The distribution of blood type was 70% A (61.8% A+, 8.2% A-). 4.5% B (4.5% B+, O% B-), 6.3% AB (4.5% AB+, 1.8% AB-) and 19.1% O (14.5%O+, 4.5% O-). The reported ABO distribution in the US population is 40% A (34% A+, 6% A-), 11% B, 4% AB and 45% O (38% O+, 7% O-). The incidence of A+ blood type among PTS patients is highly significant ($P < 0.001$). The low incidence of O+ blood type among subjects with PTS is also remarkable ($P< 0.001$). There was not a significant difference in the relative clinical severity score or CEAP distribution among blood types. The majority of documented hypercoagulability factors 42/52(81%) were in patients with A+ blood type. One or more hypercoagulability factors were identified in 26/70(37%) of A+ subjects.

Conclusions: The incidence of A+ blood type among study patients with post-thrombotic syndrome is higher than expected given the prevalence of A+ blood type in the general Euro-American population as well as among patients anticoagulated for VTE. The data suggest that patients with A+ blood may be at greater risk of developing post-thrombotic syndrome, after DVT, than those with other blood types.

2:40 – 2:45 **Mini 1 Clinical Improvement after Endovenous Radiofrequency Obliteration of the Greater Saphenous Vein in Patients with Concomitant Deep Venous Insufficiency**

A. Oropallo, H. In, P. M. Shaw, J. Dorfman, W. Nasr, G. W. Gibbons; Boston Medical Center, Boston, MA

Background: To determine the clinical results of endovenous radiofrequency ablation (closure procedure) in patients with concomitant deep and superficial venous insufficiency.

Methods: A retrospective review was performed of 122 patients with saphenous vein reflux documented by duplex from two clinical sites between February 2005 and August 2006. Endovenous radiofrequency ablation of the Greater Saphenous Vein was performed on 139 limbs. Demographic data, pre and post-operative symptoms and duplex ultrasound findings were collected by chart review. Of the data collected, 14 limbs were found to have both deep and superficial venous insufficiency. Clinical improvement was assessed for those limbs with deep and superficial venous insufficiency (DSVI) and compared to limbs with only superficial venous incompetence (SVI).

Results: The age, presence of coronary artery disease, history of deep vein thrombosis, use of aspirin and presence of perforator incompetence were significantly different between the two groups. It showed that patients with deep and superficial venous insufficiency were older (58 vs. 50. P=0.034), had more coronary artery disease (7% vs. 1%, P= 0.058), a greater incidence of aspirin use (29% vs. 10%, P=0.049), increased incidence of prior deep vein thrombosis (14% vs. 2%, P=0.007) and perforator incompetence (14% vs. 1%, p= 0.0009). Perforator ablation was performed in one limb from each group. All other data including sex, presenting symptoms, history of prior venous stripping, history of hypercoagulable state, prior use of compression stockings and use of Plavix or Coumadin were comparable in both groups. Patients in the DSVI group had symptom resolution in 86% patients vs. 82% in SVI group. Patients in both groups, DSVI and SVI, had similar rates of complication and failure to ablate (7% vs. 16% and 0% and 10% respectively). Patients also healed venous ulcers in comparable numbers (80% vs. 85%).

Conclusion: Although patients in the DSVI group were older and had greater comorbidities, symptom resolution was equivalent to those in the SVI group. These results suggest that endovenous radiofrequency ablation can be performed in both groups with similar clinical improvement and without increased complications. The presence of deep venous insufficiency should not be a deterrent in performing this procedure.

2:45 – 2:50 **Mini 2 National Venous Screening Update – Robert McLafferty, MD**

3:00 COFFEE BREAK

3:30pm

SCIENTIFIC SESSION II – SUPERFICIAL VENOUS INSUFFICIENCY (1)

Moderators: Peter Neglen, MD,
Michael Ricci, MD

Educational Objectives: to be exposed to and discuss different modes of saphenous vein ablation and surgical removal of the saphenous vein, to evaluate the clinical and hemodynamic impact of saphenous vein stripping.

3:30 – 3:50 **6. Pattern of Energy Delivery During Endovenous Laser Treatment of Varicose Veins In Experimental Model**

S. Kaspar[1], Z. Cervinkova[2] T. Danek[1] [1]Institute of Medical Studies – Pardubice General Hospital, Czech Republic, [2]Faculty of Medicine Hradec Kralove – Charles University, Prague, Czech Republic

Background: Vein shrinkage is an important surrogate marker for successfull laser treatment of varicose veins. However, many controversies still remain concerning the best parameters of the procedure. The aim of this study is the standardisation of intraoperative energy dosages and pull-back rates to achieve optimal clinical results.

Material and Methods: The insufficient trunks of the long saphenous veins which were indicated to and excised during the traditional Babcoc´s stripping procedure, were irradiated with the laser energy delivered by the diode generator emitting 980 nm laser beam in the laboratory settings. In total, 265 vein segments (5 cm long) were treated. We used the power of 5W, 8W, 10W, 12W and 15W during the maximal time possible to achieve the ideal shrinkage of the saphenous vein with minimal perforations. The study cohort consisted of two groups - in the first group the veins were filled with the blood (n=125) , in the other one the veins were empty (n=140) to simulate the patients´s position on the operating table and the impact of tumescent anesthesia during the real treatment. After the procedure, every vein segment was cut through, unfolded and his inner circumference was measured and compared to inner circumference of untreated part of the same venous segment.

Results: The best results (maximal shrinkage and minimal number of perforations) were achieved using lower or medium power (8 to 12 W) with longer exposition to administer maximal possible safe linear endovenous energy density of 120 to 159 J/ cm . Mean shrinkage compared to normal venous circumference (100%) was as follows: 50,58 % (power 5W), 44,17 % (power 8W), 43,17 (power 10W), 43,82 % (power 12W) and 53,91 % (power 15W). These differences are statistically significant (p=0,05). When higher power was used (15W), the perforations and carbonisations were more frequent and total energy was lower but the difference in amount of energy delivered was not significant (p=0,12).

Conclusions: In our experiments, shrinkage of the vein directly correlated with duration of thermal exposure. Based on our observations, we recommend slower heating and use of lower or medium power and longer exposition time (slower pull-back) during the laser treatment to achieve the sufficient energy per centrimeter of the vein and the optimal clinical result.

3:50 – 4:10 **7. Chemical Ablation of Primary Varicose Veins in a Bloodless Field is Safe, Low Cost and Effective**

M. Trinidad, Sr.[1], M. Trinidad, Jr.[2], J. Villavicencio[3]; [1]Hospital del Carmen, Guadalajara, Mexico [2]Department of Surgery, University of Illinois, Chicago, IL, [3]USUHS, Bethesda, MD

Background. Chemical ablation using sclerofoam is quickly becoming the procedure of choice in the treatment of primary varicose veins. Its low cost, effectiveness, and relative safety, compare favorably against the most expensive procedures of laser and radiofrequency saphenous ablation.

Objective: To determine the safety, effectiveness, and cost, of chemical ablation of the saphenous vein and its tributaries in a bloodless field.

Methods: 186 limbs in 126 patients were treated. There were M=20 and F=106. The average age was 50.9 years, ranging from 20 to 80. Patients were determined to have SFJ and perforator incompetence, with the latter being mapped out by duplex. The CEAP classification was C1EpA3Pr N=9; C2EpA3Pr N=27; C3EpA3Pr N=36; C4EpcA3Pr N=49; C5EpA3Pr N=33. C6EpA3Pr N=32. All procedures were done under local anesthesia and anesthesiologist controlled sedation. After routine draping, standard SFJ ligation and division was performed. An 8F catheter was threaded into the greater saphenous vein to the lower leg. Jelco catheters were inserted into varicose clusters. Exsanguination of the extremity was carried out using a pneumatic bandage of our own design. A pneumatic tourniquet at the upper thigh was inflated to twice the arterial blood pressure. Perforators larger than 4 mm were ligated. While gradually withdrawing the catheter, an increasing concentration of sclerofoam from 0.5% at the distal leg to 3% in the proximal thigh was slowly delivered. Standard groin closure was done. A 12 minutes contact period of the sclerosant agent with the empty vein was allowed. An average of 4 ml of sclerosant was utilized. A compressive adhesive non-elastic bandage was wrapped from foot to thigh and the tourniquet deflated. The patient was allowed to walk immediately. Duplex ultrasound was done on postoperative days 7, 30 and 90. Follow up period ranged from one to 56 months (average 16 mo).

Results: GSV occlusion was duplex documented in 184 limbs during the first week and 100% at the 30 days follow-up. Mean tourniquet contact time was 17.6 minutes (range 12 - 20). Pain score (visual pain scale of 0 to10) was 3 to 4. There were no thromboembolic episodes. Superficial post-sclerotherapy thrombophlebitis was observed in 10 % of the patients. Average cost of the procedure is $ 450.00.

Conclusion: 1.- Chemical ablation of primary varicose vein with sclerofoam is safe and effective. 2.-The cost of chemical ablation is significantly lower ($ 450) than laser or radiofrequency ablation ($3-4000). 3.- Minimal complications such as bruising, and soreness can be expected in any sclerotherapy procedure.

4:10 – 4:30 **8. A Novel Type of Endovenous Catheter for the Treatment of Great Saphenous Vein Reflux Combines Favorable Aspects of RF Closure and Endovenous Laser: First Clinical Experience**

T. M. Proebstle[1], B. Vago[1], O. Goeckeritz[2], H. Wenzel[2], C. Lebard[3], C. Sessa[4], O. Pichot[4]; [1]University of Heidelberg, Heidelberg, Germany, [2]Venenzentrum am Elsterpark, Leipzig, Germany, [3]Hospital St. Michel, Paris, France, [4]CHU Service de Chirurgie Vasculaire, Grenoble, France

Background: Endovenous radiofrequency (RF) ablation and endovenous laser treatment (ELT) have been widely used for treating incompetent great saphenous veins (GSV). Furthermore, the role of energy dosing for successful and durable treatment results has been understood in recent times.

Methods: A new type of catheter with a tip-located heating element was used to deliver solely heat energy. Patients' tissue was neither directly exposed to RF nor to Laser-energy. Patients with incompetent GSVs were eligible for this prospective multicenter study. Vein occlusion, side effects, clinical improvement and patient satisfaction were assessed at day 3 at 3 weeks and at 3 months. 74 limbs in 62 patients were treated between April and June 2006. Patient average age was 50.3±13.8 years, 77.4% female. The CEAP clinical class distribution was C2 59.5%, C3 14.9%, and C4 25.7%.

Results: The procedure success rate was 100%. The average length of vein treated was 37.0 ± 11.8 cm with an average energy delivery time of 2.2 ± 0.7min. Vein occlusion rate was 100% (74/74) at 3 days and 98.5% (66/67) at 3 weeks. All 11 limbs followed at 3 months remained closed. There have been no skin burns, DVTs or other serious complications. Paresthesia rate was 4.1% and 75.3% of limbs reported no post-procedural pain measured by a pain analogue scale. The remaining 18 limbs reached an average pain score of 3.2 ± 1.8, pain disappeared by 3 days in all but 3 limbs. The average VCSS score was 3.7 ± 1.6 at 3 days and 2.2 ± 1.8 at 3 wks comparing to 5.2 ± 2.2 pre-operatively.

Conclusions: The new-style catheter is highly efficacious and combines the favorable side effect profile of RF closure with the treatment speed of Laser.

4:30 – 4:50 **9. Great Saphenous Vein Stripping With Preservation of Saphenous-Femoral Junction: Hemodynamic and Clinical Results**

P. Pittaluga[1], S. Chastanet[2], R. Barbe[3], J. J. Guex[2]; 1Riviera Vein Institute, Cagnes-sur-mer, France, [2]Riviera Vein Institute, Nice, France, [3]Clinique Charcot, Lyon, France

Background: Radio frequency and laser vein treatment which entail preservation of the saphenous junction have called into question the dogma of junctional ablation. Nevertheless, junctional ablation is still done when saphenous vein stripping is chosen for varicose vein treatment. The purpose of this study was to evaluate results after stripping procedures in which the sapheno-femoral junction was preserved.

Methods: Limbs treated for varicose veins by surgical stripping of the great saphenous vein and preservation of the sapheno-femoral junction were studied. All limbs had a pre-operative duplex examination and showed junctional and truncal incompetence of the great saphenous vein. Periodic post-operative standing duplex ultrasound and clinical examinations were carried out, results were recorded and analyzed retrospectively.

Results: A total of 195 lower limbs were operated on in 151 patients, 128 women, and 25 men, aged from 22 to 88 years (mean age 56.8). The pre-operative diameter of the sapheno -femoral junction ranged from 4.7 to 17 mm (mean 9.5mm). The pre-operative CEAP class distribution was C1 1.5%, C2 82.1%, C3 6.7% and C4-C6 9.7%. Pre-operative symptoms were present in 61.8% of cases.Post-operative thrombosis of the sapheno-femoral junction was observed in one case with an extension to the deep femoral vein and pulmonary embolisation at 1 month. Recovery was complete. At a mean of 24.4 months postoperatively (8 to 34.8 months) persistent sapheno-femoral reflux was observed in only 2 cases (1.8%) and a sapheno-femoral neovascularization in 1 case (0,9%). Recurrence of varicose veins appeared in 7 cases (6.3%) but in conjunction with sapheno-femoral reflux in only 1 case. Post treatment 83.9% of limbs were converted to CEAP clinical class 0 to 1 and significant symptom improvement was observed in 91.3% of cases with an aesthetic benefit in 95.5%.

Conclusions: Preservation of the saphenous-femoral junction during saphenous stripping gave good results at mid-term follow-up with regard to hemodynamics, neovascularisation, varicose vein recurrence, improvement of symptoms and aesthetic appearance.

4:50 – 5:10 **10. Quality of Life and Venous Hemodynamics in Patients After Saphenous Venous Stripping with Stab Avulsion of Varicose Veins**

T. Ogawa, S. Hoshino; Fukushima Daiichi Hospital, Fukushima, Japan

Background: Venous stripping with stab avulsion is performed for radical treatment of primary great saphenous vein (GSV) varicosities. However, non-resolved varicose veins and incompetent perforators are found even after this procedure. The aim of this study was to evaluate Quality of Life (QOL) and venous hemodynamics in patients after GSV stripping with stab avulsion of varicose veins.

Methods:150 consecutive patients (209 legs; C2 98 legs, C3 64 legs, C4a 38 legs, C4b 6 legs, C5,6 3 legs in C classification) who underwent GSV stripping from SFJ to knee level with stab avulsions of varicose veins (average number of stab points were 4.8) were assessed for QOL using Aberdeen QOL questionnaire and venous hemodynamics using duplex ultrasound and air-plethysmography (APG) before and three months after surgery.

Results: Varicose veins still remained in 61 legs (29.2 %) 3 months after this procedure. Reflux was present before surgery in 15 small saphenous veins (SSV), 96 perforators and 17 deep veins, however, this reflux disappeared 3 months after surgery in 3 SSV (20%), 60 perforator (62.5%) and 4 deep veins(23.5%). Legs with non-completely resolved varicose veins had 3 times as many reflux sites as completely resolved varicose veins. APG examination showed that the average venous refilling index (VFI) was improved significantly from 6.19 to 2.02 after operation.($P<0.001$) There was no significant difference of VFI pre and post surgery between the cases with completely or non-completely resolved varicose veins. Average QOL score was improved significantly from 28.3 to 9.0.($P<0.001$).There was no significant difference in improved QOL between the cases with completely and non-completely resolved varicose veins.

Conclusions: Stripping with stab avulsion of varicose veins contributed to improve patients QOL and venous hemodynamics of the leg including disappearance of reflux of some perforators, SSV and deep veins. There was no difference between the two groups regarding QOL or VFI, but there were higher numbers of reflux sites in the group of non-completely resolved varicosities.

5:10 – 5:15 **Mini 3 Quality of Life analysis in Varicose Veins treated With Endovenous Laser Therapy (EVLTS): Can the Short 70 Form 8 replace the Short Form 36?**

M. N. A. Abdul Rahman, S. Gulati, A. Mekako, J. Hatfield, P. T. McCollum, I. C. Chetter; University of Hull, Hull, United Kingdom

Background: Generic Quality of Life (QoL) is a crucial outcome measure in patients treated for varicose veins. Short Form 36 (SF36) is accepted as the 'gold standard' instrument for it. We aimed to assess whether the new, shorter, simplified Short Form 8 (SF8) was as responsive to change as the SF36.

Methods: The study included 117 patients who underwent endovenous laser treatment (EVLT) for primary vericose veins. 74 women and 43 men, age range (18-83) were graded according to CEAP clinical score (C2=84, C4=31 and C5=2). Patients completed SF36 and SF8 at the time of initial assessment and at 1,6 12 weeks and 1 year post procedure. Both instruments analysed the same 8 QoL domains. Responsiveness of normalised data was analysed using the Friedman's test (across all time points) and Wilcoxon's Ranked Sum Test (two time points).

Results:

SF36;

- At 1 week post procedure; significant ($p<0.05$) differences were observed in 4 of 8 SF36 domains (general health, vitality, role emotional and mental health are not significant).

- At the end of 1 year post procedure, across all time point; significant ($p<0.05$) improvements were observed in 6 of 8 SF36 domains (general health ans social function are not significant)

SF8;

- At 1 week post procedure; significant ($p<0.05$) differences were observed in 5 of 8 SF8 domains (general health, role emotional and mental health are not significant)

- At the end of 1 year post procedure, across all time point; significant ($p<0.05$) improvements were observed in 7 of 8 domains (general health is not significant)

Conclusions: The SF8 is as responsive to QoL changes following treatment for varicose veins as the SF36 and may replace the 'gold standard' in the future.

5:15 – 5:20 **Mini 4 Coil Occlusion and Alcohol Ablation of Varicosed Saphenous Veins: A Novel Application of an Old Technique**

M. K. Barsoum[1], H. Bjarnason[1], T. W. Rooke[1], C. Felty[1], D. H. Pfizenmaier[1], J. C. Andrews[1], J. A. Heit[1]; [1]Mayo Clinic, Rochester, MN

Background: Therapies for greater saphenous vein (GSV) varicosity with or without saphenofemoral junction (SFJ) incompetence include vein stripping, laser or radiofrequency ablation, and foam sclerotherapy. Percutaneous coil occlusion and alcohol ablation (C&A) has been used to treat specific veins (e.g., varicoceles, pelvic varicosities, etc.) but not GSV varicosity.

Methods: In a retrospective cohort study, consenting patients (n=54; 81.5% female, mean age 52.2 years) with symptomatic GSV varicosity were treated with C&A. After ultrasound-guided puncture at the lower leg GSV, 1) intraluminal coils (2-10 coils/leg) were placed under fluoroscopic guidance to occlude the SFJ, 2) alcohol (1-6 mL) was instilled into the GSV varicosity, and 3) full length compression stockings were applied. Pre and post-procedure history and physical examination, venous refill rate (VRR) via strain-gauge plethysmography (SGP), and venous duplex ultrasonography (DUS) were performed. The Wilcoxon signed rank test was used to determine if the post treatment (Rx) VRR differed significantly from baseline. Due to potential correlation, if both legs were treated only one leg chosen at random was included in the analysis.

Results: Among the 54 patients, the GSV was varicose in 67 legs (21 [39%] right leg only, 20 [37%] left only, and 13 [24%] bilateral). The baseline median VRR (n=53 legs) was 10.3 mL/100 mL tissue/minute (normal < 5), and the mean SFJ diameter (n=28 legs) was 1.1 cm. Follow-up SGP and/or DUS (n=53) was performed at a median of 12 (range 2-40) weeks post-Rx. The median post-Rx VRR (n=37) was 5.4 mL/100 mL tissue/minute and the median change in VRR (n=27) was -6.2 mL/100 mL tissue/minute (95% CI: -4.7, -12.0; p=<0.001). By DUS, the GSV remained occluded in 48 (89%) and recanalized in 6 (11%) of 54 legs; DUS was not performed in 13 legs. Of the 67 varicose legs pre-Rx, patients reported discomfort/pain in 62 legs, edema in 31 legs, skin changes/discoloration in 8 legs, ulcer in 3 legs, and cosmetic dissatisfaction in 3 legs. After C&A, symptoms totally resolved in 63 legs, and partially resolved in 3 legs (one patient was lost to follow up). Complications included inappropriate coil placement requiring repositioning (n=3), a small, asymptomatic AV fistula (n=1) and superficial phlebitis (n=2); no patient developed deep vein thrombosis.

Conclusions: C&A is effective and safe treatment for symptomatic GSV varicosity with or without SFJ incompetence.

5:20 – 5:25 **Mini 5 Arteriovenous Fistula Following Endovenous Laser Ablation (EVLT) of the Saphenous Vein and Spontaneous Venous Thrombosis: Attempt at Neovascularization?**

P. Lall, M. Kalra, P. Gloviczki, A. A. Duncan, B. Lewis, R. Lee, H. Hatz; Mayo Clinic, Rochester, MN

Background: The treatment of superficial venous reflux has been revolutionized within the last 5 years by the introduction of endovenous ablation techniques. We report the development of arteriovenous fistula (AVF) formation following endovenous laser therapy (EVLT) of the great saphenous vein (GSV) and spontaneous deep venous thrombosis.

Methods: Patients with symptomatic varicose veins who were treated with EVLT, between June 2003 and March 2006 were included in the study. Duplex ultrasound was performed pre-, intra- and post-operatively in all patients. Patients with AVF formation were identified and the source, extent and location of AVF where possible were charted.

Results: A total of 157 EVLT procedures were performed in the standard manner during the study period. AVF formation was documented in 3 patients, (all females) on post procedure duplex imaging at 10 -194 days. Two patients had staged bilateral EVLT with AVF formation unilaterally. One patient had 2 AVF in the same leg. Arterial inflow was identified categorically only in 1 patient, a small branch of the CFA. Venous drainage was via the GSV stump in all 3 cases with flow in the normal direction. The remainder of the treated GSV remained obliterated. No patient had local or systemic symptoms from the AVF, or recurrent varicose veins. None has spontaneously closed during further follow-up (105 to 148 days). Similar findings were observed in 2 patients at 5 and 6 months following spontaneous deep venous thrombosis during the same time period. Arterial waveforms were noted within the previously occluded recanalized femoral vein segments. Source of arterial inflow could not be definitely identified.

Conclusions: AVF formation occurs after EVLT in 1.9 % of patients. It has not led to varicose vein recurrence in the short/mid-term and the clinical significance of this finding remains uncertain. The pathophysiology of AVF may represent neovascularization in an attempt to recanalize venous thromboses.

6:00 pm **Welcoming Reception**

7:30pm **DINNER SYMPOSIUM –** *(Registration Required)*
Supported through an educational grant provided by Bacchus Vascular & Sanofi-Aventis

Thursday, February 15th 2007

7:00am Continental Breakfast / Exhibits Open

8:00am **SCIENTIFIC SESSION III – CONSERVATIVE MANAGEMENT**

Moderators: Thomas Wakefield, MD,
Bo Eklof, MD

Educational Objectives: to elucidate the effect and use of different types of compression therapy and conservative treatment for chronic venous disease, to discuss venous imaging and thrombolysis of superior vena cava thrombosis.

8:00 – 8:20 **11. Venous Flow Enhancement in the Calf with Intermittent Pneumatic Compression: Hemodynamic Role of the Plantar Venous Plexus and the Foot Venous Pump**

K. Delis[1], A. L. Knaggs[2]; [1]Imperial College (London) and Athens Medical Center, London and Athens, United Kingdom, [2]St. Mary's Hospital, London, United Kingdom

Background: Venous leg outflow enhancement with intermittent pneumatic compression (IPC) has been effectively used both for deep vein thrombosis[DVT] prophylaxis and stasis prevention in chronic venous disease[CVD]. The plantar venous plexus in the foot is pivotal to the hemodynamic efficacy of IPC as well as the pertinent effect of ambulation. In the paucity of previous reports we evaluated the immediate impact of IPC of the foot[IPCfoot], a means of controlled foot venous pump activation, on the venous hemodynamics of the calf, encompassing all of its named axial and muscular veins.

Methods: The study entailed surveillance of the medical notes, physical examination, determination of ABPIs and peripheral duplex scanning in order to assess the infrainguinal circulation. Excluded were subjects with PAD (ABPI<1.0), prior DVT or CVD. In this cross-sectional study 17 seated individuals, aged 59 years median, range 32-84 (20 limbs) had their calf venous hemodynamics assessed with duplex at rest and with IPCfoot [3 impulses/min, 120 and 180 mmHg, impulse duration of 3 sec]. The investigation sequence was determined at random. Between measurements a 15 min rest was allowed. Flow specific software enabled determination of the peak and mean venous velocities and the volume flow (mean velocity x π x radius2). The sequence of veins examined was subject to a true cross-over design. The vessel diameter, measured at rest, was also used for volume flow determination during IPC. Data reported as median and interquartile range. The Wilcoxon test with Bonferroni correction was applied.

Results:	IPCfoot mmHg	Peak Velocity (cm/s)	Mean Velocity (cm/s)	Volume Flow (ml/min)
	Resting	4 (3.2-5.2)	0.9 (0.4-1.3)	3.2 (1.2-4.6)
Anter. Tibial v.	IPCfoot120	22.1 (15.9-34)	9.5 (7.1-13.6)	27.9 (22.1-44)
	IPCfoot180	25 (18.4-44.7)*	11 (9-14.7)	36 (26-46)
	Resting	3.8 (3-4.8)	0.88 (0.38-1.4)	6.8 (2.4-10.2)
Poster. Tibial v.	IPCfoot120	48.4 (32.2-55)	12.6 (9.3-17.2)	83 (60-117)
	IPCfoot180	59.4 (40.3-69)*	16.5 (11.9-23)*	103 (82-146)*
	Resting	3.3 (2.1-4.9)	0.75 (0.38-1.1)	7.2 (3.2-10.3)
Peroneal vein	IPCfoot120	21.8 (14-31.5)	9.3 (7-14.5)	74.2 (59-112)
	IPCfoot180	32.9 (16.1-44)*	10.6 (8-15.5)	87 (68-107)
	Resting	2.9 (2-3.7)	0.55 (0.34-0.62)	2.6 (1.5-3.1)
Gastroc/mial v.	IPCfoot120	9.8 (5.6-12.3)	5.2 (4.2-6.6)	23.8 (14-44)
	IPCfoot180	10.2 (6.5-15.3)	5.9 (4.6-8.2)	28 (15.6-49)
	Resting	2.4 (2-3.4)	0.41 (0.26-0.49)	2.5 (1.6-2.9)
Soleal vein	IPCfoot120	5.1 (4.2-7.8)	3.6 (3.3-5.1)	20 (11.5-38.5)
	IPCfoot180	5.5 (4.6-11.5)	4.1 (3.5-5.6)	19.6 (14.5-37)
	Resting	7.1 (5.8-9.1)	3.5 (2.5-4.7)	84 (65-125)
Popliteal vein	IPCfoot120	42 (32.9-52.9)	15.1 (10.9-17)	371 (257-508)
	IPCfoot180	53.5 (39.7-60)*	18.6 (13.4-20.9)*	462 (323-551)*
Peak, Mean velocities & Volume Flow with IPC (120 or 180 mmHg) significantly higher ($P<0.01$) than at rest in all veins				

Conclusions: The peak and mean velocities and volume flow in the axial calf veins were significantly augmented with IPCfoot(120/180mmHg), highlighting the hemodynamic role of the plantar venous plexus. In contrast, the practical increase in the flow velocities of the soleal and gastrocnemial veins with IPCfoot was small. The higher level of intermittent pneumatic compression[180mmHg] produced only a modest hemodynamic improvement over that sustained with the lower one[120mmHg], indicating the diminishing venous hemodynamic benefit in the calf with IPCfoot exceeding 120 mmHg. The study findings support the potential clinical role of IPCfoot for improving the lower limb venous hemodynamics and ameliorating venous hypertension, but reveal its relative inefficiency in preventing stasis at the muscular calf veins.

8:20 – 8:40 **12. "Use of Compression Stockings in Chronic Venous Disease**

S. Raju[1], K. C. Hollis[2], P. Neglén[2]; [1]University of Mississippi Medical Center, Jackson, MS, [2]River Oaks Hospital, Flowood, MS

Background: Compressive stockings are commonly prescribed in chronic venous disease (CVD) but compliance statistics are not available.

Methods: As a tertiary referral practice, patients had been under the care of primary care physicians or specialists before referral. A detailed history of past and present compressive regimens is part of our initial evaluation of CVD patients. This data was entered into a time stamped electronic medical record and later analyzed.

Results: New CVD patients seen from 1998 to 2006 totaled 3144. Only 21% of patients reported using the stockings on a daily basis, 12% used it most days and 4% less often. The remaining 63% did not use the stockings at all or abandoned it after a trial period in the past. Most patients were unclear about the benefits of stocking use or terms of usage. The primary reason given for non-usage were: no overtly stated reason, 27%; not prescribed by the primary physician, 25%; did not help, 16%; binding/ 'cutting off' of circulation, 13%; 'too hot' to wear, 8%; limb soreness, 2%; poor cosmetic appearance, 2%; unable to apply without help, 2%; contact dermatitis or itching, 1%; and other (cost, work situation, etc), 4%. Frequently multiple factors were cited. On further probing, concerns for "appearance" and restriction of life style appeared to be an underlying reason for non-compliance in many. Surprisingly, there was no difference in compliance between men and women (39% vs. 38%) or among different age groups (range 10 to 90). Compliance was relatively better at 50% in patients who gave a prior history of DVT (n=675) compared to 35% in those without prior history of DVT (n=2437) ($p<0.0001$). Overall compliance with stockings was low and statistically not different in several subsets with significant symptoms: pain 39%, swelling 37%, stasis dermatitis 46% and stasis ulceration 37%. Compliance was relatively better with longer duration of symptoms: <1y 25%; 1-5y 34%; 6-10y 40%; >10y 44%. ($p<0.003$).

Conclusions: Non-compliance with prescribed compressive stockings is high in patients with CVD. The reasons can be grouped into two major categories: 1. "Life style" attitudes and 2. Wear-comfort factors. There is room for improving the fabric and design of stockings to reduce wear discomfort. A detailed health information brochure approved by AVF enclosed with the product at point of sale may be more effective than the variable information currently provided at the offices of general practitioners.

8:40 – 9:00 **13. Multi-layer Bandaging System with Tubulcus In The Treatment Of Difficult Venous Ulcers**

D. J. Milic[1], S. S. Zivic[1], M. Jovanovic[1], J. Paravina[1], R. Jankovic[1], A. M. Visnjic[1], Z. Maksimovic[2]; [1]Surgical Clinic, Clinical Centre Nis, Nis, Serbia and Montenegro, [2]Institute for Cardiovascular Diseases, Clinical Centre of Serbia, Belgrade, Serbia and Montenegro

Background: Venous ulcers are a major health problem because of their high prevalence and associated high cost of care. The cost of venous leg ulcers is estimated to be $1 billion per year in the United States, and the average cost for one patient over a lifetime exceeds $40 000 because the natural history of this disorder is slow healing and high recurrence rate. There are no published data in English medical literature on the efficacy of the compression therapy in the treatment of difficult venous ulcers (ulcers larger than 20 cm2 of 6 months and longer duration) in terms of healing rate, time for healing, recurrence rate and quality of life of patients.

Methods: A total of 138 patients with difficult venous ulceration (ulceration surface: 20 - 210 cm2; duration: 7months - 28 years) were randomized into two groups: treatment group (72 patients who were treated using the multi-layer bandaging system with Tubulcus®) and control group (66 patients treated with multi-layer bandaging system without Tubulcus®). The exclusion criteria from the study were: heart insufficiency with EF<35, ABPI < 0.8 and pregnancy. After ulcer healing, patients in the treatment group wear Tubulcus® (compression stockings class III) and patients in control group wear compression stockings class II in order to avoid recurrence.

Results: The healing rate was 93.06% (67/72) in the treatment group, and 51.5% (34/66) in the control group ($p<0.01$). Median ulcer healing time was 181 days (28 - 464 days) for treatment group versus 221 days (61 - 438 days) for control group ($p<0.01$). The recurrence rate during the one year follow up period was in the treatment group 25.58% (11/43) and 52.63% (20/38) in the control group ($p<0.01$). The reduction of calf circumference was the only parameter indicating the success of compression therapy.

Conclusions: This study suggests that for difficult venous ulceration, multi - layer compression therapy with Tubulcus® provides extremely high healing rate. Sustained compression of class III is necessary after ulcer healing in order to avoid recurrence.

9:00 – 9:20 **14. Inelastic Compression System Produces a Reverse-pressure Gradient and Significantly Higher Skin Surface Pressures as Compared to an Elastic Compression Legging**

C. N. Kline, E. Kraus, B. R. Macias, T. B. Neuschwander, N. Angle, J. Bergan, A. R. Hargens; University of California, San Diego, San Diego, CA

Background: Compression leggings are the "gold standard" treatment for chronic venous insufficiency (CVI). Pressures ranging from 35 to 45 mmHg have proven to be particularly beneficial to patients with CVI. Both elastic and inelastic leggings are prescribed to treat venous disease, but it is uncertain how effective each is at generating the prescribed pressures. Additionally, most leggings are designed to generate reverse-pressure gradients with higher pressures at the ankle and lower pressures at the knee. Our study examines skin surface pressures beneath elastic and inelastic leggings. We hypothesize that inelastic leggings with a built-in pressure system (BPS) generate comparable pressures and reverse-pressure gradients as elastic leggings.

Methods: Eleven normal individuals without venous reflux and twelve patients with Duplex documented venous reflux (9 females, 14 males, ages 55-77) received elastic (Sigvaris® 500, 30-40 mmHg range) and inelastic (CircAid® C3 with BPS) compression leggings sized for each individual. BPS consists of printed indicia on the legging and a measuring card that when aligned provides a set compression. Skin surface pressures under the elastic and inelastic legging were measured above the ankle and below the knee, along the medial aspect of the leg using a calibrated Tekscan Industrial Sensing (I-Scan) system. While sitting, the knee was flexed to 110° angle for each pressure measurement and the order of legging application was random. To further confirm skin surface pressure readings, the Tekscan sensors were verified against the well-accepted Kikuhime sensor. Data are presented as mean ± error and were compared using a paired t-test.

Results: Inelastic leggings produced significantly higher skin contact pressures than elastic leggings in both leg regions ($p<0.001$). Mean pressures using the inelastic leggings were 47±4 and 34±2 mmHg for ankle and knee regions, respectively. Mean pressures using the elastic leggings were 27±3 and 24±1mmHg for ankle and knee regions, respectively. Inelastic leggings produced a significant reverse-pressure gradient between the ankle and the knee ($p<0.05$), whereas the elastic leggings did not. The pressure readings from the Tekscan and Kikuhime sensors were not significantly different.

Conclusions: The elastic leggings in this study are designed to produce skin surface pressures between 30 and 40 mmHg, but our study indicates they consistently produce pressures with means of only 24 and 27 mmHg. The BPS-ensured inelastic legging consistently produces pressures with means of 34 and 47 mmHg, which are somewhat higher than expected. Importantly, our study indicates that only the inelastic legging produces a significant ankle to knee, reverse-pressure gradient.

9:20 – 9:40 **15. Evaluation of Spa Therapy in Chronic Venous Disorders with Skin Changes: A Randomized Controlled Trial**

P. H. Carpentier, B. Satger, D. Poensin; University Hospital of Grenoble, Grenoble, France

Background: Besides compression therapy, physiotherapy has not been evaluated in the treatment of chronic venous disorders. The aim of this work was to assess the efficacy of balneotherapy as performed in the spa resort of La Léchère, in patients with C4-C5 CVD.

Methods: This randomized controlled trial was performed in patients with primary or post-thrombotic CVD with skin changes (C4a, C4b or C5). The treated group had the spa treatment during three weeks in La Léchère, soon after randomization, whereas the control group had a spa treatment starting at day 365. An independent follow-up was performed in Grenoble hospital every trimester for 15 months. The main outcome criterion was the severity of the skin changes, as evaluated through malleolar chromametry. Quality of life, as measured by the CIVIQ scale, and a visual analog scale (VAS) for leg symptoms were used as secondary criteria. The year after spa treatment in the treated group was compared to the year before spa treatment in the control group.

Results: Fifty-nine subjects were enrolled in the study (29 in the treated group and 30 in the control group). No statistically significant difference between groups was found regarding age, sex, etiology, CEAP "C" class and outcome variables at study onset. After randomization, chromametry showed a decreased pigmentation and a decreased erythema in the treated group, the difference with the control group becoming significant after three months of follow-up, and remaining significant at months 6, 9 and 12 ($p<0.01$). CIVIQ scale was also improved significantly ($p<0.01$) and EVA was improved by 30% ($p<0.001$); these differences remained significant for the whole study period of one year. Three months after their spa treatment (day 450) the control group showed the same magnitude of improvement as the treated group during the study.

Conclusion: This study shows that spa therapy is able to improve significantly the skin trophic changes of CVD patients and the CVD related quality of life and symptoms. This effect remains significant one year after the spa treatment.

9:40 – 9:45 **Mini 6 Extremity Venous Imaging - New Modalities for Trauma and Hemodialysis Access**

V. E. Rotella, Jr., J. Blebea, R. Choudry; Temple University Hospital, Philadelphia, PA

Background: The imaging of extremity and central veins, both acutely in trauma and electively in preparation for arterio-venous access, has classically been achieved with duplex ultrasound or contrast venography. Both of these modalities have limitations in the extent of the vessel imaging possible and invasive characteristics.

Methods: Two relatively new modalities for venous imaging are now available that can be useful in selected circumstances. Computed tomography venography (CTV) utilizes extremity peripheral intra-venous contrast infusion and early phase image acquisition to define either extremity or central venous traumatic injuries or occlusions. Magnetic resonance venography (MRV), either with or without gadolinium infusion, provides central venous imaging which is not possible with duplex ultrasound and which obviates the use of nephrotoxic contrast agents. In hemodialysis patients with fistula failure, it can identify central venous stenosis/occlusion and assist in selection of alternative dialysis access sites.

Results: We will present two cases of CTV and MRV.

Conclusions: Computed tomography and magnetic resonance venography are useful techniques for extremity venous imaging in selected cases.

9:45 – 9:50 **Mini 7** **Success of Catheter-Directed Thrombolysis in Symptomatic Patients with Superior Vena Cava Thrombosis due to Malignant or Inflammatory Disease**

E. Palchik, A. Bakken, J. Rhodes, K. A. Illig, D. Lee, D. Waldman, M. G. Davies; University of Rochester, Rochester, NY

Background: Superior vena caval and brachiocephalic venous thrombosis is a morbid and often life-threatening condition associated with various underlying diseases. This study aimed at assessing the role of catheter-directed thrombolysis in treatment of symptomatic superior vena cava (SVC) and brachiocephalic venous thrombosis in the setting of malignant or inflammatory disease.

Methods: Medical records of all patients receiving venous thrombolysis for symptomatic central venous thrombosis were reviewed. Patients with effort thrombosis and patients receiving hemodialysis were excluded. Immediate short and long term anatomic outcomes and symptom relief were determined.

Results: 34 consecutive patients were identified. 26 patients with SVC thrombosis presented with superior vena cava syndrome (25) and respiratory compromise (1). The remaining 8 patients with brachiocephalic venous thrombosis presented with painful upper extremity swelling. The underlying diseases included hematological malignancies (12); gynecologic, endocrine, and gastrointestinal malignancies (9); lung cancer (2); and non-neoplastic diseases associated with hypercoagulability and/or systemic inflammatory response (11). There were 5 patients with mediastinal involvement causing extrinsic compression. The incidence of concomitant or prior central venous catheterization was 88 %. There were 20 cases of complete and 14 cases of partial venous occlusion. All patients received catheter-directed thrombolysis in conjunction with systemic anticoagulation. In 21 (62%) cases, percutaneous venoplasty was also performed; there were 8 (24%) cases of mechanical thrombectomy and 1 venous stent was placed. The mean follow up was 36.1 month (range 0.1 - 112 months). Primary technical success was achieved in 30 of 34 patients (88%). The therapy failed in 4 of 5 patients with associated extrinsic compression. Of the 30 successfully treated patients, the symptomatic relief was 100%. During the follow-up period, 28 of them (93%) remained symptom-free, while 2 patients recurred 3 and 16 months post operatively. Both were successfully treated with thrombolysis and venoplasty making the secondary patency rate 100%. There were no significant intra-procedural events. The procedure-related complications included one access site hematoma and one case of GI bleeding that resolved spontaneously with cessation of thrombolytic therapy. Seventeen patients (50%) are currently dead with a mean post-procedural survival of 19.1 months (range 0.1 to 54 months).

Conclusions: In patients with malignant or inflammatory conditions without mediastinal mass effect, catheter-directed thrombolysis affords high rates of symptomatic relief. In patients with extrinsic compression, the response to this mode of therapy is limited. For this group of patients many of whom are highly co-morbid and have a limited life expectancy, catheter-directed thrombolysis is a well-tolerated and efficacious mode of palliative therapy

9:50 – 10:00 **Mini 8** **Aneurysms In The Superficial Veins of The Lower Extremities**

D. Varnagy[1], N. Labropoulos[1], J. Santaniello[2], P. J. Pappas[1]; [1]UMDNJ, Newark, NJ, [2]Loyola University Medical Center, Maywood, IL

Background: Few reports exist on the aneurysm of the superficial veins of the lower extremities. Misdiagnosis may occur as these aneurysms are thought to be hernias or soft tissue masses. The purpose of this study was to report the clinical presentation, characteristics and management of such aneurysms.

Methods: All patients underwent a duplex ultrasound for a palpable mass, venous reflux, thrombosis and preoperative vein mapping. The size, location and presence of thrombus in the aneurysm were recorded. The size of the aneurysm was compared to an adjacent normal vein segment. A diameter of 18mm and 3 fold increase compare to normal segment were used as criteria to define an aneurysm. All aneurysms underwent histological analysis and the patients were followed up clinically.

Results: In the last 11 years 18 aneurysms were found in 18 patients. There were 12 females and 6 males, with a mean age of 47 years ranging from 24 to 63. None of the aneurysms was associated with trauma or fistula. The most common vein involved was the GSV (n=11). These were located in the groin (n=1), upper thigh (n=3), midthigh (n=1), and in the lower thigh (n=6). No aneurysm was found in the below knee GSV. In the anterior accessory saphenous vein 4 aneurysms were found, 1 in the groin, 2 in the thigh and 1 at the knee. Only 2 aneurysms were detected in the small saphenous vein in the popliteal fossa, while one other aneurysm was found in the posterior arch vein in the upper calf. Sixteen patients presented with pain, 14 of whom had also a palpable mass. The other 2 patients had no symptoms and the aneurysm was an incidental finding. In all but one patient the aneurysm was excised. Histology showed areas of wall thinning and thickening with moderate to excessive deposition of collagen, derangement of the smooth muscle cells and elastic lamina. Four aneurysms had acute thrombosis, 1 had acute on chronic thrombosis and one had chronic thrombosis. Three paresthesias were reported 1 of which became permanent. Two other patients developed mild skin changes at the site of operation. Another patient developed a seroma that resolved at 9 months.

Conclusion: Superficial venous aneurysms are uncommon and are usually associated with chronic venous disease. They are often symptomatic and a third of them have thrombus. Elective surgery with local excision of the aneurysm and removal of associated varicosities is a very good treatment with low complication rate.

10:00 am Coffee Break / Visit Exhibits

10:30 am **Ask the Experts -Case Management - Acute Thrombosis and Chronic Occlusion**

Moderator: Peter Neglén, MD

Educational objectives: to understand the technical aspects of femoro-ilio-caval stenting and its role in the treatment of chronic venous obstruction, to discuss early clot removal of acute DVT by mechanical thrombectomy and/or catheter-directed thrombolysis, to appreciate the treatment of acute superficial vein thrombosis

12:30pm Lunch – Attendees On Own

12:30pm AVF Update - Industry Only Lunch

1:30-5:30pm **Workshops (3 - 1 hour & 20 minute sessions)**

Mechanical Thrombectomy and IVC Filter Insertion

Intravascular Ultrasound and Venous Stenting

Percutaneous Ablation of the Saphenous Vein

Ultrasound Investigations for Venous Disease

Compression Therapy of Venous Disease

Or **Concurrent SYMPOSIUM session**

1:30 – 2:50pm **Investigations of Chronic Venous Disease**

3:00 – 4:20pm **Sclerotherapy-Liquid to Foam: Ask the ACP Experts**

Foam Sclerotherapy: Indications, Techniques, Review of the Literature, Personal Results, Complications

Liquid Sclerotherapy: Indications, Techniques, Complications, Lessons Learned

Sclerotherapy Consensus

Superficial Venous Interventions: Assessing the Risk of DVT

Sclerotherapy and the Law

Thursday

4:30 – 5:50pm

The Business of Treating Superficial Venous Disease

Coding and Reimbursement for the Phlebology Practice

Ultrasound and Vascular Lab in the Phlebology Practice

Marketing a Phlebology Practice

7:00 pm

Industry Sponsored Dinner Symposium -
(Registration Required)
The Next Generation of Endovenous Ablation
Sponsored by: VNUS Medical Technologies

Friday, February 16th 2007

7:00 – 7:50 a.m. Continental Breakfast – Visit Exhibits

7:50am **SCIENTIFIC SESSION IV – ACUTE DVT**

Moderators: Joann Lohr, MD,
Joseph Caprini, MD

Educational Objectives:To evaluate aspects of diagnosis of acute DVT, to assess treatment patterns of DVT in children, and to appreciate methods to prevent disability after acute subclavian vein thrombosis.

7:50 – 8:10 **16. Does Different D-Dimer Level Reduce The Use Of Venous Duplex Scanning To Rule Out Deep Vein Thrombosis In Patients With Symptomatic Pulmonary Embolism?**

T. Yamaki, M. Nozaki, H. Sakurai, M. Takeuchi, K. Soejima, T. Kono; Tokyo Women's Medical University, Tokyo, Japan

Background: To investigate the prevalence and distribution of deep vein thrombosis (DVT) in patients with symptomatic pulmonary embolism (PE), and to establish a screening protocol to reduce unnecessary venous duplex scanning using different D-dimer level rather than single cutoff point of 0.5_g mL-1 in patients with low and moderate pretest clinical probability (PTP).

Methods: Eighty-three consecutive patients with symptomatic proven PE were evaluated using PTP score and D-dimer testing before venous duplex scanning. After calculating PTP score, patients were divided into low risk (< 0 points), moderate risk (1 to 2 points), and high risk (> 3 points) PTP. The receiver operating characteristic (ROC) curves analysis was used to determine appropriate D-dimer cutoff point in low and moderate PTP with a negative predictive value of > 98%.

Results: Seventy-nine patients were enrolled. The prevalence of DVT in this study was 62%. Twenty-six patients (33%) were classified as low, 38 (48%) as moderate, and 15 (19%) as high risk PTP. In the low risk group, DVT was detected in 9 patients (35%). In contrast, DVT was found in 27 (71%) in moderate, and 14 (93%) in high risk PTP patients. In the low PTP patients, there was a statistically significant difference in the value of D-dimer assay between positive and negative scan patients (9.99 ± 7.33 vs. 3.58 ± 4.31, respectively, p=0.008). On the contrary, in the moderate PTP patients, there was no significant difference in the D-dimer assay value between positive and negative scan results. Using ROC curves analysis, D-dimer cutoff points of 2.0 and 0.7_g mL-1 was selected for the low and moderate PTP groups respectively. And D-dimer testing provided 100% sensitivity and 100% negative predictive value in the diagnosis of DVT for both groups. In the low PTP group, specificity increased from 35% to 71% (p=0.037), and 6 additional patients could be then excluded compared to recommended cutoff level of 0.5_g mL-1. In the moderate PTP, however, determined D-dimer level did not improve the specificity. Overall venous duplex scanning could have been reduced by 18% (14/79) using different D-dimer cutoff point.

Conclusions: A combination of specific D-dimer level and clinical probability score is best effective in the low PTP patients in excluding DVT. In the moderate PTP group, however, recommended cutoff point of 0.5_g mL-1 may be preferable. These results show that different D-dimer level is potential useful in excluding DVT in established PE patients.

8:10 – 8:30 **17. A New Ultrasonographic Sign for Determination of Age of Venous Thrombosis**

N. Labropoulos[1], P. Neglen[2], P. J. Pappas[1]; 1UMDNJ, Newark, NJ, [2]River Oaks Hospital, Jackson, MS

Background: To describe a new ultrasonographic diagnostic sign of acute vein thrombosis.

Methods: In patients with an acute thrombosis a double line was observed along the thrombus/wall interface. Histology has shown a smooth coat of fibrin lining the outside of an acute thrombus. Since the fibrin is made of collagen, its acoustic impedance is very high and it appears very bright on the B-mode imaging. Prospective evaluation of the smooth double-line sign was performed in the current study in patients with acute thrombosis with signs and symptoms of less than 1 week (n=100), in high risk asymptomatic patients (n=25), in limbs with recurrent thrombosis (n=20), and in limbs with chronic thrombosis (n=20). The high risk asymptomatic patients (total hip replacement n=11, total knee replacement n=14) had the ultrasound performed 1-3 days postoperatively. Color flow duplex imaging was used with routine multifrequency linear array transducers. In superficial vein thrombosis >10MHz linear array transducers were used to study this sign in ideal conditions of imaging. More recently intravascular ultrasound was also used in patients with acute and chronic thrombosis that underwent endovenous treatment.

Results: The smooth double pattern was detected in several locations in 94 patients with acute thrombosis. In another 4 it was found after enhancing the image and in 2 was not identified. Of these patients 34 had superficial vein thrombosis and the sign was present in all limbs. In 18 patients the thrombus was formed within 3 days of a central line insertion and in all these patients the sign was present. In the high risk asymptomatic patients the sign was present in 21/25 limbs. Four patients had small nonocclusive thrombi and in those the sign was undetected probably due to the limited amount of thrombus. In patients with recurrent thrombosis the sign was clear in 14, questionable in 4, and absent in 2. In patients with chronic thrombosis, the echogenic lines were occasionally seen at the wall, but appeared irregular and easily distinguishable from those with the acute thrombosis. The smooth double line pattern was clearly detected in patients with acute thrombosis by intravascular ultrasound.

Conclusions: A smooth hyperechoic double line at the interface between the thrombus and the wall of the vein by ultrasound scanning is a clear diagnostic sign of a recently formed thrombosis. This finding may assist in determination of the age of a thrombus, and, therefore, distinguish relatively fresh from older thrombi and also detect acute on chronic thrombosis.

8:30 – 8:50 **18. Treatment Patterns for Deep Venous Thrombosis in Hospitalized Children: Are Standardized Protocols Needed?**

J. A. Sandoval, M. P. Sheehan, C. E. Stonerock, S. Shafique, F. J. Rescorla, M. C. Dalsing; Indiana University School of Medicine, Indianapolis, IN

Background: The optimal prophylactic strategy for deep venous thrombosis (DVT) in hospitalized infants and children is not fully established. Our objective was to assess the incidence and treatment for DVT among pediatric patients admitted to a hospital ward.

Methods: Children (age < 17) admitted to a single, tertiary care hospital that developed or presented with a DVT were retrospectively identified over a 14-year period. Patients were stratified according to the Wells clinical probability scoring system. Inpatient demographic, clinical, and treatment data were analyzed.

Results: Between 1992 and 2005, a total of 358 children were evaluated for a DVT. Of these, 99 kids (52 boys, 47 girls) were admitted to a clinical service and had a DVT based on clinical and radiographic imaging. Mean age of presentation was 10.1 +/- 6.3 years (range, 5 weeks to 17 years). Admitting service was medicine in 85% and surgical in 15% of cases. Associated congenital and acquired risk factors were identified in 38% and 75%, respectively. Prior history of DVT was present in 12% of cases. At the time of admission, only 7 patients received DVT prophylaxis. Clinical probability based on risk classification and risk scores were 2% (low), 37% (moderate) and 41% (high); 2% (low), 40% (moderate), and 39% (high), respectively. The majority of thromboses were multiple (53%), occurred on the right side (54%), and were located in the lower extremity (66%). The most common veins involved included common femoral (62%), subclavian (17%), popliteal (14%), and internal jugular (13%). Once DVT was identified, the major anticoagulation regimen consisted of heparin (unfractionated or low molecular weight [LMW]) and either Warfarin or continued LMW heparin. Inferior vena cava filters were placed in 4 children. Following hospital discharge, the duration of anticoagulation varied from none to lifelong. Five patients had pulmonary emboli (PE). There were 3 deaths (1 fatal PE).

Conclusions: These data suggest despite having significant clinical probability and underlying risk, routine prophylactic DVT is not actively implemented in our pediatric inpatient population. The challenge in this age group will be to determine optimal thromboprophylaxis guidelines in at-risk pediatric subgroups to decrease venous thrombotic events.

8:50 – 9:10 **19. Subclavian Venous Effort Thrombosis in Adolescents: Preventing Long-Term Disability**

A. W. Knott, A. A. Duncan, A. M. Hanna, H. Bjarnason, T. C. Bower, R. D. McBane, P. Gloviczki; Mayo Clinic, Rochester, MN

Background: Venous effort thrombosis (VET) in the setting of thoracic outlet syndrome (TOS) is a potential cause of disability in young, active patients. The purpose of this study was to review risk factors for VET and delineate the optimal management in an adolescent population.

Methods: Twenty-seven adolescents (age < 21 years) who underwent operation for both VET and TOS between August 1990 and May 2006 were reviewed retrospectively. Patients with other TOS features (neurogenic, arterial, or venous congestion without thrombosis) were excluded.

Results: Fourteen males (52%) and 13 females (48%) with a mean age of 18 years (range 13-21) had presenting symptoms of swelling (100%) and pain (74%). Twenty-three of 27 patients (85%) were involved actively in sports including 83% of boys and 82% of girls. Thirty-six percent of young women used oral contraceptives. None of the eighteen patients evaluated for hypercoagulable disorders had a prothrombotic state. All patients were imaged with Duplex and confirmed with venography (89%). Thrombolysis was performed in patients (n=16) who presented with acute, symptomatic thrombosis. Thrombolysis followed by anticoagulation was successful in restoring venous patency in 14 of 16 patients. Patency could not be re-established because of underlying chronic subclavian occlusion in two patients. First rib resection followed thrombolysis after a mean of 93 days (range 1 to 297). All patients underwent transaxillary first rib resection, scalenectomy, and venolysis. The mean follow-up period was 15 months (range 1.3 to 73). One patient underwent thrombolysis and first rib resection during the same admission complicated by early thrombosis requiring heparinization, suction thrombectomy, and angioplasty on two separate occasions. The same patient also had a wound complication and evacuation of a hematoma. Post-operative pneumothorax occurred in two patients though neither required tube thoracostomy. One patient developed symptomatic venous congestion related to stenoses of subclavian vein collaterals at 36 months requiring axillary-internal jugular bypass after unsuccessful angioplasty. Radial nerve neuropraxia occurred in one patient and resolved at 3 months. Complete resolution of symptoms was reported by 95%, and 80% were able to return to full sports activity within a mean of three months following operation. Post-operative anticoagulation was required in 10 patients for a mean of 2.6 months, however, none required long-term anticoagulation. Conclusions: More young women are presenting with VET, possibly due to increasing participation in sports and use of oral contraception. Early identification of patients with aggressive thrombolysis followed by anticoagulation and staged first rib resection is a safe and effective management approach. Adolescents with VET can expect to return to full activity without the need for long-term anticoagulation.

9:40am

SCIENTIFIC SESSION V – BASIC SCIENCE

Moderators: Joseph Raffetto, MD, David Gillespie, MD

Educational Objectives: to identify some chemical and structural changes of the wall of varicose veins, to be informed of early experience of percutaneous placement of autogenous vein valves.

9:40 – 10:00 **20. Increased Expression of Matrix Metalloproteinase-2 and Decreased Contraction in Vena Cava Subjected to Prolonged Increases in Basal Tension. Implications in Varicose Veins**

J. D. Raffetto[1], V. Koledova[2], R. Khalil[2]; [1]VA Boston Healthcare System, West Roxbury, MA, [2]Brigham and Women's Hospital, Boston, MA

Background: Increased venous hydrostatic pressure plays a major role in the pathogenesis/progression of varicose veins. Also, increased expression of matrix metalloproteinases (MMPs) have been identified in varicose vein tissue. However, the relation between venous pressure, MMP expression and venous tissue dysfunction is unclear. We have previously shown that MMP-2 causes inhibition of venous contraction. The purpose of this study was to test the hypothesis that prolonged increases in venous pressure and wall tension cause overexpression of MMPs, which in turn promote venous dilation.

Methods: Circular segments of inferior vena cava (ICV) were isolated from male Sprague-Dawley rats and suspended between two wires in Krebs solution (95% O2-5% CO2 at 37oC). Veins were subjected to either normal (0.5 g) or high (2 g) basal tension for short (1 hr) or long duration (24 hr), respectively. Isometric contraction in response to KCl (96 mM) depolarizing solution and phenylephrine (Phe, 10-5M) was measured. The veins were rapidly frozen for measurement of MMP-2 expression using immunoblot analysis and specific MMP-2 antibody.

Results: Veins subjected to 0.5 g tension for 1 hr produced significant contraction to KCl and Phe (Fig. 1). Under these normal basal tension conditions, prominent immunoreactive doublet band corresponding to MMP-2 protein could be observed in IVC (Fig. 2). Veins subjected to higher (2 g) basal tension and for longer period (24 hr) showed significant reduction in isometric contraction to both KCl and Phe (Fig. 1) associated with marked increase in the optical density of the MMP-2 immunoreactive band, but no change in the expression of the housekeeping protein actin (Fig. 2).

Conclusions: In rat IVC, increases in the magnitude and duration of basal wall tension is associated with reduction in venous contraction and overexpression of MMP-2. In light of our previous finding that MMP-2 promotes IVC relaxation, the present data suggest that protracted increases in venous pressure and wall tension increases MMP-2 expression, which in turn reduces venous contraction, leading to progressive venous dilation and varicose vein formation.

10:00 – 10:20 **21. Inhibitory Influence of TIMP Contributes to Morphological Changes of Varicose Vein Wall**

B. Sharp[2], B. Aravind[1] T. Navin[1], C. Monaco[1], E. Paleolog[1], A. H. Davies[3]; [1]Kennedy Institute of Rheumatology, Imperial College, London, UK, United Kingdom, [2]Charing Cross Hospital, Kennedy Institute of Rheumatology, Imperial College, London, UK, United Kingdom, [3]Charing Cross Hospital Department of Surgery, Oncology and Anesthetics (SORA), Imperial College, London, UK, United Kingdom

Background: Variation in varicose vein wall morphology has been studied in the past, but never been linked to the possible aetiology till recently. With the recognition of matrix metalloproteinase's (MMP) and its inhibitors (TIMP) as major regulators of matrix homeostasis on varicose vein wall, this linkage has been explored further. A higher protease expression will be expected to cause increased matrix turnover while that of inhibitors will reduce them. In this study, this hypothesis was studied further by comparison of MMP and TIMP expression levels with varicose vein wall thickness

Methods: Long saphenous varicose vein segments were harvested from patients undergoing corrective operation. Collected segments from varicose vein were classified as proximal, from sapheno-femoral junction and distal, from knee level (52 segments, 26 pairs of proximal and distal). They were immunostained with H&E, Trichrome and EVG, to identify the elastic layers, and subsequently with antibodies to MT1-MMP, TIMP-2 and TIMP-3. Distribution of immunopositivity was studied. The images were analysed using AnalySiS software package to quantitatively analyse immunopositivity. This was compared to the vein wall thickness, which was defined as the distance between the endothelium and external elastic lamina. The extremes of vein wall thickness were classified further as hypertrophic (>1000_m) and atrophic (<500 _m). Statistical analysis was performed using PRISM package.

Results: MMP and TIMP were localised in smooth muscle cells of the varicose vein wall. Proximal varicose vein wall were found to be thicker than distal (766_m versus 574.2_m). There was a 3 fold increase in TIMP-2 expression in proximal compared to distal (4.34 versus 1.29% immunopositivity), while TIMP-3 showed a 2 fold increase in expression (0.94 versus 0.41%immunopositivity). Hypertrophic varicose vein segments compared to atrophic were found to have higher expression of TIMP-2 (4.39 versus 0.99%) and TIMP-3 (1.65 versus 0.08%). MT1-MMP expression showed a reverse trend with similar expression in proximal versus distal comparison (1.05% versus 1.05% immunopositivity) and a marginally higher expression in atrophic segments of varicose veins (1.90 versus 1.05%, p>0.97).

Conclusions: The higher expression of TIMP-2 and -3 in thicker proximal varicose vein segments points to their role in inhibiting matrix turnover and thus possible thickening of the vein wall. This was further proven in the comparison between hypertrophic and atrophic vein segments. This study re-emphasise the crucial role of TIMP as an inhibitor of MMP in a chronic disease like varicose vein. Although the trigger for these changes was not clear it takes us closer to the understanding of morphological changes associated with varicose veins.

10:20 – 10:40 **22. Percutaneous Autogenous Venous Valve Transplantation in An Ovine Model**

D. Pavcnik, Q. Yin, J. Kaufman, B. Uchida, H. Timmermans, F. S. Keller, J. Rosch; Oregon Health & Science University, Portland, OR

Background: Chronic deep venous insufficiency (CDVI) remains a major health problem in the United States and worldwide. Selected patients benefited from direct deep vein valve surgical repair or valve transplantation. A major limitation of this approach is that most of the patients are not candidates for these procedures. Limited experience with the bioprosthetic venous valve percutaneously inserted into the femoral vein in 15 patients has been promising in short-term results only to show disappointing long-term results. Percutaneous autogenous venous valve (PAVV) transplantation was explored in an ovine model as possible alternative treatment.

Methods: PAVV consisted of a vein segment with valve attached to a stent template. The stent templates (n=9) were designed and hand made in our research laboratory. They consist of two stainless steel square stent 13 or 15 mm in diameter to fit the ovine JV, which range from 10 to 15 mm in diameter. A valve-containing segment of jugular vein was harvested and attached with sutures and barbs inside the stent template (n=9). The valve devices were then manually folded and front loaded inside the 4 cm chamber of the 13 Fr delivery sheath and delivered into the contra lateral JV by femoral approach. Transplanted PAVVs were studied by immediate and 3 months venograms. After animals were euthanized at 3 months, angioscopic evaluation were performed in vitro (flow model) after vein removal.

Results: PAVV transplantation was successful in all 9 animals. Good valve function with no leak was observed on immediate and 3 months venograms in 8 valves. Gross angiographic examination revealed intact, flexible, non-thickened valve leaflets in 8 specimens. One PAVV exhibited normal function of one leaflet only; the other cusp was unintentionally cut during the transplantation procedure. All transplanted PAVVs were free of thrombus and incorporated into the vein wall of the target vessel.

Conclusions: This study demonstrated that autogenous valve transplants remained patent and competent without long-term anticoagulation for up to 3months. The percutaneous autogenous venous valve may provide minimally invasive treatment for patients with CDVI.

10:40 **2006 Award Updates**
Introduced by: Michael C. Dalsing, MD

1:00 am **PRESIDENTIAL ADDRESS**
The American Venous Forum: Inclusive, Innovative, Involved.
Michael C. Dalsing, MD
Introduction by Mark A. Meissner, MD

12:00pm MEMBER BUSINESS LUNCH

Free Afternoon

Saturday, February 17th 2007

8:00am

SCIENTIFIC SESSION VI – SUPERFICIAL VEINS (2)

Moderators: Lowell Kabnick, MD,
Marc Passman, MD

Educational Objectives: to evaluate a venous pressure method to quantify hemodynamic results and to asses the importance of antibiotic prophylaxis in varicose vein surgery and compare surgery to ablation, to discuss the connection between pelvic vein insufficiency and varicose veins and its treatment.

8:00 – 8:20 **23. Quantitative Measurement of Superficial Venous Surgery Using Continuous Ambulatory Venous Pressure Measurement (CAVPM)**

R. Eifell; Queen Elizabeth Hospital and University of Newcastle Upon Tyne, Tyne and Wear, United Kingdom

Background: To quantitatively measure the pressure reducing effect of conventional superficial venous surgery on ambulatory venous pressure in patients with superficial, perforator and deep venous reflux using a new technique of continuous ambulatory venous pressure monitoring.

Methods: Fifty-one limbs of 48 patients with CVI and 15 normal controls were studied. Duplex ultrasound scanning was performed to classify limbs into 4 groups; "no reflux" (controls), superficial reflux (As2-5; "S"), superficial with perforator reflux (As2-5, Ap17, 18; "S&P") and any reflux with deep reflux (Ad11-16; "S/P&D"). Post-operative duplex scans were performed to ensure surgical efficacy. Continuous pressure monitoring was performed during exercise, before and after (6-12 weeks) superficial venous surgery and the variables; mean walking pressure (MWP) and ambulatory pressure deviation (APD; a measure of pressure amplitude) were calculated. Data were analysed using Kruskal-Wallis, Mann-Whitney and Wilcoxon signed-rank sum tests.

Results: Pre-operative MWP and APD were significantly different between all CEAP anatomical reflux groups ($p<0.001$).

Post-operatively, significant differences in MWP were detectable only between the deep reflux group and other groups ($p=0.026$). Post-operative APD remained significantly different between reflux groups with the exception of the controls and the superficial reflux group.

The median perioperative differences in MWP in the "S", "S&P", and "S/P&D" groups were 14.9, 22.0 and 21.8 mmHg, respectively.

APD reduction was not different between groups following surgery.

Conclusion: CAVPM offers reliable and objective measurements of the pressure reducing effect of superficial venous surgery. Comparisons between the conventional surgery and more other procedures for treating venous reflux may help to compare the therapeutic benefits of different treatments.

8:20 – 8:40 **24. Antibiotic Prophylaxis In Varicose Vein Surgery: A Double Blind Randomised Clinical Trial**

A. Mekako, P. Coughlin, J. Hatfield, R. Baker, P. McCollum, I. Chetter; Hull Royal Infirmary/University of Hull, Hull, United Kingdom

Introduction: Wound infection rates of up to 13% have been reported following varicose vein surgery. The results of antibiotic prophylaxis in clean surgery are contradictory. No study has examined the role of antibiotic prophylaxis in varicose vein surgery.

Methods: Patients undergoing groin surgery for varicose veins were randomised to receive co-amoxiclav (n = 277 limbs) or placebo (n = 275 limbs) on induction of anaesthesia. Patients completed a personal logbook over the initial 10-day postoperative period. Wound assessment was undertaken on days 3,5,7,9 and 10 using a modified ASEPSIS score. Patients were reviewed at 14 days, and GP attendance, further antibiotic requirement, surgical intervention and need for readmission was determined.

Results: Groups were matched for demographics and risk factors for wound infections. Patients receiving prophylaxis had significantly lower ASEPSIS scores on days 3, 5 and 7 ($p </= 0.05$). Patients receiving prophylaxis had lower global ASEPSIS scores ($p<0.05$ Chi Squared test), fewer GP attendances (14.8% vs. 30.6%; $p = 0.0017$ Chi squared test) and received fewer courses of antibiotics in the post-operative period (3.61% vs. 9.49% $p = 0.0088$). Univariate analyses showed worse outcomes with higher BMI, current smoking, being male and not receiving antibiotics. Age was associated with seeing a GP postoperatively, but not with a worse outcome. A higher BMI, being male and not receiving antibiotics were associated with a worse outcome on multivariate analysis

Conclusion: Intravenous antibiotic prophylaxis significantly reduces wound related problems following varicose vein surgery. Furthermore, it also reduces the burden placed upon primary care in the post-operative period.

8:40 – 9:00 **25. Randomized Controlled Trial of Endovenous Laser Ablation and Stripping in Patients with Great Saphenous Vein Insufficiency: Short Term Result**

L. H. Rasmussen[1], L. B. Rasmussen[2], M. L. Rasmussen[1], B. Eklof[3]; [1]Venous Center Naestved, Naestved, Denmark, [2]Surgical Clinic, Roskilde, Denmark, [3]Raa, Sweden

Background: As an out patient procedure performed in tumescent anaesthesia, endovenous laser ablation (ELA) of the great saphenous vein (GSV) is thought to minimize postoperative morbidity and work loss compared to standard surgery in general anaesthesia. Such advantage might justify the considerable cost of the equipment. ELA however, has not previously been compared to stripping performed in tumescent anaesthesia as an out patient procedure.

Methods: One hundred and five patients (119 limbs) with varicose veins due to GSV incompetence were randomized to either ELA(ELVES, 980 nm, Biolitec Germany) or stripping in tumescent anaesthesia. Stab phlebectomies were also performed in both groups. Duplex ultrasound and clinical examinations were performed initially and subsequently at 12 days, 4 weeks, 3 and 6 months postoperatively. Sick leave, time to normal physical activity, pain score, use of analgesics, Aberdeen score and complication rates were investigated. Cost calculations were based on the standard fee for stripping with the addition of laser equipment and the standard salary and productivity level in Denmark.

Results: Ninety five patients with 107 legs have attended follow up at 12 days. Mean age was 56,6 for stripped and 53 years for ELA treated. Seventy-six percent were working. The results and the number of patients followed up to 6 months are shown in the table. Results are given as mean (std).

	preoper.	12 days	4 weeks	3 months	6 months
Legs					
# of legs for Stripping/ stripped	51	51/50	47/45	35/34	12/12
# of legs for ELA/ ocluded	56	56/56	54/54	23/22	10/8

There were no serious complications. One patient in the stripping group had wound infection treated successfully with antibiotics. Sick leave was 7,3 (3,8) and 6,5 (6), while time to normal physical activity was 7,3 (5,8) and 6,6 (7,3) days in the stripping and ELA group respectively (ns). No difference in the use of analgesics was recorded. Aberdeen score was 15,8 (6,6) and 18,4 (9,5) initially, declining to 14,2 (10,7) and 15,3 (11,6) at 4 weeks in the 2 groups (ns).

Comparison of costs per procedure(USD), working patients		
	Stripping	Laser
Primary evaluation	245	245
Phycisian fee	737	737
Laser equipment		457
Ekstra duplex		170
Control 3 months	202	202
Total	1184	1811
Work loss	3736	3354
Total expences	4920	5165

Conclusions: We did not observe any significant differences regarding efficacy, complications, pain, days off work, time to normal physical activity and Aberdeen score between the groups. Whereas the ELA is often preferred by the patients in advance, it is more expensive than stripping and does not seem to offer objective advantages in the short term. The cost difference is reduced by the slightly shorter postoperative sick leave in the ELA group.

9:00 – 9:20 **26. Pelvic Leaks as the Cause for Post Surgical Varicose Recurrence**

S. Zubicoa, J. Leal, L. Del Campo, A. Sanchez, F. Arroyo; Hospital Ruber Internacional, Madrid, Spain

Background: To assess the possible connections of the veins of the pelvis with those of the lower limbs, which could account for the varicose vein recurrence and consequently to performt adequate treatment.

Methods: 990 patients with recurrent varicose veins were examined in our consultancy from 1 September 1995 to 1 September 2001. From this group we took 643 patients (64.9%) with bilateral recurrence or who had developer varicose veins after surgery in the other limb. We evaluated the veins of the lower limbs with Duplex ultrasound and the pelvic ones via trasparietal and trasvaginal. Pelvic phlebographic study was suggested when we found venous dilations equal or longer than 8 mm. with associated reflux in the Valsalva manoeuvre. We chose 298 patients according to these criteria, leaving out 22 patients. The 276 patients who comprehend this study underwent a pelvic phlebographic study, together with subsequently embolizing treatment if required.

Results: Presence of great venous lakes in 223 patients (93.1%), from whom 155 (56.1%) showed one or both gonadal axes insufficient with a diameter equal or longer than 8 mm. In 265 (96.01%) we found pelvic leakage points communicating with the veins in the lower limbs. According to the morphology they were classified into troncular 43 patients (17.8%), and/or multiple of small vessel 50 patients (21%) and mixte 172 (65 %). Most of the patients have 2 or more insufficient pedicules. We found a total of 860 insufficient pedicules, of which 66 axes (12%) were round ligament veins, 331 axes (60%) internal pudenda , 204 (37%) from the Obturator veins, and ischiatic 259 (47%) Of the 276 angiographied patients 37 were excluded from the embolizing treatment (13.4%), 3 (8.1%) due to partial posthrombotic syndrome of the iliac vein, syndrome of pelvic venous compression 11 (29.7%), 5 (13.5%) venous malformations (double cava, etc.). 18 (6.5%) because of scarce clinical significance.

Conclusions: Pelvic and lower limbs venous systems behave as a functional unit. One of the causes of the varicose recurrence post surgery in the lower limbs are the pelvic leaks established by retrograde or centrifugal collaterality. Color duplex ultrasound is a good procedure for diagnosis and selection of these type of patients. The pelvic phlebography provides precise data about the pelvic anatomy and pathology, essential for an adequate treatment (embolization), which is to be done within the same therapeutical procedure, ruling out obstruction or compression syndromes or congenital malformations.

9:20 – 9:40 **27. Treatment by Embolization of Pelvic Venous Insufficiency in Women Presenting with Non - Saphenous Perineal Veins And Clinical Symptoms (24 Cases, Three-Year Follow-Up)**

D. Creton, EC A Paré, Nancy, France; L Hennequin, Solime, Nancy, France; FA Allaert, Cenbiotec, Dijon, France

Background: To evaluate the clinical results of embolization of pelvic vein insufficiency in women presenting with perineal veins and clinical syndrome of pelvic vein insufficiency.

Methods: Symptomatology was scored on a visual analogue scale using dyspareunia, pelvic and lower limb pain. Twenty-four women presenting with non-saphenous perineal varicose veins and who experienced pelvic vein syndrome underwent pelvic vein embolization. Surgery consisted of phlebectomies. They were followed-up at 1, 2 and 3 years. The assessed extremities of the patients were classified into 2 categories at 3-year follow-up (without and with new varices)

Results: All patients presented with perineal veins, 2 with sciatic vein insufficiency and 2 with a perforator of the thigh or buttock. Pelvic venous exploration was performed via right femoral access in 87% of the cases. The mean number of coils used per vein was 6. All of them were successfully embolized. Ovarian and hypogastric veins were systematically embolized when incompetent. During the pelvic venous exploration, 11 patients presented with isolated left ovarian vein insufficiency; the other patients with hypogastric vein insufficiency or mixed insufficiencies involving ovarian and hypogastric veins. The only immediate complication was the migration of a coil into the lower lobar branch of the left pulmonary artery with no clinical consequences. All patients were re-evaluated except 2 lost from follow-up at 3 years. The difference was significant between each preoperative and postoperative sign ($P < .001$). No difference appeared in the follow-up of each postoperative clinical sign at 45 days, 1, 2 and 3 years. The mean clinical improvement score was 80%, 77%, 80% and 76% at respectively 45 days, 1, 2 and 3-year follow-up. Dyspareunia noted at preoperative evaluation was not significantly correlated with bad clinical results ($P<.079$). At 3-year follow-up significant correlation was demonstrated between the patients with a bad clinical score and varicose vein recurrence (bad results) ($P < .001$)

Conclusions: In women of reproductive age, association of non-saphenous varicose veins with clinical syndrome of pelvic vein insufficiency is a good sign of pelvic venous insufficiency and requires pelvic venous exploration. Ovarian veins and hypogastric vein branches are often simultaneously incompetent, justifying multiple embolizations that seem to give better results. The results are very satisfactory on symptomatology. Although the result on varicose vein recurrences was also satisfactory larger number of cases should be required.

9:40 am Coffee Break / Visit Exhibits

10:10 am **SCIENTIFIC SESSION VII – TRAUMA AND IVC FILTERS**

Moderators: Mark Meissner, MD, Robert McLafferty, MD

Educational Objectives: to appreciate the complications of IVC filter placement and the frequency of irretrievability when placed in trauma patients, to evaluate eccentric compression of the saphenous vein after ablation.

10:10 – 10:30 **28. Complications Related to Inferior Vena Cava Filters**

M. M. Nazzal, E. Chan, M.D. Nazzal, J. Abbas, J. Boomer, G. Erikson, K. Khechen; University of Toledo, Toledo, OH

Background: Inferior vena cava (IVC) filters have been used in the management of patients with venous thromboembolism (VTE). We reviewed our experience with different types used over four years with respect to complications and correlated that with the type of filter used.

Methods: All cases of IVC filter placed between January 2002 and December 2005 were reviewed. Data was analyzed for indication for insertion and immediate and late complications. Data was correlated with type of filter inserted and factors associated with complication. Statistical analysis was done using Fisher's exact test.

Results: 400 filters inserted in the period of 4 years. The mean age was 61 (17-86 years). There were 199 (49.75%) males and 201(50.25%) females. Indications for IVC filter insertion included: Acute VTE event in 273 patients (68.25%) and as a pulmonary embolism prophylaxis in 127 patients(31.75%) . Indications that lead to IVC filter insertion included: stroke/head injury in 43 (10.75%), fractures in 129 (32.25%), other trauma in 32 (8%), surgery in 16 (4%), paralysis in 15 (3.75%), hypercoagulable state in 34 (8.5%), contraindication to anticoagulation in 59 (14.75%), acute DVT in 197 (49.25%), acute PE in 31 (7.75%) and both PE and DVT in 45 (11.25%).

In all filters IVC thrombosis occurred in 18 (4.5%), PE in 6(1.5%), post filter DVT in 15 (3.8%) and hematoma at the site of insertion in 4 (1%) patients. Complications as related to filter type showed no significant difference - table 1.

In a subset analysis in patients with malignancy or hypercoagulable conditions, the incidence of IVC thrombosis was 20% in Trapease filter as compared to 0% in Greenfield Filter. This difference was not statistically significant possibly due to the small number of patients in either group

Complications related to IVC filters						
Complications	Incidence rate in all Filters (n=400)	Incidence rate in Greenfield filter (n=95)	Incidence rate in Trapease filter (n=223)	Incidence rate in Simon Nitinol filter (n=5)	Incidence in Tulip Filter (n=43)	Incidence rate in Bard Filter (n=34)
IVC Thrombosis	4.5% (n=18)	2.1% (n=2)	4.5% (n=10)	20% (n=1)	4.7% (n=2)	8.8% (n=3)
Post Filter Insertion PE	1.5% (n=6)	3.2% (n=3)	0.9% (n=2)	0%	2.4% (n=1)	0%
Post filter insertion DVT	3.8% (n=15)	4.2% (n=4)	3.1% (n=7)	20% (n=1)	4.7%(n=2)	2.9 (n=1)
Hematoma formation at site of insertion.	1% (n=4)	0%	0.9% (n=2)	0%	2.3% (n=1)	2.9% (n=1)

Conclusions: IVC filter insertion procedure is associated with VTE complications in 9.8% of the patients. There was no difference in complications among the types of filters. There is a tendency to a higher incidence of IVC thrombosis with Trapease filters in patients with hypercoagulable /malignancy conditions

10:30 – 10:50 **29. The Recovery Filter in Trauma Patients: Are They Truly Retrievable?**

E. M. Zakhary, D. Franklin, S. Galt, J. Elmore; Geisinger Medical Center, Danville, PA

Background: Caval interruption is considered in trauma patients at risk for pulmonary embolism. The Recovery filter is approved for removal up to 6 months from insertion. This has lowered the threshold for inserting filters in these trauma patients. The objective of this study is to evaluate the retrieval rates of the Recovery filter in this patient population. This filter was released in July 2003 and modified in September 2005.

Methods: This is a retrospective study in which the records of 122 consecutive trauma patients in whom the Recovery filters were inserted between October 2003 and October 2005 were reviewed. Patients who had the new generation of this filter were excluded.

All these filters were inserted with the intention of removal. We attempted to contact these patients at 3 months for retrieval. The clinical and technical factors associated with failure to retrieve these filters were reviewed.

Results: There were no complications related to filter insertion. Six patients (4.9%) expired for causes unrelated to the insertion procedure. Twenty patients could not be reached (16.4%). Two patients reported that their filters were removed in other facilities. Twenty one patients declined retrieval (17.2%).

Seventy three (59.8%) patients presented for follow up and were evaluated by venous color duplex .The filters were considered permanent in 18 patients (14.8%) if they were non ambulatory or if they developed inferior vena cava occlusion (one patient). Fifty five patients were brought to the endosuite for filter retrieval . Three filters were considered permanent upon obtaining a cavagram identifying unsuspected caval occlusion. We attempted to retrieve the filters in 52 patients and were successful in 45 (86.5%). However, the total retrieval rate was only 38.5%.All failures of retrieval were related to marked angulations or flaring of the limbs of the filters. Inferior vena cava occlusion was diagnosed in a total of 4 patients (5.5%).There were no complications related to the retrieval procedure.

Conclusion: Insertion and retrieval of the Recovery inferior vena cava filters is safe. Despite the thorough follow up and the success in retrieving the filters, the overall retrieval rate in this patient population is low. Inferior vena cava occlusion is documented in 5.5% of patients. This retrieval rate should be considered at the time of prophylactic filter insertion .

10:50 – 11:10 **30. Vein Repair Is Not Associated with an Increased Risk of Venous Thromboembolic Events: A Review of Over One Hundred Traumatic Military Venous Injuries**

R. W. Quan[1], D. L. Gillespie[1], C. J. Fox[1], R. P. Stuart[2], M. W. Cox[1], L. D. Cunningham[3], D. R. Whittaker[3], E. A. Adams[1], N. M. Rich[2]; [1]Walter Reed Army Medical Center, Washington, DC, [2]Uniformed Services University of the Health Sciences, Bethesda, MD, [3]National Naval Medical Center, Bethesda, MD

Background: The management of venous trauma remains controversial. Critics of venous repair have cited an increased incidence of associated venous thromboembolic events (VTE) with this management. We analyzed the current treatment of wartime venous injuries in United States military personnel in an effort to answer this question.

Methods: From December 01, 2001 to August 31, 2006, all US casualties with named venous injuries were evaluated. Data was prospectively collected on demographics, mechanism of injury, associated injuries, treatment, outcomes and VTE. Data was analyzed using Chi square.

Results: Over this five year period, 85 patients sustained 106 named venous injuries due to combat operations. All patients were male, with an average age of 27.8 years (ranged 19 to 58 years). Injury from Improvised Explosive Devices (IED) accounted for 48 (56.5%) venous injuries, gunshot wounds for 25 (29.4%), Grenades/Mortars for 9 (10.6%), and motor vehicle accidents for 3 (3.5%). Twenty-eight (32.9%) patients had isolated venous injury. Sixteen (18.8%) patients had multiple venous injuries. Two patients suffered acute phlegmasia associated with venous injury. Thirty-three (38.8%) patients had fractures associated with their venous injuries. Twenty-three (27.1%) patients sustained neurologic deficits. Sixty-four venous injuries (60.4%) were treated by ligation, 39 (36.8%) by open surgical repair and 3 (2.5%) by endovascular therapy. Post-operative extremity edema occurred in all patients irrespective of method of management. Thrombosis after venous repair occurred in five of the thirty-nine cases (12.8%). Three patients developed pulmonary emboli, one after open repair and two after ligation (_2=0.002, _<0.95).

Conclusions: In the largest review of military venous trauma in over three decades, we found no difference in the incidence of venous thromboembolic complications between venous injuries managed by open and endovascular repair versus ligation. IED injuries of the extremities have caused most of the venous injuries. Ligation is the most common modality of treatment in the combat area. We found no difference in the incidence of edema between repair or ligation of venous injuries. Long term morbidity associated with venous injuries and their management will be assessed in future follow up studies.

11:10 – 11:30 **31. Effects of Eccentric Compression after EVLT of Great Saphenous Vein**

M. Lugli, A. Cogo, S. Guerzoni, A. Petti, O. Maleti; Hesperia Hospital, Modena, Italy

Background: Endovenous laser treatment (EVLT) of the great saphenous vein (GSV) incompetence is a minimally invasive widespreading technique. However, postoperative side-effects (thrombophlebitis, cellulitis, ecchymosis) and related pain have been described in many reports. Studies to evaluate the relative effects on such events of different wave lengths and energy dose delivered have already been carried on. In this prospective randomized study we investigated the effect of an eccentric thigh compression technique on the occurrence of post-operative pain after EVLT.

Methods: From April 2005 to June 2006, 200 EVLT procedures in 178 patients (144 women and 56 men, median age 51 years - range 17 - 84, CEAP clinic class 2 - 6) were performed for GSV incompetence. All procedures were performed with a 940 nm diode laser by continuous emission at 30 W with pullback technique, under local anesthesia. An average energy of 77,8 J/cm (range 48,4 - 105,8) was administred. Patients were randomized to receive (group A, n = 100 procedures) or not (group B, n=100 procedures) an eccentric compression applied on the treated GSV at the medial aspect of tight, from groin to knee, and fixed with elastic tapes by Baynton technique. A full thigh 35 mmHg compression stocking was then placed on all treated limbs. Patients were examined at a 7 - days control for eccentric compression removal, pain level assessement, clinic and ultrasound evaluation. The intensity of pain was measured using a visual analogue scale giving a numerical grade from 0 (no pain) to 10 (worst pain ever). Pain was firstly analysed as a continous variable; thereafter, it was categorized in three classes: 0 -3 no pain to mild; 4 - 6 mild to moderete; 7 - 10 moderete to severe. The differences between the two groups were tested for significance using T-test and Chi-squared test.

Results: The intensity of postoperative pain at 7- days control was significantly reduced in the eccentric compression group as compared with the no compression group after the procedure.

Pain visual scale data analysis

	Average	Median	Range	Standard deviation	T-test	P value
Group A (n =100) Compression	1.4	1	0 - 8	1.63	3.4909	<.001
Group B (n =100) No compression	4.9	5	1- 8	1.55		

Pain classes distribution analysis

	Pain class 0 - 3	Pain class 4 - 6	Pain class 7 -10	Chi-squared test	P value
Group A (n =100) Compression	92	67	17	1.8637	<.001
Group B (n =100) No compression	16	6	2		

Conclusions: Eccentric compression greatly reduces the intensity of postoperative pain after EVLT procedures of the great saphenous vein.

11:30 am **D. EUGENE STRANDNESS MEMORIAL LECTURE**
"Foresight 2020: Creating the Venous Vission"
Robert L. Kistner, MD – Honolulu, Hawaii
Introduced by: Michael C. Dalsing, MD

12:30 pm **Lunch** (Box Lunch Provided)

1:30 pm **Ask the Experts – Part 1**

2:30 pm **Coffee Break – Last Chance to Visit Exhibits - Prize Drawing**

3:00 pm **Ask the Experts - Part 2**

4:00 pm **Moderated Poster Session**

7:00 pm **FORUM FINALE – Dinner, Entertainment, Awards**

4.00pm

Moderated Poster Session

Moderators: Thomas Wakefield, MD
Frank Padberg & Bo Eklof, MD

Educational Objectives: The participants in the poster session will gain a wide range of knowledge expansion including chronic venous disorder, saphenous vein treatment, understanding risk factors and evaluation methods.

P-1 High Peak Reflux Velocity in the Proximal Deep Veins is a Strong Predictor of Advanced Post-thrombotic Sequelae

T. Yamaki, M. Nozaki, H. Sakurai, M. Takeuchi, K. Soejima, T. Kono; Tokyo Women's Medical University, Tokyo, Japan

Background: The presence of reflux in the femoral (FV) and popliteal vein (POPV) after acute deep vein thrombosis (DVT) is considered to contribute the development of advanced postthrombotic syndrome (PTS). However, quantification of reflux has yet to be determined. The purpose of study was to determine the indicative parameters reflecting the progression of PTS.

Methods: Venous abnormalities in relation to the severity of the PTS were evaluated in 106 limbs out of 104 patients greater than 3 years after documented episode of DVT. The clinical manifestations were categorized according to the CEAP (clinical, etiologic, anatomic, and pathophysiologic) classification, and the patients were divided into two groups: group I (C0-3Es,As,d,p,Pr,o, relatively early stage of CVI) and group II (C4-6Es,As,d,p,Pr,o, advanced CVI). Venous segments were examined whether they were occluded, partially occluded, and totally recanalized, and the venous reflux in the deep, perforating, and superficial veins was also evaluated. The reflux parameters assessed in the FV and POPV were the vein diameter (cm), the reflux time (RT: s), the peak reflux velocity (PRV: cm/s), and total refluxed volume (TRV: mL).

Results: There were 69 limbs in group I and 37 in group II. The rate of venous normalization was significantly higher in group I ($p= 0.0008$), whereas the frequency of venous reflux was significantly higher in group II ($p= 0.0013$). The proportion of occlusion did not differ between the groups ($p= 0.0578$). The proportions of limbs with superficial vein insufficiency combined with deep and perforator vein insufficiency and overall, superficial, deep, and perforator vein incompetence were significantly higher in group II ($p<0.0001$, 0.006, <0.0001, 0.0002, respectively). But the number of limbs with overall superficial and perforator vein insufficiency was not significant. In deep veins, the proportions of FV and POPV incompetence were significantly higher in group II ($p=0.0003$, 0.0002, respectively). In these veins, RT did not improve the discrimination power between the two groups. On the contrary, PRV had significant discrimination power in FV (17.8 ± 12.2cm/s, 41.0 ± 17.5cm/s, $p= 0.0058$) and POPV (23.1 ± 15.4cm/s, 47.0 ± 14.3cm/s, $p= 0.0004$). After calculating suitable cutoff point using receiver operating characteristic curves analysis, multivariable analysis showed that PRV of > 34.2cm/s in

POPV was the strongest independent predictor of advanced CVI (OR 22.58, 95% CI 8.41-167.21, p< 0.0001). Similarly, in FV, PRV of > 29.8 cm/s was found to be a strong predictor of advanced CVI (OR 5.10, 95% CI 1.29-37.23, p=0.024). CONCLUSIONS: These findings suggest that the presence of high PRV in the proximal deep veins is an independent predictor of advanced symptoms of PTS.

P-2 Subcutaneous Fasciotomy as Adjuvant Therapy Promotes Ulcer Healing in Patients with Chronic Venous Insufficiency and Therapy Resistant Ulcers.

J. T. Christenson[1], C. Prins[2], S. Gueddi[3]; [1]Department Of Cardiovascular Surgery, University Hospital Of Geneva, Geneva, Switzerland, [2]University Hospital Of Geneva, Department of Dermatology, Geneva, Switzerland [3]Department of Angiology, University Hospital of Geneva, Geneva, Switzerland

Background: Chronic venous insufficiency (CVI) can lead to dermatoliposclerosis and venous leg ulcers frequently occur. The pathophysiological role of the lower limb fascias has so far been neglected. CVI may occur after longstanding superficial venous insufficiency (SVI) and in the post-thrombotic limb (PT). The principal therapy of venous leg ulcers is compression therapy and if possible elimination of pathological reflux by surgery or sclerotherapy. Recurrent ulcers frequently occur. Transcutaneous oxygen tension (TcPO2) is often low near the ulcer edge. In patients with lymphedema increased subcutaneous (s.c.) and intramuscular (i.m.) tissue pressures have been reported and in patients with CVI intramuscular tissue pressures are often increased. The role of fasciotomy as an additional surgical intervention to promote ulcer healing seems reasonable. This study evaluates the impact of subcutaneous fasciotomy in patients with therapy resistant venous ulcers.

Methods: In 22 patients (25 limbs) with recurrent, therapy resistant venous leg ulcers, due to CVI [8 PTS (11 limbs) and 14 SVI (14 limbs)] subcutaneous fasciotomy was performed in addition to removal of superficial reflux. Eighteen patients (24 limbs) had no fasciotomy and served as controls. Intramuscular and subcutaneous tissue pressures and TcPO2 were measured pre- and post-operatively. The mean age was 64.3±18.0 years. Eleven ulcers (42%) were previously skin grafted and of those 73% had received more than one failed skin graft. The mean age of the ulcers at the time of operation was 3.3 years (3 months to 15 years).

Results: Patients with CVI and venous ulcers presented with significantly higher s.c. and i.m. tissue pressures and low TcPO2 values ($p<0.001$) compared to normal limbs. Following fasciotomy 12 leg ulcers were skin grafted and all healed successfully within 3 weeks (2.9±0.7) and 13 of 14 non-skin grafted ulcers healed completely within 4 weeks (3.6±0.4) following surgery. One ulcer remained non-healed due to repeated infections.

Conclusions: Patients with CVI and recurrent venous ulcers have significantly increased subcutaneous and intramuscular tissue pressures and lowered transcutaneous oxygen tension at the edge of the ulcer. Subcutaneous fasciotomy lowers the i.m. and s.c. tissue pressures with improved cutaneous oxygen tension that result in rapid ulcer healing with or without skin graft

Table 1. Tissue pressures and transcutaneous oxygen tension before and after fasciotomy in CVI.								
Parameters	Normal values	CVI before fasciotomy N=25 limbs	p-values	CVI after fasciotomy N=25 limbs	p-values	CVI at 3 months after fasciotomy N=25 limbs	p-values	CVI at 3 months without fasciotomy N=24 limbs
S.c. tissue pressure mmHg	0.4±2.6*	10.0±3.1	<0.001	0.5±0.8	n.s.	0.8±1.2	<0.001	4.5±3.1
I.m. tissue pressure mmHg	9.6±5.6*	23.6±7.0	<0.001	5.6±3.1	n.s.	5.0±2.8	<0.001	19.9±6.2
TcPO2 mmHg	70.6±8.9**	13.9±5.2	<0.001	39.3±8.2	<0.001	49.6±7.7	-	-
* Clin Physiol 1982 **Clin Phys Physiol Meas 1983								

Table 2. Ulcer healing in CVI treated with or without fasciotomy			
Parameters	CVI with fasciotomy N= 26 ulcers	p-values	CVI, controls without fasciotomy N=24 ulcers
Venous ulcers healed by successful skin grafting	12/12 100%	n.s.	4/8 50%
Venous ulcers healed without skin grafting	13/14 93%	0.015	7/16 44%
Healed ulcers total	25/26 96%	0.005	11/24 46%

P-3 Veins Along The Course Of The Sciatic Nerve

A. K. Tassiopoulos1, N. Labropoulos2, A. Gasparis1, P. J. Pappas2; 1Stony Brook University Hospital, Stony Brook, NY, 2UMDNJ, Newark, NJ

Objective: To describe the clinical characteristics, pathology and the effects of treatment in patients with venous abnormalities along the course of the sciatic nerve.

Patients and Methods: Patients with veins detected along the course of the sciatic and tibial nerves were included in the study. Color flow duplex imaging was used with multifrequency linear array transducers. The signs and symptoms of the patient, the location, diameter and length of the involved veins were recorded in a lower limb drawing with anatomic landmarks. Veins of the sciatic and tibial nerve were those seen to enter the perineurium, while the persistent sciatic vein was a larger vein along but outside the nerve. All patients prior to (n=13) or after the vascular examination (n=3) were seen by a spine specialist.

Results: There were 18 limbs in 16 patients, 4 males and 12 females with a mean age of 52 years (range 32 to 79). The mean duration of signs and symptoms was 4.5 years ranging from 2 to 14. Reflux was detected in 12 veins of the sciatic nerve, in 2 persistent sciatic veins and in 3 veins of the tibial nerve. One patient had acute thrombosis in a persistent sciatic vein and15 hours after diagnosis she died from pulmonary embolism. All limbs with sciatic and tibial nerve veins had varicosities in the lateral and posterior aspect of thigh and calf. All limbs were symptomatic. Ten limbs presented with CEAP class 2, 5 with class 3, 2 with class 4 and 1 with class 1. Pain or tingling was reported in 15 limbs, itching in 8 and heaviness in 7. The distribution of pain and tingling was present along the nerves in 14 limbs. Of the 15 limbs with the sciatic and tibial nerve veins 12 were treated with subfascial vein ligation and stub avulsions. One patient had injection sclerotherapy, 1 refused treatment and the last did not require anything. Of the 13 treated patients, 7 reported relief of their symptoms, 5 had significant improvement and 1 had no change. Within a year, 3 patients required additional treatment for veins along the same area. Seven limbs had a follow-up duplex scanning 3 to 15 months after their treatment. All limbs showed significant diameter reduction in the nerve veins while mild reflux was present in 2.

Conclusions: Reflux is the most common pathology of the sciatic and tibial nerve veins which produces significant symptoms along the distribution of the nerves. Treatment of the varicosities offers significant relief while recurrence or residual varicosities are easily managed.

P-4 Laser-assisted repair of Venous Valves

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Aim of the study: low-power 1,9 _m laser has been demonstrated effective in welding collagen on micro-vascular anastomosis . We have investigated the new options offered by this instrument for restoring competence of venous valves.

Material and methods : an Osyris® Sephy™ laser connected to 400 nm optical fiber was used. Power setting was 300 mw , pulse duration 1,5 to 3 s. Mean Fluence : 130 J/cm2 . The tip of the fiber was held at 1 mm of the target , binocular magnification of 5X to 10X was used.

3 techniques were studied on segments of human Saphenous veins obtained after stripping.

1/ External valvuloplasty : to reproduce the effects of cuffing the vein , series of circumferential impacts were performed at the level of the annulus , to obtain a reduction of the vein diameter .

2/ Open valvuloplasty : instead of using sutures , laser impacts were made at the commissural level to reduce the leaflets length and allow better approximation. The phlebotomy was closed using interrupted sutures and laser welding .

3/ Isolated Leaflet transplant : instead of transplanting a valve-bearing segment , venous valves leaflets were harvested in the donor vessel , whose continuity was thus preserved.

The valves were welded to the recipient vein with laser impacts , and the vein closed as above mentioned.

Results : Laser welding allowed successful in vitro restoration of valve competence after a learning curve of a dozen trials for each application. External laser vavuloplasty has since been used on 2 patients , with good immediate results . Open valvuloplasty and venous valve transplants have been performed on animals , human application is planned after the follow-up period for the animal study.

Conclusion : Getting rid of sutures is a significant advance in venous reconstructive surgery . It saves time , avoids introducing thrombogenic material in the vein lumen , and allows new technical possibilities . Isolated leaflet transplant could be used more widely than segment transplant , as the donor vessel is not ligated .

P-5 Hemodynamic And Clinical Impact Of The Lateral Embryonic Vein In Limbs With Klippel-Trenaunay Syndrome

K. Delis, P. Gloviczki, P. Wennberg, T. Rooke, D. J. Driscoll; Mayo Clinic, Rochester, MN

Background: A lateral embryonic vein has been reported in up to 40-70% of limbs with Klippel-Trenaunay syndrome (KTS), a complex congenital anomaly characterized by capillary malformations, soft tissue or bony hypertrophy (or both) and varicose veins or venous malformations. This study examined the hemodynamic and clinical significance of the lateral embryonic vein in limbs with KTS.

Methods: Included were individuals with near-normal function of the affected limb, and minimal foot hypertrophy. Exclusion criteria included recent (1 year) thrombosis of the deep venous system, lymphatic impairment (clinically), length discrepancy (> 2.5 cm) of the affected limb, PAD (ABI<1.0), and cardiac disease. The study patients underwent venous duplex, ascending venography, MRI, strain gauge plethysmography (SGP) and a bone scannogram. The location of varicose veins or venous malformations and their depth (subcutaneous and/or intramuscular) were carefully noted. The severity of venous disease was determined according to the Venous Clinical Severity Score (VCSS) and the CEAP clinical class. Reflux complexity was expressed with the VSDS. Outflow obstruction [Outflow Fraction at 1- and 4-secs (OF1 and OF4) in %], venous reflux [Venous Filling Index (VFI) in ml/100 ml/sec], calf muscle pump function [Ejection Fraction (EF) in %] and hypertension [Residual Venous Fraction (RVF) in %], were determined in both limbs of the 17 study patients, 10 men and 7 women, age range 15 to 51 (median 25) years, using SGP. KTS was diagnosed in 19 limbs (unilateral in 15 subjects, bilateral in 2). A lateral embryonic vein was identified in 8 limbs of 7 patients, 3 women and 4 men. Analysis was performed with the Mann-Whitney test. Data are reported as median and interquartile range[iqr].

Results	OF 1 sec	OF 4 sec	VFI ml/100ml/sec	EF (%)	RVF (%)	CEAP	VCSS	VSDS
LEV (+) Limbs	30,7 21-35,4	70,2 49-82	0,42 0.28-0.53	14 11,6-19	86 76-87.1	3 3-3,3	12 10.8-13.3	2 1.8-2
LEV (-) Limbs	30 26-39	70 53-77	0.187 0.12-0.32	22.9 16-25	75 69.4-77	3 3-4	9 7.5-11.5	3.5 2.75-4.5
P-value	NS	NS	0.048	0.16	0.045	NS	0.28	0.02
PE			0.18	-6.0	10		2	-1.5
95%CI			0 to -0.38	-13 to 2	18 to 0.4		-5 to 3	-3 to 0

LEV: lateral embryonic vein, PE: point estimate

Conclusion: The presence of a lateral embryonic vein was associated with a worse hemodynamic impairment among limbs with KTS. Despite of the significantly less advanced patterns of venous reflux complexity, reflected by the lower VSDS, limbs with a lateral embryonic vein had a twice as high amount of venous reflux, a less efficient calf muscle pump, and an increased RVF (a non-invasive measure of venous hypertension), mirroring the worse venous clinical severity score recorded.

P-6 A New Optional Spiral-Shaped Inferior Vena Cava Filter: Evaluation Of Filter Behavior, Retrieveability, And Venous Response In An Ovine Model

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Background: A new optional vena cava filter (Crux Biomedical, Inc.) was evaluated in an ovine model. The filter is constructed from opposing Nitinol spiral support elements and an ePTFE filter. It is self centering and bi-directional allowing for retrieval from the internal jugular or femoral approach using a standard snare.

Methods: Twelve (12) Crux vena cava filters (VCF) were deployed in the inferior vena cava (mean diameter 16.4 ± 2.1mm) of 12 sheep (mean weight 77.8 ± 6.4Kg) using the 6Fr Crux hemostatic delivery sheath. After 34 days, nine (9) devices were retrieved from the vena cava via femoral or jugular access and the animals survived for an additional 28 days, euthanized and the vena cava explanted for histological analysis. The remaining 3 animals were euthanized and devices explanted in-bloc for histological analysis. An additional sheep (n=1) was utilized to evaluate in-vivo clot trapping. Blood was drawn into a sterile 18Fr sheath and allowed to clot overnight. A 5x70 mm clot was introduced via femoral access and filmed flouroscopically as it advanced to the VCF.

Results: The Crux VCF was implanted with a 100%(13/13) technical success and accuracy to the intended infrarenal IVC. At 34 days contrast enhanced venograms were taken on twelve (12) sheep. There were no caval perforations, IVC thrombosis, or migrations. Retrieval of devices were successful in all nine (9/9) animals via femoral access (n=5) and jugular access (n=4) in a mean time of 9.6 ±13.7min with an EnSnare (InterV) retrieval snare. Completion venography following retrieval demonstrated 100% patency with no evidence of perforations following retrieval. Endoscopic evaluation of the in-bloc specimens (n=3) confirmed structural integrity and freedom from fibrous formation of the ePTFE filter. Histopathologic analysis of the in-bloc VCF (3/3) specimens revealed a thin layer of neo-intima covering the Nitinol filter elements that were completely free of cellular growth at 34 days. Sections from the IVC in which the VCF was retrieved and the animal survived for 28d post retrieval and sacrificed all demonstrated areas of slightly thickened intima. In-vivo clot trapping demonstrated successful capture of the autologous thromboembolism in the filter with continued patency of the IVC with survival of the animal.

Conclusions: These series of experiments have demonstrated successful deployment, bi-directional retrieval, clot trapping and histological response of the optional Crux Biomedical VCF in an ovine model.

P-7 Withdrawn

P-8 The Clinical Outcome Of Primary Lymphedema Belonging To Hemolymphatic Malformation

J. Laredo, B. Lee, D. Deaton, R. Neville; Georgetown University, Washington DC

Background: Primary lymphedema in general represents a clinical manifestation of truncular lymphatic malformation (LM) existing alone as independent solitary lesion. But when it exists with other vascular malformation as a component of hemolymphatic malformation (HLM), it has been known to behave/respond differently especially when it coexists with extratruncular LM lesions..

Methods: Retrospective analysis was done on N=66 HLM; N=42 had primary lymphedema as truncular LM lesions, either alone (N=29) or combined with extratruncular LM lesions (N=13). N= 24 out of a total N=66 had only extratruncular LM lesions as lymphatic component of HLM.

All underwent standard evaluation as HLM for other combined vascular malformation lesions in addition to the clincal and laboratory assessment for the lymphedema including radionuclide lymphoscintigraphy.

Complex decongestive therapy (CDT) -based management was given to the truncular LM lesions as a basic maintenance therapy to prevent further progress of chronic lymphedema in most cases (38/42); N=4 underwent compression therapy alone.

Among N=13 extratruncular LM lesions combined with primary lymphedema/truncular LM lesions, N=6 was treated with ethanol/OK 432 sclerotherapy with various indications (e.g. lymph leakage).

Follow-up assessment was made clinically with a minimum of 6 months to one year interval for an average of 5.2 years; additional evaluation with lymphoscintiography was generally added when the sepsis and/or steady progress of the disease should be combined.

Results: The management results of primary lymphedema (N=42) were generally less effective with the progress of disease in majority when truncular LM lesions were combined with extratruncular LM lesions (9/13); N=1 combined with extratruncular LM lesions developed a transient deterioration of lymphedema following the excision of extratruncular LM lesions.

N=29 with primary lymphedema as solitary condition of LM belonging to HLM showed relatively benign course with minimum progress of the disease in majority (N= 25) (follow-up period-5.2 years); they maintained satisfactory response to the therapy with stable clinical status (21/25) and improved quality of life (23/25). N=4 with poor compliance out of N=29, who stopped the therapy showed a deteriorated lymphatic status (follow-up period-3.1 years) mostly following the recurrent sepsis episodes.

Conclusion: Primary lymphedema caused by truncular LM lesion behaves differently when it coexists with extratruncular LM as a component of HLM with generally poor responses. Its clinical management should coordinate with other component management of HLM.

P-9 Endovascular/Surgical Management Of Pelvic Congenital Vascular Malformation

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Background: A congenital vascular malformation (CVM) involving pelvic organ/structure named as pelvic CVM is relatively rare condition to become the cause of pelvic venous pathology, comparing to other pathologies. But the pelvic CVM accompanies significant risks of morbidity/complication depending upon its type, anatomical location and extent of hemodynamic involvement.

Retrospective analysis was made on the clinical experiences on pelvic CVM to assess the efficacy of the endovascular/surgical treatment.

Methods: Among 1203 patients with various CVMs, a total of 95 patients (mean age= 17.1 years, M=40, F=56) were identified for the internal and external pelvic CVMs in various locations and extents: AV malformation (AVM)=24, venous malformation (VM)=35, lymphatic malformation (LM)=22, and hemolymphatic malformation (HLM)=14.

N=39 out of N=95 were confirmed for external pelvic CVM involving hip, flank, buttock, perineum, and/or genitalia as independent lesion with minimum connection to intrapelvic structures. All the diagnosis and assessment of the extent/severity of the CVM were made based on various combinations of non- to less-invasive tests and seldom required additional invasive tests for the confirmation/differential diagnosis. Invasive study was generally reserved as a road map for the proper disposition. Among N=95 with pelvic CVMs, N=70 were indicated for the treatment with various indications; N=61 underwent endovascular therapy with various combinations of embolo/sclerotherapy, either as independent therapy (N=45) or as preoperative adjunctive therapy (N=16) to subsequent surgical therapy. N=9 underwent surgical therapy alone.

Results: N=45 with surgically inaccessble lesions received the endovascular therapy alone and achieved excellent control in majority (39/45) with no evidence of recurrence during the follow up period (3.7 years).

N=16 with surgically accessible lesions underwent preoperative adjunct embolo/sclerotherapy and achieved excellent results through subsequent surgical therapy in majority (12/16) with no recurrence (4.1 years).

N=10 with poor/unsatisfactory responses to the endovascular therapy showed recurrence and/or progression on N=5 lesions (follow-up 3.8 years).

All N=9 treated with surgical therapy alone had excellent result except one with recurrence within 2 years (4.0 years).

Conclusions: Pelvic CVM remains the most critical issue involved to the pelvic vascular pathology due to its complex embryologic and hemodynamic nature although overall incidences are low. Appropriate combination of open surgical therapy and endovascular treatment with various embolo/sclerotherapies can deliver successful outcome of the management of pelvic CVMs.

P-10 Clinical Experiences With Venolymphatic Malformation - Combined Form Of Congenital Vascular Malformation

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Background: The management of venolymphatic malformation (VLM), also known as Klippel-Trenaunay Syndrome, has been known for its complexity by multiple components: extratruncular and/or truncular venous malformations (VMs) as well as those of lymphatic malformations (LMs) in various combinations. A retrospective analysis was made on our experiences with VLM for the selection of treatment priority based on the degree/severity of involvement of each component of HLM.

Methods: Among N=108 VLM, N=66 who finished the management were selected for the analysis. Each vascular malformation component was assessed with duplex ultrasonography, whole-body--blood-pool-scintigraphy, transarterial-lung-perfusion-scintigraphy, MRI/CT, and/or lymphoscintigraphy.

Based on the severity/extent of each involved vascular malformation, the treatment indication/priority was given to the 'major' lesion with clinical significance.

Treatment indications included lymphatic leak, repeated lymphangitis/cellulitis, lymphedema, and chronic venous hypertension with intractable symptoms.

N=66 HLMs were confirmed for various combinations of N=46 truncular VM, N=24 extratruncular VM, N=32 extratruncular LM and N=42 truncular LM lesions.

Among N=46 truncular VMs, N=38 major lesions get the treatment priority (marginal vein=32, phlebectasia /aneurysm=6); N=27 underwent marginal vein resection; N=3 underwent deep vein reconstruction.

Among N=24 extratruncular VMs, N=6 out of N=16 major lesions underwent ethanol scerotherapy.

Among N=32 extratruncular LMs, N=10 underwent either ethanol/OK-432 sclerotherapy (6/10) or a surgical excision (4/10).

N=42 truncular LMs received complex decongestive therapy (CDT)/compression therapy for the control of lymphedema.

Follow-up assessment was made every 6 months.

Results: Among N=30 major truncular VMs which underwent marginal vein resection (N=27) or deep vein reconstruction (N=3), N=24 achieved complete relief of venous reflux/hypertension following marginal vein resection and maintained satisfactory results (average follow-up 3.2 years), and N=2 out of N=3 also kept excellent results following deep vein reconstruction in interim assessment (3.8 years).

All N=6 extratruncular VMs which underwent a total of 33 sessions of ethanol sclerotherapy achieved successful control of the lesions through interim follow-up period (3.6 years). .

N=4 out of N=6 extratruncular LMs which underwent ethanol/OK-432 sclerotherapy showed excellent response and maintained satisfactory results (3.3 years); all N=4 extratruncular LMs which were treated with surgical excision achieved excellent results with no evidence of recurrence (3.1 years).

Among N=42 truncular LMs which underwent chronic lymphedema care, the majority (30/42) with good compliance maintained satisfactory condition during the follow-up period (3.1 years), while other non-compliant N=12 deteriorated.

Conclusions: Appropriate assessment and identification of each 'major' vascular malformation lesion involved to VLM are mandated for the safe management of VLM with various components.

Clinical management can be improved by appropriate selection of the treatment priority for major lesions of each vascular malformation component involved to VLM.

P-11 Metalloproteinase Expression Is Increased In Venous Aneurysms

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Background: Venous aneurysms (VA) are rare with approximately 360 cases reported in the literature. Although VA have been described in association with the majority of the major central and peripheral veins, their pathogenesis is poorly understood. In this study, we report 7 patients with 8 venous aneurysms describe their clinical presentation and analyze venous tissue to determine the possible role of metalloproteinases (MMPs) in the pathogenesis of these lesions.

Materials and methods: Five micron paraffin embedded sections of venous tissue obtained at surgery from 5 venous aneurysms was examined by histology and immunohistochemistry and compared with normal saphenous vein (NSV) N=5 varicose veins (VV) N=5 and aneurysmal varicose vein (AVV) N=5. All specimens were stained with H&E, Movats pentachrome stains and with specific antibodies to CD68, MMP2, MMP9, and MMP13.

Results: The two patients with upper extremity venous aneurysms presented with local pain and were successfully treated by ligation and excision. The 4 patients with 5 popliteal aneurysms presented with lower extremity edema and leg pain. One patient presented with DVT and PE. Four popliteal aneurysms were successfully treated with venorrhaphy and 1 with a spiral saphenous vein bypass graft which subsequently occluded. The mesenteric VA was an incidental finding in a patient undergoing exploratory laparotomy. Histologically, VA and VV showed attenuation of the circumference of the venous wall and fragmentation of the elastic lamellae when compared to NSV. Whereas, in AVV, there was additional attenuation of part of the venous wall. The mesenteric aneurysm showed evidence of medial calcification and thrombus was present in one of the popliteal aneurysms. When compared to NSV, VV, and AVV, VA had significantly increased expression of MMP2 and MMP9 in endothelial cells, smooth muscle cells, macrophages and adventitial microvessels with only occasional cells staining with MMP13.Conclusions: Popliteal VA were the most common form of aneurysm seen in this study. Surgical therapy can be undertaken with resolution of symptoms in the majority of patients. When compared to NSV, VV, and AVV MMP2, MMP9 expression was significantly increased in venous aneurysms. This observation in conjunction with the significantly greater attenuation of the venous wall in venous aneurysmal lesions suggests a possible causal role for MMPs2 and 9 in their pathogenesis.

P-12 Local Anaesthesia With Adjuvant Relaxation Therapy For Varicose Vein Surgical Treatment

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Background: Relaxation therapy (RT) is commonly used during dentistry and plastic surgery procedures. Since 2004, we decided to use RT in association with local tumescent anesthesia (LTA) for varicose vein (VV) surgical treatment to avoid parenteral anaesthesia.

Methods: Non-selected consecutive patients operated on for VV were studied. Type of anaesthesia, pain (visual analog scale VAS) and quality of life (SF-12 questionnaire) were recorded and analized prospectively.

Results: A total of 92 patients (68 females, 24 males), age ranged from 23 to 78 years (mean age 54.9 y) have been operated on day surgery. We used adjuvant parenteral anaesthesia (APA) (benzodiazepines and morphinic) in association with LTA for 46 patients (group 1) and RT in association with LTA for 46 patients (Group 2). Demographics, CEAP class and surgical gestures were similar in group 1 and group 2. There were no significant differences on peroperative and postoperative pain VAS and quality of life (QoL) at D8 between group 1 and group 2. RT failed for ten patients (21.7%) for who postoperative pain VAS was higher (3.78 vs 2.78, $p<0,001$) and postoperative QoL was worse than in group 1 (SF-12 physical component 73.4 vs 93.5, $p<0.05$, SF-12 mental component 29.8 vs 55.3, $p<0.01$). RT succeeded for 36 patients with better results on SF-12 mental and physical components than in group 1 (55.3 vs 36.5 $p<0.01$, 93.5 vs 85.3 $p<0.05$).

Conclusions: RT and APA were equivalent on postoperative pain and QoL for the surgical treatment of VV under LTA. A preoperative selection and preparation of patients for RT might improve postoperative QoL.

P-13 Mid-Term Follow-Up After Pharmaco-Mechanical Thrombolysis For Lower Extremity Deep Venous Thrombosis

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Background: To provide follow-up evaluation of patients treated with pharmaco-mechanical thrombolysis for proximal lower extremity deep venous thrombosis (DVT).

Methods: Retrospective analysis of patients treated with mechanical thrombolysis of acute DVT between January 2001 and June 2006. Patients were brought back for evaluation. They underwent complete history and physical, Venous Clinical Severity Scoring (VCSS), Venous Segmental Disease Scoring (VSDS) and Venous Disability Scoring (VDS).

Results: Ten patients were available for evaluation, three patients had expired and seven patients could not be contacted. Average age was 38 years (19-58), there were seven women and three men. Nine patients had ileo-femoral-popliteal DVT, with two extending into the inferior vena cava, and one patient had isolated femoral-popliteal DVT. All patients were treated with both pharmacologic and mechanical thrombolysis; average treatment time was 22 hours. Average follow-up was 20 months (5-58 months). Eight of 10 patients had a Venous Disability Score (VDS max 3) of less than or equal to 1. Seven of 10 patients had a Venous Clinical Severity Score (VCSS max 30) of less than or equal to 5 and none of the patients had advanced clinical signs of venous insufficiency (C4-C6). In addition the Venous Segmental Disease Score (VSDS max 20) was less than 5 in 9 out of 10 patients. Some degree of reflux or obstruction was detected in all patients. All but one patient had partial obstruction and four had reflux. However, due to the small sample size it was not possible to associate the extent of the pathology with the clinical scores.

Conclusions: Thrombolysis of lower extremity DVT has been shown to have very good early clinical results but there is no long term data on its advantage over anticoagulation in the prevention of post-thrombotic syndrome (PTS). The patients that were followed up had minimal to mild disability at an average of 20 months. None of the patients had advanced clinical signs of venous insufficiency (C4-C6) with 8 of 10 patients having minimal or no symptoms. These data suggest that pharmaco-mechanical thrombolysis of lower extremity DVT may have a role in preventing the development of advanced PTS.

P-14 Intermittent Compression Of Leg Veins By Stiff Material During Ankle Movement

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Background: High pressure bandages, but not compression stockings are able to reduce ambulatory venous hypertension1 . The mechanism of action is not well understood.

To measure changes in venous diameter on deep leg veins by external compression and during venous pumping.

Methods: A blood pressure cuff containing an ultrasound permeable acetate window (Echocuff®, VNUS Medical, USA) on the calf is inflated to 40 and 60 mmHg in the sitting position. The pressure cuff is taken as a model for a stiff compression bandage with a defined pressure. The diameter of one tibial posterior vein (PTV) is measured by Duplex with the foot on the ground and after one maximal dorsiflexion. The pressure changes in the cuff during this manoeuvre are registered visually on the pressure manometer.

Up to now 5 healthy volunteers and 4 patients with deep reflux were investigated.

Results: Without ankle movement the pressure of 40 mmHg led to a minor reduction of the average PTV diameter (n.s.). Significant narrowing ($p<.05$) of the PTV was achieved by a pressure of 60 mm Hg with a complete occlusion in two cases. Dorsiflexion without compression induced a minor, non-significant reduction of the average diameter of the PTV. With a cuff pressure of 40 and 60 mmHg one dorsiflexion of the foot achieved a significant narrowing ($p<.001$) of the deep vein with a complete occlusion in 4 and 6 cases respectively.

By inflating the cuff to 40 and 60 mmHg, dorsiflexion led to a further pressure increase in the cuff to 53 and 77 mmHg in average simulating the working pressure of a stiff bandage during walking.

Conclusions: A pressure of 60 mmHg applied to the lower leg is able to narrow deep leg-veins in the sitting position. An intermittent occlusion could be observed during dorsiflexion of the foot, when the cuff pressure climbed to an average of 77 mmHg. This mechanism could act as a kind of "artificial valve" explaining the reduction of ambulatory venous hypertension by external compression even in patients with congenial absence of valves2 and may be a valid model for the improvement of deep venous hemodynamics by inelastic bandages in patients with venous insufficiency.

1 Partsch H . Improvement of venous pumping function in chronic venous insufficiency by compression depending on pressure and material. VASA 1984; 13:58-642 Partsch B, Mayer W, Partsch H. Improvement of ambulatory venous hypertension by narrowing of the femoral vein in congenital absence of venous valves. Phlebology 1992; 7: 101-104

P-15 Multicenter Evaluation Of The Diagnostic Criteria of The Corona Phlebectatica

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Background: The Corona Phlebectatica (CPh) was described by van der Molen in 1960 as the association of three items: dilated veins ("cup-shaped" dilatations), venules (red and blue telangiectases) and capillaries ("stasis spots") in the paraplantaris area.

CPh was used in the Widmer classification for the characterization of the first degree of chronic venous insufficiency (CVI 1)

A significant correlation was recently found between the CPh and the clinical severity of the CVD

However, the CPh is not taken into account in the CEAP classification, mainly because of the absence of practical (operational) diagnostic criteria.

The aim is to define and validate operational criteria for the clinical diagnosis of the CPh.

To evaluate where should be the best place of the limbs with CPh in the CEAP "C" classes.

Material and methods: A multicenter study was carried by 8 angiologists and a surgeon from France and Italy from May 1st to July 30th , 2006. 265 Patients (530 lower limbs) were included: of at least 18 years old, seeking medical help or advice for CVD, with visible dilated vessels of any kind in the submalleolar area at least on one leg. Both legs were assessed, with collection of the items of the CEAP "C" classes, check of the presence or absence of the 3 CPh items on each leg in the paraplantaris area. The external validity of each CPh item and of their combinations was assessed againt the CEAP "C" classes, using rank correlations.

Results: There were 46 men (17,3%). Mean age 58 years (interquartile 48-70) and 27 post-thrombotic syndromes. The repartition of the « C » classes was as follows : C0=6.0% C1=28.7% C2=41.9% C3=12.8% C4a= 5.1% C4b=2.6% C5=2.3% C6=0.6%

Cup shaped dilatations are poorly related to "C" classes, contrasting with significant correlations for red (r=0.17) and blue (r=0.32) telangiectases ($p<0.01$). However, these telangiectases are already highly prevalent In C1 and C2. As a single item, stasis spots give the best correlation with "C" classes of ascending severity (r=0.44; $p<.001$), and the association of stasis spots and red/blue telangiectases give the best prediction (r=0.49; $p<.001$).

Conclusion: The clinical definition of the Cph should be restricted to the association of stasis spots and red or blue telangiectases can be improved to acheive a better operational criteria for the diagnosis.

P-16. Superimposition of Compression Stockings (CS) With An Increased Stiffness In The Treatment Of Open Venous Ulcer

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Background: Compression is the basic treatment for non healing venous ulcer (grade A). There are no clear differences in effectiveness of different types of compression. The compliance in the elderly patients and the cost-effectiveness in patients with leg ulcer have not been well investigated.

Methods: . To measure the interface pressure on the medial aspect of the lower leg at the transition of the gastrocnemius muscle into the Achille's tendon (B1 point) of a new device (CS) in a supine position and after a dorsiflexion in healthy subjects

. To calculate the static stiffness index (SSI)

. To realize a wearing test to appreciate the tolerance of the CS

. To compare the healing rate after a 6 week treatment between the CS and 2 long stretch bandages (superimposition of 50 %)

The compression system, consisting 2 compression stockings (CS)* make up the device:

an understocking with no pressure on the foot and a 15-20 mmHg at the ankle and a very low degressive slope.

. an overstocking with an open foot and a 23- 25 mmHg at the ankle

At night, only the understocking is worn. A particular weaving of the stockings increase the friction between the two CS

The foot material of the understocking is build up as a put on device, which allows an easy put on of the second stocking. The interface pressure is measured at B1 point using a Kikuhime device with a small probe in 20 legs of 10 healthy subjects in a supine position and after a dorsiflexion. A wearing test is realized for 5 complete days in 10 legs of 5 healthy subjects A comparison of 2 groups of 30 patients with an open ulcer after a 6 weeks treatment is realized

Results: The mean of B1 pressure is 37 mmHg (SD+/- 1.2 mmHg) in a supine position and after a dorsiflexion 54.5 mm Hg (SD+/ 3 mmHg)

The mean SSI is 17.5 mmHg (SD : +/- 3 mm Hg) or 47%.

The wearing test shows the good tolerance of the CS

There is no significant difference of healing rate between the 2 devices of compression after 6 weeks

Conclusions: The stiffness of the compression system is higher than for compression stockings (long stretch) due to increased stiffness but with a warranty of pressure. The cost-effectiveness is better than a multilayer bandage due to shorter time for application and a higher number of persons being able to put on the device without help. The tolerance and the compliance were good.

P-17 Treatment of Chronic, Idiopathic Inferior Vena Cava Thrombosis With Endovascular Stents

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Background: Inferior Vena Cava (IVC) occlusion often leads to significant debilitation. This constellation of symptoms includes ascites, lower extremity edema and pain, back pain, and other sequelae of venous insufficiency in the lower extremities including the whole aspect of the postthrombotic syndrome. Due to the severe impairment caused by IVC syndrome, and because these symptoms are resistant to medical therapy, more aggressive treatment has been sought. Surgical management is associated with significant morbidity and many patients are poor operative candidates. For this reason, an endovascular therapeutic approach is compelling. The purpose of this study is to present our experience with twelve consecutive patients treated with endovascular stents for alleviation of symptoms secondary to IVC occlusion of any cause.

Methods: A computer search identified twelve patients who were treated for IVC occlusion with endovascular stents from November 2001 through March 2005. Of this group, eight were male and four were female. The mean age of these patients was 36.9 years (range 18-49). Ten of these twelve patients also had stents placed into adjacent iliofemoral venous segments. Chronic obstruction was defined as symptoms or radiological evidence of occlusion lasting for at least three months.

Results: Technical success was achieved in all 12 patients. 79 stents were used (range 2-9; median 6.6). All 12 patients were seen back for follow-up at least once (mean number of follow-up visits=2.67, range=1-5). The mean time between procedure and final follow-up was 501± 97 days (range=39-996). All recanalized IVC remained patent and notably, only one patient's IVC required intervention during the follow-up. Instead of artificially separating out the IVC as a separate data point, the actuarial patency is as follows. Four patients had reocclusion or narrowing of one or more of the stented iliac or femoral venous segments. One of these four patients required only angioplasty but the remaining patients underwent thrombolysis and/or additional stent placement. The mean initial Venous Clinical Severity Scores (VCSS) was 9.4 ± 1.4. At first follow-up, the VCSS decreased significantly to 5.3 ± 1.4 (p=0.001). At the most recent follow-up, the VCSS remained decreased at 5.6 ± 1.5 (p=0.002).

Conclusions: Recanalization of chronically thrombosed IVC and iliac veins is a safe procedure. We have observed significant clinical improvement following the procedure and the clinical and technical success appears to be lasting in the short follow up we have.

P-18 Ergonomics of Female Employment And Venous Disease

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Background: Describe the employment conditions of women with chronic venous disorders of the lower limbs in order to provide some information to occupational medicine.

Methods: Cross sectional study conducted by general practitioners who describe the first 3 women, between 18 and 65 years of age, who were employed and who presented with at least CEAP stage I venous disorders.

Results: Occupations held by these women indicate significant departures from the general population with an over representation of industrial workers (18.6% vs 11.9%) and an under representation of intermediate professions (12.5% vs 26.6%), (P<0.001). At work, 78.2% (n= 4 143) of the women remained standing for 6.2±2.4 hours per day and/or 52.3% (n=2 771) were seated for prolonged periods, 28.9% (n=1 503) were exposed to sources of high heat on the legs and 18.2% (n=947) wore garments that compressed the abdomen. Conditions favourable to the ergonomic evolution of their workstation are limited: only 9.2% (n=397) thought it is possible to reduce the time they spend standing; 10.1% (n=319) the time they spend sitting; 12.9% (n=189) their exposure to heat. Combating these factors appears difficult: 74.3% (n=3 883) state that they do not have sufficient breaks to rest their legs, 38.9% (n=2 053) that they do not have the opportunity to stretch their legs and 42.5% (n=1 395) that compression stockings would be permitted, but would be a hindrance in their work (85.6%, n=4 503). For 27% (n=1 424) of respondents, these problems significantly increase the arduousness of their work and 73.7% (n=3 870) think their working conditions have worsened their venous distress.

Conclusions: Women who consult for venous problems are employed in work which are characterized by unavoidable conditions constituting undeniable venous risk factors for venous disease and occupational medicine does not pay enough attention to the "ladies legs" at work.

P-19 Treatment of Chronic Major Deep Venous Thrombosis With Excimer Laser Thrombolysis

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Background: Deep venous thrombosis (DVT) is a significant health problem in the USA, with approximately 300,000 cases annually. Postthrombotic syndrome (PTS) can begin within months after thrombosis initially occurs, leading to disability with edema, dermatitis, pain, and ulceration. DVT treatment with anticoagulation, elevation, rest and elastic compression often fails to restore affected veins to normal function. When DVT is chronic (present three weeks or more), residual obstruction and reflux often remains, predisposing to PTS, especially with large truncal veins involved. Aggressive early measures are therefore now more commonly employed to lyse DVT, with percutaneous methods that include catheter-based devices for thrombus removal and/or dissolution. Here, we report a new method, excimer laser thrombolysis, utilized to reopen chronically obstructed major truncal veins in nine symptomatic patients.

Patients and methods: All patients exhibited edema, pain and compromise of limb function, eight had discoloration, and two could not rehabilitate after injuries due to limb size and heaviness. One had phlegmasia cerulea dolens and another venous stasis ulceration of the leg. Eight were men. The one woman was one month postpartum with undiagnosed thrombophilia, multiple prior episodes of DVT, and inadequate prophylaxis. Three upper and eight lower limbs were affected. All upper limb cases were patients who underwent chemotherapy for cancer (one each pancreatic, neuroendocrine, prostate), and two of these had ipsilateral implanted perfusion ports. Occlusions ranged in age from two months to 15 years. All patients underwent venography, after which the treatment objective was to lyse any acute thrombus component, and cross the chronic occlusion with one or more guidewires to allow balloon dilation and stenting, as needed.

Results: Venography demonstrated occlusion in all cases, including segments of three subclavian-innominate, seven iliac, and four femoral veins, and two inferior vena cavas. Two occluded segments were crossed by guidewires and lysed of acute thrombus by rheolytic technique but needed laser treatment to pass a balloon through chronic thrombus. Four segments were initially uncrossable by guide wires, requiring laser treatment to provide a path for the wires. Four, without acute components, were crossable by wires but utilized laser as a primary means of clot lysis for balloon passage. Two vessels were not successfully rechannelled, due to tortuous anatomy in one and dense scar in another. All others were successfully reopened with resulting large lumens

Conclusion: These early results demonstrate the feasibility and safety of excimer laser for reopening chronically occluded truncal DVT for relief of disabling symptoms.

P-20 Abdomino Pelvic Venous Assessment with Duplex Ultrasound (Transvaginal snd Transparietal)

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Background: To show the usefulness of the duplex ultrasound (transparietal and transvaginal) in the assessment of the abdomino-pelvic chronic venous insufficiency.

Methods: We have reviewed the findings of 726 patients examined with ultrasound due to a clinical picture of pelvic insufficiency for the last three years. We have compared the iliocavographic findings with those of the study with duplex ultrasound (DU).

Results: We have found three morphohaemodynamic patterns in the transvaginal DU:

Normal. Non dilated veins <5 mms without reflux.

Gonadal/Hypogastric Insufficiency. Flow of slow velocity with dilatation and stasis at rest and with reflux.

Derivative varicose veins. Flow of high spontaneous velocity, with morphological dilatation, without clearly noticeable reflux. It is present in patients with May Thurner syndrome, in thrombosis or anomalies of the iliocaval sector and in the Nutcracker phenomenon. In the transabdominal study the presence of asymmetry in calibre and flow of the iliac veins is correlated with May-Thurner syndrome or iliocaval thrombosis. In those cases the assessment of flow in the left hypogastric vein at rest presents an inverted flow. In the Nutcracker syndrome a ratio of velocity >5 is correlated with the presence of a significant pressure gradient in the invasive tests.

Conclusions: Duplex ultrasound distinguishes between the centripetal haemodynamic manifestations (venous obstruction, May Thurner, nutcracker) and the centrifugal ones (insufficiency of gonadal veins and/or hypogastric) favouring a diagnostic orientation (need or lack to perform iliocavographic assessment) and/or therapy (conservative management, embolization or endoprotheses).

P-21 Withdrawn

P-22 New Limb Compression Device Increases Skin, Muscle, and Bone Microvascular Flows

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Background: Compression therapy is often used to improve lower extremity wound healing. Various compression devices such as Unna's boot, compression stockings, and intermittent pneumatic compression increase muscle and skin blood flows about 10-30% (Bochmann et al. J Appl Physiol 99: 2337-2344, 2005; Morris et al. Arch Orthop Trauma Surg 125:348-354, 2005; Junger et al. Microcirculation 7: S3-S12, 2000). Improved technology to increase skin, muscle, and bone blood flow beyond the limits of current devices may enhance wound and possibly, bone fracture healing. We hypothesize that lower extremity compression with a simple and new device will increase skin, muscle, and bone microvascular flows to levels significantly higher than previously documented with other devices.

Methods: A simple compression device was placed around the lower extremity and inflated to 40 mmHg. A noninvasive photoplethysmography (PPG) probe was placed on the skin overlying the tibialis anterior muscle to measure both skin and muscle microvascular flows continuously (Zhang et al. Eur J Appl Physiol 84: 448-452, 2001). A second PPG probe was placed on the skin overlying the anterior surface of the tibial diaphysis to measure bone microvascular flow continuously. PPG peak-to-peak amplitudes were normalized to baseline (100%) and mean data were compared using paired t-tests.

Results: During compression with our new inflatable device, skin microvascular flow (mean ± SE) increased significantly to 168±31% ($p<0.05$ compared to 100% control, baseline value) and muscle microvascular flow increased significantly to 228±37% of the control, baseline value ($p<0.01$). Bone microvascular flow increased significantly to 184±19% during compression compared normal baseline ($p<0.005$). The device did not touch the skin when inflated except at the proximal seal, did not obstruct venous return, and was comfortable at compressions levels up to 40 mmHg.

Conclusions: Our new compression device for the lower extremity increases skin, muscle, and bone microvascular flows to levels greater than previously reported and thus, may enhance wound and bone-fracture healing. Although our results are counterintuitive, they may be explained by a myogenic response within skin, muscle, and bone. Bochmann and co-workers (2005) attribute a similar increase of arterial perfusion to a myogenic effect when the human forearm is compressed at pressures ranging from 13 to 23 mmHg. Morris and associates (2005) document a 10.6% increase in bone uptake of a radiopharmaceutical during 60 mmHg intermittent pneumatic compression of one-minute durations. In summary, our novel device raises microvascular flows in the leg to levels between 168 and 228% of normal at compression levels of 40 mmHg.

P-23 Experience in the Treatment of the Varicose Vein Using Endovenous Laser

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Background: The objective is to report the experience of Japanese varix ambulatory surgery center in the ablation of the varicose vein using endovenous laser.

Methods: This study includes 126 procedures in 116 extremities in 87 patients with incompetence of 101 greater saphenous veins (GSVs), 25 lesser saphenous veins (LSVs) treated with 980 nm Diode laser energy.

Saphenous veins were accessed with puncture with 18G needle or a mini-wound approach. A 400 or 600 micron bare tipped laser fiber was passed through a previously placed catheter in the target vein and positioned 2 cm below the sapheno-femoral junction (SFJ) or sapheno-popliteal junction (SPJ). The correct position of the fiber tip was confirmed by ultrasound or direct visualization of the red transluminant light beam of the laser fiber through the skin.

Tumescent anesthesia was delivered perivenously under ultrasound guidance. Diode laser energy at 980 nm was applied at 8 - 13 Watts in continuous mode to the saphenous vein.

The patients were instructed to restart normal activities the day after surgery with an elastic support stocking over an elastic bandage with compression pad for one day and an elastic support stocking for the following 14 days.Patients were evaluated clinically and with duplex ultrasound at one week, 1, 3, 6, 12 months and yearly thereafter to assess treatment efficacy and adverse reactions.

Results: The floating thrombus was found at SFJ in 78 years old man 3 days after the ablation. Thrombectomy with high ligation of SFJ was done additionally. Two patients presented early recanalization and one needed reintervention. Postoperative bruising was minimal and observed in almost all patients. One skin burn, one moderate pain, one parasthesia, some pigmentation and some phlebitis were also occurred. No deep vein thrombosis and no pulmonary embolism (PE). Successful occlusion, defined as vein occlusion with absence of flow was noted in 100 GSVs (99.0%), and 24 LSVs (96.0%). No intraoperative complications.

Conclusions: Endovenous laser treatment of varicose vein seems to offer a safe and valid alternative to conventional surgery. Excessive dilatation near the junction to deep vein is one of the contraindications because of the risk of PE. Continued evaluation with a larger numbers of patients and longer-term follow-up are needed to define the further role of endovenous techniques as treatment in patients with chronic venous insufficiency.

P-24 Comparison of a Combination Diode-Laser and Radiofrequency Device (Polaris;) And A Long-Pulsed 1064-Nm Nd:YAG Laser (Lyra) On Leg Telangiectases Histologic And Immunohistochemical Analysis

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Background: Several devices have been proposed for the treatment of leg telangiectases. For most of these devices the histologic changes induced in the dermis are not well characterized.

Methods: Three volunteers with Grade I-II red and blue 0.1-2.0mm leg telangiectases were treated with the Lyra (Laserscope, San Jose, CA)and the Polaris (Syneron Medical, Ltd, Yokneam, Israel) devices to the left and right legs, respectively. Two 3-mm punches were taken from either site seven days after treatment. The specimens were routinely processed and also stained for elastic tissue and collagen tissue.

Results: After treatment, specimens treated with both Polaris and Lyra showed intermediate-sized vessels with complete thrombosis and extensive hemorrhage in both dermis and subcutis. The overlying epidermis also evidenced damage characterized as focal full-thickness necrosis. Special stains confirmed the damage to the vessels. All other skin structures were morphologically unremarkable. An average of 50-75% clinical clearing occurred using both modalities of a single treatment session.

Conclusions: Our study confirms that both devices result in severe damage to small intermediate-size vessels thus explaining the reported clinical improvement of leg telangiectases. The expression of hsp70 in the dermal vessels and overlying epidermis is consistent with a direct thermal effect delivered by either device.

P-25 An Evaluation of Post-Sclerotherapy Laser Compression And Its Efficacy In The Treatment Of Leg Telangiectasias

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Background: The present study examined the role of compression in the treatment of Class I-II venulectasia utilizing the Pulsed Dye Laser.

Methods: Thirteen patients were treated with cosmetic leg veins size 0.5 to 1.0 mm in diameter with the Long-Pulse Tuneable Dye Laser (Vbeam®). A surface area of 5 cm2 of vessels was treated on bilaterally symmetric thighs. Class II compression (30-40mm Hg) hose was applied immediately following treatment to the left thigh only and were left on during waking hours for a period of 7 days. Post sclerotherapy results and complication profiles were analyzed and graded after one treatment session by two independent blinded observers.

Results: There was no significant difference in treatment clearing parameters or side effect profiles in the compressed vs. non-compressed or control ($p \leq 0.05$) in terms of post treatment edema, pigmentation and matting.

Conclusions: Preliminary studies suggest that compression does not alter the therapeutic efficacy or complication profile of Pulsed Dye Laser treatment of Class I-II venulectasia. Further studies on an expanded patient population are in progress.

P-26 First Experience of Application of Laser Coagulation For Venous Malformations

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Background: Endovasal laser coagulation is a prospective method of thermal obliteration of low extremities veins but there is practically no experience of its application for treatment of angioplasias in the world. In our view it is an extremely important trend. The aim of the study was to estimate potentialities of endovasal laser coagulation in patients for venous dysplasias.

Methods: Domestic compact highly energetic diode laser generating ray 1030 nm in peak range of haemoglobin and carboxihaemoglobin absorption was used for endovasal laser coagulation. Method was used as a stage of combined surgical intervention in 3 patients with venous-cavernous angiomatosis of low extremities for elimination of embryonic veins in area of thing and shin lateral surfaces. Preoperatively thorough US examination of angioarchitectonics and marking of dysplastic veins for endovasal laser coagulation were done. In one case the method was used on embryonic vein (influence rate -18 w, influence extension -25 cm) along upper third of a thing and iliac area (maximal diameter not over 15 mm) after resection of thing angiomatosis, ligation of atypical perforated veins and plastics of wound surfaces with local tissues. In two cases the method was used on shin dysplastic veins (not over 8 mm in diameter, influence extension - 10-15 cm, influence rate - 23-25 w). Skin was protected by the method of maintaining of hydraulic pillow. To control the results Dupplex scanning was performed in 7 days, one and six months after operation.

Results: There were no complications after endovasal laser coagulation. Application of the method on dysplastic veins of shin demonstrated their complete obliteration (follow-up time - 5-6 months). In the first case recanalization of embryonic vein along upper third of a thing was observed in a month. It occurred through insufficient influence rate of laser radiation.

Conclusions: Taking into account our short experience, one can assume that in maintenance of definite conditions the application of endovasal laser coagulation is able to diminish significantly intraoperative traumatization and to achieve obliteration of pathological veins difficult to approach. Best results in such cases can be achieved with application of highly energetic lasers (20-25 w) with wave length over 1000 nm. For more objective assessment of long-term results development of technical characteristics of laser radiation with further follow-up of such patients is necessary.

P-27 Radiofrequency Ablation of Incompetent Perforator Veins

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Background: Radiofrequency ablation (RFA) is a new, minimally invasive percutaneous endovenous technique for ablation of incompetent perforator veins of the lower extremity. It offers the advantage of being able to be performed under local anesthesia. To evaluate the early results of this procedure, we reviewed perforator closure success rates, healing of venous stasis ulcers and complications.

Methods: Between July 2005, and June 2006, endovenous perforator ablation was performed on 32 perforator veins in 22 limbs of 18 patients. Closure was performed using the Vnus ClosureRFS Stylet and the Model RFG2 advanced radiofrequency generator using ultrasound guidance. All patients underwent duplex scanning post procedure to confirm perforator closure. Postoperative surveillance was repeated during the first week post-procedure.

Results: According to the CEAP classification, 10 limbs were C2-C4, and 12 were C5-C6. 8 limbs of 6 patients had active ulcers. Deep venous reflux was noted in 11 limbs of 6 patients. 18 patients underwent prior or simultaneous RFA of the greater saphenous vein, 3 patients the lesser saphenous vein. At completion of the procedure, occlusion of the perforator veins was confirmed in 100% of veins treated. At one week, however, failure of ablation was noted in 22% of veins (5 patients) treated. 2 patients underwent successful re-treatment by RFA. No patient had a DVT noted on the post-procedure duplex. No peri-operative mortality or complications occurred. All patients with active ulcers healed post perforator closure. However, 2 patients (25%) recurred during the first 6 mos. post procedure with 1 patient healing by 8 months. Both patients with recurrent ulcers had prior DVT.

Conclusions: Despite ablation noted in 100% of patients immediately post procedure, at one week, only 78% of veins treated remained closed. All patients with active ulcers healed. RFA of perforators appears to be safe and effective in the management of venous disease. Further follow-up is warranted to determine the hemodynamic durability and long-term ulcer recurrence rate.

P-28 Impaired Cerebral Venous Haemodynamics In Multiple Sclerosis Patients

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Background: in multiple sclerosis (MS), a chronic inflammatory neurodegenerative disease of unknown origin, MRI venography and dissection demonstrated a central vein oriented on the long axis of the inflammatory cerebral plaque. The latter corresponds to one of the major segments of the internal cerebral venous system, almost constantly an epiventricular vein. Since MRI is limited in giving haemodynamic informations, we investigated cerebral venous return by the means of combined trans and extra-cranial color-Doppler.

Methods: after a period of learning curve in order to adjust a reliable and reproducible color Doppler methodology, we investigated 20 consecutive MS patients and 30 controls, matched for age and gender. The combined trans and extra-cranial sequence assessed the flow direction in different postural conditions (sitting and supine), as well as in different respiratory phases (inspiration, expiration, Valsalva, Valsalva release). We studied the following venous segments: peri-ventricular veins with possible assessment of the Galen and Rosenthal vein, ophthalmic vein, cavernous sinus, transverse sinus, confluens sinus, perivertebral plexus, and internal jugular vein. In addition, in each case we measured the diameter of the III ventricle.

Results: diameter of the III ventricle was significantly increased in MS (5.3m0.4 vs 4.1m0.2, p <0.009). Reflux in at least one of the assessed intracranial veins was detected in 100% of MS vs. 0% cases of the control group (P<0.001), in one or more of the experimental conditions used for evaluating the action of the respiratory pump on cerebral venous return. Therefore, the physiologic drainage route, mainly via the vertebral plexus in sitting and, in contrast, via the internal jugular veins in supine position, was reverted in 80% of the MS cases vs. 0% of controls (P< 0.001). Finally, in at least one of the above reported postural and respiratory phases, reflux was repetitively detected in the jugular vein of 100%of MS patients (10% in controls, P< 0.001).

Conclusions: The combination of trans-cranial and extra-cranial triplex assessment of the venous system, demonstrates significant alterations of the cerebral venous drainage in MS patients, as compared to controls. The role of cerebro-spinal venous insufficiency in the complex MS pathogenesis warrants further multi-disciplinary studies.

P-29 Hemodynamic Improvement As Assessed By Air Phlethysmography After Saphenous Preservation And Phlebectomy

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Background: To assess changes in venous hemodynamics after preservation of saphenous vein and phlebectomy.

Methods: Fifty consecutive lower limbs (LL) were studied before and after phlebectomy without Saphenous ablation.

Hemodynamics were assessed with air-plethysmography using Venous Volume (VV) and Venous Flow Index (VFI) as primary indicators.

Two groups were defined: group 1 (25 LL) with reflux only in tributary veins and group 2 (25 LL) with reflux in both tributary veins and the saphenous vein.

Results:

Group 1	Before phlebectomy	After phlebectomy	P
VV	42 ml	30 ml	<.05
VFI	0.72 ml/s	0.53 ml/s	<.05

Group 2	Before phlebectomy	After phlebectomy	P
VV	92 ml	80 ml	<.05
VFI	1.88 ml/s	1.42 ml/s	<.05

Conclusions: Pin treating varicose veins, phlebectomy with preservation of the saphenous vein significantly improves lower limb hemodynamics even in the presence of saphenous incompetence.

P-30 Predicting Superficial Venous Incompetence With Strain Gauze Plethysmography

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Background: Tourniquet application to study venous refilling rate has been used to differentiate deep from superficial incompetence clinically. Plethysmography techniques have been used to determine venous refilling abnormalities.

Hypothesis: Strain Gauge Plethysmography with and without tourniquet application can be used to distinguish between superficial and deep venous incompetence.

Methods: We conducted a prospective study using Strain Gauge Plethysmography to assess the severity of venous incompetence in patients referred to vascular laboratory. Mean age 55.8 years, 63% of patients were women. Referral indications included varicose veins, edema, venous stasis, post-thrombotic syndrome and presence of venous ulcer. Patients with refill rates of 8.0 ml/100ml/mi tissue were tested with and without tourniquets place at the distal thigh and mid-calf. Venous insufficiency by duplex ultrasound was performed as clinically indicated in a subset of the patients. 80 limbs were studied in 57 patients. Complete duplex was available on 28 patients, 35 limbs and are presented here.

Results:

	SVI (n=25) baseline	SVI withtourniquet	DVI (n=10) baseline	DVI withtourniquet
Refill Rate	13.58±4.74	5.09±3.68*	21.40±10.4	8.21±5.23*
Class	2.04±.61	0.32±0.75*	2.50±0.85	1.00±0.94*†

*p<0.05 vs. baseline values within group †p<0.05 vs. SVI with tourniquet

Nearly all patients with superficial vein incompetence only had normalization of the refill rate (<6.00 ml/min/100 gram tissue). Patients with mixed venous incompetence (both deep and superficial) and DVI only also had improvement but did not return to normal.

Conclusions: Strain Gauge Plethysmography with and without tourniquet application is a simple study requiring short study time. The hypothesis that refilling rates in SVI and not DVI will correct with tourniquet application was not supported. However the small numbers of patients with DVI alone are a severe limitation of the data set. Additional data are needed to fully address the hypothesis.

P-31 Extrahepatic Porto-Mesenteric Venous Aneurysm: Operative Intervention And Outcomes

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Background: Primary extrahepatic porto-mesenteric venous aneurysms are rare and their etiology and pathogenesis are poorly understood. The optimal management of these aneurysms is unknown. We review the outcome of 3 patients treated surgically

Methods: The records of adult patients with extrahepatic porto-mesenteric venous aneurysms between 1990 and 2006 were reviewed. The clinical presentation, operative management and the early and late outcome of these subjects were analyzed. Patients were followed for a minimum of 30 days and until their last contact with the institution.

Results: All 3 patients were female, with ages of 29, 42 and 63 years at time of diagnosis. Time from diagnosis to operation ranged from 2 months to 7 years. All aneurysms were greater than 5 cm, 2 involved the portal vein and 1 involved the SMV and portal vein. None had portal hypertension, arterioportal fistula, connective tissue disorder or stigmata of chronic liver disease. Two patients were symptomatic, 1 from thrombosis of the aneurysm, the other with abdominal discomfort and early satiety. The third patient was asymptomatic but the aneurysm enlarged by 2 cm in 1 year. All patients were evaluated by Duplex ultrasound and CT scans preoperatively.

The aneurysms were resected in all 3 patients and reconstructed with autogenous interposition grafts in 2 (left renal vein, left femoral vein) and a 20 mm externally supported PTFE graft. The latter patient required a distal pancreatectomy, splenectomy and removal of thrombus from the intrahepatic portal vein branches. All patients were anticoagulated with warfarin.

Pathological analysis revealed medial fibromuscular dysplasia in 1 patient and no specific etiology in the others.

There were no deaths. One patient required reoperation for bleeding. The patient whose femoral vein was harvested developed mild thigh edema.

Postoperative follow up ranged from 33 days to 11 years. Follow up imaging studies confirmed graft patency in 2 of the 3 patients. The patient with the prosthetic graft became pregnant, stopped warfarin and thrombosed the graft 6 years postoperatively. She did not develop bowel ischemia or liver dysfunction, she failed lytic therapy and no further intervention was undertaken. The autogenous grafts remain patent.

Conclusions: Operative intervention for porto-mesenteric venous aneurysm can be done safely and should be considered in good risk patients with symptoms, large aneurysms (> 5cm) or rapid growth. Venous conduits include internal jugular, left renal, spiraled saphenous vein and deep femoral vein. Life long anticoagulation is recommended. Autogenous grafts may be preferable.

P-32 Do Flow Dynamics and Histocytologic Reaction Impact On Stenting And Bypass In Venous Revascularization?

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Purpose: To determine whether flow dynamics and histocytologic reaction influence the results of venous stenting or bypass.

Materials & Methods: (1) Canine models were used to compare the efficacy and durability of direct versus the traditional AVF in venous by pass using PTFE graft and (2) to determine whether the hemodynamic of blood flow influence the long term success of venous bypass. (3) Information derived from the canine studies was applied to human. (4) TEM was used to characterize the histocytomorphology of the lumenal cell coverage of the stented and nonstented portions of the same segment of human artery and vein.

Results: (1) Direct AVF was preferred to the traditional AVF in the nonexpansive PTFE graft in venous bypass when the ostium on the PTFE graft was 5x7.5mm, 20mm from the heel of the PTFE graft anastomosis to the donor vein and the ostium of the recipient vein was 5x20mm. (2) Canine study revealed ~15% was the critical pressure gradient that warranted revascularization. Results from human application depicted below supported this tenet. (3) The lumenal cells of the stented human artery and vein were myofilament ladened modified myofibroblasts functioning as lumenal cells instead of endothelia that were found in the nonstented portions of the same segment of the vessel.

Conclusion: Blood flow dynamic and histocytologic reaction played a vital and important role in stenting and bypass in venous revascularization. Direct AVF and ≥15 % pressure gradient, created by the obstruction, improved venous bypass patency and longevity. Myofibroblast functioned as lumenal cell was predisposed to intimal hyperplasia genesis. Contrary to the monolayer endothelium, myoblast or myofibroblast is a multilayer cell by nature. Control and inhibition of myofibroblast proliferation and matrix production plus adhering to the pressure gradient criteria are needed to enhance stented vessel patency.

P-33 Evaluation of A Venous Symptoms Diagnostic Score In Primary Care Medicine

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Background: We previously developed a diagnostic score able to differentiate leg symptoms of venous origin from other causes in different groups of selected patients with leg symptoms associated with already diagnosed venous, arterial, neurological or rheumatologic diseases. The aim of this study was to evaluate the diagnostic efficiency of this score in primary care patients seaking medical advice for undiagnosed leg symptoms.

Methods: From May to September 2005, 84 French general practitioners included 562 patients complaining with undiagnosed legs symptoms. The four items of the score (1) sensation of heaviness or swelling, (2) associated with itching, restlessness or phlebalgia, (3) increased by warm (or improved by cold) environment, (4) not worsened during walking, were obtained from the patient through undirected medical interview or auto-questionnaire in a random fashion. The conclusions of the score were compared to the final diagnosis of the GP.

Results: Four groups were obtained through the diagnostic classification of the GP: venous patients (V=61%), non venous patients (N=5%), patients with associated venous and non venous leg disorders (A=18%) and patients whose diagnosis remained unclear (U=16%). The sensitivity of the diagnostic score (with a threshold level >2) was 84% in group V, 72% in group A, and 77% in group U, and 24% in group N. The diagnostic efficiency of the score was better when used as an auto-questionnaire compared to the undirected medical interview.

Conclusion: The diagnostic score is less efficient in "real life" conditions than in the previous works performed in artificial settings, but remains probably a useful diagnostic tool for the primary care physician in the evaluation of patients seeking medical help for undiagnosed leg symptoms. However, this remains to be evaluated in a randomized utility study.

P-34 Duplex Ultrasound - Guided Surgery For Small Saphenous Vein Incompetence

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Background: The intimate and variable neurovascular relationships in the popliteal (POP) fossa are major factors contributing to surgeons' generally nihilistic attitude toward the treatment of SSV reflux and the poorer clinical outcomes -(50% persistence of SSV-POP reflux immediately post-op; Mitchell AVF presentation 2006) when intervention is undertaken.

Methods: To assess how peri-operative duplex ultrasound (DUS) influenced surgical treatment of SSV incompetence by exact surgical site selection (limited mini-incision) through pre-surgery recognition of anatomical abnormalities, and to determine the effectiveness of this approach on the ablation of SSV reflux. Between 2003 and 2006, 21 patients (22 limbs) underwent peri-op DUS followed by ligation and limited stripping of the SSV alone and concomitant stab phlebectomies of its tributaries. These patients underwent subsequent clinical evaluation and post-op DUS.

Results: PRE-OP: Based on duplex findings and clinical history 18 limbs had primary venous insufficiency and 4 secondary disease. All of the SSVs had duplex documented reflux and none had evidence of prior thrombosis. One (5%) limb was classified as CEAP C2, fourteen (64%) limbs C3, four C4, two C5 and one C6. In all cases, venous disease in the remainder of the index limb was based on reflux (Pr). One-half of the limbs had multi-level deep venous reflux and 4 had isolated popliteal deep venous reflux. None of the limbs had evidence of obstructive pathophysiology. In addition to a termination site of the SSV with the popliteal vein which was located greater than 5 cm above the knee joint in 8(36%) limbs, anatomical variations that affected the surgery were demonstrated on periop DUS in 7/22 of the limbs, which included: a dominant inter-saphenous vein (n=4), a common gastrocnemius/ SSV junction with the popliteal vein (n= 2) and a venous aneurysm (n=1).

POST-OP[mean follow-up=19.6 months]: No injuries of the Sural nerve were encountered, while DUS revealed no limbs with DVT. Sapheno-popliteal vein reflux was eliminated in all cases and there was no reflux detected in the SSV remnant, gastrocnemius, or intersaphenous veins. Two limbs required late treatment of SSV branch varicosities.

Conclusions: Peri-operative DUS-guided treatment of SSV incompetence permits an accurate identification of not only the SSV termination, but also associated anatomic variations, which can contribute to better clinical results (less SSV-POP junction recurrence) and a lower neurovascular morbidity.

P-35 Does Endovenous Laser Treatment of The Saphenous Veins Correct Venous Insufficiency In Patients With Combined Superficial And Deep Venous Reflux?

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Background: EVLT is commonly performed to correct superficial reflux in patients with symptomatic chronic venous insufficiency (CVI). In patients with both superficial and deep insufficiency, it is not well defined whether ablation of the superficial system is beneficial. We studied patients with combined disease before and after treatment with EVLT to determine whether this strategy resulted in improvement in CVI by hemodynamic testing.

Methods: Patients with symptomatic lower extremity venous disease were studied with duplex ultrasound and a rapid inflation/deflation cuff to define abnormal venous reflux in the standing position. The long and short saphenous veins, the popliteal, femoral and common femoral veins were tested with a reflux time of greater than 0.5 seconds considered abnormal. The maximum velocity of reflux was determined from duplex reflux tracings obtained after cuff deflation. Patients with both superficial and deep venous insufficiency were treated with EVLT of the greater and/or lesser saphenous vein to completely ablate the superficial system. Patients were studied pre and post operatively with air plethysmography to determine changes in the venous filling index (VFI) after correction of the superficial reflux.

Results: Forty-nine patients undergoing EVLT were identified with both deep and superficial reflux. The majority of patients were in CEAP clinical class 3 (68%) with the remainder in classes 4-6 (32%). VFI for all limbs improved from 6.4±4.0 cc/sec at baseline to 2.7±2.3 cc/sec after EVLT ($P<0.001$). When reflux in the deep system was isolated to the common femoral vein (CFV) the VFI improved after EVLT from 6.1 + 3.7 cc/sec to 1.9 + 1.1 cc/sec ($p<0.01$). Limbs with superficial and popliteal reflux improved from 6.2 to 3.5 cc/sec after EVLT ($p<0.01$). In patients with superficial and deep venous reflux in both the CFV and popliteal vein, VFI improved from 6.7 to 3.4 cc/sec ($p<0.01$). Improvement after EVLT in patients with CFV reflux was significantly better than in patients with popliteal or multilevel deep venous reflux ($p<0.02$). In the popliteal and multilevel deep venous disease groups, a maximum pre-operative reflux velocity > 20 cm/sec correlated with a higher post-operative VFI (6.6 cc/sec, n= 7) when compared to pre-operative maximum velocity less than 20 cm/sec (2.3cc/sec, n= 18), $p<0.05$.

Conclusion: In patients with combined superficial and deep venous reflux, EVLT of the saphenous system results in significant hemodynamic improvement in most patients. Patients with CFV and superficial disease experienced a higher chance of complete correction of hemodynamic abnormalities. Patients with popliteal or popliteal and common femoral reflux were more likely to improve if the maximum pre-operative reflux velocity was less than 20 cm/second.

P-36 Endovenous Laser Small Saphenous Vein Ablation: Reasons, Risks, Results

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Background: Incompetency of non-great saphenous veins, including the small saphenous vein (SSV), is an underdiagnosed cause of symptomatic varicose veins and venous ulceration. This study was designed to determine if endovenous laser ablation is a safe and effective treatment of SSV insufficiency. In addition, the unique technical aspects of ablation are elucidated with the knowledge and perspective that SSV anatomy and the surrounding vascular and nerve structures differ from the greater saphenous vein (GSV) and its surrounding structures.

Methods: A retrospective chart review was performed of 50 limbs with SSV incompetence (flow reversal >0.5 seconds). Utilizing an 810 nm diode laser and 12W of power in the continuous mode, energy delivery of 60-80 joules/centimeter of vein treated was achieved. Insertion site location was above the inferior border of the gastronemius muscle to minimize sural nerve injury. To obviate the risk of DVT and posterior tibial nerve injury, the target position selected for the most proximal treatment was at the point where the SSV angulated below the fascia towards the saphenopopliteal junction (SPJ). Generous perivenous tumescent infusion separated the vein from the sural nerve and overlying skin to prevent damage to these structures. Clinical assessment and/or duplex imaging was performed at one week and up to six months postoperatively.

Results: CEAP classification consisted of C2, 38 limbs and C6, 12 limbs. Mean vein diameter was 6.9 mm (range 3-11 mm). The average distance between the endovenous ablation starting point and the SPJ was 2.28 cm (range 1.5-3.5 cm). The average treatment time for SSV ablation alone was 23 minutes (range 13-44). Complete ablation of the SSV was confirmed by completion duplex ultrasound in all cases. One patient developed recanalization in 14 months post procedure. Ulcer healing occurred in all patients by 6 weeks. All symptomatic patients reported improvement. No patient had DVT, significant bruising, or clinical signs of sural nerve or posterior tibial nerve injury.

Conclusions: To minimize risks and maximize results, we propose 1) an insertion site above the inferior border of the gastronemius muscle, 2) instituting treatment at least 2 cm from the SPJ, and 3) a 2 cm perivenous radius of tumescent solution. These three critical technical steps: insertion site location, laser distance from SPJ, and directed perivenous tumescent infusion, minimize DVT, nerve injury, and skin trauma. The unique anatomy of the SSV and surrounding vascular and nerve structures requires a different technique than that employed for GSV ablation. Being aware of these facts allows excellent symptomatic improvement and ulcer healing rates with minimal risks when SSV ablation is performed.

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AMERICAN VENOUS FORUM

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Morrison, Nick

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CALIFORNIA

Agoura
Barker, Wiley F

Baldwin Park
Murray, James D

Beverly Hills
Gradman, Wayne S

Dana Point
Cannon, Jack A

Fresno
Elmore, Frederick A

Irvine
Kanter, Alan

La Jolla
Bergan, John J
DeLaria, Giacomo A
Fronek, Arnost
O'Byrne, Margaret M.
Schmid-Schonbein, Prof G. W.
Pascarella, Luigi

Loma Linda
Hasaniya, Nahidh W.

Newport Beach
Arata, Michael

Orange
Flanigan, D. Preston

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Cerveira, Joaquim J

Portola Valley
Fogarty, Thomas J

Rancho Palos Verdes
Donayre, Carlos E

Roseville
Monahan, Daniel L.

San Francisco
Denbo, Howard E
Long, John B
Messina, Louis M

San Mateo
Harris, Edmund J

Santa Barbara
McKittrick, James E

Santa Monica
Samuels, Peter B

Seal Beach
Gaspar, Max R

Stanford
Harris, E. John

Torrance
Duffy, David M

Walnut Creek
Isaacs, Mark

COLORADO

Aurora
Hammond, Sharon L

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Kaufman, Steven L.

Palisade
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CONNECTICUT

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Tampa
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Maharaj, Dale A

THE AMERICAN VENOUS FORUM

BY-LAWS

ARTICLE I - NAME

The name of this organization shall be **THE AMERICAN VENOUS FORUM.**

ARTICLE II - OBJECTIVES

The objectives of this organization shall be (1) to promote the study of or research in venous diseases; (2) to contribute to the active continuing education of its membership; (3) to hold annual meetings; and (4) to encourage the development and dissemination of knowledge regarding venous disease.

Notwithstanding the foregoing, (a) no part of the organization's net earnings or assets shall inure to the benefit of any member, officer, or other person, except that the organization shall be authorized and empowered to pay reasonable compensation for services rendered and to make other payments and distributions in furtherance of the purposes set forth above, and (b) the organization shall not carry on any activity not permitted to an organization exempt from Federal income tax under Section 501 (c) (6) of the Internal Revenue Code of 1954, as amended (the "Code") or the corresponding provision of any future United States revenue statute.

ARTICLE III - MEMBERSHIP

Membership in the Venous Forum may include physicians certified by one of the American Certifying Boards or by one of the Royal Colleges who have demonstrated an interest in and contribution to the management of venous problems and who are in good standing in their State or Provincial Medical Societies in the United States or Canada. From time to time, the Membership Committee may recommend membership to scientists who are not M.D.'s and/or do not possess a doctoral degree but have demonstrated a major commitment to issues of venous disease.

1. Active members: as identified above and limited to 300 active members. Active members shall pay dues and have full voting privileges. Attendance at the Annual Scientific Program shall be expected of all Active members. A member may be dropped from the Forum by action of the Executive Committee after three (3) consecutive years of unexcused absence from the Annual Meeting.

2. Senior members: included will be active members who have reached the age of 65 years; or members for whom, for reasons of health or other just cause, the Executive Committee recommends this category. They shall not be bound by attendance or dues paying requirements.

3. Honorary members: individuals who have made outstanding contributions in the field of vascular science. They shall not pay dues nor shall they have voting privileges.

4. International Members: The organization, from time to time, may elect physicians or surgeons from outside the United States or Canada who meet the equivalent qualifications as outlined in Paragraph 1 of Article III. The election process shall be the same as that for candidates as outlined in Article IV. An International Member must have American Board of Medical Specialties recognition or its equivalent. An International Member must pay dues and attend two of five Annual Meetings.

5. Associate Members: Individuals who have an interest in and have made a contribution to the management of venous problems, but who do not necessarily hold a doctoral degree.

Associate members must meet all other membership requirements as outlined in Article III. Associate members will pay membership dues determined by the Executive Committee. Associate members are not eligible to vote or hold elective office. An Associate member representative shall be appointed to sit on the Executive Committee as a nonvoting member.

6. Candidate Members: Physicians who are currently serving in a capacity of a resident or fellow in a post-doctoral training programs and have demonstrated interest in and have made a contribution to the management of venous disease. Candidate members are not eligible to vote or hold elective office and are required to pay membership dues as set by the Executive Committee. A Candidate representative shall be appointed to sit on the Executive Committee as a non-voting member.

ARTICLE IV - ELECTION OF MEMBERS

1. The process of election of Active members of the Society shall be as follows:

    a. Application forms for membership shall be available only by request of a member. Applications must be accompanied by letters from the sponsor and two endorsers all of whom should be members of the American Venous Forum.

    b. Application forms presenting the curricula vitae of the candidates and signed by them shall be in the hands of the Secretary at least four (4) months before the executive session at which it is desired that the candidate be considered for election.

    c. The Secretary shall send to the Chairman of the Membership Committee these applications with all pertinent data at least two (2) months before the annual meeting. The Membership Committee shall review the professional qualifications of the candidates.

    d. The Chairman of the Membership Committee shall meet with the Executive Committee of the Venous Forum for the purpose of presenting the recommendations of the Membership Committee.

    e. The names of the candidates recommended by the Executive Committee for election shall be submitted by the Secretary to the membership in his annual report.

    f. Election to membership shall be by secret ballot, by a three-fourths affirmative vote of those members present and voting at the annual executive session.

    g. A candidate who fails of election at one meeting may be presented to the membership at the next two (2) annual meeting of the Forum. The name of a candidate who fails of election a third time shall be dropped from the list of applications for membership. Such candidate's application may be resubmitted after an interval of two (2) years.

    h. New Member Attendance: Candidates, following their election to membership at the Annual Business Meeting of the organization, will be required to attend the next Annual Meeting of the Forum to be formally introduced to the membership.

2. The process of election of Honorary members of the Forum shall be as follows:

    a. Any Active or Senior member may nominate an individual for Honorary membership. The name and a brief description of the accomplishments of the nominee must be submitted to the Secretary at least four months before the Executive Session at which it is desired the nominee be considered for honorary membership. The Secretary shall distribute this information to the Honorary Membership Committee consisting of

three (3) immediate past Presidents of the Executive Committee at least two months before the annual meeting.

b. The Honorary Membership Committee shall make its recommendations to the Executive Committee.

c. Following its deliberation, the Executive Committee may recommend that the candidate's name be submitted by the Secretary to the membership in the annual report at the Annual Business Meeting of the Forum.

d. Election to membership shall be by secret ballot by three-fourths affirmative vote of the membership present and voting at the Annual Business Meeting.

ARTICLE V - EXECUTIVE COMMITTEE

1. The Executive Committee of the Forum shall direct its activities.

2. The Executive Committee shall be composed of the President, the President-Elect, the Secretary, the Treasurer, the Recorder, three Councilors and the immediate three Past-Presidents and the Archivist.

3. The Executive Committee shall be the governing body of the Forum and shall have full power to manage and act on all affairs on the Forum except as follows:

   a. It may not, without the approval of the Forum membership at an annual executive session, alter the initiation fees or annual dues, or levy any assessment against the membership, except that it may, in individual cases, waive annual dues or assessments.

   b. It may not amend the By-Laws.

   c. It may neither elect new members nor alter the status of existing members, other than to apply the provisions of Article XI.

4. The President of the Forum shall serve as Chairman of the Executive Committee and the Secretary of the Forum as its Secretary.

5. Meeting of the Executive Committee shall be held at the call of the President of the Forum and each member of the Executive Committee must be notified in writing of the time and place of each such meeting no less than ten (10) days prior to the meeting.

6. The annual meeting of the Executive Committee shall precede the executive session of the Forum membership.

7. A majority of the voting members of the Executive Committee shall constitute a quorum for the transaction of business.

8. The act of a majority of members of the Executive Committee present at a duly called meeting at which a quorum is present shall be the act of the Executive Committee unless the act of a greater number is required by applicable statute or these By-Laws.

9. Any action which is required by law of the Articles of Incorporation or these By-laws to be taken at a meeting of the Executive Committee, or any other action which may be taken without a meeting if a consent in writing, setting forth the action taken shall be signed by all of the members of the Executive Committee entitled to vote with respect to the subject matter thereof. Any such consent signed by all of the members of the Executive Committee shall have the same force and effect as a unanimous vote at a duly called and constituted meeting of the Executive Committee.

10. American Venous Forum Foundation: At its Annual Meeting, the Executive Committee shall elect up to eight (8) individuals to serve as members of the Board of Directors of the American Venous Forum Foundation. These eight individuals shall include the Secretary, Treasurer, and Immediate Past President of the American Venous Forum. Each elected Director, other than the Secretary and Treasurer, shall serve a staggered term of up to three (3) years and shall be eligible for an additional reappointment of one (1) three-year term for a maximum of six (6) years of service to the Board.

ARTICLE VI - COUNCILORS AND OFFICERS

1. The officers of the Forum shall be a President, a President-elect, a Secretary, a Treasurer and a Recorder, all to be elected as provided in the By-Laws. Said officers shall serve ex officio as voting members of the Executive Committee.

2. All officers of the Forum, except the Secretary, the Recorder, the Archivist, and the Treasurer, shall be elected for terms of one (1) year each and until their successors are elected and qualified. The President may not serve more than one (1) consecutive term. The Secretary, Recorder and Treasurer will serve three years each and until their successors are elected and qualified. Three Councilors shall be elected serving overlapping terms of three years each.

3. A Councilor, Archivist, and the officers of the Forum shall be nominated by the Nominating Committee, which shall present the slate to the Executive Committee at its annual meeting and to the members at the executive session. Additional nominations may be made from the floor at the executive session each year. The election shall take place at the executive session.

   Election of officers shall be by a majority of the votes cast. The three candidates for Councilor who receive the most votes shall be elected, provided that each member may vote for three candidates for Councilor and may not cumulate his or her votes.

4. The President shall preside a the meetings of the Forum and the Executive Committee, preserve order, regulate debates, announce results of elections, appoint committees not otherwise provided for, sign certificates of membership, and perform all other duties normally appertaining to his office.

5. The President-elect in the absence or incapacity of the Chairman shall perform the duties of the President's office.

6. In the absence of both the President and the President-elect, the chair shall be taken by a chairman pro tem, elected by such members of the Executive Committee as are present.

7. The Secretary shall keep the minutes of the meetings of the Forum and the executive Committee; attest all official acts requiring certification; notify councilors, officers and members of their election and take charge of all papers not otherwise provided for. At least thirty (30) days but not more than forty (40) days prior to each annual or special meeting the Secretary shall issue to all members of the Society a program of the forthcoming meeting. The Secretary shall compile a written report to be read at the annual executive session of the Forum in which shall be included the list of candidates proposed for membership, as approved by the Executive Committee.

8. The Treasurer shall receive all monies and funds belonging to the Forum to pay all bills; render bills for dues and assessments as soon as possible after the annual meeting; and report to the Executive Committee at each annual meeting the names of all members in arrears as to dues.

9. The Recorder shall receive all papers and reports of discussions on paper presented before the Forum or read by title.

10. The Archivist shall serve for three years and until a successor is elected and qualified. The Archivist shall be nominated by the Nominating Committee.

ARTICLE VII - COMMITTEES

1. The Standing Committees of the Forum shall consist of a Membership Committee, a Nominating Committee, a Program Committee, a Committee on Arrangements of the Annual Meeting, an International Relations Committee, a Committee on Issues, a Committee on Research, and an Honorary Membership Committee.

2. The By-Laws Committee shall consist of three members to serve overlapping terms of three years each with the (secretary of the Forum) serving as Chair. A new member shall be appointed annually by the President. They will review the By-Laws from time to time as directed by the Executive Committee.

3. The Membership Committee shall consist of three (3) elected members, who shall serve overlapping terms of three (3) years each, plus the Secretary as an ex-officio member. The senior member in terms of service on this committee shall be the chairman. The Nominating Committee shall present, annually, one or more candidate(s) to serve as a member of the Membership Committee as part of its slate to the Executive Committee at its annual meeting. Election shall be by the members at large at the executive session. Election shall be by a majority of the votes cast. The functions of the Committee shall be to pass upon the professional and ethical qualifications of the applicants and to advise the Executive Committee of the recommendations of the Committee.

4. The Nominating Committee shall consist of the three (3) most recent available Past Presidents and shall be appointed by the President one (1) month before the annual meeting. Its function shall be to make up a slate of officers and a member or members of the Membership Committee to be presented at the annual meeting to the members at the Executive Session. The Senior Member in terms of service on this Committee shall be the Chairman.

5. The Program Committee shall consist of three (3) members who shall be appointed, one in each year, by the President to serve overlapping terms of three (3) years each. The senior member in terms of service on this committee shall be the chairman. The Secretary and Recorder shall be ex officio members of the Program Committee. The function of the Program Committee shall be to solicit papers and other presentations from members and other individuals and to make up the program for the annual meeting.

6. The Committee on Arrangements for the Annual Meeting shall be appointed by the President and consists of members resident in the general locality in which the annual meeting is to be held, together with President, Secretary and Recorder acting ex officio. The function of this committee shall be the making of general arrangements for the annual meeting.

7. The International Relations Committee shall consist of at least three (3) members who shall be appointed, one in each year, by the President to serve overlapping terms of three years each. The senior member in terms of service on this committee shall be the chairman. The Secretary of the Forum shall serve as Ex-Officio of the Committee. The functions of the International Relations Committee shall be to establish and maintain communications with venous forums and other related vascular organizations outside of the United States for the purposes of the exchange of information.

8. The Committee on Issues shall consist of at least four (4) members who shall be appointed, one in each year, by the President to serve overlapping terms of four (4) years each. The senior member in terms of service on this committee shall be the chairman. The Secretary shall serve as an Ex-Officio member of this Committee. The Committee on Issues will have, as one of its responsibilities, the monitoring and interpretation of health care related issues.

The Committee shall present its observations and recommendations for action to the Executive Committee.

9. The Research Committee shall consist of five (5) members who shall be appointed, one in each year, by the President to serve overlapping terms of five (5) years each. The senior member in terms of service on this committee shall be the chairman. The Secretary of the Forum shall serve as an Ex-Officio member of this Committee. The responsibilities of this Committee shall be to promote opportunities in research in venous diseases; to define areas of clinical research that require multicenter clinical efforts; and, to promote research investment in venous disease by national granting agencies."

10. The Honorary Membership Committee shall consist of the three (3) most immediate past Presidents on the Executive Committee of the Forum. The most senior member shall serve as Chairman. The Committee shall be responsible for reviewing candidates for Honorary Membership status and recommending actions to the Executive Committee.

11. The Executive Committee may from time to time establish such other committees as it deems advisable. Each such committee shall consist of such persons and shall have such duties and powers as may be designated by the Executive Committee upon establishment of the committee or from time to time thereafter. Unless otherwise provided by the Executive Committee, the President shall appoint the members of each such committee.

12. Any vacancy occurring among the members of any elected committee of the Forum shall be filled by appointment by the President, the appointee to serve until the next annual meeting of the Forum membership.

13. Members of the Executive Committee or a Committee may participate in any meeting thereof with a conference telephone or similar communications equipment by means of which all persons participating in the meeting can hear each other, and such participation in a Committee meeting shall constitute presence in person at the meeting.

ARTICLE VIII - MEETINGS

1. The annual meeting of the Forum shall be held at a time and place to be determined by the Executive Committee.

2. The Executive Committee shall meet in the week prior to the annual meeting, at a time and place designated by the President. The Chairman of the Membership Committee, the Nominating Committee and the Committee on Arrangements shall meet with the Executive Committee in an advisory capacity.

3. Twenty-five (25) voting members present in person shall constitute a quorum at a meeting of members.

4. The vote of a majority of members present and voting at a duly called meeting at which a quorum is present shall be necessary for the adoption of any matter voted upon by the members, unless a greater proportion is required by the applicable statute, the Articles of Incorporation, or these Bylaws.

5. Members may not cast their votes by proxy.

6. The executive session of the Forum shall be held at a time and place to be set by the President. The business of the Forum shall be conducted at this time.

7. The scientific sessions at the annual meeting shall consist of presentations of posters and papers and the discussion of these papers. An Active or a Senior member must be a participant, co-author or sponsor of each presentation selected.

8. From time to time when deemed advisable by the Executive Committee, eminent investigators in the field of venous disease or allied sciences may be invited to present a special lecture during the annual meeting. Each speaker who presents such a lecture shall receive an appropriate honorarium and a certificate of appreciation from the Forum.

ARTICLE IX - INVITED GUESTS

1. Any member of the Forum may invite one or more guests to attend the annual meeting of the Forum.

2. The names of all guests attending the annual meeting shall be entered under a separate heading in the attendance list.

3. All invited guests shall be given the privilege of the floor by the President but shall not be present at the executive session.

ARTICLE X - FEES AND DUES

1. Initiation fees, dues and assessments shall be proposed by the Executive Committee and approved by the membership at an annual executive session.

2. Any member of the Forum in arrears as to dues for one (1) year shall be notified of that fact by the Treasurer, by registered letter, which shall contain a copy of this Section 2. If the dues are not paid before the next annual Executive Committee meeting or if some reasonable explanation of the delinquency is not forthcoming, the name of the delinquent member shall be presented at that Executive Committee meeting and, on a majority vote of the Executive Committee, the name may be stricken from the membership list. The Executive Committee may reinstate the delinquent member upon his payment of the dues in arrears.

ARTICLE XI - RESIGNATIONS AND DISCIPLINE

1. Resignations of members not in arrears as to dues may be accepted at any annual meeting of the Forum by a majority vote of the members present.

2. Charges of unprofessional or unethical conduct may be brought against any member of the Forum by written complaint signed by three (3) members of the Forum and delivered to the Secretary. The rules governing disciplinary proceedings based upon such charges shall be as established from time to time by the Executive Committee.

ARTICLE XII - PAPERS AND REPORTS

1. All papers and reports read before the Forum shall be delivered to the Recorder at the time of their presentations.

2. No paper shall be published as having been read before the Forum unless it has been read by title or otherwise before the Forum.

ARTICLE XIII - PROCEDURE

The proceedings of the Forum shall be conducted under Robert's Rules of Order Newly Revised.

ARTICLE XIV - CERTIFICATE OF MEMBERSHIP

Every elected member of the Forum shall be entitled to a certificate of membership signed by the President and Secretary.

ARTICLE XV - FISCAL YEAR

The fiscal year of this corporation shall begin on the first of January in each year and shall run through the 31st day of December in that year.

ARTICLE XVI - NOTICE AND WAIVER OF NOTICE

1. Whenever under applicable law, these By-laws, or a resolution of the Executive Committee, notice is required to be given to any member, Executive Committee member or officer, such notice may be given in writing, by mail, addressed to such member, Executive Committee member or officer at his or her address as it appears on the records of the Forum. Such mailed notice shall be deemed to have been given when deposited in the United States mail in a sealed envelope so addressed, with postage thereon prepaid.

2. Whenever, under applicable law, these By-laws or a resolution of the Executive Committee, any notice is required to be given, a waiver thereof in writing, signed by the person or persons entitled to such notice, whether before or after the time stated therein, shall be deemed equivalent to the giving of such notice. In addition, the attendance of a member or Executive Committee member at any meeting shall constitute a waiver of notice of such meeting, except where an individual attends the meeting for the express purpose of objecting to the transaction of any business because the meeting is not lawfully called or convened.

ARTICLE XVII - INDEMNIFICATION

1. To the full extent specifically authorized by, and in accordance with the procedures prescribed in Section 108.75 of the Illinois General Not for Profit Corporation Act of 1986 (or the corresponding provisions of any future statute applicable to corporations organized under the Act), the Forum shall indemnify any and all members of the Executive Committee (which members shall hereinafter in this Article be referred to as "Directors") and any and all of its officers, committee members, employees, agents and other authorized representatives for expenses and other amounts paid in connection with legal proceedings (whether threatened, pending or completed) in which any such person became involved by reason of serving in any such capacity for the Forum.

2. Upon specific authorization by the Executive Committee, the Forum may purchase and maintain insurance on behalf of any or all directors, officers, employees, agents or representatives of the Forum against any liability asserted against any such person and incurred in any such capacity, or arising out of the status of serving in any such capacity, whether or not the Forum would have the power to indemnify them against such liability under the provisions of Section I of this Article.

ARTICLE XVIII - AMENDMENT

These By-laws may be amended by a three-fourths vote of the members present and voting at a properly called and convened executive session of an annual or special meeting of the Forum provided that the proposed amendment has been submitted to the Secretary by at least three (3) voting members of the Forum at least three (3) months prior to the executive session of the Forum. The Secretary shall mail the proposed amendment to all voting members at least thirty (30) days prior to the executive session, accompanied by notice that such amendment will be acted upon at that executive session.

THE AMERICAN VENOUS FORUM

PROVISO TO THE BY-LAWS

ARTICLE I

Effect of Proviso

This Proviso to the By-laws (the "By-laws") of the American Venous Forum, an Illinois not-for-profit corporation (the "Forum"), shall control and supersede the rules and regulations for the governance of the Forum contained in the By-laws as of the date on which they are adopted. Except as specifically modified by this Proviso, all other provisions of the By-laws shall remain in full force and effect.

ARTICLE II

Officers

The initial members of the Executive Committee of the Forum, which members are named in the Articles of Incorporation of the Forum as filed with the Illinois Secretary of State on February 7, 1989 shall elect the initial officers of the Forum from among the members of the Executive Committee. The officers so elected shall serve until the next annual executive session of the members of the Forum and until their successors shall have been elected and qualified.

DRAFTED: October 23, 1988

ADOPTED: February 22, 1989

AMENDED: February 19, 1999

AMERICAN VENOUS FORUM

19TH Annual Meeting
February 14-18, 2007

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AMERICAN VENOUS FORUM

Authors Index

AMERICAN VENOUS FORUM

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