



# AMERICAN VENOUS FORUM

## 21<sup>st</sup> ANNUAL MEETING

February 11-14, 2009

Arizona Grand Resort – Phoenix, AZ

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### AMERICAN VENOUS FORUM COMMITTEES EXECUTIVE COMMITTEE

President.....	Joann M. Lohr, M.D., RVT (2009)	Cincinnati, Ohio
President-Elect .....	Joseph A. Caprini, M.D. (2009)	Skokie, Illinois
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	Michael C. Dalsing, M.D. (2010)	Indianapolis, Indiana
	Thomas W. Wakefield, M.D. (2009)	Ann Arbor, Michigan
Councilors .....	B.K. Lal, M.D. (2011)	Newark, New Jersey
	Nicos Labropoulos, M.D. (2010)	Newark, New Jersey
	Peter K. Henke, M.D. (2009)	Ann Arbor, Michigan

# AMERICAN VENOUS FORUM COMMITTEES 2008-2009

## **PROGRAM COMMITTEE**

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Karthikeshwar Kasirajan, M.D.

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Paul Pittaluga, M.D.  
Amy Reed, M.D.

## **PHYSICIAN/ALLIED HEALTH EDUCATION COMMITTEE**

Mehmet Kurtoglu, M.D.  
Shoaib Shafique, M.D.

## **WEBSITE COMMITTEE**

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Mark M. Meissner, M.D. (2011)  
Robert B. McLafferty, M.D.,  
Ex-Officio

## **FELLOWS EDUCATION COMMITTEE**

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Linda Harris, M.D.

# **AMERICAN VENOUS FORUM COMMITTEES 2008-2009**

## **PATIENT EDUCATION COMMITTEE**

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Kellie Brown, M.D.  
Theresa Carman, M.D.

## **SCREENING COMMITTEE**

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Mark D. Jafrafi, M.D. (2010)  
Robert B. McLafferty, M.D. (2011)  
Julianne Stoughton, M.D. (2012)  
Armen Roupenian, M.D.  
Michele Lentz, Ex-Officio

## **BY-LAWS COMMITTEE**

Robert B. McLafferty, M.D. (2011),  
Co-Chair  
Harold Welch, M.D. (2009)  
Patricia Furey, M.D. (2010)

## **FUNDRAISING/STRATEGIC PLANNING COMMITTEE**

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Fedor Lurie, M.D. (PVS-6)  
Mark Meissner, M.D.  
(Guidelines)  
Marc Passman, M.D.  
(Screening/Web)  
Joann Lohr, M.D.  
(Fellows Education)  
Tony Comerota, M.D.  
(Member Giving)  
Lowell Kabnick, M.D.  
(Annual Meeting)  
Angela Wetherbee, Ex-Officio  
Ken Weill, Ex-Officio

## **PUBLIC AND INDUSTRIAL ADVISORY COMMITTEE**

Sandra Shaw (2011), Chair  
Jeffrey Rubin  
Allesandra Puggioni  
Elias Arbid

## **INTERSOCIETAL RELATIONS COMMITTEE**

Robert Kistner, M.D. (2009), Chair

# **FUTURE MEETINGS OF THE AMERICAN VENOUS FORUM**

## **2010**

February 10-13  
Ritz Carlton  
Amelia Island, Florida

# 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 **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.veinforum.org](http://www.veinforum.org)

## AMERICAN VENOUS FORUM FOUNDING MEMBERS

Robert W. Barnes, M.D.  
John J. Cranley, M.D.  
Ralph G. DePalma, M.D.  
Lazar J. Greenfield, M.D.  
Michael Hume, M.D.  
Robert L. Kistner, M.D.  
Seshadri Raju, M.D.  
Charles G. Rob, M.D.  
D. Eugene Strandness, Jr., M.D.  
J. Leonel Villavicencio, M.D.

John J. Bergan, M.D.  
W. Andrew Dale, M.D.  
James A. DeWeese, M.D.  
Robert W. Hobson, II, M.D.  
George Johnson, Jr., M.D.  
John M. Porter, M.D.  
Norman M. Rich, M.D.  
Joseph G. Sladen, M.D.  
David S. Sumner, M.D.  
James S.T. Yao, M.D.

## AVF FOUNDATION BOARD OF DIRECTORS

President	Thomas Wakefield, M.D. (2009)	Ann Arbor, Michigan
Vice-President	Michael C. Dalsing, M.D. (2009)	Indianapolis, Indiana
Secretary	Robert B. McLafferty, M.D. (2010)	Springfield, Illinois
Treasurer	David L. Gillespie, M.D. (2010)	Potomac, Maryland
Directors	John Blebea, M.D. (2009)	Philadelphia, Pennsylvania
	Peter N. Neglen, M.D. (2010)	Flowood, Mississippi
	Fedor Lurie, M.D. (2011)	Honolulu, Hawaii
Ex-Officio	Mark H. Meissner, M.D. (2010)	Seattle, Washington

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

The Society for Vascular Surgery  
American Association of Vascular Surgery  
The Canadian Society for Vascular Surgery

## **WITH THE SUPPORT OF MEMBERS OF**

The International Union of Phlebology  
The North American Society of Phlebology  
The Phlebology Society of America  
Austrian Society for Angiology  
Benelux Society of Phlebology (Belgium,  
Netherlands and Luxembourg)  
European Chapter of The International Society for  
Cardiovascular Surgery  
German Society of Phlebology and Proctology  
Latin American Chapter of The International Society for  
Cardiovascular Surgery  
Swiss Society for Phlebology  
Sociedad Mexicana de Angiologia  
College Francais de Pathologie  
Société Francaise de Phlebologie  
Société Francaise d'Angéiologie  
Societa Italiana de Patologia Vascolare  
Pan American Society of Phlebology and Lymphology  
Sociedad Argentina de Flebologia y Linfologia  
The Australian and New Zealand Society of Phlebology

## **FUTURE MEETINGS OF THE AMERICAN VENOUS FORUM**

**2010**

February 10-13  
Ritz Carlton  
Amelia Island, Florida

## 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.
2007	Feb. 14-17	San Diego, CA Rancho Bernardo Inn	Michael C. Dalsing, M.D.
2008	Feb. 20-23	Charleston, SC Charleston Place	Mark H. Meissner, M.D.

# AMERICAN VENOUS FORUM

## D. EUGENE STRANDNESS JR., M.D.

### MEMORIAL LECTURE

On January 7, 2002, the American Venous Forum was saddened by the passing of one of its founding members and past presidents; Dr. D. Eugene Strandness Jr. Dr. Strandness was a friend, mentor, colleague and leader in all aspects of vascular surgery. He held several NIH grants and wrote numerous publications on the etiology and noninvasive diagnosis of deep vein thrombosis. One of his most notable accomplishments was the development of duplex ultrasound scanning. His tireless pursuit of knowledge led to a better understanding of the natural history of venous disease and its diagnosis and treatment, for which our patients and we are forever indebted to him.

Each year, the D. Eugene Strandness Jr., M.D. Memorial Lecture 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, has previously been named to the position of Presidential Guest Lecturer. In honor of the memory of Dr. Strandness, the lectureship was renamed in 2003 and is now known as the "D. Eugene Strandness Jr., M.D. Memorial Lecture."

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

- 2009 O. William Brown, M.D., Bingham Farms, Michigan  
**"Venous Disease and Medical Malpractice:  
A Peek Inside the Playbook of a Plaintiff's Attorney"**
- 2008 Thomas O'Donnell, Jr., M.D., Boston, Massachusetts  
**"What's the Evidence For Treating Perforators In Venous Ulcers"**
- 2007 Robert L. Kistner, M.D., Honolulu, Hawaii  
**"Foresight 2020: Creating the Venous Vision"**
- 2006 Pan Ganguly, Ph.D., Bethesda, Maryland  
**"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  
**"Venous Thrombosis and Natural 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., Linköping, 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"**



## **2008 D. EUGENE STRANDNESS JR, MD MEMORIAL LECTURE**



### **"Venous Disease and Medical Malpractice: A Peek Inside the Playbook of a Plaintiff's Attorney"**

O. William Brown, MD, JD

Dr. Brown attended undergraduate school at the University of Michigan, earning a BA in philosophy. Upon graduation from medical school at Wayne State University School of Medicine, he completed an internship at Yale New Haven Hospital and surgical residency at the Medical College of Ohio. Following this he went to the Mayo Clinic in Rochester, Minnesota, where he was one of the first two fellows in vascular surgery.

Dr. Brown then returned to Michigan and started his own practice in vascular surgery. While in practice, he completed law school at night at the Detroit College of Law and passed the Michigan State Bar Exam.

He is presently a Clinical Professor of Surgery at Wayne State University School of Medicine and an Adjunct Professor of Law at Michigan State University College of Law, as well as the Chief of the Division of Vascular Surgery at William Beaumont Hospital in Royal Oak Michigan and the Interim Chief of Vascular Surgery at Wayne State University School of Medicine.

Dr. Brown has served on the Council of the Midwestern Vascular Surgical Society, the Board of the Society for Vascular Surgery, and is a Past President of the Society for Clinical Vascular Surgery.

***The lecture will be presented on Saturday, February 14, 2009 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 Jobst Research Fellowship In Venous and Lymphatic Disease.

The Jobst 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 opening session of the Annual Meeting.

- 1995 Peter J. Pappas, M.D., UMDNJ New Jersey Medical School, Newark, NJ
- 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, Stanford, CA
- 1999 Joseph D. Raffetto, M.D., Boston Medical Center, Boston, MA
- 2000 No Award Given
- 2001 Brajesh K. Lal, M.D., UMDNJ New Jersey Medical School, Newark, NJ
- 2002 Susan O'Shea, M.D., Duke University Medical Center, Durham, NC
- 2003 Charles Fields, M.D., Mayo Clinic
- 2004 John Rectenwald, M.D., University of Michigan, Ann Arbor, MI
- 2005 Allesandra Puggioni, M.D., Mayo Clinic
- 2006 Stephanie K. Beidler, M.D., University of North Carolina, Durham, NC
- 2007 Danny Vo, M.D., Mayo Clinic
- 2008 K. Barry Deatrick, M.D., University of Michigan, Ann Arbor, MI



## **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, 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. The finalists present their work during a special dinner hosted by Sigvaris.

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, M.D., Charing Cross Hospital Biju Aravind, M.D., Charing Cross Hospital
2007	Alisha Oropallo, M.D., Boston Medical Center M. K. Barsoum, M.D., Mayo Clinic Purandath Lall, M.D., Mayo Clinic Eugene Palchik, M.D., University of Rochester

2008     Stephanie Beidler, M.D., University of North Carolina  
             Michael Lebow, M.D., University of Tennessee  
             Brian Knipp, M.D., University of Michigan  
             Jung-Ah Lee, M.D., University of Washington



## SERVIER TRAVELING FELLOWSHIP

The Servier Traveling Fellowship provides two fellows an opportunity to travel to the 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      **Charles Stonerock, M.D.**, Indiana University School of Medicine  
            **Gustavo Oderich, M.D.**, Mayo Clinic
- 2007      **Brian Knipp, M.D.**, University of Michigan  
            **Reagan Quan, M.D.**, Walter Reed Army Medical Center
- 2008      **David Paolini, M.D.**, Toledo Hospital  
            **Jorge Martinez, M.D.**, Toledo Hospital

### 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.

### 2008 WINNERS

#### **Combined Intermittent Pneumatic Leg Compression and Pharmacological Prophylaxis for Prevention of Venous Thromboembolism in High Risk Patients**

Stavros K. Kakkos

#### **Variability of Interface Pressure Exerted by Compression Bandages and Standard Size Compression Stockings**

Hugo Partsch

#### **Relation Between Number of Pregnancies and Great Saphenous Vein Diameters**

Nick Morrison

# GENERAL INFORMATION

## REGISTRATION DESK

The Registration Desk will be located in Lobby Level 2 and will be open during the following hours:

Tuesday, February 10	2:00 pm – 6:00 pm
Wednesday, February 11	7:00 am – 5:30 pm
Thursday, February 12	7:00 am – 6:00 pm
Friday, February 13	7:00 am – 12:00 pm
Saturday, February 14	7:00 am – 5:30 pm

## REGISTRATION INFORMATION

**Full Registration Fee Includes:** The full registration fee includes all scientific sessions, Postgraduate Course, continental breakfast, coffee breaks and boxed lunches. In addition, the registration fee includes entrance to the Exhibit Hall, the Welcome Reception on Wednesday and the Forum Finale on Saturday evening.

**Guest/Spouse Registration Fee Includes:** The spouse/guest registration fee includes the Welcome Reception, continental breakfast, mid-morning refreshments daily in the Hospitality Suite and Forum Finale on Saturday evening.

## ANNUAL BUSINESS MEETING LUNCH (Members Only)

The Annual Business Meeting will be held on Friday, February 13, 2009 at 12:00 pm in the Palm Court.

## SPECIAL NEEDS



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

# INSTRUCTIONS TO AUTHORS

**Audio Visual.** All presentations must be formatted using PowerPoint. All presenters must bring their PowerPoint presentations on CD Rom or Flash Drive (USB) to the Speaker Ready Room at least two hours prior to their scheduled presentation.

**Manuscripts.** Acceptance of an abstract for standard oral presentation at the AVF Annual Meeting carries with it the requirement that the author will submit a formal manuscript for consideration of publication in the *Journal of Vascular Surgery*.

Accepted oral presenters who fail to submit a manuscript to the *Journal of Vascular Surgery* shall forfeit their right to present any material at two (2) consecutive future meetings of the American Venous Forum.

# AMERICAN VENOUS FORUM

## Author Disclosures

PRESENTATION #	AUTHOR.....DISCLOSURE
1	J. I. Almeida..... Nothing To Disclose E. Mackay..... Nothing To Disclose J. Javier..... Nothing To Disclose T. Stock..... Employment: Biolitec, Inc. J. Mauriello..... Consulting Fee: Biolitec, Inc. J. K. Raines..... Nothing To Disclose
2	M. A. Vasquez..... Nothing To Disclose
3	G. B. Mosti..... Nothing To Disclose
4	V. Mattaliano..... Nothing To Disclose S. Chastanet..... Nothing To Disclose P. Pittaluga..... Nothing To Disclose J. Guex..... Nothing To Disclose
5	D. D. I. Wright..... Employment: BTG Plc. A. Ebert..... Nothing To Disclose A. Razumovsky..... Employment: Sentient NeuroCare Inc. J. Rush..... Employment: BTG Plc.
6	P. Carpentier..... Nothing To Disclose
7	T. Kostas..... Nothing To Disclose C. Ioannou..... Nothing To Disclose E. Georgakarakos..... Nothing To Disclose A. N. Katsamouris..... Nothing To Disclose
8	J. T. Christenson..... Nothing To Disclose G. Gemayel..... Nothing To Disclose N. Murith..... Nothing To Disclose C. Prins..... Nothing To Disclose G. Marazza..... Nothing To Disclose
9	N. Unno..... Nothing To Disclose M. Suzuki..... Nothing To Disclose N. Yamamoto..... Nothing To Disclose M. Mishiyama..... Nothing To Disclose H. Tanaka..... Nothing To Disclose D. Sagara..... Nothing To Disclose Y. Mano..... Nothing To Disclose H. Konno..... Nothing To Disclose

10	E. O. Brizzio .....	Research Grants: Ganzoni Management SA, Winterthur Switzerland
	F. Amsler .....	Consulting Fees: Ganzoni Management SA, Winterthur Switzerland
	B. Lun .....	Employment: Ganzoni Management SA, Winterthur Switzerland
	W. Blättler .....	Consulting Fees: Ganzoni Management SA, Winterthur Switzerland
11	A. Perez .....	Nothing To Disclose
	F. Al Solaiman .....	Nothing To Disclose
12	M. P. Sweet .....	Nothing To Disclose
	D. R. Nathanson.....	Nothing To Disclose
	D. B. Schneider .....	Nothing To Disclose
N/A	J. M. Lohr .....	Nothing To Disclose
	M. H. Meissner.....	Nothing To Disclose
	T. W. Wakefield.....	Nothing To Disclose
	J. V. White .....	Nothing To Disclose
	V. S. Sottiurai .....	Nothing To Disclose
13	J. D. Raffetto .....	Nothing To Disclose
	R. A. Khalil .....	Nothing To Disclose
14	D. Gemmati .....	Nothing To Disclose
	L. Catozzi.....	Nothing To Disclose
	F. Federici .....	Nothing To Disclose
	S. Giancesini.....	Nothing To Disclose
	G. Tacconi .....	Nothing To Disclose
	G. L. Scapoli .....	Nothing To Disclose
	P. Zamboni .....	Nothing To Disclose
15	V. Sood.....	Nothing To Disclose
	C. Luke .....	Nothing To Disclose
	E. Miller .....	Nothing To Disclose
	M. Mitsuya .....	Nothing To Disclose
	G. Upchurch.....	Nothing To Disclose
	T. Wakefield .....	Nothing To Disclose
	D. Myers.....	Nothing To Disclose
	P. Henke.....	Nothing To Disclose
16	J. Humphries .....	Nothing To Disclose
17	J. D. Raffetto .....	Nothing To Disclose
	R. A. Khalil .....	Nothing To Disclose



18	N. J. Umoh.....	Nothing To Disclose
	C. M. Alessi .....	Nothing To Disclose
	D. P. Franklin.....	Nothing To Disclose
	A. O. Udekwu.....	Nothing To Disclose
19	M. Kindred .....	Nothing To Disclose
	M. J. Sideman.....	Nothing To Disclose
20	M. D. Humphries.....	Nothing To Disclose
21	A. P. Gasparis .....	Nothing To Disclose
	N. Labropoulos.....	Nothing To Disclose
	A. Tassiopoulos.....	Nothing To Disclose
22	S. Raju .....	Nothing To Disclose
	R. L. Darcey.....	Nothing To Disclose
	P. Neglén.....	Nothing To Disclose
23	P. Neglén.....	Nothing To Disclose
	R. L. Darcey.....	Nothing To Disclose
	S. Raju .....	Nothing To Disclose
24	J. C. Opie .....	Receipt For Royalties: Atrium Medical Corp.
25	J. Jen .....	Nothing To Disclose
	H. Jen .....	Nothing To Disclose
	A. P. Gasparis .....	Nothing To Disclose
	A. Tassiopoulos.....	Nothing To Disclose
	N. Labropoulos.....	Nothing To Disclose
26	V. Bahl.....	Nothing To Disclose
	H. Hu.....	Nothing To Disclose
	P. K. Henke.....	Nothing To Disclose
	T. W. Wakefield.....	Nothing To Disclose
	D. A. Campbell.....	Nothing To Disclose
	J. A. Caprini.....	Nothing To Disclose
27	K. T. Delis .....	Nothing To Disclose
	A. L. Knaggs .....	Nothing To Disclose
28	C. D. Killingsworth .....	Nothing To Disclose
	M. A. Passman .....	Nothing To Disclose
	J. A. Weinberg .....	Nothing To Disclose
	S. M. Taylor .....	Nothing To Disclose
	M. A. Patterson.....	Nothing To Disclose
	G. Mcwin.....	Nothing To Disclose
	S. M. Melton .....	Nothing To Disclose
	L. W. Rue .....	Nothing To Disclose
	W. D. Jordan .....	Nothing To Disclose

29	A. S. Rao .....	Nothing To Disclose
	G. Konig .....	Nothing To Disclose
	S. A. Leers .....	Nothing To Disclose
	J.S Cho .....	Nothing To Disclose
	L. K. Marone .....	Nothing To Disclose
	R. Y. Rhee .....	Nothing To Disclose
	M.S. Makaroun .....	Nothing To Disclose
30	R. A. Chaer .....	Nothing To Disclose
	D.J. Milic .....	Nothing To Disclose
	S. S. Zivic .....	Nothing To Disclose
	D. C. Bogdanovic .....	Nothing To Disclose
	R. Jankovic .....	Nothing To Disclose
	V. Popovic .....	Nothing To Disclose
	D. Stamenkovic .....	Nothing To Disclose
31	A. Thors .....	Nothing To Disclose
	P. Muck .....	Nothing To Disclose
32	Y. W. Kim .....	Nothing To Disclose
	W. S. Yun .....	Nothing To Disclose
	N. R. Kim .....	Nothing To Disclose
	K. B. Lee .....	Nothing To Disclose
	D. I. Kim .....	Nothing To Disclose
	S. K. Cho .....	Nothing To Disclose
	K. B. Park .....	Nothing To Disclose
	Y. S. Do .....	Nothing To Disclose
33	B. B. Lee .....	Nothing To Disclose
	J. Ma .....	Nothing To Disclose
	T. Ma .....	Nothing To Disclose
P1	T. Yamaki .....	Nothing To Disclose
	M. Nozaki .....	Nothing To Disclose
	H. Sakurai .....	Nothing To Disclose
	M. Taekuchi .....	Nothing To Disclose
	K. Soejima .....	Nothing To Disclose
	T. Kono .....	Nothing To Disclose
P2	D. L. Gillespie .....	Nothing To Disclose
	B. Fileta .....	Nothing To Disclose
	A. Chang .....	Nothing To Disclose
P3	T. Ogawa .....	Nothing To Disclose
	S. Hoshino .....	Nothing To Disclose

P4	E. Rabe.....	Nothing To Disclose
	A. Ko .....	Nothing To Disclose
	G. Berboth .....	Nothing To Disclose
	F. Pannier.....	Nothing To Disclose
	B. Hoffmann.....	Nothing To Disclose
P5	P. Pittaluga .....	Nothing To Disclose
	T. Locret.....	Nothing To Disclose
	S. Chastanet.....	Nothing To Disclose
	R. Barbe .....	Nothing To Disclose
	B. Rea .....	Nothing To Disclose
P6	D. J. Milic .....	Nothing To Disclose
	S. S. Zivic .....	Nothing To Disclose
	D. C. Bogdanovic .....	Nothing To Disclose
	R. Jankovic .....	Nothing To Disclose
	I. Smiljkovic .....	Nothing To Disclose
P7	S. Blackburn.....	Nothing To Disclose
	A. Hawley .....	Nothing To Disclose
	N. Ballard.....	Nothing To Disclose
	C. Stabler.....	Nothing To Disclose
	K. Guire .....	Nothing To Disclose
	F. Vandy .....	Nothing To Disclose
	J. Rectenwald .....	Nothing To Disclose
	P. Henke.....	Nothing To Disclose
	D. Myers.....	Nothing To Disclose
	T. Wakefield .....	Nothing To Disclose
P8	J. Guex.....	Consulting Fees: Pierre Fabre; Stock: Vascular Insights
	S. Boussetta .....	Employment: Pierre Fabre
	C. Nguyen.....	Employment: Pierre Fabre
	C. Taieb .....	Employment: Pierre Fabre
P9	F. Amsler .....	Research Grants & Consulting Fees: Ganzoni Management SA, Winterthur Switzerland
	T. Willenberg .....	Nothing To Disclose
	W. Blättler .....	Consulting Fees: Ganzoni Management SA, Winterthur Switzerland
P10	E. Xenos.....	Nothing To Disclose
	G. Bietz.....	Nothing To Disclose
	D. Monion.....	Consulting Fee: Gore
	N. Abedi.....	Nothing To Disclose
	E. Sorial .....	Nothing To Disclose
	N. Karagiorgos.....	Nothing To Disclose
	E. Endean .....	Nothing To Disclose

P11	M. Kurdoglu .....	Research Grant: Sanofi-Aventis
P12	C. J. Pannucci .....	Nothing To Disclose
	A. J. Oppenheimer .....	Nothing To Disclose
	T. W. Wakefield .....	Nothing To Disclose
	E. G. Wilkins .....	Nothing To Disclose
P13	G. Vettorello .....	Nothing To Disclose
	L. Marini .....	Nothing To Disclose
P14	J. J. Guex .....	Consulting Fees: Pierre Fabre, Kreussler Pharma; Stock Options: Vascular Insights
	L. Avril .....	Employment: Pierre Fabre
	S. Boussetta .....	Employment: Pierre Fabre
	C. Taieb .....	Employment: Pierre Fabre
P15	J. Benigni .....	Consulting Fees: Medi Bayreuth
	J. Uhl .....	Consulting Fees: Medi France
	A. Cornu-Thénard .....	Nothing To Disclose
P16	M. Kurtoglu .....	Nothing To Disclose
	K. Serin .....	Nothing To Disclose
	Y. Hakan .....	Nothing To Disclose
	Y. Ozdenkaya .....	Nothing To Disclose
P17	S. Kaspar .....	Nothing To Disclose
P18	R. Damstra .....	Research Grants: Lohmann Rauscher Neuwied Germany
	H. Partsch .....	Lohmann Rauscher Neuwied Germany
P19	C. Vasiliu .....	Nothing To Disclose
	M. D. Iafrati .....	Nothing To Disclose
	T. F. O'Donnell .....	Consulting Fees: VNUS
P20	B. S. DeCamp .....	Nothing To Disclose
	M. Mansour .....	Nothing To Disclose
	T. Cothery .....	Nothing To Disclose
	J. M. Gorsuch .....	Nothing To Disclose
P21	B. D. Moreira .....	Nothing To Disclose
	A. Akingba .....	Nothing To Disclose
	C. Lum .....	Nothing To Disclose
	A. Gupta .....	Nothing To Disclose
	O. Brown .....	Nothing To Disclose
	J. R. Rubin .....	Nothing To Disclose

P22	S. K. Kakkos.....	Stock: ACI Medical
	J. C. Lin.....	Stock: ACI Medical
	J. Sparks.....	Nothing To Disclose
	M. Telly.....	Nothing To Disclose
	M. McPharlin.....	Nothing To Disclose
	D. J. Reddy.....	Nothing To Disclose
P23	L. Avril.....	Employment: Pierre Fabre Company
	E. Enrici.....	Research Grants: Pierre Fabre Company
	E. Enriquez.....	Research Grants: Pierre Fabre Company
	S. Boussetta.....	Employment: Pierre Fabre Company
	C. Taieb.....	Employment: Pierre Fabre Company
P24	J. T. Christenson.....	Nothing To Disclose
	N. Murith.....	Nothing To Disclose
	G. Gemayel.....	Nothing To Disclose
P25	S. M. Belentsov.....	Nothing To Disclose
	A. S. Belentsov.....	Nothing To Disclose
P26	F. Pannier.....	Nothing To Disclose
	E. Rabe.....	Nothing To Disclose
	U. Maurins.....	Nothing To Disclose
P27	M. Lugli.....	Nothing To Disclose
	R. Verucchi.....	Nothing To Disclose
	S. Guerzoni.....	Nothing To Disclose
	O. Maleti.....	Nothing To Disclose
P28	S. Shokoku.....	Nothing To Disclose
	R. Launois.....	Nothing To Disclose
P29	T. M. Klem.....	Nothing To Disclose
P30	F. Lurie.....	Nothing To Disclose
	R. L. Kistner.....	Nothing To Disclose



# AMERICAN VENOUS FORUM

## 21<sup>st</sup> ANNUAL MEETING

### February 11-14, 2009

Arizona Grand Resort – Phoenix, AZ

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#### **Wednesday, February 11, 2009**

7:00 am Continental Breakfasts

**8:00 am POSTGRADUATE COURSE**  
**The Great Debates**

*Educational Objectives:*

*At the conclusion of the Postgraduate Course,  
the attendees will be able to:*

*Identify best practices (pharmacological and mechanical)  
for Thrombus Treatment*

*Assess the results of treatment for venal caval filters,  
DVT, lymphedema and ulcer therapy*

#### **Session I**

**8:00 am Introduction – Rules of the Debate**

*Joseph A. Caprini, MD*

**Fibrinolytic/Mechanical Therapy For  
Iliofemoral DVT**

Anthony Comerota, MD

**vs.**

**Heparin/LMWH/Fondaparinux Therapy  
For Iliofemoral DVT**

Mark Meissner, MD

**Correcting Venous Insufficiency Does Affect  
Ulcer Healing**

Seshadri Raju, MD

**vs.**

**Correcting Venous Insufficiency Does Not  
Affect Ulcer Healing**

Kevin Burnand, MD

**Retrievable Venacaval Filters For Thrombosis  
Prophylaxis In High Risk Trauma Patients**

Robert McLafferty, MD

**vs.**

**Anticoagulation For Thrombosis Prophylaxis  
In High Risk Trauma Patients**

David Gillespie, MD

9:40 am Coffee Break

9:55 am **Anticoagulant Treatment For Calf Vein Thrombosis**

Joann Lohr, MD

**vs.**

**Observation/Stockings For Calf Vein Thrombosis**

Elna Masuda, MD

**Anticoagulant Treatment For Superficial Venous Thrombosis**

Thomas Wakefield, MD

**vs.**

**Anti-Inflammatory Treatment For Superficial Venous  
Thrombosis**

Michael Dalsing, MD

**The Rationale Exists For the Treatment of Perforating Veins  
In Advanced CVI**

Peter Glowiczki, MD

**vs.**

**Perforating Vein Treatment In Advanced CVI: No  
Compelling Evidence Equals No Rationale For TX**

Thomas O'Donnell, MD

## **Individual Risk Assessment For Thrombosis Prophylaxis**

Joseph Caprini, MD

**vs.**

## **Group Prophylaxis for Thrombosis Prophylaxis**

David Bergqvist, MD

## **Thrombophilia Testing For DVT (YES)**

Peter Henke, MD

**vs.**

## **Thrombophilia Testing For DVT (NO)**

Andrew Nicolaides, MD

12:00pm Conclusion

12:00 pm Lunch (*Boxed Lunch To Be Provided*)

## **1:20 pm SCIENTIFIC SESSION I**

### **Management of Superficial Venous Disease**

*Moderators: Lowell Kabnick, MD, Cees Wittens, MD*

#### *Educational Objectives:*

*After completion of this session the attendees will:*

*All understand the effects of laser ablation on the saphenous vein.*

*Understand adjunctive procedures after RFA or appropriate timing and application.*

*Understand the difference between compression devices and the results of thigh compression after greater saphenous vein procedures.*

*Understand the purpose to varicose veins recurrence after surgical treatment.*

*Understand the relationship between varicose veins and the patent foramin ovale.*

1:30 pm **1**

### **Saphenous Laser Ablation At 1470 nm Targets the Vein Wall, Not Blood**

J. I. Almeida<sup>1</sup>, E. Mackay<sup>2</sup>, J. Javier<sup>3</sup>, T. Stock<sup>4</sup>, J. Mauriello<sup>5</sup>, J. K. Raines<sup>1</sup> - <sup>1</sup>Miami Vein Center, Miami, FL, <sup>2</sup>Mackay Vein Center, Tampa, FL, <sup>3</sup>Naples Vein Center, Naples, FL, <sup>4</sup>Biolitec Inc., East Longmeadow, MA, <sup>5</sup>Vein Center at Batey Cardiovascular, Bradenton, FL



- 1:50 pm      2**  
**Adjunctive Procedures Following Radiofrequency Ablation of the Saphenous Vein: Incidence and Timing**  
 M. A. Vasquez, MD, FACS, RVT<sup>1</sup>, J. Wang, MD, PhD<sup>2</sup>, C. E. Munschauer, BA<sup>1</sup>, G. Buczkowski RPA-C<sup>1</sup>, E. Sprehe MS, ANP<sup>1</sup>, H. H. Dosluoglu MD<sup>3</sup> - <sup>1</sup>Department of Surgery, State University of New York at Buffalo and the Venous Institute of Buffalo, Buffalo, NY, <sup>2</sup>Department of Surgery, State University of New York at Buffalo and the Department of Biostatistics, Roswell Park Memorial Cancer Institute, Buffalo, NY, <sup>3</sup>Division of Vascular Surgery, Department of Surgery, State University of New York at Buffalo Veterans Affairs Western New York Healthcare System, Buffalo, NY
- 2:10 pm      3**  
**Thigh Compression With Different Compression Devices After Great Saphenous Vein Surgery**  
 G. B. Mosti, V. Mattaliano - Clinica MD Barbantini, Lucca (LU), Italy
- 2:30 pm      4**  
**Surgical Treatment For Varicose Recurrence: Is Inguinal Redo Surgery Justified?**  
 P. Pittaluga<sup>1</sup>, S. Chastanet<sup>1</sup>, J. Guex<sup>2</sup> - <sup>1</sup>Riviera Veine Institut, Nice, France, <sup>2</sup>Cabinet de Médecine Vasculaire, Nice, France
- 2:50 pm      5**  
**Is There A Relationship Between Varicose Veins and Patent Foramen Ovale (PFO)?**  
 D. D. I. Wright<sup>1</sup>, A. Ebert<sup>2</sup>, A. Razumovsky<sup>3</sup>, J. Rush<sup>4</sup> - <sup>1</sup>BTG PLC, London, United Kingdom, <sup>2</sup>Lake Washington Vascular Surgeons, Bellevue, WA, <sup>3</sup>Sentient NeuroCare Services Inc, Cockeysville, MD, <sup>4</sup>BTG International, Philadelphia, PA
- 3:10 pm      Coffee Break**

**3:30 pm ASK THE EXPERTS**

**Endovenous Procedures: Below the Diaphragm**

*Moderator: Peter Neglen, MD*

*Panel: David Gillespie, MD, Olivier Hartung, MD, Haraldur Bjarnason, MD and Antonios Gasparis, MD*

*Educational objectives:*

*To understand the use of deep endovenous procedure in the lower limbs*

*To be aware of technical aspects of venous stenting*

*To realize the clinical impact of obstruction in chronic and acute venous disease*

*To recognize the adjuvant role of stenting after early clot removal*

5:00 pm Adjourn

6:00 pm Welcome Reception

**7:30 pm INDUSTRY SPONSORED SYMPOSIUM**

**Lymphedema: Advances In Treatment and Management**

Stanley G. Rockson, M.D., Moderator

An evening symposium co-sponsored by the

journal *Lymphatic Research and Biology*\* and Versaggi

Biocommunications®, with an educational grant from Tactile

Systems Technology, Inc. Open to all AVF paid registrants.

Beverages and hors d'oeuvres will be served. Each presentation will be followed by 15-minutes of Q&A discussion.

## Thursday, February 12, 2009

7:00 am Continental Breakfast / Exhibits Open

### 8:00 am SCIENTIFIC SESSION II

#### **Chronic Venous Insufficiency**

*Moderators: Joann Lohr, MD and Eberhard Rabe, MD*

##### *Educational Objectives:*

*After completion of this session the participant will be able to:*

*List the risk factors for different subsets of chronic venous disorders.*

*Correlate between chronic venous disease progression and modification of venous posing risk factors.*

*Describe the use of subcutaneous fasciotomy and the ratification of superficial reflux for therapy resistant recalcitrant venous ulcers and the results of this treatment.*

*Understand lymphatic function recovery after superficial venous reflux treatments.*

*Appropriate treatment therapy for recalcitrant venous ulcers.*

8:00 am 6

#### **Risk Factors For the Different Subsets of Chronic Venous Disorders: Results From the Basel Follow-Up Study**

P. Carpentier - CHU Grenoble, Grenoble, France

8:20 am 7

#### **Correlation Between Chronic Venous Disease Progression (CVDP) and Modification of Predisposing Factors**

T. Kostas, C. Ioannou, E. Georgakarakos, A. N. Katsamouris - University of Crete Medical School, Heraklion, Greece

8:40 am 8

#### **Subcutaneous Fasciotomy and Eradication of Superficial Reflux For Therapy Resistant and Recurrent Venous Ulcers: Long-Term Results and Recurrence Rate**

J. T. Christenson<sup>1</sup>, G. Gemayel<sup>1</sup>, N. Murith<sup>1</sup>, C. Prins<sup>2</sup>, G.

Marazza<sup>2</sup> - <sup>1</sup>Venous Centre, Division of Cardiovascular Surgery, University Hospital of Geneva, Geneva, Switzerland,

<sup>2</sup>Department of Dermatology, University Hospital of Geneva, Geneva, Switzerland

- 9:00 am 9**  
**Impaired Lymphatic Function Recovered After Great Saphenous Vein Stripping In Patients With Varicose Vein: Venodynamic and Lymphodynamic Results**  
 N. Unno<sup>1</sup>, M. Suzuki<sup>1</sup>, N. Yamamoto<sup>1</sup>, M. Nishiyama<sup>1</sup>, H. Tanaka<sup>1</sup>, D. Sagara<sup>1</sup>, Y. Mano<sup>1</sup>, H. Konno<sup>2</sup> - <sup>1</sup>Division of Vascular Surgery, Second Department of Surgery, Hamamatsu University School of Medicine, Hamamatsu, Japan, <sup>2</sup>Hamamatsu University School of Medicine, Hamamatsu, Japan
- 9:20 am 10**  
**For the Treatment of Recalcitrant Venous Ulcers Low-Strength Compression Stockings Are Not Inferior To Multi-Layer Short-Stretch Bandages: Evidence From A Randomised Trial**  
 E. O. Brizzio<sup>1</sup>, F. Amsler<sup>2</sup>, B. Lun<sup>3</sup>, W. Blättler<sup>2</sup> - <sup>1</sup>Grupo Internacional de la Compresion, Buenos Aires, Argentina, <sup>2</sup>Clinical and Interventional Angiology, Swiss Cardiovascular Centre, Berne, Switzerland, <sup>3</sup>Sigvaris Research Centre, Winterthur, Switzerland

## MINI PRESENTATIONS

- 9:40 am 11 (Mini)**  
**Outcomes Based Upon Day of Warfarin Initiation In the Hospital Treatment of DVT**  
 A. Perez, F. Al Solaiman - Cleveland Clinic, Cleveland, OH
- 9:45 am 12 (Mini)**  
**Pharmaco-Mechanical Catheter Directed Thrombolysis For Pregnancy-Associated DVT**  
 M. P. Sweet<sup>1</sup>, D. R. Nathanson<sup>2</sup>, D. B. Schneider<sup>1</sup> - <sup>1</sup>University of California San Francisco, San Francisco, CA, <sup>2</sup>California Pacific Medical Center, San Francisco, CA
- 9:50 am National Screening Program Update: 2008**  
 Marc A. Passman, MD, *Chairman*
- 9:55 am Knowledge Deficit In Venous Disease Remarkable In Current Vascular Trainees**  
 J. M. Lohr<sup>1</sup>, M. H. Meissner<sup>2</sup>, T. W. Wakefield<sup>3</sup>, J. V. White<sup>4</sup>, V. S. Sotturrai<sup>4</sup> - <sup>1</sup>Lohr Surgical Specialists, Cincinnati, OH, <sup>2</sup>University of Washington, Seattle, WA, <sup>3</sup>Univeristy of Michigan, Ann Arbor, MI, <sup>4</sup>Lutheran General, Park Ridge, IL

10:00 am Coffee Break/Visit Exhibits

**10:30 am SCIENTIFIC SESSION III**

**Basic Science**

*Moderators: Peter Pappas, MD & David Gillespie, MD*

*Educational Objectives:*

*After completion of this session the participant will be able to:*

*Describe venous muscle response to vasoconstriction and functional adaptations in the proximal, distal and varix segments of varicose of veins.*

*Describe vein wall remodeling after DVT and the effects of therapy with low molecular weight heparin and doxycycline.*

*Understand monocyte urokinase regulation and its effect on thrombus size.*

*Explain the hormonal mediated pathways of venous relaxation in animal model.*

**10:30 am 13**

**Functional Adaptation of Venous Smooth Muscle Response To Vasoconstriction In Proximal, Distal and Varix Segments of Varicose Veins**

J. D. Raffetto<sup>1</sup>, R. A. Khalil<sup>2</sup> - <sup>1</sup>VA Boston HCS, West Roxbury, MA, <sup>2</sup>Brigham & Women's Hospital, Boston, MA

**10:50 am 14**

**DNA-Micro-Array Detection of Gene Variants In Venous Leg Ulcer: Will It Modify Clinical Assessment?**

D. Gemmati<sup>1</sup>, L. Catozzi<sup>1</sup>, F. Federici<sup>1</sup>, S. Giancesini<sup>2</sup>, G. Tacconi<sup>2</sup>, G. L. Scapoli<sup>1</sup>, P. Zamboni<sup>2</sup> - <sup>1</sup>Hemostasis & Thrombosis Center, University of Ferrara, Ferrara, Italy, <sup>2</sup>Vascular Disease Center, University of Ferrara, Ferrara, Italy

**11:10 am 15**

**Vein Wall Remodeling After DVT: Differential Effects of Low Molecular Weight Heparin and Doxycycline**

V. Sood, C. Luke, E. Miller, M. Mitsuya, G. Upchurch, T. Wakefield, D. Myers, P. Henke - University of Michigan, Ann Arbor, MI

11:30 am 16

**Monocyte Urokinase (uPA) Up-Regulation Reduces Thrombus Size In A Model of Venous Thrombosis**

J. Humphries<sup>1</sup>, J. Gossage<sup>1</sup>, M. Waltham<sup>1</sup>, K. Burnand<sup>1</sup>, T. Sisson<sup>2</sup>, C. Murdoch<sup>1</sup>, A. Smith<sup>1</sup> - <sup>1</sup>King's College London School of Medicine, London, United Kingdom, <sup>2</sup>University of Michigan Medical School Dept. of Internal Medicine, Ann Arbor, MI

11:50 am 17

**Estrogen Receptor-Specific Endothelium-Dependent and -Independent Pathways of Venous Relaxation In Female Rat: Implications In Sex-Related Differences In Varicose Veins**

J. D. Raffetto<sup>1</sup>, R. A. Khalil<sup>2</sup> - <sup>1</sup>VA Boston HCS, West Roxbury, MA, <sup>2</sup>Brigham & Women's Hospital, Boston, MA

**MINI PRESENTATIONS**

12:10 pm 18 (Mini)

**Small Bowel Volvulus In A Quadriplegic - A Rare Complication of the Simon Nitinol Inferior Vena Cava Filter**

N. J. Umoh, C. M. Alessi, D. P. Franklin, A. O. Udekwe - Geisinger Medical Center, Danville, PA

12:15 pm 19 (Mini)

**Femoral Hernia: An Unusual Cause of Chronic Venous Insufficiency**

M. Kindred, M. J. Sideman - University of Oklahoma, College of Medicine, Tulsa, Tulsa, OK

12:20 pm 20 (Mini)

**Asymptomatic Bilateral External Iliac Vein Aneurysms In A Young Athlete: Case Report and Literature Review**

M. D. Humphries - University of California-Davis, Sacramento, CA

12:25 pm Adjourn

**12:30 pm AMERICAN COLLEGE OF  
PHLEBOLOGY LUNCH SYMPOSIUM  
FOAM SCLEROTHERAPY**

Moderator: Nick Morrison, MD

**Complications of Foam Sclerotherapy**

JJ Guex, MD

**Foam Sclerotherapy for Saphenous Insufficiency:**

**Why Wait for a Manufactured Foam? A European Perspective**

Attilio Cavezzi, MD

**Use of Different Gases for Foam Sclerotherapy**

Nick Morrison, MD

**Foam Sclerotherapy for VM's**

James Laredo, MD, PhD, RVT

**TCD with Foam Sclerotherapy**

Diana Neuhardt, RVT

**2:00 pm WORKSHOPS / SYMPOSIUMS**

**(Parallel Sessions)**

*Note: Workshops Repeat – Symposiums Do Not Repeat*

**SYMPOSIUM 1**

**TX of Exotic Veins and Cutaneous Lasers**

Neil Sadick, MD, Thomas Proebstle, MD

[or]

**WORKSHOPS – SESSION 1**

**Ultrasound Diagnosis**

Nicos Labropoulos, MD

**Vein Ablation**

Glenn Jacobowitz, MD, Nick Morrison, MD

**Pharmacomechanical Thombectomy**

David Gillespie, MD

**Sclerotherapy**

Julianne Stoughton, MD

## 3:30 PM SYMPOSIUM 2

### **New Technology and Procedural Advances**

*Moderators: Jose Almeida, MD, Lowell Kabnick, MD,  
Suresh Vedantham, MD*

### **Thermal Ablation Without Tumescant Anesthesia: Is It Feasible?**

Jose I. Almeida, MD

### **A New Laser Wavelength At 1470nm: Does Wavelength Matter?**

John Mauriello, MD

### **Are There Differences Between Bare, Covered or Diffusion Fibers?**

Lowell S. Kabnick, MD

### **Foam Sclerotherapy: Its Uses and Its Potential Complications**

Kathy Gibson, MD

### **Busting Venous Clot Above and Below the Inguinal Ligament: The Latest Endovenous Strategies**

Suresh Vedantham, MD

[or]

## **WORKSHOPS – SESSION 2 (Repeated)**

### **Ultrasound Diagnosis**

Nicos Labropoulos, MD

### **Vein Ablation**

Nick Morrison, MD

### **Pharmacomechanical Thombectomy**

David Gillespie, MD

### **Sclerotherapy**

Julianne Stoughton, MD



**5:00 PM SYMPOSIUM 3**

**Thunder On the Mountain: The New Business of Veins**

**Like A Rolling Stone - Vein Business Past, Present and Future: The Boston Experience**

Thomas O'Donnell, MD

**I Shall Be Released - Private Practice and Academia: The Buffalo Experience**

Michael Vasquez, MD

**Don't Think Twice, It's Alright: Family Practitioners and Veins: The Ann Arbor Experience**

Thomas Wakefield, MD

**When I Paint My Masterpiece: When To Change Your Business Model**

Jose Almeida, MD

**Shelter From The Storm: The New Business Commandments**

Steve Elias, MD

**Bringing It All Back Home**

Audience Questions

[or]

**WORKSHOPS – SESSION 3 (*Repeated*)**

**Ultrasound Diagnosis**

Nicos Labropoulos, MD

**Vein Ablation**

Nick Morrison, MD

**Pharmacomechanical Thombectomy**

David Gillespie, MD

**Sclerotherapy**

Julianne Stoughton, MD

6:15 pm Adjourn

7:30 pm Evening Symposium

## Friday, February 13, 2009

6:30 am Industry Advisory Council Breakfast  
7:00 am Continental Breakfast/Exhibits Open

### 7:45 am **SCIENTIFIC SESSION IV**

#### **Deep Venous Disease**

*Moderators: Bo Eklof, MD, Haraldur Bjarnason, MD*

#### *Educational Objectives:*

*After completion of this session the participant will be able to:*

*Predict clinical outcomes in post prothrombotic limbs.*

*Select appropriate patients for ilio caval stenting when morbidly obese.*

*Determine when bilateral stenting of the ilio caval confluence is indicated.*

*Select patients to correct chronic venous insufficiency using monocusp technique.*

7:45 am **21**

#### **Prospective Evaluation of the Clinical Deterioration In Postthrombotic Limbs**

A. P. Gasparis, N. Labropoulos, A. Tassiopoulos - SUNY Stony Brook, Stony Brook, NY

8:05 am **22**

#### **Ilio-Caval Stenting In the Obese**

S. Raju<sup>1</sup>, R. L. Darcey<sup>2</sup>, P. Neglén<sup>2</sup> - <sup>1</sup>University of Mississippi Medical Center, Jackson, MS, <sup>2</sup>River Oaks Hospital, Flowood, MS

8:25 am **23**

#### **Bilateral Stenting of the Iliocaval Confluence**

P. Neglén, R. L. Darcey, S. Raju - River Oaks Hospital, Flowood, MS

8:45 am **24**

#### **Monocusp - To Correct CVI**

J. C. Opie - Optima Vein Care, Scottsdale/Chandler, AZ

9:05 am Coffee Break / Visit Exhibits

- 9:45 am    SESSION V**  
**Award Session**  
*Moderator: Joann Lohr, MD*
- 9:45 am    European Venous Forum – First Place Winner**  
**Inelastic Compression Increases Venous Ejection Fraction More Than Elastic Bandages**  
 J. Mosti<sup>1</sup>, V. Mattaliano<sup>1</sup>, H. Partsch<sup>2</sup> – <sup>1</sup>Angiology Department, Clinica MD Barbantini, Lucca, Italy; <sup>2</sup>Private Practice, Vienna, Austria
- 10:00 am    European Venous Forum – Second Place Winner**  
**Side Effects and Complications of Foam Sclerotherapy of the Great and Small Saphenous Veins: A Controlled Multi-Center Prospective Study Including 1025 Patients**  
 J.L. Gillet, J.M. Guedes, J.J. Guex, C. Hamel-Desnos, M. Schadeck, M. Lauseker, F.A. Allaert - Vascular Medicine/Phlebology, Bourgoin-Jallieu, France
- 10:15 am    BSN Jobst 2008 Winner – Interim Report**  
 K. Barry Deatrick, MD  
 University of Michigan – Ann Arbor, MI
- 10:35 am    Servier 2008 Winners – Report**
- 10:55 am    Sigvaris 2008 Winner’s Announcement**
- 11:00 am    PRESIDENTIAL ADDRESS**  
**Changing Hats and Roles**  
 Joann M. Lohr, MD, RVT  
*Introduction By: Joseph A. Caprini, MD*
- 12:00 pm    Member Business Luncheon**
- 1:00 pm    Free Afternoon - Golf /Tennis Tournaments**

## Saturday, February 14, 2009

7:00 am Continental Breakfast / Visit Exhibits

**8:00 am SCIENTIFIC SESSION VI**  
**Venous Thromboembolism**

*Moderators: Mark Meissner, MD and Peter Henke, MD*

*Educational Objectives:*

*After completion of this session the participant will be able to:*  
*Identify patients at risk for recurrent DVT and explain the natural history of deep vein thrombosis.*

*Understand validation of retrospective venous thromboembolism risk scoring.*

*Explain iliofemoral versus femoral popliteal deep vein thrombosis, the clinically and hemodynamically significance, and the development of chronic venous insufficiency in postthrombotic disease process.*

*Understand the utilization of prospective algorithm for bedside intravascular ultrasound placement of filters in the critically ill.*

*Select appropriate patients for pharmacomechanical thrombectomy for DVT.*

**8:00 am 25**

**Recurrent Deep Vein Thrombosis: Long Term Incidence and Natural History**

J. Jen, H. Jen, A. P. Gasparis, A. Tassiopoulos, N. Labropoulos - SUNY Stony Brook, Stony Brook, NY

**8:20 am 26**

**A Validation Study of A Retrospective Venous Thromboembolism Risk Scoring Method**

V. Bahl<sup>1</sup>, H. Hu<sup>1</sup>, P. K. Henke<sup>1</sup>, T. W. Wakefield<sup>1</sup>, D. A. Campbell, Jr.<sup>1</sup>, J. A. Caprini<sup>2</sup> - <sup>1</sup>University of Michigan Health System, Ann Arbor, MI, <sup>2</sup>Northwestern University, Chicago, IL

**8:40 am 27**

**Iliofemoral Versus Femoropopliteal Deep Vein Thrombosis: Clinical and Hemodynamic Significance In Post-Thrombotic Venous Disease**

K. T. Delis<sup>1</sup>, A. L. Knaggs<sup>2</sup> - <sup>1</sup>Athens Medical Center, Athens, Greece, Imperial College, London, United Kingdom, <sup>2</sup>Imperial College, London, United Kingdom

9:00 am 28

**Prospective Implementation of An Algorithm For Bedside Intravascular Ultrasound Guided Filter Placement In Critically Ill Patients**

C. D. Killingsworth, M. A. Passman, J. A. Weinberg, S. M. Taylor, M. A. Patterson, G. Mcwin, Jr., S. M. Melton, L. W. Rue, W. D. Jordan, Jr. - University of Alabama at Birmingham, Birmingham, AL

9:20 am 29

**Pharmacomechanical Thrombectomy for Deep Venous Thrombosis: An Alternative For High Risk Patients**

A. S. Rao, G. Konig, S. A. Leers, J. S. Cho, L. K. Marone, R. Y. Rhee, M. S. Makaroun, R. A. Chaer - University of Pittsburgh Medical Center, Pittsburgh, PA

9:40 am Coffee Break – Visit Exhibits

10:10 am **SCIENTIFIC SESSION VII**

**Multi-Topic**

*Moderators: Joseph Caprini, MD, Robert McLafferty, MD*

*Educational Objectives:*

*After completion of this session attendees will be able to:*

*Describe the influence of different interphase pressure values, venous ulcers, and healing when treated with compression therapy.*

*Understand the potential usefulness and drawbacks of absorbable venal cava filters in animal model.*

*Predict patient response to sclerotherapy in treatment of venous malformation.*

10:10 am 30

**The Influence of Different Interface Pressure Values On Venous Leg Ulcers Healing When Treated With Compression Therapy**

D. J. Milic<sup>1</sup>, S. S. Zivic<sup>1</sup>, D. C. Bogdanovic<sup>1</sup>, R. Jankovic<sup>1</sup>, V. Popovic<sup>2</sup>, D. Stamenkovic<sup>3</sup> - <sup>1</sup>Clinic for Vascular Surgery, Clinical Centre Nis, Nis, Serbia, <sup>2</sup>Clinic for Vascular Surgery, Clinical Centre Novi Sad, Novi Sad, Serbia, <sup>3</sup>Department for Vascular Surgery, Clinical Centre Kragujevac, Kragujevac, Serbia

**10:30 am 31**

**Absorbable Inferior Vena Cava Filters (VCF):  
An In-Vivo Porcine Model**

A. Thors, P. Muck - Good Samaritan Hospital, Cincinnati, OH

**10:50 am 32**

**Predictors of Good Response To Ethanol Sclerotherapy In  
Venous Malformations Based On Patient Self-Assessment**

Y. W. Kim<sup>1</sup>, W. S. Yun<sup>1</sup>, N. R. Kim<sup>1</sup>, K. B. Lee<sup>1</sup>, D. I. Kim<sup>1</sup>, S. K. Cho<sup>1</sup>, K. B. Park<sup>1</sup>, Y. S. Do<sup>1</sup>, B. B. Lee<sup>2</sup> - <sup>1</sup>Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Republic of Korea, <sup>2</sup>Georgetown University, Washington DC, WA

**11:10 am 33**

**Encircling Construction of Popliteal Vein – A New Surgery of  
Reconstructing Deep Vein Valves**

J. Ma, T. Ma - Dalian Municipal Central Hospital, Dalian, Liaoning, China

**11:30 am D. EUGENE STRANDNESS MEMORIAL LECTURE  
Venous Disease and Medical Malpractice: A Peek Inside the  
Playbook of A Plaintiff's Attorney**

O. William Brown, MD, JD

*Introduced by: Joann M. Lohr, MD*

**12:30 pm Adjourn**

**12:45 pm VENOUS DISEASE COALITION SYMPOSIUM  
(LUNCHEON)**

*Moderator: Robert B. McLafferty, MD*

**The Surgeon General's Call To Action To Prevent DVT &  
PE: Where We Have Been and Where We Need To Go**

Thomas Wakefield, MD

**VTE and Women: Issues of Concern**

Suman Rathbun, MD

**Prophylaxis and Malignancy**

Thomas Ortel, MD

**Building Venous Awareness Through Clinical Research:  
The ATTRACT Trial**

Suresh Vedantham, MD

**2:30 pm ASK THE EXPERTS:**  
**Venous Disease: Above the Diaphragm**  
*Moderators: Mark Meissner, MD and Suresh Vedantham, MD,  
Peter Gloviczki, MD*

**Management of Subclavian/Innominate Vein Lesions**

**Interventional Management of SVC Occlusions**

**Surgical Reconstruction of the SVC**

**Combined Interventional-Surgical Approaches  
For Axillosubclavian DVT**

**When To Intervene In Catheter-Related DVT**

**4:00 pm POSTER SESSION**  
*Moderator: Joseph Raffetto, MD – Co-Moderators: Michael  
Dalsing, MD, Thomas Wakefield, MD and Mark Meissner, 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 Presence of Lower Limb Deep Vein Thrombosis and Prognosis  
In Patients With Symptomatic Pulmonary Embolism:  
Preliminary Report**

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

**P-2 The Proliferative Capacity of Dermal Fibroblasts From  
Patients With Chronic Venous Insufficiency Is Reduced In  
Physiologic Concentrations of Glucose**

D. L. Gillespie<sup>1</sup>, B. Fileta<sup>2</sup>, A. Chang<sup>2</sup> - <sup>1</sup>University of  
Rochester, Rochester, NY, <sup>2</sup>Walter Reed Army Medical Center,  
Washington, DC

**P-3 Relation Between Postoperative Venous Diameter and  
Recanalization of the Endovenously Ablated Incompetent GSV**

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

- P-4      Incidence of Chronic Venous Disorders In Germany In the Last Seven Years - The Bonn Vein Study II**  
E. Rabe<sup>1</sup>, A. Ko<sup>1</sup>, G. Berboth<sup>1</sup>, F. Pannier<sup>2</sup>, B. Hoffmann<sup>3</sup> - <sup>1</sup>Dep. of Dermatology, University of Bonn, Germany, <sup>2</sup>Dermatologie, Koeln, Germany, <sup>3</sup>Institut für Med. Informatik, Biometrie und Epidemiologie, University of Essen, Germany
- P-5      The Effects of Isolated Phlebectomy On Reflux and Diameter of the Great Saphenous Vein: A Prospective Study**  
S. Chastenet<sup>1</sup>, T. Locret<sup>1</sup>, P. Pittaluga<sup>1</sup>, R. Barbe<sup>2</sup>, B. Rea<sup>2</sup> - <sup>1</sup>Riviera Veine Institut, Nice, France, <sup>2</sup>Clinique Charcot, Lyon, France
- P-6      The Incidence of Malignant Diseases Among Patients With Deep Vein Thrombosis of Lower Extremity**  
D. J. Milic, S. S. Zivic, D. C. Bogdanovic, R. Jankovic, I. Smiljkovic - Clinic for Vascular Surgery, Clinical Centre Nis, Nis, Serbia
- P-7      Inflammatory Biomarkers Are Associated With DVT - An Interim Report**  
S. Blackburn, A. Hawley, N. Ballard, C. Stabler, K. Guire, F. Vandy, J. Rectenwald, P. Henke, D. Myers, T. Wakefield - University of Michigan, Ann Arbor, MI
- P-8      SQOR-V: Evaluation of the Population In General**  
J. Guex<sup>1</sup>, S. Boussetta<sup>2</sup>, C. Nguyen<sup>3</sup>, C. Taieb<sup>2</sup> - <sup>1</sup>Cabinet de Phlébologie, Nice, France, <sup>2</sup>Département Santé Publique - Pierre Fabre, Boulogne Billancourt, France, <sup>3</sup>Pierre Fabre Medicament, Castres, France
- P-9      In Search For An Optimal Compression Therapy of Venous Leg Ulcers - A Meta-Analysis Comparing Bandages With Stockings**  
F. Amsler, T. Willenberg, W. Blättler - Clinical and Interventional Angiology, Swiss Cardiovascular Centre, Berne, Switzerland
- P-10      Recurrence After Saphenous Vein Stripping Versus Endovenous Ablation: A Meta-Analysis**  
E. Xenos, G. Bietz, D. Minion, N. Abedi, E. Sorial, N. Karagiorgos, E. Edean - University of Kentucky Medical Center, Lexington, KY



- P-11      The Efficacy of Single Daily Dose of Enoxaparin Treatment In Acute Venous Thromboembolism: One Year Follow-Up Results**  
M. Kurdoglu, Istanbul University, Istanbul School of Medicine, Istanbul, Turkey
- P-12      Underutilization of Venous Thromboembolism Prophylaxis In Reconstructive Breast Surgery: A Survey of 606 Plastic Surgeons**  
C. J. Pannucci, A. J. Oppenheimer, T. W. Wakefield, E. G. Wilkins - University of Michigan, Ann Arbor, MI
- P-13      Comparison Among Stripping, CHIVA and Laser Ablation Performed With Haemodynamic Strategy: Rationale and Short-Term Outcomes**  
G. Vettorello<sup>1</sup>, L. Marini<sup>2</sup> - <sup>1</sup>ASS<sup>3</sup> Alto Friuli (UD), Udine, Italy, <sup>2</sup>Skin Doctors Center, Trieste, Italy
- P-14      Chronic Venous Disease and Its Impact On Quality of Life of Argentinean Patients Treated With A Combination of Ruscus Aculeatus + Hesperidin Methyl Chalcone and Ascorbic Acid.**  
J. J. Guex<sup>1</sup>, L. Avril<sup>2</sup>, S. Boussetta<sup>3</sup>, C. Taieb<sup>3</sup> - <sup>1</sup>Cabinet de Phlébologie, Nice, France, <sup>2</sup>Pierre Fabre Médicament, Castres, France, <sup>3</sup>Département Santé Publique - Pierre Fabre, Boulogne Billancourt, France
- P-15      Eccentric Compression of the Great Saphenous Vein (GSV) At the Thigh Level: Correlations Between Interface Pressure Measurements and CT Scan With 3D Reconstruction**  
J. Benigni<sup>1</sup>, J. Uhl<sup>2</sup>, A. Cornu-Thénard<sup>3</sup> - <sup>1</sup>Hôpital Bégin, St Mandé, France, <sup>2</sup>Varicose Veins Surgical Center, Neuilly, France, <sup>3</sup>Hôpital St Antoine, Paris, France
- P-16      Venous Thromboembolism Prophylaxis Methods In the Trauma and Emergency Surgery Intensive Care Unit Patients**  
M. Kurtoglu<sup>1</sup>, K. Serin<sup>2</sup>, Y. Hakan<sup>3</sup>, Y. Ozdenkaya<sup>4</sup> - <sup>1</sup>Istanbul Faculty of Medicine, Istanbul, Turkey, <sup>2</sup>Istanbul Faculty of Medicine, Istanbul, Turkey, <sup>3</sup>Istanbul Faculty of Medicine, Istanbul, Turkey, <sup>4</sup>Okmeydani Training and Research Hospital, Istanbul, Turkey

- P-17      How Can Laser Wavelength Influence the Outcome of Endovenous Varicose Veins Procedures?**  
S. Kaspar - Flebocentrum, Hradec Kralove, Czech Republic
- P-18      Which Pressure Do We Need To Reduce Breast Cancer Related Lymphedema By Short Stretch Compression Bandages?**  
R. Damstra<sup>1</sup>, H. Partsch<sup>2</sup> - <sup>1</sup>Department of Dermatology and Phlebology and Lymphology Hospital Nij Smellinghe, Drachten, Netherlands, <sup>2</sup>Medical University Vienna, Vienna, Austria
- P-19      RFA of the GSV: How Close Is Too Close?**  
C. Vasiliu, M. D. Iafrati, T. F. O'Donnell, Jr. - Tufts Medical Center, Boston, MA
- P-20      Mixed Results With Perforator Ablation For Chronic Venous Disease**  
B. S. DeCamp, M. Mansour, T. Cothery, J. M. Gorsuch - Spectrum Health, Grand Rapids, MI
- P-21      Venoplasty and Stenting of Residual Stenosis Following Pharmacomechanical Thrombectomy For Symptomatic Deep Vein Thrombosis**  
B. D. Moreira, A. Akingba, C. Lum, A. Gupta, O. Brown, J. R. Rubin - Wayne State University/Detroit Medical Center, Detroit, MI
- P-22      Prospective Comparison of the Pneumatic Cuff and Manual Compression Methods In Diagnosing Lower Extremity Venous Reflux**  
S. K. Kakkos, J. C. Lin, J. Sparks, M. Telly, M. McPharlin, D. J. Reddy - Henry Ford Hospital, Detroit, MI
- P-23      Quality of Life Improvement In Latin American Patients Suffering From Chronic Venous Disorder Using A Combination of Ruscus Aculeatus + Hesperidin Methyl Chalcone and Ascorbic Acid (QUALITY Study)**  
L. Avril<sup>1</sup>, E. Enrici<sup>2</sup>, E. Enriquez<sup>3</sup>, S. Boussetta<sup>1</sup>, C. Taieb<sup>1</sup> - <sup>1</sup>Pierre Fabre Company, Castres, France, <sup>2</sup>Hospital, Santa Fe, Argentina, <sup>3</sup>Hospital, Mexico, Mexico

- P-24 Can Bilateral Varicose Vein Surgery Be Performed Safely In An Ambulatory Setting?**  
J. T. Christenson, N. Murith, G. Gemayel - Venous Centre, Division of Cardiovascular Surgery, University Hospital of Geneva, Geneva, Switzerland
- P-25 Terminal Valve of the Great Saphenous Vein: Which Pressure Can It Hold?**  
S. M. Belentsov, A. S. Belentsov - City Clinic Hospital #40, Yekaterinburg, Russian Federation
- P-26 Endovenous Laser Ablation (EVLA) of Great Saphenous Varicose Veins By A 1470 NM Diode Laser By Using the Radial Fiber: First Results**  
F. Pannier<sup>1</sup>, E. Rabe<sup>2</sup>, U. Maurins<sup>3</sup> - <sup>1</sup>Dermatologie Koeln, Koeln, Germany, <sup>2</sup>Dep. of Dermatology, University of Bonn, Germany, <sup>3</sup>center of phlebology, Riga, Latvia
- P-27 Crossed-Tape Technique: A Method To Increase Eccentric Compression Pressure**  
M. Lugli<sup>1</sup>, R. Verucchi<sup>2</sup>, S. Guerzoni<sup>1</sup>, O. Maletti<sup>1</sup> - <sup>1</sup>Hesperia Hospital, Modena, Italy, <sup>2</sup>IFN-CNR Institute for Photonics and Nanotechnology, Trento, Italy
- P-28 Endovenous Laser Ablation Improves CIVIQ2 Score**  
S. Shokoku<sup>1</sup>, R. Launois<sup>2</sup> - <sup>1</sup>Varix Ambulatory Surgery Center, Okayama Daiichi Hospital, Okayama-shi, Japan, <sup>2</sup>REES France, Réseau d'Evaluation en Economie de la Sante, Paris, France
- P-29 Outcomes of Air Plethysmography Before and After Short Stripping of the Great Saphenous Vein**  
T. M. Klem - Sint Franciscus Hospital, Rotterdam, Netherlands
- P-30 Segmental Outflow Ratio As A Measure of Hemodynamic Impact of the Femoral Vein Obstruction In Clinical Decision Making**  
F. Lurie, R. L. Kistner - Kistner Vein Clinic and University of Hawaii, Honolulu, HI
- 7:30 pm THE FORUM FINALE**  
Awards, Dinner, Entertainment & More

# Wednesday, February 11, 2009

7:00 am Continental Breakfasts

## 8:00 am POSTGRADUATE COURSE The Great Debates

*Educational Objectives:*

*At the conclusion of the Postgraduate Course,  
the attendees will be able to:*

*Identify best practices (pharmacological and mechanical)  
for Thrombus Treatment*

*Assess the results of treatment for venal caval filters,  
DVT, lymphedema and ulcer therapy*

### Session I

8:00 am **Introduction – Rules of the Debate**

*Joseph A. Caprini, MD*

#### **Fibrinolytic/Mechanical Therapy For Iliofemoral DVT**

Anthony Comerota, MD

**vs.**

#### **Heparin/LMWH/Fondaparinux Therapy For Iliofemoral DVT**

Mark Meissner, MD

#### **Correcting Venous Insufficiency Does Affect Ulcer Healing**

Seshadri Raju, MD

**vs.**

#### **Correcting Venous Insufficiency Does Not Affect Ulcer Healing**

Kevin Burnand, MD

#### **Retrievable Venacaval Filters For Thrombosis Prophylaxis In High Risk Trauma Patients**

Robert McLafferty, MD

**vs.**

#### **Anticoagulation For Thrombosis Prophylaxis In High Risk Trauma Patients**

David Gillespie, MD

9:40 am Coffee Break

9:55 am **Anticoagulant Treatment For Calf Vein Thrombosis**

Joann Lohr, MD

**vs.**

**Observation/Stockings For Calf Vein Thrombosis**

Elna Masuda, MD

**Anticoagulant Treatment For Superficial Venous Thrombosis**

Thomas Wakefield, MD

**vs.**

**Anti-Inflammatory Treatment For Superficial Venous Thrombosis**

Michael Dalsing, MD

**The Rationale Exists For the Treatment of Perforating Veins In Advanced CVI**

Peter Gloviczki, MD

**vs.**

**Perforating Vein Treatment In Advanced CVI: No Compelling Evidence Equals No Rationale For TX**

Thomas O'Donnell, MD

**Individual Risk Assessment For Thrombosis Prophylaxis**

Joseph Caprini, MD

**vs.**

**Group Prophylaxis for Thrombosis Prophylaxis**

David Bergqvist, MD

**Thrombophilia Testing For DVT (YES)**

Peter Henke, MD

**vs.**

**Thrombophilia Testing For DVT (NO)**

Andrew Nicolaides, MD

12:00pm Conclusion

12:00 pm Lunch (*Boxed Lunch To Be Provided*)

**1:20 pm SCIENTIFIC SESSION I**  
**Management of Superficial Venous Disease**  
*Moderators: Lowell Kabnick, MD, Cees Wittens, MD*

*Educational Objectives:*

*After completion of this session the attendees will:*

*All understand the effects of laser ablation on the saphenous vein.*

*Understand adjunctive procedures after RFA or appropriate timing and application.*

*Understand the difference between compression devices and the results of thigh compression after greater saphenous vein procedures.*

*Understand the purpose to varicose veins recurrence after surgical treatment.*

*Understand the relationship between varicose veins and the patent foramin ovale.*

**1:30 pm 1**  
**Saphenous Laser Ablation At 1470 nm Targets the Vein Wall, Not Blood**  
 J. I. Almeida<sup>1</sup>, E. Mackay<sup>2</sup>, J. Javier<sup>3</sup>, T. Stock<sup>4</sup>, J. Mauriello<sup>5</sup>, J. K. Raines<sup>1</sup> - <sup>1</sup>Miami Vein Center, Miami, FL, <sup>2</sup>Mackay Vein Center, Tampa, FL, <sup>3</sup>Naples Vein Center, Naples, FL, <sup>4</sup>Biolitec Inc., East Longmeadow, MA, <sup>5</sup>Vein Center at Batey Cardiovascular, Bradenton, FL

**BACKGROUND:** To evaluate whether a water-specific laser wavelength will close incompetent saphenous veins without perivenous tumescent anesthesia using minimal energy dosing. Current endovenous lasers require 60-80 J/cm of energy delivery, require generous volumes of perivenous tumescent anesthesia to create venous deformation and a heat sink, and are associated with vein wall perforation and post-operative pain and bruising.

**METHODS:** Thirty-one incompetent saphenous veins (28 great saphenous, 3 anterior accessory saphenous) were treated with a maximum of 30 J/cm of 1470 nm laser energy via a radially-emitting fiber. Patient demographics were: mean age 51.5 years (range 29-75 years), 83.9% female, 61% white, and 39% black. Minor medical issues were present in 7 subjects, and the rest were healthy. CEAP classification was: 19 (C2), 7 (C4), 3 (C5), and 2 (C6). Power was set at 3 watts (n=24), 4 watts (n=3), and 5 watts (n=4).

**RESULTS:** The average total energy delivered was 22.6 J/cm. Twenty-nine cases (94%) required perivenous 0.1% lidocaine anesthesia (mean 28 cc), while 2 (6%) required no anesthesia. During the procedure 5 patients reported no pain, 11 mild pain, 13 moderate pain, and 2 severe pain. All veins closed at >21.3 J/cm (n=17), however, closure dropped to 78.6% (n=14) at <21.3 J/cm energy delivery (p=0.0231). Average vein size was 8 mm; the average treatment length was 33 cm and average ablation time was 8.2 minutes. Postoperative ultrasound demonstrated >50% vein wall thickening along the entire length of all successfully ablated veins with the intraluminal space free of thrombus (n= 28). Vein wall thickening was absent in the 3 failures. On a 10-point postoperative pain scale, patients reported an average of 0.8, and 79% required no oral analgesics. Eccymosis was absent in all patients.

**CONCLUSIONS:** Using a radial-firing 1470 nm laser it was possible to reduce the delivered energy from 60-80 J/cm to less than 30 J/cm by more laser-specific targeting of the vein wall. With reduced delivered energy, generous volumes of perivenous tumescent anesthesia to compress and reduce the vein diameter and create a heat sink were not required. Minimal amounts of local anesthesia were placed solely for analgesic reasons. The procedure and the first 24 hours were virtually painless for patients; and ecchymoses was absent. The Primary Closure Rate (90.3%) is comparable to current thermal ablation benchmarks. The authors conclude that such a dramatic reduction in energy and anesthetic requirements, combined with such robust postoperative sonographic vein wall changes, are indicative of the vein wall truly acting as a chromophore.

1:50 pm 2

## Adjunctive Procedures Following Radiofrequency Ablation of the Saphenous Vein: Incidence and Timing

M. A. Vasquez, MD, FACS, RVT<sup>1</sup>, J. Wang, MD, PhD<sup>2</sup>, C. E. Munschauer, BA<sup>1</sup>, G. Buczkowski RPA-C<sup>1</sup>, E. Sprehe MS, ANP<sup>1</sup>, H. H. Dosluoglu MD<sup>3</sup> - <sup>1</sup>Department of Surgery, State University of New York at Buffalo and the Venous Institute of Buffalo, Buffalo, NY, <sup>2</sup>Department of Surgery, State University of New York at Buffalo and the Department of Biostatistics, Roswell Park Memorial Cancer Institute, Buffalo, NY, <sup>3</sup>Division of Vascular Surgery, Department of Surgery, State University of New York at Buffalo Veterans Affairs Western New York Healthcare System, Buffalo, NY

**BACKGROUND:** Radiofrequency ablation (RFA) of the greater saphenous vein results in clinical improvement as determined by the Venous Clinical Severity Score (VCSS). Adjunctive procedures are often required. The choice and timing of these procedures are important to providing best patient care and are a matter of increasing debate. Based on VCSS we have recommended that adjunctive procedures be delayed 3-4 months following RFA to allow the full effect of saphenous ablation to be demonstrated. At that point, the patient's main symptomatic concerns can be best coupled to the clinician's judgment to commence a new treatment plan.

**METHODS:** We report on our original cohort of 682 patients who underwent RFA between 2003-2005. All patients were followed for up to 4 years to gather long term data regarding adjunctive procedures performed.

**RESULTS:** One hundred-fifty-seven patients (23%) required adjunctive procedures for residual or recurrent symptoms. This included microphlebectomy (69%), repeat ablation (9.6%), repeat ablation plus other (8.3%), and other procedures including accessory vein ablation, perforator treatment and sclerotherapy (13.4%). Microphlebectomy had the shortest average wait time after RFA (348 days), while repeat ablation had the longest wait time (818 days). Purely cosmetic treatments were not included in this assessment.

**CONCLUSIONS:** Based on the results of an accepted outcome measurement tool, the full benefits of saphenous vein ablation are not derived for 3-4 months following RFA. Most patients (77%) do not require additional procedures for symptoms. Delaying adjunctive procedures allows the clinician to formulate a more directed treatment plan that can best address the needs of the patient.

Table 1: Breakdown of adjunctive procedures performed

Microphlebectomy	108 (69%)
Repeat ablation	15 (9.6%)
Repeat ablation plus other	13 (8.3%)
Other procedures	21 (13.4%)
Total	157 (23%)

Table 2: Timing of adjunctive procedures following closure

Microphlebectomy	348 days (0-1440)
Repeat ablation	818 days (355-1302)
Repeat ablation plus other	370 days (0-814)
Other	515 days (0-1008)
Total	417 days (0-1440)



2:10 pm 3

## Thigh Compression With Different Compression Devices After Great Saphenous Vein Surgery

G. B. Mosti, V. Mattaliano - Clinica MD Barbantini, Lucca (LU), Italy

**INTRODUCTION:** Aim of our work was to study the clinical effectiveness and tolerability of different compression devices after great saphenous vein (GSV)- surgery depending on the exerted pressure.

**MATERIALS AND METHODS:** 36 patients (13 males; 23 females, age 58±11 years), treated by vein surgery because of massive GSV- insufficiency (CEAP C2-C5) were randomly assigned to receive 3 different compression devices after the procedure, 12 patients for every compression system. The patients were informed on the procedure and gave their consent to participate in this study.

Group 1: thigh length natural rubber stocking exerting at the B point 23-32 mm Hg (Gloria 261®; Menaggio; Italy); Group 2: the same stocking on top of a newly developed eccentric compression device (ECD) (Medi postop®, Medi Bayreuth, Germany) fixed at the skin by crosswise applied tapes; Group 3: inelastic bandage made up of Porelast® on the lower leg and the thigh and Panelast® on the knee area (Por-Pan-Por; Lohmann & Rauscher GmbH & Co KG, Rengsdorf; Germany) applied to exert  $\geq 40$  mm Hg at thigh level in the standing position.

All the devices were left in place for 6 days. The interface pressure was measured immediately after application and before removal by means of Picopress® (Microlab, Padua; Italy) with the probe on the medial aspect of the thigh halfway between the groin and the knee. At compression removal the patients were checked for severe side effects based on the following definitions: pain when VAS evaluation exceeded 8 and when analgesics were required; haematoma when a tissue hemorrhagic area more than 10cm<sup>2</sup> was measured; external bleeding when the stocking was significantly stained with blood; bruising when it was diffused in all the medial aspect of the thigh. Tolerability and discomfort of the compression system were evaluated as well.

**RESULTS:** Median values and ranges for the sub-bandage pressures (mm Hg) after application and 6 days later are given in the Table 1:

	Sub-bandage pressure (thigh)		Before removal after 6 days	
	Lying	Standing	Lying	Standing
Elastic stocking (n=12)	14.5 (11-17)	17 (14-18)	11 (8-15)	13 (11-18)
ECD (n=12)	76.5 (61-100)	103 (81-124)	41 (31-65)	66 (38-77)
Por-Pan-Por (n=12)	48 (29-58)	62 (42-75)	16 (11-25)	30 (15-33)

Severe reactions (n) are reported in Table 2:

	Pain	Haematoma	External bleeding	Bruising
Elastic stocking (n=12)	3	2	3	3
ECD (n=12)	0	0	0	0
Por-Pan-Por (n=12)	0	0	0	0

ECD was better tolerated than Por-Pan-Por.

**CONCLUSIONS:** The results support the use of high pressure compression devices, at least in the first week post-op, to minimize the post-surgical sequelae. An eccentric compression device fixed by tapes and topped by a stocking seems to offer the best tolerability.

2:30 pm 4

## Surgical Treatment For Varicose Recurrence: Is Inguinal Redo Surgery Justified?

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**BACKGROUND:** Surgical treatment for varicose recurrence (STVR) traditionally involves removing all sources of reflux from the deep venous network to the superficial venous network. STVR is usually more complex and aggressive than first line treatment by means of stripping, particularly for inguinal redo surgery (IRS). The **AIM** of this study is to compare the results of traditional STVR to the results of a less aggressive surgical approach focusing on treatment of the varicose reservoir (VR) avoiding IRS as often as possible.

**METHODS:** This study was a retrospective study comparing two successive periods of STVR after great saphenous vein (GSV) stripping: the first period (T1) involved traditional STVR and the second period (T2) involved STVR focusing on the VR. We reviewed postoperative complications and studied the haemodynamic and clinical results for both periods.

**RESULTS:** During the entire period of the retrospective study (T1+T2), we operated on a total of 473 legs to treat varicose recurrence after GSV stripping. Overall, we operated on 288 patients (236 women and 52 men) aged between 28 and 88 (mean age 57). We operated on 137 patients during T1 and 151 during T2. There was no significant preoperative difference between T1 and T2 in terms of demographic data, CEAP classification and the Venous Disability Score. There was inguinal reflux in 73.9% of cases during T1 and in 74.4% of cases during T2.

We performed IRS in 69% of cases during T1 and in only 2.6% of cases during T2 ( $P<0.05$ ). We did not use foam sclerotherapy in addition to STVR in any cases during T1 and T2. The postoperative complications rate was higher during T1 than during T2 (4% versus 0.5%,  $p<0.05$ ), particularly due to the frequency of inguinal complications.

After 3 years of follow-up, there was no significant difference for patients operated on during T1 or T2 with regard to the rate of iterative varicose recurrence (9.6% versus 8.6%), the absence of inguinal reflux (90.4% versus 91.7%) and levels of patient satisfaction (85.5% versus 93.5%). On the other hand, patients operated on during T2 had better results in terms of the Venous Disability Score (0.36 versus 0.57,  $p=0.02$ ) and cosmetic improvement (93.5% versus 81.3%,  $p<0.05$ ).

**CONCLUSIONS:** STVR focusing on the VR and avoiding IRS led to a reduction in postoperative complications with good clinical and haemodynamic results in the medium term, particularly in terms of improvements to symptoms and cosmetic appearance, compared to traditional STVR with IRS.

2:50 pm 5

## Is There A Relationship Between Varicose Veins and Patent Foramen Ovale (PFO)?

D. D. I. Wright<sup>1</sup>, A. Ebert<sup>2</sup>, A. Razumovsky<sup>3</sup>, J. Rush<sup>4</sup> - <sup>1</sup>BTG PLC, London, United Kingdom, <sup>2</sup>Lake Washington Vascular Surgeons, Bellevue, WA, <sup>3</sup>Sentient NeuroCare Services Inc, Cockeysville, MD, <sup>4</sup>BTG International, Philadelphia, PA

Varicose veins are increasingly treated by endovenous methods including foam sclerotherapy. Echocardiography of patients with R-L shunt treated with foam sclerotherapy demonstrates that bubble emboli can enter the systemic circulation through PFO. Circulating bubble emboli following foam sclerotherapy can therefore cause cerebral artery gas embolisation. This investigation sought to determine the prevalence of R-L in subjects with symptomatic GSV incompetence.

Males and females between 18-60 years with symptomatic varicose veins (CEAP C3-5) responded to an advertisement to recruit subjects into a study of endovenous microfoam ablation (EMA). Subjects were screened with duplex ultrasound and tested for R-L shunt using transcranial Doppler (TCD) middle cerebral artery (single-sided) blood flow monitoring for the presence of bubble emboli following injection of contrast (agitated saline/blood/air). One or more high intensity transient signal (HITS) was considered positive for R-L shunt (Spencer Grade  $\geq 1$ , either at rest or after Valsalva). Presence of bubble emboli during EMA was subsequently monitored.

A total of 217 subjects with GSV incompetence were tested for R-L shunt. Two shunt negative subjects had no grading recorded and one (Grade 5) was not tested with Valsalva. At rest 85 (39.2%) were positive for shunt [95% CI 32.7-45.7] and 112 (51.6%) were positive after the Valsalva [CI 45.0, 58.3]. The total number of subjects positive for R-L shunt either at rest or after Valsalva was 128 (59.0%) [CI 52.0-65.1]. Significantly higher than the reported 27% prevalence of PFO in the general population [CI 24.4-30.1]. At rest approximately half were grade 1 but following Valsalva the results were distributed more evenly across all grades. More severe shunts (4 & 5) occurred in 21% at rest and 46% after Valsalva.

Spencer Grading System		No. of Subjects with Spencer Grade	
Grade	Definition (no. of HITS)	At Rest	After Valsalva
0	0	129	102
1	1-5	44	29
2	6-10	10	16
3	11-50	13	15
4	51-150	9	24
5	>150	9	28

Eighty two patients underwent EMA, 51/61 (83.6%), who were TCD positive for shunt had bubble emboli during treatment compared with shunt negative patients when only 3/21 (16%) had bubble emboli.

Prevalence of R-L shunt in subjects with GSV incompetence was substantially greater than would expected in the general population. Most test positive patients were observed to have MCA bubble emboli detectable during EMA. TCD does not differentiate between intracardiac and intrapulmonary shunts, therefore further investigation is required. Understanding the association between R-L shunt and varicose veins, whether etiological or functional may improve the understanding of both conditions. These findings have safety importance in the treatment of varicose veins with foam sclerotherapy.

3:10 pm Coffee Break

### 3:30 pm ASK THE EXPERTS

#### **Endovenous Procedures: Below the Diaphragm**

*Moderator: Peter Neglen, MD*

*Panel: David Gillespie, MD, Olivier Hartung, MD, Haraldur Bjarnason, MD and Antonios Gasparis, MD*

*Educational objectives:*

*To understand the use of deep endovenous procedure in the lower limbs*

*To be aware of technical aspects of venous stenting*

*To realize the clinical impact of obstruction in chronic and acute venous disease*

*To recognize the adjuvant role of stenting after early clot removal*

5:00 pm Adjourn

6:00 pm Welcome Reception

### 7:30 pm INDUSTRY SPONSORED SYMPOSIUM

#### **Lymphedema: Advances In Treatment and Management**

Stanley G. Rockson, M.D., Moderator

An evening symposium co-sponsored by the journal *Lymphatic Research and Biology*\* and Versaggi Biocommunications®, with an educational grant from Tactile Systems Technology, Inc. Open to all AVF paid registrants. Beverages and hors d'oeuvres will be served. Each presentation will be followed by 15-minutes of Q&A discussion.

## Thursday, February 12, 2009

7:00 am Continental Breakfast / Exhibits Open

### 8:00 am SCIENTIFIC SESSION II

#### **Chronic Venous Insufficiency**

*Moderators: Joann Lohr, MD and Eberhard Rabe, MD*

*Educational Objectives:*

*After completion of this session the participant will be able to:*

*List the risk factors for different subsets of chronic venous disorders.*

*Correlate between chronic venous disease progression and modification of venous posing risk factors.*

*Describe the use of subcutaneous fasciotomy and the ratification of superficial reflux for therapy resistant recalcitrant venous ulcers and the results of this treatment.*

*Understand lymphatic function recovery after superficial venous reflux treatments.*

*Appropriate treatment therapy for recalcitrant venous ulcers.*

8:00 am 6

#### **Risk Factors For the Different Subsets of Chronic Venous Disorders: Results From the Basel Follow-Up Study**

P. Carpentier - CHU Grenoble, Grenoble, France

**BACKGROUND.** Although chronic venous disorders (CVD) are widespread in the general population and represent a major health problem, their pathogenesis remains unclear, which explains the difficulties encountered in the long-term management of CVD patients. As CVD appear as a multifactorial condition, the epidemiological approach is mandatory for a better understanding, and data from follow-up studies are crucial for the validation of statistical associations found in cross-sectional studies. In the Basel study, Leo Widmer and his team followed the venous status of a large cohort of subjects over a 11 years time course (1971-1982) and we reanalysed their data with the **AIM** of investigating the risk factors for the occurrence of varicose veins, venous edema and skin trophic changes.

**METHODS.** 4592 subjects working in the chemical industry of Basel were clinically evaluated (history, physical and standardized photograph) in 1971, and a subset of them were asked to participate in a follow-up examination in 1982; 1441 subjects participated in this follow-up. Statistical analysis were both univariate and logistic regression analysis, performed with a case-control design; cases were defined as subjects with respectively varicose veins, venous edema or skin changes in 1982, but not in 1971; controls were all subjects who did not show the analyzed disorder both in 1971 and 1982.

**RESULTS.** The results of full model logistic regression analysis are summarized in the table.

**CONCLUSION.** Only age is a significant predictor for all three target variables. Best single long term predictors are age for varicose veins, venous symptoms for edema and corona phlebectatica for skin changes. CVD should not be regarded only as a multifactorial, but even as a multidimensional condition.

Risk factors for the occurrence of CVD (logistic regression)			
Predictors (p<0.05)	Odds ratio for varicose veins	Odds ratio for venous edema	Odds ratio for skin changes
Venous symptoms	NS	4.08	NS
Varicose great saphenous vein	-	NS	1.72
Varicose short saphenous vein	-	NS	NS
Non saphenous varicose veins	-	NS	NS
Venous edema	NS	-	NS
Corona phlebectatica	NS	-	9.6
Age (per year)	1.03	1.04	1.05
Body Mass Index (per unit)	NS	1.16	NS
History of Deep Vein Thrombosis	NS	NS	1.86

## Correlation Between Chronic Venous Disease Progression (CVDP) and Modification of Predisposing Factors

T. Kostas, C. Ioannou, E. Georgakarakos, A. N. Katsamouris -  
University of Crete Medical School, Heraklion, Greece

**AIM:** To evaluate a) if patients with CVDP comply to principal predisposing factor modification recommendations and b) if predisposing factor modification inhibits CVDP progression.

**METHODS:** Seventy three patients (69 female, mean age 48 years), subjected to unilateral varicose vein surgery (73 operated limbs) were prospectively evaluated using physical and color duplex examination. At 5-years follow-up, the development of New Sites of Reflux (NSR) in the contralateral, asymptomatic, non-operated limbs were assessed and associated with the modification of predisposing factors, such as prolonged orthostatism, obesity, Estrogen Therapy (ET) and multiparity and Elastic Stockings (ES) use.

**RESULTS:** Forty-eight NSR, (superficial system: 37 (77%), perforators 5 (10.4%), deep venous system 6 (12.5%)), were revealed in 38 limbs (38/73, 52.1%) resulting in significant deterioration of all CEAP scores (Clinical score  $2.2 \pm 0.5$  from 0,  $p < 0.01$ , Anatomical score  $3.8 \pm 1.2$  from  $2.6 \pm 2.5$ ,  $p < 0.05$ , Disability score  $1.9 \pm 0.7$  from 0,  $p < 0.01$ , and Severity score  $7.9 \pm 2.4$  from  $2.6 \pm 2.5$ ,  $p < 0.01$ ).

Patient compliance to predisposing factor modification was low during the follow-up period. Specifically, patient compliance pre-op vs. post-op was: 1. Orthostatism: 60% vs. 64% ( $\chi^2$ ,  $p = 0.9$ ), 2. Obesity: 66% vs. 73% ( $\chi^2 = 0.7$ ), 3. ET: 6% vs. 7% ( $\chi^2 = 0.98$ ), 4. Multiparity: 5% vs. 10% ( $\chi^2 = 0.45$ ), 5. ES use: 46% vs. 33% ( $\chi^2 = 0.29$ ). Despite the fact that these changes were not significant we found that: a) patients who limited the pre-op orthostatism had a trend for lower incidence of CVDP compared to those who maintained the pre-op orthostatism or initiated it post-op ( $\chi^2$ ,  $p = 0.052$ ), b) patients who controlled the pre-op obesity, had a significant lower incidence of CVDP compared to those becoming obese post-op or maintaining the pre-op obesity ( $\chi^2 < 0.05$ ), c) patients, who stopped the use of ES post-op, had a significant higher incidence of CVDP compared to those who started their use post-op or continued the pre-op use ( $\chi^2$ ,  $p < 0.05$ ).

Additionally, we estimated, after bi-varied correlation analysis for ordinal variables, (Significance of Pearson's  $\chi^2$  with  $p < 0.05$ , Spearman's rho with  $p < 0.01$ , Significance of Spearman's rho with  $p < 0.05$ ), that: 1. Orthostatism had a significant impact on CVDP among patients who maintained the pre-op obesity, or became obese post-op. 2. Obesity had a significant influence on CVDP in patients who stopped using ES post-op or did not use ES post-op.

**CONCLUSIONS:** CVDP is related to the inability to control prolonged orthostatism and obesity as well as non-compliance to ES use, whereas the history of multiparity or ET did not significantly influence CVDP in these patients. Therefore, maintenance of a normal body weight, limitation of prolonged orthostatism and systemic use of ES should be recommended in CVDP patients

8:40 am 8

## Subcutaneous Fasciotomy and Eradication of Superficial Reflux For Therapy Resistant and Recurrent Venous Ulcers: Long-Term Results and Recurrence Rate

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<sup>2</sup>Department of Dermatology, University Hospital of Geneva, Geneva, Switzerland

**BACKGROUND:** Recurrent venous ulcer disease is a difficult entity to handle. There is evidence that eradication of superficial venous reflux and compression therapy does not always solve the problem. Significantly increased intramuscular and subcutaneous tissue pressures are often found in these patients and additional subcutaneous para-tibial fasciotomy promote instant ulcer healing. This study evaluates the long-term effect of eradication of superficial reflux with additional fasciotomy.

**METHODS:** Between June 2005 and April 2008, 58 patients underwent this type of surgery. Tissue pressures (intramuscular, i.m. and subcutaneous, s.c.) were measured preoperatively, day 1 and at 3 months postoperatively. Sixty-nine limbs with 91 venous ulcers were treated. Mean duration of ulcer disease was 3.4 years (0.5 to 15 years). Underlying disease was post-thrombotic syndrome (PT) in 19 patients (33%, 24 limbs, 27 ulcers) and severe chronic venous insufficiency (SCVI) in 39 (67%, 45 legs, 64 ulcers). All patients were C6 at the time of surgery. All surgery was performed by one surgeon. Preoperative tissue pressures were  $23.5 \pm 6.1$  mmHg (i.m.) and  $9.8 \pm 3.2$  mmHg (s.c.).

**RESULTS:** One ulcer did not heal, while 90 ulcers (99%) healed postoperatively (42 with and 47 without skin grafting). Tissue pressures significantly decreased following surgery to  $5.5 \pm 3.1$  mmHg (i.m.) and  $0.6 \pm 1.1$  mmHg (s.c.) and remained low at 3 months postoperatively. PT patients had significantly higher tissue pressures compared to SCVI patients both preoperatively and at 3 months. Ten ulcers in 6 patients recurred 6 to 20 months postoperatively (11%), resulting in 86.4% actuarial freedom from venous ulcer recurrence at 3 years following surgery. Significantly higher preoperative tissue pressures were observed in patients that subsequently developed ulcer recurrence compared to patients that remained healed. Ulcer recurrence occurred more often in PT patients (7 PT vs. 2 SCVI,  $p=0.032$ ), while other parameters did not differ. Two patients had no re-fasciotomy, 1 healed (SCVI) and 1 remained small (PT), with conservative treatment. Four (1 SCVI and 3 PT) had re-fasciotomy; all healed initially but 2 ulcers (2 patients, PT) recurred (at 11 and 12 months). Those patients underwent re-re-fasciotomy 1 healed and 1 recurred 6 months later.

**CONCLUSIONS:** Eradication of superficial reflux with additional subcutaneous fasciotomy for therapy resistant or recurrent venous ulcer improves ulcer healing. Long-term results are excellent particularly in patients with SCVI. Recurrence is more frequently seen in patients with PT syndrome. Life-long compression therapy still is a must. In patients with ulcer recurrence with high tissue pressures re-fasciotomy can be helpful to promote healing.



## Impaired Lymphatic Function Recovered After Great Saphenous Vein Stripping In Patients With Varicose Vein: Venodynamic and Lymphodynamic Results

N. Unno<sup>1</sup>, M. Suzuki<sup>1</sup>, N. Yamamoto<sup>1</sup>, M. Nishiyama<sup>1</sup>, H. Tanaka<sup>1</sup>, D. Sagara<sup>1</sup>, Y. Mano<sup>1</sup>, H. Konno<sup>2</sup> - <sup>1</sup>Division of Vascular Surgery, Second Department of Surgery, Hamamatsu University School of Medicine, Hamamatsu, Japan, <sup>2</sup>Hamamatsu University School of Medicine, Hamamatsu, Japan

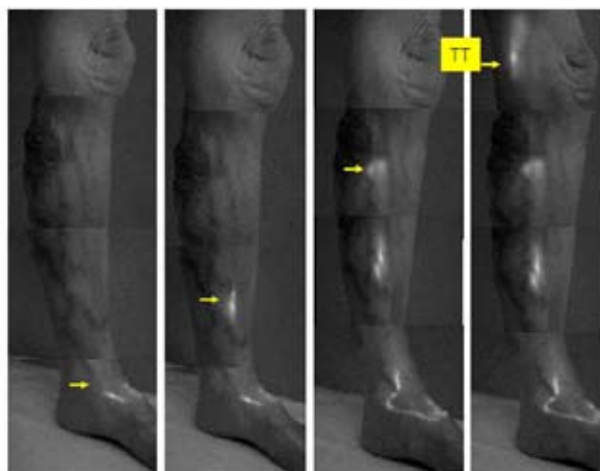
**BACKGROUND:** Veno-dynamics and lympho-dynamics may interact as an inseparable and mutually dependent dual outflow system. To understand the mechanisms of edema, both venodynamic and lymphodynamic studies are inevitable. The purpose of this study is to investigate the effect of surgical treatment on lower limb lymph flow in patients with varicose veins.

**METHODS:** This observational sequential prospective study was performed in a University affiliated hospital with a permission of the ethical committee. Forty-one limbs in 30 patients with varicose veins (Vx) were investigated in this study (CEAP class distribution: C2 14, C3 17, C4-C6 10 limbs). Air-plethysmography (APG) and indocyanine green (ICG) fluorescence lymphography were performed preoperatively and six months after surgical treatment. All limbs had a preoperative duplex examination and showed great saphenous vein (GSV) truncal incompetence. With APG, Venous volume (VV) and venous filling time was measured. Venous filling index (VFI) was calculated. ICG fluorescence lymphography was performed by subcutaneously injection of ICG (0.3 ml, 0.5% ICG) at the dorsum of the foot. After the injection, fluorescent image of ICG dye was traced as a real-time video image with a near-infrared camera system. The interval the dye reached the knee was measured (Transit time: TT) at standing position (Fig. 1), which was previously demonstrated to be correlated with the interval measured with dynamic isotope lymphoscintigraphy.

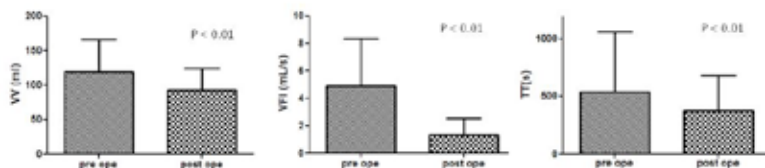
**RESULTS:** Preoperative TT in limbs with Vx was longer than that in healthy volunteers without venous insufficiency ( $490 \pm 510$ ,  $313 \pm 351$  seconds, respectively, mean  $\pm$  SD,  $p < 0.01$ ). Preoperative VV and VFI in limbs with Vx were  $118.4 \pm 47.2$  ml,  $4.90 \pm 3.2$  ml/s, respectively. GSV stripping was performed in all limbs. Six months after surgery, APG demonstrated significant hemodynamic changes as measured with VV and VFI ( $92.5 \pm 31.6$  ml,  $p < 0.01$ ,  $1.4 \pm 1.2$  ml/s,  $p < 0.01$ , respectively). Similarly, ICG fluorescence lymphography demonstrated significant decrease in TT ( $373 \pm 306$  seconds,  $p < 0.01$ ) (Fig. 2).

**CONCLUSIONS:** Varicose vein-induced derangement of lymph flow could be reversible with surgical treatment of venous incompetence. Measurement of TT with ICG fluorescence lymphography may be a useful parameter to assess lymphatic function in patients with chronic venous insufficiency.

Measurement of transit time(TT) by real time observation of ICG fluorescence lymphography. Arrows indicate the most advancing ICG dye in lymph vessel.



Venodynamic and lymphodynamic results (paired t-test)



# For the Treatment of Recalcitrant Venous Ulcers Low-Strength Compression Stockings Are Not Inferior To Multi-Layer Short-Stretch Bandages: Evidence From A Randomised Trial

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**BACKGROUND:** Compression is the mainstay of therapy for chronic venous leg ulcers. Medical compression stockings (MCS) are suitable to heal small ulcers and to prevent recurrence. The role of low-strength MCS in the treatment of refractory ulcerations is not clear.

**METHODS:** A randomised, single-centre, open-label study was performed on 60 legs of 56 consecutive patients with no prior compression therapy. Sigvaris prototype MCS providing 20.7 mmHg ( $\pm 5.5$ ) at the ankle (measured without eccentric compression) were compared with multi-layer short-stretch bandages. Eccentric padding was used in all patients. Wound treatment was individually tailored. Compression was left on the leg day and night and changed every week until healing was completed. Endpoints were healing within 90d, time to healing, and quality of life measured monthly with the chronic venous insufficiency questionnaire (CIVIQ).

**RESULTS:** Four patients (5 legs) dropped out, 2 (3 legs) in the MCS and 2 in the bandage group for ulcer progression (2), systemic infection (2), and death unrelated to venous disease (1). Characteristics of patients and ulcers were evenly distributed. The pressure exerted by the MCS was much lower than that of bandages and garment elasticity not different. The ratio and rate of ulcer healing did not differ significantly between MCS and bandage groups nor did quality of life.

Overall, risk factors for non-healing were advanced patient age (64.8yrs vs. 57.6yrs;  $p=0.021$ ), lower BMI (30.2kg/m<sup>2</sup> vs. 34.1kg/m<sup>2</sup>;  $p=0.028$ ), longer presence of ulcers (36.3mos vs.

13.4mos;  $p=0.025$ ), and larger initial ulcer area (17.9cm<sup>2</sup> vs. 5.5cm<sup>2</sup>;  $p=0.001$ ). Ulcer recurrence and deep venous reflux had no influence on healing.

Ulcers that were not healed at 90d had diminished their size from 17.9cm<sup>2</sup> to 8.7cm<sup>2</sup> ( $p<0.001$ ).

**CONCLUSION:** Compression therapy for 90 days brought less than half of the recalcitrant ulcer to complete healing (42%). MCS delivering a modest pressure to the ulcer area were not inferior to multi-layer short-stretch bandages. High interface pressure did not yield an advantage. Thus, MCS emerge as a valuable option for the necessary long-term treatment of recalcitrant ulcers.

Type of compression	MCS	Bandages	p for Difference
Patient's mean age (yrs)	62 ( $\pm 10$ )	61 ( $\pm 13$ )	0.833
Women	66%	63%	0.346
Mean BMI (kg/m <sup>2</sup> )	31 ( $\pm 7$ )	32 ( $\pm 6$ )	0.643
Ulcer size, mean (cm <sup>2</sup> )	13.1 ( $\pm 14.5$ )	12.2 ( $\pm 12.7$ )	0.809
Presence, mean (mos)	27 ( $\pm 45$ )	27 ( $\pm 30$ )	0.985
Recurrent ulcers	43%	56%	0.346
Deep venous reflux	39%	44%	0.698
Pressure beneath dressing and eccentric compression at ulcer area (mmHg)	29 ( $\pm 9$ )	49 ( $\pm 15$ )	0.001
Pressure amplitude with movement (mmHg)	16 ( $\pm 12$ )	15 ( $\pm 6$ )	0.928
Healing within 90 days (n/N)	10/28 (36%)	13/27 (48%)	0.350
Mean time to healing (wks)	6.7 ( $\pm 2.2$ )	6.9 ( $\pm 2.8$ )	0.839
Mean ulcer area at 90 days (cm <sup>2</sup> )	4.8 ( $\pm 8.5$ )	5.4 ( $\pm 11.7$ )	0.825
CIVIQ total score beginning	53 ( $\pm 19$ )	53 ( $\pm 15$ )	0.999
CIVIQ total score 35 days	44 ( $\pm 16$ )	44 ( $\pm 20$ )	0.944
CIVIQ total score 90 days (patients with no healing)	44 ( $\pm 18$ )	45 ( $\pm 17$ )	0.862

## MINI PRESENTATIONS

9:40 am 11 (Mini)

### Outcomes Based Upon Day of Warfarin Initiation In the Hospital Treatment of DVT

A. Perez, F. Al Solaiman - Cleveland Clinic, Cleveland, OH

**BACKGROUND:** Venous thromboembolism (VTE) is a common occurrence both in the community and in hospitalized patients. 1 year mortality for patients with a deep vein thrombosis (DVT) can range from 20-26%. When used, warfarin is recommended to be initiated on the same hospital day as heparin product initiation, but data is lacking as to how outcomes are affected.

**METHODS:** Patients discharged from 1/1/2006 - 6/30/2006 with the diagnosis of lower extremity DVT were evaluated by electronic medical record chart review. The following variables were evaluated concerning the treatment of their DVTs: age, hospital day warfarin initiated in comparison to heparin product initiation, initial dose of warfarin, therapeutic status of heparin, associated pulmonary embolism (PE) and subsequent inferior vena cava (IVC) filter placement. Primary outcomes measured were mortality at 6 months, mortality at 1 year, propagation/new DVT within a year and length of stay (LOS).

**RESULTS:** 703 patients were retrieved by electronic medical record search by DVT diagnosis. 532 verified acute lower extremity DVTs occurred within the study period with a mean age 62.8. 73 were given warfarin on Day 1 of heparin initiation (Group 1), 95 on Day 2 (Group 2) and 164 Day 2-5 (Group 3). Mortality rates at 6 months were 9.6%, 14.7% and 14.6% and at 12 months were 13.7%, 17.9%, and 17.1 % for Groups 1, 2, and 3 respectively. Rates of propagation/new DVT within one year were 11.0%, 11.6% and 15.2% respectively for Groups 1, 2, and 3. Age adjusted Odds Ratio Estimate for mortality of warfarin Day 1 vs. Day 2 was 0.72, 95% confidence interval (0.30-1.71). Mean LOS in days were for Group 1 = 10.0, Group 2 = 9.4 and Group 3 = 11.3.

**CONCLUSIONS:** For this sample size, no statistically significant differences in mortality, propagation of DVT/new DVT, or LOS were observed whether warfarin was initiated for lower extremity DVT on the same day as heparin product initiation vs. a delay of at least a day. Larger study populations are needed to verify with sufficient power both safety and cost differences of this early warfarin initiation strategy.

Acute DVT Patient Characteristics (Mean Age 62.8 Years)		
	N	%
Men	287	53.9
Women	245	46.1
PE Associated	87	16.4
Subsequent IVC Filter	163	30.6
Non-subtherapeutic Heparin Day1	212	59.4
Initial Dose of 5mg of Warfarin	229	73.4
Initial Dose of 10mg of Warfarin	12	3.8
Other Initial Dose of Warfarin	71	22.8

Characteristics of DVT Patients Treated with Warfarin in Relation to Day Heparin Product Initiated			
	Warfarin Day 1	Warfarin Day 2	Warfarin Day 2-5
Number of Patients	73	95	164
Female n/N (%)	36/73 (49.3)	51/95 (53.7)	81/164(49.4)
Mean Age (Years)	64.1	64.6	63.7

DVT Outcomes of Patients Treated with Warfarin in Relation to Day Heparin Product Initiated				
	Warfarin Day 1	Warfarin Day 2	Warfarin Day 2-5	P-Value (Warfarin D1 vs. D2, Warfarin D1 vs. D2-5)
Mean Length of Stay (Days)	10.0	9.4	11.3	0.35, 0.54
New DVT/Propagation at 1 Year: n/N (%)	8/73 (11.0)	11/95 (11.6)	25/164 (15.2)	0.90, 0.38
Death at 6 Months: n/N (%)	7/73 (9.6)	14/95 (14.7)	24/164 (14.6)	0.32, 0.29
Death at 12 Months: n/N (%)	10/73 (13.7)	17/95 (17.9)	28/164 (17.1)	0.46, 0.51
Age Adjusted Odds Ratio of Mortality of Warfarin given Day 1 vs. Day 2 = 0.72, 95 % CI (0.30-1.71)				

9:45 am 12 (Mini)

**Pharmaco-Mechanical Catheter Directed Thrombolysis For Pregnancy-Associated DVT**M. P. Sweet<sup>1</sup>, D. R. Nathanson<sup>2</sup>, D. B. Schneider<sup>1</sup> - <sup>1</sup>University of California San Francisco, San Francisco, CA, <sup>2</sup>California Pacific Medical Center, San Francisco, CA

**BACKGROUND:** Deep venous thrombosis occurs in 1-3 of 1,000 pregnancies. Pulmonary embolus from DVT is the leading cause of peri-partum death. Moreover, women of child-bearing age are at risk for long-term disability as a consequence of DVT from the post-thrombotic syndrome. Percutaneous intervention with catheter directed thrombolysis for DVT has been shown to reduce morbidity in non-pregnant patients. However, few reports exist about the use of percutaneous interventions for treatment of pregnancy associated DVT. We report a series of pharmaco-mechanical catheter directed thrombolysis (PCDT) of pregnancy associated ilio-femoral DVT in 4 patients.

**METHODS:** A retrospective review was conducted of 4 patients who underwent PCDT for treatment of ilio-femoral DVT diagnosed during pregnancy. PCDT was performed via ipsilateral popliteal access in 3 cases and ipsilateral femoral access in 1 case. Three patients were treated with power-pulse spray of a single bolus of tPA followed by mechanical thrombectomy with the AngioJet device. A single patient was treated in a similar fashion plus additional overnight tPA infusion using the EKOS device. Residual iliac venous stenosis was identified in all 4 patients and was treated with self-expanding stents. Prophylactic IVC filter placement was not performed. All patients were treated with therapeutic anti-coagulation for a minimum of 6 months. Clinical follow up was available for all patients.

**RESULTS:** All four patients presented with severe left lower extremity swelling during pregnancy and were diagnosed with ilio-femoral DVT by either ultrasound (n=3) or MRA (n=1). All patients were initially treated with IV heparin infusion and subsequently underwent PCDT for persistent severe symptoms. Three patients diagnosed during the late 3rd trimester were treated in the early post-partum period. One patient was diagnosed and treated during the 2nd trimester. PCDT was technically successful in all cases with restoration of venous patency. All patients were found to have iliac venous stenosis consistent with May-Thurner syndrome that was successfully treated with self-expanding stent placement. All patients experienced complete resolution of leg swelling and pain. One patient treated with PCDT 4 days after Cesarean section developed a large hematoma that required a laparotomy for evacuation. No complications occurred in the other 3 patients. All 4 mothers and children were healthy at last follow up with complete resolution of all DVT symptoms.

**CONCLUSIONS:** PCDT can be effective treatment for severe ilio-femoral DVT in carefully selected pregnant or post-partum patients. Although caution must be exercised, pregnancy should not be considered an absolute contraindication to endovascular treatment of severe ilio-femoral DVT. Additional studies to determine the safety and efficacy of PCDT in pregnant and post-partum patients are warranted.

**9:50 am National Screening Program Update: 2008**

Marc A. Passman, MD, *Chairman*

**9:55 am Knowledge Deficit In Venous Disease Remarkable In Current Vascular Trainees**

J. M. Lohr<sup>1</sup>, M. H. Meissner<sup>2</sup>, T. W. Wakefield<sup>3</sup>, J. V. White<sup>4</sup>,  
V. S. Sotturai<sup>4</sup> - <sup>1</sup>Lohr Surgical Specialists, Cincinnati,  
OH, <sup>2</sup>University of Washington, Seattle, WA, <sup>3</sup>Univeristy of  
Michigan, Ann Arbor, MI, <sup>4</sup>Lutheran General, Park Ridge, IL

Vascular residents attending the AVF 2007 Venous Fellows Course were surveyed prior to the course in Chicago. Fifty percent of respondents had completed six months of training while the remainder had completed eighteen months of training. Two-thirds reported inadequate training in venous disease. The average duration of vascular laboratory training was eight weeks with only twenty-eight percent having vascular laboratory interpretation training of venous studies. All respondents expect to include venous disease in their practices. Two-thirds of respondents had heard of CEAP, but only one-third could actually define it and ten percent could accurately classify patients. Venous anatomy questions were answered correctly by only five percent. Questions regarding sclerotherapy, idiopathic DVT, lytic access sites, thrombophilias, probe selection in vascular laboratory and thromboembolic prophylaxis were answered correctly fifty percent of the time. Assessment of iliac venous stenosis and the definition of pathologic venous reflux were answered correctly by thirty-nine percent and twenty-one of respondents respectively. Retesting after the course showed significant improvement in all question areas. The 2008 VSITE included fifteen percent venous questions and two percent lymphatic questions. Venous insufficiency items were correctly answered seventy-seven percent of the time while venous thrombosis questions were correctly answered eighty-three percent of the time. These results show the need and benefit of the AVF vascular resident education program and the need for further curriculum expansion in venous disease.

Thursday

10:00 am Coffee Break/Visit Exhibits

## 10:30 am SCIENTIFIC SESSION III

### Basic Science

*Moderators: Peter Pappas, MD & David Gillespie, MD*

#### *Educational Objectives:*

*After completion of this session the participant will be able to:*

*Describe venous muscle response to vasoconstriction and functional adaptations in the proximal, distal and varix segments of varicose of veins.*

*Describe vein wall remodeling after DVT and the effects of therapy with low molecular weight heparin and doxycycline.*

*Understand monocyte urokinase regulation and its effect on thrombus size.*

*Explain the hormonal mediated pathways of venous relaxation in animal model.*

10:30 am 13

### **Functional Adaptation of Venous Smooth Muscle Response To Vasoconstriction In Proximal, Distal and Varix Segments of Varicose Veins**

J. D. Raffetto<sup>1</sup>, R. A. Khalil<sup>2</sup> - <sup>1</sup>VA Boston HCS, West Roxbury, MA, <sup>2</sup>Brigham & Women's Hospital, Boston, MA

**INTRODUCTION:** Varicose Veins (VVs) is a common disorder of venous dilation with unclear mechanism. Although venous smooth muscle constitutes a significant component of the vein wall, the ability of VVs smooth muscle to produce constriction is unclear. The **OBJECTIVE** of this study was to determine whether venous smooth muscle contractile dysfunction is associated with VVs formation.

**METHODS:** Specimens of greater saphenous vein from patients undergoing lower extremity bypass (n=5) were used as control veins. Vein segments from the proximal end, distal end, and varices were obtained from patients undergoing VVs stripping (n=4). Circular venous segments were equilibrated under 2 g of tension in tissue bath (Krebs solution 95% O<sub>2</sub> 5% CO<sub>2</sub> at 37°C). Changes in isometric constriction were recorded. After two control constrictions to KCl (96 mM), the tissues were stimulated with phenylephrine (Phe, 10<sup>-9</sup>-10<sup>-4</sup> M) or angiotensin II (AngII, 10<sup>-11</sup>-10<sup>-6</sup> M).

Vasoconstrictor	Normal Vein	Varicose Vein		
		Proximal	Distal	Varices
Phe	0.05±0.01	0.04±0.02	0.02±0.00	0.07±0.02
Max (g/mg) ED50 (M)	3.8 x10 <sup>-6</sup>	8.2 x10 <sup>-6</sup>	6.7 x10 <sup>-6</sup>	3.8 x10 <sup>-6</sup>
AngII	0.02±0.00	0.02±0.00	0.01±0.00	0.00±0.00
Max (g/mg)ED50 (M)	2.9 x10 <sup>-9</sup>	4.8 x10 <sup>-9</sup>	6.6 x10 <sup>-9</sup>	7.9 x10 <sup>-8</sup>

**RESULTS:** All vein specimens produced significant constriction to KCl indicating viability. Phe caused concentration-dependent constriction in normal veins that reached a maximum of 0.05±0.01 g/mg. Phe produced smaller constriction, and was less potent (greater ED50), in proximal and distal VVs. Varices produced greater constriction to Phe compared with proximal and distal VVs and even normal vein. Phe was more potent in varix segments than proximal



and distal VVs, and equally potent in normal veins. In contrast, AngII caused concentration-dependent constriction in normal vein, but the magnitude was markedly smaller than that of Phe. Furthermore, AngII was less potent in all segments of VVs compared to normal veins, and caused negligible constriction in varix segments.

**CONCLUSIONS:** Compared with normal veins, VVs display upregulation of  $\alpha$ -adrenergic responses and downregulation of AngII-mediated venoconstriction. The venoconstriction differences are more pronounced in Varix segments as compared to the upstream proximal VVs or downstream distal VVs segments. Downregulation of AngII-mediated venous constriction may play a role in progressive dilation and VVs formation. The upregulation of  $\alpha$ -adrenergic responses in Varix segments may represent a compensatory adaptation of human venous smooth muscle to maintain venous wall constriction against the progressive venous distension associated with VV formation.

10:50 am 14

## DNA-Micro-Array Detection of Gene Variants In Venous Leg Ulcer: Will It Modify Clinical Assessment?

D. Gemmati<sup>1</sup>, L. Catozzi<sup>1</sup>, F. Federici<sup>1</sup>, S. Giancesini<sup>2</sup>, G. Tacconi<sup>2</sup>, G. L. Scapoli<sup>1</sup>, P. Zamboni<sup>2</sup> - <sup>1</sup>Hemostasis & Thrombosis Center, University of Ferrara, Ferrara, Italy, <sup>2</sup>Vascular Disease Center, University of Ferrara, Ferrara, Italy

**BACKGROUND:** Wound healing in venous leg ulcer (VLU) is a multi-step process involving complex pathways. Lack of the associated knowledge at molecular level limits clinical assessment and treatment. Anomalous management of local iron overload, as well as transglutaminase and MMPs, have a recently recognized role in VLU establishment. We selected a number of single nucleotide polymorphisms (SNPs) in candidate genes (HFE, FPN1, TF, MMP12, FXIII) basically involved in VLU to find out possible associations.

**METHODS:** Micro-array-genotyping was assessed in 638 subjects for the following SNPs: HFE [C282Y, H63D], FPN1 [-8CG], TF [C1C2], MMP12 [-82AG] and FXIII [V34L]. Among these, 221 were affected by VLU (171 primary and 50 post-thrombosis), 112 by severe CVD (CEAP, C3-C4), and 305 were healthy controls completely matched with cases. Statistical comparisons were performed between case groups and controls.

**RESULTS:** In the risk computation, HFE C282Y genotype had a CVD risk of 1.64 (CI95%, 0.9-3.1), and an overall VLU risk of 1.95 (CI95%, 1.0-3.9) even higher among primary VLU 2.01 (CI95%, 1.2-4.5). FPN1 -8GG genotype had a CVD risk of 4.3 (CI95%, 1.6-12), and an overall VLU risk of 5.2 (CI95%, 1.9-15) virtually the same among primary VLU 4.98 (CI95%, 1.82-14.9). MMP12 -82AG showed an appreciable different genotype distribution only comparing primary VLU vs controls (P=0.01). Conversely, TF C1C2 genotype had a protective association against primary VLU of 0.6 (CI95%, 0.35-0.9). Considering HFE H63D and FXIII V34L SNPs, no significant risk association was found. In the genotype-ulcer size association studies, among a sub group of 167 cases, we observed an inverse relation between mean ulcer size and the number of FXIII L34 alleles (P-trend <0.01; see table) and a smaller mean ulcer size among MMP12 GG-genotype compared with the other genotypes (P=0.001; see table). Finally, the TFC2C2 homozygous genotype had a smaller mean ulcer size compared with the other genotypes (P=0.001; see table).

FXIII V34L [n] (ulcer cm2)	MMP12 -82AG [n] (ulcer cm2)	TF C1C2 [n] (ulcer cm2)
VV [103] 16.3±30	AA [135] 12.7±15	C1C1 [125] 13.5±25
VL [56] 9.0±12	AG [26] 15.4±25	C1C2 [34] 13.6±17
LL [8] 5.0±5	GG [6] 5.4±2	C2C2 [8] 4.8±1.9

**CONCLUSIONS:** VLU is a complex disease in which gene and environment combine together to bring out many-sided clinical phenotypes. Our study by micro-array procedures demonstrates individual differences in VLU susceptibility among CVD patients, and also SNP-related different prognosis. Finally, DNA-micro-array could be added to clinical CVD assessment for its reliability in predicting VLU onset. Carriers of gene variants with increased VLU-susceptibility should undergo to surgery before any lesion establishment.

11:10 am 15

## **Vein Wall Remodeling After DVT: Differential Effects of Low Molecular Weight Heparin and Doxycycline**

V. Sood, C. Luke, E. Miller, M. Mitsuya, G. Upchurch, T. Wakefield, D. Myers, P. Henke - University of Michigan, Ann Arbor, MI

**OBJECTIVE:** Venous thrombus resolution sets up an early intense inflammatory reaction, from which vein wall damage results. Tissue response to injury includes matrix metalloproteinase (MMP) activation and extracellular matrix protein turnover. This study sought to determine the effect of exogenous MMP inhibition and its potential attenuation of early vein wall injury.

**METHODS:** Rats received treatment 2 days after a stasis venous thrombosis by IVC ligation had been formed and until harvest at day 7. Three groups were evaluated: 1. Vehicle saline (NaCl); 2. LMWH (Lovenox, 200 U/Kg per day SQ); 3. Doxycycline (DOXY; 30 mg/Kg per day PO). Thrombus size (mg), levels of TNF $\alpha$  and d-Dimer by colorimetric assay, and ED-1 counts by immunohistochemistry were assessed. Vein wall assessment included stiffness by tensiometry, IL $\beta$  protein levels by ELISA, MMP2 and -9 by zymography, histological analysis of intimal thickness (IT). Comparisons were by t-Test to control. A  $P < .05$  was considered significant.

**RESULTS:** Thrombi sizes were similar at both days 2 and 7, while thrombus TNF $\alpha$  was increased in 2d LMWH and DOXY treated groups (NaCl =  $1.0 \pm .8$ , LMWH =  $9 \pm 3^*$ , DOXY =  $27 \pm 5^*$ , pg/mg protein,  $N = 6-8$ ,  $P < .05$ ); and at 7d in the DOXY group (NaCl =  $3.0 \pm 2.5$ , DOXY =  $23 \pm 4.2^*$ , pg/mg protein,  $N = 5$ ,  $P < .05$ ). Vein wall stiffness was less with LMWH treatment at 7d, but not with DOXY, as compared with controls (NaCl =  $.33 \pm .05$ , LMWH =  $.17 \pm .03^*$ , DOXY =  $.43 \pm .09$  N/mm,  $N = 4-5$ ,  $P < .05$ ). Vessel-wall IL-1 $\beta$  was reduced only in the DOXY group at 7d (NaCl =  $26 \pm 3$ , LMWH =  $38 \pm 17$ , DOXY =  $6 \pm 3^*$  pg/mg protein,  $n = 4-6$ ,  $P < .05$ ) as was the IT score versus controls (NaCl =  $2.2 \pm .6$ , LMWH =  $1.7 \pm .3$ , DOXY =  $0.8 \pm .20^*$ , IT score,  $N = 4-6$ ,  $P < .05$ ). Zymographic MMP9 activity was significantly reduced at 2 days in the LMWH and DOXY groups (NaCl =  $85 \pm 24$ , LMWH =  $23 \pm 7^*$ , DOXY =  $13 \pm 5^*$  U/mg protein,  $N = 6-8$ ,  $P < .05$ ). MMP2 zymographic activity, thrombi ED-1 cell counts, and d-Dimer activity were not significantly different across groups.

**CONCLUSIONS:** Treatment with LMWH and DOXY did not alter size of DVT, mildly altered thrombus composition, and differentially affected vein wall injury. LMWH inhibited early MMP9 activity and was associated with decreased vein wall stiffness while DOXY also inhibited MMP9 activity and was associated with less intimal reaction. Whether exogenous MMP inhibition affects long term vein wall fibrosis will require further study.

11:30 am 16

### Monocyte Urokinase (uPA) Up-Regulation Reduces Thrombus Size In A Model of Venous Thrombosis

J. Humphries<sup>1</sup>, J. Gossage<sup>1</sup>, M. Waltham<sup>1</sup>, K. Burnand<sup>1</sup>, T. Sisson<sup>2</sup>, C. Murdoch<sup>1</sup>, A. Smith<sup>1</sup> - <sup>1</sup>King's College London School of Medicine, London, United Kingdom, <sup>2</sup>University of Michigan Medical School Dept. of Internal Medicine, Ann Arbor, MI

**BACKGROUND:** The main AIM of this study was to determine if systemically administered uPA upregulated monocytes accelerated venous thrombus resolution. Further AIMs were to ascertain if transfecting human blood monocyte/macrophages (HBMMs) with adenovirus-uPA (ad-uPA) could upregulate urokinase activity, increase monocyte fibrinolytic activity and accelerate their migration.

**METHODS:** Adenovirus vectors, ad-uPA or an empty cassette (ad-blank), were used to transfect HBMM isolated from 12 individuals. Levels of uPA activity and antigen, plasminogen activator inhibitor-1 (PAI-1), PAI-2, soluble urokinase receptor (uPAR) and monocyte chemotactic protein -1 (MCP-1) were measured in HBMM conditioned media using substrate and ELISA assays. A panel of ten inflammatory cytokines were estimated in cell conditioned media by multiplex ELISA. Cell viability and total protein were also assessed. The effect of uPA upregulation the migration rate of HBMM and macrophage like cell line (MM6) following transfection was assessed using a modified Boyden chamber assay. Thrombosis was induced in the inferior vena cava of SCID mice using reduced flow and endothelial disturbance. The leukocyte content and structure of the SCID mouse thrombi were characterised using immunohistochemistry. Uptake of HBMM into thrombi was confirmed by intravenous infusion of fluorescently labelled cells and immunohistochemical colocalisation of the human leukocyte antigen (HLA). HBMM (1x10<sup>6</sup> cells) treated with either ad-uPA, ad-blank or a sham injection of carrier were infused intravenously into cohorts of 8 SCID mice in which a thrombus was formed. Thrombi were harvested and weighed at seven days.

**RESULTS:** Adenovirus-uPA transfection of HBMMs increased uPA production by >1000-fold (P=0.003), uPA activity by 150-fold (P=0.0001), and soluble uPAR by almost 2-fold (P=0.043) compared with ad-blank treated cells. Expression of PAI-1 and PAI-2 were decreased by approximately 2-fold (P=0.011) and 3-fold (P=0.005) respectively. Up-regulation of HBMM uPA had no effect on their viability or the production of inflammatory cytokines. Transfection with ad-uPA increased the in vitro migration rate of both the macrophage cell line, MM6, (P=0.005) and HBMMs (P=0.03). Tracking fluorescently labelled cells and staining with HLA confirmed recruitment of HBMMs into thrombi formed in the SCID mice. Systemic injection of uPA-upregulated HBMMs caused a reduction in thrombus weight of approximately 20% compared with ad-blank (P=0.038) or sham treated controls (P=0.0028).

**CONCLUSION:** Stimulating HBMM uPA production using an ad-uPA construct increased fibrinolytic activity and enabled more rapid monocyte migration. Injection of uPA-upregulated HBMMs into the circulation significantly reduced thrombus size at one week post-induction.

11:50 am 17

# **Estrogen Receptor-Specific Endothelium-Dependent and -Independent Pathways of Venous Relaxation In Female Rat: Implications In Sex-Related Differences In Varicose Veins**

J. D. Raffetto<sup>1</sup>, R. A. Khalil<sup>2</sup> - <sup>1</sup>VA Boston HCS, West Roxbury, MA, <sup>2</sup>Brigham & Women's Hospital, Boston, MA

**BACKGROUND:** Sex differences in the prevalence of varicose veins have been reported, with greater incidence in females (F) compared with males (M). We have previously demonstrated reduced  $[Ca^{2+}]_e$ -dependent venous contraction and enhanced venodilatory response to acetylcholine in F compared with M rat inferior vena cava (IVC). This study was designed to test the hypothesis that the sex differences in venous responses likely related to direct effects of estrogen on specific vascular estrogen receptor (ER) subtype(s) and downstream activation of endothelium-dependent and/or endothelium-independent mechanisms of venous relaxation.

**METHODS:** Circular segments of IVC were isolated from F Sprague-Dawley rats and suspended between two wires in a tissue bath, and isometric contraction and relaxation were measured. IVC segments were pre-contracted with phenylephrine (Phe 10-5 M). To test for the specific ER, IVC segments were treated with increasing concentrations (10-12 to 10-5 M) of 17 $\beta$ -estradiol (E2, activator of most ERs), PPT (ER $\alpha$  agonist), DPN (ER $\beta$  agonist), and ICI 182,780 (GPR30 stimulant). To test for the role of endothelium-dependent nitric oxide (NO) release, experiments were conducted in IVC segments non-treated or treated with the NO synthase inhibitor L-NAME (3x10-4 M). Data are presented as % relaxation (mean $\pm$ SEM).

**RESULTS:** E2, PPT, DPN, and ICI 182,780 caused concentration-dependent relaxation of Phe contraction in IVC that reached a maximum at 10-5M. Maximal IVC relaxation was E2 (79.4 $\pm$ 5.4) > DPN (66.8 $\pm$ 11.2) > PPT (62.1 $\pm$ 17.0) > ICI 182,780 (50.0 $\pm$ 16.7). The venorelaxant effects of E2, DPN, and ICI 182,780 were reversible, and after washing the IVC with Krebs, a significant Phe contraction could still be elicited. In contrast, the venorelaxant effects of PPT were irreversible, and after repeated washing with Krebs, no Phe contraction could be measured. In IVC treated with L-NAME, the venous relaxation induced by E2 (79.4 $\pm$ 5.4) and DPN (67.2 $\pm$ 8.0) was similar to that induced in L-NAME nontreated IVC. On the other hand, the ICI 182,780-induced relaxation appeared to be different in L-NAME treated (80 $\pm$ 20.0) as compared to non-treated IVC.

**CONCLUSION:** In F rat IVC, estrogenic compounds induce significant venous relaxation in an ER subtype-specific fashion. The similarity in E2 and DPN induced relaxation in L-NAME treated and non-treated veins suggests an ER $\beta$  NO-independent venous relaxation mechanism. The difference in ICI 182,780 induced relaxation in L-NAME treated compared to non-treated veins suggests an GPR30 mediated NO-dependent in addition to an endothelium-independent venous relaxation mechanisms. The profound and persistent vein relaxation by PPT suggests that prolonged stimulation of ER $\alpha$  could lead to more distensible and less contractile veins, and thereby possibly accounting for the greater incidence of varicose veins in females.

## MINI PRESENTATIONS

12:10 pm 18 (Mini)

### Small Bowel Volvulus In A Quadriplegic - A Rare Complication of the Simon Nitinol Inferior Vena Cava Filter

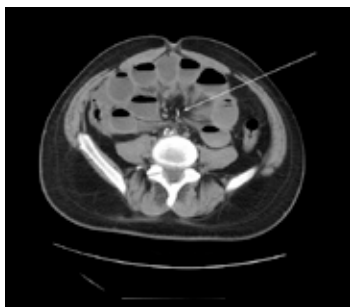
N. J. Umoh, C. M. Alessi, D. P. Franklin, A. O. Udekwa -  
Geisinger Medical Center, Danville, PA

**BACKGROUND:** Pulmonary embolism (PE) is the third most common cause of death in the United States. Among spinal cord injury patients, the incidence of clinically apparent deep venous thrombosis and PE are 15% and 5% respectively. The advent and use of inferior vena cava (IVC) filters have reduced the short term incidence of pulmonary embolism in hospitalized patients but are not without complications.

**METHODS:** We report a rare case of small bowel volvulus following IVC perforation by a Simon Nitinol filter strut in a quadriplegic patient four years after the IVC filter placement.

**RESULTS:** A 22 year old man restrained male passenger involved in a rollover motor vehicle accident presented via ambulance to our emergency department. He was clinically quadriplegic. Lateral C-spine films revealed a C5-C6 fracture dislocation with 100% anterior displacement and magnetic resonance imaging revealed spinal cord interruption at this level. He underwent C5-C6 anterior cervical discectomy with anterior and posterior fusion. A Simon Nitinol IVC filter was also placed in that admission.

Fours years later, he represented with a one day history of nausea, vomiting, abdominal pain and increasing abdominal distension. A computed tomography scan of the abdomen was suggestive of small bowel volvulus and showed one of the IVC filter struts outside the IVC.



He was immediately taken for an exploratory laparotomy. Intra-operatively, hemorrhagic infarction of 180cm of small bowel was found. An IVC filter strut had perforated through the IVC and migrated through the root of the small bowel mesentery to become the source for a volvulus.

This led to vascular compromise and resultant bowel infarction. The extracaval strut of the filter was transected, the infarcted bowel resected and an enteroenterostomy performed. He had an uncomplicated post-operative course.

Complications from IVC filters are well documented especially with regards to the Greenfield filter. To our knowledge, this is the first case report of a small bowel volvulus resulting from a Simon Nitinol IVC filter. We review the history, indications and complications of IVC filters.

**CONCLUSION:** The use of IVC filters has significantly increased over time and is associated with rare, but potentially fatal or morbid complications including small bowel volvulus. We recommend the use of retrievable filters, and their subsequent removal, for prophylactic indications in order to minimize long term complications.

12:15 pm 19 (Mini)

### **Femoral Hernia: An Unusual Cause of Chronic Venous Insufficiency**

M. Kindred, M. J. Sideman - University of Oklahoma, College of Medicine, Tulsa, Tulsa, OK

**BACKGROUND:** Chronic venous insufficiency and venous stasis ulceration are common problems that have significant impact on patient's lives. The most common causes of chronic venous insufficiency are reflux from incompetent valves or outflow obstruction from deep venous thromboses. To our knowledge, compression of the common femoral vein by a femoral hernia has not been reported as the cause of venous stasis ulceration.

**METHODS:** We offer a case report of a 54 year-old male with a 3 year history of right lower extremity edema and recurrent bouts of venous stasis ulcerations.

**RESULTS:** The patient was originally referred to the vascular clinic for treatment of recurrent venous stasis ulcerations of his right lower extremity. These had been present in the past and improved with conservative measures. He was an obese gentleman with chronic edema of the right lower extremity, venous stasis changes and ulcerations, and palpable pulses in the right foot. The greater saphenous venous system was competent by in-office ultrasound. The ulcers were treated successfully with Unna boots. Further evaluation with a CT - angiogram demonstrated a discrete occlusion of the right common femoral vein and a possible femoral hernia. Surgery was recommended.

In the operating room the right groin was explored revealing an incarcerated femoral hernia. A venogram was performed showing a discrete stenosis of the common femoral vein. A 10 mm balloon was inflated in the vein to aid in repair of the femoral hernia. The hernia was reduced and repaired primarily. Venogram after hernia repair showed a residual stenosis. Venous angioplasty with a 14 mm balloon was performed and reduced the stenosis to 0%.

On his first post-operative visit the patient reported marked improvement in both Objective and subjective symptoms. Physical exam revealed marked decrease in edema, absence of ulcerations and improvement in his stasis dermatitis.

**CONCLUSIONS:** While femoral hernia is an unusual cause of chronic venous insufficiency, it should be sought if the clinical picture is inconsistent with valvular incompetence or deep system obstruction.



12:20 pm 20 (Mini)

**Asymptomatic Bilateral External Iliac Vein Aneurysms  
In A Young Athlete: Case Report and Literature Review**

M. D. Humphries - University of California-Davis,  
Sacramento, CA

Iliac vein aneurysms are an exceedingly uncommon problem faced by vascular specialists. They may present with thromboembolism, spontaneous rupture, or they may be asymptomatic. We report a case of a healthy 32 year old woman, a professional volleyball player, who had large asymptomatic bilateral external iliac vein aneurysms found incidentally on a CT scan. Review of the literature found few case reports of unilateral iliac venous aneurysms; and only a single prior case report of bilateral aneurysms in a marathon runner. Although there is a paucity of literature specifically on iliac vein aneurysms, they appear to be more common on the left. Of the seven reports of unilateral external iliac vein aneurysms, all occurred on the left side. Iliac vein aneurysms occur equally in both male and females; however complications are more frequently observed in women. Spontaneous iliac vein rupture has been reported; 80% of patients presented after a thrombosis or pulmonary embolism. In evaluating these aneurysms, it is important to obtain MRI or CT volumetric imaging data that can be rendered in 3-dimensions and reconstructed in multiple planes. With our patient, it was the multiplanar reconstructions that best demonstrated the fusiform morphology of the aneurysms. Treatment for asymptomatic external iliac veins is controversial, and can include surgical intervention or anticoagulation.

Thursday



12:25 pm Adjourn

**12:30 pm AMERICAN COLLEGE OF  
PHLEBOLOGY LUNCH SYMPOSIUM  
FOAM SCLEROTHERAPY**

Moderator: Nick Morrison, MD

**Complications of Foam Sclerotherapy**

JJ Guex, MD

**Foam Sclerotherapy for Saphenous Insufficiency:**

**Why Wait for a Manufactured Foam? A European Perspective**

Attilio Cavezzi, MD

**Use of Different Gases for Foam Sclerotherapy**

Nick Morrison, MD

**Foam Sclerotherapy for VM's**

James Laredo, MD, PhD, RVT

**TCD with Foam Sclerotherapy**

Diana Neuhardt, RVT

**2:00 pm WORKSHOPS / SYMPOSIUMS**

**(Parallel Sessions)**

*Note: Workshops Repeat – Symposiums Do Not Repeat*

**SYMPOSIUM 1**

**TX of Exotic Veins and Cutaneous Lasers**

Neil Sadick, MD, Thomas Proebstle, MD

[or]

**WORKSHOPS – SESSION 1**

**Ultrasound Diagnosis**

Nicos Labropoulos, MD

**Vein Ablation**

Glenn Jacobowitz, MD, Nick Morrison, MD

**Pharmacomechanical Thombectomy**

David Gillespie, MD

**Sclerotherapy**

Julianne Stoughton, MD

## 3:30 PM SYMPOSIUM 2

### **New Technology and Procedural Advances**

Moderators: Jose Almeida, MD, Lowell Kabnick, MD,  
Suresh Vedantham, MD

### **Thermal Ablation Without Tumescant Anesthesia: Is It Feasible?**

Jose I. Almeida, MD

### **A New Laser Wavelength At 1470nm: Does Wavelength Matter?**

John Mauriello, MD

### **Are There Differences Between Bare, Covered or Diffusion Fibers?**

Lowell S. Kabnick, MD

### **Foam Sclerotherapy: Its Uses and Its Potential Complications**

Kathy Gibson, MD

### **Busting Venous Clot Above and Below the Inguinal Ligament: The Latest Endovenous Strategies**

Suresh Vedantham, MD

[or]

## **WORKSHOPS – SESSION 2 (*Repeated*)**

### **Ultrasound Diagnosis**

Nicos Labropoulos, MD

### **Vein Ablation**

Nick Morrison, MD

### **Pharmacomechanical Thombectomy**

David Gillespie, MD

### **Sclerotherapy**

Julianne Stoughton, MD

5:00 PM SYMPOSIUM 3

**Thunder On the Mountain: The New Business of Veins**

**Like A Rolling Stone - Vein Business Past, Present and Future: The Boston Experience**

Thomas O'Donnell, MD

**I Shall Be Released - Private Practice and Academia:**

**The Buffalo Experience**

Michael Vasquez, MD

**Don't Think Twice, It's Alright: Family Practitioners and**

**Veins: The Ann Arbor Experience**

Thomas Wakefield, MD

**When I Paint My Masterpiece: When To Change Your Business Model**

Jose Almeida, MD

**Shelter From The Storm: The New Business Commandments**

Steve Elias, MD

**Bringing It All Back Home**

Audience Questions

[or]

**WORKSHOPS – SESSION 3 (*Repeated*)**

**Ultrasound Diagnosis**

Nicos Labropoulos, MD

**Vein Ablation**

Nick Morrison, MD

**Pharmacomechanical Thombectomy**

David Gillespie, MD

**Sclerotherapy**

Julianne Stoughton, MD

6:15 pm Adjourn

7:30 pm Evening Symposium

## Friday, February 13, 2009

6:30 am IAC Breakfast

7:00 am Continental Breakfast / Exhibits Open

### 7:45 am SCIENTIFIC SESSION IV

#### **Deep Venous Disease**

*Moderators: Bo Eklof, MD, Haraldur Bjarnason, MD*

#### *Educational Objectives:*

*After completion of this session the participant will be able to:*

*Predict clinical outcomes in post prothrombotic limbs.*

*Select appropriate patients for ilioacaval stenting when morbidly obese.*

*Determine when bilateral stenting of the ilioacaval confluence is indicated.*

*Select patients to correct chronic venous insufficiency using monocusp technique.*

### 7:45 am 21

#### **Prospective Evaluation of the Clinical Deterioration In Postthrombotic Limbs**

A. P. Gasparis, N. Labropoulos, A. Tassiopoulos - SUNY Stony Brook, Stony Brook, NY

**OBJECTIVE:** Several studies have evaluated the natural history of deep vein thrombosis (DVT) with few correlating the clinical progression using duplex ultrasound (DU) during the first year. This study was designed to determine the relationship of changes in the venous system and correlate them with progression of disease at long term.

**METHODS:** Consecutive patients with a documented first episode of proximal DVT by DU were included prospectively. Clinic exams were performed at 3, 6, 12 months and yearly thereafter. The CEAP system was used to grade disease severity. DU was performed at least once, one year after the diagnosis, and repeated at 5 years. The proximal veins were divided in the common femoral vein (CFV), femoral vein (FV) and popliteal vein (POPV) segments for analysis. Thrombosed veins were subsequently graded as complete, partial and fully recanalized. Recurrent DVT cases were also recorded.

**RESULTS:** Forty-one patients with 46 involved limbs were included in the study. The incidence of skin damage at 1 year was 4% (2/46) whereas at 5 years it was 24% (11/46) of limbs ( $p=0.014$ ). Overall from 1 to 5 years a change in Clinical Class occurred in 14 limbs (30%) while 32 limbs remained the same. Of the limbs that changed three progressed from Class 0 to Class 3, 9 limbs from Class 3 to Class 4 and 6, and 2 limbs from Class 4 to Class 5 and 6. DU of the 14 limbs that had Clinical Class progression showed either recurrent DVT or progression of reflux in 11 limbs (79%). In the 32 limbs with no progression DU showed only reflux changes in 8 ( $p=0.001$ ).

Recurrent DVT at 1 year occurred in 9 out of 41 patients (21.9%) of which 6 (14.5%) was ipsilateral and 3 (7.3%) contralateral. Total recurrence at 5 years was 31.7% (ipsilateral in 21.9% and contralateral in 9.8%). The incidence of recurrent thrombosis was significantly higher in limbs that had progression in Clinical Class ( $p=0.0015$ ).

**CONCLUSION:** Clinical Class progression from year 1 to 5 occurs in 30% of post-thrombotic limbs. This progression is associated with development of new reflux and ipsilateral recurrent DVT.

8:05 am 22

**Ilio-Caval Stenting In the Obese**

S. Raju<sup>1</sup>, R. L. Darcey<sup>2</sup>, P. Neglén<sup>2</sup> - <sup>1</sup>University of Mississippi Medical Center, Jackson, MS, <sup>2</sup>River Oaks Hospital, Flowood, MS

**BACKGROUND:** Chronic venous disease (CVD) in the obese (BMI more than 30) poses difficult management problems. Weight reduction often fails or is not an option, and compression therapy difficult or ineffective. Persistent symptoms further diminish activity and exercise. Stenting of the ilio-femoral venous outflow in this difficult subset of limbs were studied.

**METHODS:** During an 11-year period iliofemoral venous stenting was performed in 87 obese patients (101 limbs, 14 bilateral; 5 patients required recanalization of an occlusion, one bilaterally). Concurrent EVLT was performed in 23 limbs. The median age was 51 years (range: 23-84), weight 260 lbs (165-≥500, scale limit), and BMI 41(30-83). Male/female ratio was 5:3. CEAP classification of treated limbs: C2- 2; C3-45; C4a-15; C4b-13; C5-8; C6-18; Ep-65; Es-36; Ad-42; Ad/p-2; As/d-54; As/d/p-3; Po-36; Pr/o-65. Ultrasound scanning or venogram was performed regularly to detect patency. Clinic outcome (pain, swelling, and ulcer healing) was performed at followup (median 8 months; range: 1-97).

**RESULTS:** Median pre-stent resting and exercise femoral vein pressures were 24 mm Hg (range: 14-39) and 28 mm Hg (range: 16-57), respectively. In 24 limbs the exercise pressure increase was >3 mm Hg. These pressures were not significantly different in the non-operated limb or in a non-obese cohort of patients. Median cross-section area at the greatest obstruction was 0.61 cm<sup>2</sup> (68% stenosis) and 1.83 cm<sup>2</sup> following stenting. The obstructive lesion was diffuse and segmental on intravascular ultrasound (IVUS) in postthrombotic limbs. Contrarily, the lesion was focal and subsegmental at arterial crossover points in non-thrombotic limbs, and not a diffuse compression as previously hypothesized. Mortality was nil and early DVT (≤30 day) was found in 5 limbs (ipsilateral limb in 4, involving the stent in 2). Late occlusions occurred in 4 stents (one was reopened by lysis). Cumulative primary, assisted-primary and secondary patency at 5 years were 52%, 97% and 98%, respectively. Median swelling significantly improved after stenting from grade 3 (range: 0-3) to 1 (range: 0-3) (p<0.0001); median pain (visual analog scale) improved from 4/10 (range: 0-9) to 0/10 (range: 0-8) (p<0.0001); 12/24 ulcers healed. There was no change in ambulatory venous pressure, refilling time, venous filling index (air plethysmography) or arm/foot pressure parameters after stenting.

**CONCLUSIONS:** The etiology and pathology of CVI in the obese is multivariuous as in non-obese patients. Iliac vein obstruction with or without distal reflux is often present. Venous stenting appears to be a worthwhile procedure in obese patients who had failed conventional treatment to control CVI symptoms.

8:25 am 23

## **Bilateral Stenting of the Iliocaval Confluence**

P. Neglén, R. L. Darcey, S. Raju - River Oaks Hospital,  
Flowood, MS

**BACKGROUND:** Chronic non-malignant obstruction of the ilio-caval venous confluence may need bilateral stenting. This study describes techniques and stent-related outcome of bilateral stenting.

**METHODS:** 80 patients had bilateral stenting of the ilio-caval confluence (median age: 54 years, range: 14-76; female/male ratio 3/1; non-thrombotic iliac lesion/thrombotic lesion ratio was 1.3/1 in 160 limbs, requiring recanalization in 13 thrombotic limbs; 85 limbs had concomitant reflux, involving the superficial system in 70 limbs). C-class of CEAP was 2-3 in 97/160 limbs and 4-6 in 67/160 including 20 limbs with active ulcer. 116 limbs were painful and 119 limbs had swelling. Twenty patients were treated in the same setting; in 33 patients the procedures were intentionally staged; in 27 the development of contra-lateral symptoms resulted in contralateral stenting. Bilateral stenting was performed as a “double-barrel” technique (“kissing-stents” in the IVC reaching into the iliac veins; DB; n=29), fenestrated Y-configuration (stent inserted through the side of a previously inserted contralateral ilio-caval stent, sometimes facilitated by the use of a TIPS-needle; Y-FEN; n=17), or by “appositional” technique (positioning of the iliac stent as close as possible to the contralateral stent leaving a short cephalad vein not covered by stent; APP; n=34). The patients were followed clinically and stent patency ensured by intermittent transfemoral venogram or ultrasound scanning.

**RESULTS:** The limb symptoms were substantially improved similarly to previously reported results of unilateral stenting procedures. Reinterventions were performed in 19 limbs (10, 3 and 6 in the APP, DB and Y-FEN groups, respectively). Six of the APP patients were converted to “double-barrel” (2) or Y-fenestration (4) configurations due to recurrent symptoms of the leg with the uncovered iliac vein. Late occlusions occurred only in the Y-fenestrated groups, 3 unilateral (2 limbs reopened by thrombolysis) and 1 bilateral occlusion, which remained occluded. Primary, assisted primary and secondary cumulative patency at 50 months were 55%, 100% and 100%, 73%, 100%, and 100%, 31%, 59%, and 86% in the APP, DB and Y-FEN groups, respectively.

**CONCLUSIONS:** The subgroups of patients using different techniques are small and results affected by the etiology of obstruction. “Double-barrel” technique at the same sitting, when possible to perform, appears to have the least stent-related complications. This technique usually has to be replaced by y-fenestration in patients with bilateral occluded veins or small caliber IVC. There appear to be a risk of recurrent stenosis in the uncovered iliac veins using the “appositional” technique requiring re-intervention.

8:45 am 24

**Monocusp - To Correct CVI**

J. C. Opie - Optima Vein Care, Scottsdale/Chandler, AZ

**BACKGROUND:** Central Venous Insufficiency is relatively common and affects between 3%-5% of the adult population. When a CVI affected common femoral vein has no usable/reconstructable valves or no valves at all, the CVI condition is severe and has generally been considered inoperable and uncorrectable. Greater than 95% of secondary CVI patients (secondary to DVT - by far the most common form) will have no usable/reconstructable CFV valves. For those reasons surgery to correct this condition is presently uncommon. Traditional management is compression stockings and wound care clinics when the skin ulcers occur. Patients with this condition usually appear at wound clinics with swollen legs, aggressive venous stasis ulcers, and have multiple frustrating therapeutic failures. The cost to the US/UK health care to manage CVI patients approaches about \$2 billion annually. Current treatment methods should be largely declared a financial and therapeutic failure.

**METHODS:** A new operation was invented using a box shaped incision on the anterior wall of the CFV with a distal uncut hinge creating a CFV wall viable monocusp. This monocusp is suspended close to the side of the lumen of the CFV with 60 prolene sutures and can occlude the CFV with reflux, and open again when the reflux stops, the monocusp creates a viable valve that exhibits low thrombogenic tendencies that has stood the test of time. The CFV defect is covered with a special highly compliant iVena (Atrium Medical Corp) e-PTFE vascular patch.

**RESULTS:** 23 such monocusp surgeries have now been completed and followed for five years for the longest follow ups. Mean venous reflux scores decrease from  $3.8 \pm 0.4$  to  $0.3 \pm 0.5$  ( $p < 0.001$ ). VIENES scores improved from  $2.7 \pm 0.9$  to 0 ( $p < 0.001$ ). CEAP scores improved from 4-6 to 0-1. Note CEAP is not generally a post operative grading system due to C5 grading but it can be modified.

**CONCLUSIONS:** Monocusp surgery works reliably in reversing most of the complications of CVI including: resolution and nonrecurrence of VSUs, eczema, lipodermosclerosis, hemosiderin, leg congestion. Wound clinic visits and compression stockings are usually not required after monocusp surgery and monocusp surgery has avoided at least 4 probable amputations so far in this series. There have been minimal surgical complications and no mortality associated with the procedure. The surgery appears safe, reliable and relative easy to complete for a trained vascular surgeon. Monocusp surgery could become widespread for miserable CVI patients. The surgery is billed as a CFV valvuloplasty and e-PTFE patch venoplasty and is in the CPT code books.

9:05 am Coffee Break / Visit Exhibits



**9:45 am    SESSION V****Award Session***Moderator: Joann Lohr, MD***9:45 am    European Venous Forum – First Place Winner****Inelastic Compression Increases Venous Ejection Fraction More Than Elastic Bandages**

J. Mosti<sup>1</sup>, V. Mattaliano<sup>1</sup>, H. Partsch<sup>2</sup> – <sup>1</sup>Angiology Department, Clinica MD Barbantini, Lucca, Italy; <sup>2</sup>Private Practice, Vienna, Austria

**10:00 am    European Venous Forum – Second Place Winner****Side Effects and Complications of Foam Sclerotherapy of the Great and Small Saphenous Veins: A Controlled Multi-Center Prospective Study Including 1025 Patients**

J.L. Gillet, J.M. Guedes, J.J. Guex, C. Hamel-Desnos, M. Schadeck, M. Lauseker, F.A. Allaert - Vascular Medicine/Phlebology, Bourgoin-Jallieu, France

**10:15 am    BSN Jobst 2008 Winner – Interim Report**

K. Barry Deatrck, MD  
University of Michigan – Ann Arbor, MI

**10:35 am    Servier 2008 Winners – Report****10:55 am    Sigvaris 2008 Winner's Announcement****11:00 am    PRESIDENTIAL ADDRESS****Changing Hats and Roles**

Joann M. Lohr, MD, RVT  
*Introduction By: Joseph A. Caprini, MD*

**12:00 pm    Member Business Luncheon****1:00 pm    Free Afternoon - Golf /Tennis Tournaments**

## Saturday, February 14, 2009

7:00 am Continental Breakfast / Visit Exhibits

### 8:00 am SCIENTIFIC SESSION VI

#### **Venous Thromboembolism**

*Moderators: Mark Meissner, MD and Peter Henke, MD*

##### *Educational Objectives:*

*After completion of this session the participant will be able to:*  
*Identify patients at risk for recurrent DVT and explain the natural history of deep vein thrombosis.*

*Understand validation of retrospective venous thromboembolism risk scoring.*

*Explain iliofemoral versus femoral popliteal deep vein thrombosis, the clinically and hemodynamically significance, and the development of chronic venous insufficiency in postthrombotic disease process.*

*Understand the utilization of prospective algorithm for bedside intravascular ultrasound placement of filters in the critically ill.*

*Select appropriate patients for pharmacomechanical thrombectomy for DVT.*

### 8:00 am 25

#### **Recurrent Deep Vein Thrombosis: Long Term Incidence and Natural History**

J. Jen, H. Jen, A. P. Gasparis, A. Tassiopoulos, N. Labropoulos - SUNY Stony Brook, Stony Brook, NY

**PURPOSE:** This study was designed to determine the incidence of recurrent deep vein thrombosis (DVT), to evaluate the factors associated with risk of recurrence, and to examine its impact on morbidity and mortality.

**PATIENTS AND METHODS:** Consecutive patients who came to the vascular laboratory for detection of DVT were included in the study. Only patients with acute DVT were enrolled. Patients with previous venous thromboembolism (VTE), active cancer, short life expectancy and on anticoagulation or in need of permanent anticoagulation were excluded. All remaining patients underwent follow up with clinical examination and duplex ultrasound for at least 5 years. The distribution and extent of the first DVT was recorded in detail. Recurrent VTE, cause of mortality, and the development of post thrombotic syndrome (PTS) were recorded. Data on thrombophilia, anticoagulation, new onset of cancer and other diseases were entered prospectively.

**RESULTS:** 487 patients were enrolled in this study. 292 patients were excluded due to previous VTE (79), on anticoagulation at time of DVT (7), need for permanent anticoagulation (51), active cancer (94), death at 6 months (3), short life expectancy (19), unable to return for follow up (27), or refused to be part of the study (12). Of the remaining 195 patients, 31 died and 11 were lost to follow up prior to 5 years. Therefore, 153 patients were available for long term analysis.

Unprovoked DVT was associated with a higher recurrence rate at 5 years (31/83, 37% vs 9/70, 13%  $p < 0.001$ ). Patients with proximal and calf DVT (17/48, 35%) had a higher recurrence rate than proximal (12/49, 24%,  $p = 0.27$ ) or calf alone (11/56, 20%,  $p = 0.08$ ). Age over 65 was associated with higher recurrence rates (24/67, 36% vs 16/86, 19%  $p = 0.025$ ). Thrombophilia was present in 22% of patients (24/107). These patients had 9 recurrences for rate of 37%. 47 patients had either surgery or trauma with a recurrence rate of 6%.

Ipsilateral recurrence was associated with increased severity of PTS (presence of skin damage) compared to both no recurrence and contralateral recurrence (13/28, 46% vs 16/128, 12%  $p < 0.001$ ; vs 1/12, 8%  $p = 0.03$ ). PE occurred 47 times in our follow up interval, 12 of which were fatal events (12/47, 25%).

**CONCLUSIONS:** Factors associated with a higher rate of recurrence included unprovoked DVT, age  $> 65$ , and thrombophilia. Patients with temporary causative factors such as surgery and trauma had low recurrence rates. Increased thrombotic burden may be associated with higher recurrence rates. Ipsilateral recurrence was strongly associated with increased development of PTS. PE occurred frequently and was a common cause of death.

8:20 am 26

## A Validation Study of A Retrospective Venous Thromboembolism Risk Scoring Method

V. Bahl<sup>1</sup>, H. Hu<sup>1</sup>, P. K. Henke<sup>1</sup>, T. W. Wakefield<sup>1</sup>, D. A. Campbell, Jr.<sup>1</sup>, J. A. Caprini<sup>2</sup> - <sup>1</sup>University of Michigan Health System, Ann Arbor, MI, <sup>2</sup>Northwestern University, Chicago, IL

**BACKGROUND:** Venous thromboembolism (VTE), a disease which includes deep vein thrombosis and pulmonary embolism, results in significant mortality and morbidity among surgical patients. Despite strong evidence that VTE prophylaxis reduces the incidence of VTE, numerous studies show that prophylaxis is underutilized or inadequate for patients at-risk. To measure prophylaxis practices at our academic medical center, a retrospective risk scoring method based on a published VTE risk assessment model was developed. The **OBJECTIVES** of this study were to validate this method and assess the confounding effects of provider adherence to VTE prophylaxis guidelines.

**METHODS:** A total of 8,216 inpatients from the private sector National Surgical Quality Improvement Program discharged between July 2001 and January 2008 were selected for study. The VTE risk category (low, moderate, high and highest) for each patient was assigned using the retrospective scoring method, which is based on data from electronic sources. Logistic regression was used to calculate odds ratios (OR) for VTE within 30 days after surgery of individual risk factors and the four risk categories. A bivariate probit model was applied to estimate the effects of the risk category while controlling for adherence to prophylaxis guidelines.

**RESULTS:** The distribution of the study population by risk was: highest: 51.5%, high: 36.1%, moderate: 10.2%; low: 2.1%. The incidence of VTE within 30 days was: overall: 1.4%; by risk: highest: 1.9%; high: 0.9%; moderate: 1.1%; low: 0%. Controlling for length of hospitalization (>2d) and fiscal year, pregnancy or postpartum (OR = 8.3; 1.0-68,  $p < .05$ ), recent sepsis (4.0; 1.4-10.9,  $p < .01$ ), malignancy (2.3; 1.5-3.3,  $p < .01$ ), history of VTE (2.1; 1.1-4.1,  $p < .05$ ) and central venous access (1.8; 1.1-3.0,  $p < .05$ ) were associated with VTE. Age, varicose veins, and Factor V Leiden were marginally significant, at  $\alpha = 0.1$  level. The four risk categories were significantly associated with the likelihood of acquiring a VTE (1.7; 1.3-2.3,  $p < .01$ ). The bivariate probit model demonstrated a significant association between the probability of acquiring VTE and lack of adherence to prophylaxis guidelines ( $\rho = 0.331$ ,  $p = 0.006$ ). When recommended prophylaxis is not given, the marginal effect of an increase in risk from moderate to high on the mean probability of VTE was an increase of 0.31 percentage points ( $p < .05$ ). The marginal effect of an increase from high to highest risk was a growth of 0.74 percentage points ( $p < .0001$ ).

**CONCLUSIONS:** An internally-developed retrospective VTE risk scoring system, coupled with data about length of hospitalization, produced a valid method for identifying patients at risk for VTE within 30 days after surgery. Validation of a prospective scoring system will further refine VTE risks in surgical patients.

## Iliofemoral Versus Femoropopliteal Deep Vein Thrombosis: Clinical and Hemodynamic Significance In Post-Thrombotic Venous Disease

K. T. Delis<sup>1</sup>, A. L. Knaggs<sup>2</sup> - <sup>1</sup>Athens Medical Center, Athens, Greece, Imperial College, London, United Kingdom, <sup>2</sup>Imperial College, London, United Kingdom

**BACKGROUND:** By compromising the venous outflow at the apex of the extremity's veins and with time the competency of local valves, iliofemoral deep vein thrombosis (DVT) is associated with advanced chronic venous clinical and hemodynamic impairment. However, a comprehensive comparison with post-thrombotic proximal DVT, which originally spared the iliac veins (femoropopliteal DVT), is currently unavailable. Our hypothesis was that femoropopliteal DVT, by posing a lesser challenge to the venous outflow of the extremity, would allow a less complicated disease resolution, thus leading to less severe chronic venous sequelae. The purpose of this study was to determine the long-term clinical and hemodynamic significance of iliofemoral versus femoropopliteal DVT, and the impact of outflow obstruction, in post-thrombotic chronic venous disease.

**METHODS:** The study comprises 37 consecutive patients with a history of proximal DVT which spared the iliac veins [20 men, 17 women; 37 limbs](Femoropopliteal-DVT Group), and 33 consecutive patients with past DVT which propagated into the iliac veins [16 men, 17 women; 33 limbs](Iliofemoral-DVT Group). All study patients were treated originally with anticoagulation, leg elevation and elastic compression. Patients were referred to the vascular-lab for non-invasive investigation of their venous hemodynamics with duplex and air-plethysmography. The CEAP clinical class[C] and VCSS level of the afflicted limbs were also determined. Hemodynamic assessment included: venous outflow (Outflow-fraction[OF]), amount of venous reflux (Venous-Filling-Index[VFI]), and calf muscle pump function (Ejection-Fraction[EF], Residual-Volume-Fraction[RVF]). Heart-disease, PAD, peripheral-edema of unrelated causes, lymphedema, limb trauma, thrombolysis, thrombectomy, venous or arterial leg surgery were exclusion criteria. Results reported as median and interquartile range.

### RESULTS

DVT	Age	Duration*	VCSS	C Class**	OF (%)	VFI (ml/s)	EF (%)	RVF (%)
Iliofemoral	46 (37-55)	6 (2-8)	6 (3-7)	3 (3-4)	37 (32-42)	3,7 (2,6-5,7)	48 (38-57)	45 (40-53)
Femoro-popliteal	47 (38-62)	6 (3-13)	4 (3-6)	3 (2-4)	45 (39-49)	3,1 (1,7-6,2)	54 (47-65)	38 (21-46)
<i>P-Value</i>	ns	ns	< 0.05	ns	< 0.05	ns	< 0.05	< 0.02
* Disease Duration in years; ** CEAP Clinical Classification [C]; Statistical analysis with the Mann Whitney test; ns: not significant								

Reflux >0.5 s	Common Femoral	Femoral	Popliteal	Posterior Tibial	Anterior Tibial	Peroneal	Soleal	Gastrocnemial
Iliofemoral	9 (27%)	16 (48%)	20 (61%)	14 (42%)	1 (3%)	17 (52%)	20 (61%)	21 (64%)
Femoro-popliteal	2 (5%)	15 (41%)	26 (70%)	18 (49%)	2 (5%)	18 (49%)	22 (59%)	24 (65%)
<i>P-Value</i>	<0.01	ns	ns	ns	ns	ns	ns	ns
Distribution of abnormal reflux (>0.5 s) in the deep axial and muscular veins of the lower limb; Statistical analysis with the chi-square test (± Yates correction as requested); ns: not significant								

Obstruction OF<38%	Iliofemoral DVT	Femoro popliteal DVT	VCSS	C Class*	VFI (ml/s)	EF (%)	RVF (%)
Present	18	9	6 (3,5-8)	4 (3-4)	5,5 (2,9-7,5)	42 (32-48)	51 (43-58)
Absent	15	28	4 (2,8-7)	3 (2-4)	3 (1,7-5)	55 (50-67)	38 (21-44)
P-Value	<0.01**		< 0.05	ns	< 0.02	< 0.05	< 0.02
* CEAP Clinical Classification[C]; Statistical analysis with the Mann Whitney test except in ** (chi-square test); ns: not significant							

**CONCLUSIONS:** There was a similarity in the distribution of valvular incompetence in the deep axial and muscular veins of the limb, and parity in the amount of venous reflux between the two groups. However, limbs with a history of iliofemoral DVT were associated with worse venous outflow, calf muscle pump dysfunction and venous clinical severity, than limbs with a history of femoropopliteal DVT. Venous outflow obstruction (OF<38%) was matched with a worse calf muscle pump dysfunction, a larger amount of venous reflux, and more advanced venous clinical severity, underscoring its cardinal role in the pathophysiology of post-thrombotic venous disease.

## **Prospective Implementation of An Algorithm For Bedside Intravascular Ultrasound Guided Filter Placement In Critically Ill Patients**

C. D. Killingsworth, M. A. Passman, J. A. Weinberg, S. M. Taylor, M. A. Patterson, G. Mcwin, Jr., S. M. Melton, L. W. Rue, W. D. Jordan, Jr. - University of Alabama at Birmingham, Birmingham, AL

**BACKGROUND:** Although contrast venography is the standard imaging method for vena cava filter insertion, intravascular ultrasound (IVUS) is a safe and effective option which allows for bedside placement, and is especially advantageous for critically ill and immobilized patients by limiting resource allocation, risk of transportation and cost. The purpose of this study is to review the effectiveness of a prospectively implemented algorithm for IVUS guided filter placement in this high risk population.

**METHODS:** A clinical decision algorithm for IVUS guided filter placement in critically ill patients was created based on current evidence based guidelines. After a defined lead-in phase to allow dissemination of techniques, the algorithm was prospectively implemented on January 1, 2008. Data was collected based on accepted reporting standards and quality assurance review performed based on intent to treat at 6 months.

**RESULTS:** 94 patients underwent IVC filter placement, of which 68 patients met criteria for IVUS directed bedside filter placement as defined in the prospectively implemented algorithm. Technical feasibility was 98.5% - one patient had inadequate IVUS visualization for filter placement and required subsequent placement in the endosuite. Of the remaining 67 patients, technical success defined as proper deployment in infrarenal position was 97.1%. A permanent filter was used in 16 (25%) and optional filter in 51 (75%). Single puncture technique was utilized in 62 (92.5%) with additional dual access required in 5 (6.5%). Periprocedural complications were rare and included malpositioning requiring retrieval and repositioning (2), filter tilt  $\geq 15^\circ$  (2), and arterio-venous fistula (1). 30-day mortality was 7.5% with no deaths related to venous thromboembolism or filter related problems.

**CONCLUSIONS:** Successful placement of IVC filters using IVUS at the bedside in critically ill patients can be established via an evidence-based prospectively implemented algorithm thereby limiting the need for transport in this high risk population.

9:20 am 29

### Pharmacomechanical Thrombectomy for Deep Venous Thrombosis: An Alternative For High Risk Patients

A. S. Rao, G. Konig, S. A. Leers, J. S. Cho, L. K. Marone, R. Y. Rhee, M. S. Makaroun, R. A. Chaer - University of Pittsburgh Medical Center, Pittsburgh, PA

**BACKGROUND:** venous lysis is usually reserved for symptomatic patients with acute DVT and low risk for bleeding. This study reports on the use of pharmacomechanical thrombectomy (PMT) in high risk patients traditionally considered unsuitable for this therapy.

**METHODS:** a retrospective review of all patients with symptomatic DVT treated between 2007 and 2008 with PMT was performed. All patients were treated by a combination of local TPA with the Angiojet or Trellis device. TPA drip was used sparingly.

**RESULTS:** 28 patients with mean age  $50.4 \pm 16.8$  presented with symptoms averaging  $15.6 \pm 9.2$  days in duration. 16(57%) had symptoms for more than 14 days and 11 (39%) had a contraindication for lysis (Table 1). Symptomatic subclavian thrombosis occurred in 4(14%), and 24 (86%) presented with disabling lower extremity DVT (3 phlegmasia) despite anticoagulation. Ten patients had a thrombosed indwelling permanent filter (9 TrapEase, 1 Greenfield). 81% were treated in one session but 3 patients required a TPA drip following suboptimal PMT. Iliac stenting was required in 30%. Successful lysis (>50%) was achieved in 89% of patients, and symptom resolution in 97%. All patients became ambulatory with no or minimal limitation. There were no major systemic bleeding complications but access site hematoma occurred in 2 patients, and worsening of preexisting rectus sheath hematoma requiring transfusion occurred in another 2 patients. Limb salvage was maintained in 100%. Mean follow up was  $4.3 \pm 2.6$  months. Freedom from DVT recurrence and reintervention was 96% at 9 months by life table analysis.

**CONCLUSIONS:** PMT can be safely and effectively used for sub-acute ilioacaval and iliofemoral DVT and in patients with contraindications for lytic therapy resulting in improved functional outcomes.

Contraindication to Thrombolysis (N=11/28)						
	Renal/ Liver Failure	Recent Minor Surgery	PUD/GI Bleed	Major Surgery/ Trauma	Organ Biopsy	Active Bleeding
Number of Patients	3	2	2	4	2	5

9:40 am Coffee Break – Visit Exhibits



## 10:10 am SCIENTIFIC SESSION VII

### Multi-Topic

*Moderators: Joseph Caprini, MD, Robert McLafferty, MD*

#### *Educational Objectives:*

*After completion of this session attendees will be able to:*

*Describe the influence of different interphase pressure values, venous ulcers, and healing when treated with compression therapy.*

*Understand the potential usefulness and drawbacks of absorbable venal cava filters in animal model.*

*Predict patient response to sclerotherapy in treatment of venous malformation.*

## 10:10 am 30

### **The Influence of Different Interface Pressure Values On Venous Leg Ulcers Healing When Treated With Compression Therapy**

D. J. Milic<sup>1</sup>, S. S. Zivic<sup>1</sup>, D. C. Bogdanovic<sup>1</sup>, R. Jankovic<sup>1</sup>, V. Popovic<sup>2</sup>, D. Stamenkovic<sup>3</sup> - <sup>1</sup>Clinic for Vascular Surgery, Clinical Centre Nis, Nis, Serbia, <sup>2</sup>Clinic for Vascular Surgery, Clinical Centre Novi Sad, Novi Sad, Serbia, <sup>3</sup>Department for Vascular Surgery, Clinical Centre Kragujevac, Kragujevac, Serbia

**BACKGROUND:** Compression therapy is the most widely used treatment for venous leg ulcers (VLU) and it was used in different forms for more than 400 years. According to numerous studies it has been suggested that the application of external pressure to the calf muscle raises the interstitial pressure resulting in improved venous return and reduction in the venous hypertension. Also, these studies suggest that compression system should provide interface pressure (IP) in the range from 35mmHg to 45mmHg in order to achieve best possible healing results.

**METHODS:** An open, randomized, prospective, single-center study was performed in order to determine healing rates of VLU when treated with different compression systems and different interface pressures. One hundred and thirty one patients (72 women, 59 men; mean age 59 years) with VLU (ulcer surface > 5cm<sup>2</sup>; duration > 3 months) were randomized into 3 groups:

Group A) 42 patients who were treated using a heelless open-toed elastic class III compression device knitted in tubular form-Tubulcus® (Laboratoires Innothera, Arcueil, France);

Group B) 46 patients treated with multi-layer bandaging system comprised of (Tubulcus®) and one elastic bandages (15cm wide and 5m long with 100% stretch, Niva, Novi Sad, Serbia), and Group C) 43 patients treated with multi-layer bandaging system comprised of (Tubulcus®) and two elastic bandages.

**RESULTS:** IP was measured under the three different compression systems over an observation period of 26 weeks with piezoresistance sensors at four different sites on the lower leg and with the patient in different body positions. The median resting values in the supine and standing position in examined study groups were as follows: Group A- 36.2mmHg and 43.1mmHg; Group B- 51.9mmHg and 59.8mmHg; Group C- 61.3mmHg and 69.9mmHg.

The healing rate during the 26 weeks treatment period was 25%(13/42) in group A, 67.4%(31/46) in group B, and 74.4%(32/43) in group C. The success of compression treatment in group A was strongly associated with the small ulcer surface (<10cm<sup>2</sup>) and small calf circumference (<35cm). On the other hand compliance was good. In group B and C compliance was bad in patients with small calf circumference but the healing rate was high especially in patients with large ulcers and large calf circumference (>40cm).

**CONCLUSIONS:** The results obtained in this study suggest that compression system should be individually determined for each patient according to his/hers calf circumference. The higher interface pressure is needed for the healing of venous leg ulcers, especially for the patients with larger calf circumference. We suggest that the value of target IP should be determined according to calf circumference using simple formula: Target IP(mmHg)=Calf Circumference(cm)+Calf Circumference(cm)/2.

10:30 am 31

### **Absorbable Inferior Vena Cava Filters (VCF): An In-Vivo Porcine Model**

A. Thors, P. Muck - Good Samaritan Hospital, Cincinnati, OH

**BACKGROUND:** The use of vena caval filters (VCF) in the acute care surgical patient continues to expand. This increased use has lead to further product development and options pertaining to the type of device that is inserted. This study is the first of a multi-part series to determine the efficacy and feasibility of an absorbable VCF in an in-vivo porcine model.

**METHODS:** A total of 10 hand-made, dual filtration level, absorbable VCF's were produced and gas sterilized. Operative insertions using paramedian incisions, infra-renal vena cava dissection, venotomy, and device insertion using 8F rigid sheath was performed on 10 pigs (>50lbs). Six-weeks after implantation, the VCF's were operatively removed en-bloc and the pigs euthanized. The filters were grossly inspected for measure of absorption, retained residual material, migration, and clot burden. Subsequently the inferior vena cava (IVC) specimens were examined under microscopy to assess for degree of inflammatory response to the present foreign body.

**RESULTS:** All 10 retrieved devices were completely dissolved (100%), with no signs of migration, residual material, or clot burden. The non-absorbable Z-stent portion of the design was completely incorporated into the vena cava wall with complete neointimalization of the vena cava lumen. There was no evidence for residual knots or strands in the caval wall, nor was there evidence of IVC narrowing. One pig (10%) developed a post-operative wound infection requiring treatment. Filter and vena cava specimens were preserved in formaldehyde and sent for histology.

**CONCLUSIONS:** To date there are no commercially available absorbable VCF devices, nor has this concept been published in the medical literature. The application of such a device could fit a specific subset of patients.

10:50 am 32

## Predictors of Good Response To Ethanol Sclerotherapy In Venous Malformations Based On Patient Self-Assessment

Y. W. Kim<sup>1</sup>, W. S. Yun<sup>1</sup>, N. R. Kim<sup>1</sup>, K. B. Lee<sup>1</sup>, D. I. Kim<sup>1</sup>, S. K. Cho<sup>1</sup>, K. B. Park<sup>1</sup>, Y. S. Do<sup>1</sup>, B. B. Lee<sup>2</sup> - <sup>1</sup>Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Republic of Korea, <sup>2</sup>Georgetown University, Washington DC, WA

**BACKGROUND:** Treatment results for venous malformations (VM) with sclerotherapy, embolization, surgical excision, or deep venous reconstruction have previously been reported. However, patients' own assessment of their treatment has not been studied. After ethanol sclerotherapy in patients with VMs, we assessed patient's perception of outcome, as well as predictors of a good response to treatment.

**METHODS:** Of 307 patients who underwent ethanol sclerotherapy for VMs at a specialized Congenital Vascular Malformation (CMV) clinic, 158 patients (mean age, 13.7 years, male 42%) were available for follow-up imaging (whole body blood pool scan [WBBPS] or magnetic resonance imaging [MRI]) and these patients completed a questionnaire on their perceived treatment results. Patients had to answer questions on cosmetic, functional and symptomatic results of their ethanol sclerotherapy. In each category, the possible choices were improved, no or minimal change, or worse compared to pretreatment status. Results of imaging studies were considered improved (decrease of the maximal diameter of the lesion > 30% on MRI or decrease of abnormal blood pooling > 50% on a semi-quantitative measurement on the WBBPS), no or minimal change, or worse (VM size increase on MRI or abnormal blood pooling on WBBPS with an increase > 20%) compared to pretreatment. The questionnaire and image results were combined into a composite outcome - good response (improved clinically based on the questionnaire and on 1 or more imaging studies) or poor response (anything other than a good response). Multivariate analysis (binary logistic regression model) was performed on patient factors (age and gender), lesion characteristics (location, type, size, skin mark, associated lymphatic malformation, deep venous anomaly, lateral marginal vein, MRI findings, presence of drainage vein and tissue involvement) and treatment factors (concentration or dose of sclerosing agent used, number of sessions and adjuvant treatment) to determine predictors of a good response to the sclerotherapy in the patients with VMs.

**RESULTS:** Cosmetic, functional and symptomatic improvement was 34%, 12% and 17% respectively according to patients' questionnaires. In imaging studies 42 (27%) were improved. Composite outcome combining questionnaire and imaging, showed a good response in 16%. On multivariate analysis, female gender (OR, 4.59; 95% CI, 1.41-14.89), well-defined margin on MRI (OR, 5.16; 95% CI, 1.59-16.77), presence of drainage vein on venogram (OR, 5.57; 95% CI, 1.38-22.51) were predictors of a good response to ethanol sclerotherapy.

**CONCLUSIONS:** Patients' perception of their results following ethanol sclerotherapy is important and should be part of the assessment of outcome. The results of this study showed that female patients with VMs having well-defined margin and drainage vein may be suitable candidates for ethanol sclerotherapy.

11:10 am 33

## **Encircling Construction of Popliteal Vein – A New Surgery of Reconstructing Deep Vein Valves**

J. Ma, T. Ma - Dalian Municipal Central Hospital, Dalian, Liaoning, China

**BACKGROUND** There are two conventional ways to reconstruct valves in the no-valve segment the popliteal vein (PV): 1) axillary-to-popliteal vein valve transplantation 2) 'substitute valve' operation on the popliteal vein. We present a new way, encircling construction of popliteal vein, and evaluate its curative effectiveness.

**METHODS** The study (Sep. 1996- Sep.2007) involved 915 patients with chronic venous insufficiency, median age 57 years (range, 19 - 87 years). CEAP classification: C4 674, C5 153, C6 88. Deep venous hemodynamic measurements (pre- and postoperative): ambulatory venous pressure; regurgitation volume per minute of PV centering on the popliteal transverse striation through vascular color ultrasound system, patient in a standing position; development time of the contrast media in PV moving from the dorsal foot vein to the superior margin of patellar level (patients in a 60-degree slope from the vertical); ascending or descending phlebography of veins; Intraoperative measurements: venous pressure of both distal and proximal end of the encircling constructed PV in both resting state and Valsalva maneuver; descending phlebography in the proximal part of the encircling construction of PV. In the segment of PV with no valves, above the part where the gastrocnemius vein converges into PV, the caliber was reduced by 1/3 using artificial graft piece. After that, the great saphenous vein, the small saphenous vein and the perforator veins were ligated.

**RESULTS** Among the 784 patients (85.6%, follow-up of 1-11 years, mean 6.4 years), 182 had postoperative ascending phlebography in 10 days to 8 years after surgery. No reflux was found in 154 of them, while a small amount of reflux was found in 28 patients. 21 patients (2.3%, 21/915) developed thrombosis after operation; 4 patients' (4.5%, 4/88) ulcers recurred. Ambulatory venous pressure ( $P < .01$ ), development time of the contrast media moving to the superior margin of patellar level ( $P < .001$ ), regurgitation volume per minute of PV ( $P < .001$ ), venous pressure of both proximal and distal end of PV ( $P < .01$ ), no reflux was found in intraoperative descending phlebography of PV.

**CONCLUSION** Encircling construction of PV is a brand-new and effective technique to treat severe deep venous insufficiency of the lower limbs. Furthermore, ligating the great saphenous vein, the small saphenous vein and perforator veins will receive a better future efficacy.

**11:30 am D. EUGENE STRANDNESS MEMORIAL LECTURE**  
**Venous Disease and Medical Malpractice: A Peek Inside the**  
**Playbook of A Plaintiff's Attorney**  
 O. William Brown, MD, JD  
*Introduced by: Joann M. Lohr, MD*

**12:30 pm Adjourn**

**12:45 pm VENOUS DISEASE COALITION SYMPOSIUM**  
**(LUNCHEON)**

*Moderator: Robert B. McLafferty, MD*

**he Surgeon General's Call To Action To Prevent DVT & PE:**  
**Where We Have Been and Where We Need To Go**

Thomas Wakefield, MD

**VTE and Women: Issues of Concern**

Suman Rathbun, MD

**Prophylaxis and Malignancy**

Thomas Ortel, MD

**Building Venous Awareness Through Clinical Research:**  
**The ATTRACT Trial**

Suresh Vedantham, MD

**2:30 pm ASK THE EXPERTS:**

**Venous Disease: Above the Diaphragm**

*Moderators: Mark Meissner, MD, Suresh Vedantham, MD,*  
*Peter Gloviczki, MD*

**Management of Subclavian/Innominate Vein Lesions**

**Interventional Management of SVC Occlusions**

**Surgical Reconstruction of the SVC**

**Combined Interventional-Surgical Approaches**  
**For Axillosubclavian DVT**

**When To Intervene In Catheter-Related DVT**

## 4:00 pm POSTER SESSION

*Moderator: Joseph Raffetto, MD – Co-Moderators: Michael Dalsing, MD, Thomas Wakefield, MD and Mark Meissner, 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 Presence of Lower Limb Deep Vein Thrombosis and Prognosis In Patients With Symptomatic Pulmonary Embolism: Preliminary Report

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

**BACKGROUND:** To investigate the presence of lower limb deep vein (DVT) thrombosis and prognosis in patients with symptomatic pulmonary embolism (PE).

**METHODS:** A total of 203 consecutive referral patients with PE were included. The distribution of DVT was evaluated with compression ultrasound (CUS), and all patients were then followed for 12 months for investigation of recurrence of venous thromboembolism (VTE) and fatal events as adverse outcome.

**RESULTS:** The mean age of the patients was 62.8 years, and 78 (38.4%) were male. DVT was found in 118 (58.1%) patients. Of these patients, 61 (30.0%) had proximal DVT. Multivariate analysis demonstrated that active cancer, inadequate anticoagulation, leg symptoms, male gender, presence of DVT, presence of proximal DVT, and previous DVT were independent risk factors for adverse outcome. A clinical risk score ranging from 0 to 10 points was generated on the basis of multivariate regression coefficients. Receiver operating characteristic curve analysis showed that an appropriate cut-off point for discriminating between the presence and the absence of an adverse event was 4. Using this category, 166 (81.8%) patients were classified as low risk and 37 (18.2%) as high risk for adverse outcome. The adverse event rates were 6.0% for the low-risk group and 59.5% for the high-risk group.

**CONCLUSIONS:** This study has confirmed the clinical significance of surveillance CUS in patients with a first episode of PE. Furthermore, a simple risk score on the basis of available variables can identify patients at risk of an adverse outcome in patients with PE.

**P-2      The Proliferative Capacity of Dermal Fibroblasts From Patients With Chronic Venous Insufficiency Is Reduced In Physiologic Concentrations of Glucose**

D. L. Gillespie<sup>1</sup>, B. Fileta<sup>2</sup>, A. Chang<sup>2</sup> - <sup>1</sup>University of Rochester, Rochester, NY, <sup>2</sup>Walter Reed Army Medical Center, Washington, DC

**OBJECTIVE:** Previous studies have shown that dermal fibroblasts from patients with chronic venous insufficiency (CVI) have characteristics of early senescence. These studies however, have studied fibroblast growth in Dulbecco's Modified Eagle Media (DMEM) containing non-physiologic concentrations of glucose (450 mg/dl). To examine the proliferative capacity of dermal fibroblasts from patients with venous insufficiency in physiologic concentrations of glucose, we compared cell proliferation in Eagles' minimum Essential Media (EMEM) that contains physiologic concentration of glucose (100 mg/dl) to DMEM

**METHODS:** Fibroblasts were isolated from paired dermal punch biopsies from the thigh (n=5) and ankle (n=5) of patients with chronic venous insufficiency CEAP 2 - 6. Cells were grown in (EMEM) that contains 100 mg/dl glucose. Separate cell cultures were then grown in DMEM which contains glucose at a concentration of 450 mg/dl. Fibroblasts were plated at a concentration of 1000 cells per plate. The determination of total cell number per plate was performed using a hemocytometer on days 1,2,5,6 and 7 to assess growth curves. Statistical analysis was performed using the General Linear Model for Repeated Measures. Significance was established at  $p < 0.05$ .

**RESULTS:** We found a statistically significant reduction in the proliferative capacity of fibroblasts of both thigh and ankle dermis when grown in media containing physiologic concentrations of glucose (EMEM) in comparison to growth in the non-physiologic media DMEM ( $p = 0.0001$ ). Fibroblasts of ankle dermis had lower proliferative capacity than thigh dermis independent of media type ( $p = 0.001$ ).

**CONCLUSION:** These findings suggest that dermal fibroblasts from patients with venous insufficiency possess significantly lower proliferative capacity at physiologic concentrations of glucose than in currently used media. In both EMEM and DMEM ankle dermal fibroblasts show less proliferative capacity than do thigh dermal fibroblasts. Future studies examining the growth of dermal fibroblasts should consider using more physiologic concentrations of glucose.



### P-3      **Relation Between Postoperative Venous Diameter and Recanalization of the Endovenously Ablated Incompetent GSV**

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

**BACKGROUND:** Endovenous ablation is recognized as a less invasive treatment for the incompetent GSV compared to stripping. However, there is higher risk of recanalization of ablated vein which could be a cause of recurrent varicose veins. Although recent reports show that most of recanalizations occur within three months after treatment, some recanalization can occur later. The fact that the obstructed vein shrinks over time after operation is a good sign, but the relation between degree of venous shrinkage and recanalization is unclear.

The purpose of this study was to determine whether the degree of shrinkage of ablated vein at postoperative follow up can predict recanalization at mid-term follow up.

**METHODS:** 53 patients (62 limbs) of 89 patients (102 limbs) underwent endovenous ablation for GSV reflux from 2004 to 2006 were evaluated for venous reflux and GSV diameter at sapheno-femoral junction (SFJ), middle thigh and knee preop and postop at 1, 6, 12, 24 to 36 months by duplex ultrasound at standing position. Endovenous ablation of GSV from SFJ to knee using radiofrequency (VNUS Closure) for 28 limbs, 980 nm diode laser (ELVeS) for 34 limbs in combination with stab avulsion phlebectomies was performed.

**RESULTS:** 8 of 10 recanalized GSV (RF 5, laser 5) in 62 GSV were found at 12 to 36 months follow up. The remaining 2 GSV recanalized within 1 month. The GSV at thigh and knee shrank subsequently during 24-36 months follow up. (Table 1) There was no significant GSV diameter difference between the two endovenous procedures during the follow up period. The GSV diameter at 12 months follow up in recanalized cases was larger than occlusion cases. The diameters of all 10 recanalized GSV at thigh and knee were more than 3 mm at the time of recanalization, and the venous diameter at thigh and knee in 9 of 10 recanalized GSV were more than 3 mm at all post operative periods. However, only one GSV diameter of 52 closed GSV was more than 3 mm at all post operative periods.

**CONCLUSIONS:** The ablated GSV shrank during the post operative follow up of 24 to 36 months. A diameter of GSV at thigh and knee level of more than 3 mm mid-term follow-up (24-36 months) is a predictor for GSV recanalization.

	Site	Pre	Post 1m	Post 6m	Post 12m	Post 24-36m
	SFJ	7.1±1.7	7.3±1.9	6.4±1.1	6.5±1.7	6.5±1.5
Total n=62	Thigh	6.1±1.9	5.5±1.8	3.7±1.5	2.4±1.5	1.7±1.4
	Knee	6.7±1.7	5.8±2.0	3.9±1.6	2.3±1.6	1.7±1.4

## **Incidence of Chronic Venous Disorders In Germany In the Last Seven Years - The Bonn Vein Study II**

E. Rabe<sup>1</sup>, A. Ko<sup>1</sup>, G. Berboth<sup>1</sup>, F. Pannier<sup>2</sup>, B. Hoffmann<sup>3</sup> - <sup>1</sup>Dep. of Dermatology, University of Bonn, Germany, <sup>2</sup>Dermatologie, Koeln, Germany, <sup>3</sup>Institut für Med. Informatik, Biometrie und Epidemiologie, University of Essen, Germany

**BACKGROUND:** Chronic venous disorders are among the most common diseases in Germany. In the Bonn Vein Study I (BVS I), conducted in 2000, 3072 participants of the general population of the city of Bonn and two rural townships, aged 18-79 years were took part in this study (1350 men, 1722 women). Participants were selected via simple random sampling from the registries of residents. In this follow-up study seven years later, the same population was investigated again to. The **AIM** was to identify the incidence of newly developed chronic venous disorders and of progression of pre-existing CVD.

**METHODS:** From May 2007 to September 2008, we contacted all participants of BVS I and invited them for a reinvestigation. The participants answered a standardized questionnaire and were examined by clinical means and by duplex ultrasound.

**RESULTS:** In the BVS I results show a distribution in the CEAP classification with C0: 9.6%, C1: 59.0%, C2: 14.3%, C3: 13.4%, C4: 2.9%, C5: 0.6% and C6: 0.1%, when considering the highest class of each individual. In the Bonn Vein Study II the response rate of the principally applicable population was more than 80 %. The reinvestigations have just been finished one week ago and the results are still in the process of statistical analysis. Until December 2008 the first results will be available.

**CONCLUSIONS:** The results of this study will show the 7-year incidence and the incidence of progression of chronic venous disorders in Germany.

## P-5      **The Effects of Isolated Phlebectomy On Reflux and Diameter of the Great Saphenous Vein: A Prospective Study**

S. Chastenet<sup>1</sup>, T. Locret<sup>1</sup>, P. Pittaluga<sup>1</sup>, R. Barbe<sup>2</sup>, B. Rea<sup>2</sup> -

<sup>1</sup>Riviera Veine Institut, Nice, France, <sup>2</sup>Clinique Charcot, Lyon, France

**BACKGROUND:** A new pathophysiological concept in primary varicose disease suggests ascending or multifocal progression from the suprafascial venous network to the saphenous vein (SV). Ablation of the suprafascial varicose reservoir could therefore improve or eliminate reflux in the SV. The **AIM** of this study is to evaluate the effect of isolated phlebectomy on the duration and velocity of reflux, as well as on the diameter of the SV.

**METHODS:** We included patients presenting reflux in the great saphenous vein (GSV) and who were treated with isolated phlebectomy in a prospective study. We measured reflux duration (RD) and peak reflux velocity (PRV) using duplex ultrasound when patients were standing up and including a manual compression/release manoeuvre in the calf, preoperatively and then 1 month after surgery. We also measured the diameter of the GSV at the same time when patients were standing up using ultrasound.

**RESULTS:** We included 55 legs in 54 patients (24 women and 30 men) aged from 37 to 83 (mean age 62.6). The source of preoperative reflux was above the preostial valve (POV) of the GSV in 45 cases and in the thigh segment of the GSV below a continent POV in 10 cases. We reviewed all of the legs 1 month after the isolated phlebectomy treatment.

	Preoperative	1 month postop	P
Legs with RD > 0.5 s	90.9%	36.3%	< .05
Mean RD (sec)	1.53	0.81	< .0001
Mean PRV (ms)	248.6	119.5	< .0001
Mean GSV diameters (mm)			
Ostial	6.7	5.6	< .01
Preostial	5.4	4.8	< .05
Thigh mid third	5.0	4.2	< .001
Knee	5.3	4.0	< .001
Leg mid third	4.0	2.7	< .0001

**CONCLUSION:** We noted a change to reflux in the GSV after isolated phlebectomy with a significant reduction in RD and PRV. Isolated phlebectomy also led to a significant reduction in GSV diameter. These data suggest that the SV can be improved from a haemodynamic and anatomical point of view by using treatment focusing on the suprafascial venous network.

## **P-6      The Incidence of Malignant Diseases Among Patients With Deep Vein Thrombosis of Lower Extremity**

D. J. Milic, S. S. Zivic, D. C. Bogdanovic, R. Jankovic, I. Smiljkovic - Clinic for Vascular Surgery, Clinical Centre Nis, Nis, Serbia

**BACKGROUND:** It is well known that patients with malignant diseases have increased hypercoagulability (Trousseau syndrome). However, the true incidence of deep vein thrombosis (DVT) in patients with malignant disease is unknown because most DVT episodes remain clinically silent.

**METHODS:** The **AIM** of our study was to establish the incidence of malignant diseases among patients with deep vein thrombosis. Also, in the follow up period of 24 months after initial treatment, patients with DVT and without established malignancy were regularly checked up in order to determine the appearance of malignant disease.

**RESULTS:** A total of 382 patients with deep vein thrombosis verified by ultrasonography were included in the study. Fifty-five patients were lost during the 24 months follow-up period and 327 patients completed the study.

During the initial treatment of deep vein thrombosis 18 patients (5.5%) already had verified malignant disease. The diagnosis of lymphoma and retroperitoneal tumor was established in two more patients (0.61%) after performing additional diagnostic procedures during initial anticoagulant treatment for DVT, making overall incidence of malignant diseases in patients with newly diagnosed DVT of 6.11%.

In the follow up period of 24 months the malignancy was diagnosed in 17 patients (5.20%). Six patients (1.83%) were diagnosed with cancer in the first year and 11 patients (3.36%) were diagnosed with cancer in the second year of the follow up period.

Overall, 37 patients (11.31%) included in the study developed DVT as a result of increased hypercoagulability due to presence of malignant disease.

Colorectal cancer and prostate cancer were the most often seen malignancies in patients during the initial treatment of DVT (7 patients - 2.14%, and 4 patients - 1.22%, respectively) while in the follow up period lung cancer had a highest incidence of 1.22% (4 patients).

**CONCLUSIONS:** The results obtained in our study show that the presence of DVT may be an early sign of malignant disease and that the patients with idiopathic DVT should be carefully monitored for malignancy.

# P-7      Inflammatory Biomarkers Are Associated With DVT - An Interim Report

S. Blackburn, A. Hawley, N. Ballard, C. Stabler, K. Guire, F. Vandy, J. Rectenwald, P. Henke, D. Myers, T. Wakefield - University of Michigan, Ann Arbor, MI

**BACKGROUND** Although Virchow’s triad has been associated with venous thrombosis (DVT) for over 150 years, the role of inflammation in this process has only recently been appreciated. A number of thrombogenic factors increase with inflammation such as soluble P-selectin (sPsel). Additionally, procoagulant microparticles (MPs) mediate the thrombogenic response, and d-Dimer increases with DVT. The use of d-Dimer and clinical characteristics (Wells score) is most common in clinical practice today to diagnose DVT when ultrasound is unavailable. The purpose of this study was to evaluate a panel of inflammatory biomarkers for DVT diagnosis and compare to current practice.

**METHODS** This study included 186 subjects, 41 (20 males, 21 females) with DVT documented by duplex ultrasound, 115 (48 males, 67 females) with leg pain but negative for DVT by duplex, and 30 (12 males, 18 females) healthy controls without a history of thrombosis. At the time of diagnosis (patients) or donation (controls), blood was withdrawn and tested for sPsel, d-Dimer, C-reactive protein (CRP), sE-selectin, microparticles (MPs) derived from leukocytes (leu), platelets (plt), combined leu-plt, tissue factor (TF) positive MPs, and total MPs (MPs from all sources). Additionally, Wells score was determined along with the number of venous segments affected (maximum 16 segments, 8/leg) by DVT.

**RESULTS** A mean of 4.4 venous segments/patient with DVT were found. Biomarkers which discriminated DVT from non-DVT patients were sPsel (100.3 vs. 60.7ng/ml,  $p<.01$ ), d-Dimer (5.9 vs. 2.5mg/lt,  $p<.01$ ), CRP (2.3 vs. 1.1µg/ml,  $p<.01$ ), MPs-leu (2.2x cont vs. 0.9x cont,  $p<.05$ ), TF positive MPs (2.4x cont vs. 0.6x cont,  $p<.05$ ), and Wells score (3.8 vs. 2.1,  $p<.01$ ). The number of venous segments with DVT correlated with sPsel ( $p<.01$ ), CRP ( $p<.01$ ), and Wells score ( $p<.05$ ). Using a logistic regression model, we determined the following characteristics:

Variable	R2	P-value	AUC	Total Correct	Sensitivity	Specificity
Univariate Model						
sPsel	0.38	<.0001	0.81	0.76	0.47	0.91
d-Dimer	0.25	<.0001	0.77	0.72	0.41	0.88
CRP	0.06	<.05	0.7	0.67	0.08	0.97
MPs-TF	0.1	<.05	0.66	0.62	0.49	0.79
Wells score	0.25	<.0001	0.76	0.79	0.45	0.91
Multivariable Models						
sPel + d-Dimer	0.45	<.0001	0.85	0.8	0.48	0.95
sPsel + Wells score	0.47	<.0001	0.85	0.8	0.6	0.89
d-Dimer + Wells score	0.37	<0.001	0.81	0.79	0.67	0.85
R2 = Maximum resolved R2 statistic from logistic regression model; AUC = Area under the Curve						

**CONCLUSIONS** Inflammatory biomarkers are associated with DVT. A combination of sPsel plus d-Dimer gives the best AUC, total correct, and combination of sensitivity with specificity, followed closely by sPsel plus the Wells score. Importantly, the use of sPsel (but not MPs) improved results, when compared to d-Dimer plus Wells score.

J. Guex<sup>1</sup>, S. Boussetta<sup>2</sup>, C. Nguyen<sup>3</sup>, C. Taieb<sup>2</sup> - <sup>1</sup>Cabinet de Phlébologie, Nice, France, <sup>2</sup>Département Santé Publique - Pierre Fabre, Boulogne Billancourt, France, <sup>3</sup>Pierre Fabre Medicament, Castres, France

**BACKGROUND:** The impact of venous disorders on quality of life is obviously an essential area of work, but one which currently remains under-explored. In order to compensate for this deficiency, a specific questionnaire was developed: the SQOR-V (Specific Quality of Life & Outcomes Response - Venous).

**METHODS:** A sample group of 1,014 subjects aged 15 and over, representative of the French population (quota sampling method), was questioned by telephone (SQOR-V and phleboscoring). Subjects from both sexes and over 25 years of age were selected. The SQOR-V is a validated (in French) patient reported outcome specially dedicated to Chronic Venous Disorders (CVD). It allows a relevant and sensitive assessment of clinical features and quality of life of patients at all stages of CVD. The SQOR-V scoring comprises 45 items. The total score varies from 20 to 100. The higher the score, the more the quality of life affected by venous insufficiency is impaired.

**RESULTS:** 792 subjects older than 25 years. 432 women (53.4%) and 369 men (46.6%). Mean age of  $50.6 \pm 16.1$  years old. 56.8% were older than 45, 35.0% aged between [30-45] years and 8.2% were younger than 30.

12% suffered from obesity, 25% were overweight, 59% had a normal BMI and 4% were thin.

The average SQOR-V score was 26.7 [25.9-27.5].

It was higher in "obese" subjects than in the "overweight" subjects or those with a "normal" BMI.

Women quality of life was significantly more affected than that of men (29.5 vs 23.5). The older the subjects were the more impaired is the quality of life. (22.9, 24.3 and 28.7 in subjects younger than 30, aged between [30-45] years and older than 45).

The SQOR-V score increased with the risk of venous disease. (22.9, 31.1 and 51.0 in subjects with low, moderate and high risk). Subjects had a positive view of quality of life relative to their disorder, since the SQOR-V score was significantly higher in subjects who believed they had venous problems (39.6 vs 21.3).

**CONCLUSIONS:** These results confirm the relevance of the use and the interpretation of SQOR-V scores in the field of venous disorders. A SQOR-V score of less than 30 seemed to reflect that quality of life was unaffected or little affected, between 30 and 50 that it was moderately affected, greater than 50 that quality of life was greatly affected by venous disorder.

**P-9      In Search For An Optimal Compression Therapy of Venous Leg Ulcers - A Meta-Analysis Comparing Bandages With Stockings**

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**BACKGROUND:** Venous leg ulcers are treated by external compression, classically with high-pressure multi-layer short-stretch bandages. Graduated elastic compression stockings were found effective as well and easier to use in several comparative studies.

**METHODS:** We retrieved and scrutinized 4 single- and 5 multi-center RCTs, performed a meta-analysis on the proportion and rate of healing and pain (Cochrane methodology), and identified the conditions predicting outcome.

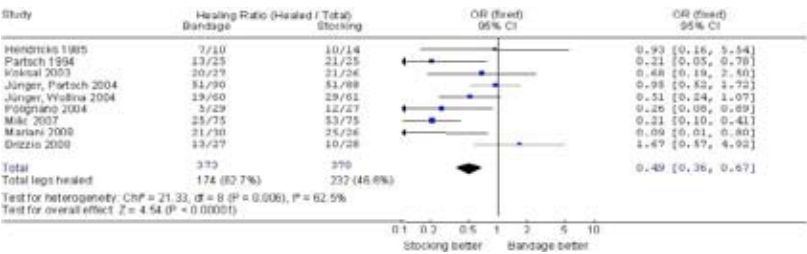
**RESULTS:** The trials included 737 patients (mean age 60.8yrs, 57% women) with 743 leg ulcers sized from 1 to 210cm<sup>2</sup> and present for 2 weeks to 9 years. The observation period ranged from 12 to 78 weeks. Patient and ulcer characteristics were evenly distributed in 4 studies (436 legs), favoured the stocking groups in 4 (251 legs), and bandage group in 1 (56 legs). Interface pressures beneath stockings and bandages were measured in 8 and 3 studies, amounting to 24-56 and 27-64mmHg, respectively.

The proportion of ulcers healed within the pre-specified time frame was greater with stockings (62.7%) than with bandages (46.6%) (Figure 1). Time to healing (8 studies, 558 pts) averaged 11.5 weeks (±6.5) with stockings and 14.4 (±7.2) with bandages (p=0.0002). In the 3 studies where all patients removed their stockings at night was the healing ratio in the stocking groups significantly higher (87% vs 66%, p<0.002). In the 2 studies where stockings were not removed at night was the healing ratio identical (53% vs 55%). Removing the stocking reduced the interface pressure to ≤20mmHg.

Pain was assessed in 4 studies (270 pts) revealing an important advantage of stockings (p<0.00001).

**CONCLUSIONS:** This survey demonstrates an equal or better performance of stockings as compared with bandages in each of the trials on therapy of venous ulcers, despite considerable heterogeneity, sometimes substandard reporting, and a slight bias toward less difficult to treat ulcers in the stocking groups. Stockings relieved pain more efficiently and made nursing easier. The best results were obtained with two-stocking systems where the second stocking was removed at night.

Figure 1.



## P-10 Recurrence After Saphenous Vein Stripping Versus Endovenous Ablation: A Meta-Analysis

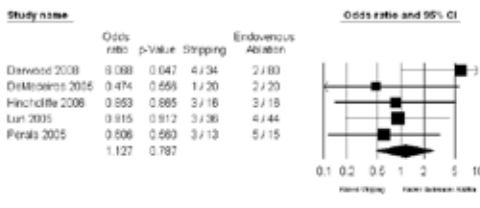
E. Xenos, G. Bietz, D. Minion, N. Abedi, E. Sorial, N. Karagiorgos, E. Endean - University of Kentucky Medical Center, Lexington, KY

**BACKGROUND:** Saphenous vein ligation and stripping is associated with recurrence rates of 20% or greater. The cause of recurrence is unclear and may include surgical technique, development of new veins (neovascularization), or progression of the underlying disease. Long term results of catheter-based minimally invasive techniques developed to treat saphenous vein insufficiency (endovenous laser and radiofrequency ablation) are under evaluation. A meta-analysis of trials comparing endovenous versus surgical saphenous vein ablation was performed focusing on long term (greater than 365 days) outcomes of recurrence of varicosities, reflux and symptomatic disease.

**METHODS:** A systematic search of published studies reporting treatment varicose veins was performed. The following databases were searched: Medline/PubMed, OVID, EMBASE, CINAHL, ClinicalTrials.gov, the Cochrane central register of controlled trials and the Cochrane database of systematic reviews. Search terms included saphenous vein ligation, stripping, radiofrequency ablation, laser ablation, endovenous ablation. Reports from 1966 to 2007 in all languages were considered. The "related articles" function was used to broaden the search. All manuscript titles, abstracts, and subject headings were screened by one reviewer for potential relevance. Abstracts of manuscripts selected by title were read online to reduce the number of articles for full-text examination. Finally, additional titles were sought in the bibliographies of the retrieved articles. Only studies reporting outcomes with greater than 365 days were selected. Outcomes analyzed included recurrence of varicosities and reflux as documented by duplex ultrasound and/or recurrence of signs and symptoms. Data extraction was done from life tables, text, or graphs. Statistical analysis was performed using the commercially available software CMA Version 2 (Biostat Inc). The random-effects model was used to calculate the odds ratio and 95% confidence intervals. Statistical heterogeneity was evaluated using the Q-value and considered present if  $P < 0.05$ .

**RESULTS:** Five randomized controlled trials reporting on 294 patients were included. 119 patients underwent ligation and stripping and 175 underwent endovenous ablation (100 laser, 75 radiofrequency ablation). Follow up period was 584+ 182 days (mean+ SD); there was no difference in the age or gender distribution between the groups. No differences were identified in the long term recurrence rate between open vs. endovenous saphenous vein ablation as shown in the graph (95% CI 0.47-2.68,  $P=0.78$ ). Statistical heterogeneity was not significant ( $P=0.33$ ) and publication bias was limited.

### Recurrence of varicose veins/reflux



**CONCLUSIONS:** Recurrent varicose vein disease remains a significant problem after either endovenous or open surgical ablation. Neither technique appears to confer an advantage in terms of mid or long-term freedom from recurrent symptoms.



## P-11      **The Efficacy of Single Daily Dose of Enoxaparin Treatment In Acute Venous Thromboembolism: One Year Follow-Up Results**

M. Kurdoglu, Istanbul University, Istanbul School of Medicine, Istanbul, Turkey

**BACKGROUND:** This local multi-center study was designed as open label, single treatment arm, long-term observational (18 months), phase IV clinical trial. Primary **OBJECTIVE** of the study was the evaluation of the efficacy of single daily dose of enoxaparin with warfarin in patients presenting with acute venous thromboembolism.

**METHODS:** Between December 2004 and September 2007, 251 patients were enrolled to study and an interim analysis of 153 patients (mean age; 51.9 ±19.2, 85 male and 68 female) who completed 1 year follow-up were performed.

For all patients, enoxaparin treatment was immediately started after confirmation of diagnosis (single dose, 1.5 mg/kg/day, sc). After 24th hour of the initiation of enoxaparin treatment, 5 mg warfarin tablet was administered for a period of minimum 3 months. Main efficacy parameters included; DVT symptoms and localization of thrombus by means of doppler USG, D-Dimer and INR testing.

**RESULTS:** The most common sign and symptoms of the DVT patients at enrollment were; tenderness, edema and pain on the diseased legs with a frequency of 97.8%, 92.7% and 91.9% respectively. Significant decrease was observed in all sign and symptoms of DVT ( $p=0.000$ ) (Figure 1). D-Dimer values were normalized in 92.2% of patients after 3 months of treatment ( $p=0.000$ ). One-year follow-up results revealed similar D-dimer levels for all patients. Additionally there were no correlations between D-Dimer values and severity of symptoms (leg pain, edema and tenderness, odds ratios were 0.1945, 0.2135 and 0.1675 respectively). Safety laboratory evaluations including ALT, AST and CK have not revealed significant changes from normal levels.

INR values increased significantly in the course of treatment, mean INR values reached 1.81 after 5 days of treatment with enoxaparin ( $SD \pm 0.80$ ) and to 2.25 ( $SD \pm 0.89$ ) on Day 7. On day 10, mean INR reached to 2.73 ( $SD \pm 1.31$ ). Results of Doppler USG evaluations revealed that percentages of re-canalizations significantly increased at all levels of veins examined except superficial femoral and tibio-peroneal vein.

**CONCLUSIONS:** Enoxaparin treatment until patients reach  $INR > 2$  and addition of warfarin until the end of 3 months, significantly reduced the patients' physical symptoms including differences on leg circumferences. This reduction was further supported with USG evaluations.

Fig.1. Change of pain and edema after 3 months of treatment, clinically significant decrease in pain and edema; Day 1 to Month 3 ( $p=,0000$ )

EVF-Presentation Abstract (TROMBOTEK Study)04.09.2008

## P-12 Underutilization of Venous Thromboembolism Prophylaxis In Reconstructive Breast Surgery: A Survey of 606 Plastic Surgeons

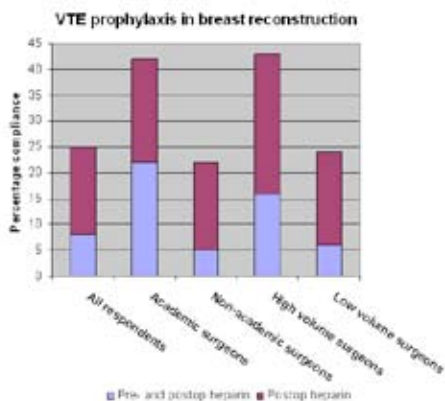
C. J. Pannucci, A. J. Oppenheimer, T. W. Wakefield, E. G. Wilkins - University of Michigan, Ann Arbor, MI

**OBJECTIVES:** Despite multiple risk factors, no specific venous thromboembolism (VTE) prophylaxis guidelines are available for the high-risk breast cancer population undergoing immediate or delayed breast reconstruction. The incidence of clinically apparent VTE in patients receiving autologous tissue reconstruction has been estimated at up to 2.2%. Currently, guidelines from the general surgery literature are applied to patients undergoing reconstruction. Both the American College of Chest Physicians (ACCP) and the Caprini Risk Assessment Model place all women with breast cancer undergoing lengthy reconstruction in the highest risk categories. Accordingly, both sequential compression devices and postoperative pharmacologic prophylaxis are recommended. Using a web-based survey, clinical practice patterns for VTE prophylaxis were determined for 606 members of the American Society of Plastic Surgery with a clinical interest in autologous breast reconstruction. Compliance to established guidelines was assessed.

**METHODS:** An anonymous, blinded survey was distributed to all members of the American Society of Plastic Surgery practicing in the United States with a clinical interest in breast reconstruction (N=3584). The web-based survey queried surgical case volume, practice subtype, strategy for VTE prophylaxis, and self-reported utilization of established VTE prophylaxis guidelines. Reported practice patterns were compared to the national ACCP standards. Both descriptive statistics and tests of statistical significance using Chi-squared analysis were performed.

**RESULTS:** Completed surveys were received from 606 surgeons for a response rate of 16.9%. Surgeons in academic practice and surgeons with high case volume were significantly more likely to use postoperative heparin alone ( $p<.0001$  and  $p<.0001$ , respectively) and both pre- and postoperative heparin ( $p<.0001$  and  $p=.0013$ , respectively). Analysis of self-reported practice patterns of 72 surgeons who report utilization of ACCP guidelines showed that 38% actually provided prophylaxis consistent with the ACCP's recommendations.

**CONCLUSION:** Breast reconstructive surgeons' self-reported practice patterns for VTE prophylaxis demonstrate poor compliance with and poor understanding of current guidelines. Few well-designed studies examining VTE prophylaxis in plastic surgery patients have been published. Further research is necessary to create VTE prophylaxis guidelines specific to patients undergoing autologous breast reconstruction. The need for ongoing surgeon education on appropriate prophylaxis against this potentially fatal disorder cannot be overemphasized.



## **P-13      Comparison Among Stripping, CHIVA and Laser Ablation Performed With Haemodynamic Strategy: Rationale and Short-Term Outcomes**

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<sup>2</sup>Skin Doctors Center, Trieste, Italy

**PURPOSE:** The Aim is to compare short term results between High Ligation/Stripping (HL/S) vs Endovenous Laser Treatment (EVL) and "cure conservatrice de l'insuffisance veineuse en ambulatoire" (CHIVA) at any rate performed in haemodynamic way, in a randomized monocentric prospective trial in patients with clinical C2 C3 class in CEAP classification and type I II III venous shunts in Teupitz classification.

**METHODS:** Patients were treated from November 2004 to November 2007. Clinical and ECD follow up was performed at 2 weeks, 1, 2 and 3 years after surgery. Small shrewdness of technique in each surgical procedure ensure haemodynamic conditions. Treatment efficacy, anatomical failure, complications, recurrence rate and clinical improvements were analyzed.

**RESULTS:** There were 358 consecutive patients (374 inferior legs with varicose veins C2 C3), 56 were excluded and 318 inferior legs were enrolled with simple randomization in EVLT group, HL/S group and CHIVA group; after ECD examination were enrolled only type I II and III; patients with ambulatory capacity limitations were excluded from CHIVA procedures and treated with HL/S.

The 15 days-follow up analysis shows differences for bruising ( $p < 0.01$  EVLT vs CHIVA/HL/S) and clinical recurrence Hobbs C ( $p < 0.01$  CHIVA vs EVLT/HL/S).

The 3 years-follow up shows that global (HL/L, EVLT, CHIVA) whole limb recurrence rate vs groin recurrence in conventional stripping is lower ( $p < 0.01$ ); lowest recurrence rate was in EVLT ( $p < 0.01$  vs HL/S e CHIVA)

**CONCLUSIONS:** In selected patients haemodynamic-guided surgery procedures are equally safe and efficient, clinical outcomes are durable without statistical differences on disease progression, complications, aesthetical outcomes; recurrence rate is lower in haemodynamic-guided surgery vs conventional stripping and lowest in EVLT vs CHIVA and HL / S.

Long-term outcomes shall be investigated

**P-14      Chronic Venous Disease and Its Impact On Quality of Life of Argentinean Patients Treated With A Combination of Ruscus Aculeatus + Hesperidin Methyl Chalcone and Ascorbic Acid.**

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**BACKGROUND:** Chronic venous disease is a common pathology in Argentina affecting a large number of the adult population. Depending on its severity, it causes discomfort and various clinical symptoms that can reduce quality of life (QoL). We thus evaluate the evolution of QoL of patients affected by chronic venous disease and managed by a phlebotonic drug, using validated QoL questionnaires.

**METHODS:** In an observational study, Argentinean patients classified C0 to C3 on the CEAP classification were assessed using SF-12 (generic) and CIVIQ (specific) questionnaires. This evaluation was carried out at baseline and after a 12 week phlebotonic treatment.

**RESULTS:** The investigators (149 of which 51% GPs, 37% phlebologists and 12% gynecologists) enrolled 1036 patients (82.4% women) with completed quality of life questionnaires. The mean patient age was 54.2+/-15.7 years. More than half of the patients (59.5%) had a job with a standing position for more than 8 +/- 2.2 hours. Most of the patients were C2 and C3 (respectively 36.32% and 36.32%). The mean global CIVIQ score at baseline was 35.8 +/-19.1 and after 12 weeks was significantly reduced to 18.6+/-15.4 ( $p<0,001$ ). The younger the patient was the better the improvement in CIVIQ score (-54.7+/-43.3% under 40 years, - 40.5+/-36.6% between 40-60 years, -40.5+/-36.6% after 60 years). Concerning SF-12 questionnaire, a significant improvement was also noted after 12 weeks in physical (5.4+/-7.5) and mental (4.3+/-7.7) dimensions ( $p<0,001$ ).

**CONCLUSIONS:** Quality of life of patients suffering from chronic venous disease is significantly improved with a 12-week treatment with Ruscus aculeatus + HMC+ Ascorbic acid.

**P-15      Eccentric Compression of the Great Saphenous Vein (GSV)  
At the Thigh Level: Correlations Between Interface Pressure  
Measurements and CT Scan With 3D Reconstruction**

J. Benigni<sup>1</sup>, J. Uhl<sup>2</sup>, A. Cornu-Thénard<sup>3</sup> - <sup>1</sup>Hôpital Bégin, St  
Mandé, France, <sup>2</sup>Varicose Veins Surgical Center, Neuilly, France,  
<sup>3</sup>Hôpital St Antoine, Paris, France

**BACKGROUND:** After treating the trunk of the GSV (surgery, duplex guided sclerotherapy, endovenous procedures) some adverse effects could potentially be serious and can also hinder a return to work (pain). They could be prevented by applying a compression on the thigh. To compress the saphenous trunk or canal, it is advisable to place a pad between the compression and the skin. No physical proofs of the effects have validated this theoretical notion.

**OBJECTIVES:** To measure the interface pressures at points B1 (ankle) and F (middle of the thigh) between the skin and the superimposition of 2 thigh compression stockings (CS) (23 mmHg Mediven Struva) before and after adding a specific pad on the thigh.

To evaluate the effects on the GSV trunk of the superimposition of the 2 CS before and after adding the pad (image 1) by CT scan with 3D reconstruction.

**Material and METHODS:** The interface pressures were measured in 10 healthy volunteers with a Kikuhime device using a small probe.

A CT scan was performed in supine position with and without the pad. The diameter and morphology of the GSV trunk was assessed using the slices and a 3D model.

**RESULTS:** In supine and standing position, the mean pressures in B1 and in F under 2 thigh CS without and with interposition of the foam pad are presented in table 1. \$table 1?\$\$

On the 3D scan reconstruction, without pad, no compression of the trunk of the GVS is observed in spite of the 2 CS. At the opposite, with the pad, an average reduction of the section of the GSV is obtained : 53 to 78 % at the lower and upper parts, 40% in F (image 2).

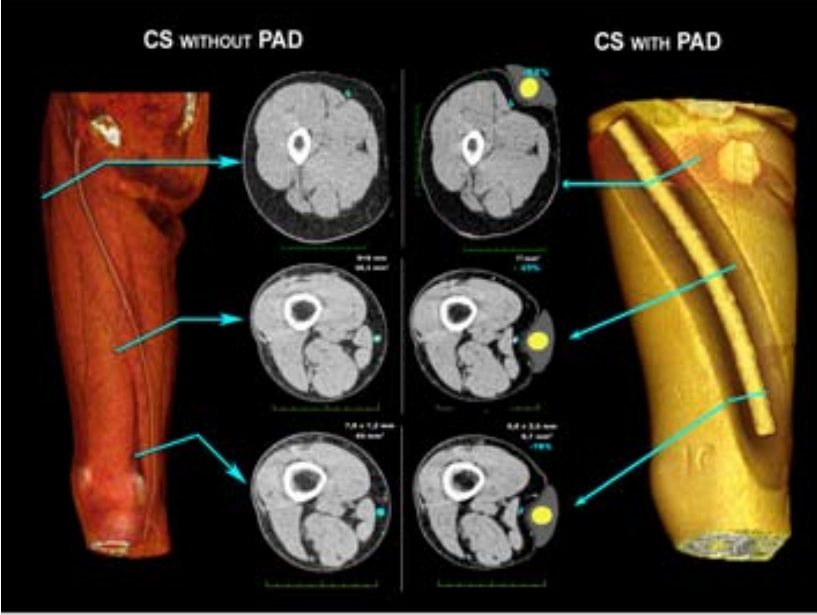
**CONCLUSIONS:** This study, conducted on healthy volunteers, shows that the interposition of a specific pad between a compression device and the skin at the thigh level can be used to increase the interface pressure. The CT scan with 3D reconstruction shows that this system provides an effective compression the GSV trunk. A movie is available with a 3D virtual travel along the GSV under the pad.

Foam Pad with a hard foam core  
and a peripheral softer foam



table 1 : Interface pressure measurements

	B1 2CS supine (mm Hg)	B1 2CS standing (mm Hg)	F 2CS supine (mm Hg)	F 2CS standing (mm Hg)	F 2CS + foam pad supine (mm Hg)	F 2CS + foam pad standing (mm Hg)
average	35.1	41.5	19.1	22	58.5	67
SD	4.4	5.6	3	2.5	9.2	7.4
median	33.5	42	19	22	57.5	66



## P-16 Venous Thromboembolism Prophylaxis Methods In the Trauma and Emergency Surgery Intensive Care Unit Patients

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**BACKGROUND:** To evaluate the efficacy and safety of low molecular weight heparins(LMWH) compared to elastic stockings in combination with Intermittent Pneumatic Compression (ES+IPC) in venous thromboembolism (VTE) prophylaxis in the intensive care unit (ICU) of trauma and emergency surgery

**METHODS:**From june 2005 to june 2007, 259 patients, who were on mechanic ventilation in the ICU were assigned to 2 groups, which were either LMWH or ES+IPC. Color flow doppler sonography was carried out on 3rd and 7th days. LMWH group was consisted of 152 patients whilst the ES+IPC group induced 94 patients.

**RESULTS:** Deep venous thrombosis was revealed in 3 (2%) of the LMWH whilst one (1%) in the ES+IPC group. Minor bleeding were in 15 patients. The frequency of VTE was 1.5%. Two patients suffered from fatal PE in total of 4 patients with PE.

**CONCLUSIONS:** We believe that the protocol, which is applied for VTE prophylaxis in Istanbul Medical Faculty Emergency Surgery Department is effective and safe one in such group with high mortality and morbidity

Patients demographics			
		LMWH	ES+IPC
n	259	152	94
Mean Age	47.4	47	37
BMI	25.4	26.5	24.6
Hospital Days	13.3	13.3	11.5

Our bleeding complications during prophylaxis period and mortality ratio				
	Trauma( n:131)		Emergency surgical disease (n:128)	
	ES +IPC	LMWH	ES +IPC	LMWH
Bleeding	4 (%3)	2 (%2)	-	9 (%6)
Mortality	1 (%0.8)	-	-	3 (%2)

## P-17      **How Can Laser Wavelength Influence the Outcome of Endovenous Varicose Veins Procedures?**

S. Kaspar - Flebocentrum, Hradec Kralove, Czech Republic

**AIM:** Diode (810-1470nm) and Nd:YAG (1064 and 1320nm) lasers are usually used for endovenous laser therapy. The purpose of present study is the comparison between 980 nm diode laser and 1320 nm Nd:YAG laser in terms of side effects and therapeutic results.

**MATERIALS AND METHODS:** Sixty limbs were operated on with diode 980nm laser with manual pull-back and in another 60 limbs Nd:YAG laser 1320 nm with automated pull-back was used. Endovenous laser procedures of the great saphenous veins (GSV) were performed under tumescent local anesthesia (TLA) in continuous mode according to usual protocol. Demographic data, TLA volumes and basic laser parameters were comparable in both cohorts. Results of the therapy were evaluated 5 days after procedure (D5), after 1 month, 6 months and 1 year. At D5 all patients completed short pain related questionnaire and 10-cm visual analogue scale (VAS) to evaluate post-procedural pain. The eventual consumption of analgetics were also recorded. Physician evaluated the size of bruising or hematoma, induration and superficial phlebitis using 10-cm VAS at D5, too. Next visits consisted of evaluation of the actual QoL (CIVIQ-2 questionnaire) and eventual sick leave by the patient and clinical CEAP score and the quality of saphenous occlusion using duplex ultrasound by physician.

**RESULTS:** Statistically significant difference in immediate postoperative pain ( $p=0.003$ ) evaluated by patient using 10-cm VAS was found: in diode group (median [inter-quartile range]: 2.15 [1.1- 4.2]) compared to Nd:YAG group (1.4 [0.4-2.2]) and influence on usual daily activities graded 1(best) to 5 (worst) ( $p=0.03$ ): in diode group (2.5 [2 -3 ]) compared to Nd:YAG group ( 2.0 [2-3]).

Evaluation by physician using 10-cm VAS found statistically significant difference in grade of bruising or hematoma ( $p<0.001$ ): in diode group (3.8 [3-5]) compared to Nd:YAG group (1.35 [0.4-2.5]) and in induration ( $p=0.04$ ): in diode group ( 0.4 [0-1]) compared to Nd:YAG group ( 0 [0-0.6]). There were no differences in quality of life, clinical CEAP score and percentage of saphenous occlusion.

**CONCLUSIONS:** Efficacy of hemoglobin-specific and water-specific lasers is comparable in short and mid-term horizon. The advantage of Nd:YAG 1320nm device consists in the least immediate postprocedural discomfort and bruising which can be important for majority of patients. In surgeon's point of view, the advantage of CTEV Nd:YAG laser is also the motorised pull-back of the fibre and build-in powermeter which can secure the exact emission of laser energy during procedure.



## **P-18 Which Pressure Do We Need To Reduce Breast Cancer Related Lymphedema By Short Stretch Compression Bandages?**

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**BACKGROUND:** Multilayered, short stretch bandages are recommended as the basic therapy in the intensive treatment-phase for lymphedema patients. However, the deciding question how firmly such bandages should be applied was never investigated before.

**AIM:** To compare the efficacy of mild and strong compression bandages in patients with postmastectomy arm lymphedema.

**METHODS:** 36 patients with breast cancer related lymphedema of one arm were randomized into two groups: Group A (n=18) received short stretch bandages (Rosidal lymphset®, Lohmann Rauscher) applied with a pressure between 20 and 30 mm Hg, group B (n=18) with a pressure between 44 and 55 Hg. The sub-bandage pressure was measured using air-filled transducers on the distal and proximal lower arm (Kikuhime®).

The bandages were renewed after 2 and 24 hours. Arm volume was measured by water displacement volumetry before bandage application and repeated after removal of the bandages 2 and 24 hours later.

**RESULTS:** The arm volume reduction (mean + SD) after 2 and 24 hours respectively in group A was 117.7 + 133.7 ml (-2.7%) (p<.0001) and 212.1 + 137.0 ml (-4.8%) (p<.01) and in group B 60.2 + 126.5 ml (-1.4%) (n.s.) and 210.7 + 212.0 ml (-4.8%) (p<.01). There were no significant differences between group A and B. Bandages in group A were better tolerated. The sub-bandage pressure drop in the first 2 hours was 41.9% in group A and 41.3% in group B. The corresponding percent decrease after 24 hours was 63.4% and 57% respectively.

**CONCLUSION:** In contrast to the lower extremity where a dose-response relationship between compression pressure and volume reduction could be demonstrated, upper extremity lymphedema responds to light bandages (20-30 mm Hg) with the same decrease of the arm size as strongly applied bandages in the first 24 hours.

## P-19 RFA of the GSV: How Close Is Too Close?

C. Vasiliu, M. D. Iafrati, T. F. O'Donnell, Jr. - Tufts Medical Center, Boston, MA

**BACKGROUND:** Endovenous radiofrequency ablation (RFA) of the great saphenous vein (GSV) provides a minimally invasive therapy for varicose veins. Recent device modifications provided a 7 cm length heating element (closure fast™), allowing higher treatment temperatures (120oC) and reduced treatment times. However, RFA has been associated with thrombosis of the sapheno-femoral junction (SFJ). The device instructions were modified, increasing the recommended catheter tip position (CTP) from the SFJ to >2 cm. We sought to determine if specific catheter positioning prevents thrombus propagation and if CTP or vein diameter correlated with the length of the residual GSV stump in a consecutive series of 50 patients, undergoing RFA by two experienced surgeons.

**METHODS:** Preoperative, intraoperative, and post operative duplex scans were obtained on patients undergoing RFA according to a standardized clinical protocol. The diameter of the saphenous vein at the SFJ was recorded preoperatively, the CTP to SFJ distance was measured intraoperatively, and distance from the proximal thrombus edge to the femoral vein (patent GSV) on postoperative scans (days 5-7) performed by a sonographer unaware of the RFA details. These data were reviewed on all patients treated during the 1st six months of 2008. All cases were ambulatory under tumescent anesthesia (400-500 cc's). Patients were treated with unfractionated heparin 3,000-5,000 and baseline antiplatelet medications were continued. Treatment with closure fast™ was performed with repeated ultrasound validation of CTP, two 20 sec RFA cycles on the first segment, and single cycles on the remaining segments.

**RESULTS:** The CTP was 2.5 to 2.9 cm (mean 2.74 cm) from the SFJ. The GSV diameter at the SFJ was 0.46 to 1.88 cm (mean 0.97 cm). All treated veins were occluded post op. The residual patent GSV length was -0.3 to 10 cm (mean 1.86 cm). In two cases, thrombus extended to the SFJ and into the common femoral vein. In both cases the CTP was 2.7 cm from the SFJ at the initiation of therapy. We found no correlation between CTP ( $r = 0.08$ ) or the GSV diameter ( $r = -0.26$ ) with the length of the residual patent GSV.

**CONCLUSIONS:** RFA using the closure fast™ catheter and a protocol to minimize thrombotic complications, resulted in consistent occlusion of the GSV. Despite this uniform approach, 2 limbs (4%) had extension of thrombus to the SFJ. Neither the CTP nor the GSV diameter correlated with the residual length of patent GSV. These data suggest that endovascular heat transmission in RFA may be variable between patients and may extend 2.7 cm beyond the catheter tip or that other unidentified factors may lead to thrombus extension.

## **P-20      Mixed Results With Perforator Ablation For Chronic Venous Disease**

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Spectrum Health, Grand Rapids, MI

**BACKGROUND:** Many procedures designed for the treatment of chronic venous disease are initially met with enthusiasm only to be abandoned later because of mixed results. The purpose of this study is to examine the technical and clinical outcomes of radiofrequency perforator ablation (RFA) in our practice.

**PATIENTS & METHODS:** All patients presenting to our vein clinic with chronic venous disease, CEAP class 4, 5 & 6, were entered in a prospective database. Initial evaluation with color-flow duplex scan was performed in the office to identify the presence and location of reflux. All patients were rescanned after treatment. Active venous stasis ulcers were treated initially with compression therapy to heal the ulcer before attempting RFA. Patients presenting with axial and perforator incompetence had simultaneous treatment.

**RESULTS:** In a 32-month period ending in August 2008, 98 patients (51 women and 47 men) had RFA performed in 129 calf perforators (109 limbs). Twenty eight patients(29%) had simultaneous treatment of axial reflux. On the first follow-up visit, color flow scan demonstrated satisfactory perforator ablation in 78 (60%), 50 (39%) were still patent and 1 could not be visualized adequately. Clinically, after successful RFA, 47 patients (48%) showed improvement of symptoms and 5 had no significant change. Seventeen other patients who had an additional procedure for axial reflux showed improvement. There were 3 patients who failed with a second RFA attempt and remained clinically unchanged.

**CONCLUSION:** Radiofrequency ablation of perforators is technically difficult and associated with a high failure rate. Patients with combined axial and perforator incompetence tend to improve clinically after RFA despite the presence of patent perforators.

## **P-21      Venoplasty and Stenting of Residual Stenosis Following Pharmacomechanical Thrombectomy For Symptomatic Deep Vein Thrombosis**

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**BACKGROUND:** Post-thrombotic syndrome can be a debilitating sequelae of deep venous thrombosis (DVT). Pharmacomechanical thrombectomy (PMT) provides an alternative for accelerated resolution of extensive venous thrombosis. We believe that residual stenosis can serve as a nidus for recurrent thrombosis. Therefore, in this report we reviewed our current surgical protocol of venoplasty and stenting for residual stenosis following PMT in order to demonstrate a decreased incidence of recurrent thrombosis.

**METHODS:** All patients in our practice, undergoing PMT over the last 2-years (2006 - 2008) were retrospectively reviewed. Pre-procedural patient characteristics such as demographics, mode of presentation, clinical risk factors, and history of prior therapeutic modalities were recorded and analyzed. Pre-procedural lesion characteristics including thrombus homogeneity and location of stenosis/occlusion were obtained with duplex imaging. Pre- and Post-PMT venograms were acquired to determine technical success or residual disease. Under our current protocol venoplasty  $\pm$  stenting were performed as adjunctive procedures for residual disease. Most patients underwent follow-up with clinical and duplex evaluations. Finally, we compared the clinical resolution of symptoms and restenosis rate of our current protocol with a cohort of similar patients who did not have this adjunctive procedure.

**RESULTS:** A total of 64-cases were performed in 59-patients. The mean age of presentation was 61-years (range 15 - 87-yrs), (32/59) 54% were female and most patients presented with unilateral extremity swelling (54/59; 91.5%), followed by pain (19/41; 46%). The most common risk factor was immobilization (24/59; 40.7%) followed by cancer (14/59; 23.7%). Most of the lesions were located in the common femoral vein (54/59; 91.5%). Five patients (8.4%) presented with upper extremity DVT. Technical success of PMT-alone was defined as < 10% residual stenosis and this was achieved in (4/64; 6.3%) of cases. Fifty-seven (57/64; 89%) cases went on to have an adjunctive procedure while the rest (3/64; 4.7%) were monitored in our surveillance program and served as our controls. Clinical resolution of symptoms was higher in patients who underwent adjunctive venoplasty compared with our control group.

**CONCLUSION:** In our series, the majority of patients presenting with a DVT had an underlying flow limiting lesion and even after PMT were left with a residual stenosis. We feel that all residual venous stenoses require treatment using balloon venoplasty with or without stenting in order to decrease the incidence of recurrent venous thrombosis following PMT.

## Quality of Life Improvement In Latin American Patients Suffering From Chronic Venous Disorder Using A Combination of Ruscus Aculeatus + Hesperidin Methyl Chalcone and Ascorbic Acid (QUALITY Study)

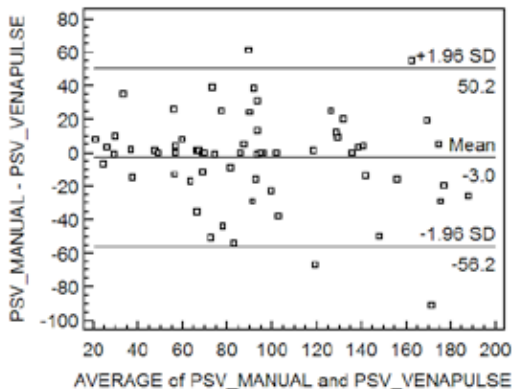
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**BACKGROUND:** Pneumatic cuffs have been used in the diagnosis of chronic venous insufficiency (CVI) by inducing leg compression followed by sudden deflation to generate retrograde flow (reflux) in the lower extremity veins during Duplex scanning. The automated nature of this method makes it attractive, compared to the traditional manual method that requires the single-handed operator to hold simultaneously the ultrasound probe during compression. The **AIM** of this study was to compare pneumatic cuff with manual compression in diagnosing reflux in patients with CVI.

**METHODS:** Eighteen patients with CEAP 2-5 CVI (12 females, mean age 56 years, median VCSS 6.5) were studied. The Venapulse device (ACI Medical, San Marcos, CA) was used for cuff inflation. The hemodynamic performance of the two methods was tested in the first nine patients positioned in 300 reverse Trendelenburg. The relative diagnostic value of the two methods was tested in the last nine patients in 300 reverse Trendelenburg and standing positions. Tested segments included the common and superficial femoral veins, the popliteal vein, the great saphenous vein (at three or four levels) and the short saphenous vein. Patient satisfaction was recorded using a 0-10 pain scale; compression method order was randomized.

**RESULTS:** Both methods induced equal compression with median peak velocity of the antegrade flow (PVA) being 86cm/sec ( $P=.65$ , Bland-Altman plot is shown in the Figure) in 63 venous segments tested. Coefficient of variation (CV) for PVA in the superficial veins was significantly higher with the manual method (16.8%) compared to the Venapulse method (9.5%,  $P<.001$ ), but in the deep veins the two methods had similar CVs (9% vs 10.4%,  $P=.029$ ). Peak velocity of the retrograde flow and reflux duration of the manual and Venapulse methods were 34cm/sec and 2.3 sec, and 21cm/sec ( $P=.037$ ) and 3 sec ( $P=.12$ ), respectively. During the second part of the study 13 venous segments (out of 43 tested in total) had reflux with either method. Using the presence of any reflux as gold standard, sensitivity and specificity of the manual and Venapulse methods were 85% and 100%, and 78% (kappa 0.68,  $P<.001$ ) and 100%, respectively. Median (interquartile range) of patient satisfaction score with the manual and Venapulse methods was 0 (0-0.75) and 0 (0-1.0), respectively ( $P=.16$ ).

**CONCLUSIONS:** Pneumatic cuff and manual leg compression were shown to be equally effective in inducing and diagnosing venous reflux in patients with CVI. Cost-



## P-24 Can Bilateral Varicose Vein Surgery Be Performed Safely In An Ambulatory Setting?

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**BACKGROUND:** Surgery for varicose veins is still the method of choice worldwide. When varicose veins require bilateral surgery a single procedure often is the preferred choice by the patient. Today unilateral varicose vein surgery is frequently performed as an out-patient procedure, while in many institutions bilateral surgery is done as in-hospital procedure.

**METHODS:** Between October 1, 2004 and October 31, 2006, 433 patients underwent surgery for the great saphenous vein as in-patient procedure (303 unilateral and 130 bilateral), period 1. From November 1, 2006 until May 30, 2008, 363 patients had great saphenous vein surgery (256 unilateral and 107 bilateral), period 2. We have compared unilateral and bilateral varicose vein surgery (high ligation and stripping of the great saphenous vein), and in-hospital procedures with ambulatory surgery, with regard to postoperative complications and mid-term follow-up.

**RESULTS:** Operation time and total length of stay in the institution following varicose vein surgery were significantly shorter for period 2 compared to period 1 for both unilateral and bilateral surgery, without other differences between the groups. Table 1 There were few postoperative complications without differences between periods, and between unilateral and bilateral surgery. Table 2

**CONCLUSIONS:** Varicose vein surgery can safely be performed as an out-patient (ambulatory) procedure, without increased risk of postoperative complications and no adverse mid-term effects. There is no additional risk to perform bilateral varicose vein surgery compared to unilateral surgery. Therefore, bilateral varicose vein surgery can be safely performed as an ambulatory procedure with obvious cost benefits.

Table 1				
Parameter	Period 1	Period 1	Period 2	Period 2
	Unilateral GSV	Bilateral GSV	Unilateral GSV	Bilateral GSV
Number of patients	303	130	256	107
Mean age, years	48.3±14.0	49.1±13.7	48.2±14.7	46.9±14.1
Female gender	212 (70%)	90 (69%)	174 (68%)	77 (72%)
Operating time, min.	212 (70%)	63.4±14.8	32.7±11.5	55.0±14.3
General anesthesia	139 (46%)	64 (49%)	120 (47%)	55 (51%)
Loco-regional anesthesia	164 (54%)	66 (51%)	136 (53%)	52 (49%)
Time in recovery room, min.	153.6±71.3	159.4±66.6	144.6±61.9	134.7±64.0
Total stay in the institution, hours	38.9±12.8	39.4±11.5	10.4±3.4	10.2±3.0

Table 2				
Parameters	Period 1	Period 2	Unilateral GSV	Bilateral GSV
Number of patients	433	363	559	237
(474 legs)				
Wound infection	3 (0.7%)	2 (0.6%)	3 (0.5%)	2 (0.4%)
Hemorrhage	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Hematoma drainage	1 (0.2%)	1 (0.3%)	1 (0.2%)	1 (0.2%)
Paraesthesia	7 (1.6%)	2 (0.6%)	6 (1.1%)	3 (0.6%)
Superficial thrombo-phlebitis	4 (0.9%)	2 (0.6%)	2 (0.4%)	4 (0.8%)
Deep venous thrombosis	0 (0.0%)	1 (0.3%)	1 (0.2%)	0 (0.0%)
Residual veins to treat	13 (3.0%)	12 (3.3%)	12 (2.1%)	13 (2.3%)
Total complications	28 (6.5%)	20 (5.5%)	25 (4.5%)	23 (4.9%)

## **P-25      Terminal Valve of the Great Saphenous Vein: Which Pressure Can It Hold?**

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**BACKGROUND:**terminal (ostial) valve of the Great Saphenous Vein is the most important part of pathogenesis of Chronic Venous Insufficiency (CVI). 85% of patients have varicose veins in the area of the Great Saphenous Vein. This fact, probably, is the reflection of an initial weakness of the valve. to investigate the highest pressure which terminal valve of the Great Saphenous Vein can hold. There are few publications discussing this subject.

**METHODS:**the experiment was carried out with using 11 segments of Femoral Veins. The segments were extracted from cadavers (males and females) died a natural death; age was 41-67 years. There were no signs of CVI. We used a monitoring device, consisting of a manometer and two plastic tubes joined with the help of T-joint. The limits of measurement were 0 - 400 mm Hg.

**RESULTS:**two of eleven segments had incompetent terminal valve of the Great Saphenous Vein. We couldn't achieve closing of the valve's leaflets. One valve was ruptured when pressure reached 190 mm Hg. And, finally, the rest of valves (8 segments) were safe when pressure had achieved 400 mm Hg and even more. We observed one rupture of the wall of the femoral vein while the leaflets of the terminal valve were safe.

**CONCLUSIONS:**in actual practice reflux through the terminal valve of the Great Saphenous Vein is impossible. The pressure of rupture of the competent ostial valve is more than 400 mm Hg. The competent ostial valve is not a factor of varicose transformation of veins. There was not any relationship between the age and solidity of the valve.



**P-26      Endovenous Laser Ablation (EVLA) of Great Saphenous Varicose Veins By A 1470 NM Diode Laser By Using the Radial Fiber: First Results**

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**BACKGROUND:** The AIM of this study was to show outcome and side effects after EVLA of incompetent great saphenous veins (GSV) with a 1470 nm Diode laser (Ceralas E, biolitec) by using new radial fiber for energy delivery into the vein wall.

**METHODS:** The non-randomized, prospective study included 21 unselected limbs of 21 patients with a duplex sonographically verified insufficiency of the GSV. Laser treatment was carried out in a continuous mode with a power of 15 watts. Standardized follow-up after 1, 10 and 30 days included clinical and duplex investigation for thromboembolic complications, occlusion rate, clinical CEAP score, patient's satisfaction, vein diameter and pain score.

**RESULTS:** Up to 30 days follow-up all treated veins remained occluded and no new reflux in the treated segments occurred. No recurrent varicose veins occurred so far. We used an average linear endovenous energy density (LEED) for the GSV of 77.3 J/cm vein with a minimum of 48.8 J/cm and a maximum of 161.3 J/cm (SD 25.2). The average endovenous fluence equivalent (EFE) was 31.9 J/cm<sup>2</sup> vein with a minimum of 19.6 J/cm<sup>2</sup> and a maximum of 59.6 J/cm<sup>2</sup> (SD 9.1). No severe complications such as deep venous thrombosis occurred. The diameter of the GSV at 3 cm below the sapheno-femoral junction reduced from 1.0 before treatment (SD 0.4) to 0.6 cm at day 30 (SD 0.1). 50 % of patients did not have any pain after the treatment and 81 % of patients did not take analgesics at any time after the procedure. 10 patients developed postoperative pain with a mean value of 0.7 (SD 0.7). The patients of this group took a mean of 1.6 pain killer tablets (SD 3) at a mean of 1.5 days (SD 0.9). Postoperative ecchymosis in the track of the treated veins was rare. In 78% of the treated limbs no ecchymosis had been observed at any time after the treatment.

**CONCLUSIONS:** EVLA of GSV with 1470 nm diode laser is a minimally invasive, safe and efficient treatment option with a high success rate. Using a radial fibre improves diameter reduction within one month and postoperative pain.

## P-27      **Crossed-Tape Technique: A Method To Increase Eccentric Compression Pressure**

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**BACKGROUND:** The application of specific devices to obtain an efficient compression on great saphenous vein is known as eccentric compression. The pressure required to determine an occlusion of the great saphenous vein at the thigh in standing position should be almost 80-100 mm Hg: such a high value can't be achieved by elastic stocking. In the case of bandage application, the required ankle pressure would not be tolerated. The **AIM** of the study is to evaluate the efficacy of eccentric compression of the medial aspect of thigh utilizing a standard device fixed by crossed-tape technique, without superimposing any kind of elastic stocking.

**METHODS:** 40 limbs from volunteers (10 males, 10 females) received firstly the application of a standard device fixed by crossed-tape technique to obtain an eccentric compression without addition of elastic stocking and then the same device was applied under elastic stocking alone. The interface pressure has been measured at the interface between the device and the limb skin, at three points of the medial aspect of the thigh, along the great saphenous vein skin projection. The measurements were performed in three different situations: in supine position, in standing position and during muscular activity in erect position. The limb circumference was measured in correspondence of the pressure-detection points and the subcutaneous thickness was recorded by ultrasound scanning; body mass index was also evaluated.

**RESULTS:** The comparison between the pressures obtained with the eccentric compression fixed by crossed tape technique or elastic stockings shows values significantly higher for the former case ( $p < .001$ ). Disregarding the absolute precision of the measured pressures (that can be considered within  $\pm 5\%$ ), values as high as 70-80mmHg have been measured by using crossed- tapes. Moreover, the pressure detected during muscular activity shows a significant increase with respect to the supine position case, corresponding to a mean value 20 mmHg, only when the eccentric compression is obtained by crossed-tape technique. In fact, no appreciable differences have been found when the device was fixed by elastic stocking. No significant correlation between body mass index, limb circumference and subcutaneous thickness were detected.

**CONCLUSIONS:** The application of the crossed-tape technique to fix the eccentric compression strongly increase the interface pressure, especially during muscular activity. This is a simple and highly efficient method to increase both resting and working interface pressure of eccentric compression. The suitability of the proposed approach can be understood by analysing the crossed-tape fixed device mechanical system in terms of isotropic and anisotropic forces distribution.

## P-28 Endovenous Laser Ablation Improves CIVIQ2 Score

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**BACKGROUND:** Endovenous laser ablation (EVLA) is becoming one of the optimal treatments of saphenous varicose veins. The advantage of this procedure seems to be less invasive with good outcome compared with traditional stripping. We conducted monocenter nonrandomized comparative study of EVLA with venous stripping.

**METHODS:** Total of 63 patients participated in this study. EVLA was performed in 63 saphenous veins (GSV 49, SSV 14) in 51 patients (male 15, female 36, mean age  $60.8 \pm 9.9$ ) under local and tumescent anesthesia. Laser instrument was ELVeS 980nm diode laser, Biolitec Germany. Set power was 12W, average linear endovenous energy density (LEED) was  $72.4 \pm 10.7$  J/cm. Stripping was performed in 22 saphenous veins (GSV 17, SSV 5) in 12 patients (male 3, female 9, mean age  $59.2 \pm 11.2$ ) under total intravenous anesthesia (TIVA) and tumescent anesthesia. The results were evaluated clinically and with Duplex US and the chronic venous insufficiency questionnaire (CIVIQ2) score (Japanese version) before treatment, at one, four, 12 and 24 weeks after treatment.

**RESULTS:** The complete obstruction of saphenous vein by EVLA was observed in all patients. The CIVIQ2 score before EVLT was  $19.8 \pm 15.0$ . There was significant improvement of CIVIQ2 score at 4 weeks ( $12.2 \pm 12.6$ ,  $p < 0.01$ ), 12 weeks ( $8.5 \pm 8.3$ ,  $p < 0.01$ ) and 24 weeks ( $8.1 \pm 9.0$ ,  $p < 0.01$ ) compared with that of before EVLA. The CIVIQ2 score at 1 week after EVLA was deteriorated, but not significant ( $23.2 \pm 15.8$ ,  $p = 0.06$ ). The CIVIQ2 score before stripping was  $15.2 \pm 12.6$ . There was significant improvement of CIVIQ2 score at 12 weeks ( $10.5 \pm 11.3$ ,  $p < 0.05$ ). The CIVIQ2 score at 1 week was deteriorated, but not significant ( $19.6 \pm 13.5$ ,  $p = 0.31$ ). The CIVIQ2 score was improved but not significant at 4 weeks ( $14.7 \pm 13.4$ ,  $p = 0.849$ ) and 24 weeks ( $10.8 \pm 14.5$ ,  $p = 0.186$ ). No severe adverse event was occurred in both groups.

**CONCLUSION:** These findings suggest that endovenous laser ablation may have greater promise compared with conventional stripping in the treatment of saphenous varicose veins. However, a randomized study is indicated to elucidate longer-term clinical and QOL outcomes.

## P-29 Outcomes of Air Plethysmography Before and After Short Stripping of the Great Saphenous Vein

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**BACKGROUND:** Air plethysmography (APG) is the most accurate form of plethysmography and is easy to perform.

The outcomes of APG were investigated before and after short stripping of the great saphenous vein (GSV) and compared to venous duplex and clinical severity class 2-4

Outcomes were Venous Volume (VV), Venous Filling Index (VFI), Ejection Volume (EV), Ejection Fraction (EF), Residual Volume Fraction (RVF) and Outflow Fraction (OF)

**METHODS:** As part of a large multi center randomized clinical trial comparing two surgical techniques for short stripping of the GSV, APG was performed in one center.

In total 162 symptomatic patients with clinical severity class 2-4 had an APG before and after short stripping of the GSV

**RESULTS:** Mean VV preop: 162 ml and postop: 120 ml ( $P < 0.001$ ), mean VFI preop: 6.4 ml/sec and postop 2.7 ml/sec ( $P < 0.001$ ), mean EV preop: 94 ml and postop 83 ml ( $P < 0.001$ ).

Mean EF preop: 62% and postop 77% ( $P < 0.001$ ), mean RVF preop: 28% and postop: 22% ( $P < 0.001$ ), mean OF preop: 50% and postop 48% ( $P < 0.001$ )

There was no correlation of the outcome of venous duplex outcome (no residual GSV / residual GSV) and outcomes of the APG.

This might be due to the low number of patients with postoperative residual GSV (20/162)

There was no correlation of the clinical severity class and preoperative outcomes of the APG.

**CONCLUSIONS:** APG can significantly detect change after (surgical) treatment of the GSV in all outcomes (VV, VFI, EV, EF, RVF, OF)

There is no observed correlation between APG and venous duplex. There is no observed correlation between APG and clinical severity class 2-4

Future research will compare outcomes between APG and health-related quality of life.

**P-30      Segmental Outflow Ratio As A Measure of Hemodynamic Impact of the Femoral Vein Obstruction In Clinical Decision Making**

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**BACKGROUND:** The ratio of the outflow rates in the femoral vein (FV), great saphenous vein (GSV) and deep femoral vein (DFV) has been used in our practice for last 8 years. Study in 20 volunteers, and repeated use in 84 patients with primary chronic venous disease (CVD) showed high repeatability of this ratio. The purpose of this report is to demonstrate clinical utility of this ratio in patients with acute and chronic obstruction of femoral vein (FV).

**METHODS:** In 8 patients with unilateral acute deep venous thrombosis (DVT) the segmental outflow ratio was obtained at the time of initial diagnosis, and at 1 week, 1 month and 6 month duplex follow up. 3 of these patients had been treated by catheter-directed thrombolysis, and 2 by surgical thrombectomy. In these 5 patients venographic studies were done before and after treatment.

In 14 patients with chronic FV obstruction the outflow ratio was obtained at least 3 times with 6 months intervals. 4 patients had clinical suspicion of re-thrombosis, 6 patients were considered to be candidates for treatment of GSV reflux. 4 patients had venographic studies after the duplex scan.

**RESULTS:** Extremities with FV obstruction with demonstrated reversal of the outflow ratio with dominant flow through GSV or through DFV. During recanalization of the FV 6-12 month after the initial scan, the outflow ratio returned to the values identical to those in the contra lateral leg and similar to those in normal volunteers. In all cases outflow ratios correspond well with venographic findings. Based on normalized outflow ratio, 3 patients underwent thermal ablation of the GSV with excellent clinical outcome. In 2 patients the decision was made not to intervene on incompetent GSV because outflow ratio indicated that GSV is the main outflow track in these extremities. One patient had reversal of the outflow ratio 12 month after Recanalization of the FV, and venography confirmed re-thrombosis.

**CONCLUSIONS:** Outflow ratio obtained by duplex ultrasound is clinically useful test to assess hemodynamic impact of FV obstruction.

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### ARIZONA

#### **Tucson**

Hunter, Glenn C

#### **Scottsdale**

Morrison, Nick

Salles-Cunha, Sergio X

### ARKANSAS

#### **Little Rock**

Ferris, Ernest J

### CALIFORNIA

#### **Baldwin Park**

Murray, James D

#### **Beverly Hills**

Gradman, Wayne S

#### **Dana Point**

Cannon, Jack A

#### **Encinitas**

Cheng, Van

#### **Escondido**

Bulkin, Anatoly

#### **Fresno**

Elmore, Frederick A

#### **Irvine**

Kanter, Alan

#### **La Jolla**

Bergan, John J

Delaria, Giacomo

Pascarella, Luigi

Schmid-Schonbein, G W

#### **Loma Linda**

Hasaniya, Nahidh W

#### **Newport Beach**

Arata, Michael

#### **Orange**

Flanigan, D. Preston

#### **Portola Valley**

Fogarty, Thomas J

#### **Rancho Palos Verdes**

Donayre, Carlos E

#### **Roseville**

Monahan, Daniel L

#### **San Diego**

Angle, Niren

OByrne, Margaret

#### **San Francisco**

Denbo, Howard E

Long, John B

#### **San Mateo**

Harris, Edmund J

#### **Santa Barbara**

Mckittrick, James E

#### **Seal Beach**

Gaspar, Max R

#### **Stanford**

Harris, E. John

#### **Torrance**

Duffy, David M

#### **Walnut Creek**

Isaacs, Mark

### COLORADO

#### **Aurora**

Hammond, Sharon L

#### **Fort Collins**

Kaufman, Steven L

#### **Palisade**

Bernhard, Victor M

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### Farmington

Menzoian, James O

### Greenwich

Mulcare, Robert

### Hartford

Ruby, Steven T

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Depalma, Ralph G

Feied, Craig F

Giordano, Joseph M

Laredo, James

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### Boca Raton

Meretei, Attila

### Jacksonville

Hakaim, Albert G

### Miami

Almeida, Jose Ignacio

Ginzburg, Enrique

### Naples

Tzilinis, Argyrios

### Palm Beach Gardens

Miskin, Barry M

### Port Charlotte

Gruneiro, Laura A

### Sarasota

Samson, Russell H

### South Miami

Kang, Steven S

### Tampa

Kerr, Thomas M

### West Palm Beach

Lynn, Richard A

### Weston

Fernandez, Bernardo B

## GEORGIA

### Atlanta

Ferrier, Frank

Kasirajan, Karthikeshwar

### Gainesville

Procter, Charles D

### Rome

Kirkland, John

## HAWAII

### Haleiwa

Yellin, Albert E

### Honolulu

Lurie, Fedor

Kistner, Robert L

Masuda, Elna M

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Forrestal, Mark

### Chicago

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Durham, Joseph R

Matsumura, Jon S

McCarthy, Walter J

Morasch, Mark D

Pearce, William H

Schuler, James J

Vazquez, Richard M

Yao, James S T

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Gocke, John

### Maywood

Leon, Luis

### Park Ridge

Buckman, Jeffrey

### Skokie

Caprini, Joseph A

### Springfield

Johnson-Moore, Colleen

McLafferty, Robert B

Sumner, David S

### Winfield

Schneider, Joseph R

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### Carmel

Finkelmeier, William R

### Indianapolis

Dalsing, Michael

Goodson, Spencer F

Lemmon, Gary W

Shafique, Shoaib

### West Lafayette

Rolley, Ronald T

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### Iowa City

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### West Des Moines

Anderson, Robert

## KENTUCKY

### Lexington

Simons, Glen W

### Pikeville

Collins, David E

## LOUISIANA

### Baton Rouge

Frusha, John D

Schellack, Jon V

### New Orleans

Hollier, Larry H

Schmidt, Frank E

### Shreveport

Phifer, Travis J

## MAINE

### Bangor

Cambria, Robert A

### Portland

Eldrup-Jorgensen, Jens

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Williams, G. Melville

Zatina, Michael A

### Bethesda

Rich, Norman M

Villavicencio, J. Leonel

### Hunt Valley

Weiss, Robert A

### Owings

Pietropaoli, John

### Potomac

Simonian, Simon J

### Towson

Buchbinder, Dale

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Cantelmo, Nancy L

Iafrati, Mark D

O'Donnell, Thomas F

Polak, Joseph F

### Brighton

Razvi, Syed A

### Burlington

Welch, Harold J

### Framingham

Donaldson, Magruder C

### Plymouth

Roupenian, Armen L

### Stoneham

Nath, Ronald

Stoughton, Julianne

### Wellesley

Persson, Alfred V

### West Roxbury

Raffetto, Joseph D

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Wolk, Seth W

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### **Zurich**

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Sharp, Beverley

### **Solihull**

Bradbury, Andrew W

### **Wexham**

Coleridge Smith, Philip D

# **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 venous and lymphatic health through innovative research, education, and technology; (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.

#### **Mission Statement**

The mission statement of this organization shall be to promote venous and lymphatic health through innovative research, education and technology.

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 any physicians certified by their respective specialty Certifying Boards in the applicant's Country of practice 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. 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. Active members shall pay dues and have full voting privileges. Attendance at the Annual Scientific Program shall be expected of all Active members.
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 meeting attendance and dues may be waived upon written request by Senior Member to waive dues. The Executive Committee may approve or disapprove the request at an executive meeting.
3. **Honorary Members:** individuals who have made outstanding contributions in the field of venous science. They shall not pay dues nor shall they have voting privileges.

4. Associate Members: Individuals who have an interest in the management of venous disorders, but do not necessarily hold a doctoral degree, such as nurses, registered vascular technologists, etc. Associate members will pay membership dues determined by the Executive Committee. Associate members are not eligible to vote or hold elective office.
5. Candidate Members: Physicians who are currently serving in a capacity of a resident or fellow in 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. Membership in this category shall not exceed 3 years. At the conclusion of post-doctoral training, Candidates may opt to become Active Members, by notifying the Forum in writing. In this instance, the application process will be waived, and the name shall automatically be placed on the Ballot.

## **ARTICLE IV      ELECTION OF MEMBERS**

1. The process of election of Active members of the Society shall be as follows:
  - a. Applications must be accompanied by a letter of interest, documenting the applicants experience in venous and lymphatic disease.
  - b. Application forms must be accompanied by the curricula vitae of the candidates and shall be in the hands of the Secretary before the executive session at which it is desired that the candidate be considered for election.
  - c. The Secretary shall send to the Chair of the Membership Committee these applications with all pertinent data before the annual meeting. The Membership Committee shall review the professional qualifications of the candidates.
  - d. The Chair of the Membership Committee shall meet with the Executive Committee 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 or her 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 business meeting
  - g. A candidate who fails to be elected 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 for Associate and Candidate Members shall be as follows:
  - a. Application forms presenting the curricula vitae of the candidates and signed by them shall be in the hands of the Secretary before the executive session at which it is desired that the candidate be considered for election.
  - b. The Secretary shall send to the Chair of the Membership Committee these applications with all pertinent data before the annual meeting. The Membership Committee shall review the professional qualifications of the candidates.
  - c. The Chair of the Membership Committee shall meet with the Executive Committee for the purpose of presenting the recommendations of the Membership Committee.
  - d. The names of the candidates recommended by the Executive Committee for election shall be submitted by the Secretary to the membership in his or her annual report.
  - e. Election to membership shall be by secret ballot, by a three fourths affirmative vote of those members present and voting at the annual business meeting
  - f. A candidate who fails to be elected 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.
  - g. 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.
3. 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 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 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 Honorary 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 the activities of the Forum.
2. The Executive Committee shall be composed of the President, the President Elect, the Secretary, the Treasurer, the Recorder, at least three Councilors the Chairs of the Education and Research Councils, 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 levy any assessment against the membership, except that it may, set the annual dues rates and, 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 annual business meeting 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, Secretary, Treasurer and 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 (3) years each and until their successors are elected and qualified. Councilors shall be elected serving overlapping terms of three (3) 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 annual business meeting. Additional nominations may be made from the floor at the annual business meeting 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 at the meetings of the Forum membership Executive Committee, and Officers, and preserve order, regulate debates, announce results of elections, appoint committees not otherwise provided for in the Bylaws, 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 President shall perform the duties of the President's office.
6. In the absence of both the President and the President elect, the position shall be taken by a chairman pro tem, nominated and elected by such members of the Executive Committee as are present.
7. The Secretary shall keep the minutes of the meetings of the Forum, the Executive Committee, and the Officers; attest all official acts requiring certification; notify councilors, officers and members of their election and take charge of all papers not otherwise provided for. The Secretary will be the Chair of the Administrative Council and make appointments as delineated in Article VII. At least ten (10) days but not more than thirty (30) 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 business meeting 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 AND COUNCILS**

1. The activities of the American Venous Forum will be conducted by designated committees under the oversight of four (4) councils, designated the Administrative, Research, Education, and Development Councils.
2. Each council will have a council chair or co-chair determined as follows.
  - a. The President of the American Venous Forum will appoint the chair of the Research and Education councils at the time of the annual business meeting. The chair of the Research Council will serve a three (3) year term, and the chair of the Education council will serve a two (2) year term.
  - b. The secretary of the Forum will serve as chair of the Administrative Council.
  - c. The president and immediate past president of the American Venous Forum Foundation will serve as co-chairs of the Development Council.
3. The Administrative Council will consist of the chairmen of the Bylaws, Membership, Nominating, Program, Issues, and Honorary Membership committees (the Administrative committees), with the secretary of the Forum serving as chairman. The secretary of the forum will serve as an ex-officio member of all committees of the Administrative Council.
  - a. The By-Laws Committee shall consist of three members to serve overlapping terms of three (3) years each with the secretary of the Forum serving as Chair. A new member shall be appointed annually by the Administrative Council Chair (secretary of the Forum). They will review the By-Laws from time to time as directed by the Executive Committee.
  - b. The Membership Committee shall consist of three (3) members who shall be appointed, one in each year, by the Administrative Council Chair (secretary of the Forum) to 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 chair. 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.
  - c. 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 comprise 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.
  - d. The Program Committee shall consist of four (4) members who shall be appointed, one in each year, by the Administrative Council Chair (secretary of the Forum) 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 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.
  - e. The Issues Committee shall consist of four (4) members who shall be appointed, one in each year, by the Administrative Council Chair (Secretary of the Forum) 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 primary responsibility of the



Committee on Issues will be the monitoring and interpretation of health care related issues. This will include responding in a timely manner to legislative and other issues of importance to the Forum, as well as investigation charges of unethical or unprofessional conduct, including erroneous medico legal testimony, by Forum members. The Committee shall present its observations and recommendations for action to the Executive Committee.

- f. 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 Chair. The Committee shall be responsible for reviewing candidates for Honorary Membership status and recommending actions to the Executive Committee.
4. The Research Council will consist of the chairs of the Research, Outcomes, Guidelines, and Grants and Awards committees (the Research committees) under the direction of the Research Council chair. The chair of the Research Council will serve as an ex-officio member of all committees of the Council.
    - a. The Research Committee will oversee all research activities sanctioned by the American Venous Forum. The responsibilities of this Council shall also include promotion of research in venous diseases; definition of areas of requiring multi-center clinical efforts; and promotion of research investment in venous disease by national granting agencies. The chair of the Research Committee will be appointed by the Research Council Chair of the Forum to serve a two (2) year term. Members of the Research Committee will be appointed by the chair of the Research Committee, and serve a two (2) year term.
    - b. The Outcomes Committee will be responsible for the creation and maintenance of all outcome measures and reporting standards produced under the auspices of the Forum. The chair of the Outcomes committee will be appointed by the Research Council Chair of the Forum to serve a two (2) year term. The chair of the Outcomes Committee will appoint members of the Outcomes Committee to two (2) year terms.
    - c. The Practice Guidelines Committee will be responsible for the creation and maintenance of all evidence-based practice guidelines produced under the auspices of the Forum. The chair of the Practice Guidelines committee will be appointed by the Research Council Chair of the Forum to serve a two (2) year term. The chairman of the Outcomes Committee will appoint members of the Practice Guidelines Committee to two (2) year terms.
    - d. The Grants & Awards Committee will be responsible for the selection of the recipients of all recurring grants and awards administered by the Forum. The Grants & Awards Committee shall consist of three (3) members who shall be appointed, one in each year, by the Research Council Chair to serve overlapping terms of three (3) years each. The senior member in terms of service on this committee shall be the chair.
  12. The Education Council will consist of the chairs of the Fellow's Education, Patient Education, Physician / Allied Health Education, Website, and National Venous Screening Program committees (the Education committees) under the direction of the Education Council chair. The chair of the Education Council will serve as an ex-officio member of all committees of the Council.
    - a. The Fellow's Education Committee will be responsible for all components of resident and fellow's education in venous and lymphatic disease. Responsibilities will include development and maintenance of the fellow's

venous curriculum as well as development and oversight of all fellow's courses held under the auspices of the Forum. The Committee shall consist of four (4) members who shall be appointed, one in each year, by the Education Council Chair to serve overlapping terms of four (4) years each. The senior member in terms of service on this committee shall be the chair.

- b. The Patient Education Committee will be responsible for the creation, maintenance, and distribution of all layman's educational materials produced by or under the auspices of the Forum. The chair of the Patient Education committee will be appointed by the Education Council Chair of the Forum to serve a two year term. The chair of the Committee will appoint members of the Patient Education Committee to serve two (2) year terms.
- c. The Physician and Allied Health Education Committee will be responsible for the creation, maintenance, and distribution of all professional educational materials produced by or under the auspices of the Forum. The chair of the Physician and Allied Health Education committee will be appointed by the Education Council Chair of the Forum to serve a two (2) year term. The chair of the Committee will appoint members of the Physician and Allied Health Education Committee to serve (2) year terms.
- d. The Website Committee will be responsible for maintenance of the Forum's website. The chair of the Website committee functions as webmaster and will be appointed by the Education Council Chair of the Forum to serve a two (2) year term. The chair of the Committee will appoint members of the Website Committee to two (2) year terms.
- e. The National Venous Screening Program Committee all activities associated with the screening program. The chair of the Screening Committee will be appointed by the Education Council Chair of the Forum to serve a three (3) year term. The chair of the Committee will appoint members of the Physician and Allied Health Education Committee to three (3) year terms.

The Development Council will consist of the chairs of the Fundraising / Strategic Planning, Public and Industrial Relations, and Intersocietal Relations committees (the Development committees) under the direction of the Development Council co-chairs. The chair of the Industrial Advisory Committee will also serve as a council member. The co-chairs of the Development Council will serve as an ex-officio member of all committees of the Council.

- f. The Fundraising / Strategic Planning committee will oversee all long-term fundraising activities of the Forum in conjunction with administrative staff and any outside consultants. The Committee shall consist of the co-chairs of the Development council and their designated appointees.
- g. The Public and Industrial Relations Committee shall consist of three (3) members who shall be appointed, one in each year, by the Co-Chairs of the Development Council to serve overlapping terms of three (3) years each. The senior member in terms of service on this committee shall be the chairs.
- h. The Intersocietal Relations Committee shall consist of three (3) members who shall be appointed, one in each year, by the Co-chairs of the Development Council to serve overlapping terms of three (3) years each. The senior member in terms of service on this committee shall be the chair.

14. The Executive Committee may from time to time establish such other committees as it deems advisable, including committees established to augment and assist the Research, Education and Development Councils 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 or council.
15. 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.
16. Members of the Executive Committee, Officers 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 business 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 Chair of the Membership Committee, and the Nominating Committee 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 the membership.
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.
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. This lecture shall be known as the "D. Eugene Strandness, Jr., M.D. Memorial Lecture. 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 and assessments shall be proposed by the Executive Committee and approved by the membership at an annual executive session. The Executive Committee shall set dues for membership in all categories from time to time and publish same to the membership at the annual business meeting.
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 business 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 executive committee meeting 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 a member of the Forum and delivered to the Secretary. The Issues Committee will investigate said complaints and present them to the Executive Committee. 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 and submitted online as directed by the Recorder.
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 and as amended from time to time.

## **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 of an annual business meeting 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 business meeting

# **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

AMENDED: February 16, 2007

AMENDED: February 22, 2008

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