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Society for Clinical Vascular Surgery
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SOCIETY FOR CLINICAL VASCULAR SURGERY

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VASCULAR DISEASE FOUNDATION
M. Ashraf Mansour, MD

PAST PRESIDENTS

2011	Joann M. Lohr, MD	Orlando, Florida
2010	George H. Meier, MD	Scottsdale, Arizona
2009	Alan B. Lumsden, MD	Fort Lauderdale, Florida
2008	Keith D. Calligaro, MD	Las Vegas, Nevada
2007	O. William Brown, MD	Orlando, Florida
2006	Anton N. Sidawy, MD	Las Vegas, Nevada
2005	Peter F. Lawrence, MD	Coral Gables, Florida
2004	Kim J. Hodgson, MD	Rancho Mirage, California
2003	Enrico Ascher, MD	Miami, Florida
2002	John J. Ricotta, MD	Las Vegas, Nevada
2001	Marshall W. Webster, MD	Boca Raton, Florida
2000	Peter Gloviczki, MD	Rancho Mirage, California
1999	James O. Menzoian, MD	Lake Buena Vista, Florida
1998	P. Michael McCart, MD	Coronado, California
1997	John D. Corson, MB, ChB	Naples, Florida
1996	Bruce J. Brener, MD	Rancho Mirage, California
1995	Larry H. Hollier, MD	Fort Lauderdale, Florida
1994	Wayne M. Swenson, MD	Tucson, Arizona
1993	Morris D. Kerstein, MD	Palm Desert, California
1992	J. Dennis Baker, MD	Orlando, Florida
1991	Toshio Inahara, MD	Kauai, Hawaii
1990	Roy L. Tawes, Jr., MD	Palm Desert, California
1989	Dominic A. DeLaurentis, MD	Boca Raton, Florida
1988	Joseph G. Sladen, MD	Maui, Hawaii
1987	Sheldon Levin, MD	Scottsdale, Arizona
1986	James E. McKittrick, MD	Orlando, Florida
1985	Herbert Dardik, MD	Rancho Mirage, California
1984	C. Allen Wall, MD	Palm Springs, California
1983	Robert L. Kistner, MD	Palm Springs, California
1982	Robert M. Blumenberg, MD	Palm Springs, California
1981	Max Gaspar, MD	Palm Springs, California
1976–1980	Peter B. Samuels MD	Palm Springs, California

PAST SPEAKERS

DISTINGUISHED VISITING PROFESSORS

2011	**Robert L. Kistner, MD** *"Venous Ulcers: Treatable and Presentable"*
2010	**Thom W. Rooke, MD** *"The Seven Blunders of the Vascular Word"*
2009	**J. Michael Bacharach, MD, MPH, FACC** *"Evolution of Vascular Care: Collaboration or Competition"*
2008	**G. Patrick Clagett, MD, Dallas, TX** *"EVAR, TEVAR, FEVAR, TOO FAR?"*
2007	**Jonathan Towne, MD, Milwaukee, Wisconsin** *M.O.C. – What Does It Mean?*
2006	**Jack L. Cronenwett, MD, Lebanon, New Hampshire** *Vascular Surgery Training: An International Evolution*
2005	**Wesley S. Moore, MD, Los Angeles, California** *How Has Technology Influenced My Clinical Practice?*
2004	**Thomas F. Fogarty, MD, Portola Valley, California** *The Impact of Technology on the Surgical Specialties* **Richard M. Green, MD, Rochester, New York** *Where Do We Go From Here?*
2003	**Frank J. Veith, MD, FACS, Bronx, New York** *Where is Vascular Surgery Coming From and Where Is It Going: A Call to Arms for Every Vascular Surgeon*
2002	**William P. Paaske, MD, FRCS, FACS, Aarhus, Denmark** *Regulation of Distal Perfusion: A European's View on Local Control of the Peripheral Circulation in Functional and Critical Ischemia, and in Patients with AAA*
2001	**James May, MD, Sydney, Australia** *A Critique on the Current Status of Endovascular Treatent of AAA*
2000	**Juan L. Parodi, MD, Buenos Aires, Argentina** *Endovascular Repair of Aortic Aneurysms in the 21st Century*
1999	**Alexander W. Clowes, MD, Seattle, Washington** *Vascular Gene Therapy*

1997 **Sir Norman Browse, MD, Surrey, England**
Lymphatic Problems Encountered by the Clinical Vascular Surgeon

1996 **Edouard Kieffer, MD, Paris, France**
Survey for Type B Aortic Dissection: When and How?

1995 **Wilhelm Sandmann, MD, Dusseldorf, Germany**
Chronic Progressive and Acute on Chronic Visceral Ischemia: Surgical Approach, Reconstructive Techniques and Results

1994 **Hans O. Myhre, MD, Trondheim, Norway**
Hemodynamic Response and Cerebro-Spinal Fluid Dynamics During Proximal Aortic Cross Clamping

1993 **Keizo Sugimachi, MD, Fukuoka, Japan**
Management of Concomitant Abdominal Aortic Aneurysm and Gastrointestinal Malignancy

1992 **Andrew N. Nicolaides, MD, London, England**
Evaluation of Chronic Venous Insufficiency

1991 **Sam Mellick, MD, Brisbane, Australia**
Ruptured Aortic Aneurysms – Current Concepts

1990 **H.H.G. Eastcott, MD, London, England**
Famous Operations and Ideas

HUME MEMORIAL LECTURERS

2003 **Robert W. Hobson, II, MD, FACS, Newark, New Jersey**
Clinical Trial Methodology and Carotid Occlusive Disease.

2002 **K. Wayne Johnston, MD, Toronto, Ontario**
New Technology – The Issues Raise Caution

2001 **Lazar J. Greenfield, MD, FACS, Ann Arbor, Michigan**
Protecting Patients From Thromboembolism

2000 **Robert B. Rutherford, MD, FACS, Silverthorne, Colorado**
Endograft Repair of AAA: Progress and Problems

1999 **John M. Porter, MD, Portland, Oregon**
Leg Bypass: Outcome Assessment

1998 **John E. Connolly, MD, Irvine, California**
Prevention of Spinal Cord Complications in Aortic Surgery

1997 **James C. Stanley, MD, Ann Arbor, Michigan**
Surgical Treatment of Renovascular Hypertension

1996 **Frank J. Veith, MD, Bronx, New York**
New York Experience with Endovascular Grafts and Their Influence on Our Vascular Surgical Practice

1995 **Calvin B. Ernst, MD, Detroit, Michigan**
Peer Review – Does It Work?

1994 **Malcolm O. Perry, MD, Dallas, Texas**
Ischemia-Reperfusion Injury of Skeletal Muscle

1993 **Norman M. Rich, MD, Bethesda, Maryland**
Surgeon's Response to Battlefield Vascular Trauma

1992 **Andrew N. Nicolaides, MD, London, England**
Atherogenesis and High Resolution on Ultrasound: Clinical Complications

1991 **D. Eugene Strandness, Jr., MD, Seattle, Washington**
Osler and His Thoughts for Us in 1991

1990 **Wesley S. Moore, MD, Los Angeles, California**
The Future of Carotid Endarterectomy in the 1990s

1989 **John A. Mannick, MD, Boston, Massachusetts**
Evolution of Arterial Reconstruction to the Infra-Popliteal Vessels

1988 **John J. Bergan, MD, Chicago, Illinois**
The Challenges of Intestinal Ischemia

1987 **Charles Hufnagel, MD, Washington, DC**
Dissections of the Thoracic Aorta

1986 **Jesse Thompson, MD, Dallas, Texas**
Historical Aspects of Carotid Surgery

1985 **James A. DeWeese, MD, Rochester, New York**
Autogenous Veins for Femoro-Popliteal Bypasses – A 25 Year Experience

1984 **Ralph A. Deterling, Jr., MD, Boston, Massachusetts**

1983 **Michael E. DeBakey, MD, Houston, Texas**
Surgical Management of Aneurysms of the Aorta

1982 **Harris B. Shumacker, Jr., MD, Washington, DC**

1981 **Max R. Gaspar, MD, Long Beach, California**
The Surgeon and the Pilot

1980 **Allan D. Callow, MD, Boston, Massachusetts**
An Overview of the Stroke Problem in the Carotid Territory

1979 **Wiley F. Barker, MD, Los Angeles, California**
Milestones in the Use of Interruption in Venous Thromboembolism

1978 **Karl Viktor Hall, MD, Oslo, Sweden**

1977 **Henry Haimovici, MD, New York, New York**

1976 **W. Sterling Edwards, MD, Albuquerque, New Mexico**
Alexis Carrel and Its Contributions to Cardiovascular Surgery

1975 **Jerome Sacks, MD, Encino, California**

AWARDS

PETER B. SAMUELS AWARD RECIPIENTS

2011 **Elizabeth L. Detschelt, MD, Pittsburg, PA**

"Clinical Relevance of Serial CT Scans in Post-Endovascular Aneurysm Repair Patients"

2010 **Niamh Hynes, MD, Galway, Ireland**

Five-year Experience with EVAR without Fenestration for Pararenal Aortic Aneurysms. Clinical Efficacy, Reintervention Rates & Cost-Effectiveness Compared with Open Repair in High Deliberare Practice Volume Centres?

2009 **Houssam K. Younes, MD, Houston, TX**

Hybrid Thoracic Endovascular Aortic Repair (Tevar): Are We Pushing the Envelope Too Far?

2008 **Owen N. Johnson, MD, Washington, DC**

Outcome Analysis of Popliteal Artery Aneurysm Repair

2007 **Anantha K. Ramanathan, MD, Buffalo, NY**

Should DOQI Guidelines be Updated? The Role of Basilic Vein Fistula

2006 **Donald T. Baril, MD, New York, New York**

An Eight-year Experience with Type II Endoleaks: Natural History Suggests Selective Intervention is a Safe Approach

2005 **Indranil Sinha, BA, Ann Arbor, Michigan**

A Biological Basis for Anatomic Variation in Descending Thoracic Aneurysms

2004 **Gilbert R. Upchurch, Jr., MD, Ann Arbor, Michigan**

Diffusion of New Technology in the Treatment of Renovascular Hypertension in the United States: Surgical Revascularization Versus Catheter-Based Therapy, 1988-2001

2003 **Thomas Maldonado, MD**

Successful Management of Type I Endoleaks Following Aortic Aneurysm Repair Using N-Butyl Cyanoacrylate Adhesive

2002 **Juan Ayerdi, MD**

Indications and Outcomes of Patients in the Phase III Trial Versus Commercial Aneurrx

2001 **Ranier V. Aquino, MD**

Are Somatosensory Evoked Potentials an Acceptable Alternative to Electroencephalogram in Monitoring Carotid Endaterectomy

2000 **Nicholas Morrissey, MD**
Endovascular Repair of Paraanastomotic Aneurysms of the Aorta and Iliac Arteries: Preferred Treatment for a Complex Problem

1999 **Ricardo Avena, MD, Washington, DC**
The Proliferative Effects of Insulin and Glucose on Human Infragenicular Vascular Smooth Muscle Cells are Mediated by Insulin Like Growth Factor-1 Receptors, Not by Insulin Receptors

1998 **Ganesh Ramaswami, MD, London, England**
Restenosis Following Percutaneous Transluminal Angioplasty: A Human Model

1997 **Dan L. Morehouse, MD, Danville, Pennsylvania**
Physician Work Effort and Reimbursement or Ruptured Abdominal Aortic Aneurysms

1996 **John A. Manicone, MD, Newark, New Jersey**
The Effect of Thrombus on the Vascular Endothelium of Arterialized Vein Grafts

1995 **Andrew J. Seiwert, MD, Danville, Pennsylvania**
Ruptured Abdominal Aortic Aneurysm Repair

1994 **Roderick T.A. Chalmers, MD, Iowa City, Iowa**
The Effects of Polytetrafluoroethylene Graft Anastomataic Stenting in a Canine Model

1993 **Graham W. Long, MD, Royal Oak, Michigan**
Cell Washing Versus Immediate Reinfusion of Intraoperatively Shed Blood During Abdominal Aortic Aneurysm Repair

1992 **Chittur R. Mohan, MD, Brooklyn, New York**
Reduction of the Extent of Ischemic Skeletal Muscle Necrosis By Perfusion With Oxygenated Perflurocarbon

1991 **Ronald A. Klein, MD, Detroit, Michigan**

1990 **Robert J. Anderson, MD, Newark, New Jersey**
Benefits of Limited Reperfusion in Skeletal Muscle Ischemia – Reperfusion Injury; Effects on Eicosanoids and White Blood Cells

1989 **Mark F. Fillinger, MD, Syracuse, New York**
Beneficial Effects of Banding on Venous Intimal-Medial Hyperplasia in Arteriovenous Loop Grafts

1988 **Michael Belkin, MD, Boston, Massachusetts**
A New Spectrophotometric Assay for the Measurement of Skeletal Muscle Ischemia-Reperfusion Injury

1987 **William D. Suval, MD, Newark, New Jersey**

1986 **John A. Schwartz, MD, Chicago, Illinois**

Evaluation and Clinical Application of a New Hemorheologic Technique: The Effect of the Acute Phase Reaction on Blood Viscosity Following Infrainguinal Arterial Bypass

1985 **Jens Eldrup-Jorgensen, MD, Boston, Massachusetts**

1984 **Steven R. Grundy, MD, Ann Arbor, Michigan**

Azure A: A New Measurement for the Chemical Assay of Heparin

1983 **H. Margaret Hancock, MD**

1982 **Karl L. Claus, MD**

1981 **Robert Lusby, MD**

1980 **Dale Buchbinder, MD, Chicago, Illinois**

ALLASTAIR KARMODY AWARD RECIPIENTS

2011 **Patrick Neville, MD, Cincinnati, Ohio**
Evan J. Ryer, MD, Rochester, Minnesota

2010 **Clayton Brinster, MD, Philadelphia, Pennsylvania**
Late Open Conversion and Explantation of Abdominal Aortic Stent Grafts

2009 **Aaron E. Bond, MD, Los Angeles, California**
The Influence of Stents on the Performance of an Ultrasonic Navigational System for Endovascular Procedures

2008 **Chris Beirne, MD, Galway, Ireland**
A Prospective Comparative Study of Pre-Operative Duplex Ultrasound Arterial Mapping (DUAM), Digital-Subtraction Angiography (DSA) and Magnetic Resonance Angiography (MRA) in Critical Lower Limb Ischaemia (CLI) Prior to Endovascular Revascularization (EvR)– Clinical, Technical and Economic Outcome

2007 **Andrew Bakken, MD, Rochester, New York**
Modern Peripheral Venous Angioplasty Significantly Enhances Arteriovenous Access Function and Lifespan

2006 **Christopher D. Scibelli, MD, Norfolk, Virginia**
Subintimal Angioplasty for Lower Extremity Claudication

2005 **Grace J. Wang, MD, Boston, Massachusetts**
Adventitial Angiogenesis and Vein graft Hyperplasia: Role of an Inhibitor of Apoptosis Protein, Survivin

2004 **Charles E. Fields, MD, Rochester, Minnesota – First Place**
Desarom Teso, MD, New Haven, Connecticut
Mahmoud B. Malas, MD, Ardsley, New York

2003 **Joseph Lombardi, MD, Philadelphia, Pennsylvania – First Place**
Stephanie Elkhouri, MD, Rochester, Minnesota
Douglas Wilhite, MD, Philadelphia, Pennsylvania
A. Cecillia Lorenzo, MD, Hartford, Connecticut

2002 **Tanuja Damani, MD, Chicago, Illinois**
Neal Cayne, MD, New York, New York
Theresa Impeduglia, MD, Staten Island, New York
K. Kasirajan, MD, Rio Rancho, New Mexico

2001 **Joseph V. Lombardi, MD, Philadelphia, Pennsylvania**
Randy J. Janczyk, MD, Royal Oak, Michigan
Mihai Rosca, MD, Buffalo, New York
Peter Lin, MD, Athens, Georgia

2000	**Peter L. Faries, MD, Boston, Massachusetts** **Ashish Gupta, MD, Detroit, Michigan** **James R. Elmore, MD, Danville, Pennsylvania** **Laura A. Karch, MD, Springfield, Illinois**
1999	<No Award Given>
1998	**F. Noel Parent, III, MD, Norfolk, Virginia** *Surgery for Neurogenic Thoracic Outlet Syndrome: A Comparison of Results Between Laborers and Non-Laborers*
1997	**Richard F. Neville, MD, Washington, DC** *Prosthetic Bypass with a Distal Vein Patch for Limb Salvage*
1996	**Joseph J. Piotrowski, MD, Cleveland, Ohio** *DVT Surveillance in High Risk Trauma Patients: Is It Warranted?*
1995	**Joann M. Lohr, MD, Cincinnati, Ohio** *Calf Vein Thrombi are not a Benign Finding*
1994	**Peter Gloviczki, MD, Rochester, Minnesota** *Prospective Evaluation of 100 Consecutive Microscope-Aided Pedal Bypasses: An Effective and Low Risk Operation to Salvage the Ischemic Foot*
1993	**Robert A. Morgan, MD, Indianapolis, Indiana** *Improved Recovery of Limb Function with ATP/MgCI2 in an Ischemic Canine Hind Limb*
1992	**Khodam Rostami, MD, Los Angeles, California** *Endothelial Seeding: New Evidence and New Hope*
1991	**Stephen W. Dailey, MD, Philadelphia, Pennsylvania**
1990	**Tej M. Singh, MD, Chicago, Illinois**
1989	**Robert Forster, MD, Newark, New Jersey**
1988	**Lee Dresser, MD**

GENERAL INFORMATION

REGISTRATION DESK

The Registration Desk will be located in the Encore Promenade area during the following hours:

Wednesday, March 14	9:00 am – 5:00 pm
Thursday, March 15	7:00 am – 12:30 pm
Friday, March 16	7:00 am – 5:00 pm
Saturday, March 17	7:30 am – 12:30 pm

MESSAGES

A message center will be maintained in the Registration Area during the registration hours. Please check it often. There will be NO PAGING in the scientific sessions.

SPEAKER READY ROOM

Faculty and Authors are requested to present their *PowerPoint* presentation (DVD, CD, thumbdrive, or Zip Disk) to the technician in the Speaker Ready Room, **Schubert**, upon arrival to the meeting, or at least 12 hours prior to the opening of the session in which you are scheduled to present. Single LCD projection (*PowerPoint*) from a single, dedicated PC or laptop will be provided. Individual laptop computers may not be used. Speaker Ready Room is located in the **Schubert Room**.

Wednesday, March 14	9:00 am – 5:00 pm
Thursday, March 15	7:00 am – 12:00 pm
Friday, March 16	7:00 am – 5:00 pm
Saturday, March 17	7:00 am – 12:00 pm

COFFEE BREAKS/ePOSTER VIEWING

Wednesday, March 14	3:15 pm – 4:00 pm
Thursday, March 15	9:30 am – 10:00 am
Friday, March 16	9:40 am – 10:15 am
	3:45 pm – 4:15 pm

MEMBER BUSINESS MEETING

(Members Only)

On Friday, March 16th, the Member Business Meeting Luncheon (for members only) will be held at 12:30 pm in Chopin 2-3.

WELCOME RECEPTION

On Wednesday evening, March 14th at 5:30 pm, there will be a Welcome Reception held in the Exhibition Hall, Encore Ballroom 1-3.

ANNUAL BANQUET

On Friday, March 16th, the Society will have its Annual Banquet at the XS Night Club located at the Encore Hotel. All registered physicians and spouses are welcome to attend. The Reception will be held from 6:00 pm – 8:00 pm for cocktails and hors d'oeuvre's. Attendees will have the opportunity to make dinner plans following the conclusion of the banquet, remain in the club or return to the club later that evening complimentary.

SCVS FELLOWS PROGRAM

The Society for Clinical Vascular Surgery is again offering an exciting program dedicated to Clinical Vascular Fellows. Fellows can also participate in the SCVS Top Gun Competition, an opportunity to fine-tune surgical skills in a safe, simulated environment.

*The SCVS Fellows Program is not part of the SCVS scientific program and is not eligible for CME credit through the SCVS joint sponsor, CineMed.

Please Note: Your SCVS registration materials will be available for pickup at the Gore Registration Desk outside of Dubussy.

**Presentations should be loaded in the room at the tech table.*

Program Co-Chairs:
Richard F. Neville, MD, *Georgetown University*
William D. Jordan, MD, *University of Alabama*

Tuesday, March 13

12:00 pm – 1:00 pm	SCVS Fellows Lunch	Mozart Patio (Rain back up Mozart)
1:00 pm – 3:10 pm	SCVS Fellows Program (Part I)	Dubussy
3:10 pm – 5:30 pm	SCVS Fellows Technology Showcase	Chopin 1
6:00 pm – 8:00 pm	SCVS Fellows Reception	Brahms Patio (Rain Backup – Brahms Ballroom)

Wednesday, March 14

7:00 am – 8:00 am	SCVS Fellows Breakfast	Dubussy
8:00 am –11:30 am	SCVS Fellows Program (Part II)	Dubussy
11:30 am – 12:00 pm	SCVS Fellows Lunch	Dubussy

SCVS INCOMING FELLOWS PROGRAM

The Society for Clinical Vascular Surgery is again offering an exciting program dedicated to the needs of 3rd – 5th year residents accepted to a Vascular Fellowship.

*The SCVS Incoming Fellows Program is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor, CineMed.

**Presentations should be loaded in the room at the tech table.*

Program Co-Chairs:
Joseph J. Ricotta, MD, *Emory University*
Caron R. Rockman, MD, *New York University*

Wednesday, March 14

5:30 pm – 8:30 pm	SCVS Incoming Fellows Program (Part 1 – Reception and Working Dinner)	Chopin 4

Thursday, March 15

12:00 pm – 12:20 pm	SCVS Incoming Fellows Working Lunch	Chopin 4 & Patio
12:20 pm – 5:00 pm	SCVS Incoming Fellows Program (Part II)	Chopin 4

SCVS VASCULAR TOP GUN COMPETITION

This exciting competition, which includes a dinner during the final round, provides an opportunity for 2nd year/senior Fellows to fine-tune their surgical skills in a safe, simulated environment. The first rounds of competition will take place in the exhibit hall on Wednesday and Thursday, with the final round taking place during dinner on Thursday evening. During the First Rounds of competition all participants will be confronted with the same cases for simulation. Four semi-finalists (2 open and 2 endo) will proceed to the Final Round.

*The SCVS Top Gun Program is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor, CineMed.

Program Chair:
Jean Bismuth, MD, *Baylor College of Medicine*

Thursday, March 15

6:00 pm – 9:00 pm	SCVS Vascular Top Gun Program	Dubussy

SCVS YOUNG VASCULAR SURGEONS DINNER

The Society for Clinical Vascular Surgery is again pleased to offer the Young Vascular Surgeons Program, designed for vascular surgeons who have completed fellowships and have been working for five years or less. Programming includes a special dinner symposium featuring talks from leaders in vascular surgery.

*The SCVS Young Vascular Surgeons Program is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor, CineMed.

**Presentations should be loaded in the room at the tech table.*

Program Co-Chairs:
Colleen J. Moore, MD, *SIU School of Medicine*
Donald T. Baril MD, *University of Massachusetts Medical*

Thursday, March 15

6:00 pm – 9:00 pm	SCVS Young Vascular Surgeons Dinner	Chopin 2

SCVS EXHIBIT HALL/PAVILIONS

A number of firms as listed at the end of this program will be with us as Exhibitors. Their attendance constitutes a valuable part of the meeting. We urge registrants to visit the exhibits during regularly scheduled breaks. Continental breakfast will be available each day; with continuous beverage service available during the scheduled hours of the Exhibition Hall, located in Encore 1-3.

The Society for Clinical Vascular Surgery wishes to thank the following companies for their exhibit support of the 2012 Annual Symposium:

AngioDynamics
Arstasis
Atrium Medical Corp.
Bard Peripheral Vascular
Consensus Medical Systems, Inc.
Cook Medical
Covidien
CryoLife, Inc.
Edwards Lifesciences
Endologix, Inc.
Gore & Associates
ICAVL
Implantable Devices, Inc.
InaVein, LLC
LeMaitre Vascular, Inc.
M2S, Inc.
Med Streaming, LLC
Medtronic
Organogenesis Inc.
Osborn Medical Corp.
PenRad Technologies
Scanlan International, Inc.
Semler Scientific
Society for Vascular Surgery
SVS Patient Safety Organizations
Vascular Transplant Services
Volcano Therapeutics
Wexler Surgical Supplies

EXHIBITION TIMES

Wednesday, March 14	2:00 pm – 6:30 pm
Thursday, March 15	7:00 am – 11:30 am 11:30 am – 4:00 pm (Dedicated Pavilion times)
Friday, March 16	7:00 am – 5:00 pm
Saturday, March 17	7:30 am – 8:30 am

COMPANIES WITH PAVILIONS

Covidien
Gore & Associates
Medtronic

SCVS SUPPORTERS

The Society for Clinical Vascular Surgery wishes to thank the following companies for their educational grants in support of the 2012 Annual Symposium:

PLATINUM SUPPORTERS	Cook Medical
	Gore & Associates
	Medtronic
SILVER SUPPORTER	Bard Peripheral Vascular

INDUSTRY SUPPORTED SYMPOSIA

The SCVS Supported Symposium is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor, CineMed.

Thursday, March 15

12:30 pm – 1:45 pm LUNCHEON SYMPOSIA
Gore & Associates — Dubussy
Above-Knee Revascularization with the GORE Hybrid Vascular Graft: Technique, Advantages and Early Results
Nabeel Rana, MD

From Repositioning to Proper Sizing – Continued Innovation in EVAR and TEVAR From Gore
Mark Farber, MD

LUNCHEON SYMPOSIA
Covidien — Chopin 3
Advanced Techniques and the Treatment of Chronic Venous Insufficiency

Friday, March 16

6:45 am – 8:00 am BREAKFAST SYMPOSIA
Endologix — Chopin 2
Breakfast with the Experts: Challenging EVAR Cases

FUTURE MEETINGS

2013
FONTAINEBLEAU HOTEL
MIAMI BEACH, FLORIDA
MARCH 12–16, 2013

2014
LA COSTA RESORT
CARLSBAD, CALIFORNIA
MARCH 17–22, 2014

AUTHOR/SPEAKER DISCLOSURES

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Author	Disclosure Information
Nick Cheshire International Panel	Advisory Board: Medtronic, Medrad Academic Support: Cook, Hansen Medical, Tenaxis Medical Speakers Bureau: WL Gore Stockholder: Veryan Medical
Daniel Clair MP27	Consultant: Endologix, WL GORE, Medtronic, Vessix Vascular
Mark Farber Moderator, 12	Consultant: Cook Medical, WL Gore, Bolton Medical
Robert Feezor 13	Speaking and Teaching: Cook Medical
James Froehlich Speaker	Consultant: Merck, Pfizer Research Grant: Bluecross of Michigan, Fibromoscular Disease Society
William Jordan MP25	Consultant: Abbott Vascular, Medtronic, Inc. WL Gore Membership: LeMaitre Vascular Clinical Research: Endologix, Inc.
Evan Lipsitz Moderator	Research Consultant: Aputus Endosystems, Cook, CardioMems

Author	Disclosure Information
Alan Lumsden Moderator	Grants: Nycomed, Hansen, Gore, Harvest Tech, Boston Sicientific, Lomard Medical, Bolton Consultant: Boston Sicientific, NVUS, Gore, Abbott, Maquet, Medtronic, Siemens Speaker: Boston Scientific, Gore, Medtronic Stock Holder: Hatch, Northpoint, Embrella
Luke Marone Moderator	Consultant: IDEV, EV3
George Meier Moderator & Speaker	Honorarium: Pfizer and Covidien Research Support: Abbott, Xbiotech, WL Gore, Cook, Medtronic
Joseph Ricotta II MP26	Consultant: Cook Medical, Medtronic Inc.
Peter Schneider Focused Session Speaker	Advisory Board: Abbott Vascular, Medtronic Participant: Terumo, Cook, Gore, Medtronic Board Member: VIVA Royalties: Cook Sponsored Studies: Cordis, Abbott Vascular, Gore
Benjamin Starnes Speaker	Consultant/ Advisory Board: Cook Medical and Abbott Vascular
William Quinones-Baldrich Moderator	Honorarium: WL Gore, Medtronic

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Jill Zink

SOCIETY FOR CLINICAL VASCULAR SURGERY

40th Annual Symposium

March 13–17, 2012

Las Vegas, Nevada

SCHEDULE AT A GLANCE

Tuesday, March 13

12:00 pm – 3:10 pm	SCVS FELLOWS PROGRAM– PART I (Dubussy)
3:10 pm – 5:30 pm	SCVS Fellows Technology Showcase (Brahms 2 & 3)
6:00 pm – 8:00 pm	SCVS FELLOWS RECEPTION Brahms Patio (Rain Backup – Brahms Ballroom)

Wednesday, March 14

7:00 am – 12:00 pm	SCVS FELLOWS PROGRAM– PART II (Dubussy)
12:30 pm – 1:45 pm	FOCUSED SESSION– What Made Vascular News in 2011? (Encore 4-8)

1:45 pm – 3:15 pm	SCIENTIFIC SESSION 1— LOWER EXTREMITY ARTERIAL DISEASE I (Encore 4-8)
2:00 pm – 6:30 pm	EXHIBITION HALL HOURS *(continuous beverage service)* (Encore 1-3)
3:15 pm – 4:00 pm	COFFEE BREAK IN EXHIBIT HALL & ePOSTER VIEWING (Encore 1-3)
4:00 pm – 5:30 pm	SCIENTIFIC SESSION 2— VENOUS & HEMODIALYSIS ACCESS (Encore 4-8)
5:30 pm – 6:30 pm	WELCOME RECEPTION in Exhibit Hall (Encore 1-3)
5:30 pm – 8:30 pm	INCOMING FELLOWS PROGRAM— PART I (Chopin 4)

Thursday, March 15

7:00 am – 8:00 am	SPECIAL INTEREST GROUP CONCURRENT SESSIONS Challenging Cases: Peripheral & Other (Chopin 2) Challenging Cases: Abdominal Aortic (Chopin 3)
7:00 am – 8:00 am	CONTINENTAL BREAKFAST WITH INDUSTRY (Encore 1-3)
7:00 am – 11:30 am	EXHIBITION HALL HOURS *(continuous beverage service)* (Encore 1-3)

8:15 am – 9:30 am	SCIENTIFIC SESSION 3— CAROTID DISEASE (Encore 4-8)
9:30 am – 10:00 am	COFFEE BREAK IN EXHIBIT HALL & ePOSTER VIEWING (Encore 1-3)
10:00 am – 11:15 am	SCIENTIFIC SESSION 4— THORACIC AORTIC DISEASE (Encore 4-8)
11:15 am – 12:00 pm	DISTINGUISHED VISITING PROFESSOR (Encore 4-8)
12:00 pm – 12:30 pm	SOCIETY FOR VASCULAR MEDICINE (SVM) SCIENTIFIC SESSION (Encore 4-8)
12:00 pm – 5:00 pm	INCOMING FELLOWS PROGRAM— PART II (Chopin 4)
12:30 pm	FREE AFTERNOON/PAVILION TIME
12:30 pm – 1:45 pm	CONCURRENT LUNCHEON SYMPOSIA (Debussy) *Supported by: Gore & Associates* (Chopin 3) *Supported by: Covidien*
6:00 pm – 9:00 pm	SCVS VASCULAR TOP GUN COMPETITION (Debussy)
6:00 pm – 9:00 pm	SCVS YOUNG VASCULAR SURGEONS DINNER SYMPOSIUM (Chopin 2)

Friday, March 16

6:45 am – 8:00 am	BREAKFAST SYMPOSIUM (Chopin 2) *Supported by: Endologix*
7:00 am – 8:00 am	CONTINENTAL BREAKFAST WITH INDUSTRY (Encore 1-3)
7:00 am – 5:00 pm	EXHIBITION HALL HOURS *(continuous beverage service)* (Encore 1-3)
8:15 am – 9:40 am	SCIENTIFIC SESSSION 5– AORTIC ANEURSYM (Encore 4-8)
9:40 am – 10:15 am	COFFEE BREAK IN EXHIBIT HALL & ePOSTER VIEWING (Encore 1-3)
10:15 am –11:15 am	INTERNATIONAL PANEL (Encore 4-8)
11:20 am – 12:20 pm	PRESIDENTIAL ADDRESS (Encore 4-8)
12:30 pm – 1:30 pm	MEMBERS' BUSINESS LUNCHEON (Chopin 2-3)
12:30 pm – 1:30 pm	LUNCH WITH INDUSTRY (Encore 1-3)
1:30 pm – 2:15 pm	KARMODY POSTER COMPETITION– Round 1 (Encore 4-8)
2:15 pm – 3:45 pm	FOCUSED SESSION Pushing the Limits of Vascular Technology (Encore 4-8)
3:45 pm – 4:15 pm	COFFEE BREAK IN EXHIBIT HALL & ePOSTER VIEWING (Encore 1-3)

4:15 pm – 5:00 pm	SCIENTIFIC SESSION 6— LOWER EXTREMITY ARTERIAL DISEASE II (Encore 4-8)
6:00 pm – 8:00 pm	ANNUAL BANQUET (XS Nightclub)

Saturday, March 17

7:30 am – 8:30 am	SPECIAL INTEREST GROUP CONCURRENT SESSIONS Challenging Cases: Thoracic Aortic (Chopin 2) Challenging Cases: Venous & Dialysis Access (Chopin 3)
7:30 am – 8:30 am	CONTINENTAL BREAKFAST WITH INDUSTRY (Encore 1-3)
7:30 am – 8:30 am	EXHIBITION HALL HOUR (Encore 1-3)
8:45 am – 9:45 am	SCIENTIFIC SESSION 7— TECHNOLOGY/MISCELLANEOUS I (Encore 4-8)
9:45 am – 10:45 am	TO BE OR NOT TO BE—SURGEONS AS HOSPITAL EMPLOYEES DEBATE (Encore 4-8)
10:45 am –11:30 am	KARMODY POSTER COMPETITION— Final Round (Encore 4-8)
11:30 am –12:30 pm	SCIENTIFIC SESSION 8— TECHNOLOGY/MISCELLANEOUS II (Encore 4-8)
12:30 pm	MEETING ADJOURN

SOCIETY FOR CLINICAL VASCULAR SURGERY

40th Annual Symposium

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Las Vegas, Nevada

FULL PROGRAM

Tuesday, March 13

12:00 pm – 5:30 pm	SCVS FELLOWS PROGRAM– PART I (Dubussy) ***Supported by: Gore & Associates*** **Fellows Program is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.*
12:00 pm – 1:00 pm	Buffet Lunch/Welcome: Your Career *Richard F. Neville, MD & William D. Jordan, MD*
1:00 pm – 1:20 pm	Shaping Your Vascular Surgery Career *Peter F. Lawrence, MD*
1:20 pm – 1:40 pm	Continuing Academic Contributions While in Private Practice *Russell H. Samson, MD*

1:40 pm – 2:00 pm	Reimbursement Effects on Practice *Sean P. Roddy, MD*
2:00 pm – 2:30 pm	Break
2:30 pm – 2:50 pm	What You Bring to Your Institution *Michael C. Stoner, MD*
2:50 pm – 3:10 pm	Panel Discussion with the Day's Presenters
3:10 pm – 5:30 pm	Technology Showcase—Gore Product Demonstrations (Brahms 2 & 3)
5:30 pm	ADJOURN
6:00 pm – 8:00 pm	SCVS FELLOWS RECEPTION Brahms Patio (Rain Backup – Brahms Ballroom) **Fellows Program is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.*

Wednesday, March 14

7:00 am – 12:00 pm	SCVS FELLOWS PROGRAM– PART II (Dubussy) **Fellows Program is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.*
7:00 am – 8:00 am	Breakfast/Opening Remarks: Surviving on the Business Side *Richard F. Neville, MD & William D. Jordan, MD*
8:00 am – 8:20 am	Medical Malpractice *O. William Brown, MD*
8:20 am – 8:40 am	Awareness Outreach *Manish Mehta, MD*
8:40 am – 9:00 am	Employment Contracts *Russell H. Samson, MD*
9:00 am – 9:30 am	Break

9:30 am – 9:50 am	Partnership/Real Estate Deals *O. William Brown, MD*
9:50 am – 10:10 am	Panel Discussion with the Day's Presenters
10:10 am – 11:00 am	Vascular Jeopardy! *Richard F. Neville, MD & William D. Jordan, MD*
11:00 am – 11:30 pm	Wrap-Up Discussion and Final Q&A
11:30 am – 12:00 pm	Lunch with SCVS Executive Committee
9:00 am – 5:00 pm	REGISTRATION DESK (Promenade)
9:00 am – 5:00 pm	SPEAKER READY (Schubert)
11:30 pm – 12:30 pm	FELLOWS LUNCH (Debussy) **Fellows Program is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.*
10:00 am – 5:00 pm	KARMODY POSTER SETUP (Encore 4-8)
2:00 pm – 6:30 pm	EXHIBITION HALL HOURS *(continuous beverage service)* (Encore 1-3)

12:30 pm – 1:45 pm

FOCUSED SESSION– What Made Vascular News in 2011? (Encore 4-8)

Moderated by: *Fred A. Weaver, MD*
Joann M. Lohr, MD

SPEAKERS:

Aorta and Aneurysm News
Thomas C. Bower, MD
Mayo Clinic, Rochester, MN

Carotid and Stroke News
Jason T. Lee, MD
Stanford University Medical Center, Stanford, CA

Lower Extremity News
Vincent L. Rowe, MD
LAC/USC Medical Center, Los Angeles, CA

Hemodialysis/Vascular Access News
Scott S. Berman, MD
Tucson Vascular Surgery, Tucson, AZ

Venous News
Peter F. Lawrence, MD
UCLA, Gonda Vascular Center, Los Angeles, CA

Best of the Rest
Anil P. Hingorani, MD
Maimonides Medical Center, Brooklyn, NY

1:45 pm – 3:15 pm SCIENTIFIC SESSION 1– LOWER EXTREMITY ARTERIAL DISEASE I (Encore 4-8)

Moderated by: *Samuel R. Money, MD*
Leila Mureebe, MD

1:45 pm – 1:58 pm *1. **Comparative Analysis of Endovascular and Open Popliteal Artery Aneurysm Repair; Mid-Term Results**

Melanie R. Hoehn, MD, Ryan M. McEnaney, MD, Theodore H. Yuo, MD, Rabih A. Chaer, MD, Robert Y. Rhee, MD, Michel S. Makaroun, MD, Luke K. Marone, MD

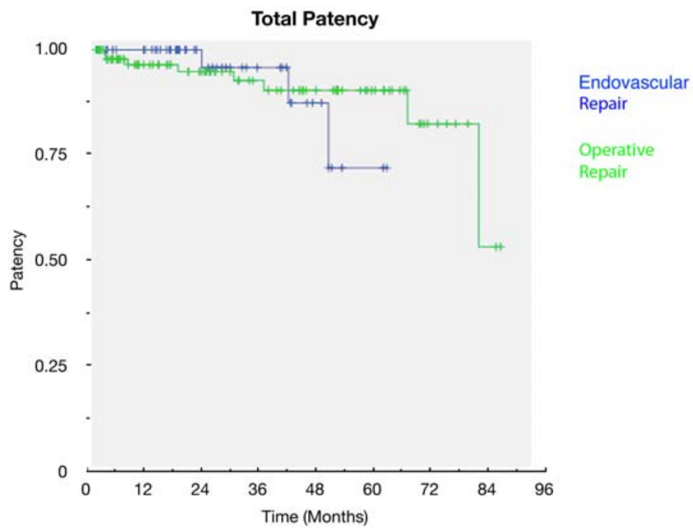
University of Pittsburgh Medical Center, Pittsburgh, PA

OBJECTIVE: To compare patency of endovascular (ER) and open repair (OR) of popliteal artery aneurysms (PAA) and determine predictors of failed revascularization. The focus is mid-term patency, as only early outcomes of ER are well known.

METHODS: A retrospective review of all patients treated for PAA from 2004–2010 was conducted at one institution. Indications for and details of repair, patient characteristics, and outcomes were reviewed. Kaplan-Meier curves were used to estimate patency rates. Multivariate analysis was performed to determine factors predictive of patency.

RESULTS: A total of 161 PAAs underwent endovascular repair in 50 and open surgical repair in 111 (8.0% and 20.7% emergent respectively p = .067). Follow-up was available for 151 repairs and mean follow-up time was 29.7 (±2.4) months. The average age of patients at the time of repair was 70.6 (±12.7) and 96% were male. Of the bypass group, 72.1% were performed with native conduit. Operative mortality was 2.0% for the ER group and 3.6% for the OR group (p = 1). ER had a significantly lower complication rate (14.0% vs 32.4% p = .020) and shorter LOS (median 1 vs 4 days p = < .001). Rates of reintervention to maintain patency were similar (12.2% and 10.8% p = .789). Two year primary patency rate was 83.3% for ER, and 80.0% for OR (p = .779); overall patency was 96.7% and 87.3% (p = .250) respectively. There was one amputation in each group, both in the setting of a patent bypass. Overall limb salvage rate was 98.0% with ER and 99.1% with OR (p = .526). SVS runoff scores were significantly better in the bypass group (Mean 9.2 vs 4.8, p = < .01). Univariate analysis revealed plavix (p = .037), and antegrade puncture (p = .048) in the ER group and statin use (p = .027) in the OR group were associated with improved patency. Multivariate analysis revealed only statin use to be protective overall (p = .027).

* Peter B. Samuels Finalist.



CONCLUSION: Endovascular and bypass techniques for PAA repair have equivalent mid-term patency, limb salvage and reintervention rates. Endovascular repair is a valid option for patients presenting with favorable runoff scores and is associated with a lower complication rate and shorter hospital length of stay.

WEDNESDAY

1:58 pm – 2:11 pm *2. **Outcome of Prosthetic Versus Vein Grafts for Below-Knee Bypass in Real World Practice**

Bjoern D. Suckow, MD[1], Larry W. Kraiss, MD[1], David H. Stone, MD[2], Andres Schanzer, MD[3], Daniel J. Bertges, MD[4], Jack L. Cronenwett, MD[2], Philip P. Goodney, MD[2]

[1]University of Utah, Salt Lake City, UT, [2]Dartmouth Medical School, Hanover, NH, [3]University of Massachusetts School of Medicine, Worcester, MA, [4]University of Vermont College of Medicine, Burlington, VT

OBJECTIVES: Native venous conduit is preferred in below-knee vascular reconstructions. However, many argue that prosthetic grafts can perform well in crural bypass with adjunctive antithrombotic therapy. We therefore compared outcomes of below-knee bypass grafts using prosthetic conduit with adjunctive antithrombotic therapy to those using autologous vein.

METHODS: Utilizing the Vascular Study Group of New England registry (2003–2009), we studied 308 patients with a prosthetic graft to the below-knee popliteal artery (76%) or more distal target (24%). We used propensity matching to identify a patient cohort who received single-segment saphenous vein (GSV) yet remained similar to the prosthetic cohort in terms of patient characteristics, graft origin/target and antithrombotic regimen (Table 1). Main outcome measures were graft patency and major adverse limb events (MALE = ipsilateral amputation, graft revision or thrombectomy/thrombolysis) within one year. Secondary outcomes were bleeding complications (re-operation or transfusion) and mortality. We performed comparisons by conduit type and by antithrombotic therapy.

RESULTS: Patients receiving prosthetic conduit were more likely to be treated with warfarin than those with GSV (51% versus 22%, $p < 0.001$). Prosthetic grafts with tibial targets received the most aggressive antithrombotic combination (aspirin+clopidogrel+warfarin) more commonly than popliteal targets (26% versus 9%, $p < 0.001$). At one year, we found no significant difference in primary or secondary outcomes by conduit type (Table 2). While 1-year prosthetic graft patency rates varied from 68% (aspirin+clopidogrel+warfarin) to 82% (aspirin), no significant differences were seen in primary patency or MALE by antithrombotic therapy ($p = 0.32$ and 0.8, respectively). Further, the incidence of bleeding complications and 1-year mortality in prosthetic graft patients was similar among antithrombotic regimens.

* Peter B. Samuels Finalist.

Table 1: Comparison of Native and Propensity-Matched Cohorts

	Native Cohort			Propensity-Matched Cohort		
Variable	Prosthetic (n = 308)	Greater Saphenous Vein (n = 1,356)	p-Value	Prosthetic (n = 287)	Greater Saphenous Vein (n = 287)	p-Value
Male Gender	64%	73%	0.002	67%	68%	0.65
Coronary Artery Disease	49%	34%	<0.001	48%	49%	0.87
Previous Arterial Bypass	46%	25%	<0.001	46%	46%	1
Below-Knee Popliteal Target	76%	52%	<0.001	75%	77%	0.49
Aspirin only	34%	59%	<0.001	37%	41%	0.43
Aspirin + Clopidogrel	15%	20%	0.04	16%	15%	0.82
Aspirin + Warfarin	39%	17%	<0.001	36%	33%	0.53
Aspirin + Clopidogrel + Warfarin	12%	5%	<0.001	11%	11%	1

Table 2: Comparison of Outcomes in the Propensity-Matched Cohort

Variable	Prosthetic (n = 287)	Greater Saphenous Vein (n = 287)	p-Value
Primary Graft Patency at 1 Year	80%	81%	0.44
Incidence of MALE at 1 Year	20%	17%	0.25
Patient Survival at 1 Year	87%	89%	0.5
Bleeding Complications	10%	11%	0.79

CONCLUSIONS: While limited in size, our study demonstrates that, with appropriate patient selection and antithrombotic therapy, 1-year outcomes for below-knee prosthetic grafts can be comparable to greater saphenous vein conduit.

2:11 pm - 2:24 pm **3. Remote Iliac Artery Endarterectomy**

Simon A. Papoyan, Jr., MD, Derenik Maytesyan, MD, Igor Abramov, MD

Moscow Municipal Hospital, Moscow, Russian Federation

ONEJECTIVE: Remote endarterectomy of external and common iliac artery occlusions through a single, groin incision under fluoroscopic guidance is a relative unknown surgical procedure. This prospective single center cohort study describes this less invasive endovascular technique with the ring strip cutter and its early complications. The results at midterm follow-up are presented.

PATEINTS AND METHODS: From April 2004 to July 2010, 49 remote-endarterectomies of the external or common iliac artery were performed in a retrograde manner from a single, groin incision in 48 patients (30 men, 31 procedures). The median age was 66 years (39 to 82 years). Indications for operation were as follows: severe claudication in 28 (57%), rest pain in 13 (27%), and gangrene in 8 (16%) procedures. Follow-up included clinical evaluation, ankle-brachial index, and duplex scanning at 6 weeks, 3 months, and yearly thereafter.

RESULTS: Intraoperative technical success was achieved in 43 (88%) procedures. A retroperitoneal incision was necessary in three patients for an additional arteriotomy in the iliac artery and in three others for a bypass procedure. The mean follow-up was 20 months (2 to 77 months). Three-year cumulative primary patency rate by means of life table analysis was 60.2% _ 12.0 (SE). During follow-up, percutaneous transluminal balloon angioplasty with and without stenting was performed in six and two patients, respectively, resulting in a 3-year primary-assisted patency rate of 85.7% _ 9.56.

Three-year secondary patency was 94.2% _ 5.50.

CONCLUSIONS: Remote endarterectomy in external and common iliac arterial occlusive disease is a feasible endovascular procedure with a low complication rate. The midterm primary-assisted patency rate is good.

2:24 pm – 2:37 pm

4. Fate of the Contralateral Limb in Lower Extremity Amputation

Julia D. Glaser, Rodney P. Bensley, MD, Rob Hurks, MD, Frank Pomposelli, MD, Allen Hamdan, MD, Mark Wyers, MD, Elliot Chaikof, MD, PhD, Marc L. Schermerhorn, MD

BIDMC, Boston, MA

OBJECTIVE: Lower extremity (LE) amputation is often performed in patients where both limbs are at risk due to vascular disease, yet the proportion of patients who progress to amputation on their contralateral limb is not well defined. We sought to determine the rate of subsequent amputation on both the ipsilateral and contralateral limbs following initial amputation.

METHODS: We conducted a retrospective review of all patients undergoing LE amputation for vascular disease at an academic tertiary care center from 1998–2010. ICD-9 codes identified patients and procedures, as well as comorbidities. Outcomes included the proportion of patients undergoing contralateral and/or ipsilateral amputation stratified by major or minor amputation at 1 and 5 years. Multivariable analysis was performed to determine predictors of major contralateral amputation.

RESULTS: We identified 1751 patients (2534 procedures). Mean age was 67 years; 63% were male. A majority (52%) of procedures were performed on diabetics. Many of the procedures (64%) were minor amputations (toe or ray). After minor amputation 11% and 19% had an ipsilateral major amputation at 1 and 5 years while 3% and 9% had a contralateral major amputation at 1 and 5 years. After major amputation 5% and 11% have a contralateral major amputation at 1 and 5 years. Multivariate analysis indicated that female gender (OR1.5 [1.1–2.2] $p = 0.02$), diabetes (OR2.2 [1.5–3.2] $p < 0.001$), end stage renal disease (OR1.9 [1.0–3.5] $p = 0.04$), and initial major amputation (OR1.5 [1.1–2.2] $p = 0.02$) were all independent predictors of subsequent major contralateral amputation.

Table 1: Percent of Vascular Patients Undergoing Subsequent Amputation at 1 and 5 years, % (n)

Initial Amputation	Ipsilateral, Minor		Ipsilateral, Major		Contralateral, Minor		Contralateral, Major	
	1 year	5 years	1 year	5 years	1 year	5 years	1 year	5 years
Minor	13.8 (150)	23.6 (181)	10.9 (118)	19.0 (146)	6.4 (69)	15.9 (122)	2.8 (30)	9.0 (69)
Major	N/A	N/A	8.7 (48)	13.0 (51)	3.1 (17)	7.9 (31)	4.6 (25)	10.7 (42)

CONCLUSIONS: Rates of contralateral limb amputation vary by the level of the initial procedure. The majority of subsequent LE amputations occur within the first year. A high risk group of patients may be identified for improved surveillance and counseling.

WEDNESDAY

2:37 pm – 3:12 pm **MINI PRESENTATIONS**

MP1. Withdrawn

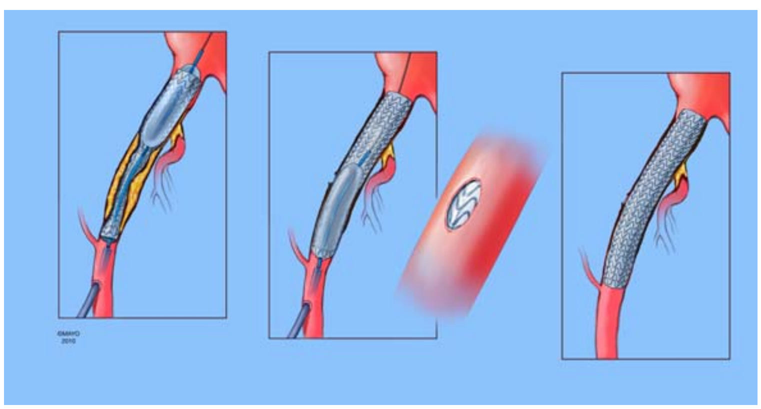
MP2. Endoconduits to Facilitate Endovascular Repair of Aortic Aneurysms in High-Risk Patients with Difficult Iliac Access

Tiziano Tallarita, MD, Gustavo S. Oderich, MD, Alexandre A. Pereira, MD

Mayo Clinic, Rochester, MN

PURPOSE: This study describes the technique and outcomes of endovascular conduits to facilitate endovascular aortic aneurysm repair in patients with difficult iliac access.

METHODS: We reviewed the clinical data of all consecutive patients treated by endovascular aortic aneurysm repair using endovascular conduits (2006–2010). Endoconduits were indicated in high-risk patients with small or occluded iliac arteries. Inadvertent hypogastric artery occlusion was avoided in patients with thoracic or thoracoabdominal aneurysms (TAAA) to minimize risk of spinal cord injury. The endoconduit technique consisted of controlled iliac artery disruption using >9 mm self-expandable stent grafts (Figure 1) or angioplasty and stenting for recanalization of larger iliac arteries. End-points were technical success, morbidity, mortality, patency and freedom from re-interventions.



RESULTS: There were 11 patients, 10 male and 1 female, with mean age of 74 ± 8 years. Aneurysm extent was infrarenal in 7 patients, pararenal in 3 (Figure 2) and TAAA in 1. The inner iliac artery diameter averaged 5 ± 2 mm. The endoconduit included the external iliac artery in all patients, and extended into the common iliac artery in 7. A patent hypogastric artery was sacrificed in 4 patients. The

average stent diameter and length was 11 ± 1 and 84 ± 24 mm, respectively. Technical success was achieved in all cases, allowing introduction of 20 to 24 Fr sheaths. Endovascular repair required infrarenal bifurcated stent grafts in 7 patients and fenestrated endografts in 4. There were no operative deaths. Four patients had postoperative complications including respiratory failure, minor stroke, renal insufficiency and iliac limb kink in one patient each. There were no pelvic ischemic complications, spinal cord injuries or uncontrolled arterial disruptions. After a median follow up of 28 months, all endoconduits remained patent. One patient required muscle flap coverage for late groin wound infection.

CONCLUSION: Endovascular conduits are useful to facilitate endovascular aortic aneurysm repair in patients with difficult iliac access because of small size or occluded iliac arteries. The technique is safe, effective and has excellent patency.

MP3. Embolic Protection Devices Below the Knee for Critical Limb Ischemia Interventions: Initial Results

James Jen, MD[1], Robert A. Lookstein, MD[1], Sharif H. Ellozy, MD[1], Michael L. Marin, MD[1], Henry Jen, BA[2], Peter L. Faries, MD[1]

[1]Mount Sinai Hospital, New York, NY, [2]Stony Brook Medical School, Stony Brook, NY

OBJECTIVES: To assess the safety and efficacy of the use of a distal embolic protection device in below-the-knee vessels in patients with critical limb ischemia and single-vessel runoff.

METHODS: Retrospective review of 30 consecutive patients treated at a single institution over a 5 year period. All patients were Rutherford class 4–6 and had single-vessel runoff. The technical success rate, the target vessel, the level of disease, the runoff before and after the intervention, the nature of the intervention, complications related to the use of the filter, the incidence of macroscopic debris, complete occlusion of the filter and target vessel with debris, and limb salvage at 30 days were examined.

RESULTS: Technical success with delivery of the device to the runoff vessel and successful retrieval was 100%. The most common target vessel for the device was the peroneal artery 43.3% (n = 13), followed by the anterior tibial artery 40% (n = 12) and the posterior tibial artery 16.7% (n = 5). Multisegmental disease was treated in 76.7% of patients (n = 23). Femoral-popliteal disease alone was treated in 13.3% (n = 4) and tibial disease alone was treated in 10% (n = 3). Single vessel runoff was demonstrated before and after the intervention in 100% of cases. Stenting was utilized in 80% (n = 24) of interventions. Laser or rotational atherectomy was used in 16.7% (n = 5). Pharmacomechanical thrombolysis was used in 23.3% (n = 7). Acute occlusions comprised 10% (n = 3). The only complication attributable to the embolic protection device was spasm which was seen in 6.7% (n = 2) and in both cases resolved with use of vasodilators. Macroscopic debris was visualized on fluoroscopy in 53.3% (n = 16). No reflow phenomena was seen in 13.3% (n = 4) which resolved with removal of the filter. Limb salvage at 30 days was 100%.

CONCLUSIONS: The use of a distal embolic protection device in below-the-knee vessels is a safe method of protecting single vessel runoff in patients with critical limb ischemia. Technical success was achieved in all patients in each of the tibioperoneal vessels. Complex interventions involving multisegmental disease and a variety of techniques resulted in a majority of patients having fluoroscopically visualized debris in the filter with some patients having total occlusion of the filter prior to retrieval. Distal runoff was preserved in all cases and there was no limb loss in the short term.

MP4. Predicting Success of Endovascular Intervention in Anatomically Unfavorable Femoropopliteal Disease

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OBJECTIVES: Guidelines addressing the appropriateness of endovascular therapy for peripheral arterial disease may lag behind contemporary practice patterns; endovascular therapy for TASC C/D femoropopliteal disease is frequently performed. Application of a comprehensive prediction model to anatomically unfavorable femoropopliteal disease may clarify the appropriateness of endovascular therapy in TASC C/D lesions.

METHODS: Retrospective review of a prospectively maintained database identified 500 consecutive endovascular interventions for TASC C/D femoropopliteal interventions. A previously reported, comprehensive clinical prediction model for long-term patency after endovascular intervention based on 8 variables (runoff, % stenosis, complete occlusion, length, calcification, smoking status, diabetes, and heart failure) was applied. The predictive power of the 8-variable model was evaluated at defined endpoints (6 and 12 months). Comparisons were made using standard techniques (Chi-square, ROC curve analysis).

RESULTS: Of 500 treated limbs, 375 (75%) were TASC C; 125 (25%) were TASC D. Overall primary patency was 54.4% and 32.6% at 6 and 12 months, respectively. At 12 months, there was no statistically significant difference between primary patency of TASC C vs. TASC D lesions (34.2% vs. 29.7%; P = 0.320). Mean endovascular disease severity score (DSS) was 7.2+2.7 points (of a maximum 16). Higher DSS (>8, n = 254) was associated with reduced patency at 6 months (49.2% vs. 62%; P = 0.005) and 12 months compared to DSS 9 (n = 108) was associated with 24.6% 12-month primary patency, compared to 46.5% 12-month primary patency among those with DSS < 4. While weakly correlated to TASC classification (R = 0.424), the endovascular disease severity score demonstrated improved discrimination of patency at 12 months compared to TASC classification by ROC comparison (C-index: 0.62, P < .001).

CONCLUSIONS: Overall, endovascular therapy for TASC C/D femoropopliteal disease is associated with poor primary patency. There is, however, significant variability in outcomes after endovascular treatment of unfavorable lesions that is not predicted by TASC classification. Here, we validate a comprehensive clinical model on a sub-group of patients with severe femoropopliteal disease. Application of such disease scoring methods may be used to predict outcomes and guide choice of therapy.

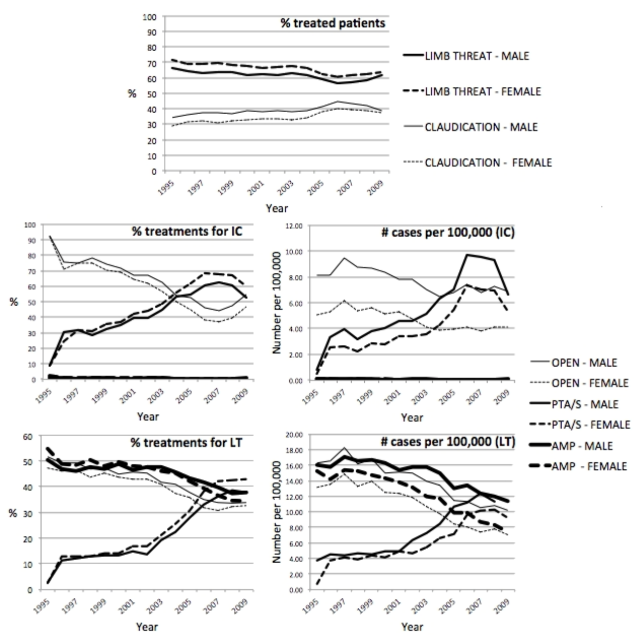
MP5. Presentation, Treatment, and Outcome Differences Between Men and Women Undergoing Revascularization or Amputation for Lower Extremity Peripheral Arterial Disease

Ruby C. Lo, MD, Rodney P. Bensley, MD, Robina Matyla, MD, Frank Pomposelli, MD, Allen Hamdan, MD, Mark Wyers, MD, Elliot Chaikof, MD, Marc L. Schermerhorn, MD

BIDMC, Boston, MA

OBJECTIVE: Prior studies have suggested treatment and outcome disparities between men and women for lower extremity peripheral arterial disease (PAD). Given the recent shift towards endovascular therapy, we sought to analyze gender disparities in interventions, amputations, and inpatient mortality based on presentation (limb threat vs. claudication).

METHODS: We identified patients with lower extremity arterial occlusive disease, subdivided into intermittent claudication (IC) vs. limb threat (LT) using ICD-9 codes in the Nationwide Inpatient Sample (NIS) from1995 to 2009. We compared open surgery (endarterectomy, aortibifemoral bypass, peripheral bypass) to PTA ± stent (PTA/S). Results were indexed to the population using U.S. Census Bureau data.



RESULTS: We identified 343,237 patients (56.9% male) who underwent treatment, 62.9% for LT. Women were older by 2.6 years on average and more likely to present with LT (Figure, $p < 0.05$ for all years). Women were more likely to receive PTA/S for both IC and LT ($p < 0.05$). Women had higher rates of major amputation prior to 2000, similar rates from 2000–2005 and lower rates after 2005. After an initial steady climb from 1995–2006, we observed a drop in the rate of endovascular revascularization after 2007 for both IC and LT while rates of bypass remained stable. Overall amputation rates continue to decline despite the recent decline in PTA/S. Over the study period, women had higher in-hospital mortality for both IC (PTA/S 0.6% vs. 0.3%, $p < 0.0001$, Surgery 1.2% vs. 0.8%, $p < 0.0001$) and CLI (PTA/S 3.6% vs. 3.0%, $p < 0.0001$, Surgery 3.8% vs. 3.2%, $p < 0,0001$).

CONCLUSIONS: Women with PAD appear to present at a later stage, are more likely to be treated with PTA/S, and have higher in-hospital mortality. Surprisingly, amputation rates among women are now similar/lower than for men. Enthusiasm for PTA/S appears to be declining. Despite this, amputation rates continue to decline.

MP6. Immediate Post-Operative Prosthesis Following Trans-Tibial Amputation: Comparative Analysis of a Contemporary Series

Mujtaba M. Ali, MD[1], Lorraine Loretz, NP, DPM[1], Art Shea, BA, CPO[2], Eli Poorvu, BS[1], Andres Schanzer, MD[1], Louis M. Messina, MD[1], Donald T. Baril, MD[1]

[1]University of Massachusetts Medical School, Worcester, MA, [2]New England Orthotic and Prosthetic Systems, Worcester, MA

OBJECTIVE: Post-operative management of trans-tibial amputations is traditionally done with soft compressive dressings over the stump to allow for complete healing and reduction in edema prior to fitting of the initial prosthesis. A prolonged period of limited mobility is necessary with this technique, placing patients at risk for muscle weakness, body de-conditioning, joint stiffness, or fall injury to the stump. The use of an immediate post-operative prosthesis (IPOP) allows patients to begin ambulation and rehabilitation on post-operative day one which can be of great psychological benefit. The purpose of this study is to compare outcomes of a series of patients undergoing IPOP to a historical control group of patients undergoing traditional trans-tibial amputations.

METHODS: Records of all patients undergoing trans-tibial amputations performed in traditional manner who were IPOP candidates (35 patients in 2006–2007) along with patients undergoing IPOP (37 patients in 2007–2010) were retrospectively reviewed. Patients considered for IPOP were ambulatory pre-operatively and had expected compliance to the post-operative protocol. Patient co-morbidities and preoperative ambulation status were compared. Preoperatively non-ambulatory patients were excluded from the control group. The data was analyzed using student's t-test (two tail analysis, assuming unequal variance). Significance was set at p-value of 0.05.

RESULTS: Preoperative patient characteristics of the two groups were similar, although the IPOP group was younger (see Table).

Preoperative Characteristic	Non-IPOP	IPOP	p-Value
Age (years)	69.0	61.5	0.010
Gender (% male)	68.6%	83.8%	0.135
Hypertension	85.7%	70.3%	0.116
Diabetes mellitus	74.3%	89.2%	0.067
Hypercholesterolemia	71.4%	81.1%	0.344
Chronic Renal Failure	34.3%	43.2%	0.442
Hemodialysis	20.0%	18.9%	0.909
Coronary artery disease	60.0%	56.8%	0.784
Tobacco use	71.4%	81.1%	0.574
Ambulatory without assistance	100%	97.3%	0.324

Immediate peri-operative complication rates were not significantly different (non-IPOP 31.4% vs. IPOP 29.7%, p = 0.878). Post-operative complication rates were as follows: wound infection (non-IPOP 25.0% vs. IPOP 18.9%, p = 0.568), wound dehiscence (non-IPOP 25.0% vs. IPOP 29.7%, p = 0.677), skin breakdown separate from incision (non-IPOP 3.6% vs. IPOP 18.9%, p = 0.044), and fall (non-IPOP 21.4% vs. IPOP 10.8%, p = 0.266). The need for revision was significantly greater in the non-IPOP group (non-IPOP 27.6% vs. IPOP 5.4%, p = 0.021). The time from surgery to placement of the definitive leg was 51 days in the IPOP group.

CONCLUSION: Patients undergoing IPOP had similar complication rates as those undergoing the traditional method but were less likely to require surgical revision. The use of IPOP is of great psychological benefit to the patient and allows for early ambulation and rehabilitation. It should be considered for all appropriate candidates undergoing trans-tibial amputation.

MP7. Preoperative Statins and Amputation-Free Survival After Lower Extremity Revascularization in the U.S. Medicare Population

Todd R. Vogel, MD, MPH, Viktor Y. Dombrovskiy, MD, MPH, PhD, Alan M. Graham, MD

University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School, New Brunswick, NJ

OBJECTIVES: Statin usage has been shown to stabilize atherosclerotic plaque, decrease mortality after surgical procedures, and is linked to anti-inflammatory effects. The objective of this study was to evaluate preoperative administration of statins and longitudinal amputation-free survival after lower extremity (LE) revascularization.

METHODS: Patients were selected from the Medicare MedPAR, Carrier, and Part D files (2007–2008) using ICD-9-CM diagnosis codes (claudication, rest pain, and ulceration/gangrene) and CPT codes for LE endovascular revascularization (ENDO) and LE open surgery (OPEN). Amputations over time were identified using CPT codes and preoperative statin use was identified by querying the National Drug Code Directory and Part D files. Chi-square test, multivariable logistic regression, Kaplan-Meier and Cox regression methods were utilized.

RESULTS: 22,954 patients undergoing LE vascular procedures (14,353 ENDO and 8,601 OPEN) were identified. Indications included: Claudication (8,128); Rest pain (3,056); and Ulceration/gangrene (11,770). 11,687 (50.9%) were identified as statin users before revascularization. Overall, statin users compared to non-users had lower amputation rates at 30 days (11.5% vs. 14.4%; $P < 0.0001$), 90 days (15.5% vs. 19.3%; $P < 0.0001$) and 1 year (20.9% vs. 25.6%; $P < 0.0001$). This association was noted after both ENDO and OPEN. Multivariate logistic regression adjusted by age, gender, race, comorbidities, and procedure demonstrated non-statin users were more likely to undergo amputation at 30 days (OR = 1.26; 95% CI 1.16–1.36), 90 days (OR = 1.28; 95% CI 1.19–1.38), and 1 year (OR = 1.30; 95% CI 1.22–1.39). Survival analysis demonstrated improved amputation-free survival during 1 year for statin-users compared to non-users for the diagnosis of claudication ($P = 0.0025$), a similar trend for rest pain ($P = 0.059$), and no improvement for ulceration/gangrene ($P = 0.61$). Statin users with a diagnosis of claudication underwent secondary bypass at 30 days (0.90%) and 90 days (1.91%) at a significantly lower rate compared to non-statin users (1.48%; $P = 0.04$ and 3.00%; $P = 0.008$, respectively). This association was not found with other procedure indications.

CONCLUSIONS: Overall, preoperative statins were significantly associated with improved 1-year amputation-free survival after lower extremity revascularization. Statin usage among patients with the diagnosis of claudication was more effective compared to patients with rest pain and ulceration/gangrene. Further focused evaluation of preoperative statins and the severity of peripheral vascular disease is warranted to assess the possible benefits of this pharmacotherapy on amputation-free survival.

3:15 pm – 4:00 pm **COFFEE BREAK IN EXHIBIT HALL & ePOSTER VIEWING**
(Encore 1-3)

4:00 pm – 5:30 pm SCIENTIFIC SESSION 2— VENOUS DISEASE & HEMODIALYSIS ACCESS (Encore 4-8)

Moderated by: *Robert B. McLafferty, MD*
Steven A. Leers, MD

4:00 pm – 4:13 pm 5. **Observations of Chronic Cerebrospinal Venous Insufficiency (CCSVI) in Multiple Sclerosis Patients Using a Multimodality Imaging Protocol**

Richard F. Neville, MD[1], Carlo Tornatore, MD[2], James Laredo, PhD[1], Byung-Boong Lee, MD, PhD[1], Anton N. Sidawy, MD[1]

[1]Division of Vascular Surgery George Washington University, Washington, DC, [2]Division of Neurology Georgetown University, Washington, DC

OBJECTIVE: Chronic cerebrospinal venous insufficiency (CCSVI) has been implicated in the etiology of multiple sclerosis (MS) with truncular venous malformations leading to stenosis of the jugular (IJV) and azygous veins resulting in insufficient drainage of the cerebrospinal venous circulation. Consistent with this theory is an increased mean transit time in MRI perfusion studies and histology showing hemosiderin deposits and pericapillary fibrin cuffs. This study prospectively evaluated patients with MS for the presence of CCSVI using Duplex ultrasound (US), venography, and intravascular ultrasound (IVUS).

METHODS: This prospective analysis was performed under IRB approval (IRB# 2010–186, August 2010). 100 consecutive patients with MS were screened by US using parameters of flow direction (reflux), B mode abnormalities (stenosis, webs, septum), obstructed flow, and decreased venous area below 0.4 cm^2 (no widening in the supine position). CCSVI was positive if two or more of these criteria were found with those patients undergoing venography with IVUS. Venous angioplasty was performed in patients with IJV or azygous stenosis by venography confirmed by IVUS. Balloon size was guided by IVUS measurements using low pressure balloons and prolonged inflation times. Post treatment venography and IVUS were performed in all treated patients. No stents were deployed.

RESULTS: US findings were positive for CCSVI in 57% of patients screened. The most common finding was abnormal flow direction with unilateral reflux in 52% and bilateral reflux in 43%; right IJV in 57% (reflux time 0.55–1.70 seconds) and left IJV in 62% (reflux time 0.68–2.25 seconds). Venograms were performed in 48 patients with abnormalities in 35 (73%); right IJV stenosis (29%), left IJV stenosis (33%), and azygous stenosis (10%). IVUS imaging confirmed sclerotic, hyperplastic areas of stenosis, but also identified venographic "pseudostenosis" of the proximal IJV valve in various states of closure. In 32 patients (67%) angioplasty was performed; right IJV (9, 28%), left IJV (13, 41%) and the azygous vein (4, 12.5%). Venography and IVUS were performed post-angioplasty.

CONCLUSIONS: This study describes initial observations of imaging the cervical venous circulation in patients with MS. There were a substantial number of patients with venous abnormalities; however there was no comparative normal group. IVUS was critical in differentiating true abnormalities from venous valvular phenomenon which may prove essential in guiding intervention if a causal relationship is proven.

4:13 pm – 4:26 pm

6. Prediction of Graft Patency and Mortality After Distal Revascularization and Interval Ligation for Hemodialysis Access Related Hand Ischemia

Salvatore T. Scali, MD, Catherine K. Chang, MD, Daniel Raghinaru, PhD, Mike Daniels, PhD, Adam W. Beck, MD, Robert J. Feezor, MD, Peter R. Nelson, MD, Scott A. Berceli, MD, PhD, Thomas S. Huber, MD, PhD

University of Florida, Gainesville, FL

OBJECTIVES: The goals for management of access related hand ischemia (ARHI) are to reverse symptoms and salvage the access. Many procedures have been described, but the optimal treatment remains unresolved. In an effort to guide clinical decision making, this study was undertaken to document our outcomes for distal revascularization and interval ligation (DRIL) and identify predictors of bypass patency and patient mortality.

METHODS: A retrospective review was performed of all patients who underwent DRIL (1997–2010). Bypass patency and mortality were determined using life-tables and predictors determined using univariate and multivariate analyses.

Table. Univariate Predictors of Failure for DRIL Primary Patency

†Co-variate	Hazard Ratio	95% C.I.	P-value
Cryo conduit	**5.5**	**1.1-26.5**	**0.03**
Aspirin/coumadin pre-op	4.9	1.0-23.3	0.04
≥ 3 prior access procedures	3.3	1.0-10.3	0.04
*'Other access configuration'	3.2	1.2-8.5	0.02
2 prior access procedures	2.9	1.0-8.5	0.06
Dyslipidemia	0.4	0.1-1.0	0.06
Statin	0.2	0.1-0.8	0.02
Brachiocephalic access configuration	0.2	0.04-0.8	0.02

†Cox Proportional Hazard regression
**Includes SFV, forearm loop, prosthetic configurations*

RESULTS: 132 DRILs were performed in 126 patients (female-59%, diabetes-69%, age 57 ± 12 yrs (mean ± SD)) following brachial artery-based access with a 27% (19% wound) morbidity and a 2% 30-day mortality. Mean follow-up is 15 months. The wrist/brachial and digital/brachial indices increased 0.31 ± 0.25 and 0.25 ± 0.29, respectively. Symptoms resolved in 82% of patients and 85% were able to continue using their access. Primary and primary-assisted patency was 77%, 79% and 68%, 70% at 1 and 5 years. Univariate predictors of patency failure were cryo-preserved conduit, pre-operative ASA +coumadin use, a non-brachial basilic/cephalic access configuration, and ≥2 prior access attempts. Pre-operative statin therapy, saphenous vein conduit, and brachiocephalic access were predictors of improved bypass patency (Table). Mortality was 28% and 79% at 1 and 5 years, respectively. Multivariate predictors of mortality were composite conduit, complication from DRIL, and an indication of grade 3 ischemia.

CONCLUSIONS: DRIL effectively improves distal perfusion and reverses the symptoms of ARHI while salvaging the access. However, given the high mortality of this patient population, pre-operative risk stratification is critical for optimal utilization of this remedial strategy.

4:26 pm – 4:39 pm

7. Complications of Endovascular Grafts in the Treatment of Pseudoaneurysms and Stenoses in AV Access

Jill Zink, MD, Victor Erzurum, MD, Robert Netzley, MD, Dennis Wright, MD
Akron General Medical Center, Akron, OH

OBJECTIVES: Endovascular stent grafts are utilized in the rescue of failing AV access. Reports claim the superiorty of stent grafts and recommended these as a first line treatment. We have observed a rise in the number of complications related to stent grafts in our patients. The following study was undertaken to assess the severity of these complications and their effect on access site maintenance.

METHODS: We reviewed all patients who had endovascular stent grafts placed for treatment of failing dialysis access over the last 44 months. A series of 38 consecutively placed stent grafts was reviewed for stent migration, fracture, erosion, hemorrhage and rupture at the site of the stent grafts. Hospital charts were reviewed to assess for indications, hemodynamic stability, transfusion requirement, and outcome.

RESULTS: Of 38 stent grafts placed, 9 were for pseudoaneurysm (PS), 20 for stenosis (ST), and 9 for a combination (PS/ST). The average length of follow-up was 218.6 days. Primary patency was 49% with an assisted primary patency of 76%. Eleven patients (28.9%) presented with complications (Table 1) related to migration, fracture, erosion, or rupture. Six were in the PS, three in the PS/ST and two in the ST treatment groups. In all cases migration or fracture of the stent graft lead to recurrent pseudoaneurysm formation or erosion. Rupture occurred after a herald bleed in 4 cases. Once complication occurred 10 of the 11 access sites had to be abandoned.

Table 1

Presentation and outcomes of stent graft complications	# of pts
Presented with significant bleeding episode	6
Required emergent/urgent operation	6
Attempted access site salvage	6
Herald Bleed (At least 72 hrs prior to presentation)	4
Significant hemodynamic instability (SBP <90)	4
Required blood transfusion (>1 unit PRBC)	3
Erosion without bleed	2
Cardiopulmonary Arrest	1
Mortality	1

CONCLUSIONS: Significant life threatening complication can arise when fracture and migration of the stent grafts used for treating AV access occur. Herald bleed with a previously placed stent graft may be a harbinger of future rupture. Complications appear less likely when stent grafts are used to treat stenosis however when complications occur access site salvage is rare. Surgical revision in the case of pseudoaneurysm should be considered for access preservation.

4:39 pm – 4:52 pm ***8. Metabolic Syndrome: A Marker for Decreased Cumulative Patency Among Patients Undergoing Arteriovenous Fistula Placement**

Clinton D. Protack, MD, Larissa Chiulli, MD, Penny Vasillas, RN, Caroline Jadlowiec, MD, Michael Collins, MD, Xin Li, MD, Alan Dardik, MD, PhD

Yale University, New Haven, CT

OBJECTIVES: The natural history of patients with Metabolic Syndrome (MetS) undergoing arteriovenous fistula placement is unknown. MetS has previously been found as a risk factor for poor outcomes for vascular surgery patients undergoing other interventions. The aim of this is study is to describe the outcomes of MetS patients undergoing primary arteriovenous fistula placement.

METHODS: The medical records of all patients undergoing arteriovenous fistula placement between 2004 and 2009 at the VA Connecticut Healthcare system were reviewed (n = 122). Survival, primary patency, and secondary patency were evaluated using Gehan-Breslow test for survival. MetS was defined as the presence of three or more of the following: blood pressure ≥130 mmHg/≥90 mmHg; triglycerides ≥150 mg/dl; high-density lipoproteins (HDL) •50 mg/dl for women and •40 mg/dl for men; Body Mass Index (BMI) ≥30 kg/m^2; fasting blood glucose ≥110 mg/dl.

RESULTS: One hundred and twenty-two patients underwent primary arteriovenous fistula placement. Seventy-five (61%) of the patients were identified to have MetS. The distribution of MetS factors among all patients were: 120 (98%) were hypertensive.; 70 (57%) patients were diabetic; 51 (42%) patients had elevated triglycerides; 75 (61%) of patients had decreased HDL; 46 (38%) of patients had an elevated BMI. 55 (45%) of patients were currently receiving hemodialysis. The mean age of patients was 65 years. The mean length of follow-up was 2.9 years. The forearm was site of fistula placement in 76 (62%) of patients; no difference existed between groups (39% for MetS, 36% for No MetS, p = 0.78). The median time to primary failure was 0.57 years for all patients (0.76 years [No MetS], 0.47 years [MetS]; p = 0.11). Secondary patency was 50% at 1.28 years for all patients (1.72 years [No MetS], 0.72 years [MetS]; p = 0.01). Median survival duration for all patients was 4.7 years (5.2 years [No MetS], 4.5 years [MetS]; p = 0.03).

CONCLUSIONS: MetS is prevalent among patients undergoing arteriovenous fistula placement. Patients with MetS have equivalent primary patency rates, however their survival and cumulative patency rates are significantly lower compared to those patients without MetS. MetS should be considered as a significant risk factor for patients undergoing arteriovenous fistula placement.

* Peter B. Samuels Finalist.

4:52 pm – 5:27 pm **MINI PRESENTATIONS**

MP8. Embolization During Pharmacomechanical Thrombectomy of Iliofemoral DVT: Is Routine Preoperative IVC Filter Placement Warranted?

Ross Ratner, MD, Kenneth Goldstein, MD,
Luis R. Davila-Santini, MD
Montefiore Medical Center, Bronx, NY

OBJECTIVES: At our institution, pharmachomechanical thrombectom (PMT) for acute iliofemoral (IF) DVT has become standard. We reviewed our experience with PMT of IF DVT and thromboembolic events to determine if a change in practice towards routine preoperative IVC filter (IVCF) placement is warranted.

METHODS: Using a prospectively maintained database, we identified all patients who underwent PMT for acute IF DVT between June 2008 and August 2011. All procedures were performed at our institution, with the Trellis®(Covidien, Dublin, Ireland/ Massachusetts, USA) device. IF DVT was diagnosed with venous duplex. Patients were placed prone and percutaneous popliteal vein access achieved. Our initial patient cohort did not undergo IVCF placement. Observation of thromboembolic events caused some patients to recieve preoperative IVCF. Completion venogram was performed of the IVC to evaluate for thrombus within the IVCF. tPA was used as the pharmacologic agent. A 7 FR multipurpose catheter was used to remove thrombus. Angioplasty/stenting of iliac, femoral or IVC was performed selectively. Demographic data, etiology of thrombus, comorbidities and length of stay were recorded. Study endpoints included pulmonary embolus (PE), thrombus within IVCF and technical success. Technical success was defined as significant thrombus retrieval, adequate outflow through iliac veins and significant symptom improvement. All patients were systemically anticoagulated during and after the procedure.

RESULTS: A total of 23 legs were treated in 19 patients. Median age was 42 years (range 21–85). Median follow up was 17 months (range 2–37). Median length of stay was 5 days (range 2–9). Technical success was 100%, with significant symptom improvement in 18/19 (95%) patients. Four of 19 (21%) cases were bilateral. One of 19 (5%) patients required thrombolysis infusion overnight. Eight of 19 (42%) cases were related to either May Thurner's syndrome or an underlying stenosis. One of 19 (5%) patients developed symptomatic PE, and 1/19 (5%) patients were incidentally found to have asymptomatic PE. Four of 19 (21%) patients had IVCF in place prior to the procedure. Nine of 19 (47%) patients had preoperative placement of a retrievable IVCF. Fifteen of 19 (79%) patients required angioplasty with or without stent placement. Seven of 19 (37%) patients had thrombus within the IVCF. Seventeen of 19 (89%) patients had patent iliac veins during follow up.

CONCLUSIONS: PMT of IF DVT improves venous outflow in patients with acute thrombus. The mechanical part of PMT may cause significant rates of embolization and we recommend considering IVCF placement preoperatively.

MP9. Impact of a Mandatory Venous Thromboembolism (VTE) Prevention Program on Rates of Prophylaxis and Hospital Acquired Pulmonary Embolism (PE)

Elizabeth S. Levin, MD, Reid Ravin, MD,
Lisa Mainieri, MD, Eliot J. Lazar, MD,
Robert A. Green, MD, Nicholas J. Morrissey, MD
Columbia University, New York, NY

OBJECTIVE: The use of a hospital wide electronic risk assessment tool was hypothesized to improve rates of appropriate venous thromboembolism (VTE) prophylaxis and decrease the rate of hospital acquired pulmonary embolism (PE).

METHODS: Beginning June 2010, all patients admitted to a 2300 bed academic hospital had VTE risk and prophylaxis assessed as part of their admission orders. A retrospective review identified 127 patients between January 2010 and March 2011 who developed hospital acquired PE. Positive events were identified via conclusive imaging with CT angiogram in all cases. Patient demographics, clinical details, diagnostic modalities, and hospital course data were collected. Descriptive statistics and chi-square tests were used to describe data and compare variables (alpha = $p < 0.05$). Tool implementation occurred midway through 2010. Additional detailed examination of in-hospital VTE prophylactic measures was performed to determine the effects of tool implementation on rates of appropriate DVT prophylaxis.

RESULTS: 127 PE occurred between January 2010 and March 2011, with a significant decrease noted after implementation of the VTE prevention tool (Table 1). Absolute risk reduction with tool use was 13%, with relative risk reduction of 39%. Based on review of all patients with documented PE, implementation of a mandatory VTE prevention program dramatically increased the proportion of patients who were on appropriate prophylaxis when they suffered an event.

Table 1

	PE Rate per 1000 Patient Days	Proportion of PE Occurring with Appropriate ppx
Pre implementation of Tool	.33	.35
Post Implementation of Tool	.20	.77
P Value	<.0001	<.0001

CONCLUSIONS: Implementation of an electronic tool that addressed the VTE risk and provided an appropriate order set for all patients on admission significantly decreased the occurrence of hospital acquired PE and improved the rate of patients on appropriate prophylactic therapy for VTE. Future efforts are directed at the use of electronic order and alert systems to assure the level of appropriate prophylaxis approaches 100% and allows real time adjustment of prophylactic therapy to optimize patient care.

MP10. Eliminating Redundancy in the Pre-Operative Vascular Surgical Patient Workup: Computed Tomography Angiography for Greater Saphenous Vein Mapping as an Alternative to Traditional Ultrasonography

William F. Johnston, MD, Damien J. Lapar, MD, Kenneth J. Cherry, MD, John A. Kern, MD, Margaret C. Tracci, MD, Gorav Ailawadi, MD, Gilbert R. Upchurch, Jr., MD

University of Virginia, Charlottesville, VA

OBJECTIVES: Autologous greater saphenous vein (GSV) graft is frequently used as a conduit during infrainguinal arterial bypass. Pre-operative vein mapping is used to define GSV anatomy, thereby decreasing operative time and reducing wound complications. The purpose of this study was to determine whether GSV mapping using computed tomography angiography (CTA) closely correlated with that of traditional duplex ultrasonography (US).

METHODS: From August 2009 through June 2011, 51 patients underwent CTA of the lower extremities primarily to determine arterial anatomy and US for pre-operative vein mapping. Most of the studies (84%) were performed within one month of each other. GSV diameters measured on CTA [both antero-posterior (AP) and lateral] and US were evaluated at levels of the proximal thigh, mid thigh, knee, mid calf, and ankle. The relationship between CTA and US measurements were compared at each anatomic level using linear regression. Cost savings were calculated to include technical and professional fees.

RESULTS: Average patient age was 61.6 years old with the majority of patients male (70.6%). GSV diameter sequentially decreased from the proximal thigh to the mid calf and then increased to the ankle as measured by CTA and US (both $p < 0.005$). Overall, a high degree of correlation existed between CTA and US GSV diameters. The strongest degree of correlation occurred in measurements at the proximal thigh (CTA-lateral vs. US: $R = 0.92$; CTA-AP vs. US: $R = 0.93$), followed by the mid thigh (CTA-lateral vs. US: $R = 0.87$; CTA-AP vs. US: $R = 0.86$), mid calf (CTA-lateral vs. US: $R = 0.80$; CTA-AP vs. US: $R = 0.78$), knee (CTA-lateral vs. US: $R = 0.80$; CTA-AP vs. US: $R = 0.76$), and ankle (CTA-lateral vs. US: $R = 0.75$; CTA-AP vs. US: $R = 0.74$). All GSV measurements as measured by CTA and US were statistically equivalent ($p < 0.001$ for all correlation coefficients). By eliminating US for the study patients, the potential cost savings at our hospital over the study period was $49,316.

CONCLUSIONS: Indirect venography by CTA correlates well to US for GSV mapping in the lower extremity and provides significant cost savings. CTA allows AP and lateral evaluation of the GSV throughout its anatomic course. As CTA is often performed prior to lower extremity arterial bypass, these results suggest that the use of indirect venography from the preoperative CTA should be considered an acceptable alternative to the use of ultrasonography.

MP11. Correlation of IVUS and CT Scan Measurements for Placement of IVUS-Guided IVC Filters

Sean J. Hislop, MD, Dustin J. Fanciullo, MD, Adam J. Doyle, MD, Michael J. Singh, MD, Jason K. Kim, MD, Ankur Chandra, MD, Nicole A. Stassen, MD, David L. Gillespie, MD
University of Rochester, Rochester, NY

OBJECTIVES: The use of intravascular ultrasound to place bedside IVC filters has the potential to increase patient safety due to decreased need for patient transport and its use in patients with open abdomen. IVUS has been criticized for an increased rate of malpositioned IVC filters. The purpose of this study was to evaluate the utility of correlating preprocedure CT scan measurements with IVUS derived measurements of anatomic structures for assistance in placement of bedside IVUS-guided inferior vena cava (IVC) filters.

METHODS: A retrospective review of prospectively collected data was performed on all patients receiving bedside IVUS guided filters from July 1, 2010 and August 31, 2011. Measurements of the inferior vena cava length from the atrial-IVC junction to the mid-portion of the crossing right renal artery, the lowest renal vein and iliac vein confluence were obtained prior to IVC filter placement by evaluation of existing CT scan data and intra-operatively by IVUS pullback. Regression analysis (significant for $P < 0.05$) was used to determine if there was a correlation between measurements obtained by IVUS as compared to those obtained using preprocedure CT imaging.

RESULTS: Over this 13 month period of time there were 27 bedside IVUS filters placed. There were 22 patients who had both IVUS and CT scans available to perform the analysis. All IVUS guided filters were placed using the single puncture technique using the Cook Celect Filter system. There was a correlation between IVUS and CT derived measurements of the right atrium–right renal artery distance ($P < 0.001$), right atrium–lowest renal vein distance ($P < 0.001$) and right atrium–iliac confluence distance ($P < 0.001$). There were no complications or malpositions of IVC filters using this protocol.

CONCLUSIONS: These data suggest that IVUS pullback measurements from the right atrium in combination with preprocedure CT derived measurements of the distance from the right atrium to the lowest renal vein and right atrium to the iliac vein confluence provide an accurate roadmap for the placement of bedside IVC filters under IVUS guidance. We suggest this easily employed technique be more fully utilized to help decrease the incidence of malplaced filters using IVUS guidance alone.

MP12. Early Experience with a Novel "Hybrid" Graft Used for Hemodialysis Access

Javier E. Anaya-Ayala, MD, Matthew K. Adams, BS, Charudatta S. Bavare, MD, Jean Bismuth, MD, Alan B. Lumsden, MD, Eric K. Peden, MD, Mark G. Davies, MD, PhD, MBA, Joseph J. Naoum, MD

Methodist DeBakey Heart & Vascular Center, Houston, TX

BACKGROUND: Achieving functional dialysis access in patients with few or hard to access open deep veins is an ongoing challenge in the present day. The development of new technologies may provide an alternative to conventional approaches and maximize the use of the extremity's venous real-estate while reducing the operative insult to these generally fragile patients.

METHODS: We describe our initial experience with the hybrid vascular graft (W.L. Gore and Associates, Flagstaff, Ariz.) in 23 patients. The hybrid graft allows for a stented and sutureless distal anastomosis which can be performed using endovascular access. Selection criteria included: no acceptable peripheral alternative access site, previous graft anastomosis or a stent in the venous target at the level of the axilla, failed brachial-basilic upper arm transposition arteriovenous fistula or a target vein <0.3 cm within the axilla. Patient demographics and early patency were evaluated.

RESULTS: Technical success was accomplished in all 23 cases (100%), 7 required a Viabahn (W. L. Gore and Associates, Flagstaff, Ariz.) stent-graft extension and two additional patients percutaneous angioplasty (PTA) to improve venous outflow at the axillary and/or subclavian veins at the time of surgery. Nineteen patients are currently using the hybrid graft for hemodialysis while two recently had the procedure and are not yet using their grafts. 2 patients developed dialysis associated steal syndrome (DASS) requiring plication of the inflow graft segment and one of them also required stenting of the brachial artery to improve inflow. During the follow up period two patients died of comorbidities nonrelated to the access procedure while having a functioning graft

CONCLUSION: This early experience shows that the hybrid graft concept appears to be a safe and technically effective alternative for patients with a disadvantaged anatomy in whom dialysis access is needed. Long-term data will be required to validate it as a preferential option in patients with limited venous real-estate.

MP13. Outcome of Open Repair of Arteriovenous Fistula Aneurysms

Mitul S. Patel, MD, Huynh T. Huynh, MD, Erik K. Peden, MD, Mark G. Davies, MD, PhD, Joseph J. Naoum, MD

The Methodist Hospital, Houston, TX

OBJECTIVES: Arteriovenous fistula (AVF) aneurysms (AVFA) can lead to skin erosion, bleeding, difficult access while on hemodialysis, and poor cosmetic appearance. We reviewed our experience in treating patients with aneurysmal dilatation of their arteriovenous access and examined the prevalence of significant venous outflow stenoses.

METHODS: We reviewed clinical data of 48 patients (37 men; overall mean age 55 years, range 28–85 years) with an AVFA who underwent treatment during a 30 month period. There were 32 brachial cephalic upper arm, 7 radial-cephalic forearm and 9 brachial-basilic upper arm transposition AVFs. Ninety-six percent of patients suffered from hypertension and 50% had diabetes. All patients underwent a fistulogram prior to open repair. Relevant clinical variables, imaging studies and treatment outcomes were analyzed.

RESULTS: Open repair with aneurysmorrhaphy was performed in either one or two stages in 63% and 37% of patients, respectively. No interposition grafts were used. Only 11 patients (23%) required placement of a tunneled dialysis catheter (TDC) as a bridge until the surgically repaired AVF was ready for use again. Thirty three percent of patients undergoing a one-stage aneurysmorrhaphy required placement of a tunneled dialysis catheter compared to only 6% of patients undergoing a two-stage procedure. Eighty one percent of the AVFs had at least one significant venous outflow obstruction, and 43% of these patients had at least two outflow stenoses that required treatment. A stenosis of the arteriovenous fistula was the most common lesion in 65% of patients followed by a stenosis of the axillary or subclavian vein outflow in 54%, innominate vein stenosis in 17%, and SVC in 2% of patients. All stenoses were treated with percutaneous balloon angioplasty. All AVFA were salvaged and patients were able to maintain functional use of their access.

CONCLUSIONS: There is a very high association of venous outflow stenoses and AVFA. Comprehensive therapy should encompass treatment of any venous outflow stenoses prior to open AVFA repair. A two-stage repair may decrease TDC use in patients with multiple aneurysms.

MP14. Five-Year Comparison with Quality-of-Life Analysis of Proximal Versus Distal Primary Non-Synthetic Arterio Venous Fistula (AVF) for Long-Term Venous Access in Patients on Haemodialysis (HD)

Nader Hamada, MB, BCh, MCh, MRCS, Sherif Sultan, MD, FACS, FRCS, EBQS, Vasc, Niamh Hynes, MD, MRCS, MMSc,
Western Vascular Institute, Galway, Ireland

INTRODUCTION: End Stage Renal Disease (ESRD) patients ideally should have Arterio-Venous Fistula (AVF) formation 3–6 months prior to commencing Haemodialysis (HD). However this is not always possible with contemporary strained healthcare resources.

OBJECTIVES: We aim to compare autologous Proximal AVF (PAVF) formation with Distal AVF (DAVF) in patients already on HD. Primary endpoints are 4-year primary and post-intervention patency. Secondary endpoints are freedom from major adverse clinical events (MACE), and Quality Time Spent without Symptoms of disease or Toxicity of Treatment (Q-TWIST).

DESIGN: Retrospective cohort study using data from a prospectively-maintained Vascular Database.

METHODS: From January 2003 to June 2009, 179 patients with ESRD on HD had 200 procedures for AVF formation (37 DAVF vs. 163 PAVF), in arms in which no previous fistula had been formed. No synthetic graft was used.

RESULTS: 4-year primary functional patency significantly improved with PAVF (68.9% ± SD8.82%) compared to DAVF (7.25% ± SD4.94%) ($p < 0.0001$).

4-year secondary functional patency significantly improved with PAVF (76.02% ± SD9.61%) versus DAVF (7.45% ± SD5.07%, $p < 0.0001$).

5-year freedom from MACE was 85% with PAVF compared to 40% with DAVF ($P < .005$).

5-year QTWiST significantly improved with PAVF compared to DAVF ($P < 0.005$).

CONCLUSION: PAVF bestows long-term functional access with fewer complications compared to DAVF and should be preferentially offered to patients already on HD.

WEDNESDAY

5:30 pm – 6:30 pm	WELCOME RECEPTION in Exhibit Hall (Encore 1-3) ** The Welcome Reception is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.*
5:30 pm – 8:30 pm	INCOMING FELLOWS PROGRAM– PART I (Chopin 4) ***Supported by: Cook Medical*** **Incoming Fellows Program is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.*
5:30 pm – 6:00 pm	Reception
6:00 pm – 6:15 pm	Welcome *Joseph Ricotta, MD and Caron Rockman, MD*
6:15 pm – 6:25 pm	Icebreaker
6:25 pm – 6:45 pm	Running an Efficient Service *Mark D. Fleming, MD*
6:45 pm – 6:55 pm	Question and Answers
6:55 pm – 7:15 pm	Balancing you Time *Nabeel Rana, MD*
7:15 pm – 7:35 pm	Question and Answers
7:35 pm – 7:45 pm	How to Utilize your Industry Reps *Gautam Shrikhande, MD*
7:45 pm – 7:55 pm	Question and Answers
7:55 pm – 8:30 pm	2nd year Fellows Panel *Eric Hager, MD; Sean Hislop, MD; Venita Chandra, MD*

Thursday, March 15

7:00 am – 8:00 am

SPECIAL INTEREST GROUP (SIG)– BREAKFAST SESSION (Chopin 2)

Challenging Cases: Peripheral & Other

Moderated by: *Alan M. Dietzek, MD*
Kim J. Hodgson, MD

SPEAKERS:

Matthew L. White, MD
University of Arizona, Tucson, AZ

Shipra Arya, MD
University of Michigan, Ann Arbor, MI

Michael Martinez, MD
Scott & White Hospital Clinic, Temple, TX

Tapash Palit, MD
Louisiana State University, Marrero, LA

David Dexter, MD
NYU Medical Center, New York, NY

Mark Morasch, MD
Northwestern Memorial Hospital, Chicago, IL

7:00 am – 8:00 am

SPECIAL INTEREST GROUP (SIG)– BREAKFAST SESSION (Chopin 3)

Challenging Cases: Abdominal Aortic

Moderated by: *Fred A. Weaver, MD*
R. Clement Darling, MD

SPEAKERS:

Cassidy Duran, MD
The Methodist DeBakey Heart & Vascular Center, Houston, TX

Todd Cumbie, MD
Baylor University Medical Center, Dallas, TX

Thomas Reifsnyder, MD
Johns Hopkins University, Baltimore, MD

	Emilia Krol, MD *Danbury Hospital, Danbury, CT*
	Joseph S. Giglia, MD *University of Cincinnati, Cincinnati, OH*
	Matthew L. White, MD *University of Arizona, Tucson, AZ*
7:00 am – 8:00 am	CONTINENTAL BREAKFAST WITH INDUSTRY (Encore 1-3)
7:00 am – 11:30 am	EXHIBITION HALL HOURS *(continuous beverage service)* (Encore 1-3)
7:00 am – 12:30 pm	REGISTRATION DESK (Promenade)
7:00 am – 12:00 pm	SPEAKER READY ROOM (Schubert)

8:15 am – 9:30 am SCIENTIFIC SESSION 3–CAROTID DISEASE (Encore 4-8)

Moderated by: Gilbert R. Upchurch, MD
Fred A. Weaver, MD

8:15 am – 8:28 am 9. Prospective Neurocognitive Evaluation of Patients Undergoing Carotid Interventions

Elizabeth Hitchner, MA[1], Kathleen Gillis, RNP[1], Lixian Sun, MS[2], Allyson Rosen, PhD[2], Wei Zhou, MD[2]

[1]Palo Alto VA Medical Center, Palo Alto, CA,
[2]Stanford University, Stanford, CA

OBJECTIVE: During carotid interventions there is a risk of distal cerebral embolization. Here we prospectively investigate whether subclinical microembolization seen on post-operative MRI leads to cognitive deficits in a cohort of patients undergoing either carotid endarterectomy (CEA) or carotid artery stenting (CAS).

METHODS: Patients undergoing carotid interventions and eligible for MRI scanning were recruited to participate. Among 247 patients who received both preoperative and postoperative MRI evaluations, a total of 51 patients also completed neuropsychological testing prior to the procedure and at one month following. Demographic data and MRI with diffusion weighted sequence (DWI) were collected for all patients. MRI with DWI was performed preoperatively and within 48 hours after the procedure. Cognitive function was evaluated using the Rey Auditory Verbal Learning Test (RAVLT) to evaluate memory and the Mini-Mental State Examination (MMSE) to screen for general cognitive impairment.

RESULTS: All 51 patients (16 CAS and 35 CEA) were male with a mean age of 71 years, ranging 54 to 89 years. Among them, 26 patients (51%) were symptomatic including 11 patients who had prior stroke and 15 patients who had prior TIA. The majority of the patients had significant medical comorbidities including hypertension (92%), diabetes (31.3%), coronary artery disease (47%), and COPD (15.7%). Thirteen patients (25%) had prior CEA and 7 had contralateral carotid occlusion (13.7%).

Memory decline evident on RAVLT was identified in 21 patients including 8 CAS patients and 13 CEA patients. There was no significant difference in baseline cognitive function or memory change between CEA and CAS cohort. Eleven patients had evidence of procedure-related microemboli. Multivariate regression analysis showed that procedure-related microembolization was associated with memory decline ($P = 0.016$) as evident by change in RAVLT. Prior history of neurologic symptom was significantly associated with poor baseline cognitive function (MMSE) ($P = 0.03$) and overall cognitive deterioration (change in MMSE) ($P = 0.026$) as determined by Wilcoxon Rank Sum test and linear regression analysis respectively.

CONCLUSIONS: Although both CEA and CAS are effective in stroke prevention with minimal neurologic complication, neurocognitive effects remain uncertain. Procedure-associated microembolization and pre-existing neurologic symptoms are associated with poor baseline cognitive function and memory decline following the procedures. Further comprehensive cognitive evaluation to determine the benefit of carotid interventions is warranted.

8:28 am – 8:41 am **10. The Prevalence of Carotid Artery Stenosis Varies Significantly by Race**

Caron Rockman, MD, Thomas Maldonado, MD, Glenn R. Jacobowitz, MD, Jeffrey S. Berger, MD, Mark A. Adelman, MD, Thomas S. Riles, MD

New York University Medical Center, New York, NY

OBJECTIVES: Certain races are known to be at increased risk for stroke, and the prevalence of carotid artery stenosis (CAS) is thought to vary by race. The goal of this report was to study the prevalence of CAS by race via analysis of a large population of patients who underwent vascular screening examinations.

METHODS: Of 3.494.778 patients who underwent voluntary vascular screening, 3.7% did not self-identify a race and were excluded. Analysis of collected data was performed by gender and by age. CAS was defined to be present when >50% by Duplex criteria.

RESULTS: The 3.561,679 patients consisted of Caucasians (C, n = 3,166,432, 88.9%), African-Americans (AA, n = 111,456, 3.1%), Hispanics (H, n = 87,615, 2.5%), Asians (A, n = 71,198, 2.0%, and Native Americans (NA, n = 102,162, 2.9%). Controlling for gender and age, there was marked variation in the prevalence of CAS ($p < 0.001$). In males of all ages, NA's had the highest rate of CAS, and C's had the second highest rate. Male AA patients had either the lowest rate, or the second lowest rate in all age categories studied. In female patients of all ages, NA's again had the highest rate of CAS, with C's having the second highest rate. However, in contrast to males, A females uniformly had the lowest prevalence of CAS. Multivariate analysis including atherosclerotic and demographic factors confirmed race as an independent predictive variable.

Table: Relationship of Carotid Artery Stenosis and Race

	Caucasian	African American	Hispanic	Asian	Native American
Males 51–60	1.8%	1.1%	1.2%	1.1%	2.3%
Males 61–70	4.1%	2.6%	2.8%	3.1%	5.4%
males 71–80	7.2%	4.7%	5.5%	5.0%	9.8%
Males > 81	10.8%	7.3%	9.2%	6.5%	12.5%
Females 51–60	1.7%	1.3%	1.1%	1.1%	2.6%
Females 61–70	3.3%	2.6%	2.3%	2.1%	4.6%
Females 71–80	5.6%	4.3%	4.5%	3.4%	6.7%
Females > 81	7.6%	6.7%	7.0%	4.7%	8.3%

CONCLUSIONS: The prevalence of CAS varies significantly by race. NA and C patients have the highest rates of CAS, while AA males and A females appear to have the lowest rates. This information adds evidence to the hypothesis that the increased stroke rate in AA patients is likely not related to extracranial cerebrovascular disease. Furthermore, this is an oval report of an extremely high rate of CAS in NA patients.

8:41 am – 8:54 am ***11.** **Increased Hospital Use of Carotid Artery Stenting (CAS) over Carotid Endarterectomy (CEA) Is Associated with Inferior Outcomes in Asymptomatic Patients**

Theodore H. Yuo, MD, Howard Degenholtz, PhD, Rabih A. Chaer, MD, Kevin L. Kraemer, MD, Michel S. Makaroun, MD

University of Pittsburgh, Pittsburgh, PA

OBJECTIVES: CAS has been shown to have higher perioperative stroke and death (PSD) rates than CEA in symptomatic, but less convincingly in asymptomatic patients. Limited CAS experience has been blamed for worse outcomes. We sought to compare the PSD rate of CAS versus CEA in an administrative database to determine if CAS usage variation is linked to PSD in asymptomatic patients at the hospital level.

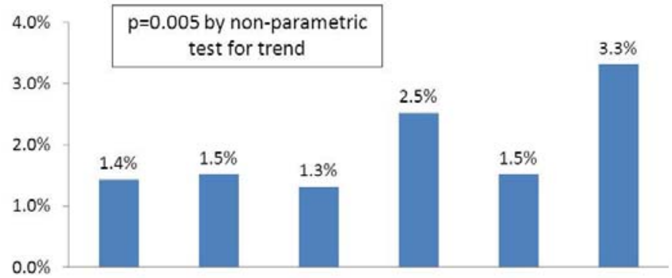
METHODS: Using California hospital discharge data from 2005 through 2009, we identified CAS and CEA procedures and hospitals where they were performed. Preoperative symptom status was determined using ICD-9 and administrative codes. Propensity scores based on comorbidities and demographics were generated to identify a matched and balanced cohort of CEA and CAS patients. We used logistic regression to identify risk factors for PSD, calculated CAS rates as a proportion of all carotid revascularization (CR) procedures for each hospital, stratified hospitals into groups based on the proportion of CR that was CAS, and performed non-parametric test for trend to compare PSD rates.

RESULTS: From 2005 to 2009, 3,549 CAS and 26,792 CEA were identified that treated asymptomatic patients in 270 hospitals. PSD occurred in 133 CAS and 446 CEA patients, yielding unadjusted PSD rates of 3.7% and 1.7%, respectively ($p < 0.001$). Compared with CAS patients, CEA patients were more likely to be older than 70 (67% vs. 64%, $p < 0.001$), but less likely to have 3 or more comorbidities (37% vs. 40%, $p < 0.001$). After propensity score matching and eliminating hospitals with fewer than 20 CR over 5 years, 18,297 patients in 169 hospitals were available for analysis. Logistic regression demonstrates CAS is significantly associated with increased PSD risk (OR 2.497, $p < 0.001$). Patients undergoing CR in hospitals that perform CAS more frequently, in terms of CAS as a proportion of CR, had higher PSD rates than patients in hospitals that performed CAS less (Figure).

CONCLUSIONS: CEA has a lower PSD rate compared to CAS in asymptomatic patients. PSD rates were elevated in hospitals with higher proportions of CAS as a proportion of CR, suggesting that increased use of CAS in a hospital is associated with worse patient outcomes.

* Peter B. Samuels Finalist.

Figure: Hospital PSD rates stratified by quintiles in terms of use of CAS as opposed to CEA



Quintile	N/A (No CAS)	1 (Lowest)	2	3	4	5 (Highest)
CAS/CR (Percent)	0%	2%	4%	9%	21%	48%
Number of hospitals	54	23	23	23	23	23

8:54 am – 9:29 am **MINI PRESENTATIONS**

MP15. Age Can Affect Incidence of DWI Detected Microembolic Lesions Following Carotid Intervention

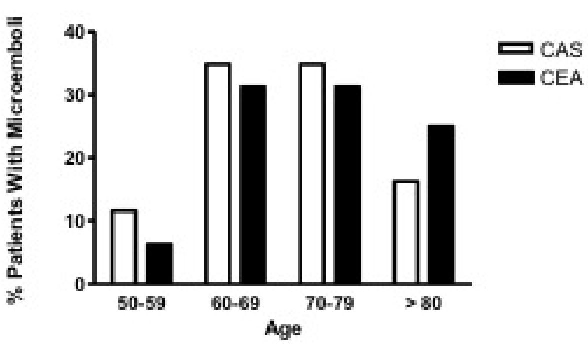
Mohamed Zayed, MD, PhD[1], Elizabeth Hitchner, MA[2], Simin Gholibeikian, MD, PhD[2], Allyson Rosen, PhD[1], Barton Lane, MD, PhD[1], Wei Zhou, MD[1]

[1]Stanford University, Stanford, CA, [2]Palo Alto VA Medical Center, Palo Alto, CA,

OBJECTIVE: Diffusion weighted MRI (DWI) detected microembolic events following carotid endarterectomy (CEA) and/or carotid artery stenting (CAS) is a known phenomenon. We previously reported nearly a 40% chance of newly detected DWI microembolic events following CAS. Recent CREST trial results suggest that age is a predictor of poor outcomes following CAS. We thought to evaluate whether age is also a predictor of newly detected perioperative DWI detected microembolic events.

METHODS: From 7/2004 to 12/2010, a total of 294 patients (178 CEA and 116 CAS) underwent carotid artery interventions at a single academic institution, and also received pre- and post-operative DWI evaluations. Incidence of DWI detected microembolic events were evaluated for different age groups, and two-way ANOVA analysis with Bonferroni correction was performed.

RESULTS: Forty three (37.1%) CAS patients compared to 16 (8.9%) CEA patients had postoperative DWI lesions (P80 years old were more likely to develop postoperative DWI detected microemboli with CEA compared to CAS. In all other age groups, the incidence of microemboli was higher among patients who received CAS. Although no significant differences were observed in microemboli rates between CAS and CEA within each age group (Figure 1), two-way ANOVA analysis of the study population suggested that a patient's age significantly affects the incidence of microemboli ($P < 0.001$).



CONCLUSION: Our study underscores that age is an important variable that affects the incidence of microembolic events following either CAS or CEA. Unlike other age groups, patients older than 80 years old are more likely to develop post-operative microemboli following CEA, but this difference is not statistically significant. These findings suggest that microembolic events, in addition to stroke, myocardial infarction, and death are important postoperative parameters to evaluate and may be affected by a patient's age.

MP16. Plaque Vulnerability and Cerebral Embolization After Carotid Stenting

Andrew Unzeitig, MD, David E. Timaran, MD, Eric B. Rosero, MD, Adriana J. Higuera, MD, R. James Valentine, MD, Carlos H. Timaran, MD

University of Texas Southwestern Medical Center, Dallas, TX

OBJECTIVES: The large necrotic core and thin fibrous cap of vulnerable plaques render them prone to rupture and cerebral embolization. Whether vulnerable plaques represent unfavorable lesions for carotid artery stenting (CAS) is unknown. The purpose of this study was to assess the occurrence of cerebral embolization after CAS of vulnerable vs. nonvulnerable plaques identified with virtual histology intravascular ultrasound (VH-IVUS).

METHODS: During an 18-month period, 40 patients undergoing CAS were prospectively evaluated. All patients underwent VH-IVUS at the time of the intervention. Transcranial Doppler (TCD) monitoring during CAS and pre- and 24-hour postprocedural diffusion-weighted magnetic resonance imaging (DW-MRI) were used to assess cerebral embolization. Using VH-IVUS, lesions with large necrotic core (>10%) and thin fibrous cap were identified as vulnerable plaques. Univariate and nonparametric analyses were used to compare the degree of cerebral embolization between vulnerable and nonvulnerable plaques.

RESULTS: CAS was performed for 15 (38%) vulnerable and 25 (42%) nonvulnerable plaques. The median MES counts detected by TCD were 313 (interquartile range [IQR], 251–404) for vulnerable plaques and 239 (IQR, 160–378) for nonvulnerable plaques (P = .2). New acute cerebral emboli detected with DW-MRI occurred in 57% and 56% of patients undergoing CAS of vulnerable and nonvulnerable plaques, respectively (P = .9). The total and ipsilateral median number of DW-MRI lesions between groups were not statistically significantly different, i.e. 1 (IQR, 0–3) and 1 (IQR, 0–2) for vulnerable and nonvulnerable plaques, respectively (P = .8). One asymptomatic patient undergoing CAS of a vulnerable plaque sustained a minor stroke; the 30-day stroke-death rate in this series was 2.5%.

CONCLUSIONS: Cerebral embolization, as detected by TCD and DW-MRI, occurs with similar frequency after CAS of vulnerable and nonvulnerable plaques. Because acute brain injury occurs in more than half of patients undergoing CAS under filter embolic protection for both vulnerable and nonvulnerable plaques, further improvements to prevent distal embolization is necessary to optimize CAS safety.

MP17. Circle of Willis: A Major Highway for Contralateral Microemboli During CAS

Kevin Casey, MD[1], Elizabeth Hitchner, MA[2], Barton Lane, MD[3], Weesam K. Al-Khatib, MD[3], Wei Zhou, MD[3]

[1]Naval Medical Center San Diego, San Diego, CA, [2]Veterans Administration Palo Alto, Palo Alto, CA, [3]Veterans Administration Palo Alto, Stanford University Hospital, Palo Alto, Stanford, CA

OBJECTIVES: Carotid artery stenting (CAS) with distal protection has proven an effective alternative for high-risk patients with severe carotid stenosis. A major concern during CAS is that debris from the aortic arch may travel via either internal carotid artery (ICA) to the cerebrum. Contralateral microemboli are thought to be due to excessive manipulation of a diseased aorta leading to debris embolization via the contralateral ICA. We sought to determine other sources of contralateral microembolization during CAS.

METHODS: Consecutive patients receiving carotid interventions for carotid artery stenosis at a single institution were retrospectively reviewed. Only patients who received both pre- and post- operative MRI with diffusion-weighted sequences (DWI) were included in the study. Patients who had contralateral carotid artery occlusions were the primary focus. The presence of contralateral ICA occlusion, patient characteristics, and anatomic variability were compared.

RESULTS: From 2006–2011, 350 patients underwent carotid interventions. Among them, 247 had pre- and post-procedure MRI evaluations including 23 patients who had contralateral carotid artery occlusions. Fourteen CAS patients (12%) had known contralateral ICA occlusions and 3 patients (21%) demonstrated new contralateral microemboli. All were male, current smokers, and on antihypertensive medications.

One patient had a previous CVA and two patients had a history of atrial fibrillation. One patient developed hemodynamic instability requiring pressor support during the procedure. However, no patient developed symptoms during the procedure or follow-up period. Two patients had a Type II arch, but direct arch embolization to the contralateral hemisphere was unlikely due to contralateral ICA occlusion. All three patients also demonstrated new ipsilateral microemboli.

MRI images showed that all patients had a patent Circle of Willis. Two had a very prominent posterior communicating artery, while one patient had a patent anterior communicating artery. Logically, the contralateral DWI lesions originated ipsilaterally and travelled through the intracranial communicating arteries to the contralateral hemisphere.

CONCLUSIONS: Contralateral cerebral embolization during CAS is not a rare occurrence. This series is the first to provide structural evidence of the intracranial primary collateral pathway as an important source of inter-hemispheric microembolization. Larger studies are needed to help predict those patients at greatest risk for contralateral ICA embolization.

MP18. Recurrent Stenosis Is Higher After Eversion Endarterectomy

Daniel Mortensen, BS[2], M. Ashraf Mansour, MD[1], Robert F. Cuff, MD[1], Christopher M. Chambers, MD, PhD[1], Jason D. Slaikeu, MD[1]

[1]Spectrum Health, Grand Rapids, MI, [2]MSU, Grand Rapids, MI

BACKGROUND: Recurrent stenosis (RCS) after carotid endarterectomy (CEA) occurs in 5–10% of cases. Redo endarterectomy or carotid stenting (CAS) are indicated in symptomatic patients or those with high-grade restenosis.

PURPOSE: To review the incidence of RCS by color-flow duplex scan (CFDS), and compare the incidence after eversion and patch angioplasty CEA.

METHODS: Patients undergoing CEA were entered in a prospective database. CFDS was performed at 3, 6, 12, 24, 36, 48 months. More frequent intervals were done in select patients with abnormal results or symptoms. We excluded patients with insufficient follow-up. CFDS criteria for detecting restenosis were peak systolic of >250 cm/sec or end diastolic of >100 cm/sec. Charts were reviewed to determine what type of reintervention was performed, redo CEA or CAS.

RESULTS: In a 5-year period, we found 627 patients (268 women, 41%) who had CEA, 176 were eversions (28%). RCS was detected in 12 (6.8%), 8 in the first year, 3 in the second and 1 in the fourth. By comparison, 451 were CEA with patch angioplasty (72%) and 19 (4.2%) developed RCS: 8 in the first year, 7 in the second, 2 in the third and 2 in the fourth. In the eversion group, only 4 (2.2%) required CAS for symptomatic recurrence, and all 4 patients were women. There were 8 (1.8%) CAS in the patch group, 3 were women and 3 were symptomatic.

CONCLUSIONS: This study shows that the recurrence rate with eversion endarterectomy is slightly higher than after CEA with patch angioplasty. The rate of symptomatic recurrence or RCS requiring stenting is nearly identical in both groups.

MP19. Outcomes of Urgent Carotid Endarterectomy for Stable and Unstable Acute Neurological Deficits: A Single-Centre Retrospective Analysis

Lacopo Barbetta, MD[1], Michele Carmo, PhD[1], Alberto Settembrini, MD[2], Lattuada Patrizia, MD[3], Piergiorgio Settembrini, Professor[4]

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OBJECTIVES: Urgent carotid endarterectomy (CEA performed within 2 weeks after the onset of acute neurological deficits) seems to yield better long-term results than if delayed or not performed.

We retrospectively analysed the results of all urgent CEAs performed in our institution since the establishment of an operative protocol with our Stroke Unit.

METHODS: From January 2002 to July 2011 all the patients coming to our ER with acute neurological symptoms underwent a diagnostic work-up consisting of: neurologic evaluation, head computed tomography (CT), and carotid duplex scanning. Assessment of National Institute of Stroke Scale (NHISS) was performed at admission and discharge for neurologically stable patients.

88 patients with a carotid stenosis >50% and no contraindication to surgery (NHISS >15 or hemorrhagic infarction at CT scan) underwent urgent CEA.

The mean age was 70.8 years (range 37–89 years) with 63 (71.6%) men and 25 (28.4%) women.

Patients were grouped according to presentation: Group1 single transient ischemic attack (TIA), Group2 minor and moderate stroke, Group3 unstable symptoms (crescendo TIA or stroke in evolution).

We considered the timing of surgery as emergent (CEA < 24h) or non emergent.

End points were NHISS score modification, postoperative morbidity and mortality.

RESULTS: Urgent CEAs were performed at a median time of 50 hours (IQR 16–116 hours) from the onset of symptoms.

Median NHISS was 4 (IQR 2–6,2) on admission and 2 (IQR 0,7–3,2) on discharge with a median improvement of 2 points (IQR 0–4).

There was a total of 11 (12,5%) neurologic complications: 0/16 for GROUP1, 6/55 (10.9%) for GROUP2 and 5/17 (29.4%) for GROUP3.

In patients with minor to moderate stroke a timing of intervention >24 h was significantly associated with a higher rate of complications ($P < 0,4$), while in patients with unstable symptoms we we found no relation between timing of surgery and clinical outcomes.

Total mortality was 4 (4,5%): 3 deaths due to neurologic complications and 1 death do to myocardial infarction.

CONCLUSIONS: Urgent CEA is a safe and effective therapeutic strategy for patients presenting with mild to moderate stable neurologic deficits, especially if performed in the very first hours of presentation. We need more accurate studies to identify that subset of patients presenting with unstable symptoms who may not benefit from early surgery.

MP20. Gray Scale Median Analysis Predicts Perioperative Outcome of Carotid Artery Stenting: Is There a Difference Between Primary Stenosis and Post-Carotid Endarterectomy Restenosis?

James Pavela, MD, Samuel N. Steerman, MD, Jonathan A. Higgins, MD, Jean M. Panneton, MD

EVMS, Norfolk, VA

OBJECTIVES: Gray scale median (GSM) analysis has been used to measure lipid content in carotid lesions. Previous studies have shown that a low GSM value is correlated with increased perioperative risk during carotid artery stenting (CAS). A comparative analysis of GSM values between patients with a primary stenosis (the "primary" group) and those with a post-carotid endarterectomy (CEA) atherosclerotic restenosis (the "post-CEA" group) was performed to determine if both groups are appropriate for GSM analysis.

METHODS: Retrospective data was collected and analyzed from all patients undergoing CAS from November 2005 to August 2010. Data collected were: demographics, atherosclerotic risk factors, high risk criteria, ultrasound imagery, perioperative outcomes, and long-term outcomes. Patients who had pre-operative images amenable to gray scale analysis were identified as a sub-population for investigation. GSM values were calculated with Adobe Photoshop (v.CS4, San Jose, CA, USA) in the manner previously described in the literature.

RESULTS: During the study period, 284 patients underwent 304 CAS procedures. The study population was comprised of 53 patients for whom GSM analysis was feasible. The study population was divided into one of the two groups mentioned above: the primary group (n = 40, 75%) or the post-CEA group (n = 13, 25%). The mean time from CEA to CAS reintervention for the post-CEA group was 7.3 years (range 0.5 to 15 years, σ = 4.7). The two groups had the following characteristics:

Table 1

	Primary (n = 40)	Post-CEA (n = 13)	p-Value
Mean Age	72.2 (range 50 to 88, σ = 9.5)	69.3 (range 55 to 86, σ = 8.7)	0.31
Hypertensive	36 (90%)	9 (69%)	0.08
Coronary Artery Disease	16 (40%)	3 (23%)	0.33
CVA prior	13 (33%)	2 (15%)	0.31
Octogenarian	10 (25%)	2 (15%)	0.70
	Primary (n = 40)	Post-CEA (n = 13)	p-Value
Mean GSM	43.8 (range 4 to 102, σ = 23.6)	19.9 (range 0 to 53, σ = 16.5)	0.0002
Perioperative Stroke	1 (2.5%)	0 (0%)	1.00
Perioperative Mortality	2 (5.0%)	0 (0%)	1.00
Combined Perioperative Complication	3 (7.5%)	0 (0%)	0.57
Mean Followup	280 days	412 days	0.20
Restenosis (>224 PSV)	4 (10%)	1 (7.7%)	1.00
>30 day Ipsilateral Stroke	1 (2.5%)	0 (0%)	1.00

The patients in each group were then further subdivided into low (<30) or high (≥30) GSM subsets. In the primary group, there were 10 patients (25%) in the low GSM subset and all perioperative complications occurred within this subset (n = 3, 30%). This differed significantly from the patients in the high GSM subset (p = .0289). For the post-CEA group, there were 10 patients (77%) within the low GSM subset and there were no complications (n = 0, 0%). There was no difference between the low GSM subset and high GSM subset in the post-CEA group (0 vs. 0 complications).

CONCLUSION: This study confirms that a low GSM value is associated with increased perioperative risk for primary stenosis but suggests that GSM analysis is less predictive for patients with post-CEA restensosis.

MP21. Primary Extracranial Vertebral Artery Aneurysms: A Case Series

Sachin V. Phade, MD[1], Mark D. Morasch, MD[2], Justin Hurie, MD[2], Peter A. Naughton, MD[3], Manuel Garcia-Toca, MD[1], Ramon Berguer, MD[2]

[1]Northwestern University, Chicago, IL, [2]University of Michigan, Ann Arbor, MI, [3]St. James Hospital, Dublin, Ireland

OBJECTIVE: Extracranial vertebral artery aneurysms are uncommon and are usually associated with trauma or dissection. Primary cervical vertebral aneurysms are even rarer and are not well described. The presentation and natural history are unknown and operative management can be difficult. Accessing aneurysms at the skull base can be taxing, and since the frail arteries are often afflicted with connective tissue abnormalities, direct repair can be particularly challenging. We describe the presentation and surgical management of patients with primary extracranial vertebral artery aneurysms.

METHODS: A retrospective multi-institutional review of patients with primary aneurysms within the extracranial vertebral artery.

RESULTS: Between January 1, 2000, and December 3, 2010, 7 patients, age 12–56, were noted to have 9 primary extracranial vertebral artery aneurysms. All had underlying connective tissue or other hereditary disorder including Ehler-Danlos (3), Marfan's (2), neurofibromatosis (1) and an unspecified connective tissue abnormality (1). Seven aneurysms were managed operatively, including one attempted bypass that ultimately required vertebral ligation; the contralateral aneurysm on this patient has not been treated. Open interventions included vertebral bypass with vein, external carotid autograft, and vertebral transposition to the internal carotid artery. Special techniques were used for handling the anastomoses in patients with Ehler-Danlos. While endovascular exclusion was not performed in isolation, two hybrid procedures were performed. There were no perioperative strokes or deaths.

CONCLUSIONS: Primary extracranial vertebral artery aneurysms are rare and occur in patients with hereditary disorders. Operative intervention is warranted in symptomatic patients. Exclusion and reconstruction may be performed with open and hybrid techniques with low morbidity and mortality.

9:30 am – 10:00 am **COFFEE BREAK IN EXHIBIT HALL & ePOSTER VIEWING (Encore 1-3)**

10:00 am – 11:15 am SCIENTIFIC SESSION 4— THORACIC AORTIC DISEASE (Encore 4-8)

Moderated by: William J. Quinones-Baldrich, MD
Mark A. Farber, MD

10:00 am – 10:13 am 12. Tevar Using the Redesigned Tag Device (C-TAG) for Traumatic Aortic Transection: A Non-Randomized Multicenter Trial

Mark A. Farber, MD[1], Joseph S. Giglia, MD[2], Benjamin Starnes, MD[3], Scott Stevens, MD[4], Jeremiah Holleman, MD[5], Rabih Chaer, MD[6], Jon Matsumura, MD[7]

[1]University of North Carolina, Chapel Hill, NC, [2]University of Cincinnati, Cincinnati, OH, [3]University of Washington, Seattle, WA, [4]University of Tennessee, Knoxville, TN, [5]Carolinas Medical Center, Charlotte, NC, [6]University of Pittsburgh, Pittsburgh, PA, [7]University of Wisconsin, Madison, WI

OBJECTIVES: To evaluate the safety and efficacy of the CTAG device for the endovascular repair of traumatic aortic transections.

METHODS: A prospective, non-randomized, multicenter trial was conducted at 21 sites. Primary study endpoints included 30 day all cause mortality and major adverse events. The efficacy endpoint was freedom from a major device event (MDE) requiring reintervention through one-month follow-up.

RESULTS: Fifty-one subjects were enrolled between December 2009 and January 2011 with polytraumatic injuries and a mean injury severity score (ISS) of 32 + 14. The proximal mean intimal aortic diameter measured 24 mm while the mean distal intimal diameter was 22 mm. A total of 56 CTAG devices were implanted (mean: 1.1/subject, range: 1–2) with a mean patient age of 44 years (range: 21–87) and a male to female ratio of 2:1. Technical success was 100% with an operative mortality of 0%. Femoral access was utilized in 96% of patients. The mean procedure time and blood loss was 105 minutes and 148 ml respectively. All subjects required admission to an intensive care unit with a mean hospital stay of 13 days. Adjuvant techniques (lumbar drains and induced hypertension) to prevent paraplegia were used in only 7.8% of patients. No patient developed paraplegia despite 67% having complete or partial left subclavian artery (LSCA) coverage and only 6% receiving LSCA revascularization. In addition there were no device compressions or MDE reported. Overall mortality at 30 days was 7.8% and all were adjudicated by the CEC as not being device or procedure related.

Serious adverse events occurred in 35.3% of patients. To date there have been no conversions to open repair. Two site-reported minor endoleaks were detected during the mean follow-up of 4.2 months which did not require reintervention.

CONCLUSIONS: The CTAG device appears to be a safe and effective treatment modality for traumatic aortic transection based on 30 day outcomes with no device related events.

10:13 am – 10:26 am 13. Elevated Incidence of Spinal Cord Ischemia Among Patients Undergoing TEVAR for Type B Aortic Dissections

Robert J. Feezor, MD, Salvatore T. Scali, MD, Tomas D. Martin, MD, Philip J. Hess, Jr., MD, Thomas M. Beaver, MD, MPH, Charles T. Klodell, MD, Adam W. Beck, MD

University of Florida, Gainesville, FL

OBJECTIVES: Spinal cord ischemia (SCI) is a dreaded complication of thoracic endovascular aortic repair (TEVAR), and has been reported to have lower rates in dissection patients when compared to other aortic pathologies. Techniques to prevent SCI are inconsistently applied, potentially due to the unclear risk factors, and are often not used in dissection patients due to the low reported incidence of SCI in those patients. We sought to assess our incidence of SCI among patients undergoing TEVAR for both acute and chronic type B aortic dissections, and the potential implication of spinal drainage.

METHODS: A TEVAR database from a single institution was queried for patients with acute ($\leq$14 days from symptom onset) or chronic dissection ($\geq$14 days). Pre-operative and post-operative variables were compared.

RESULTS: Between 2000 and 2010, 137 TEVARs were performed for aortic dissections, which represented 22.9% of the 598 TEVARs performed overall. 66 (48.2%) were performed for chronic dissection-related pathology and 71 (51.8%) for urgent/emergent dissection-related pathology. Aortic coverage length and proximal landing zone was similar between acute and chronic patients. A shift in clinical practice occurred during the study period, with 16.7% of patients having spinal drains placed between 2000 and 2006, and 83.2% having spinal drains placed between 2007 and 2011 ($p < 0.0001$). For the entire study, the overall rate of SCI was 14.6%, with permanent SCI occurring in 9.5%. Acute dissection patients had higher overall rates of SCI and permanent SCI compared to chronic dissection patients (overall: 18.3% vs.10.6%; permanent 11.3% vs. 7.6%) (p = 0.23 and 0.56, respectively). The shift to a higher rate of spinal drain usage in the later study period was not associated with a decline in the rate of overall SCI or permanent SCI (overall: 16.7% vs. 14.0%, $p = 0.77$; permanent: 10.0% vs. 9.3%, $p = 1.0$).

CONCLUSIONS: The rate of SCI in our patient population is much higher in both acute and chronic dissection patients than rates previously reported in the literature. The reason for this is unclear, but may be attributed to a liberal definition of SCI. Although SCI was observed more frequently in our acute patients, there was no statistically significant difference between the groups. There was no reduction in incidence of SCI or permanent SCI with a more aggressive approach to spinal drainage.

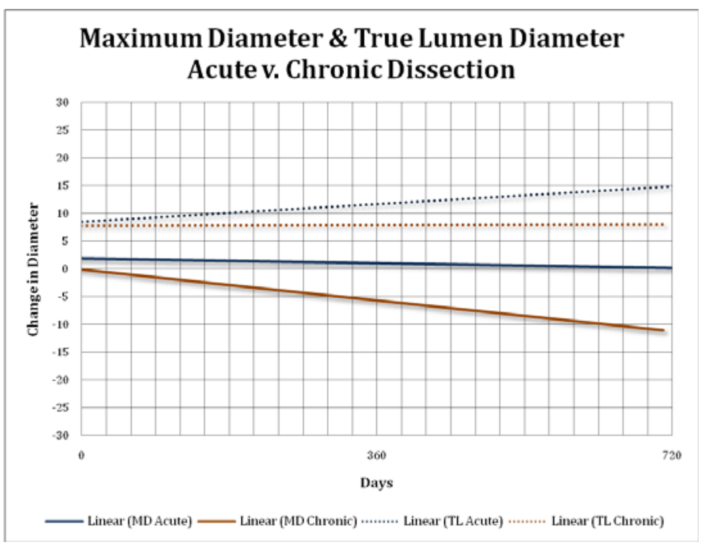
10:26 am – 10:39 am 14. **Aortic Remodeling Following TEVAR in Acute and Chronic Type B Dissection**

Woodrow J. Farrington, MD, James B. Sampson, MD, Marjan Mujib, MD, MPH, Marc A. Passman, MD, Mark A. Patterson, MD, Steve M. Taylor, MD, Thomas C. Matthews, MD, William D. Jordan, Jr., MD

University of Alabama at Birmingham, Birmingham, AL

OBJECTIVES: To determine the changes in aortic luminal diameter for patients with acute and chronic aortic dissection.

METHODS: Patients treated with TEVAR for type B aortic dissection (AD) were identified from a prospectively maintained registry. Health systems charts, medical correspondence and computed tomography (CT) imaging were reviewed. Measurements for true lumen (TL) and false lumen diameters were recorded at the first transverse section directly inferior to the aortic arch. Maximum diameter (MD) was recorded at the point of maximal dilation regardless of position. Data were analyzed for up to 2 years following endovascular intervention.



RESULTS: Of 52 patients treated with TEVAR for AD, pre and 2 year post op CT was available for analysis and comparison in 30 patients. Fourteen patients (47%) were treated within 14 days of dissection (acute), while 16 patients (53%) were after 14 days (chronic). Indications for treatment were malperfusion (5–16.7%), expansion (10–33.3%), pain (8–26.7%), and uncontrolled hypertension (7–23.3%). For all patients at 2 years, MD decreased by a mean of 2.1 mm while TL increased by a mean of 12.7 mm. Overall, 19 patients (63%) had a decrease in MD and 26 patients (87%) had an increase in TL. Subgroup analysis revealed the following: patients treated in the acute period, MD decreased an average of 1.8 mm while TL increased an average of 9.8 mm. For those treated for chronic dissection, MD decreased an average of 4.1 mm while TL increased an average of 15 mm.

CONCLUSIONS: TEVAR shows stabilization and positive remodeling of both acute and chronic type B aortic dissection evident by both decreasing maximum diameter and increasing the true lumen.

10:39 am – 10:52 am *15.

Anatomic Distribution of Stroke and Its Relationship to Perioperative Mortality and Neurologic Outcome following TEVAR

Brant W. Ullery, MD, Michael L. McGarvey, MD, Albert T. Cheung, MD, Ronald M. Fairman, MD, Benjamin M. Jackson, MD, Edward Y. Woo, MD, Nimesh Desai, MD, Grace J. Wang, MD

Hospital of the University of Pennsylvania, Philadelphia, PA

OBJECTIVE: To assess the anatomic distribution of stroke after TEVAR and its relationship to perioperative mortality and neurologic outcome.

METHODS: A retrospective review was performed for patients undergoing TEVAR between 2001–2010. Aortic arch hybrid and abdominal debranching cases were excluded. Demographics, operative variables, and neurologic complications were examined. Stroke was defined as any new focal or global neurologic deficit with radiographic confirmation of cerebral infarction.

RESULTS: Perioperative stroke occurred in 20 of 530 (3.8%) patients undergoing TEVAR. Mean age of this cohort was 75.2 ± 8.9 years (range, 57–90) and 55% were male. Indication for surgery was degenerative aneurysm (n = 15; mean diameter, 6.8 cm), acute type B dissection (n = 4), or aortic transection (n = 1). Sixty percent of cases were performed either emergently or urgently due to contained rupture (n = 9) or severe back pain (n = 3). Proximal landing zone was either Zone 2 (n = 11) or Zone 3 (n = 9) in all patients. Nine of 20 patients had EEG monitoring, with only 11% demonstrating intraoperative EEG changes. All strokes were embolic in nature. Distribution of stroke included the anterior cerebral circulation (AC) in 8 patients (Zone 2, n = 5) and posterior cerebral circulation (PC) in 12 patients (Zone 2, n = 6). Laterality of cerebral infarction varied, including 5 right, 8 left, and 7 bilateral strokes. Nine strokes were diagnosed <24 hours postoperatively; the remainder occurred at a median of 72 hours post-procedure. Neurologic deficits were focal in 16 patients and global in 4 patients. Presence of bilateral stroke was significantly associated with global deficits (p = 0.01). Overall in-hospital mortality was 20% (n = 4), with those suffering PC strokes trending toward increased mortality (33% vs. 0%;p = 0.12). PC strokes suffered during the emergent/urgent setting had a mortality rate of 50%, whereas all patients suffering AC strokes in the emergent/urgent setting survived (p = 0.21). Patients with AC strokes were more likely than those with PC strokes to achieve complete recovery of neurologic deficits prior to discharge (75% vs.17%;p = 0.02). Mean ICU and hospital length of stay for those surviving to discharge was 8 ± 11 and 16 ± 11 days, respectively. 75% of patients required an interim stay at a rehabilitation facility post-discharge.

CONCLUSION: While stroke following TEVAR is an infrequent event, our data indicate it is associated with significant morbidity and mortality, particularly among those who suffer posterior circulation strokes.

* Peter B. Samuels Finalist.

10:52 am – 11:12 am **MINI PRESENTATIONS**

MP22. Simultaneous Thoracic and Aortic Stent Graft Placement for Synchronous Aortic Disease

Salvatore T. Scali, MD[1], David H. Stone, MD2, Philip P. Goodney, MD[2], Catherine K. Chang, MD[1], Robert J. Feezor, MD[1], Peter R. Nelson, MD, MS[1], Scott A. Berceli, MD, PhD[1], Thomas S. Huber, MD, PhD[1], Adam W. Beck, MD[1]

[1]University of Florida-Gainesville, Gainesville, FL, [2]Dartmouth-Hitchcock Medical Center, Lebanon, NH

OBJECTIVES: Simultaneous treatment of multi-level aortic disease (MLAD) is controversial due to the theoretical increase in morbidity. The purpose of this study was to define the outcomes in patients treated electively with simultaneous thoracic (TEVAR) and abdominal aortic (EVAR) endografting for synchronous aortic pathology. The results of the combined procedures were compared to TEVAR alone (TA) to determine the safety of performing both procedures together.

METHODS: Patients treated with simultaneous TEVAR-EVAR (T&E) at a single institution were identified and compared to those treated with TA. All cases with emergent indications were excluded, as well as those requiring chimney stents, fenestrations or visceral de-branching procedures. Demographics, operative details, and peri-procedural complications were recorded. Freedom from re-intervention was determined using survival analysis.

RESULTS: From 2000 to 2011, 595 patients underwent TEVAR, of who 435 were non-emergent. Twenty-two were identified who were treated with simultaneous T&E. There were 18 male patients (81%) with a mean age (±SD) of 66 ± 9 yrs and median follow-up time was 8.8 mos (range 1–34 months). Four patients (18%) had a remote history of previous open aortic surgery prior to the index procedure. Indications included dissection-related pathology (N = 11, 50%), and various combinations of degenerative etiologies (N = 11, 50%) (e.g. aneurysm, penetrating ulcer, post-surgical pseudoaneurysm and atheromatous disease).

Procedural details are outlined in the attached Table. Compared with TA patients, T&E patients had significantly higher blood loss, contrast exposure, fluoroscopy and operative times. The permanent spinal cord ischemia (SCI) rate was 4% for both groups (P = 0.96). The 30-day mortality for T&E was 4.6% (N = 1) compared to 2.1% (N = 9) for TA (P = 0.45). No significant difference in renal injury (defined by a 25% increase over baseline creatinine) occurred between the two groups (P = 0.14).

Table. Comparison of Procedure Specific Variables and Post-operative Complications of Simultaneous TEVAR-EVAR vs. TEVAR Alone

	TEVAR-EVAR	TEVAR Alone	*P-value
Patient Characteristics (N)	N = 22	N = 435	
Gender	86% M	67% M	0.41
Age	66±9.2	67±12.8 years	0.97
**Pre-op Procedure	45% (N =10)	23% (N=131)	0.008
Operative Characteristics			
Spinal Drain	77.3% (N =17)	54.7% (N=238)	0.047
EBL	570±524mL	273±270mL	<0.0001
Contrast	239±92mL	135±53mL	<0.0001
Flouro-time	64±32 minutes	23±15 minutes	<0.0001
Procedure Time	252±120 minutes	117±64 minutes	<0.0001
Outcomes			
LOS	8.5±7 days	6.6±7 days	0.12
Re-intervention@12 months	9%(N=3)	11%(N=53)	0.77
ΨRenal Injury ("any")	9.1% (N = 2)	2.8% (N = 12)	0.14
ΨRenal Injury (requiring HD)	0	0.9% (N=4)	1.0
ǂPermanent Spinal Cord Ischemia	4.5% (N = 1)	4.4% (N = 19)	1.0
30-day Mortality	4.5% (N = 1)	2.1% (N = 9)	0.45

*P-value determined using Fischer Exact or t-test when appropriate
**Pre-op Procedures included carotid subclavian bypass, embolization, arch debranching, elephant trunk or access vessel procedure
ΨRenal Injury-> Defined as a change in baseline creatinine of 25% or greater
ǂSpinal Cord Ischemia->Defined as any decrease in baseline ambulatory ability

CONCLUSIONS: As far as we are aware, this is the largest reported series to date of patients undergoing simultaneous T&E for MLAD. Acceptable short term morbidity and mortality can be achieved when compared to TA. Not surprisingly, longer operative and fluoroscopy times, greater contrast exposure, and higher blood loss can be expected, which may lead to increased morbidity to the patient. Short-term re-intervention rates are low but longer follow up is needed to determine procedural applicability and durability.

MP23. Iliofemoral Complications Associated with Thoracic Endovascular Aortic Repair: Frequency, Risk Factors, and Early and Late Outcomes

Frank C. Vandy, MD, Micah Girotti, MD, G. Michael Deeb, MD, David M. Williams, MD, Narasimham L. Dasika, MD, Jon L. Eliason, MD, Himanshu J. Patel, MD

University of Michigan Cardiovascular Center, Ann Arbor, MI

OBJECTIVES: This study was performed to identify and characterize factors which influence perioperative iliofemoral complications during thoracic aortic endovascular repair (TEVAR).

METHODS: We identified all patients undergoing TEVAR since 2005 (n = 235). Patients were excluded from analysis if they did not have adequate preoperative 3-D aortoiliac imaging (80), or underwent TEVAR via a non-transfemoral approach including prior aortobifemoral graft or planned creation of iliac conduit (18), delivery via carotid (1) or ascending aorta (10). In the remaining study cohort of 126 patients an adapted iliac artery morphology scoring system created by the Society of Vascular Surgery (SVS) was calculated by combining iliac tortuosity, calcification, and representative vessel diameter. Both patient demographics and implanted device characteristics were obtained. Assessment of preoperative imaging was blinded with regards to occurrence of early complication, defined as anything other than successful transfemoral device delivery and primary closure of an arteriotomy.

RESULTS: The complication rate was 12% (n = 15). Complications included iliac rupture or dissection (8), femoral artery patch repair (6), and the inability to deliver the device into the aorta (1), Univariate analysis revealed female gender, preoperative ankle-brachial index (ABI), representative and minimal iliac diameters, diameter difference between iliac artery and sheath size, and iliac morphology score as significant factors (all $p < 0.05$) in patients who incurred complications (Table 1). Multivariate logistic regression revealed the difference between representative iliac diameter and sheath size (p = 0.014), SVS iliac artery morphology score (p = 0.033) and preoperative ABI (p = 0.012) to be significantly associated with an iliofemoral complication. Early mortality was higher in those with operative complications (13.3% vs. 1.8%, p = 0.069). Four year freedom from limb loss, claudication, or revascularization was 97.9%. Late complications included claudication from iliac stent graft occlusion (1) and iliac revascularization (1).

Table 1: Risk Factors Associated with an Iliofemoral Complication: Univariate Analysis

Variable	Iliofemoral Complication	No Complication	p Value
Patients (n)	15	111	N/A
Female gender n (%)	12 (80%)	45 (41%)	0.009
Age (SD)	74.7 (±10.6)	68.1 (±13.2)	0.16
Iliac Tortuosity Index (SD)	1.33 (±0.24)	1.22 (±0.15)	0.15
Iliac Calcium Score (SD)	1.15 (±0.53)	0.96 (±0.88)	0.48
Representative Iliac Diameter in mm (SD)	7.18 (±1.31)	8.64 (±1.99)	0.015
Minimum Iliac Diameter in mm (SD)	6.16 (±1.0)	7.19 (±1.72)	0.041
Iliac Morphology Score (SD)	3.77 (±0.72)	2.75 (±1.39)	<0.001
Difference between representative iliac diameter and sheath diameter in mm (SD)	-1.3 (±1.16)	0.12 (±1.94)	<0.001

CONCLUSIONS: Thoracic aortic endovascular repair can safely be performed via a transfemoral approach. Alternative access in patients with high preoperative SVS iliac artery morphology scores and device delivery size requirements in excess of 1 mm over the native iliofemoral size may reduce perioperative iliofemoral complications. If early complications occur, prompt repair results in low rates of claudication or need for revascularization at late follow up.

MP24. Staged Hybrid Approach Using Proximal TEVAR and Distal Open Repair for the Treatment of Extensive Thoracoabdominal Aortic Aneurysms

William F. Johnston, MD, Gilbert R. Upchurch, Jr., MD, Margaret C. Tracci, MD, Kenneth J. Cherry, MD, Gorav Ailawadi, MD, John A. Kern, MD

University of Virginia, Charlottesville, VA

OBJECTIVES: Repair of extent I and II thoracoabdominal aortic aneurysms (TAAAs) is associated with significant patient morbidity and mortality, while repair of more distal extent III and IV TAAAs has a lower risk of mortality and paraplegia. Therefore, we describe a novel approach using thoracic endovascular repair (TEVAR) as the index operation to convert extent I and II TAAAs to extent III and IV TAAAs amenable to later open aortic repair to minimize patient risk.

METHODS: Between July 2007 and July 2011, 9 staged hybrid operations were performed to treat 1 extent I and 8 extent II TAAAs secondary to aortic aneurysmal disease, including 6 chronic type B dissections, 2 acute type B dissections, and 1 penetrating aortic ulcer. Initially, the proximal descending thoracic aorta was repaired with TEVAR for coverage of the most proximal fenestration in cases of dissection. Carotid to subclavian artery bypass was performed in 5 patients (56%). Interval open distal aortic replacement was performed either in a short-term planned setting or for progressive dilation of the distal aortic segment. In the open repair, the proximal end of the graft was sewn directly to the distal end of the TEVAR and outer wall of the aorta.

RESULTS: Average patient age was 51.4 years and the majority male (67%). Two patients had Marfan syndrome. Post-operative complications following TEVAR included endoleaks [type IA (n = 2); type II (n = 2)], pleural effusion (n = 2), and acute kidney injury (n = 1). Endovascular re-intervention was required in 3 cases. In dissection cases, persistent filling of the false lumen was common and associated with continued distal aortic dilation. Following open graft placement, there were no major complications. In the patients with chronic dissection or penetrating ulcer, average hospital stay was 5.3 days following TEVAR and 7.4 days following open distal TAAA repair. The time from TEVAR to open repair was 332 ± 339 days. Most importantly, there was no 30-day mortality or neurologic deficit after either procedure.

CONCLUSIONS: A staged hybrid approach to extent I and II TAAAs combining proximal TEVAR followed by interval open distal TAAA repair is a safe and effective alternative to traditional open repair. This approach may decrease the significant morbidity associated with single stage open extent I and II TAAA repairs and may be applicable to other TAAA etiologies.

MP25. Thirty Day Results of a Prospective Multicenter Trial of a New Thoracic Endograft

William D. Jordan, Jr., MD[1], Sina Moainie, MD[2], Joshua Rovin, MD[3], Joseph Bavaria, MD[4], Richard Cambria, MD[5], Mark Fillinger, MD[6], William McMillan, MD[7], Jon Matsumura, MD[8]

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OBJECTIVES: The conformable GORE TAG Device (CTAG Device) is a new TEVAR device designed to be more conformable in curved anatomy, more resistant to compression, and has wider, overlapping sizing range compared to the predicate TAG Device. This study evaluated the safety and effectiveness of the CTAG Device in the repair of descending thoracic aortic aneurysms.

METHODS: This is a prospective, multi-center regulatory study with a primary endpoint of freedom from major device event through one month post-treatment.

RESULTS: One month Results: Fifty-one subjects were enrolled between October 2009 and October 2010. The cohort was 67% male, 86% Caucasian, and median age was 72 years. Mean maximum diameter of both saccular (n = 21, 41%) and fusiform (n = 30, 59%) aneurysms was 58.4 mm. Mean total treatment length was 17 cm with average of 1.7 devices. Procedure time averaged125 minutes and blood loss averaged 276 mL. There was one 30 day mortality (2%), and 12 patients (24%) experienced a total of 28 serious adverse events including one case of paraparesis but no central strokes. There was one site reported major device event of access failure (98% freedom from major device event). There were 8 site reported endoleaks (15.7%) (3 Type 1A and 5 Type II). There were no conversions, migrations, fractures, compressions, aneurysm ruptures or enlarging aneurysms at one month.

CONCLUSIONS: This next generation thoracic endograft has a low rate of major device events through one month with no graft compressions or device failures. The short term data from with this new TEVAR device are consistent with historical data, demonstrate favorable outcomes, confirm low risks for treatment and exhibit a improved benefit-risk profile for the CTAG Device. Follow-up will be continued for 5 years.

11:15 am - 11:20 am	INTRODUCTION OF DISTINGUISHED VISITING PROFESSOR (Encore 4-8)
11:20 am – 12:00 pm	DISTINGUISHED VISITING PROFESSOR: *Richard P. Cambria, MD* *Chief, Division of Vascular and Endovascular Surgery* Massachusetts General Hospital, Professor of Surgery, Harvard Medical School, Boston, MA Thoracic Aortic Disease: A 25-year Perspective
12:00 pm – 12:30 pm	SOCIETY FOR VASCULAR MEDICINE (SVM) SCIENTIFIC SESSION James B. Froehlich, MD University of Michigan, Ann Arbor, MI Scott Kinlay, MBBS, PhD Brigham & Women's Hospital, Boston, MA
12:30 pm – 1:45 pm	CONCURRENT LUNCHEON SYMPOSIA (Dubussy) *Supported by: Gore & Associates* Above-Knee Revascularization with the GORE Hybrid Vascular Graft: Technique, Advantages and Early Results Nabeel Rana, MD From Repositioning to Proper Sizing–Continued Innovation in EVAR and TEVAR From Gore Mark Farber, MD (Chopin 3) *Supported by: Covidien* Advanced Techniques and the Treatment of Chronic Venous Insufficiency *Luncheon Symposia are not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.

12:00 pm – 5:00 pm	INCOMING FELLOWS PROGRAM– PART II (Chopin 4) **Incoming Fellows Program is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.*
12:00 pm – 12:20 pm	Lunch
12:20 pm – 12:30 pm	Welcome Back
12:30 pm – 1:15 pm	Imaging: How to Utilize the Proper Imaging Equipment for Diagnosis *Mark D. Fleming, MD*
1:15 pm – 3:00 pm	Introduction to Endovascular: The Basics *Nabeel Rana, MD*
3:00 pm – 3:15 pm	Break
3:15 pm – 4:15 pm	Aorta Basics *Gautam Shrikhande, MD*
4:15pm – 4:45 pm	Hands-On Deployment of Flex and Pro-Form
4:45 pm – 5:00 pm	Closing Remarks and Final Questions
5:00 pm	Program Conclusion and Issue of Cook Books
12:30 pm	FREE AFTERNOON/PAVILION TIME

6:00 pm – 9:00 pm	SCVS TOP GUN COMPETITION (Debussy) ***Supported by: Gore & Associates, Medtronic, Methodist DeBakey, and Philips*** **Top Gun Competition is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.*
6:00 pm – 9:00 pm	SCVS YOUNG VASCULAR SURGEONS DINNER SYMPOSIUM (Chopin 2) ***Supported by: Medtronic*** **Young Vascular Surgeons Program is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.*
6:00 pm	Reception
6:30 pm	Dinner
6:40 pm	"Working Within the System to Build an Aortic Center of Excellence" *Speaker: Apostolos Tassiopoulos, MD*
7:00 pm	"Moving Locations and Transition to a Senior Level Practice" *Speaker: Frank Arko, MD*
7:20 pm	"How to Balance Everything While Building Your Clinical Practice" *Speaker: Jennifer Ash, MD*
7:40 pm	Full Panel Q&A

Friday, March 16

6:45 am – 8:00 am	BREAKFAST SYMPOSIUM (Chopin 2) *Supported by: Endologix* Breakfast with the Experts: Challenging EVAR Cases **This breakfast symposia s not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.*
7:00 am – 8:00 am	CONTINENTAL BREAKFAST IN EXHIBIT HALL (Encore 1-3)
7:00 am – 5:00 pm	EXHIBITION HALL HOURS *(continuous beverage service)* (Encore 1-3)
7:00 am – 5:00 pm	REGISTRATION DESK (Promenade)
7:00 am – 5:00 pm	SPEAKER READY ROOM (Schubert)

8:15 am – 9:40 am SCIENTIFIC SESSION 5– AORTIC ANEURSYM (Encore 4-8)

Moderated by: Thomas C. Bower, MD
Alan B. Lumsden, MD

8:15 am – 8:28 am 16. Benchmark Renal Outcome Measures of Open Repair of Complex Abdominal Aortic Aneurysms for Comparison with Fenestrated Endografts

Alexandre A. Pereira, MD, Gustavo S. Oderich, MD, Tiziano Tallarita, MD, Manju Kalra, MBBS, Audra A. Duncan, MD, Peter Gloviczki, MD, Thanila A. Macedo, MD, Stephen Cha, MD, Thomas C. Bower, MD

Mayo Clinic, Rochester, MN

PURPOSE: Renal outcomes after open repair of complex abdominal aortic aneurysms (cAAA) have been poorly described. This study provides a detailed, long-term analysis of clinical and anatomical renal outcome measures in a cohort of patients treated by open repair of cAAAs.

METHODS: We retrospectively reviewed 461 patients treated by open repair of juxtarenal, suprarenal and type IV thoracoabdominal aneurysms (TAAA) between 2000 and 2010. Renal outcome measures included changes in laboratory and clinical markers (serum creatinine, estimated glomerular filtration rate [eGFR], renal replacement therapy [RRT]) and anatomical parameters (pole-pole kidney length, cortical-medullary thickness [CMT] and new diagnosis of renal infarct, renal artery stenosis or occlusion). Anatomical parameters were independently reviewed by two investigators in 200 patients who had paired CT studies obtained prior to and >12 months after the operation. Renal function deterioration (RFD) was defined by >30% decrease in eGFR. End-points were freedom from RFD, RRT, and changes in anatomical measurements.

RESULTS: There were 354 male and 107 female patients with mean age of 73 ± 8 years. Operative mortality was 1.3% (6/461). Early RFD occurred in 184 patients (40%), returning to baseline values within 3 months in all except for 16 patients (8%). Other 8 patients (4%) had additional RFD >3 months after the operation. RRT was required in 8 patients (4%), and was permanent in four (2%). After a median follow up of 44 months, freedom from RFD at 5-years was 87 ± 3%, 85 ± 5%, and 65 ± 9% for juxtarenal, suprarenal, and type IV TAAAs, respectively. Independent predictors of RFD were renal artery disease and increasing level of aneurysm complexity. Anatomical changes included a decrease in kidney length in 60 patients (30%, mean 2.5 mm), decrease in CMT in 20 (10%, mean 1 mm), and new diagnosis of renal infarct in 12 (6%) or renal artery stenosis/occlusions in 24 (12%).

CONCLUSIONS: RFD was common (40%) after open cAAA repair, but most patients (92%) returned to their baseline values within 3 months. The presence of renal artery disease and increasing level of aneurysm complexity correlated with higher rates of RFD. These renal outcome measures herein described provide a benchmark for future comparison with studies evaluating the use of fenestrated endografts.

8:28 am – 8:41 am **17. Staple-2: The Pivotal Study of the Aptus Endovascular AAA Repair System- 24-Months Results**

Manish Mehta, MD MPH[1], Ronald M. Fairman, MD[2], David H. Deaton, MD, FACS[3]

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OBJECTIVES: Aptus is the first endograft with EndoStaples for proximal fixation. A study evaluated standard EVAR safety and efficacy endpoints.

METHODS: A prospective single-arm IDE study was performed. The Aptus System includes a modular endograft and stapling system. MAEs were defined as death, MI, stroke, renal failure, respiratory failure or paralysis at 30d. Composite success was defined as delivery success and absence of Type I/III endoleak, migration >10 mm, rupture and open conversion at 1 yr.

RESULTS: 155 patients were enrolled. 147 and 121 pts completed 1 and 2yr f/u respectively. 153 (99%) were successfully implanted. 2 pts were acutely converted due to cannulation failure and misdeployment. 810 total staples were implanted (median 5/pt). Primary safety and efficacy endpoints were achieved in 98% (goals >87% and >80% respectively), though thrombus-related events (TRE) occurred in 34.8%, adjudicated by CEC as device related. Shear stress induced platelet aggregation in out-of-spec docking area caused TRE. TRE resulted in 52 interventions in 49 pts (31.6%) thru 2 yrs, with no related amputation or death. There was 1 Type I leak in a patient that did not meet proximal neck inclusion criteria and 1 Type III leak with an aortic cuff that was not stapled. There were no late Type I/III leaks. 2 cases of migration were seen at 2yr f/u, both due to neck elongation and no evidence of graft or staple dislocation, Type I leak or need for re-intervention. Type II leak at 2yrs was 12%. AAA size decreased in 72.5%, was stable in 22% and increased in 3% at 2yrs; all patients with increased AAA had Type II leaks. Through 2yr f/u there are no ruptures, AAA-related deaths, stent fracture, staple displacement, or late Type I/III endoleaks.

CONCLUSIONS: The STAPLE-2 trial met safety and efficacy endpoints. An abnormally high rate of TREs occurred due to a manufacturing discrepancy. Excluding TRE, results thru 2 yrs demonstrate device fixation and seal integrity, a high rate of sac regression and few re-interventions.

8:41 am - 8:54 am **18. Natural History of Saccular Aortic Aneurysms**

Eric K. Shang, MD, Derek P. Nathan, MD, William W. Boonn, MD, Ivan A. Lys-Dobradin, MD, Ronald M. Fairman, MD, Edward Y. Woo, MD, Grace J. Wang, MD, Benjamin M. Jackson, MD
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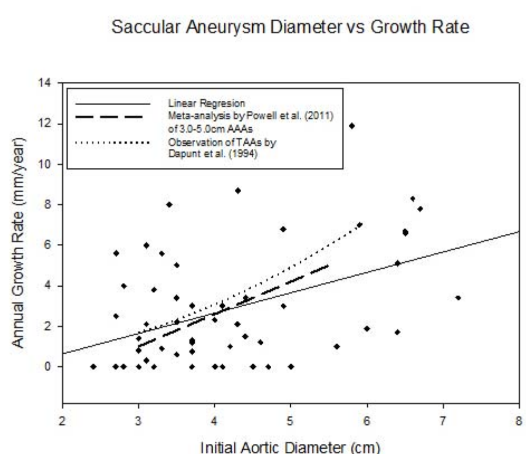
OBJECTIVES: Repair of saccular aortic aneurysms (SAA) is frequently recommended based on a perceived predisposition to rupture, despite little evidence that these aneurysms have a more malignant natural history than fusiform aortic aneurysms.

METHODS: The radiology database at a single university hospital was searched for the computed tomographic (CT) diagnosis of SAA between 2003 and 2011. Patient characteristics and clinical course, including the need for surgical intervention, were recorded. SAA evolution was assessed by follow-up CT, where available. Multivariate analysis was used to examine potential predictors of aneurysm growth rate.

RESULTS: 322 saccular aortic aneurysms were identified in 284 patients. There were 153 (59.0%) men and 131 women with a mean age of 73.5 ± 10.0 years. SAA were located in the ascending aorta in 2 (0.6%) cases, the aortic arch in 24 (7.4%), the descending thoracic aorta in 227 (70.5%), and the abdominal aorta in 79 (24.5%). 113 (40.0%) patients underwent surgical repair of SAA. 63 patients (54.3%) underwent TEVAR, 24 underwent EVAR (20.7%) and 29 (25.0%) required open surgery. The average maximum diameter, measured perpendicular to the aortic lumen centerline and including the aortic lumen diameter, of SAA was 5.0 ± 1.7 cm. In repaired aneurysms, the mean diameter was 5.4 ± 1.4 cm; in unrepaired aneurysms it was 4.4 ± 1.1 cm ($P < 0.001$). Eleven patients (3.9%) had ruptured SAA on initial scan. Of the initial 284 patients,



50 patients (with 54 SAA) had CT follow-up after at least 3 months (mean 23.2 ± 19.0 months). Aneurysms grew on average 2.8 ± 2.9 mm/year. Aneurysm growth was only weakly related to initial aortic diameter ($R^2 = 0.19$ by linear regression, $P = 0.09$ by multivariate regression). Decreased calcium burden ($P = 0.03$) and increased patient age ($P = 0.05$) predicted increased aneurysm growth.

CONCLUSIONS: SAA were not found to have a markedly malignant natural history. Close clinical follow up in the individual patient and further clinical research are necessary to determine the optimal management of SAA.

8:54 am – 9:34 am **MINI PRESENTATIONS**

MP26. Surgeon-Modified Fenestrated-Branched Stent-Grafts to Treat Complex Aortic Emergencies in High-Risk Patients

Joseph J. Ricotta II, MD, MS, Nikolaos Tsilimparis, MD, James Reeves, MD, Anand Dayama, MD, Luke Brewster, MD, PhD, Ravi Rajani, MD, Thomas Dodson, MD

Emory University School of Medicine, Atlanta, GA

BACKGROUND: Fenestrated-Branched stent-grafts have been developed as an endovascular alternative for the treatment of complex aortic aneurysms. However, it can take as much as 6–12 weeks to manufacture these devices, and therefore, they cannot be used to treat aortic emergencies. We reviewed our experience with surgeon-modified fenestrated-branched stent-grafts (sm-FBSG) in high-risk patients who presented emergently with ruptured or symptomatic complex aortic aneurysms.

METHODS: Retrospective review of all patients treated with sm-FBSG at our institution. Patients presenting with acute symptoms or emergent indication for repair were analyzed.

RESULTS: Thirteen high-risk patients (8 ASA class IV and 5 ASA class III) (10 male, mean age 71 years) presented with symptomatic (n = 5) or ruptured (n = 8) aortic aneurysms with an average size of 8 cm (range 5–12 cm). Twelve patients (92%) had prior aortic surgery or a hostile abdomen, 77% had heart failure with an ejection fraction of <35%, and 85% had severe pulmonary dysfunction. Four aneurysms were para-renal and 9 were thoracoabdominal. The average number of visceral vessels treated per patient was 3 (range 2–4) with 37 total branches performed. Endografts were successfully implanted in all patients. There were no cases of paraplegia, no intra-operative deaths, and one death occurred within 30 days (7%). Re-intervention was necessary in two cases; one for a type 3 endoleak and another for a retroperitoneal hematoma. Morbidity included 1 myocardial infarction, 2 patients with transient respiratory failure, and two with transient renal insufficiency not requiring dialysis. Mean postoperative stay in ICU was 3 days, and in-hospital 9 days. At a mean follow-up of 5 months (range 0–12), 3 patients died of non-aneurysm related causes. Branch vessel patency was 100%, and no late re-interventions were necessary. No type I or III endoleaks occurred, and one type II endoleak is under observation.

CONCLUSION: Sm-FBSG may play an important role in the treatment of select patients with symptomatic or ruptured complex aortic aneurysms that are prohibitive risks for open surgery and in whom endovascular repair cannot be delayed to allow implantation of a custom made commercial device. Until an "off the shelf" fenestrated-branched device is created that does not require a prolonged waiting period, this may be the best option to treat patients with symptomatic or ruptured complex aneurysms that are at excessively high surgical risk.

MP27. Initial Pilot Study Outcomes of the Ventana Fenestrated Stent Graft System for Endovascular Repair of Juxtarenal and Pararenal Aortic Aneurysms

Daniel Clair, MD[1], Andrew Holden, MD[2], Andrew Hill, MD[2], Renato Mertens, MD[3], Leopoldo Marine, MD[4]

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OBJECTIVES: Customized endovascular stent grafts have been investigated as an alternative to open surgery for repair of more complex juxtarenal aortic aneurysms. The substantial time required to design and manufacture these devices has led to the desire for a more standardized endovascular system. The Ventana stent graft system was designed as a potential off-the-shelf endografting option with the intent to fit the majority of juxtarenal or pararenal aneurysm morphologies. It includes the anatomically-fixed bifurcated stent graft, a proximal extension with a fenestrated, oversized mid-section and proximal scallop to accommodate the renal arteries, superior mesenteric artery (SMA) and celiac axis, and covered renal stent grafts. We report the initial Pilot Study results to assess the initial safety and feasibility of this potential "off-the-shelf" system approach.

METHODS: Following Ethics Committee approvals at two centers, consenting patients were evaluated for eligibility. Patients with aneurysms abutting or including the renal artery orifices who were not candidates for standard infrarenal endograft placement due to proximal aortic neck morphology were further assessed for anatomic suitability, including: stable infra-SMA aortic neck ≥15 mm; renal artery orifices within 35 mm from SMA origin and within 30 mm of each other axially; absence of severe renal occlusive disease (>70% stenosis); and adequate distal anatomy for device placement.

RESULTS: Among 15 patients with juxtarenal or pararenal aneurysms having mean age of 77 years (87% male), mean vascular measurements include sac diameter 5.9 cm; infrarenal neck length 6.9 mm; infra-SMA neck length 25 mm; and renal artery spacing 6.9 mm axially and 147° radially (clockface). All devices were successfully implanted, and all renal and visceral arteries were preserved. Mean procedure time was 108 minutes with a mean fluoroscopy time of 55 minutes utilizing 254 cc of contrast. Five patients received blood products. Mean time to hospital discharge is 3.3 days. Among all patients reaching one month follow-up and three patients reaching six month follow-up, no Type I/III endoleak, migration, renal artery loss/damage, or renal infarcts is observed. One late non-aneurysm related death occurred secondary to accidental fall. One secondary procedure for limb kinking/occlusion has been performed.

CONCLUSIONS: Initial Pilot Study experience with the Ventana fenestrated stent graft system for juxtarenal and pararenal aneurysms is feasible and safe. More extensive evaluation to assess efficacy over the mid and long-term is warranted.

MP28. Efficacy of Translumbar Glue Embolization for Type II Endoleaks in Patients with Growing Aneurysms After EVAR

Michael Dudkiewicz, MD, Caron Rockman, MD, Frank Veith, MD, Mark Adelman, MD, Thomas Maldonado, MD, Neal Cayne, MD

NYU Langone School of Medicine, New York, NY

OBJECTIVE: The purpose of this study is to evaluate the effectiveness of translumbar glue embolization (GE) of type II endoleaks in patients with growing aneurysms after EVAR.

METHODS: Thirteen patients (mean age 78 ± 7.1 years;77% male) with documented type II endoleaks on computed tomography (CT) scan and growing aneurysms after EVAR were retrospectively identified. All patients had post-EVAR growth ≥5 mm. The patients underwent attempted translumbar angiogram (TLA) and GE of the type II endoleak with n-butyl cyanocrylate glue (nBCA). Co-morbidities of the patient cohort included hypertension (93%), diabetes (31%), hyperlipidemia (62%), coronary artery disease (69%), and renal failure (15%). Average follow-up after embolization was 21 ± 16 months (range 4–66 months).

RESULTS: A type II endoleak nidus with outflow vessels was identified in 9/13 (69%) patients and TLA. All nine were successfully embolized with nBCA (group 1). In 4/13 (31%) patients no clear endoleak nidus was identified on TLA, and nBCA glue was blindly injected into the aneurysm sac (group 2). In 9/9 (100%) patients in group 1, aneurysm sac size stabilized or shrunk (7.1 ± 1.2 cm to 6.5 ± 1.4 cm) over a mean time period of 16 ± 9 months. In 2/4 (50%) of the group 2 patients, the aneurysm sac continued to grow despite blind GE, and open ligation of back bleeding vessels was performed. The remaining 2 patients in group 2 stabilized aneurysm growth over 19 ± 7 months. There was no evidence of spinal ischemia, colon ischemia, or hemorrhage from GE in either group.

CONCLUSIONS: TLA and GE of a type II endoleak nidus is safe and can stabilize growing AAAs after EVAR. Blind sac GE of a type 2 endoleak without identification of an endoleak nidus may not stabilize growing AAAs after EVAR. Patients with continued AAA growth after TLA and GE may be successfully treated with open ligation of the back bleeding vessels.

MP29. Do Patent Aortic Side Branches Affect Aneurysm Sac Growth?

David J. Dexter, MD, Caron Rockman, MD, Mark A. Adelman, MD, Firas Mussa, MD, Neal Cayne, MD, Todd Berland, MD, Frank Veith, MD, Thomas Maldonado, MD

New York University, New York, NY

OBJECTIVES: Endoleak and sac growth remain unpredictable occurrences following EVAR. This study was designed to evaluate the impact of patent Inferior Mesenteric Artery and Lumbar Arteries on aneurysm sac behavior after EVAR.

METHODS: Pre-and postoperative CT scans from 133 abdominal aortic aneurysms treated with EVAR were analyzed. The status of all Lumbar Arteries and the IMA were evaluated for patency and size. Sac change was defined as a >2.5 mm difference in diameter when compared to preoperative measurements.

RESULTS: The number of patent lumbars was highly predictive of endoleak (1–3 = 6.7%, 4–6 = 35.6%, 7–9 = 57.8%, $p < .05$), as was the presence of a patent IMA (45.4% vs. 3.1%, $p < .05$). The size of patent lumbars was not predictive of endoleak. Patients with at least one patent lumbar artery >3 mm were more likely to experience sac diameter growth postoperatively (28.4% vs. 11.4%, $p < .05$). Similarly, patients with a patent IMA on preoperative CT were more likely to experience sac growth, although this did not reach statistical significance (26% vs. 11%, $p = .08$). The more patent lumbar arteries preoperatively, the more likely a patient experienced sac growth postoperatively (1–3 = 1%, 4–9 = 21%, $p = .06$). Multivariate analysis showed that the number of patent lumbar arteries was an independent predictor of sac growth postoperatively.

CONCLUSIONS: The presence of patent lumbars, and patent IMA on preoperative imaging appears to be associated with a post-operative endoleak, and an increase in sac diameter. Aneurysms with fewer patent lumbar arteries, smaller arteries and occluded IMA are less likely to grow and may require less vigilant postoperative imaging. Similarly, preoperative patients with a patent IMA, patent lumbar artery >3 mm in diameter, or at least 4 patent lumbar arteries, can be considered for preoperative embolization of these vessels, as these patients have a high chance of experiencing endoleak and sac growth which will may require intervention.

MP30. Aneurysmal Degeneration and Changes in Aortic Diameter After Open Repair of Complex Abdominal Aortic Aneurysms

Tiziano Tallarita, MD, Gustavo S. Oderich, MD, Alexandre Pereira, MD, Thanila A. Macedo, MD, Manju Kalra, MBBS, Audra A. Duncan, MD, Peter Gloviczki, MD, Stephen Cha, MD, Thomas C. Bower, MD

Mayo Clinic, Rochester, MN

PURPOSE: Rates of secondary aneurysmal degeneration and changes in aortic diameter have not been described in patients undergoing open repair of complex abdominal aortic aneurysms (cAAAs), yet these events may affect the choice and extent of repair. This study analyzed anatomical measurements of the aorta in a cohort of patients treated by open repair of cAAAs.

METHODS: We retrospectively reviewed the clinical data and digital imaging studies of 201 patients treated by open repair of juxtarenal, suprarenal and type IV thoracoabdominal aortic aneurysms (2000–2010). All patients had clinical follow up and paired CT imaging studies obtained prior to and >12 months after the operation. Anatomical measurements included centerline of flow analysis to determine the location of normal aorta, defined by parallel aortic wall without aneurysm involvement. Axial imaging of the descending thoracic aorta and visceral aortic segments was used to determine changes in aortic diameter and development of new aneurysms. Serial anatomical measurements were analyzed taking into consideration weather the proximal graft anastomosis was placed within normal or abnormal aorta.

RESULTS: There were 157 male and 44 female patients with mean age of 73 ± 8 years. Median follow up was 39 months. The proximal graft anastomosis was placed in normal aorta in 150 patients and within abnormal segments in 51. A >3 mm increase in aortic diameter at any location was noted in 116 patients (57%), averaging 5.5 ± 3 mm and most frequently being noted at the supra-celiac level. Changes in aortic diameter at any location and adjacent to the anastomosis were noted in 80 (53%) and 24 (16%) patients who had anastomosis in normal aorta (mean 5.9 ± 2 mm), compared to 36 (71%) and 12 (24%) who had anastomosis in abnormal segments (mean 5.6 ± 3 mm). A new aortic aneurysm was diagnosed in 16 patients (8%), including 6/150 (4%) who had anastomosis in normal and 10/51 (20%) who had anastomosis in abnormal segments ($P < 0.05$). Re-intervention for aortic aneurysm was needed in 6 patients (3%), including 2 (1%) who had para-anastomotic aneurysms and 4 (2%) who had descending thoracic aortic aneurysms.

CONCLUSION: Changes in aortic diameter are common (57%) after open repair of cAAAs. New aortic aneurysms were more common (20%) if the anastomosis was placed in abnormal segments, yet re-interventions for para-anatomotic aneurysms were needed in only 1% of patients.

MP31. The Management of Endograft Infections Following Endovascular Thoracic and Abdominal Aortic Aneurysm Repair

Erin H. Murphy, MD, Benjamin J. Herdrich, MD, Benjamin M. Jackson, MD, Grace J. Wang, MD, Alberto Pochettino, MD, Wilson Y. Szeto, MD, Joseph E. Bavaria, MD, William Moser, RN, Ronald M. Fairman, MD, Edward Y. Woo, MD

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OBJECTIVE: The management of infected aortic endografts is a challenging endeavor. Treatment of this problem has not been well defined as it is fairly uncommon. However, the incidence is increasing. This study examines the results of treatment at a single center for this morbid process.

METHODS: A retrospective review was performed of patients treated for infected abdominal or thoracic endograft infection following previous EVAR or TEVAR. Data was reviewed for patient demographics, details of initial endograft implantation, presentation and timeline of subsequent infection, management of infected grafts, and outcomes during follow-up.

RESULTS: Between 2000–2006, 2 patients were treated for infected endografts. However, from 2006–2011, 14 patients underwent treatment. Sixteen patients in total were treated (thoracic:4, abdominal:12). Mean time to presentation with infection from endograft implant was 208 days, with over half (56%) presenting within the first 3 months. Tissue and/or blood cultures were positive in 12/16 growing E.Coli (n = 1), Group A streptococcus (n = 3), Methicillin-resistent-Staph Aureus (n = 2) or polymicrobial infections (n = 6). The other 4 patients were culture negative with CT evidence of gas surrounding the endograft and clinical sepsis. Ten patients (abdominal:8, thoracic:2) were treated with endograft explantation. The remaining six patients lacked CT evidence of advanced infection (n = 3) or were considered too high-risk for explant (N = 3) and were therefore managed conservatively without explant (abdominal:4, thoracic:2). Mortality was 37.5% (n = 6) and was higher for thoracic stent infections (n = 3, 75%) ($p < 0.001$) and patients presenting with aorto-enteric or aorto-bronchial fistulas (n = 6/9, 67%) ($p < 0.001$). Survival was 100% (n = 7) in patients without evidence of aorto-enteric or aorto-bronchial fistula. Overall survival was similar between those managed surgically (n = 4,40%) or medically (n = 2,33%) (p = 0.81). Mean follow-up of survivors was 27.1 months. All survivors remain on long-term suppressive antibiotics. Two additional patients died of unrelated causes during follow-up.

CONCLUSION: Endograft infection is a rare but increasing complication after EVAR/TEVAR which carries significant associated morbidity and mortality. Aorto-enteric or aorto-bronchial fistulas are a common presentation which portends significantly worse prognoses. Surgical excision has been the standard of care but conservative management with IV antibiotics may be of benefit in certain patients.

MP32. Total Percutaneous Aortic Aneurysm Repair: Predicting the Learning Curve and Its Failures

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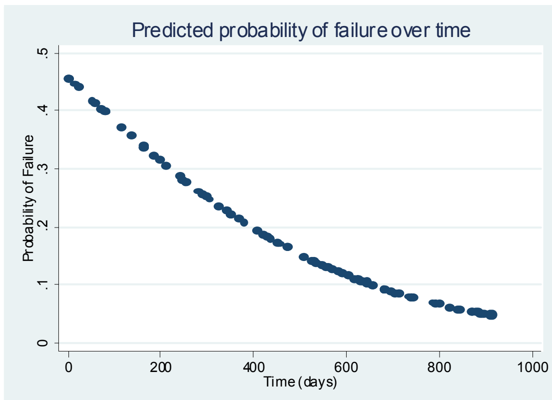
[1]Baylor College of Medicine, Houston, TX,
[2]University of Michigan, Ann Arbor, MI

INTRODUCTION: Percutaneous endovascular aneurysm repair (PEVAR) has been shown to be feasible, however; technical success is variable, reported between 46.2%–100%. The objective of this study was to quantify the learning curve of the PEVAR closure technique and identify predictors of closure failure.

METHODS: We recorded patient and procedure-related characteristics in 99 consecutive patients who underwent PEVAR over a 30-month period in a single academic institution. A suture-mediated closure device (Proglide or Prostar XL) was used. Forward stepwise logistic regression was used to investigate associations between the failure of the closure technique and a number of patient and operative characteristics. To assure objective assessment of the learning curve, a time-dependent covariate measuring time in calendar quarters since the beginning of the PEVAR program was introduced in the model. Poisson regression was used to model the trend of observed failure events of the percutaneous technique over time.

RESULTS: Overall PEVAR technical success was 82%. Type of closure device ($p < 0.35$), patient's body mass index ($p < 0.86$), use of a hydrophilic sheath ($p < 0.69$), type of anesthesia ($p < 0.95$), femoral artery diameter ($p < 0.09$), femoral artery calcification ($p < 0.56$), and sheath size as measured in Fr ($p < 0.17$) did not correlate with closure failure rates. There was a strong trend for decreasing number of failure events over time ($p < 0.007$). The average decrease in the odds of technical failure was 24% per calendar quarter. The predicted probability of closure failure decreased from 45% per patient at the time of the initiation of our PEVAR program to 5% per patient at the end of the 30-month period. The learning curve appeared to be steepest during the first 18 months (Figure 1). There were 2 postoperative access-related complications that required surgical repair. Need for surgical cutdown in the event of closure failure prolonged the operative time by a mean of 45 minutes ($p < 0.001$). No groin infections were seen in the percutaneous group or the failed group.

CONCLUSION: Technical failure can be reduced as the surgeon gains experience with the suture-mediated closure device utilized during PEVAR. Previous experience with the Proglide device does not seem to influence the learning curve.


Predicted probability of failure over time
Probability of Failure
0
.1
.2
.3
.4
.5
0
200
400
600
800
1000
Time (days)

MP33. Endovascular Aortoiliac Aneurysm Repair: Comparing Outcomes with Vascular Plugs vs. Coil Embolization of the Internal Iliac Artery

Travis P. Webb, MD, David P. Franklin, MD, John L. Gray, MD, Robert P. Garvin, MD, Jennifer A. Sartorius, MS, James R. Elmore, MD

Geisinger Medical Center, Danville, PA

OBJECTIVES: AAA often involve iliac arteries and aortic stent-graft limbs may need to cover the internal iliac arteries (IIA). Retrograde flow from the IIA can lead to progression of the aneurysmal disease from a type II endoleak. Embolization of the IIA prior to stent graft repair, by coils or Amplatzer vascular plugs (AVP), have been used to prevent this comlication. Both coil embolization (CE) and AVP embolization (AVPE) have been shown to be successful techniques, but there is less data regarding AVP. We analyzed our single insitution outcomes and complications, of CE and AVPE. This data represents a larger series of IIA embolization prior to AAA endograft placement than previously reported.

METHODS: A retrospective chart review using the electronic health record was undertaken reviewing all patients that had undergone IIA embolization prior to AAA stent graft repair. A total population of 55 patients: 27 patients underwent CE and 28 patients underwent AVPE. Patient characteristics and comorbidities were documented. Patient outcomes **and complications that were recorded are discussed in the results section.**

RESULTS: There were no major complications (death, MI, stroke) within 6 months post procedure. Buttock claudication at one month was 14.8% for CE and 28.6% for AVPE cases (p = 0.078). Buttock claudication persisted in 7.4% of CE and 17.9% for AVPE cases (p = 0.054) at one year. Unintended coil embolization occurred in 2 CE cases. There was one endoleak in each group on the 6 month CT scan that was unrelated to the site of IIA embolization (endoleak rate, P = NS).

Among the cases performed in a staged fashion, separate from the AAA procedure, significantly lower fluoroscopy time (CE: 28.9 min vs. AVPE 15.6 min, p = 0.014), procedure time (CE: 99.3 min vs. AVPE 67.9, p = 0.035) and radiation dosage (CE: 919Gycm^2 vs. AVPE: 367 Gycm^2, p = 0.017) were observed in the AVP cases.

CONCLUSIONS: Our study found that CE and AVPE provide effective IIA embolization with low complication rates. Buttock claudication did not occur in the majority of patients, and completely resolved in 41% of the patients by one year. AVPE took significantly less time, therefore decreasing fluoroscopy time and radiation dosage. Given these results, we feel that AVP should be used as the preferred method for IIA embolization prior to AAA repair, if allowed by patient anatomy.

9:40 am – 10:15 am	COFFEE BREAK IN EXHIBIT HALL & ePOSTER VIEWING (Encore 1-3)
10:15 am – 11:15 am	INTERNATIONAL PANEL (Encore 4-8) *"Robotic Endo-Surgery; Fact or Fiction?"* *Nicholas J.W. Cheshire, MD* *St. Mary Hospital, London, United Kingdom* *"CAS Offers Comparable Results with CEA with Appropriate Operator Training and Patients Selection"* *Piergiorgio Cao, MD* *University of Perugia, Italy* *"Biomarkers Reflect Plaque Instability: Another Myth or an Actual Fact?"* *Christos Liapis, MD* *Athens University Medical School, Athens, Greece*
11:15 am – 11:20 am	INTRODUCTION OF THE PRESIDENT (Encore 4-8)
11:20 am – 12:20 am	PRESIDENTIAL ADDRESS "The Best of Times, The Worst of Times" ***Michel S. Makaroun, MD*** *University of Pittsburg Medical Center, Pittsburgh, PA*
12:30 pm – 1:30 pm	MEMBERS' BUSINESS LUNCHEON (Chopin 2-3) **The Member's Business Luncheon is not part of the SCVS scientific program and are not eligible for CME credit through the SCVS joint sponsor.*
12:30 pm – 1:30 pm	LUNCH WITH INDUSTRY (Encore 1-3)

1:30 pm – 2:15 pm KARMODY POSTER COMPETITION–Round 1 (Encore 4-8)

Moderated by: Thomas C. Bower, MD
Mark G. Davies, MD

TOPIC: ANEURYSM
Moderator: George H. Meier, MD

P1. Do Shorter Hospital Stays Increase the Risk of Readmission and Mortality in Patients Undergoing High-Risk Vascular Surgery?

Benjamin S. Brooke, MD, PhD[1], Philip P. Goodney, MD[1], Mark F. Fillinger, MD[1], Richard J. Powell, MD[1], Lori L. Travis, MS[2], Lee Lucas, PhD[2], David C. Goodman, MD[3], Jack L. Cronenwett, MD[1], David H. Stone, MD[1]

[1]Dartmouth-Hitchcock Medical Center, Lebanon, NH, [2]Maine Medical Center, Portland, ME, [3]Dartmouth Institute for Health Policy and Clinical Practice, Lebanon, NH

OBJECTIVES: Health policy aimed at reducing length of stay (LOS) following vascular surgery has been broadly implemented to reduce costs. Many question, however, if early discharge may increase the risk of readmission or mortality, both important hospital quality metrics. To address this question, we examined the relationship between LOS and 30-day outcomes among patients undergoing a high-risk vascular surgery procedure, Thoracic Aortic Aneurysm (TAA) repair.

METHODS: Using Medicare claims 2000–2007, we identified all patients who underwent elective thoracic endovascular aneurysm repair (TEVAR) and open repair for non ruptured TAA. For each procedure, we examined the correlation between LOS and 30-day readmission and mortality rates. Predictors of readmission were evaluated using logistic regression models controlling for patient comorbidities, perioperative complications and discharge location.

RESULTS: Our sample included 13,155 patients, of which 10,803 (82%) underwent open TAA repair and 2,319 (18%) underwent TEVAR. Most patients were Caucasian (93%), male (56%) with a mean age of 74 years, and were discharged home (74%) following their procedures. Patients discharged home following TEVAR had lower mean LOS (5.2 days vs. 8.9 days; $P < 0.001$) and 30-day readmission rates (18% vs. 20%; $P < 0.05$) as compared to open TAA repair, although there was no difference in 30-day post-discharge mortality rates between procedures. Among patients who were discharged home, hospital LOS

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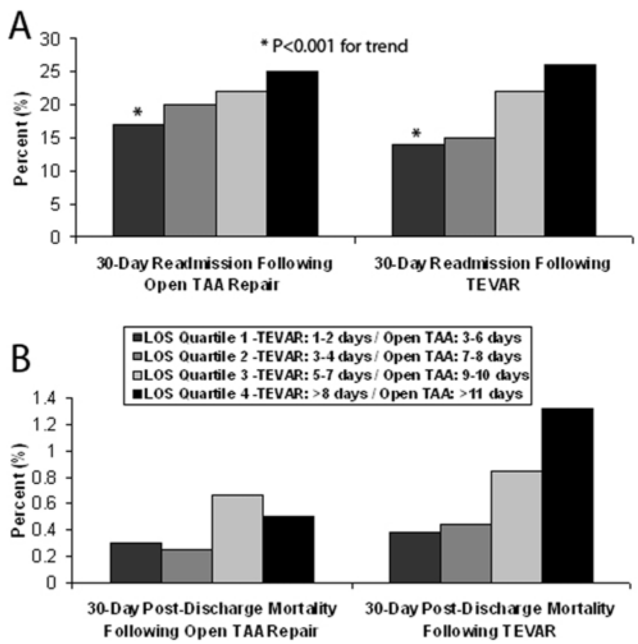
was directly related to 30-day readmission (Figure, Panel A) and 30-day post-discharge mortality (Figure, Panel B). In multivariable analysis, patients were more likely to be readmitted if they had a longer LOS (OR:1.15; 95% CI: 1.09–1.20; $P < 0.001$), higher Charlson comorbidity score (OR:1.08; $P < 0.001$), or any major post-operative complication (OR:1.10; $P < 0.05$).



CONCLUSIONS: Patients discharged home with short LOS (<3 days for TEVAR, <7 days for open TAA repair) following high-risk vascular surgery are the least likely to be readmitted and had the lowest rates of 30 day mortality. While indirect, these data suggest (1) health policy aimed at early discharge is safe, even in high-risk surgery, and (2) quality measures based on readmission need to consider patient-level characteristics.

P2. Developing Training Models for Advanced Endovascular Skills: Type II Endoleaks in Abdominal Aortic Aneurysms

Jean Bismuth, MD, Cassidy Duran, MD, Ponraj Chinnadurai, MD, Stephen Igo, Michael A. Donovan, Matthew S. Jackson, Alan B. Lumsden, MD

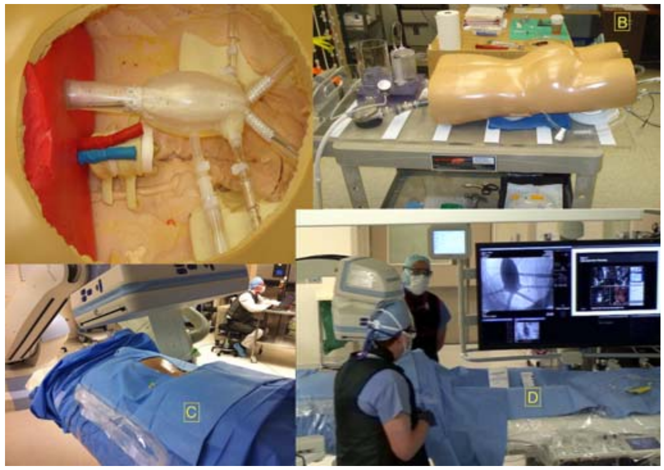
The Methodist Hospital/Debakey Heart & Vascular Center/Weill Cornell Medical College, Houston, TX

INTRODUCTION: Endovascular virtual reality simulators provide training in a wide array of endovascular skills, but are not able to provide comprehensive instruction for all vascular procedures. This is particularly the case in procedures that require advanced imaging techniques, tasks that are not strictly endovascular and those that involve new tools. One such skill is Type II endoleak embolization by translumbar approach. Type II embolization was rated by The Society for Vascular Surgery members as one of the most desirable techniques to learn.

METHODS: We developed a simulator-based educational program, which provided instruction on relevant anatomy and pathology, demonstrated the steps to the procedure including the imaging (3D angioCT reconstruction with iGuide), as well as define and demonstrate pitfalls. The simulator was made from multiple materials including a procedure specific silicone aortic model, a mannequin, and pulsatile flow pump (Image: A) silicone model B) Entire model prone C) Translumbar access with sheath in place D) AngioCT in OR). An aortic endograft was placed to exclude the aneurysm and the silicone aortic model provided an endoleak. Translumbar access was demonstrated, with needle entry into the aneurysm sac. Participants were asked to complete a questionnaire on their experience with the course and model, rating on a standard Likert 5 point scale.

RESULTS: 21 participants completed the questionnaire and rated the course. Average scores gave faculty knowledge 4.7, teaching strategy 4.6, and teaching effectiveness 4.4. Based on the participants' evaluations and the ability to demonstrate all steps of the procedure we were able establish face validity of the model.

CONCLUSIONS: This demonstrates the ability to create models to teach complex endovascular skills. Although this provides a good model and curriculum it does not allow for performance assessment, as individual attendees were not given the opportunity to test their skills. The next step in this process is to evaluate individual performance of experienced interventionalists to establish construct and content validity.


B
C
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P3. The Effect of Regionalization of AAA Repair to High Volume Hospitals: Financial and Outcomes Implications

Nicholas H. Osborne, MD, MS[1], *Justin B. Dimick, MD, MPH*[1], *Gilbert R. Upchurch, Jr., MD*[2]

[1]University of Michigan, Ann Arbor, MI
[2]University of Virginia, Charlottesville, VA

OBJECTIVE: Regionalization has been proposed as a potential strategy to improve the outcomes of patients undergoing abdominal aortic aneurysm (AAA) repair. We sought to examine the implications of regionalization of AAA repair to highest volume hospitals using Medicare data between 1997 and 2007.

METHODS: All Medicare patients undergoing non-ruptured AAA repair between 1997 and 2007 were identified by ICD9 (n = 294,812). Hospitals were stratified by volume of aortic aneurysm repair and total Medicare payments into quintiles. Differences in mortality and Medicare payments (including DRG payments, outlier and readmission payments) were compared using bivariate and multivariate statistics.

RESULTS: Over the last decade, there has been relatively little redistribution of cases to highest volume hospitals. Previously documented trends confirmed that patients undergoing surgery in highest volume hospitals are 29% more likely to undergo an endovascular repair (RR 1.29, 95% CI 1.27–1.31). Accounting for differences in patient factors and endovascular repair, risk-adjusted mortality rates varied from 4.1% in the lowest volume hospitals to 3.1% in the highest volume hospitals (RR 1.27, 95% CI 1.08–1.49). When Medicare payments were examined across quintiles of hospital volume, the findings were surprising. Using 2005–2006 as a benchmark, median Medicare payments were slightly higher in the highest volume hospitals ($24, 078 in lowest volume vs. $25,177 in highest volume, $p < 0.001$). These differences in payments across hospital volume quintiles were not due to differences in outlier payments (complications) or readmission rates, but were related to higher DRG payments to the highest volume hospitals. Thus, moving aortic surgery for all patients in 2006 to only highest volume hospitals would result in an excess of 29 million Medicare dollars spent and save 130 lives per year. Interestingly, lowest Medicare-payment facilities have a lower mortality than highest payment facilities (2.8% vs. 4.8%, RR 0.59, $p < 0.001$). These differences in mortality were not explained by differences in endovascular repair rates, patient co-morbidities, or hospital volume, but occurred because low Medicare-payment facilities have lower complications (lower readmission and outlier payments).

CONCLUSIONS: It appears that regionalization of AAA repair to highest volume hospitals would reduce mortality rates; however, this may increase healthcare expenditures by as much as 29 million dollars per year. Continued focus on preventing complications, rather than regionalization, appears to be a better strategy for reducing overall Medicare expenditures.

P4. Aortic Mural Thrombus in the Normal or Minimally Atherosclerotic Aorta: A Systematic Review and Meta-Analysis of the Available Literature

Ziad Fayad, MD, Elie Semaan, MD, Marcus D'Ayala, MD

New York Methodist Hospital, Brooklyn, NY

OBJECTIVES: Aortic mural thrombus in a nonaneurysmal, minimally atherosclerotic or normal aorta is a rare entity and an uncommon cause of arterial embolization. Both anticoagulation and aortic surgery are commonly used as primary treatment, but there is no consensus or clinical guidelines to outline the best management strategy. This systematic review compares the reported outcomes of these two management strategies.

METHODS: An extensive search of the literature was conducted and all relevant publications reviewed, with individual patient data pooled in this meta-analysis. Outcome variables included persistence or recurrence of aortic thrombus, recurrence of embolization, mortality, and a composite endpoint of stroke, limb loss, and bowel resection. Chi-square test and Logistic regression analysis were used to compare groups and to find any predictors of adverse outcome.

RESULTS: A total of 200 patients from 98 articles were enrolled (Anticoagulation N = 112, Surgery N = 88). Smoking was more prevalent in the surgery group, but no other differences in demographics, comorbidities, or mode of presentation was seen between groups. The surgery group was more likely to have thrombus located in the arch, but there were no differences in mobility or size of thrombus between groups. Aortic thrombus persisted or recurred in 26.4% of the anticoagulation group and in 5.7% of the surgery group ($P < .001$). Recurrence of arterial embolization was seen in 25.7% of the anticoagulation group and 9.1% of the surgery group ($P = .003$). Mortality rates were 6.2% and 5.7% for the two groups, respectively ($P = .879$). Complications occurred in 27% of the anticoagulation group and 17% of the surgery group ($P = .07$), and major limb amputation rates were 9% and 2% for the two groups, respectively. ($P = .004$). Logistic regression analysis established thrombus location in the ascending aorta (OR 12.7 and 95% CI, 2.3 to 238.8) or arch (OR 18.3 and 95% CI, 2.6 to 376.7), mild atherosclerosis of the aorta (OR 2.5 and 95% CI, 1 to 6.4), and stroke presentation (OR 11.8 and 95% CI, 3.3 to 49.5) as important predictors of recurrence.

CONCLUSIONS: The results this meta-analysis seem to favor the surgical management of aortic mural thrombus in the normal or minimally diseased aorta. Anticoagulation as primary therapy is associated with a higher likelihood of recurrence and a higher incidence of limb loss.

P5. Delayed Abdominal Aortic Aneurysm Repair After Thoracic Aortic Aneurysm Surgery: What is the Risk of Paralysis?

Brant W. Ullery, MD, Grace J. Wang, MD, Edward Y. Woo, MD, Albert T. Cheung, MD, Michael L. McGarvey, MD, Jeffrey P. Carpenter, MD, Ronald M. Fairman, MD, Benjamin M. Jackson, MD

Hospital of the University of Pennsylvania, Philadelphia, PA

OBJECTIVE: To examine the results of open or endovascular abdominal aortic aneurysm (AAA) repair following prior open or endovascular thoracic aortic aneurysm (TAA) surgery.

METHODS: A retrospective review of a prospectively maintained database was performed in order to identify all patients who underwent open or endovascular AAA repair in a delayed fashion following prior open or endovascular TAA surgery at a single university hospital between 1999 and 2011. Patients requiring cardiopulmonary bypass for their abdominal aortic operation were excluded. Primary outcomes were mortality and spinal cord ischemia (SCI).

RESULTS: Thirteen patients were identified as having undergone AAA repair (open, n = 6; EVAR, n = 7) following prior TAA repair (open, n = 2; TEVAR, n = 11). Mean age at initial thoracic aortic operation was 68.9 ± 6.9 years, and 77% (n = 10) were male. Of the 11 patients who underwent TEVAR, 4 had extent C endovascular coverage (coverage of the entire descending thoracic aorta), and 4 patients had coverage of the left subclavian artery after prior left carotid-subclavian bypass. Three patients experienced transient delayed-onset SCI (paraplegia, n = 2; paraparesis, n = 1) following this initial thoracic aortic intervention; full recovery of neurologic deficits was evidenced in all three patients prior to discharge. The mean time interval between initial thoracic aortic surgery and subsequent AAA repair was 2.0 ± 1.8 years (range, 0.15–5.4 years). At the time of delayed AAA repair, 54% (n = 7) had prophylactic lumbar drainage and 46% (n = 6) had intraoperative somatosensory evoked potential monitoring. One patient who underwent EVAR had planned unilateral internal iliac artery coverage requiring coil embolization. Overall 30-day mortality was 0%. None of the patients demonstrated any neurologic deficits associated with SCI following their second aortic procedure. Kaplan-Meier survival at 1 year was 91% ± 9% with zero incidence of delayed SCI.

CONCLUSIONS: Delayed open or endovascular AAA repair following prior open or endovascular thoracic aortic surgery is technically feasible. This small series does not evidence any increased risk of perioperative mortality or SCI even in patients who had previously experienced transient SCI during prior thoracic aortic intervention. There is uncertain benefit to the routine use of prophylactic lumbar drainage in this unique patient cohort.

P6. Does ASA Classification Correlate with Outcomes Following Open and Endovascular Aortic Aneurysm Repairs?

Kuldeep Singh, MD, Danny Yakoub, MD, Jonathan Schor, MD, Charles Sticco, DO, Qinghua Pu, MD, Jonathan Deitch, MD

Staten Island University Hospital, Staten Island, NY

OBJECTIVES: Recently published reports have shown that the American Society of Anesthesiology (ASA) classification system has limited ability to act as clinical indicators and predict adverse events. We undertook this study to compare and evaluate the applicability of ASA to prognosticate post-operative morbidity and mortality following open and endovascular aneurysm repairs.

METHODS: We reviewed charts from January 1996 to September 2010 of all patients who underwent elective and urgent abdominal aneurysm procedures at SIUH were included for the study. Charts were reviewed, patient demographics, ASA classification and co-morbidities were recorded. Less than 30 days post operative mortality rates were analyzed along with postoperative complications.

RESULTS: A total 233 patients (146 EVAR and 77 open) were included in the study. All were preformed under general anesthesia. The average age was 74.7 years for EVAR group and 67.7 for open. Number of patients with ASA classes 1, 2, 3 and 4 were 0, 3, 86 and 50 respectively in the EVAR group and 0, 0, 33 and 44 in the open group. There was no significant difference noted in age or sex between the two groups. Comorbidities in the EVAR vs. the open group included cardiac history (53% vs. 62%) renal insufficiency (10% vs. 19%) COPD (29% vs. 22%). EBL was significantly lower in the EVAR group (0.8 liters vs. 1.8 liters). 30 day mortality for EVAR vs. open repair (0.007% vs. 20%). Postoperative complication rate was significantly lower in EVAR group compared to the open group (21% vs. 59%); renal insufficiency (8.2% vs. 21%), respiratory failure (0.5% vs. 24.6%), and cardiac complications (2% vs. 25%). In the open group mortality and morbidity strongly correlated to the ASA class with higher mortality in ASA class 4 than class 3 patients (34% vs. 9%, $p = 0.006$). With regards morbidity, in both the EVAR and the open groups, morbidity significantly increased with higher ASA class (EVAR group: 31% for ASA 3 and 56% for ASA 4, $p < 0.05$) and (open group: 33% for ASA 3 and 100% for ASA 4, $p < 0.05$).

CONCLUSIONS: ASA scores were predicative of outcomes in patients undergoing both open AAA repair and EVAR especially in patients with ASA 3 and more. Better perioperative risk assessment tool is needed for patients undergoing both open and EVAR.

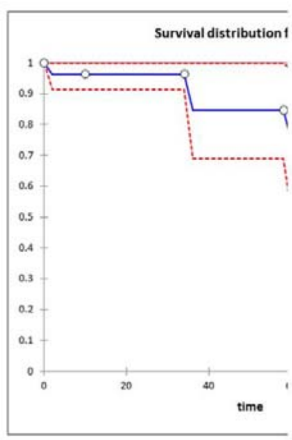
P7. Long-Term Outcome of Femoralfemoral Bypass Grafting with Aortouniliac Endovascular Aneurysm Repair

David O'Connor, MD, Ageliki Vouyouka, MD, Scott Sundick, MD, Daniel Han, MD, Varinder Phangureh, MD, Marvin Weaver, MD, Sharif Ellozy, MD, Michael Marin, MD, Peter Faries, MD

Mount Sinai Medical Center, New York, NY

OBJECTIVES: Femoralfemoral bypass grafting in conjunction with aortouniliac endovascular aneurysm repair (AUI) is required for maintenance of contralateral limb perfusion. Acceptable patency rates have been established for occlusive disease, however few studies have examined outcomes after aortouniliac aneurysm repair.

METHODS: All patients undergoing aortouniliac endovascular aneurysm repair at a single institution from 2001 to 2005 were identified from a prospectively maintained database and retrospectively reviewed.



RESULTS: Over a 4 year period, 64 patients underwent AUI with an aortouniliac endovascular stent graft. Cumulative primary patency by life-table analysis at 1, 3, and 5 years was 96.5, 96, and 85% respectively. The mean follow-up 28.8 months (range 1–110 months). Two grafts were removed for infectious complications. There were no associated major amputations.

CONCLUSIONS: Acceptable primary patency results can be achieved with femoralfemoral bypass grafts with endovascular aortouniliac aneurysm repair over the intermediate and long-term periods in patients who require AUI for aneurysm repair.

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TOPIC: CAROTID
Moderator: Fred A. Weaver, MD

P8. Early Outcomes of Blunt Thoracic Aortic Injury Over an 18-Year period: A Prospective Level 1 Trauma Center Experience

Rafael D. Malgor, MD, Thomas V. Bilfinger, MD, Jane McCormack, RN, Marc J. Shapiro, MD, Apostolos K. Tassiopoulos, MD

Stony Brook Medical Center, Stony Brook, NY

OBJECTIVES: To review the natural history of Blunt Aortic Thoracic Injury (BTAI) and its management over an 18-year period.

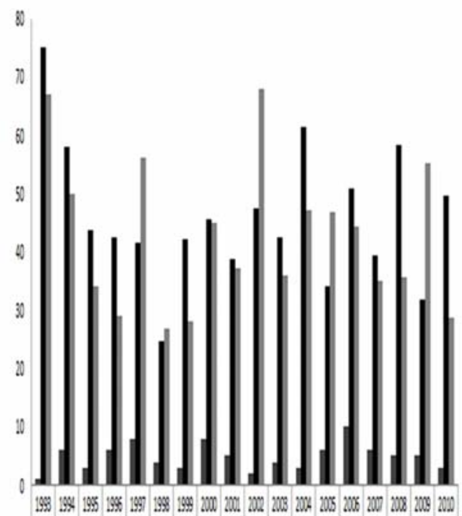
METHODS: Prospective data of 88 (0.3%) patients with a confirmed diagnosis of BTAI among 26,020 trauma patients from January 1993 to December 2010 were reviewed. Excluded were patients with penetrating aortic injury or those who were either younger than 18 or older than 80. Outcomes of interest were demographics, use of safety devices at the time of injury, type of repair (conservative, open repair (OR) or endovascular treatment (ET)) and the impact of concomitant injuries using the Injury Severity Score (ISS).

RESULTS: Sixty-three (72%) patients with BTAI were male and the median age was 38 ± 17. The most prevalent mechanism of trauma was motor vehicle collision in 65 (74%) patients, followed by motorcycle crash (13, 15%). Airbag deployment, use of seatbelt or both were found in 48% and helmet use in 69%. Sixteen patients with elevated ISS were pronounced dead in the emergency department after initial assessment (Mean ISS, 69 dead vs 39 alive; P < .0001). Graph 1 depicts a temporal distribution of cases coupled to age and ISS, and comparative data on type of repair are found in Table 1. The overall mortality of hospitalized patients with BTAI was 32%. Initial ISS was higher in the hospital mortalities compared to that of discharged patients (47 ± 19 in patients that died, versus 35 ± 14 in those alive; P < .001). Of those discharged from the hospital, 33 (67%) went to a rehabilitation center or were transferred to another hospital, and 16 (33%) went home.

Table 1: Management of BTAI Over an 18-Year Period

	Conservative N = 15	Endovascular Treatment N = 11	Open Repair N = 46	P-value
Age, median	38 ± 18	35 ± 16	38 ± 17	NS
Male	8 (53%)	8 (73%)	36 (78%)	NS
ISS, mean	43 ± 16	37 ± 16	38 ± 16	NS
Accident to ER, min	54	52	55	NS
ER to intervention, min	N/A	370	331	NS
Hospital length of stay, mean	113 ± 53	20 ± 9	36 ± 23	<.001
Mortality, %	11 (73%)	0 (0%)	12 (26%)	<.001

Graph 1. Temporal distribution of BTAI according to age and ISS



	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cases, n	1	6	3	6	8	4	3	8	5	2	4	3	6	10	6	5	5	3
ISS	75	58	43.7	42.5	41.4	24.8	42	45.5	38.8	47.5	42.5	61.3	34	50.7	39.2	58.4	31.8	49.7
Age, y	67	50	34	29	56	27	28	45	37	68	36	47	47	44	35	36	55	29

CONCLUSIONS: The incidence of BTAI in trauma admissions is low but has a significant impact on morbidity and mortality, with reduced length of hospital stay and lower mortality rates found in the ET group despite similar ISS. The majority of patients with BTAI who survived hospitalization had a lower ISS and were discharged to rehabilitation or another facility rather than home.

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P9. Is SDH Gene Mutation Screening Usefull to Improve Surgical Outcomes in Patients with Neck Paragangliomas?

Michele Piazza, MD[1], Federico Boschiero, MD[1], Mirko Menegolo, MD[1], Elena Molon, MD[1], Michele Antonello, MD[1], Joseph J. Ricotta, Jr., MD[2], Franco Grego, MD[1]

[1]Clinic of Vascular and Endovascular Surgery, Padova University, School of Medicine, Italy, [2]Vascular and Endovascular Surgery, Emory University, School of Medicine, GA

OBJECTIVES: To compare the outcomes in patients who underwent surgery for neck paragangliomas (NPs) before and after preoperative Succinate Deidrogenase (SDH) gene mutation analysis and genetic screening.

METHODS: Between 1995 and 2010, 36 consecutive patients underwent surgery. Two patients (5.5%) were excluded because of a post-operative histological diagnosis of schwannoma. Two groups were compared: Group A (1995–2003; n = 12/34, 35.29%) retrospectively evaluated for SDH gene mutation; Group B (2004–2010; n = 22/34, 64.7%) underwent preoperative genetic evaluation for SDH gene mutation and if positive the screening was extended to family members. Primary endpoints were: mass diameter, preoperative endovascular procedures (PEP), estimated blood loss (EBL), and cranial nerve injury (CNI). The secondary endpoint was to compare the number of new silent masses (NSM) discovered after genetic evaluation.

RESULTS: Overall, there was a higher incidence of females (n = 23/34, 68%), mean age of 49 ± 18 years, with no difference in demographics between groups A and B. The SDH mutation was found in 1 patients (8.3%) in Group A and 7 (31,8%) in Group B ($p = .061$). Of these, further evaluation led to the discovery of 4 NSM in Group B and 1 in Group A (18.2% vs 8.3%, $p = .41$). There was a significant increase in the number of small NP (Shamblin I or 5 cm) compared to Group A (7.7% vs 13.6%, $p = .31$). PEP was performed in 5 cases only in group B (22% vs 0%, $p < .05$). EBL was less in Group B (104 ± 286 ml vs 396 ± 554 ml, $p = .043$) as was incidence of postoperative CNI at 30 days (21.7%, vs 53.8% $p = .02$) compared to Group A. No surgical related strokes or deaths were reported, as no signs of recurrence during follow-up (mean 49 ± 11 months).

CONCLUSIONS: Even if larger number of patients are needed, preoperative genetic screening for SDH mutation together with new advanced technique in the treatment of NPs, has the potential to lead to earlier diagnosis and better surgical outcomes.

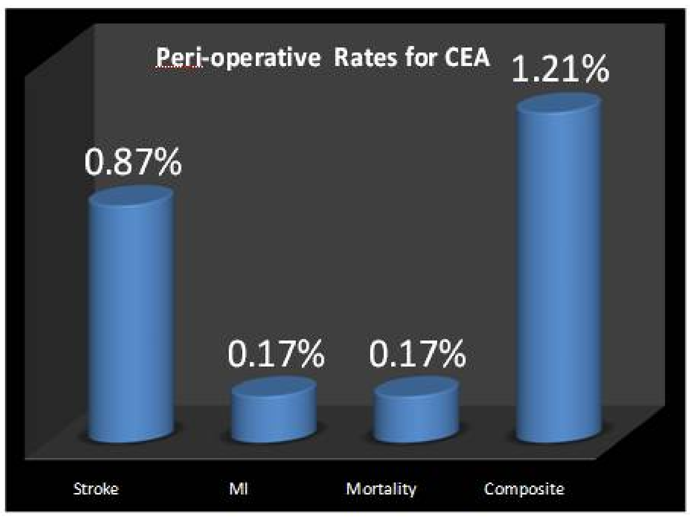
P10. A Single Surgeon and Single Institution Review of Carotid Endarterectomy: Minimal Morbidity and Mortality in a Veteran Population

Daniel Copeland, MD, Sandi Brock, RN, William Stevenson, MS, Mohammed Moursi, MD

Central Arkansas Veterans Health System, Little Rock, AR

OBJECTIVES: Carotid Endarterectomy (CEA) and Carotid Artery Stenting are used in the treatment of extra-cranial carotid stenosis and stroke prevention. This study provides a contemporary cohort of CEA subjects for comparison.

METHODS: A retrospective review of primary carotid endarterectomies for symptomatic and asymptomatic stenosis was performed at a single Veterans Hospital from 2000–2010.



RESULTS: 577 veterans were studied. Median age was 67 years with 97% male. 57% were asymptomatic severe stenosis (99%) by ultrasound alone (97%). 98% percent were ambulatory and living independently. Of those who were symptomatic (247), 105 (43%) had ocular symptoms, 166 (67%) had a transient ischemic attack, and 115 (47%) had evidence of an embolic stroke. 79% were on Aspirin alone, 5% on Plavix alone, and 16% on both. Comorbidities included hypertension (83%), coronary artery disease (24%), CHF (11%), diabetes (38%), and peripheral vascular occlusive disease (28%). All surgeries were done under the direction of a single surgeon using a traditional CEA with bovine pericardial patch angioplasty of the internal carotid artery. Fifty-eight percent underwent regional block and 42% general anesthesia. A shunt was utilized in general anesthesia cases and in 11% done under regional block. A vascular fellow was involved in 21% of the cases and a midlevel general surgery resident in 79%. Average operative time was 94 minutes. The average follow up was 50 months with an average length of stay at 3.9 days. The majority were discharged to home ambulatory with independent living status. Few patients were treated for wound infection (1.4%) and seventeen patients (3%) experienced transient nerve dysfunction (16 marginal mandibular, 1 hypoglossal), all resolving within a year. One patient had persistent jaw fatigue. One patient sustained an intraoperative stroke. The thirty-day, one year, and three year stroke rate was 0.87%, 1%, and 1.4% respectively. Two peri-operative strokes were major leading to severe dysfunction and early mortality. The rates for peri-operative myocardial infarction and death rates were both 0.17%. The mortality rate at one year (1.8%), three years (4.8%), and at follow up (12.2%) were also recorded.

CONCLUSIONS: CEA remains the gold standard for carotid revascularization with low perioperative events in experienced hands.

P11. A Strategy for Cost Containment in Carotid Endarterectomy: Analysis of the Impact of Surgeon Preference on Operating Room Cost

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OBJECTIVES: The growing concern over healthcare cost and the implications of a transition towards bundled payments for surgical procedures has made cost analysis a necessity for health systems and providers alike. Identifying areas which improve the delivery of quality care and simultaneously limit cost are essential to maintaining a sustainable healthcare model.

Variability in operating room charges based solely on surgeon preference is an ideal target for cost containment measures. The goal was to identify the impact of preference-dependent utilization of surgical supplies on the intraoperative charges for carotid endarterectomy (CEA).

METHODS: A retrospective chart review was undertaken for patients who underwent CEA between January 2009 and August 2010 at a high-volume academic center. Data was collected from the electronic medical record and billing system and then categorized. The three categories with the highest degree of cost variability were identified and analyzed.

RESULTS: The records of 140 patients (32% female, 68% male) with an average age of 68.5 years (range 45–86) were reviewed. Preoperative symptomatology was known for 127 patients, of whom 32% (41) were symptomatic and 15% (19) of procedures were performed urgently. The average length of stay was 3 days (mode 1, range 1–20) and the average charge incurred during a CEA hospitalization was $29,459 (range $14,723-$128,328). The three areas that comprised the highest percentage of total hospital charges were operating room services (28%), ICU stay (12%), and surgical supplies (11%). Operating room (OR) times averaged 173 minutes (range 89–315) and charges averaged $6,663.35 (range $4,176.50–$10,843.50). After a base charge of $1,551.00, OR charges were $31.97/minute. Within surgical supplies, the three units with largest cost variability were surgical trays, hemostatic agents and shunts, comprising 48%, 15% and 11% of the total operative supply charges respectively. Within surgical packs, the mean charge was $834/patient; however, the range was $339–$4853. Hemostatic agents were used in 83 of 140 cases, with a mean charge was $431 (range $107–$1531). Shunts were utilized in 60 of 140 cases mean charge $444, (range $96-$2493).

CONCLUSIONS: In addition to OR time, preference in the composition of surgical packs, shunt type and hemostatic agent used generate wide variability in the intra-operative charges of CEA. These categories with significant surgeon-dependent variability are potential targets for cost containment.

P12. Treating Aortic Dissection: Success and Failures in the Endovascular Era

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OBJECTIVES: Aortic dissection (AD) can be a catastrophic emergency. Stanford Type-A dissections are usually treated urgently. Indications for intervention Type-B were: end organ ischemia, rupture or lumen expansion. The objective of this study was to look at outcomes for AD in a contemporary vascular academic center.

METHODS: All patients with AD were included over an 11 year period from 2000–2011. Patients were divided into Stanford Type A or B

RESULTS: Over an 11-year period, 98 patents presented with the diagnosis of AD. There were 34 Type-A and 64 Type-B. Out of 34, Type-A, thirty underwent urgent repair. Perioperative mortality was 56% and 12-month mortality was 64%.

For Type-B; 53 were acute and 11 were chronic or >2 weeks after the initial diagnosis. The mean age was 58.6 ± 16 where 45 (70%) were men. Total of 49 procedures were performed. Indications for surgery were refractory hypertension in 15%, limb ischemia in 13.3% visceral ischemia 24%, progression of dissection in 4.4%, rupture in 9% and enlargement in 29%. The time to surgical intervention was 2.1 (0–185) days. Two patients died from rupture before surgery. Procedure related or in-hospital mortality was 20% while 12-month mortality for the Type-B was 33%. Of the patients that survived 12-month, 37% were lost to follow up. Open repair was performed in 3 patients where two died during surgery. Most common procedure was a thoracic endograft 80% with covering of subclavian artery in all. Two patients had lower extremity ischemia and underwent a femoro-femoral bypass. Six visceral revascularization were done with stents.

CONCLUSIONS: There is a clear advantage of endovascular approach in Type-B. However, AD remains a morbid disease with high mortality. Furthermore, a significant number of patients were lost to follow up. A new approach may be needed to address this issue.

P13. Carotid Endarterectomy: A Practitioner's 35-Year Experience

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OBJECTIVE: Carotid endarterectomy (CEA) is recognized as the gold standard surgical treatment for symptomatic and asymptomatic carotid lesions. Multiple published manuscripts have described the optimal technical and management details of the procedure, including non-surgical management, optimal drug regiments, best shunting techniques and intra-operative monitoring techniques. Many of the studies published have large numbers of patients, mostly pooled from multiple centers and surgeons. However, few papers report long term follow-up greater than 20-years; fewer report a single surgeon's outcomes. This study reports a single practitioner's 35-year experience with CEA.

METHODS: Retrospective analysis of prospectively collected data was evaluated from a single vascular surgeon's database. Inclusion criteria: any patient who underwent a CEA and was closed either primarily or with a greater saphenous vein patch. Results pertaining to side, surgical approach, reoperation rate and reason, 60-day morbidity and mortality and long-term results were analyzed. Data was compared to multiple published reports of CEA both with and without the use of a vein patch.

RESULTS: After 35-years of operating a total of 1029 patients underwent 1173 CEAs, right: 593 (50.55%), left: 580 (49.44%); 144 (13.9%) patients' underwent bilateral CEA. A total of 953 (81.24%) greater saphenous vein patches were performed with 212 (18.01%) closed primarily, data was unavailable for 8 (.68%) repairs. Restenosis occurred in 16 (1.36%) patients (left-10 right-6, vein patch: 12, primary closure: 4) with an average stenosis of 99% before reoperation. 60-day post operative results for primary closure versus vein patch respectively were: ipsilateral stroke 1.7%/0.5%; mortality 2.2%/0.3% and any stroke related death 3.4%/0.76%. Over the 35-year analysis a total of 283 patients died of both post-operative and natural causes. Overall the morbidity of CEA with greater saphenous vein patch compared to primary closure was statistically significant, $P < 0.01$.

CONCLUSION: CEA is a time tested surgical treatment for symptomatic and asymptomatic carotid lesions. Closing the arteriotomy with a saphenous vein patch is safe, effective and stands the test of time. This study reports that a single practitioner's long-term results are consistent with published record of larger trials. These comparative observations support the notion that CEA closed with a greater saphenous vein patch should be considered the gold standard of surgical treatment for carotid artery disease.

P14. Aortic Arch Anatomy in Patients with Carotid and Aortic Disease

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BACKGROUND: Vascular surgeons performing carotid stents and thoracic aorta endografts traverse the aortic arch and cannulate the great vessels routinely. Certain anatomic features render these diagnostic and therapeutic procedures more difficult.

PURPOSE: To review the anatomical arch types, and degree of calcification encountered in patients undergoing diagnostic and therapeutic arch aortograms (AA).

METHODS: The digital subtraction angiograms of all patients subjected to AA were retrospectively reviewed. Classification included bovine type (common origin for innominate and left common carotid), and types I, II and III for great vessel takeoff. Other anomalies were noted as well as the extent of calcification present. Types of catheters used for selective cannulation were noted, as well as procedure complications and outcomes.

RESULTS: We randomly selected 320 patients (140 women) out of 478 patients subjected to AA. The average age was 69.5 (range 22 to 94). There were 175 (54%) AA performed for diagnostic purposes. The large majority (280; 89%) was for cerebrovascular disease, 21 (6.5%) for thoracic aortic disease, 9 for subclavian or upper extremity ischemia, and 5 for visceral aortic disease. After excluding 71 patients with inadequate views, we found 61 (19%) patients with bovine arch. Only 50 (20%) had a type I arch, while 167 (39%) had type II a and b, and 103 (41%) had type III. Moderate calcification was noted in 35 (14%) and severe in 6 (2.4%). Severe calcification and stenosis precluded selective cannulation in 3 patients. Severe disabling stroke occurred in 3 (0.9%) patients.

CONCLUSIONS: Arch anatomy influences the choice of catheters and procedures performed in patients with carotid and aortic disease. We found a significant proportion of patients with difficult arch anatomy, particularly type III, complicating delivery of carotid stents and thoracic endografts.

TOPIC: LOWER EXTREMITY
Moderator: O. William Brown, MD

P15. True Lumen Re-Entry: A Single Center 7-Year Experience Comparing Outback LTD and Pioneer Catheters

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OBJECTIVES: Chronic total occlusions of the lower extremity can cause symptoms from claudication to tissue loss. A significant reason for failure of transcatheter revascularization in patients with chronic total occlusion is the inability to re-enter the true lumen distally after transversing the lesion. Two devices have been approved for such re-entry—Outback® LTD® Re-Entry Catheter (OBK) that utilizes fluoroscopy (Cordis, Johnson and Johnson Company, Bridgewater, NJ), and the Pioneer® Catheter (PNR) which uses intravascular ultrasound (Medtronic, Minneapolis, MN). We aimed to examine our single center initial revascularization success and complication rates with these devices.

METHODS: Patients who underwent endovascular procedures for lower extremity chronic total occlusion between December 2002 and July 2010 with OBK (N = 36) or PNR (N = 41) were selected. Patient characteristics, demographics, lesion morphology, and complications were examined. Case-mix adjusted forward step-wise multiple regression models ascertained independent risks for initial success.

RESULTS: A true-lumen re-entry device was attempted in 77 limbs in 69 patients. There was no device related mortality in either group. Procedural complications were similar across groups. Surgeon selection was equally distributed within groups. Overall success rate of re-entry was 86%. OBK was successful in 75% [Aortoiliac: 10/13, Femoropopliteal: 17/23] and PNR was successful in 95% of limbs attempted [Aortoiliac: 33/34, Femoropopliteal: 6/7] (*P = 0.012*). TASC lesion classification was similar between groups, while level D lesions with heavy calcification were present in 67% of the OBK failures for re-entry. Revascularization with percutaneous balloon angioplasty was completed in 8.3% of OBK and 2.4% of PNR, while adjunctive stents were placed in 55.6% of OBK and 90.2% of PNR (*P = 0.002, respectively*). There were 11% periprocedural complications with OBK and 7% with PNR. Following risk-adjustment (Nagelkerke R^2 0.61), Pioneer® Catheter utilization independently predicted success [adjusted odds ratio 17.83, 95% confidence interval 1.094–290.404] compared to Outback® LTD® (area under receiver operating characteristic curve 0.85).

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CONCLUSIONS: Both the Pioneer® and Outback® LTD® Catheters are highly successful in achieving true-lumen re-entry in lower extremity chronically occluded lesions with minimal complications. At our center, failure to revascularize a limb with the Outback catheter primarily occurred in the TASC D lesion with heavy calcification. Although selection bias for the Pioneer® Catheter may be contributory, use of the Pioneer® device provides independent putative benefit that requires further exploration

P16. Distal Anastomotic Vein Cuff Usage in Prosthetic Bypasses: A Vascular Study Group of New England Study

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OBJECTIVES: Single-segment saphenous vein remains the optimal conduit for infra-inguinal revascularization. In its absence, prosthetic conduit may be used. Existing data regarding the significance of adjunctive distal vein cuff (DVC) usage with prosthetic grafts are based on small series.

METHODS: This is a retrospective cohort analysis derived from the regional Vascular Study Group of New England, 2003–2010. 1018 infrainguinal prosthetic bypass grafts were captured in the dataset from 73 surgeons at 15 participating institutions. Outcome measures of interest included: primary patency, freedom from major adverse limb events (MALE), and amputation free survival (AFS) at 1 year as a function of vein patch utilization.

RESULTS: Of the 1018 bypass operations, 94 (9.2%) had a DVC while 924 (90.8%) did not (no DVC). The DVC and no DVC group had many similar baseline comorbid characteristics (Table). Likewise, they had similar rates of pre-operative independent living (93.6% vs. 95.7%, p = 0.43) and independent ambulation (70.2% vs. 76.5%, p = 0.2). A higher proportion of the DVC group had a CLI indication (73.4% vs. 60.3%, p = 0.01), had a prior bypass (58.5% vs. 37.9%, p = 0.014), were on hemodialysis (11.7% vs. 5.8%, p = 0.003) or had a more distal target vessel (p < .0001). The DVC group had a higher rate of completion angiogram performed (56.4% vs. 42.6%, p = 0.01). At 1 year the DVC and no DVC groups had similar rates of primary patency, freedom from MALE and AFS (Table).

Table 1: Baseline Characteristics and 1-Year Outcomes for Prosthetic Infrainguinal Bypasses

	Distal Vein Cuff	No Distal Vein Cuff	P-Value
Mean Age [± Stddev]	70.5 [10.8]	68.8 [11.1]	0.17
% Male Gender	54.3	64.2	0.07
% Below-knee target	78.7	42.5	<0.0001
% Diabetes	58.5	48.8	0.08
% on Hemodialysis	11.7	5.8	0.003
% Critical Limb Ischemia Indication	73.4	60.3	0.01
Primary Patency at 1 year	71.3 ± 5.7	71.1 ± 2.0	0.73
Freedom from MALE	80.4 ± 4.8	79.9 ± 1.8	0.45
Amputation free Survival	60.0 ± 6.7	71.8 ± 2.6	0.067

CONCLUSIONS: This contemporary multi-institutional study demonstrates that patients that receive distal anastomotic vein cuffs as part of infrainguinal prosthetic bypass operations in general have higher risk comorbidities and more technically challenging operations based on level of target vessel and prior bypass attempts. The use of a DVC may improve outcomes for disadvantaged grafts to a level similar to that for grafts with more favorable features.

P17. Percutaneous Iliac Angioplasty and Stenting in Patients on Hemodialysis: Are the Outcomes that Poor?

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BACKGROUND: Endovascular therapy for symptomatic atherosclerotic iliac artery stenosis is common place, but its outcomes in special populations is poorly described. This study evaluates the outcomes of percutaneous iliac therapy in patients on hemodialysis at a national academic medical center.

METHODS: We performed a retrospective analysis of records from patients who underwent endovascular intervention for symptomatic atherosclerotic iliac artery stenosis and were followed by duplex ultrasound between January 1990 and June 2011. Clinical efficacy was defined as the absence of recurrent symptoms, maintenance of ambulation and limb preservation in the index limb.

RESULTS: 324 patients underwent iliac artery interventions: 35 were on HD while the remainder were not (non HD). The 59 percutaneous interventions were performed in the HD patients (60% male, average age 63 yrs, range 43–86). 97% had hypertension, 74% had hyperlipidemia, 40 had metabolic syndrome and 71% were considered diabetic. 29% of these presented with Rest Pain/Tissue loss. 17% of lesions and 6 procedures were to improve inflow for an infra-inguinal procedure, compared to 13% in non-HD patients. There was a 1% technical failure rate. Comparisons of demographics, presenting symptoms and outcomes between the non HD and HD patients are shown in Table 1.

Table 1

Non HD	HD	p-value	
Gender (% male)	61	68	NS
Age (mean ± SD years)	65 ± 12	62 ± 11	NS
30-day Mortality (%)	<1	<1	NS
Morbidity (%)	4	1	0.04
Major Adverse Limb Event (MALE %)	7	26	0.002
Amputation-Free Survival (%)*	73 ± 6	34 ± 7	0.002
Clinical Efficacy (%)*	87 ± 2	74 ± 5	0.05

* at five years

By Cox proportional hazards amputation-free survival and clinical efficacy are worse in HD patients that are diabetic, continue to smoke, or present with tissue loss.

CONCLUSION: Percutaneous intervention of the iliac artery on dialysis patients is associated with a high morbidity and MALE rate compared to non-HD patients. While intervention success rates are equivalent, clinical efficacy and amputation-free survival are significantly worse in HD patients.

P18. Comparison of Interventional Therapies for Diabetic Ulcers: National Trends from 2001 to 2008

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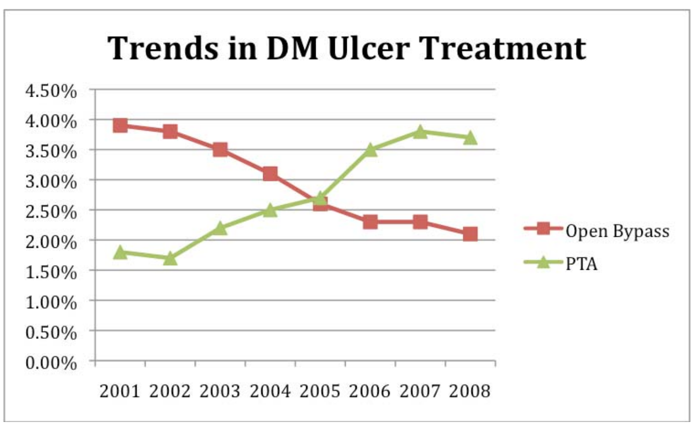
OBJECTIVE: The incidence of hospitalization for diabetes and related wounds increases yearly in the United States. Amputation remains a significant complication of these wounds. With aggressive medical and interventional therapies including endovascular procedures for treating chronic vascular disease in diabetic patients, we hypothesize the rate of lower extremity amputations should be declining. The purpose of this study was to analyze national trends in utilization of various treatment modalities for diabetic ulcers and compare related costs.

METHODS: A retrospective analysis of the Nationwide Inpatient Sample (NIS) from 2001 to 2008 was performed. ICD-9 codes were used to identify all diagnoses of diabetic related lower extremity ulcers and surgical procedures used. Using a coding algorithm to identify patients who underwent surgical intervention (amputation, open peripheral bypass, diagnostic angiography, PTA) during admission, national trends were calculated and chronicled.

RESULTS: A total of 5,727,764 patients were identified with admitting diagnosis of diabetic lower extremity ulcer during the study period. Mean age was 66.42 (SEM 0.007), 51.2% were males, 49.2% were white, and 66.3% had Medicare coverage. Utilization of open peripheral bypass procedures decreased from 3.9% in 2001 to 2.1% in 2008 ($p < 0.001$). The percentage of patients undergoing angioplasty after diagnostic angiogram increased more than 2-fold, from 20.4% in 2001 to 42.7% in 2008 ($p < 0.001$). Amputation (includes toe, foot, below and



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above knee) rate remained relatively stable at 11.3%. Comparing amputation to angioplasty, mean total hospital charge was significantly lower with amputation (\$53,962.94 versus \$74,664.97, $p < 0.001$)). Mean length of stay was also significantly shorter for angioplasty (10.81 days versus 12.81 days, $p < 0.001$).

CONCLUSIONS: During the study period, there was significant decrease in peripheral open bypass procedures for patients with diabetic ulcers. The percentage of patients undergoing amputation remained relatively constant despite a corresponding increase in utilization of angioplasty with diagnostic angiography. Although mean length of stay was shorter for angioplasty, there was a significant increase in total hospital charge for these patients. Further studies are needed to determine the role of angioplasty in the ongoing effort to control costs in caring for diabetic patients in the era of shrinking healthcare economic resources.

P19. Thrombosis of the Popliteal Artery from Entrapment Syndrome–A Subgroup with Worse Outcomes

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OBJECTIVES: Popliteal artery entrapment syndrome (PAES) is a low-frequency disease that causes leg ischemia as well as vein and nerve compression. Operative management consists of releasing the constricting muscle or tendons and reconstructing the popliteal artery, when symptomatic. We have identified a subgroup of patients presenting with occlusion of the popliteal artery secondary to PAES, who have worse long term outcomes than those without popliteal artery occlusion.

METHODS: We reviewed our database of patients surgically treated for PAES.

RESULTS: Between 2000 and 2010, 9 patients (3 female, 6 male, median age; 32) were identified with PAES. All patients presented with intermittent claudication alone. Preoperative workup included duplex ultrasound (n = 6, 67%), MRI (n = 5, 56%), MRA (n = 6, 67%), CTA (n = 2, 22%), and catheter angiogram (n = 8, 89%).

Seventy-eight percent (7/9) of patients had a thrombosed popliteal artery identified during the initial evaluation. Four underwent preoperative intervention with thrombolysis and stenting; only two were recanalized. At the time of surgery, five patients had thrombosed popliteal arteries; a posterior approach to the popliteal artery was used in 8/9 to allow for a myotomy, with or without arterial reconstruction; one patient had a bypass through a medial incision. Arterial reconstructions included interposition vein grafts (n = 4), of which two occluded postoperatively requiring thrombolysis, but remain patent, and one prosthetic bypass which thrombosed and was unable to be salvaged.

The average follow up has been 26.5 + 23.4 months with a 0% amputation rate and a 100% survival. When comparing patients with thrombosed (n = 5) versus patent (n = 4) popliteal arteries at the time of operation, preoperative intervention rates were 40% versus 25%, arterial reconstructions were required in 100% versus 25%, primary patency of the popliteal artery or reconstruction were 40% versus 100%, secondary patency rates were 80% versus 100%, and secondary intervention rates were 60% versus 0%, respectively.

CONCLUSION: Patients with PAES who require reconstruction of a thrombosed popliteal artery require more secondary interventions than those without occlusion, possibly due to intimal damage of the artery from thrombus. Early surveillance after repair of a thrombosed popliteal artery is recommended. A multi-institutional study is underway to better define treatment options for these patients.

P20. Penetrating Iliac Ulcers

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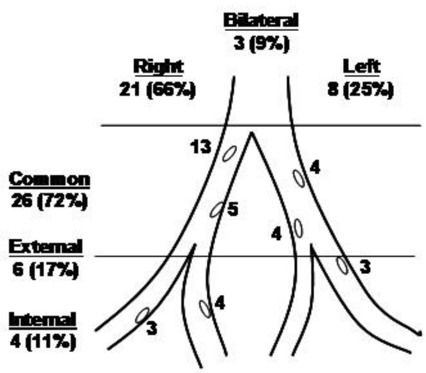
OBJECTIVES: This review assesses the characteristics of penetrating iliac ulcers (PIU), as well as, the morbidity and mortality associated with them.

METHODS: From October 2010 to August 2011, 157 patients were identified as having a penetrating ulcer on CT angiogram of the chest, abdomen or pelvis. A total of 32 patients with 36 PIUs were identified. Medical records were reviewed for patient demographics, comorbidities, medications, and tobacco use. CT angiograms were reviewed by two licensed radiologists. Student's t test was used to compare ages between genders and for PIC occurring in various locations.



RESULTS: PIU represented 20% of the penetrating ulcers identified during the study period, including ascending, arch, descending thoracic, infrarenal, iliac and femoral. Of the 32 patients with PIU identified, 27 (84%) were male and the average age was 71.93 ± 10.43 years. There was no difference in age between genders (p = 0.44). Follow-up over a period ranging from 1 month to 4 years with repeat CT angiograms was performed for 15 (47%) patients. All PIU were essentially unchanged with repeat imaging. Survival during the follow-up period was 97%. Twelve (38%) patients with PIU had multiple penetrating ulcers including 9 (28%) patients with infrarenal penetrating aortic ulcers. Twenty three (72%) patients with PIUs were current or former smokers. The most common associated comorbidities in patients with PIU were hypertension (75%), hyperlipidemia (66%) and aneurismal disease (56%). The location of all PIUs are included below. (Figure 1.) No difference in age was noted for right versus left and common versus distal (p = 0.27 and 0.91, respectively). More than 60% of PIUs identified were adjacent to the IVC and iliac veins, including those PIUs found along the common iliac arteries (CIA), specifically right posteriolateral, right medial and left lateral CIA.

CONCLUSIONS: PIUs account for a moderate percentage of all penetrating ulcers identified and yet their characteristics and natural history are not well described. These data suggest that while they commonly occur in hypertensive males, PIUs are relatively benign. Further characterization needs to be performed before recommendations for repair can be given.

P21. Drug Eluting Stents for Below Knee Revascularization in High-Risk Patients with Critical Limb Ischemia

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OBJECTIVE: To evaluate the role of drug eluting stents in below knee revascularization in patients with critical limb ischemia who are deemed high risk candidates for an open revascularization procedure.

METHODS: We retrospectively reviewed 13 consecutive high-risk patients (15 limbs) who underwent drug eluting stent placement over a period of 18 months. Standard percutaneous techniques were used for stent placement. Outcomes were measured in terms of patency, limb salvage and relief of symptoms.

RESULTS: Patient characteristics were as shown below in Table 1. 10 of 13 patients were deemed very high risk for open revascularization due to debilitating medical conditions. 3 of 13 had a threatened distal bypass and were at higher risk due to difficult anatomy. The lesions included 3 below knee popliteal, 4 tibioperoneal trunk, 2 anterior tibial, 3 peroneal, 1 posterior tibial and 3 below knee distal bypass stenosis. Simultaneous proximal interventions were performed during 26.6% of the procedures. Mean follow up was 111 days (14–329 days). Pain relief was observed in 83.3%. Limb survival rate was 85.7%. The primary patency rate was 86.2% and secondary patency rate was 93.1%. Two patients had minor complications (one groin hematoma and one puncture site pseudo aneurysm).

Table 1. Patient Characteristics

Age	79.6 ± 10.8
Sex (M:F)	9:4
Hypertension	92.3%
Diabetes	53.85%
Hyperlipidemia	69.2%
Coronary artery disease	38.4%
Chronic renal insufficiency	46.1%
Smoking	61.5%
ASA Class	3.3 ± 0.6
Rutherford Category	4.6 ± 0.8

CONCLUSIONS: Use of below the knee drug eluting stents is a safe and effective method for treatment of critical limb ischemia in high-risk surgical patients. Short term follow up demonstrates favorable clinical outcomes. Further studies to determine medium and long term outcomes are warranted.

TOPIC: PERIPHERAL
Moderator: Robert B. McLafferty, MD

P22. Common Femoral Endarterectomy in the Endovascular Era: Is Anyone Unfit for Surgery?

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OBJECTIVES: Despite acceptance of endovascular intervention for peripheral arterial disease, common femoral endarterectomy (CFE) remains the preferred treatment for atherosclerotic disease of the common femoral artery (CFA). The objectives of this study are to delineate the safety of this open procedure in the endovascular era, establish contemporary benchmarks for morbidity and mortality after CFE, and identify patients at increased risk for post-operative adverse events.

METHODS: Patients undergoing elective CFE in the 2006–2008 National Surgical Quality Improvement Project dataset were randomly assigned to a model derivation sample (80%) or validation sample (20%). Univariate analyses were used to identify factors associated with major morbidity and mortality. Significant ($P < .05$) variables by univariate analysis were used to create binomial multivariate logistic regression models for morbidity and mortality. Models were internally tested for goodness-of-fit and validated on a distinct sample.

RESULTS: 988 patients underwent elective CFE. The 30-day mortality rate was 1.6%. Major post-operative morbidities included cardiac (0.9%), pulmonary (2.1%), renal (0.4%), thromboembolic (0.5%), neurologic (0.5%), sepsis (2.2%), and major wound complications (2.8%). 78 patients (7.9%) experienced at least one major complication. By univariate analysis, 8 of 31 preoperative variables tested were associated with mortality, including dyspnea, heart failure (HF), angina, dependent functional status (DFS), and critical limb ischemia (CLI) with open wounds. Variables associated with major morbidity included diabetes (DM), HF, DFS, angina, open wound, and steroid use. By multivariate analysis, DFS was the only independent predictor of mortality ($P < .0001$, OR: 19.8[95% C.I. 3.4–99.7]). Independent predictors of morbidity included DFS ($P = .018$, 2.4 [1.17–5.27]) steroid use ($P = .024$, 2.90 [1.143–7.37]), and DM ($P = .025$, 1.958[1.089–3.523]). In the validation sample, mortality was 10.7% among those with DFS vs. 0% in those with independent functional status ($P = 0.002$), and major morbidity was significantly more common among those with DFS (25% vs. 3.9%, $P = 0.001$). ROC curve area under the curve (AUC) analysis further delineated the predictive power of these models for mortality ($P < .0001$, AUC: .885) and major morbidity ($P = .039$, AUC: .67).

CONCLUSIONS: CFE is well tolerated. Results affirm the safety of CFE in the overwhelming majority of patients, and suggest that endovascular CFA intervention is infrequently warranted. Endovascular CFA interventions must not only be compared to the proven durability of CFE, but also to the established safety of this open procedure.

P23. Impact of Effective Statin Therapy on SFA Interventions for Claudication

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BACKGROUND: Controlling lipids particular cholesterol and LDL is an accepted pre-requisite in the effective management of the atherosclerotic patient. Many patients present for superficial femoral artery (SFA) intervention on statins but it is unclear if this therapy has achieved its primary goal of a reduction in total cholesterol (less than 200 mg/dl) and a reduction in LDL (less than 100 mg/dl). The aim of this study is to determine the impact of effective statin therapy on patient and procedural outcomes following SFA interventions in patients with claudication.

METHODS: A database of patients undergoing endovascular treatment of the SFA for claudication between 1999 and 2011 was retrospectively queried. The analysis examined patients on statins and not on statins (No Statin) at the time of intervention and the statin group was subdivided into those with cholesterol and LDL patterns which were not (partly (Partial) or completely (Total) controlled under current national guidelines. The primary comparison was between those receiving statins or not and the secondary analysis determined the impact of the effective statin therapy on outcomes. Kaplan-Meier survival analyses were performed to assess time-dependent outcomes.

Table

	Statin Therapy		Statin Efficacy		
	No	Yes	No effect	Partial	Full
Male Gender (%)	33.5	34.5	36.7	60	3.3
Lee's revised Cardiac Risk Index	2.6 ± 1.4	2.9 ± 1.7	2.7	2.7	3.3
30-day Mortality (n)	1	3	1	1	2
30-day Morbidity (%)	8.9	6.9	15.8	14.1	0.6
MACE (%)	4	5	1	3	5
MALE (%)	5	14	5	14	0
Survival (%)	83*	70*	85*	77*	40*
Amputation free Survival (%)	72	83	83*	78*	49*
Primary Patency (%)	73	56	68	70	63
5-yr Assisted Primary Patency (%)	79	81	83	76	72
5-yr Secondary Patency (%)	80	80	84	77	82
5-yr Clinical Efficacy	63	64	61	66	74

* p value (< 0.05)

RESULTS: 573 patients (68% male, average age 67 years) underwent endovascular treatment for symptomatic SFA disease. 52% were on stains at time of the procedure. Of those on stains 93% had an acceptable cholesterol, 5% had an acceptable LDL and 5% had both. Patients on statins presented with a greater number of TASC-II C and D type lesions (21.3%) than patients not on statins (11.3%)

CONCLUSIONS: There is a low penetrance of statin administration among patients with claudication. The effectiveness of anti-lipid therapy is poor. Patients on statins have a higher cardiac risk and a greater burden of disease as determined by TASC-II guidelines. The presence of statin therapy has a favorable effect on peri-operative outcomes and long term clinical efficacy, but seems not to improve over-all survival and limb complications.

P24. Cocaine Induced Arterial Thrombosis of the Lower Extremity

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OBJECTIVE: Recreational cocaine use has been credibly linked to many health hazards, including acute coronary syndrome, cardiac arrhythmia, hypertensive crisis, stroke, intestinal ischemia, and sudden death. Several reports have documented presumed cocaine-induced arterial thrombosis of the coronary or cerebral vasculature, but rarely has this phenomenon been established in the periphery. This study aims to review our experience with cocaine-induced peripheral arterial thrombosis requiring operative thrombectomy.

METHODS: A retrospective chart review was performed of patients undergoing emergency lower extremity thrombectomy from August 1995 to January 2011. Patients treated for arterial trauma, acute thrombosis of revascularization grafts, acute thrombosis of chronic peripheral arterial disease, or by thrombolytic therapy were excluded from this study. Records were reviewed to obtain patient demographics, co-morbidities, risk factors for atherosclerotic disease, results of urine toxicology screen, operative details, hospital course, and peri-operative outcomes.

RESULTS: Over the 15-year study period, 123 patients underwent emergency surgical thrombectomy at our institution. Eleven patients (8.9%) had cocaine-positive urine toxicology screens, confirming cocaine use within 72 hours of presentation. In comparison to non-cocaine users, cocaine-positive patients were significantly younger (43.0 ± 9.9 vs. 57.5 ± 13.5 years, $P < .001$) and were less likely to have more than one risk factor for atherosclerotic vascular disease (45.4% vs. 74.1%, $P = .07$). Thrombus was removed from cocaine-negative patients at the aortoiliac ($n = 57$, 51%), femoropopliteal ($n = 65$, 58%), and tibioperoneal ($n = 14$, 12%) region, whereas all cocaine-positive patients required femoropopliteal thrombectomy ($n = 11$, $P = .002$). Major (above-knee or below-knee) amputation rate was not significantly differently among cocaine users ($n = 2$, 18.2%) and presumed non-cocaine users ($n = 30$, 26.8%). Outcome measures including peri-operative myocardial infarction, stroke, death, and hospital length of stay were not significantly different between the groups. Mean follow-up was 7.8 years (range, 0.8–16.1 years).

CONCLUSION: This study further substantiates the association between cocaine use and acute peripheral arterial thrombosis, and specifically localizes clot formation at the femoropopliteal level. Clinical suspicion for cocaine induced acute arterial thrombosis should remain high in young patients presenting with lower extremity ischemia to expedite an appropriate treatment strategy. Surgical thrombectomy continues to be a suitable option for intervention in these patients.

P25. Current Use and Outcomes of Ambulatory Vascular Surgery for Lower Extremity Ischemia

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OBJECTIVE: The proliferation of endovascular procedures and changes in payment arrangements have increased the number of vascular procedures performed on an ambulatory basis. The purpose of this study was to evaluate the use and outcomes of ambulatory vascular surgery among patients with lower extremity (LE) ischemia in the United States (U.S.).

METHODS: The National Survey of Ambulatory Surgery, a nationally representative database on ambulatory surgery procedures in the U.S., was used to identify vascular procedures performed for patients with LE ischemia in 2006. Logistic regression and general linear models were used to assess the association between patient characteristics, type of procedures and adverse outcomes.

RESULTS: The estimated number of ambulatory procedures for LE ischemia was 333,842. Only 9.684 (2.9%) patients underwent vascular procedures for limb-threatening ischemia (LTI). Angiography was performed in 69.4% of patients. Most procedures (54.6%) were exclusively diagnostic, whereas 6% involved open and 36.8% endovascular revascularization, respectively. Postoperatively, 3.7% of patients reported adverse events, 3.2% were admitted to a hospital and 2.5% were discharged to observation status. Mean procedural time (in minutes) was significantly increased in women (50.5 ± 36.2 vs. 31.8 ± 36.5), procedures under general anesthesia (64.4 ± 45.8 vs. 40.5 ± 31.1), patients with LTI (80.4 ± 16.5 vs. 45.6 ± 36.6), endovascular procedures (60.9 ± 42 vs. 36.9 ± 29.1) and high-risk patients (49.4 ± 29.2 vs. 44.5 ± 29.2) (all $P < .001$). Multivariate logistic regression identified female gender, LTI, high surgical risk, use of general anesthesia, endovascular procedures, and procedural time as independent predictors of complications and increased odds of hospital admission.

CONCLUSIONS: Ambulatory vascular surgery is performed safely and with minimal periprocedural morbidity and hospital admission rates. Approximately half of the ambulatory vascular procedures involve exclusively diagnostic angiography, whereas more than one third include endovascular revascularization. Female gender, LTI, high surgical risk, general anesthesia and endovascular procedures are associated with an increased risk of complications, hospital admissions and procedural times.

P26. Decubitus Ulcers in Patients Undergoing Vascular Operations Does Not Impact Mortality but Affects Resource Utilization

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OBJECTIVES: While it is anticipated that decubitus ulcers (DU) are detrimental to outcomes following vascular operations, the contemporary influence of preoperative DU in vascular surgery remains unknown. We examine this relationship to identify potential improvements towards better resource utilization.

METHODS: Using voluntary inpatient data from 2009, all adult patients who underwent either open or endovascular carotid repair, abdominal aortic aneurysm (AAA) repair, femoral artery to distal vessel revascularization, peripheral arterial stenting (PAS) or an above/below knee amputation were selected. Patients were stratified by the presence or absence (non-DU) of decubitus ulcer. Case-mix adjusted hierarchical models examined in-hospital mortality, any complication and discharge disposition.

RESULTS: A total of 538,808 cases were analyzed. DU was most prevalent among Caucasian male Medicare beneficiaries ($P < 0.001$). Patients with DU were more likely to be admitted on a weekend and with Stage IV ulcerations ($P < 0.001$, *respectively*). DU patients underwent more non-elective surgery ($P < 0.001$). Wound, infectious, and procedural complications were more common in DU ($P < 0.001$, *respectively*). Failure to rescue, defined as mortality following any complication, was more than doubled in DU (non-DU: 1.5%, DU: 3.2%, $P < 0.001$). Similarly, unadjusted mortality was also doubled with DU (non-DU: 3%, DU: 6%, $P < 0.001$). Following risk adjustment among all patients, neither presence of DU nor specific ulcer staging increased the adjusted odds of death. In DU patients, no specific vascular operation, body mass index threshold, or ulcer staging increased the adjusted odds of death. However, open and endovascular AAA repair, and PAS increased the adjusted odds of any complication ($P < 0.05$, *respectively*). Having a DU increased the adjusted odds of discharge to an intermediate care facility by almost 3 fold (AOR 2.9, 95% CI [2.7–3.4], $P < 0.001$). Additionally, when patients with DU were admitted from non-health care centers for elective surgery, they were 12 times more likely to go to a skilled nursing facility at discharge (AOR 12.04, 95% CI [7.1–20.3], $P < 0.001$). These patients also had 1.6 times the total charges compared to their non-DU cohort (non-DU: \$49,460 ± 281, DU: \$81,149 ± 5855, $P < 0.001$).

CONCLUSIONS: Contrary to common perception, preoperative decubitus ulcer does not adversely affect mortality following vascular surgery. However, patients with decubitus ulcers are at higher risk for complications and incur sizeable additional charges. Care costs, complications, and discharge disposition must be appropriately weighed in at-risk patients during operative planning.

P27. The Deleterious Effects of Renal Disease on Diabetic Patients Undergoing Infrainguinal Interventions

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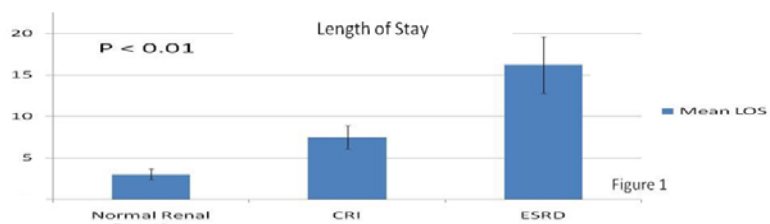
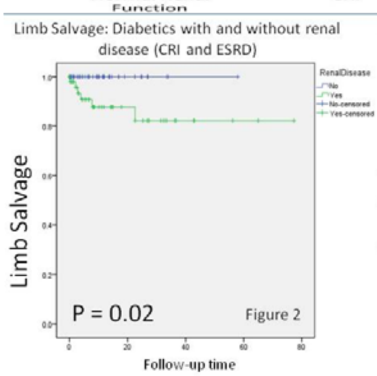
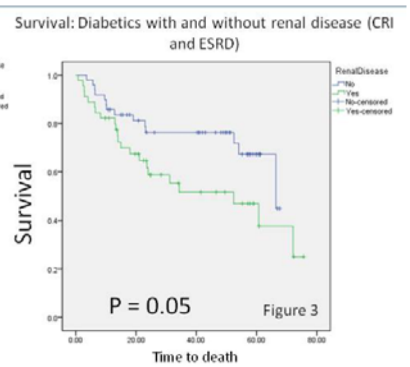
OBJECTIVES: This study assesses the effects of chronic renal insufficiency (CRI) and end stage renal disease (ESRD) on diabetics undergoing percutaneous infrainguinal interventions.

METHODS: Diabetics requiring infrainguinal interventions were studied retrospectively. Outcomes were compared between those with normal renal function, CRI and ESRD. Statistical analysis included chi-square, Student's t-test, ANOVA and Kaplan-Meier.







RESULTS: Ninety-five diabetics were analyzed (28 with CRI and 18 with ESRD). Mean follow-up of 8 months (range, 0–40). There were no differences in the index procedures performed or peri-procedural complication rates between groups. Compared to patients with normal renal function, diabetics with CRI or

ESRD were more likely to be hypertensive (98% vs. 82%, $p < 0.01$), have isolated tibial disease (18% vs. 7%, $p = 0.05$) and present with tissue loss (67% vs. 43%, $p < 0.01$). Patients with CRI or ESRD had more returns to the operating room (15% vs. 2%, $p < 0.01$). However, overall patency rates did not differ. Renal disease was associated with a step-wise increased length of stay (LOS, $p < 0.01$, fig. 1), inferior limb salvage ($p = 0.02$, fig. 2) and worse survival ($p = 0.05$, fig. 3). Diabetics with ESRD compared to those with normal renal function or CRI presented at an earlier age (63.9 vs. 72.1 years, $p < 0.01$).

CONCLUSIONS: Diabetics with CRI or ESRD compared to those with normal renal function are associated with more returns to the OR, an increased LOS, worse limb salvage and decreased survival despite comparable overall patency rates. Further research will be necessary to assess the impact of such deleterious outcomes on our current healthcare economy.

P28. Trends in Percutaneous Renal Artery Intervention in the South

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OBJECTIVE: To examine trends in renal artery (RA) percutaneous balloon angioplasty and stenting (PTAS) in the South.

METHODS: Hospital discharge data from the Nationwide Inpatient Sample (NIS) were used to examine the rate of percutaneous intervention of renal arteries in the South region for the years 2001–2005. The NIS is the largest all-payer inpatient care database in the United States that samples approximately 20% of hospitalized patients across the country and can be analyzed regionally. The database includes ICD-9 CM codes for procedures and diagnoses during hospitalizations. These codes were used to estimate trends in RA-PTAS. PTAS was classified as either *therapeutic* or *prophylactic* based on the presence or absence of hypertension and/or renal insufficiency. Associations across years were evaluated using logistic regression. All analyses employed methods appropriate for complex survey data.

RESULTS: During the five year study period, over 100,000 patients underwent RA-PTAS in the South. This group consisted of 51.3 percent female, 31.6 percent non-white, with a mean age of 65.1 years. The annual estimated rate of RA-PTAS (see Table 1) ranged between 28,385 (2001) and 34,382 (2004), and represented 0.20–0.23 percent of all hospitalizations (p = 0.33). Overall, from 2001 to 2005, there was a significant decrease in the proportion of prophylactic PTAS (from 26.5% in 2001 to 22.4% in 2005; P = 0.03). Compared to 2001, the proportion of prophylactic PTAS, compared with therapeutic PTAS, decreased significantly in 2004 (OR = 0.84; 95% CI: 0.73–0.96; P = 0.01) and in 2005 (OR = 0.80; 95% CI: 0.67–0.96; P = 0.02).

Table 1. Annual Number of RA-PTAS Procedures in the South

Total Procedures		*Therapeutic* Procedures		
Year	Overall Number of RA-PTAS Procedures Performed (SD)	Percent of Hospitalizations (SE)	Number of Therapeutic Procedures (SD)	Percent of Total Procedures (SE)
2001	28,385 (2,133)	0.20 (0.01)	20,869 (1,620)	73.5 (1.40)
2002	31,570 (2,502)	0.22 (0.02)	13,917 (1,960)	75.8 (1.05)
2003	30,471 (2,133)	0.21 (0.01)	22,883 (1,589)	75.1 (0.81)
2004	34,382 (2,345)	0.23 (0.01)	26,425 (1,882)	76.9 (1.23)
2005	30,457 (2,484)	0.20 (0.01)	23,635 (1,965)	77.6 (1.06)

CONCLUSIONS: Over a recent 5 year period, estimates of RA-PTAS performed annually in the South ranged from 28,385 to 34,382 procedures. Approximately one-fourth of these procedures appear to be prophylactic, performed in the absence of hypertension and/or renal dysfunction. The proportion of prophylactic procedures decreased during this study period.

TOPIC: HEMODIALYSIS
Moderator: Joseph S. Giglia, MD

P29. Differential Outcomes of Autologous and Prosthetic Lower Extremity Arteriovenous Access for Hemodialysis

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BACKGROUND: Obtaining hemodialysis access after exhaustion of all sites in the upper extremities remains a significant obstacle to continued care. The lower extremity is increasingly been used as alternative access with variable outcomes. The purpose of this study is to evaluate our experience with lower extremity arteriovenous access.

METHODS: A database of 34 patients, (58% females and mean age of 47 year old) that underwent lower extremity arteriovenous access from March 2006 to August 2011 was queried. A total of 35 extremity arteriovenous (AV) accesses were created,:13 the femoral vein transposition (FVt) arteriovenous fistulas (AVF) (37%) and 22 prosthetic AV grafts (63%). All patients had previously failed multiple access surgeries in the upper extremity (mean 4 for FVt and 7 for AVG).

RESULTS: Technical success was achieved in all cases (100%) with no perioperative mortality and low perioperative morbidity. Patient's characteristics, complications and number of reinterventions for the FVt and AVG groups are listed in Table 1. In two diabetic patients a concomitant distal revascularization interval ligation (DRIL) procedure was performed with a FVt fistula to prevent steal syndrome. During a mean follow-up of 36 months, 20 (60%) accesses remained functional. (45% FVt and 55% AVG; p = ns). Average function time for FVt AVF was of 20 ± 13 months while the AVG was 11 ± 10 months ($p = 0.03$). Thrombotic and infective complications were higher in the AVG compared to FVt. 4 access revisions (3 due to infection, 1 open thrombectomy) were necessary in the in the AVG group vs. 3 cases revisions (2 plication and DRIL). Primary (75% vs. 57%, FVt vs. AVG; $p < 0.01$), Assisted Primary (87% vs. 67%; $p < 0.01$) and Secondary Patency (90% vs.72%; $p < 0.01$) were significantly better in the FVt compared to the AVG at 12 months.

Table I: Patient Characteristics and Complications for the AVF and AVG Groups

Access Type	FVt AVF (13)	LE AVG (22)
Mean age (yrs)	**41 ± 11**	**54 ± 12 ***
Females	46%	68%
Hypertension	**76%**	**81%**
Coronary Artery Disease	**28%**	**27%**
Diabetes Mellitus	**38%**	**36%**
Peripheral Artery Disease	**8%**	**18%**
Procedure related Morbidity	**38%**	**95%****
Steal syndrome	**15%**	**10%**
Edema > 2 weeks	**8%**	**18%**
Thrombosis	**14%**	**36%**
Infection	**8%**	**27%***
Pseudoaneurysm	**8%**	**5%**
2nd Intervention rate	**23%**	**36% ***

*$p < 0.05$ ** $P < 0.01$*

CONCLUSION: Autologous hemodialysis access creation in the lower-extremity has markedly superior results than prosthetic material. Patients receiving AVG do not demonstrate a sustained benefit from the access site due to high rate complications, greater intervention rate and limited access functionality. The use of AVG in the leg should be questioned.

FRIDAY

P30. Withdrawn

P31. The Fate of Tapered AV Grafts in the Era of Endovascular Interventions

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OBJECTIVES: Tapered grafts are used for hemodialysis access with the goal of reducing ischemic complications. Currently, most AV graft thromboses are treated with percutaneous interventions at outpatient access centers. These interventions are often associated with angioplasty of the arterial anastomosis and arterial end of the graft to diameters greater than 6 mm. Dilatation of the proximal 4 mm. taper will produce at least an elimination of the taper and potentially rupture, pseudoaneurysm or steal syndrome. We performed this retrospective study to determine the fate of tapered AV grafts after percutaneous intervention.

METHODS: We retrospectively reviewed the outcomes of eighty 4–7 mm tapered PTFE grafts placed for hemodialysis access in 74 patients. Percutaneous interventions for graft complications were performed at one of two outpatient access centers. The type and location of the interventions were analyzed with a focus on those grafts which underwent interventions on the inflow artery, arterial anastomosis and proximal grafts segments. Primary and secondary patency rates and the frequency of complications of rupture, pseudoaneurysm and steal were calculated for this subgroup.

RESULTS: Thirty three of eighty grafts had a total of 63 interventions of the inflow artery, arterial anastomosis or proximal graft. Angioplasty was performed with balloons ranging from 5 to 10 mm. with 79% of interventions utilizing balloons 6 mm. in diameter or greater. In these 33 grafts, seven ruptures or pseudoaneurysms of the arterial anastomosis or proximal graft (24.2%) were treated with four covered stents and three surgical revisions. Four limbs (12%) developed steal syndrome, two of which required open surgical revision. One patient had two complications, making the overall complication rate 30.3% (10/33). Primary and secondary patency rates for this subgroup were 21.8% and 68.7% respectively at 6 months and 12.5% and 53.1% at one year.

CONCLUSIONS: The majority of tapered AV grafts in this series required secondary interventions within 12 months of placement. Most patients required inflow intervention and dilatation of the artery, anastomosis and proximal graft to 6 mm. or greater was common. This eliminates the benefit of the taper and resulted in rupture, pseudoaneurysm or steal syndrome in over 30% of patients in this series. This study raises questions about the benefits of tapered AV grafts for dialysis access with current endovascular strategies utilized for graft thrombosis.

P32. Salvaging the Failed Hemodialysis Reliable Outflow (HeRO) Vascular Access Device: Patterns of Failure and Therapy

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BACKGROUND: Hemodialysis Reliable Outflow (HeRO) (Hemosphere Inc,) Vascular Access Device is a long-term access that can overcome some of the challenges of complex dialysis patients with exhausted traditional peripheral access sites and outflow problems due to central venous occlusive disease (CVOD). Initial studies have demonstrated lower rates of infectious complications compared with tunneled dialysis catheters (TDC) and similar patency to traditional arteriovenous grafts (AVG). Experience with HERO catheter salvage has not been reported. We performed a retrospective evaluation our institutional experience salvaging this device.

METHODS: A database of thirty three patients (51% males with mean age of 55 ± 19 years) that underwent implantation of the HeRO device from November 2008 to August 2011 was queried. Data included demographics, anatomic and clinical factors, functional and patency rates were determined. Complications, reinterventions, and other factors influencing outcomes were also examined.

RESULTS: 27 patients had history of arterial hypertension, 14 had type 2 diabetes and 9 coronary artery disease. The primary indication were: Need for access creation in the setting of CVOD with exhausted peripheral sites in thirty two patient; and salvage of an existing and functioning arteriovenous fistula (AVF) in one case. The HeRO device was successfully implanted in all patients (Technical success of 100%), the graft was component was anastomosed in the brachial artery in 32 patients (end to side fashion) and the cephalic vein in one case (end to end). The most common access location for the catheter component was the Internal Jugular vein (27 (81%) patients) followed by subclavian veins in 6 (15%) and the cephalic vein in one (3%). Complications included 10 cases of graft thrombosis, resolved by percutaneous (7) or open (1) thrombectomies of the graft component) (31%), 4 cases graft removal were required secondary to infection and failure due to thrombosis (12%). The primary patency, assisted primary patency and secondary patency rates at 12 months were 55%, 64% and 64% respectively. 9 (30%) patients died from comorbidities non-related to the access procedure, no documented cases of bacteremia occurred during the follow up period.

CONCLUSIONS: HeRO Device is a viable alternative to other complex hemodialysis access solutions in access-challenged patients who otherwise have to rely on TDC; however it is associated with high reinterventions and failure rates 43% of cases.

FRIDAY

P33. To BAM or Not to BAM?: A Closer Look at Balloon Assisted Maturation

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OBJECTIVES: Balloon assisted maturation (BAM) is a recent, innovative, yet controversial method for developing autogenous arterio-venous fistulae (AVF), with little supportive data. Few retrospective studies have addressed the efficacy of BAM and cofactors affecting successful maturation. We conducted a retrospective analysis of our vascular access database to compare possible factors associated with a successful BAM, as determined by increase in volume flow of the fistulae.

METHODS: Between 2009 and 2010, data was prospectively collected on patients undergoing BAM of their AVF under ultrasound guidance at our institution. 30 of these patients, consisting of 143 BAMs, were retrospectively analyzed. Data collection included: past medical history, age, number of BAM procedures preformed, volume flow measurement (VFM) in mid-fistulae, size of balloon used, and presence of post procedural wall hematoma. VFM was determined with duplex within one month prior to and subsequent to each BAM performed.

RESULTS: Of the 30 patients, consisting of 143 BAMs, the average age was 69 years old ± 15 (range 38–92) with 20 males and 10 females. The most common risk factors being hypertension (n = 27) and diabetes mellitus (n = 16). The average BAM per patient was 4.8 (range 1–7). Of the 143 BAM procedures, 4 were excluded due to absence of preoperative or postoperative duplex. In 139 BAMs, 74 developed a post procedural hematoma as observed on duplex, and 76 showed a increase in VFM. In all BAMs analyzed, there was no correlation observed between the presence of a hematoma and increase in VFM ($p = 0.87$). Hematomas occurred most frequently during the second BAM procedure, with 24.3% of all hematomas observed. In 139 BAMs, 8 different balloon sizes were used, 3 mm–10 mm, with the 7 mm balloon being the most frequently used (n = 34). No significant difference was noted between increase in VFM in 3 mm to 7 mm balloons. A 8 mm balloon was used in 31 BAMs with 22 developing hematomas. Of the 8 mm balloon group, a statistical difference was noted between increase in VFM with presence of a hematoma and increase VFM without presence of a hematoma ($p = 0.027$).

CONCLUSIONS: These preliminary data, suggest that a more aggressive approach to BAM, with use of larger balloons to create hematoma formation, may have a significant impact on performing a successful maturation in respects to increase in VFM.

P34. Endograft Salvage of Failing Hemodialysis Access: A Feasibility Study

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INTRODUCTION: The incidence of ESRD is on the rise. In 2008, approximately 355,000 individuals were on hemodialysis (HD) with about 103,000 new patients annually. The most common cause of hospitalization in these patients is HD access placement, maintenance, and associated complications–including, pseudoaneurysm (PA) formation, skin erosion, graft thrombosis, and infection.

Proximal venous outflow stenosis causes increased resistance leading to weakening and dilatation of the vein or graft. PAs that are not repaired may result in skin erosion, rupture, or infection. Current standard of treatment of PAs is surgical revision.

We hypothesize that percutaneous covered stent placement is a viable and safe alternative to surgical resection for maintaining access patency.

METHODS: A micropuncture sheath was placed, and a diagnostic fistulogram was obtained. Patients were anticoagulated using intravenous heparin at the discretion of the interventionalist. Fluency self-expanding covered stents were deployed, and a 6-French sheath was placed following deployment. Duplex ultrasound studies were performed at two- and six-month post-operative intervals.

RESULTS: From July 2005 to May 2010, we prospectively evaluated 32 patients of whom 24 were enrolled. Ten patients had multiple PAs. Nine had previous interventions consisting of angioplasty of stenotic areas. There were no complications from the PA repairs. Two-month follow-up duplex was completed on 83% (20/24) of patients and six-month follow-up duplex was completed on 58% (14/24). One patient requested stent removal secondary to pain after the two-month follow-up. One patient died before completing six-month follow-up. One patient has not been enrolled for six months. Three patients had stent explantation before two-month follow-up duplex. Two patients had the stent removed due to infection before six-month follow-up. Two- and six-month duplex showed 100% patency and effective exclusion of PAs. One patient developed a late complication of stent fracture with new PA formation. To date, the longest duration of patency is 54 months.

CONCLUSION: Results show that minimally invasive endovascular techniques can be safely used to exclude PAs while prolonging use of the access site. In our study, infection was the most common cause for endograft removal. A larger sample size and additional follow-up is needed to validate and support our current results. It should be noted that late complications may arise, and patients should continue to be followed at regular intervals.

P35. Primary Patency of Arteriovenous Fistulas and Biosynthetic Grafts: Is There a Gender Difference?

Loren L. Masterson, MD, MBA, Patricia Pentiak, MD, Mohsen Bannazadeh, MD, Adewunmi Adeyemo, MD, O. William Brown, MD

William Beaumont Hospital, Royal Oak, MI

OBJECTIVES: Patients who require long term hemodialysis (HD) typically receive either an arteriovenous fistula (AVF), biosynthetic prosthesis graft (AVG) or tunneled central catheter. AVF are the preferred primary access for patients, and gender differences have been reported in the past in their implementation and use. While studies have shown that AVF have greater patency overall, AVG are implemented in women at a higher rate then men possibly due to concerns over vessel size or early fistula failure. This retrospective study aims to examine the primary patency rates of both AVF and AVG at our institution, and to evaluate any gender differences in their use or function.

METHODS: A retrospective chart review was conducted. All AVF and AVG performed over the previous two years at our institution were included for review. Patient demographics such as cause of end-stage renal disease (ESRD), age at time of procedure and gender were evaluated, as well as primary patency (defined as time until first successful HD treatment). Patency at one year and any complications were also reviewed where data was available.

RESULTS: A total of 132 patients received AVF or AVG in the study time period. Any patients with inadequate follow-up or without recorded primary patency rates were excluded. A total of 12 AVG and 36 AVF over the previous 2 year time period were qualified. Significantly more women received AVG then men –75% of AVG studied were performed in women, in comparison to 25% of AVF. The one year patency of all AVG and AVF was 70.0% (standard error of 8.46%), which is consistent with previously reported national patency rates. When comparing primary patency of AVG and AVF, there was no statistical difference demonstrated (p value 0.64). When evaluating complications, complication rates were similar in women who received AVF versus AVG (37.5% versus 38.0%).

CONCLUSIONS: At our institution, there was no significant difference in patency or complications between AVG and AVF over a 1 year time period in female patients. While long term follow up is needed, AVG are still a viable option for women that do not qualify for an AVF. Future studies include a review of preoperative evaluation of these patients in comparison to long term patency.

TOPIC: VENOUS & OTHER
Moderator: Joann M. Lohr, MD

P36. Intracardiac Leiomyomatosis: A Case Report and Literature Review

Trisha Roy, BASc, MD Candidate[1], Richard O'Connor, MD, FRCSC[2], Ian McGilvray, MD, PhD, FRCSC[3], Graham Roche-Nagle, MD, MBA, FRCSI, EBSQ-VASC[3]

[1]University of Toronto, Toronto, ON, Canada, [2]Credit Valley Hospital, Mississauga, ON, Canada, [3]University Health Network, Toronto, ON, Canada

OBJECTIVES: Intravenous leiomyomatosis (IVL) is a rare smooth muscle tumour characterized by the unusual growth of uterine leiomyomas into pelvic veins. Although these tumours are benign, in some cases they can extend into the inferior vena cava (IVC) and right-sided heart chambers resulting in life-threatening consequences. There is growing recognition of this fatal condition but intracardiac leiomyomatosis (ICL) may still be under recognized. Kocica et al performed a literature review in 2005 of all reported cases of ICL. We present an updated extensive literature review of ICL from 2005–2011 and a case report illustrating features of this pathology.

METHODS: We performed a comprehensive literature search using MEDLINE, Embase and PubMed databases using MeSH terms: "leiomyomatosis" and "heart", limited to English articles from 2005 to 2011. References within each publication were searched to identify reported cases of ICL to date.

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RESULTS: We present a case of a 37-year-old female with ICL extending to the right atrium and treated with a one-stage tumour excision with perioperative TEE. This case demonstrates the important factors in diagnosis and management of this pathology. The literature search generated 41 published articles of 116 ICL cases from 2005–2011. There are a total of 229 cases of ICL reported from its first description in 1907. 51% of all ICL cases were reported from 2005–2011. Patients are on average 42.9 years old (20–72) and presented most often with symptoms of dyspnea, palpitations and syncope. The most commonly reported preoperative imaging techniques were CT and transthoracic echocardiogram (TTE). However, misdiagnoses on CT and TTE of atrial myxoma or atrial/IVC thrombus were reported in 10 cases. Radical excision is required because incomplete excision results in recurrences, as reported in 11 cases. Radical excision may be achieved via one-stage (60% of reported cases) or two-stage (40% of reported cases) operations. Perioperative TEE was reported in 5 cases and was a powerful tool for diagnosis and guiding surgical management.

CONCLUSIONS: ICL may be an under recognized fatal condition that requires a high index of clinical suspicion. Contemporary imaging tools including TEE can aid in diagnosing ICL and guide optimal surgical strategy.

P37. Efficacy of Multimodality Endovascular Treatment for Acute Inferior Vena Cava Thrombosis

Qinghua Pu, MD, Jonathan A. Schor, MD, Kuldeep Singh, MD, Charles C. Sticco, MD, Jonathan S. Deitch, MD

Staten Island University Hospital, Staten Island, NY

OBJECTIVE: To study the technical feasibility and procedural outcomes of multimodality endovascular treatment on acute symptomatic inferior vena cava (IVC) thrombosis.

METHODS: Retrospective analysis was performed of consecutive patients between the years 2004 to 2011 with acute symptomatic IVC thrombosis treated by endovascular methods. Demographic data, technique modality and procedure outcomes were collected.

RESULTS: 17 patients (10 male) who ranged in age from 26–72 years (mean, 54 years) with acute (<2 weeks) symptomatic IVC thrombosis underwent endovascular revascularization. The average onset of symptoms was 4.9 days. Infrarenal IVC thrombus and iliac vein thrombus was identified in all patients. 88% patients had at least one risk factor for IVC thrombosis. 82% had a prior placed IVC filter. Phlegmasia cerulea dolens was the presenting symptom in 7 patients (41%). Multimodality endovascular techniques, including Angiojet thrombectomy (n = 13, 76%), Trellis thrombectomy (n = 10, 59%), catheter directed thrombolysis (CDT) (n = 15, 88%), adjunctive venoplasty (n = 12, 71%) and stent placement (n = 4, 24%) were utilized in combination for endovascular treatment. Unilateral (29%) or bilateral (59%) popliteal veins were accessed for catherization in 15 patients whereas femoral vein or internal jugular vein was utilized in 2 patients (12%). The number of endovascular procedures ranged from 1–3 (mean, 2.10 precedures). Patients with more than one procedure typically had overnight CDT with TPA 1 mg/kg/hour through one or two infusion catheters (n = 15). CDT as the sole treatment was performed in 2 patients. Grade III (complete) lysis was achieved in 13 (76%) and grade II (50%-90%) lysis in 4 (24%) patients. No serious procedure-related complications were encountered, although two of the patients died of phlegmasia related complications.

CONCLUSIONS: A multimodality approach to the acutely thrombosed inferior vena cava is very effective at rapid restoration of inline blood flow. The presence of a thrombosed IVC filter does not preclude the use of these techniques.

P38. Resolution of Symptoms Post Isolated Celiac Artery Revascularization

Madian Yahya, MD[1], Emilia Krol, MD[1], Alan M. Dietzek, MD[2], Dahlia Plummer, MD[1], Richard Hsu, MD[1]

[1]Danbury Hospital, Danbury, CT, [2]Surgery, Danbury Hospital, Danbury, CT

OBJECTIVES: Due to the extensive collateralization between the celiac artery (CA) and the superior mesenteric artery (SMA) it has been argued that isolated atherosclerotic CA stenoses do not result in symptomatic ischemia requiring intervention. This report addresses whether isolated CA stenoisis can manifest symptoms and whether single vessel CA endovascular revascularization can lead to symptom relief.

METHODS: A retrospective chart review was done on 6 cases of isolated celiac artery (CA) endovascular revascularization performed by two fellowship-trained vascular surgeons in our institution since January 2007. The lesions were detected by Duplex Ultrasonography, CT angiography (CTA), or Magnetic Resonance Angiography (MRA). They were then confirmed by angiography and treated concomitantly with stent placement. Completion angiogram confirmed patency. The patients were then maintained on Plavix for three months after the procedure. Data gathered included: gender, age, presenting symptoms, pre-operative testing, intra-operative angiographic findings, type of procedure, symptom resolution and length of follow up.

RESULTS: All six patients (all female, with mean age of 57.6 years old) had a patent SMA and underwent successful stenting of isolated CA lesions. The patients presented with chronic abdominal symptoms including; diarrhea (33%), nausea and vomiting (33%), chronic abdominal pain including postprandial (100%), duodenal/gastric ulcers refractory to medical treatment (33%), and/or weight loss (33%). All of the patients had more than one symptom and underwent a work-up that excluded other primary causes. One patient, who was previously treated for symptomatic isolated celiac stenosis, presented two years later with recurrent symptoms and inter-stent stenosis which required re-intervention.

100% of the patients reported improvement of symptoms on follow up. Two patients presenting with gastric and duodenal ulcers due to isolated celiac artery stenosis had resolution of these ulcers postoperatively. None of our patients had any significant morbidity postoperatively, with 0% thrombosis, peripheral arterial injury, kidney failure, infection, significant bleeding or MI. The length of follow up ranges from 3 weeks to 2.5 years.

CONCLUSIONS: We have shown that endovascular treatment of isolated celiac artery stenosis can result in resolution of symptoms consistent with intestinal ischemia. Further, our results would indicate that these procedures can be performed with very low morbidity and mortality rates.

P39. Assessing the Prevalence of Thrombolysis in DVT Management and Identifying the Factors Contributing to Its Utilization

Charles V. Strom, MD, Justin Lee, MD, Haisar Dao, MD, Julia Tassinari, MD, Rocco Ciocca, MD

St. Elizabeth's Medical Center, Boston, MA

OBJECTIVE: To determine the prevalence of thrombolysis in patients admitted with DVT's and to elucidate patient and hospital characteristics affecting its utilization.

METHODS: A retrospective analysis was conducted using the Nationwide Inpatient Sample (NIS) for the years 2004 through 2008. The database was queried using ICD-9-CM codes for all diagnoses of venous embolism and thrombosis (excluding DVT's in various organ systems). The number of patients receiving thrombolytics was trended over that period. Searches comparing the anatomic locations of treated DVT's and medical center characteristics were also performed.

RESULTS: Data from this cohort of patients, representing all discharges from a 20% stratified sample of US hospitals over five years, demonstrate an increasing trend in the diagnosis of proximal leg DVT's (41.5% to 49.3% of all DVT diagnoses), and a decreasing trend in the rate of distal leg DVT's (33.3% to 27.5%). Resultant use of thrombolytics over that period increased, from 1.3% of patients in 2004 to 1.9% in 2008 ($p < 0.001$). By location, 3.1% of patients with distal leg DVT's received thrombolysis, versus 3.5% with DVT's located elsewhere ($p = 0.048$). More notably, 5.3% of patients with proximal leg DVT's received thrombolysis, versus 1.9% located elsewhere ($p < 0.001$). By teaching status, 2.5% of patients at teaching hospitals received thrombolysis, compared to 3.6% at nonteaching hospitals ($p < 0.001$). Hospital location had no effect, as 3.4% of patients received thrombolysis at both urban and rural centers ($p = 0.489$). Multivariate analyses compared the likelihood of receiving thrombolysis across five different patient and hospital criteria. Odds ratio of receiving thrombolysis in distal leg DVT's was 0.88 ($p = 0.092$), but significantly greater for proximal leg DVT's (OR 2.938, $p < 0.001$). Thrombolysis was less likely to be given at teaching programs (OR 0.702, $p = 0.001$), while more likely at nonteaching institutions (OR 1.427, $p = 0.001$). For reference, thrombolysis in the treatment of pulmonary emboli was also considered (OR 1.798, $p < 0.001$).

CONCLUSIONS: We identified a steady increase in the use of thrombolytics for venous embolism and thrombosis. This is best exemplified by the heightened prevalence of thrombolytic utilization in the management of proximal lower extremity DVT's. Institutional teaching status also appears to play a role, with a significantly greater usage of thrombolysis by nonteaching facilities. Hospital location (urban vs. rural) does not appear to play a role.

P40. The Role of Ultrasound to Identify Non-Thrombotic Lower Extremity Pathology

Anil Hingorani, MD, Mohsin Khan, Enrico Ascher, MD, Natalie Marks, MD, RVT, Alexsander Shiferson, DO, Robert Jimenez, ME, ED Aboian, MD, Theresa Jacob, PhD Maimonides Medical Center, Brooklyn, NY

Accreditation in peripheral venous testing can be obtained based upon femoropopliteal duplex ultrasound evaluation, and many laboratories limit their examination to this segment only. This simplified protocol detects acute femoropopliteal deep venous thrombosis (DVT) but misses calf vein DVT, superficial venous thrombosis, chronic DVT, venous reflux, and other non-venous findings potentially responsible of the pateints' presenting conditions. A protocol limited to the femoropopliteal segment results in additional unnecessary testing and can create patient dissatisfaction. We evaluated the differences in the diagnosis between a limited femoropopliteal versus a complete approach to the venous ultrasound evaluation of the lower extremities in patients examined in an outpatient vascular laboratory.

METHODS: A database with the complete ultrasound exams of the lower extremity including the common femoral, deep femoral, popliteal, tibial and peroneal veins, calf musclar veins, great and lesser saphenous veins performed in 1208 consecutive patients from July 2009–February 2010 was queried.

RESULTS: Acute femoropopliteal DVT was found in (20/1208) = 1.66% of the patients.

Acute infrapopliteal DVT was found in (36/1208) = 2.98%. Chronic femoropopliteal DVT was found in (42/1208) = 3.48%. Superficial thrombophlebitis of Lower extremities–84/1208 = 6.95%.

In addition, deep venous insufficiency (>500 milliseconds) was found in (385/1208) = 31.87% and superficial venous insufficiency in (212/1208) = 17.55% (>500 milliseconds).

A mass (cyst, hematoma, solid mass or aneurysm) was found in (10 cysts, 4 Hematomas, 46 solid mass, 3 aneurysms) 64/1208 = 5.3%.

CONCLUSIONS: Limited femoropopliteal ultrasound examination for acute DVT would have only detected a small percentage of the positive findings. These data suggest that the duplex exam can be used to further delineate the cause of outpatients' symptoms as compared to the limited protocol.

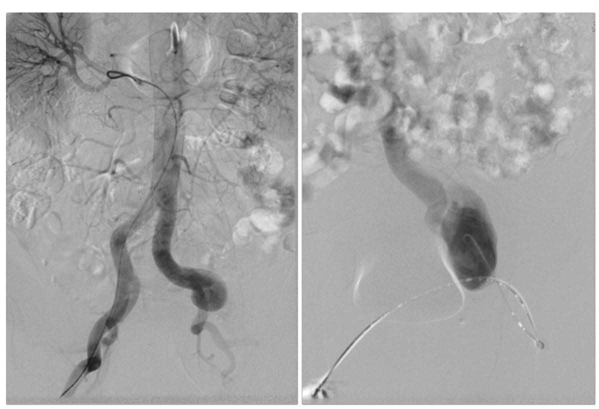
P41. Endovascular Exclusion of a Large External Iliac Vein Aneurysm: A Novel Approach

Mina Todorov, MD, Diego Hernandez, MD
St. Joseph Mercy Oakland, Pontiac, MI

OBJECTIVES: Venous aneurysms are uncommon entities, particularly those involving the iliac veins. Their etiology is often secondary to trauma, and although usually asymptomatic, these aneurysms may lead to complications such as compression, thrombosis, embolization and rupture. Due to their rare occurrence, there has been no consensus as to what constitutes optimal treatment. Historically, these aneurysms have been treated by open techniques with tangential aneurysmectomy and lateral venorrhaphy, or by interposition grafting using other venous or synthetic conduits. We present a case of a large external iliac vein aneurysm successfully treated by endovascular exclusion.

METHODS: The patient is a 62 year-old male who underwent work-up for a left pelvic mass incidentally discovered during routine urological examination. An MRI confirmed a large saccular external iliac vein aneurysm. As a teenager, he had developed an AV fistula from a traumatic injury to his SFA. He subsequently developed heart failure and the fistula was ligated. For years he had persistent left lower extremity edema previously attributed to a left ankle fracture.

Aorto-iliac angiogram revealed a corkscrew appearance to his dilated left external iliac artery (Figure 1, left image), a sequela of his distal AV fistula. Ascending venogram confirmed a large saccular external iliac vein aneurysm extending just cranial to the common femoral vein, and stenosis of the distal left common iliac vein (Figure 1, right image), likely secondary to compression from the tortuous iliac artery. The aneurysm was excluded by using a 16 mm x 18 mm x 13.5 cm Gore Excluder stent graft. Our access was via cut-down on the mid-femoral vein, and we utilized IVUS to obtain appropriate measurements and ensure adequate positioning.



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RESULTS: Post-deployment venogram confirmed complete aneurysm exclusion and no endoleak. He was discharged home on POD 2 and resumed his daily activities without limitations. He used a compression stocking to control his edema, which resolved quickly. Six month venous Duplex revealed a smaller aneurysm sac and no endoleak.

CONCLUSIONS: To our knowledge, this is the first reported case of a large external iliac vein aneurysm treated by endovascular exclusion. We have demonstrated the feasibility of this approach, with short-term follow-up that appears satisfactory.

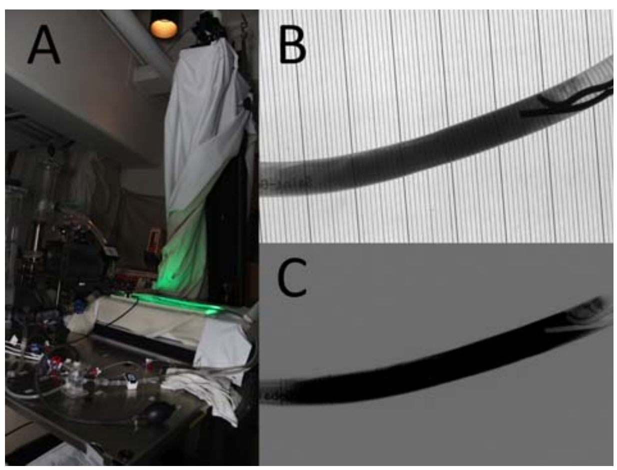
P42. A Light-Based, Radiation-Free Angiographic Simulator for the Study of Complex Hemodynamics

Doran Mix, BS[1], Daniel B. Phillips, PhD[2], Steven Day, PhD[2], Nicole Varble, MS[1], Karl Q. Schwartz, MD[1], Ankur Chandra, MD[1]

[1]University of Rochester, Rochester, NY, [2]Rochester Institute of Technology, Rochester, NY

OBJECTIVE: The experimental study of hemodynamics through angiography is difficult. Most studies require large animal models with concurrent exposure to ionizing radiation in dedicated, expensive animal facilities. Our goal was to develop an experimental angiographic system without the need for ionizing radiation and animal models.

METHODS: A physiologically accurate, in vitro arteriovenous fluid model was used to simulate the vascular system. An Infimed high-resolution CCD imaging unit was used to image the photo-lucent vascular model over a light source (Figure 1A). Black photo-opaque dye was used as the contrast medium in varying concentrations delivered through a power injector. The entire imaging system was driven through a customized computer interface.



RESULTS: The use of the light-based system allowed for both fluoroscopic (Figure 1B) and digital-subtraction DICOM image (Figure 1C) acquisition and storage to a local PACS server for future study. Total imaging area obtained was 506 cm^2 with spatial 1024 x 1024 pixel resolution of 250 ìm^2 per pixel at a maximum frame rate of 15 fps. Various parameters including flow, contrast density, and downstream contrast dilution were quantified after varying contrast injection rates. The system accurately imaged real-time catheter and guidewire movements during physiologic flows and contrast injections.

CONCLUSIONS: Through the novel utilization of imaging technology and in vitro hemodynamic simulation, experimental angiographic studies can be carried out free of radiation and large animal work in a variety of anatomic situations. The current limitations include the inability to image through tissues, requiring recreation of the vascular system of interest on the hemodynamic simulator. The potential applications of this technology include training, device testing, and development of angiographically-derived hemodynamic algorithms which would be too cumbersome or unethical to obtain in human or animal settings.

2:15 pm – 3:45 pm

FOCUSED SESSION– Pushing the Limits of Vascular Technology

(Encore 4-8)

Moderated by: *Fred A. Weaver, MD*
R. Clement Darling, III, MD

SPEAKERS:

Carotid
Peter A. Schneider, MD
Kaiser Foundation Hospital, Honolulu, HI

Aorta and Aortic Aneurysm
Benjamin W. Starnes, MD
University of Washington, Seattle, WA

Lower Extremity
Richard F. Neville, MD
George Washington University, Washington DC

Visceral/Renal
Mark G. Davies, MD
Methodist Hospital, Houston, TX

Venous
Robert B. McLafferty, MD
SIU School of Medicine, Springfield, MI

3:45 pm – 4:15 pm

COFFEE BREAK IN EXHIBIT HALL & ePOSTER VIEWING
(Encore 1-3)

4:15 pm – 5:00 pm SCIENTIFIC SESSION 6—LOWER EXTREMITY ARTERIAL DISEASE II (Encore 4-8)

Moderated by: Rabih A. Chaer, MD
George H. Meier, MD

4:15 pm – 4:28 pm 19. Contemporary Outcomes of Endovascular Interventions for Arterial Acute Limb Ischemia (ALI)

Raphael Byrne, BA, Luke Marone, MD, Robert Rhee, MD, Jae Cho, MD, Dan Winger, MS, Li Wang, MD, Clareann Bunker, MPH, PhD, Michel S. Makaroun, MD, Rabih A. Chaer, MD

University of Pittsburgh, Pittsburgh, PA

OBJECTIVES: Thrombolysis for arterial ALI has become first line therapy based on studies published over two decades ago primarily using urokinase. The purpose of this study was to assess outcomes of patients treated for ALI using contemporary lytic agents and endovascular techniques.

METHODS: Consecutive patients with lower extremity ALI treated with thrombolysis between 2005–2011were studied. All patients were treated with tPA delivered via catheter directed thrombolysis (CDT) and/or pharmacomechanical thrombolysis (PMT), with adjunctive endovascular or surgical interventions.

Table 1: Patient Characteristics and Indications for Intervention

	Overall N (%)	CDT N (%)	PMT N (%)	P Value
Mean Age	65.45	65.53	65.35	0.943
Sex (Female)	65 (42.2)	34 (41.0)	31 (43.7)	0.746
Smoking	112 (76)	57 (39)	55 (37)	0.389
CAD	83 (55.7)	44 (55.0)	39 (56.5)	0.87
Afib	33 (22)	21 (25.9)	12 (17.4)	0.239
Hypertension	116 (78.4)	62 (77.5)	54 (79.4)	0.843
Diabetes	59 (39.9)	34 (42.5)	25 (36.8)	0.504
Dialysis	7 (4.7)	3 (3.8)	4 (5.8)	0.704
Indications				
In situ thrombosis	37 (24.0)	21 (25.3)	16 (22.5)	0.71
Failed Stent	41 (26.6)	18 (21.7)	23 (32.4)	0.147
Failed Bypass	56 (36.4)	30 (36.1)	26 (36.6)	0.951
Pop Aneurysm	6 (3.9)	4 (4.8)	2 (2.8)	0.687
Embolization (Afib, aortoiliac)	22 (14.3)	16 (19.3)	6 (8.5)	0.066

Procedural success and outcomes were obtained for the whole series and were also compared between the CDT and PMT groups. Limb salvage, and survival were assessed using Kaplan-Meier estimation and Cox proportional hazards models.

RESULTS: 154 limbs (83 CDT only, 56 CDT for incomplete PMT, 15 standalone PMT), were treated in 147 patients presenting with ALI (Rutherford class I 9.7%, class IIa 70.1%, class IIb 20.1%). Mean follow-up was 15.20 months (range :0.56–56.84). Patient characteristics and indications for intervention are detailed in Table. Technical success was achieved in 80.5% of cases, with a 30-day mortality rate of 5.2%. Procedural complications included systemic bleeding (5.8%), access site hematoma (4.5%), and acute renal failure (3.9%). The mean runoff score improved from 13.42 pre- to 7.43 post intervention. Adjuvant revascularization procedures were required in 89.0% of patients and were endovascular (68.8%), hybrid (9.1%) or open (11.0%). Only 7.1% of patients required a fasciotomy. Overall rate of major amputation was 14.9% (18.1% for CDT only, 11.3% for PMT, p = NS). Predictors of limb loss by life table analysis included ESRD (HR = 12.754, $p = 0.0479$), and poor pedal outflow ($p = 0.0022$), with an incremental protective effect for improved pedal outflow [(HR = 0.212, $p = 0.0078$ for 1 pedal outflow vessel); (HR = 0.062, $p = 0.003$ for ≥2 pedal outflow vessels)]. Gender, smoking, diabetes, Rutherford score, runoff score, and thrombosed popliteal aneurysm, were not significant predictors of limb loss. In addition, limb salvage appeared equivalent between the CDT and PMT groups.

CONCLUSIONS: Endovascular therapy with thrombolysis using tPA remains an effective treatment option for patients presenting with lower extremity ALI, with equivalent limb salvage with CDT or PMT. Patients with ESRD and poor pedal outflow have increased risk of limb loss and may benefit from alternative revascularization strategies.

4:28 pm – 4:58 pm MINI PRESENTATIONS

MP34. Gracilis Muscle Flap for Groin Infections: Under Utilized by the Vascular Surgeons

Ahsan T. Ali, MD, Sarasijhaa Desikan, MS, J. Gregory Modrall, MD, Mohammad M. Moursi, MD, John F. Eidt, MD

University of Arkansas for Medical Sciences, Little Rock, AR

OBJECTIVES: The incidence of arterial infections in the groin area is on the rise. Treatment of arterial infection posses a challenge when multiple procedures have destroyed skin and soft tissue over the femoral artery. The femoral can be vulnerable due to lack of adequate coverage. It is hypothesized that the gracilis muscle flap can be successfully used as muscle pedicle flap to provide coverage of these wounds. This may be under utilized by the vascular surgeons. This series reviewed all the gracilis flaps performed over a 15-year period exclusively by vascular surgeons.

METHODS: All reconstruction using muscle flaps were reviewed from 1997 through 2011.

RESULTS:

Table 1

	n = 50 (limbs = 54)
Age (yr.)/sex (M:F)	64.3 ± 11.4/(39:8)
Presentation	
Bleeding (n)	2
Pseudoaneurysm (n)	3
Groin sinus (n)	27
Exposed graft (n)	13
Mortality (%)	13%
12-month mortality (%)	22%
Microbiology (%)	
No growth	16%
Uni microbial	44%
Poly microbial	32%
Recurrent infection	8%
Procedure complication	2%
Limb loss	9%

Vacuum assisted drainage over the flap was used in 16 limbs whereas primary closure was performed in 11 limbs and wet to dry dressing changes were performed in 26. Three primary closures had to be converted to wet to dry saline dressing. One patient had flap necrosis needing a sartorius flap. Overall the flap survival rate was 98%. One flap necrosis occurred on post op day 8 from persistent infection. All procedures were done in conjunction with a infected graft excision and vascular reconstruction in 90% of the patients. Preioperative mortality was 13%. Mean follow-up of 28 months with a freedom from reinfection of 98%. All flap transposition was performed by vascular surgeons at the time of vascular reconstruction.

CONCLUSIONS: Gracilis muscle is relatively uninvolved and provides for an excllent coverage in the groin area. It is durable and effective against infection. This procedure is technically feasible and can be easily be performed by vascular surgeons at the initial surgery.

MP35. Limb Salvage Following Isolated Percutaneous Balloon Angioplasty of the Tibial Arteries

Andrew M. Bakken, MD, Manju Kalra, MBBS, Gustavo S. Oderich, MD, Michael A. McKusick, MD, Audra A. Duncan, MD, Jeremy L. Friese, MD, Thomas C. Bower, MD, Peter Gloviczki, MD

Mayo Clinic, Rochester, MN

OBJECTIVE: Patients with critical limb ischemia (CLI) due to atherosclerotic occlusive disease isolated to the infrapopliteal vessels are beset by diabetes, chronic kidney disease, and cardiac disease. Although percutaneous therapy seems an ideal option in this comorbid population, data suggest worse outcomes compared with multilevel disease. This study reviewed our experience with percutaneous angioplasty (PTA) for atherosclerotic disease isolated to the tibial vessels.

METHODS: All patients undergoing PTA exclusive to the tibial vessels from 2001 through 2010 were retrospectively reviewed. Limb salvage and survival were assessed by Kaplan-Meier analysis. Additional clinical outcomes were subjected to Cox proportional hazards analysis.

RESULTS: Among 399 primary tibial interventions over the study period, 129 limbs in 122 patients (mean age 73) were treated for isolated tibial vessel disease. Average follow-up was 25 months. Eighty-one percent were diabetics, 23% had renal insufficiency, 16% required hemodialysis, and 5% were prior renal transplant recipients. Eighty-nine percent were treated for tissue loss, while 4% were treated for rest pain. Fifty-three percent of treated vessels were occluded. The TP trunk, AT, peroneal, and PT were treated in 17%, 54%, 27%, and 29% of limbs, respectively. Multiple vessels were treated in 23%. Technical success was 85%. Thirty-day peri-operative mortality was 2.3 ± 1% due to 3 post-operative mortalities, 1 of which was attributable to the intervention. Median pre-operative TcPO2 was 15. Median post-operative TcPO2 was 33. Forty percent of limbs had a TcPO2 increase ≥ 20. Freedom from major amputation was 66 ± 5% at 1 year and 63 ± 5% at 3 and 5 years. Overall survival was 78 ± 4% at 1 year, 52 ± 5% at 3 years, and 35 ± 6% at 5 years. Major amputation-free survival was 56 ± 6% at 1 year, 38 ± 5% at 3 years, and 27 ± 5% at 5 years. Diabetes and renal disease were not associated with limb salvage, nor was the specific vessel of intervention. Post-operative TcPO2 ≥ 20 was strongly associated with limb salvage (LR 9.3, $P = 0.0023$).

CONCLUSIONS: Tibial vessel PTA is relatively safe in the higher-risk population of patients with CLI due to isolated tibial disease, though not without risk. Unfortunately, meaningful mid- to long-term limb salvage is achieved for only a minority of these patients.

MP36. Surgical Bypass or Endovascular Therapy?: How Vascular Surgeons Decide for Patients with Infrainguinal Arterial Disease and Critical Limb Ischemia

Alik Farber, MD[1], Gheorghe Doros, PhD[2], Matthew Menard, MD[3]

[1]Boston University Medical Center, Boston, MA, [2]Boston University School of Public Health, Boston, MA, [3]Brigham and Women's Medical Center, Boston, MA

OBJECTIVES: The decision to treat critical limb ischemia (CLI) with open surgery (OS) or endovascular therapy (ET) is often guided by individual bias, skill set and intuition rather than established evidence-based criteria. We sought to quantify the degree of equipoise between these treatment options across a range of clinical and anatomic parameters and elucidate the relative importance of these parameters on treatment strategy.

METHODS: A 123-question survey (multiple choice and Likert scale (1–5)) was administered to vascular surgeons from the United States and Canada recruited to participate in a proposed randomized trial of best OS or ET in patients with infrainguinal arterial disease and CLI. Surgeon demographics (7 questions), open and endovascular experience (25 questions) and surgeon bias (91 questions) were assessed. Treatment equipoise was measured as the sum of individual (personal declaration that equipoise exists) and community (offsetting discordance in choice of competing therapies) equipoise.

RESULTS: 76 of 100 surgeons queried completed the survey. 85% of respondents were academic vascular surgeons, 64% completed training more than 10 years previously and 78% had a OS:ET practice ratio of 40:60, 50:50 or 60:40. Ambulatory status, high surgical risk, severe coronary artery disease, frail appearance, and early surgical failure were judged to be very to extremely important (Likert scale 1 and 2) by 88%, 87%, 87%, 83%, and 80% of respondents in choosing between OS and ET, respectively. A greater degree of treatment equipoise was seen with ischemic rest pain (88%) and minor (92%) than major (58%) tissue loss. 79% of surgeons preferred ET when autogenous vein was unavailable, while treatment equipoise was 49% in the presence of suitable saphenous vein. Treatment equipoise was notably low for TASC D anatomy (Figure 1A). 96% of respondents felt the presence of severe common femoral arterial disease should warrant OS, whereas there was significant equipoise with respect to other anatomical factors (Figure 1B).

Figure 1A: Treatment Preference by TASC II Classification

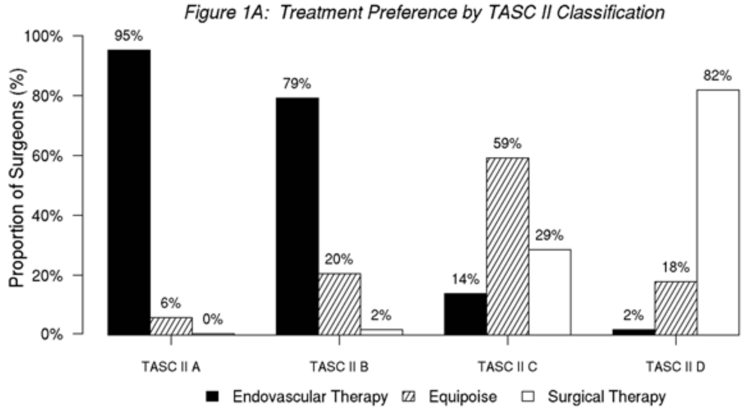
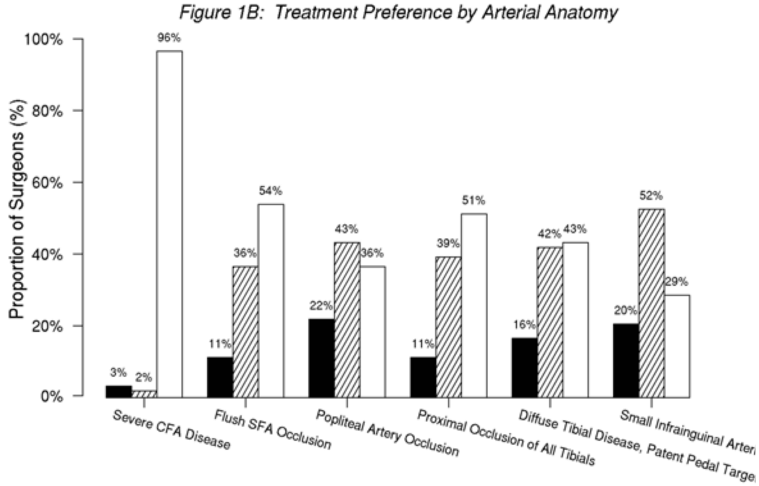


Figure 1B: Treatment Preference by Arterial Anatomy



CONCLUSIONS: Our survey identifies significant equipoise across a range of clinical and anatomic variables in the current treatment of CLI within the North American vascular surgery community, and delineates the relative influence of individual clinical and anatomic parameters on the choice of OS or ET. A strong preference for surgical treatment of TASC D lesions was demonstrated.

MP37. Impact of Pedal Runoff on Clinical and Anatomic Outcomes of Endovascular Tibial Artery Interventions

Javier E. Anaya-Ayala, MD, Matthew K. Adams, MD, Scott S. Saunders, BS, Christopher J. Smolock, MD, Jean Bismuth, MD, Eric K. Peden, MD, Alan B. Lumsden, MD, Mark G. Davies, MD, PhD, MBA

Methodist DeBakey Heart & Vascular Center, Houston, TX

BACKGROUND: While there has been a significant increase in primary endoluminal therapy for tibial artery occlusive disease, the implications of pedal runoff on the outcomes of these interventions is unclear. The purpose of this study is to examine the impact of pedal runoff on long-term clinical and anatomic outcomes of tibial interventions.

METHODS: A prospective database of patients undergoing endovascular treatment of the tibial vessels for rest pain and tissue loss between 2000 and 2011 was queried. Angiograms were reviewed in all cases to assess tibial runoff. Each dorsalis pedis (DP), lateral plantar (LP), and medial plantar (MP) artery was assigned a score according to the reporting standards of the SVS (0, no stenosis >20%; 1,21%–49% stenosis; 2,50%–99% stenosis; 2.5, <half the vessel length occluded; 3, > half the vessel length occluded). A foot score (DP + MP + LP) was calculated for each foot (1to10). Two run-off score groups were identified: <5 and ≥5. Clinical success was defined as a patient that satisfied all three criteria: absence of recurrent symptoms, maintenance of ambulation and absence of major amputation. Kaplan-Meier survival analyses were performed to assess time-dependent outcomes. Factor analyses were performed using a Cox proportional hazard model for time dependent variables.

RESULTS: 220 limbs in 198 patients (60% male, average age 70 years) underwent endovascular tibial artery interventions for tissue loss. 87% had hypertension, 73% had diabetes mellitus, 59% had hyperlipidemia and 23% had chronic renal insufficiency (76% of these on hemodialysis). Technical success was 99% with a mean of vessels treated per patient and a mean pedal runoff score of 6. Overall mortality was 9% and overall morbidity was 32% at 90 days after the procedure. At 3 years, vessels with compromised runoff (scores ≥5) had significantly lower ulcer healing and a lower limb salvage rate (Table). Patencies were significantly worse in patients with a runoff score ≥5 (Table). Occlusion was correlated with major limb loss (*$p < 0.05$*). (Table).

Table 1

Runoff Score	<5	≥5	p-value
Number Limbs at Risk	78 (35%)	142 (65%)	–
MACE (%)	2 (3%)	2 (1.4%)	
MALE (%)	13 (16%)	60 (42%)	
Conversion to open bypass within 3 months (%)	2	10 (7%)	
Patient survival (% by life table)	68%	62%	
Minor Amputation (Toe and TMA) (% of n)	7 (8%)	24 (16%)	
Major Amputation (BKA and AKA) (% of n)	2 (3%)	43 (30%)	
Primary Patency (% by life table)	81%	56	
Assisted Primary Patency (% by life table)	73%	58%	
Secondary Patency (% by life table)	7	58%	
Limb Salvage (% by life table)	82%	36%	
Clinical success (% by life table)	43%	39%	

Mean ± SEM at three years follow up

CONCLUSIONS: Pedal runoff score can easily identify those patients who will not achieve ulcer healing and limb salvage after tibial intervention. Defining such subgroups will allow stratification of the patients and appropriate application of interventions.

MP38. Patterns of Femoropopliteal Recurrence After Endoluminal Therapy: Does Routine Stenting of the Entire Diseased Artery Decrease the Incidence of Clinically Significant Recurrence?

Misaki Kiguchi, MD, MBA, Luke Marone, MD, Rabih Chaer, MD, Justine Kim, Zhen Yu Shi, MD, Rolando Celis, MD, Michel S. Makaroun, MD, Robert Rhee, MD

University of Pittsburgh Medical Center, Pittsburgh, PA

OBJECTIVE: To determine the incidence and characteristics of recurrent disease after femoropopliteal angioplasty, following either selective or routine stenting of diseased site(s).

METHODS: Retrospective analysis of a prospectively maintained database for femoropopliteal interventions from 6/03 to 7/10 was performed. Interventions during this period were from a single institution, followed at 1, 3 and 6 months after initial intervention and on a semiannual basis thereafter with clinical examination and duplex ultrasound. Two groups were identified, Group RS (all diseased areas are routinely stented) versus Group SS (selective stenting for only segments which exhibited compromised flow from residual stenosis or significant dissection). Those patients who developed recurrent symptoms (claudication, rest pain, etc.), decrease in ABI (>0.2), or duplex documentation of a significant (>80%) recurrent stenosis, underwent reintervention. Patient demographics, co-morbidities, TASC II classification, run off, and degree of calcification (none, mild, moderate, severe) at initial intervention were recorded. Time to re-intervention and recurrence pattern were recorded for both groups.

RESULTS: 746 endovascular interventions in 447 patients were performed during the study period. Total recurrence rate, including bypass, amputation, and asymptomatic occlusion after initial intervention, was 36.48% (Group SS = 42.9% Group RS 33.1% p = 0.04). Of all initial interventions, 182 endovascular re-interventions in 165 patients for recurrent femoropopliteal disease were identified (Group SS = 70, Group RS = 95). No differences were noted among the groups in terms of gender, comorbidities, initial TASC II classification, run off, calcification scores, or statin/clopidrogel use. Time to recurrence was not different between the RS and SS groups. TASC II classification, run off score, and degree of calcification were not different between the two groups (Table 1). Although not statistically significant, analysis of recurrence pattern demonstrated denovo stenosis was more common in the SS group (50.0% vs. 34.7% p = 0.06).

Table 1

	Group SS n = 70	Group RS n = 95	p-Value
Recurrence time (in days)	245.5 (18–1078)	289.0 (27–2022)	0.07
TASC			
A	18/69 (26.1%)	17/94 (18.1%)	0.41
B	17/69 (24.6%)	33/94 (35.1%)	
C	13/69 (18.8%)	19/94 (20.2%)	
D	21/69 (30.4%)	25/94 (26.6%)	
Recurrence pattern			
prior intervention site	58/70 (82.9%)	76/95 (80.0%)	0.69
marginal	18/70 (25.7%)	36/95 (37.9%)	0.13
denovo	35/70 (50.0%)	33/95 (34.7%)	0.06
Runoff			
good	30/70 (42.9%)	46/95 (48.4%)	0.59
compromised	29/70 (41.4%)	32/95 (33.7%)	
poor	11/70 (15.7%)	17/95 (17.9%)	
Calcification			
none	6/70 (8.6%)	12/95 (12.6%)	0.51
mild	30/70 (42.9%)	34/95 (35.8%)	
moderate	22/70 (31.4%)	37/95 (39.0%)	
severe	12/70 (17.1%)	12/95 (12.6%)	

CONCLUSION: Patients treated with selective stenting had no difference in time to recurrence and recurrence pattern compared to routine stenting.

MP39. Clinical Presentation and Outcome Following Failed Endovascular and Open Revascularization in Patients with Chronic Limb Ischemia

Hasan H. Dosluoglu, MD[1], Purandath Lall, MBBS[1], Linda M. Harris, MD[2], Maciej L. Dryjeski, MD[2]

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OBJECTIVES: Prior endovascular interventions have been reported to have a negative impact on the final outcomes. The goal of our study was to compare the clinical presentation of patients who failed endovascular (EV) and Open revascularizations (OR), and impact of the initial intervention on final outcomes.

METHODS: From 06/2001–10/2010, 216 patients (237 limbs; 66 DC, 171 CLI) presented with failed OR of EV revascularization for chronic limb ischemia. Clinical presentation, re-interventions, patency and limb salvage (LS) rates and final outcomes were analyzed.

RESULTS: The EV group (N = 143) had more diabetes (44% vs. 57%, P = 0.048), ulcer (26% vs. 38%, P = 0.039) while the OR group (N = 94) had more multilevel revascularization (59% vs. 33%, P < 0.001). Presentation at the time of failure was non-limb threatening ischemia in 70% of DC, 16% of CLI patients (P < 0.001), with no difference in those initially treated with EV or OR. In CLI, more presented with acute limb ischemia in OR than EV group (23% vs. 10%, P = 0.024). Early failure (<3 months) occurred in 15% of DC and 36% of CLI patients, and was more in OR than EV groups (30% vs 7% for DC, P = 0.011, and 71% vs.38% for CLI, P = 0.024). Overall, 195 (82%) had attempted re-interventions (79% in DC, 85% in CLI P = 0.245). In DC patients, 47% of OR had open ± EV, 26% had EV; 32% of EV had open ± EV, 47% had EV reinterventions. In CLI patients, 43% of OR had open ± EV, 39% had EV; 16% of EV had open ± EV, 70% had EV reinterventions. A patent revascularized limb was achieved in 66% of OR, and 92% of EV groups (P < 0.001). Patency and LS were significantly better in the EV group, mainly due to the difference in CLI patients, while survival was identical (Table).

CONCLUSIONS: Clinical presentation following failed revascularization is determined by the initial indication (DC vs. CLI). CLI patients are more likely to present with acute limb ischemia, and within 3 months of revascularization, especially following open revascularization. Endovascular re-interventions play a significant role in management of patients with failed revascularization, and EV failure is associated with better outcomes than those following Open revascularization.

Table 1: Patency, Limb Salvage and Survival After Failure of EV or Open Revascularization

All limbs	24 mo PP	24 mo SP	24 mo Overall (tertiary) patency	24 mo LS (*CLI only)	Survival
Open (94)	28 ± 5%	32 ± 6%	55 ± 6%	63 ± 5% 53 ± 6%*	69 ± 5%
EV (143)	42 ± 5%	58 ± 5%	78 ± 4%	84 ± 4% 77 ± 5%*	73 ± 4%
P value	0.001	<0.001	<0.001	<0.001 <0.001*	0.737
Attempted revascularization only					
Open	44 ± 8%	50 ± 8%	69 ± 6%	64 ± 6% 56 ± 7%*	67 ± 6%
EV	56 ± 6%	75 ± 5%	93 ± 3%	84 ± 4% 77 ± 5%*	73 ± 5%
P value	0.011	<0.001	<0.001	0.001 0.006*	0.952

6:00 pm – 8:00 pm ANNUAL BANQUET (XS Nightclub)

Saturday, March 17

7:30 am – 12:30 pm	REGISTRATION DESK (Promenade)
7:30 am – 12:00 pm	SPEAKER READY ROOM (Schubert)
7:30 am – 8:30 am	EXHIBITION HALL HOUR (Encore 1-3)
7:30 am – 8:30 am	CONTINENTAL BREAKFAST WITH INDUSTRY IN EXHIBIT HALL (Encore 1-3)

7:30 am – 8:30 am SPECIAL INTEREST GROUP (SIG)– BREAKFAST SESSION (Chopin 2)

Challenging Cases: Thoracic Aortic

Moderated by: *Thomas C. Bower, MD*
Evan Lipsitz, MD

SPEAKERS:

Neil Moudgill, MD
Thomas Jefferson University Hospital, Philadelphia, PA

Peter Rossi, MD
Medical College of Wisconsin, Milwaukee, WI

Francis J. Caputo, MD
Washington University School of Medicine, St. Louis, MS

Christopher Smolock, MD
Methodist Hospital, Houston, TX

Ramyar Gilani, MD
Ben Taub General Hospital, Houston, TX

Michael Malinowski, MD
Loyola University Medical Center, Maywood, IL

7:30 am – 8:30 am

SPECIAL INTEREST GROUP (SIG)– BREAKFAST SESSION (Chopin 3)

Challenging Cases: Venous & Dialysis Access

Moderated by: *Robert B. McLafferty, MD*
Joseph S. Giglia, MD

SPEAKERS:

Francesco Aiello, MD
New York Presbyterian Hospital, Columbia University, New York, NY

Ryan Messiner, MD
St. Johns/University of Oklahoma, Tulsa, OK

Erika Ketteler, MD
Albuquerque Murphy VA Medical Center, Albuquerque, NM

William Lee, MD
Keck Hospital of the University of Southern California, Los Angeles, CA

Kevin Taubman, MD
University of Oklahoma College of Medicine, Tulsa, OK

Michelle Martin, MD
Beth Israel Deaconess Medical Center, Boston, MA

8:45 am – 9:45 am SCIENTIFIC SESSION 7– TECHNOLOGY & MISCELLANEOUS I (Encore 4-8)

Moderated by: Alan M. Dietzek, MD
Audra A. Duncan, MD

8:45 am – 8:58 am *20. Clinical Significance of the Clopidogrel-Proton Pump Inhibitor Interaction After Peripheral Endovascular Intervention

Andrew J. Meltzer, MD, Priscilla Da Silva, MD, Francesco A. Aiello, MD, James F. McKinsey, MD, Darren B. Schneider, MD, Gautam V. Shrikhande, MD
New York-Presbyterian Hospital, New York, NY

OBJECTIVES: The impact of proton pump inhibitor (PPI) administration on the antiplatelet effect of clopidogrel remains controversial. Studies suggest that mechanistic interactions between these medications may lead to higher rates of adverse cardiac events after myocardial infarction or coronary intervention. The objective of this study is to evaluate the effects of concurrent PPI and clopidogrel administration on outcomes after peripheral endovascular interventions.

METHODS: Retrospective review of a prospectively maintained database identified patients undergoing angioplasty and stenting (PTA+S) of the superficial femoral artery (SFA) for lifestyle-limiting claudication. Patients with critical limb ischemia, multilevel disease, and those undergoing atherectomy or angioplasty without stenting were excluded. Medical record review confirmed post-intervention administration of clopidogrel and identified patients concurrently prescribed a PPI. Univariate analyses (Wilcoxon, chi-square) were performed to compare demographics, lesion characteristics, complication rates, and outcome measures. Patency comparisons were made with Cox-PH multivariable models and Kaplan-Meier function.

RESULTS: 109 limbs were treated in 103 patients. All were prescribed clopidogrel for one month; concurrent PPI use (+PPI) was identified after 42 (38.5%) interventions. Compared to −PPI patients, +PPI patients had no statistically significant differences in demographics, co-morbidity prevalence (including diabetes, renal insufficiency, heart failure, coronary disease, or smoking status), lesion length, degree of stenosis, or runoff. There were no cases of immediate thrombosis in either group. There were more early failures in +PPI patients, with reduced 6-month (87.7 ± 5.8% vs. 96.3 ± 2.6%) and 1-year (74.2 ± 7.9% vs. 90.2 ± 4.2%) primary patency. Throughout follow-up there were more instances of patency loss (50% vs. 42%) in +PPI patients, and a trend towards reduced primary patency among +PPI, although this did not achieve statistical significance (P = 0.45). By multivariate analysis of risk factors for patency loss as well as PPI status, only chronic occlusion was an independent predictor of primary patency loss (P = .023; HR:1.54 [95% CI:1.1–2.3]).

* Peter B. Samuels Finalist.

CONCLUSIONS: The clinical significance of the clopidogrel-PPI interaction is a controversial topic that has been the subject of numerous studies in the cardiology literature. This is the first report to examine this medication interaction after peripheral intervention. Results are notable for a trend towards more early failures and reduced patency in patients prescribed clopidogrel and PPIs. Further studies are needed to clarify this phenomenon, particularly given the high prevalence of PPI use at the time of intervention.

8:58 am – 9:11 am

21. Statin Therapy Is Associated with Improved Clinical Outcomes in Patients with Symptomatic Peripheral Arterial Disease Undergoing Endovascular Intervention

Francesco A. Aiello, MD[1], Gisberto Evangelisti, MD[2], Ashley Graham, BS[2], Andrew J. Meltzer, MD[1], James F. McKinsey, MD[3], Darren B. Schneider, MD[2]

[1]New York Presbyterian Hospital: Columbia/ Cornell Medical Center, New York, NY, [2]New York Presbyterian Hospital: Cornell Medical Center, New York, NY, [3]New York Presbyterian Hospital: Columbia University Medical Center, New York, NY

OBJECTIVE: Statin therapy has proven clinical benefits in patients undergoing endovascular interventions for cerebral, abdominal and renal artery disease, and critical limb ischemia (CLI). The purpose of this study is to determine the effects of statin therapy on all patients undergoing peripheral intervention for symptomatic peripheral artery disease (PAD).

METHODS: A retrospective review of all patients undergoing peripheral endovascular intervention for symptomatic PAD. All patients on a statin at the time of intervention were placed in the statin therapy group. Demographics, symptom status (claudication or CLI), lesion morphology, primary patency, primary assisted patency, secondary patency and overall mortality were compared between these two groups. Analysis was performed using multivariate regression and Kaplan-Meier analysis.

RESULTS: 955 patients (1110 number of limbs) underwent endovascular intervention for symptomatic PAD between 2004 and 2009. 412 patients were treated for claudication and 543 patients were treated for CLI. 522 patients (54%) were on a statin, statin therapy group, and 433 patients were not on statin therapy at the time of intervention. The statin therapy group had significantly higher rates of diabetes mellitus, hypercholesterolemia, coronary artery disease, congestive heart failure, history of myocardial infarction, and previous coronary artery bypass surgery. The two groups had similar lesion length, location, TASC classification, and intervention. The statin therapy group had no difference in primary patency rates but did have significantly improved primary assisted (77.8% vs. 69.1%; $p = 0.006$) secondary patency (83.2% vs. 74.6%; $p = 0.002$), limb salvage (86.0% vs. 72.8%; $p = 0.001$) and overall mortality rates at 12, 24, and 36 months. Claudicants on statin therapy had improved mortality rates at 12 months but no significant difference in primary, primary assisted, or secondary patency rates at 12, 24, or 36 months while the CLI patients on statin therapy had significantly improved primary assisted, secondary patency, limb salvage and mortality rates at all time periods.

CONCLUSION: Patients receiving statin therapy at the time of intervention for treatment of symptomatic PAD have a statistically significantly improvement in patency, limb salvage and mortality rates seen at up to 36 months. The benefits of statin therapy were most pronounced in the CLI subgroup and patients in the claudication subgroup had improved survival, but not improved patency. Our findings suggest that statin therapy should be part of the treatment regimen for all patients undergoing intervention for PAD.

9:11 am – 9:41 am **MINI PRESENTATIONS**

MP40. Illustration of Workflow with Results of Fourteen Cases Employing Angio CT and Fluoroscopic Needle Guidance Software for Percutaneous Access and Embolization of Type-II Endoleak after EVAR

Charudatta Bavare, MD, MPH, Ponraj Chinnadurai, MBBS, MMST, Christopher Smolock, MD, Joseph Naoum, MD, FACS, Heitham Hassoun, MD, Alan Lumsden, MD, FACS, Jean Bismuth, MD, FACS

The Methodist Hospital, Houston, TX

OBJECTIVES: To evaluate the technical feasibility and to illustrate the clinical workflow of using C-arm Computed Tomography (CT) (angio CT) and fluoroscopic needle guidance software, for percutaneous access and embolization of type-II endoleak after endovascular aortic aneurysm repair (EVAR).

METHODS: Between July 2010 and June 2011, fourteen cases of type II endoleak after EVAR were treated in our hybrid operating room using C-arm CT (Syngo DynaCT®, Siemens AG, Forchheim, Germany) and fluoroscopic needle guidance software (Syngo iGuide®, Siemens AG). DynaCT® images were acquired using our robotic C-arm system (Artis Zeego®, Siemens AG). After merging with the pre-op CT demonstrating the endoleak, a virtual needle path was designed using iGuide®. We describe a clinical workflow using DynaCT® and iGuide® as a stepwise process to successfully access the aneurysm sac in a controlled fashion, as outlined in Figure 1. Where possible, selective catheterization and embolization of the communicating vessel was done with coils and/or injection of Onyx® Liquid Embolic System (ev3 Endovascular Inc., Plymouth, MN). Obliteration of flow in the sac was otherwise performed by injection of Onyx®.

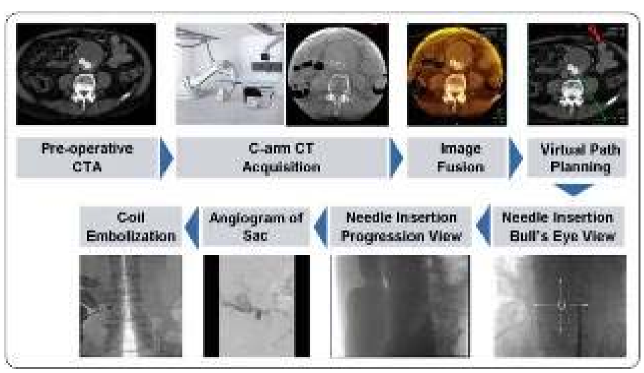


Figure 1: An illustration of clinical workflow about using DynaCT® and iGuide® software for percutaneous access of type II endoleak after EVAR.

SATURDAY

RESULTS: The mean age was 75 years (Range 64–86). All sac punctures were done percutaneous at the first attempt. Direct cannulation of the communicating vessel was done in two patients (15.4%). Final sac angiogram and post-operative duplex at 24 hours demonstrated no further endoleaks in all but one patient (92.8% success). Early in our experience, one patient underwent a non-guided sac puncture due to non-availability of the iGuide®, which resulted in puncture of the endograft, leading to hemoperitoneum needing emergent laparotomy.

CONCLUSIONS: Percutaneous sac access with real-time three-dimensional fluoroscopic needle guidance is a minimally invasive treatment for complex type II endoleaks after EVAR. Although direct catheterization of the communicating vessel is challenging due to the fluid/thrombus in the sac, safe access of the sac and obliteration of flow can be successfully achieved.

MP41. Does Kidney Transplantation to Iliac Artery Deteriorate Ischemia in the Ipsilateral Lower Extremity with Peripheral Arterial Disease?

Ashley Northcutt, MD, Gazi Zibari, MD, Wayne W. Zhang, MD

Louisiana State University Health Sciences Center-Shreveport, Shreveport, LA

OBJECTIVES: It was reported that steal syndrome caused by transplanted kidney may result in limb threatening ischemia in pediatric patients. However, the steal phenomenon and its clinical significance have not been well defined in adults. It has been a concern that "blood steal" from iliac artery by transplanted kidney may deteriorate ischemia in the ipsilateral lower extremity with underline peripheral arterial disease (PAD). This study was designed to investigate the progression of lower extremity ischemia following kidney transplantation to iliac artery.

METHODS: A retrospective chart review of all renal transplants completed at a university teaching medical center from January 2005 to December of 2010 was performed. Patients were excluded if renal artery was anastomosed to the aorta. A total of 219 patients underwent successful kidney transplantation to the common, external, or internal iliac artery. Data including pre- and post-transplantation limb ischemic changes, conventional angiography, CT angiography (CTA), and MR angiography (MRA) of the ipsilateral lower extremity were collected and analyzed.

RESULTS: Of the 219 patients with successful renal transplantation to the common, external or internal iliac arteries, 143 were male and 76 were female. The median age was 52 years, ranging from 28 to 77 years. Sixty-nine patients underwent preoperative conventional angiogram, CTA, or MRA to rule out PAD. Thirty-eight were diagnosed to have ipsilateral lower extremity arterial disease, including 30 mild, 4 moderate and 4 severe arterial stenosis/occlusion. No arterial revascularization was performed. Seven patients were symptomatic preoperatively and 8 became symptomatic after kidney transplantation. In the 7 with preoperative lower extremity ischemia, symptoms/signs remained same in 6 and improved in 1. Of the 8 patients who developed ischemic symptoms after transplantation, 4 had claudication and 4 sustained chronic foot ulcers or toe gangrene 12 months later. The ulcers were healed in 2 patients with wound care, and toe amputation was performed in the rest 2. No major amputation above the level of mid-foot was required during the follow-up between 6 to 48 months.

CONCLUSIONS: "Blood steal" from iliac artery by transplanted kidney does not significantly deteriorate ischemia in adults with lower extremity PAD. Late developed ischemic complications maybe due to the progression of underline arterial disease. Further study comparing limb ischemia in renal failure patients with and without kidney transplantation will be performed.

MP42. Non-Invasive Quantification of Inter-luminal Pressure Gradient in DeBakey Type B Aortic Dissections

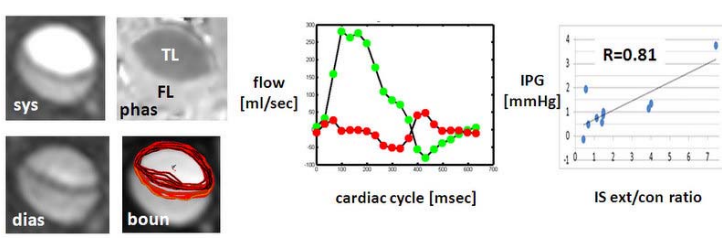
Christof Karmonik, MD, Cassidy A. Duran, MD, Javier E. Anaya-Ayala, MD, Dipan J. Shah, MD, Jean Bismuth, MD, Mark G. Davies, MD, PhD, MBA, Alan B. Lumsden, MD

Methodist DeBakey Heart & Vascular Center, Houston, TX

INTRODUCTION: Inter-luminal pressure gradient (IPG) the pressure between the true and false lumen in Type B Aortic Dissections (AD) is considered of clinical relevance with highly elevated false lumen to true lumen pressure ratio indicating risk of false lumen expansion and rupture. Non-invasive IPG quantification would be beneficial as invasive pressure catheter measurements pose additional risk to the patient, and may serve as a predictive measure for poor outcome of Type B aortic dissections, which are managed conservatively.

METHODS: From 40 AD patients undergoing MRI examinations at the Methodist Acute Aortic Treatment Center, 10 acute AD were selected for further analysis. All examinations included aclinical pcMRI study (Figure 1a) from which false lumen and true lumen blood velocities were quantified. Both true and false lumenswere automatically segmented and maximum IS extension and contraction were quantified. IPG was derived by applying the Bernoulli equation. Intra-arterial septum (IS) motion was quantified and correlated with IPG. Pearson correlation coefficientbetween IPG and maximum IS extension, contraction and their ratio was calculated.

RESULTS: In these type B dissections true lumen velocity range was 40 cm/sec to 89 cm/sec (62 ± 16 cm/sec), false lumen velocity was 7 cm/sec to 36 cm/sec (18 ± 11 cm/sec) corresponding to an average static false lumen /true lumen pressure ratio of 11.9 (range: 4.6 to 18.8). IS extension was 2.4 to 5.5 mm (3.5 ± 0.9 mm), IS contraction was 0.8 to 6.9 mm (3.0 ± 1.9 mm). IPG correlated with maximum IS extension (R = 0.76) andinversely with maximum IS contraction (R = −0.51). Strength of correlation was highest with IS extension/contraction ratio (R = 0.81, Figure 1).



CONCLUSIONS: IPG quantified non-invasively with pcMRI strongly correlateswith IS mobility in acute AD. Static false lumenpressures were on average one order of magnitude higher thanthose found in the true lumen. Non-invasive monitoring with pcMRI may be applied at follow-up examinations to correlate false lumen expansion and thrombus formation with IPG.

MP43. Prosthetic Graft Infections Involving the Femoral Artery—Ten Year Experience

Jeffrey J. Siracuse, MD, Marc L. Schermerhorn, MD, Prathima Nandivada, MD, Kristina A. Giles, MD, Allen D. Hamdan, MD, Mark C. Wyers, MD, Elliot L. Chaikof, MD, PhD, Frank B. Pomposelli, MD

Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA

OBJECTIVES: Prosthetic graft infection is a major and feared complication of peripheral vascular surgery. We set forth to investigate our institution's experience for bypasses involving the femoral artery.

METHODS: A retrospective cohort single institution review of prosthetic bypass grafts involving the femoral artery from 2001–2010 looked at patient demographics, BMI, comorbidities, indications, location of bypass, type of prosthetic material, case urgency, previous ipsilateral bypasses or percutaneous interventions, and evaluated mortality, amputations, and graft infections.

RESULTS: There were 421 prosthetic grafts identified. The graft infection rate was 4.3% with a median post-operative time to presentation of 90 days. Multivariate analysis shows that redo bypass (OR 5.6, 95% CI 2.2–14.6), active infection at time of bypass (OR 4.8, 95% CI 1.7–13.1), female gender (OR 4.2, 95% CI 1.5–12.0), and diabetes (OR 3.9, 95% CI 1.3–12.1) were significant predictors of graft infection. Redo bypasses made up 55% of graft infections. Graft infection was predictive of major lower extremity amputation (OR 10.6, 95% CI 3.7–30.2), as were concurrent bypass (OR 4.2, 95% CI 1.2–15.1) and preoperative tissue loss (OR 3.8, 95% CI 1.5–9.7). Graft infection did not predict mortality, however chronic renal insufficiency (OR 2.2, 95% CI 1.5–3.1), tissue loss (OR 1.4, 95% CI 1.0–1.9), and age (OR 1.2, 95% CI 1.1–1.4) were predictive. Infected grafts were removed 77% of the time. S. epidermidis (39%) and Methicillin-sensitive S. aureus (28%) were the most common pathogens isolated.

CONCLUSION: Redo, female, diabetic, and patients with an active infection are at a higher risk for graft infection and therefore higher rates of major extremity amputation, but are not at increased risk of mortality. Alternate sources of vein and endovascular interventions should be used when available in high risk patients.

MP44. Isolated Dissection of the Celiac and Superior Mesenteric Arteries

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OBJECTIVES: Isolated dissection of the mesenteric circulation is an unusual occurrence. Previous isolated case reports and small series have varied in treatment modalities. We report a series of 6 patients with focal dissection of the mesenteric circulation. In each case conservative management was attempted as the primary mode of therapy.

METHODS: We reviewed hospital and patient follow-up records for a series of 6 patients who presented with isolated mesenteric dissections over the last 5 years. Conservative management with anticoagulation and observation was instituted on diagnosis. Records were reviewed for initial presentation and success of therapy in both the acute and long-term setting as well as noted complications.

RESULTS: Average age at presentation was 54 years (range 44–61 years). Five patients were male. One patient had prior history of PVD. HTN was present in 5 patients. In all cases the diagnosis was made by CTA. Presenting symptoms were abdominal pain (6), nausea/vomiting (4), chest pain (3), and food intolerance (3). In 4 cases the dissection was preceded by a severe coughing or retching episode. Four cases were isolated to the celiac artery and 2 cases showed extension into the SMA. All 6 cases showed good visceral perfusion initially. Two cases showed mild aneurysmal dilation. All cases were initially managed with heparin. One patient had progressive symptoms of bowel ischemia with failed interventional/operative management and bowel resection was required. Of the remaining 5 patients, all were treated with conversion to coumadin (4) or ASA/Plavix (1). Four of five patients had complete resolution of symptoms and no further degenerative changes. One patient with both aneurysm and persistent cachexia has been considered for operative management but is not a candidate secondary to severe CHF. In the remaining 4 patients, follow-up CT scans have shown no progression of dissection (2) and partial resolution (2).

CONCLUSIONS: Isolated mesenteric dissection appears to occur at a younger age and without the hallmark symptoms of PVD. Conservative management of isolated mesenteric dissection appears both safe and effective for relief of symptoms. Ongoing follow-up with CT scanning is indicated for assessment of degenerative changes. Operative management should be considered for persistent symptomatology but may be associated with increased morbidity.

MP45. Trends in a Changing Vascular Practice Environment for Members of the Society for Vascular Surgery

Bhagwan Satiani, MD, MBA[1], Mika Matthews, MD[1], Joann M. Lohr, MD[2]

[1]The Ohio State University, Columbus, OH, [2]Lohr Surgical Specialists, LLC, Cincinnati, OH

OBJECTIVE: To survey the SVS membership with regard to practice trends related to work effort, employment status, practice ownership, endovascular cases and anticipated changes in practice in the near future.

METHODS: A survey questionnaire was developed to gather information about member demographics and practice, hours worked, full-time (FT) or part-time (PT) status, employment status, practice ownership, competition for referrals, proportion of endovascular versus open procedures and anticipated changes in practice in the next 3 years. We utilized Survey Monkey and distributed the survey to all Vascular Surgeon (VS) members of the Society for Vascular Surgery (SVS).

RESULTS: The response rate was 207 of 2,230 (10.7%). Two-thirds are in private practice and 21% are in solo practice. 24% are employed by hospitals/health systems. Vascular Surgeons under the age of 50 were more likely to be in an exclusively vascular surgery practice compared to VS over the age of 50 ($p < 0.0003$). Sixty-eight (32.7%) of the physicians were between 50–59 years old, 186 (90.3%) were men, 192 (92.8%) worked FT (>36 hours of patient care per week) and almost two-thirds worked >60 hours/week. Those in physician owned practices worked >40 hours of patient care/week more often than FT employed VS ($p < 0.012$). Younger VS (<age 50) more frequently reported >50% of their workload being endovascular compared to older VS (age >50) ($p < 0.001$). Eighty percent of FT VS planned to continue their current practice over the next three years. Of the 43.6% indicating loss of referrals, 82% pointed to cardiologists as the competition.

CCONCLUSION: The current workforce is predominantly male, full-time and 1/3 is between 50–59 years old. Younger VS (< age 50) are more likely to exclusively practice VS and have a higher caseload of endovascular procedures. Those in physician owned practices are more likely to put in >40 hours of patient care/ week than FT employed VS. Longitudinal surveys of SVS members are imperative to help tailor the educational, training and practice management offerings, guide governmental activities, advocate for issues important to members, improve branding initiatives and sponsor workforce analyses.

9:45 am – 10:45 am

TO BE OR NOT TO BE –SURGEONS AS HOSPITAL EMPLOYEES
(Encore 4-8)

Moderators: *Russell H. Samson, MD*
W. Charles Sternbergh, III, MD

Con Debater: **Why You Should Always Try and Remain Independent**

Enrico Ascher, MD
Maimonides Medical Center, Brooklyn, NY

Pro Debater: **Why You Should Be Employed**

George H. Meier, III, MD
University of Cincinnati, Cincinnati, OH

10:45 am – 11:30 am

KARMODY POSTER COMPETITION–
Final Round
(Encore 4-8)

Moderated by: *Mark G. Davies, MD*

11:30 am – 12:30 pm SCIENTIFIC SESSION 8– TECHNOLOGY & MISCELLANEOUS II (Encore 4-8)

Moderated by: Joseph S. Giglia, MD
Luke K. Marone, MD

11:30 am – 12:30 pm MINI PRESENTATIONS

MP46. Analysis of Extra-Vascular Closure Device After Transbrachial Artery Access

Aleem K.H. Mirza, BS, Samuel N. Steerman, MD, Jonathan A. Higgins, MD, Sirisha Mushti, RA, Jean Panneton, MD

Eastern Virginia Medical School, Norfolk, VA

OBJECTIVES: The brachial artery has become an invaluable route for endovascular procedures and imaging. Extra-vascular closure devices (eVCD) have been developed to obtain hemostasis after trans-femoral artery access, but other sites of access have not been analyzed. We seek to determine if eVCD are safe and effective after transbrachial access.

METHODS: A retrospective analysis of patient's undergoing transbrachial access from November 2005 to February 2011 was performed. Hemostasis at the access site was achieved using manual compression or an eVCD as selected by the surgeon. History, operative data, and complications were recorded. Thrombotic (brachial artery thrombosis, embolism, limb ischemia) and hemorrhagic complications (bleeding, hematoma requiring intervention, and pseudoaneurysm) were compiled and categorized. Total major adverse effects (MAEs) encompassed brachial artery thrombosis, limb ischemia, additional surgery, and 30-day mortality. Minor complications were defined as bleeding not requiring surgery or transfusion, increased pain, additional compression and transient sensory nerve deficit. Analysis was performed using the student's t-test, the Mann-Whitney test and chi-square. Relative risk was computed when applicable.

RESULTS: Procedures with brachial artery access were performed on 148 patients and 154 limbs. Manual compression (MC) was performed on 134 brachial arteries and 20 arteries were controlled with an extra-vascular closure device. Groups were well matched for sex (p = 0.34), race (p = 0.75), smoking (p = 0.73), anticoagulation (p = 0.71), and diagnostic vs. therapeutic procedure (p = 0.61). The complications profile is shown:

Table 1

	MC (n = 134)	eVCD (n = 20)	p-value
Minor complications	14 (10%)	1 (5%)	0.45
Device Failure	N/A	1 (5%)	N/A
Thrombotic Complication	6 (4%)	0	0.43
Hemorrhagic Complication	3 (2%)	1 (5%)	0.47
Major Adverse Events (MAE)	9 (7%)	1 (5%)	0.77

Factors that were associated with an increased incidence of thrombosis after MC were female sex (p = 0.07) and sheath size &gt6 Fr (p = 0.008). Diagnostic procedures had a decreased risk of brachial artery thrombosis (p = 0.04) as all 6 instances of thrombosis occurred following an interventional procedure (Relative Risk, RR:9.1). Age, race, and BMI had no effect on complications rate in either hemostatic procedure.

CONCLUSIONS: Extra-vascular closure devices are safe for use in the brachial artery following an endovascular procedure. They may be best applied in patients that are high risk for thrombosis, such as, females, patients undergoing an interventional procedure or access with a sheath &gt6 Fr.

MP47. Ultrasound Navigation for Endovascular Aortic Intervention

Gabriel Herscu, MD, Jay Mung, MS, John Moos, MD, Sukgu Han, MD, Grace Huang, MD, Jesse Yen, PhD, Fred A. Weaver, MD

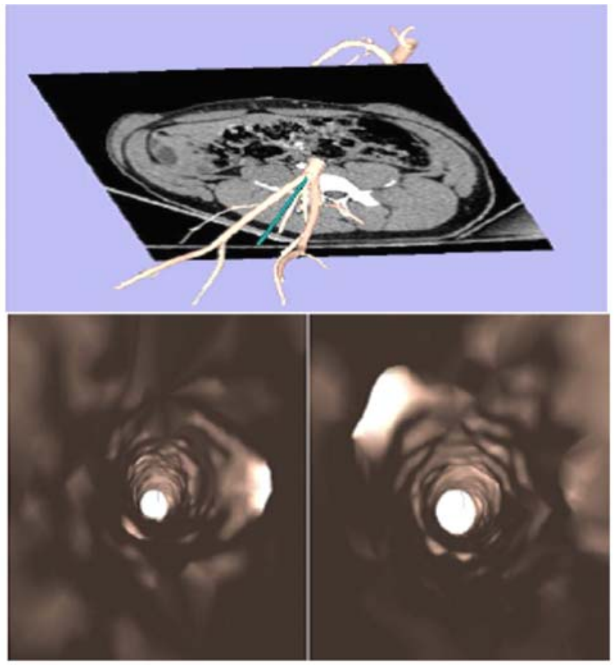
University of Southern California, Los Angeles, CA

OBJECTIVES: Radiation exposure and nephrotoxic contrast injections are inherent to conventional endovascular treatment regimens in aortic disease. Contrast nephropathy is estimated to occur in up to 50% of patients undergoing administration of contrast. Radiation exposure during endovascular aortic intervention is significant and the long-term effects have not been fully realized. Our objective was to determine navigational precision of this novel technique.

METHODS: We designed a navigational system for placement of aortic endovascular prostheses using an ultrasound guidance system with a graphical user interface (GUI). Our system utilizes an endovascular ultrasound transmitter passed into the aorta on the tip of a catheter and continuously tracked via trilateration with external ultrasound receivers. Graphical representation of catheter location coupled in 3-D with preoperative CTA is represented on a monitor along with a virtual aortoscopic view looking forward from the catheter tip. This procedure was performed in a pig model. Movement of the catheter via ultrasound guidance was compared using correlation plot with fluoroscopic measurements. Ultrasound-guided catheter movement was also compared to aortic centerline as determined by preoperative CT A. After data acquisition, a covered, self-expanding stent was advanced and deployed at the inferior edge of the right renal artery as determined by the ultrasound guidance system. The pig was then sacrificed and the aorta opened in-situ to evaluate accuracy of stent placement in relation to the right renal artery orifice.

RESULTS: Compared with fluoroscopy data, ultrasound navigation showed excellent concordance (RMS = 0.6 mm, $R^2 > 0.99$). Tracking of catheter position showed a mean difference of 2.15 mm when compared to aortic centerline for all recorded catheter tip positions. At aortic dissection, the stent was found within 2 mm of the renal orifice.

CONCLUSIONS: Ultrasound navigation in endovascular aortic intervention is feasible and precise when compared to fluoroscopic catheter manipulation. Its virtual-reality graphical user interface allows intuitive, real-time manipulation of endovascular devices, while avoiding the damaging effects of radiation and contrast administration.



Representative 3-Dimensional and aortoscopic views of the pig aorta as seen on user interface. Note left and right renal arteries visible on aortoscopic view.

MP48. Low-Dose Intra-Arterial Contrast Computed Tomography Angiography to Plan Endovascular Repair of Complex Aneurysms in Patients with Severe Renal Dysfunction

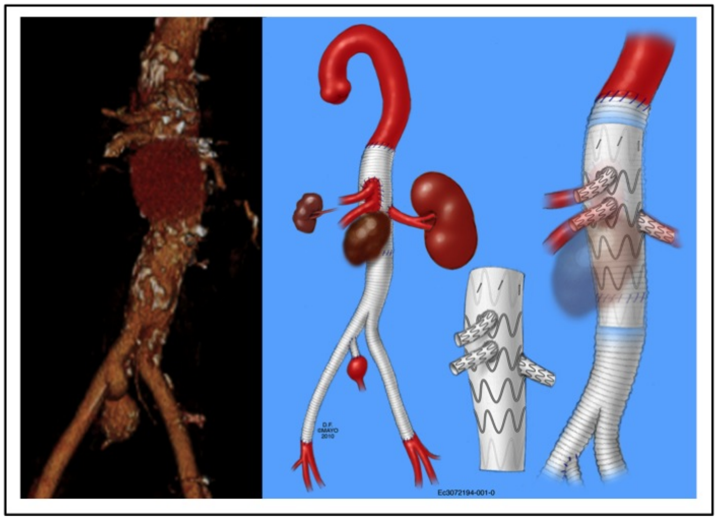
Tiziano Tallarita, MD, Gustavo S. Oderich, MD, Thomas C. Bower, MD, Alexandre A. Pereira, MD, Jerome Breen, MD, Thanila A. Macedo, MD, James Andrews, MD

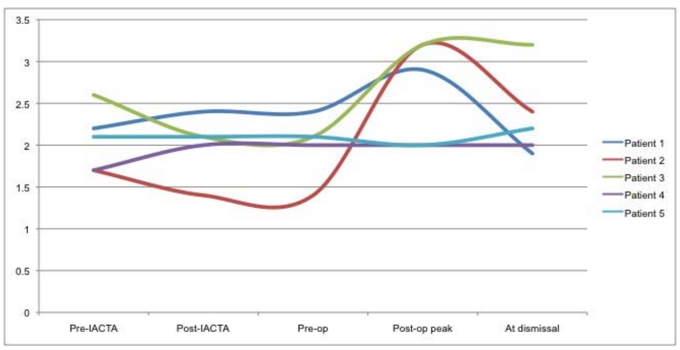
Mayo Clinic, Rochester, MN

PURPOSE: This study evaluates the feasibility of a low dose intra-arterial contrast computed tomography angiography (IA-CTA) protocol to plan endovascular repair with fenestrated and branched endografts in patients with severe renal dysfunction and complex aortic aneurysms.

METHODS: Five high-risk patients underwent IA-CTA prior to endovascular repair of 3 thoracoabdominal (TAAA) and 2 pararenal aortic aneurysms with fenestrated and branched endografts. All patients had stage IV chronic kidney disease with baseline serum creatinine (sCr) > 1.7 mg/dL and age > 70 years, which corresponded to an estimated glomerular filtration rate (eGFR) of <30 mL/min/1.73 m^2. Three patients had diabetes. IA-CTA protocol required 5 Fr transfemoral flush catheter positioned in the proximal descending thoracic aorta. IA-CTA was obtained using multi-slice helical scanner with total of 40 ml of non-ionic contrast agent diluted in 80 ml of normal saline and injected at 8 ml/sec for 15 seconds. End-points were feasibility of device design and procedure planning using IA-CTA images with centerline of flow measurements and changes in renal function.

RESULTS: IA-CTA was obtained 7 ± 6 days prior to endovascular repair. In two patients with contained ruptured TAAAs urgent repair was performed within <24 hours of IA-CTA (Figure 1). Imaging quality was excellent in all studies allowing procedure planning and device design. Endovascular repair was successfully performed using fenestrated and branched endografts in all patients, with no mortality. There were no changes in renal function parameters after IA-CTA, but three patients had rise in sCr after the endovascular repair, returning to baseline values within 3 months (Figure 2). After a median follow up of 6 months, all patients had stable renal function within baseline values.





CONCLUSION: Low-dose IA-CTA was successful in this pilot study, providing excellent imaging quality for device design in patients treated by fenestrated and branched endografts for complex aortic aneurysms. This technique may be useful to plan complex endovascular procedures in select patients with severe renal dysfunction.

MP49. Advanced Techniques for Retrieval of Malpositioned Inferior Vena Cava Filters

Robert T. Lancaster, MD, MPH, Christopher J. Kwolek, MD, Junaid Y. Malek, MD, Glenn M. LaMuraglia, MD, Virendra I. Patel, MD, Mark F. Conrad, MD, MMSc

Massachusetts General Hospital, Boston, MA

OBJECTIVE: Although most inferior vena cava (IVC) filters placed today are designed for temporary use, published rates of retrieval remain low. Prolonged dwelling times and filter malposition can make extraction by standard techniques challenging. This series details our experience with several advanced techniques that facilitate removal of malpositioned filters.

METHODS: We identified fourteen patients between 1/1/2009 and 8/31/2011 who required adjunctive techniques for filter removal. These techniques included the use of: shaped catheters for snare guidance, deflectable tip wires, deflectable tip sheaths, balloon angioplasty, and grasping forceps.

RESULTS: The average patient age at the time of retrieval was 51.5 years (33–74 years). Twenty-one percent were male. The indication for initial filter placement was prophylaxis in 36%, contraindication to anticoagulation in the setting of DVT/PE in 43%, and failure of anticoagulation in 21%. The filter types included: Bard G2 (67%), Bard Eclipse (8%) and Cook Celect (25%). The average time to filter retrieval was 422 days (86–1962 days). All of the filters were tilted in the IVC and 11 (79%) demonstrated legs that penetrated the IVC on preprocedural imaging. Techniques used to aid in removal of these filters included: snare directed by shaped catheter (79%), deflectable tip sheath (43%), balloon angioplasty (43%), deflectable tip wire (36%), and grasping forceps (29%). Forty-three percent of patients required placement of more than 1 sheath to facilitate removal and 29% of patients required >3 techniques for successful removal. There were no deaths or IVC occlusions identified in follow-up.

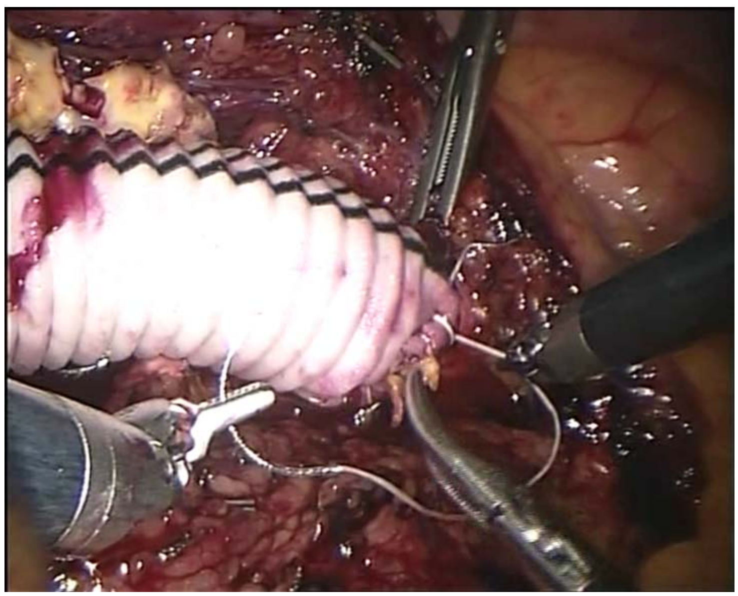
CONCLUSIONS: Endovascular removal of most tipped and perforating IVC filters can be safely accomplished by gradually employing a combination of complex retrieval methods. The techniques described represent important adjuncts to the standard snare method, and will allow for a higher retrieval rate in most patients.

MP50. Robot and Vascular Surgery

Petr Stadler, Assoc. Professor, MD, PhD, Libor Dvoracek, MD, Petr Vitasek, MD, Pavel Matous, MD

Na Homolce Hospital, Praha, Czech Republic

OBJECTIVES: The feasibility of robotically-assisted laparoscopic aortic surgery has been adequately demonstrated. The robot represents the next step in the use of minimally invasive surgery. Our clinical experience with robot-assisted aortoiliac reconstruction for occlusive diseases, aneurysms, and hybrid procedures performed using the da Vinci system is herein described.



METHODS: Between November 2005 and March 2011, we performed 200 robot-assisted laparoscopic aortoiliac procedures. 158 patients were prospectively evaluated for occlusive diseases, 36 patients for abdominal aortic aneurysm, two for a common iliac artery aneurysm, two for a splenic artery aneurysm, and two for hybrid procedures. The robotic system was applied to construct the vascular anastomosis, for the thromboendarterectomy, for the aorto-iliac reconstruction with a closure patch, for dissection of the splenic artery, and for the posterior peritoneal suture. A combination of conventional laparoscopic surgeries and robotic surgeries were routinely included. A modified, fully-robotic approach without laparoscopic surgery was used in the last 30 cases in our series.

RESULTS: 193 cases (96,5%) were successfully completed robotically, one patient's surgery was discontinued during laparoscopy due to heavy aortic calcification. In six patients (3%) conversion was necessary. The thirty-day mortality rate was 0,5%, and non-lethal postoperative complications were observed in nine patients (4,5%).

CONCLUSIONS: Our clinical experience with robot-assisted laparoscopic surgery has demonstrated the feasibility of this technique for aortoiliac vascular and hybrid procedures. The da Vinci robotic system facilitated the creation of the aortic anastomosis, and shortened the aortic clamping time as compared to purely laparoscopic techniques.

Robotic maneuvers are of exceptional value due to their unique ability to combine conventional laparoscopic surgery with stereoscopic 3D magnification and ultra-precise suturing techniques. However, previous laparoscopic aortoiliac experience is necessary before performing robot-assisted procedures in vascular surgery. Robotic surgery offers great potential for future hybrid procedures.

MP51. Accuracy and Utility of 3D Rotational Angiography for Hypogastric and Uterine Artery Embolization

David E. Timaran, MD, Eric B. Rosero, MD, Adriana J. Higuera, MD, M. Shadman Baig, MD, R. James Valentine, MD, Carlos H. Timaran, MD

University of Texas Southwestern Medical Center, Dallas, TX

OBJECTIVES: Digital subtraction angiography (DSA) is the standard imaging method for hypogastric artery (HA) and uterine artery (UA) embolization, but multiple views are frequently required to demonstrate the origin of the target artery, which increases radiation, contrast volume, and procedure time. The purpose of this study was to assess the accuracy and utility of three-dimensional rotational angiography (3D-RA) to select optimal projections and to guide embolization.

METHODS: In a series of 30 pelvic (5 HA and 25 UA) embolizations performed over an 18-month period, 3D-RA using a Philips Allura Xper FD20 system was obtained. 3D-RA was used to select the optimal working projection, which automatically synchronized the position of the C-arm. DSA was obtained to confirm the adequacy of the projection and to produce a road map for embolization.

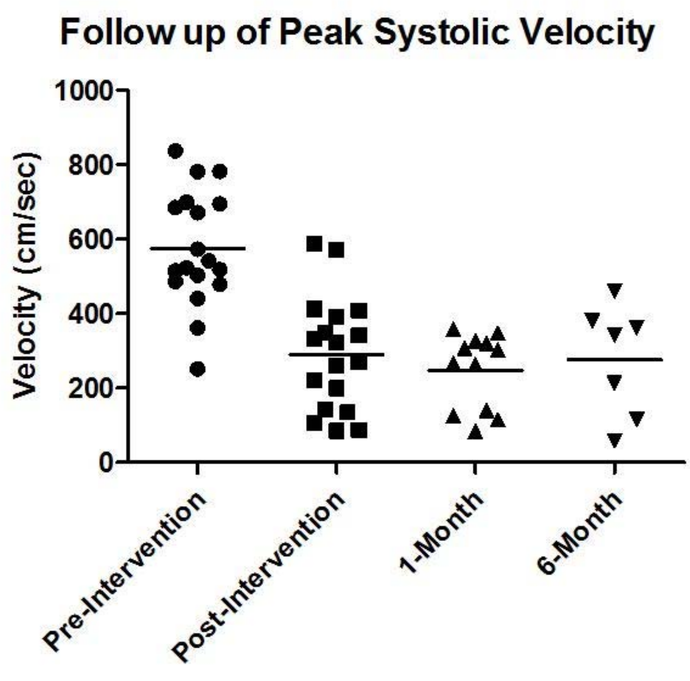
RESULTS: The sensitivity and specificity of 3D-RA were 96% and 86% to determine optimal projection for embolization. The operative technique for embolization was altered based on 3D-RA in 10 patients (40%); specifically, different guiding microcatheters or hydrophilic wires were used in 6 patients (25%). Based on 3D-RA findings, target artery characteristics could be determined with excellent reliability (kappa = 0.81; 95% CI, 0.57–1.06). Patients undergoing HA and UA embolization based on 3D-RA had 100% technical success and no 30-day morbidity or mortality.

CONCLUSIONS: 3D-RA is accurate in determining the best projection that demonstrates the origin of the hypogastric and uterine arteries and may alter the plan for embolization in 40% of patients. 3D-RA can, in fact, accurately predict imaging projections and indicate the best devices that may facilitate safe and expeditious pelvic embolizations.

MP52. Endovascular Intervention for Hepatic Artery Stenosis After Liver Transplantation

Blake A. Hamby, MD, Hernan A. Bazan, MD, Taylor A. Smith, MD, Edward Bluth, MD, George E. Loss, MD, PhD, W. Charles Sternbergh, III, MD
Ochsner Clinic Foundation, New Orleans, LA

OBJECTIVES: Hepatic artery stenosis (HAS) and thrombosis (HAT) are serious complications of orthotopic liver transplantation (OLT) with 30% risk of graft loss and death. Open vascular reconstruction or re-transplantation are the traditional treatment options. Enhanced collaboration between transplant and vascular services at our institution has provided minimally invasive options for HAS.



METHODS: From September 2009–August 2011, OLT patients with clinical and ultrasound evidence of HAS were evaluated for endovascular treatment. Ultrasound criteria included hepatic artery (HA) peak systolic velocities (PSV) more than triple initial post-transplant evaluation, resistive indices (RI) less than 0.4, and blunted intrahepatic arterial waveforms (tardus parvus). Interventions included percutaneous transluminal angioplasty (PTA) alone or with stent (PTAS). Pre-intervention, post-intervention, one- and six-month follow-up HA velocities and RIs were compared using the two-tailed t-test. Fischer's exact test compared re-intervention rates.

RESULTS: Over the study period 237 OLTs were performed with 19 interventions performed in 14 patients with HAS (including 2 previously re-transplanted for HAT), giving an occurrence rate of clinically-significant HAS of 5.9% (14/237). Mean age was 50 ± 8 (range 15–63). Interventions occurred at a mean 82 ± 52 days post-transplant (range 8–233 days). Mean HA velocities before (575 ± 125 cm/s) and after (291 ± 123 cm/s) intervention significantly improved [$p < 0.0001$], as were mean RIs before (0.41 ± 0.08) and after (0.59 ± 0.08) [$p < 0.0001$]. Mean follow up was 5.7 ± 0.4 months (range 0–23.2). Sustained improvement in PSV and RI was seen for 11 patients with 1-month follow-up (247 ± 87 cm/s [$p = 0.001$] and 0.58 ± 0.07 [$p < 0.0001$], respectively) and 7 patients at 6-months (276 ± 126 cm/s [$p = 0.05$] and 0.61 ± 0.08 [$p < 0.0001$], respectively). Five patients underwent PTA, of which 3 required re-intervention with PTAS for re-stenosis at a mean of 39 days. From our early experience with early re-stenosis with PTA alone, our policy changed to primary stent placement when technically possible. Nine patients underwent primary PTAS with self-expanding (n = 3) or coronary balloon-expandable (n = 6) stents. Freedom from re-intervention was 78% with primary stenting versus 40% with PTA [$p = 0.27$]. No treated patient suffered graft loss.

CONCLUSIONS: Endovascular treatment of HAS after OLT appears safe and effective in the short-term. Primary stenting may provide superior patency compared to PTA alone. Longer follow-up is needed to confirm these early encouraging results.

MP53. Duplex Guided Endovascular Interventions for Acute Lower Extremity Ischemia

Anil Hingorani, MD, Enrico Ascher, MD, Natalie Marks, MD, RVT, Robert Jimenez, MD, ED Aboian, MD, Theresa Jacob, PhD, Alexsander Shiferson, DO

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OBJECTIVE: Contrast arteriography (CA) is considered to be the gold standard for preoperative and intraoperative imaging modality for patients with chronic lower limb ischemia. We have previously shown that high quality duplex arteriography can safely replace preoperative CA in these patients. Our experience with duplex guidance for infrainguinal arterial balloon angioplasties and stenting encouraged us to investigate whether this approach can also be used effectively in the setting of acute ischemia.

METHODS: 27 high-risk patients with acute lower extremity ischemia were admitted to our institution with intention to perform endovascular interventions. Twelve patients (44%) had elevated serum creatinine (≥1.5 mg/dL) and one additional patient (4%) was allergic to iodine. Twelve patients (44%) had thromboembolic complications during duplex-guided balloon angioplasties (DGBA),11 patients (40%) had acute arterial thromboembolism,2 patients (8%) had thrombosed infrainguinal arterial bypasses with vein (femoral-anterior tibial and femoral-dorsalis pedis) and the remaining 2 patients (8%) had thrombosed popliteal aneurysms discovered on preoperative duplex scan. Five of 23 patients (22%) with arterial thromboembolism had previous ipsilateral balloon angioplasties and stenting procedures.

RESULTS: Of the 12 intraoperative DGBA complications, thromboemboli were diagnosed in the popliteal artery in 6 cases (50%), in the tibio-peroneal trunk in 5 cases (42%) and in the peroneal artery in the remaining case (8%). These were treated under duplex-guidance only with intraarterial instillation of thrombolytic agents in 5 cases (42%) and suction thrombectomy in the remaining 7 cases (58%). Of the 11 cases of acute arterial ischemia, the most proximal thrombus end was identified in the superficial femoral artery in 5 cases (45%) and in the popliteal artery in the remaining 6 cases (55%). Nine of these patients (82%) were treated with duplex-guided suction thrombectomy, balloon angioplasty and stenting. The remaining 2patients (18%) had a combination of Trellis® thrombectomy followed by suction thrombectomy, balloon angioplasty and stenting. Complete evacuation of the thrombus was achieved after overnight thrombolysis in 2 patients with arterial thromboembolism. Two thrombosed infrapopliteal bypasses were treated with suction thrombectomy and balloon angioplasty of multiple stenotic lesions. Both patients with thromboses popliteal aneurysms required suction thrombectomy, overnight thrombolysis and consecutive placement of Viabahn® stented grafts for aneurysm exclusion.

CONCLUSIONS: Our initial experience suggests that patient with acute lower limb ischemia of diverse etiology can be safely and effectively treated by endovascular procedures under duplex guidance alone.

MP54. Decreasing Contrast Induced Nephropathy with Targeted Renal Therapy

James C. Prueter, MD, Thomas Khoury, MD, FACS, FICS
Southern Ohio Medical Center, Portsmouth, OH

OBJECTIVES: Radiocontrast imaging has increasingly become a popular diagnostic and therapeutic technique. The advantages of a percutaneous approach generally include shorter hospitalization, less pain, lower occurrence of infection and minimal blood loss. Minimally invasive percutaneous procedures require the use of radiocontrast media which has been shown to cause acute renal failure, also known as radiocontrast induced nephropathy. Prophylactic treatments include sodium bicarbonate, N-acetylcysteine, hydration, hemodialysis or hemofiltration and systemic infusion of fenoldopam. To further minimize the disadvantages of radiocontrast media and to prevent nephropathy, the Benephit catheter is targeted renal therapy in which the delivery of the therapeutic agent is directly to the kidney by infusing within the renal arteries. The therapeutic agent of choice in this trial is fenoldopam, a D-1 receptor agonist.

METHODS: A total of 212 patients underwent angiography. Of those, 20 qualified for the use of Benephit catheter infusion. Inclusion criteria: pre-op Cr ≥1.3. Patients on dialysis were excluded from study. Data (pre and post operative Cr) was collected retrospectively.

RESULTS: The average pre-op Cr among these patients was 1.7 and improved to an average of 1.5 post-operatively. Overall, the average improvement was 11.5% and maximum was 46.2%. Two patients had no change. The Benephit catheter has a 95% success rate of either maintaining or improving kidney function after angiography.

CONCLUSIONS: Administration of N-ac, bicarb and hydration are shown, by the results of this trial, to be effective in just over 60% of patients with renal insufficiency. In order to prevent contrast induced nephropathy in patients, more medical therapy must be done. At this time, it appears that the addition of targeted renal therapy with direct infusion of fenoldopam has a 95% success rate of preventing contrast induced nephropathy.

MP55. The AV Fistula for Long Term TPN Administration

Jonathan D. Woody, MD[1], Megan Lovett, RN, BSN, CRNI[2]

[1]Athens Vascular Specialists, Athens, GA, [2]Athens Regional Medical Center, Athens, GA

OBJECTIVE: Long term total parenteral nutrition (TPN) administration requires central venous access. Long term central venous catheter (CVC) use is problematic. The Fistula First initiative highlighted the advantages of arteriovenous fistula (AVF) over CVC for hemodialysis. AVF may be the preferred access for long term TPN.

METHODS: A database was developed to prospectively monitor patients requiring long term vascular access. We identified five patients receiving long term TPN with recurrent CVC infections. They underwent creation of AVF for long term TPN. Patient characteristics and clinical outcomes were reviewed.

RESULTS: From 2006–2011, five patients underwent creation of AVF for TPN. All were dependent on TPN. Four had short gut syndrome. One had severe diabetic gastroparesis. There were four females and one male in the group. Mean age at the time of AVF was 56. Of the AVF, three were brachio-cephalic, one was a basilic vein transposition (BVT) and one was a cephalic vein transposition. Mean follow up is 23.7 months (range 11–62). Two AVF required percutaneous transluminal angioplasty. All three brachio-cephalic AVF matured. Two were used for TPN. One was never used for TPN but was ultimately used for hemodialysis. The BVT matured and was used for TPN. A poor quality vein was used for the cephalic vein transposition and it failed. All AVF created with adequate veins on pre-op duplex imaging matured. Two patients expired in follow up. No CVC infections occurred in patients using AVF for TPN. We developed a successful program to educate patients and their families about AVF and home access techniques for TPN. One barrier was the reluctance of payors and home health agencies to approve administration of TPN through a non-CVC route.

CONCLUSION: AVF is a safe and effective alternative for long term TPN administration. CVC related infections can be eliminated with the use of AVF for TPN. Patients requiring long term TPN should be referred for AVF. Our protocol for training patients and their families for home access of AVF results in the safe and effective administration of TPN. Efforts should be made to educate payors and other organizations that AVF is a safe and effective method for TPN administration and may be the preferred mode of access.

MP56. Strategies for Increasing Medical Student Awareness and Exposure to Vascular Surgery in Canada: New Ventures for 2012

Kyle Hunt, MD Candidate[1], Douglas Wooster, MD[2], Andrew Dueck, MD[2], Elizabeth Wooster, MEd, PhDc[2]

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OBJECTIVES: As of 2012, there will be a five-year, direct-entry residency program (0+5) in vascular surgery in Canada. This presents an opportunity to investigate the most effective strategies for raising medical student awareness, knowledge, and interest in a career in vascular surgery. In the current medical school curriculum only a fraction of students will have exposure to vascular surgery. The use of electronic communication tools and multimedia may have a role in generating interest in vascular surgery amongst potential applicants.

METHODS: A survey to be hosted on an encrypted online survey website (SurveyMonkey.com) and sent to all medical students in Ontario was developed to assay demographic data, 12 career choice determinants, the availability and usage of computers, laptops, and portable devices and preferred social networking and communication methods. A small-scale beta test survey was conducted on a sample of 20 medical students. Comments and feedback received during the test survey period were used to guide the creation of the finalized complete survey.

RESULTS: The type of clinical problems encountered, lifestyle factors and difficulty in obtaining a residency ranked highly in specialty selection. Future income, research potential and malpractice issues had a low ranking. Information was best delivered in Pre-clerkship. Websites with individual or aggregate residency information were most useful; journal articles and mass emails were not. All students owned a computer and MP3 player; 70% had a 'smartphone' capable of data transmission. The complete survey was elaborated to address more detailed study of best approaches to electronic communication regarding vascular specialty training and practice based on the findings of this beta survey.

CONCLUSIONS: We identified the preferences of medical students for receiving information regarding residency selection. We demonstrated the feasibility of further assessing this through a detailed internet-based survey. The information obtained will be useful to develop focused, effective and efficient communication strategies for vascular surgical training programs in addressing the 0+5 program development.

MP57. Outcomes of Surgical Paraclavicular Thoracic Outlet Decompression

Ali Azizzadeh, MD[1], Mohammad A. Toliyat, MD[1], Kristofer M. Charlton-Ouw, MD[1], Monir Hossain, MD[2], Anthony L. Estrera, MD[1], Sheila M. Coogan, MD[1], Hazim J. Safi, MD[1]

[1]UT Cardiothoracic and Vascular Surgery, Houston, TX, [2]UT Health Center for Clinical and Translational Sciences, Houston, TX

OBJECTIVE: Thoracic outlet syndrome (TOS) is a constellation of signs and symptoms caused by compression of the neurovascular structures in the thoracic outlet. These structures include the brachial plexus, the subclavian vein, and the subclavian artery resulting in neurogenic (N), venous (V), and arterial (A) types of TOS, respectively. The purpose of this study was to evaluate the outcomes of surgical decompression for TOS.

METHODS: A retrospective review of medical records for patients who underwent surgical decompression for TOS at a newly established center was performed. Primary outcomes were assessed according to Derkash's classification as excellent, good, fair, and poor. Secondary outcomes included mortality, complications, and length of stay.

RESULTS: From 8/2004 to 6/2011, 40 paraclavicular decompression procedures were performed on 36 patients (16 males) with thoracic outlet syndrome. The mean age was 36.5 years (range 15–68). Bilateral decompression was performed on 4 patients. The TOS types were neurologic (n = 19), venous (n = 16), and arterial (n = 5). The presenting symptoms were pain (83%), numbness (67.5%), swelling (57.5%), fatigue (52.5%), weakness (50%), coolness (32.5%), headache (25%), and ulceration (5%). A previous history of trauma was present in 22.2%. Two patients presented with recurrent symptoms after previous first rib resection at another institution. Diagnostic tests performed included nerve conduction studies (43%), venogram (40%), and arteriogram (20%). All patients with NTOS completed a trial of physical therapy prior to surgery. All patients underwent paraclavicular decompression, which included radical anterior and partial middle scalenectomy, brachial plexus neurolysis, and partial (52.5%) or complete (35%) first rib removal. Functional outcomes were excellent, good, fair, and poor in 74.4%, 15.4%, 10.3%, and 0% of cases, respectively. One patient was lost to follow up. Two patients with incomplete relief of symptoms after paraclavicular decompression underwent pectoralis minor decompression. There was no mortality. Complications included pleural effusion requiring evacuation (n = 4), neuropraxia (n = 1), and lymph leak (n = 1) treated with tube thoracostomy. No patients experienced injury to the long thoracic or phrenic nerves. The mean length of stay was 4.4 days. Mean follow-up was 10.3 months (range 0.2–57.1).

CONCLUSIONS: In our experience, surgical paraclavicular decompression can provide safe and effective relief of neurological, venous, and arterial TOS symptoms. Functional outcomes were excellent or good in the majority of patients with minimal complications.

12:30 pm **ADJOURN**

SCVS ePoster Listing

Located in the Exhibit Hall

EP1. Early Duplex Predicts Late Stenosis After Renal Artery Angioplasty and Stenting

Jason W. Christie, MD, Thomas D. Conlee, MD, Timothy E. Craven, Justin B. Hurie, MD, Kimberley J. Hansen, MD

Wake Forest University Baptist Medical Center, Winston-Salem, NC

EP2. Autogenous Vein Reconstruction May Not Protect Against Re-Infection of Infrarenal Aortic Grafts

Kristofer M. Charlton-Ouw, MD[1], Harleen K. Sandhu, MD[1], Guanmengqian Huang, MD[2], Samuel S. Leake, BS[1], Charles C. Miller, III, PhD[3], Ali Azizzadeh, MD[1], Sheila M. Coogan, MD[1], Anthony L. Estrera, MD[1], Safi J. Safi, MD[1]

[1]University of Texas Medical School at Houston, Houston, TX, [2]Shanghai Jiaotong University, Shanghai, China, [3]Texas Tech University Health Sciences Center, El Paso, TX

EP3. Prospective Randomized Study of Fibrin Sealant Versus Manual Compression for Treatment of Suture Line Bleeding in Expanded Polytetrafluoroethylene (ePTFE) Graft Placement

Sibu P. Saha, MD, MBA[1], Satish Muluk, MD[2], Worthington Schenk, III, MD[3], James W. Dennis, MD[4], Bettina Ploder, MS[5], Ani Grigorian, MFA[6], Isabella Presch, MD, MBA[5], Andreas Goppelt, PhD[5]

[1]Division of Cardiovascular and Thoracic Surgery, Department of Surgery, University of Kentucky, Lexington, KY, [2]Allegheny General Hospital, Division of Vascular Surgery West Penn, Pittsburgh, PA, [3]University of Virginia, the Surgical Therapeutic Advancement Center, Department of Surgery, Charlottesville, VA, [4]University of Florida Health Science Center of Jacksonville, Department of Surgery, Jacksonville, FL, [5]Baxter innovations GMBH, Vienna, Austria, [6]Baxter Healthcare Corp, Westlake Village, CA

EP4. High Intraoperative Transfusion Volumes Are Independently Associated with a Higher 30-Day Mortality in Stanford Type-A Aortic Dissection Patients

Wadi Gomero-Cure, MD, Robert Lowery, MD, Steven W. Boyce, MD, Jennifer Ellis, MD, Ammar S. Bafi, MD, Fred Beavers, MD, Sean O'Donnell, MD, Paul Corso, MD

Washington Hospital Center, Washington, DC

EP5. Endovascular Treatment for Distal Aortic Occlusive Disease with Concomitant Asymptomatic Chronic Mesenteric Ischemia: Successful Revascularization of the Aorta and Inferior Mesenteric Artery Using the Kissing-Stents Technique

Marisa Toma, MD, Angelo Santos, MD, Bart Chess, MD, Satish Muluk, MD

Allegheny General Hospital, Pittsburgh, PA

EP6. Percutaneous Thrombectomy for AV Access Failure: Some Predictive Factors

Clifford M. Sales, MD[1], Hilary Barr[2], Christopher Banko, RN[2], Rami Bustami, PhD[1]

[1]Overlook Hospital, Summit, NJ, USA, [2]The Cardiovascular Care Group, Westfield, NJ

EP7. Withdrawn

EP8. Safety of IVC Filter Retrieval without Interruption of Anticoagulation

Neil Moudgill, MD, Bing Shue, BS, Paul DiMuzio, MD, Taki Galanis, MD, Atul Rao, MD, Joshua Eisenberg, MD

Thomas Jefferson University, Philadelphia, PA

EP9. WITHDRAWN

EP10. Screening for Carotid Stenosis—Prospective Clinical Trial Using a Hand-Held Ultrasound Device

John Blebea, MD[1], David Vilkomerson, PhD[2], Robert Outcault, RVT[3], Glenn Jacobowitz, MD[4], Kenneth Goldman, MD[3]

[1]Case Western Reserve University, Cleveland, OH, [2]DVX, Princeton, NJ [3]Princeton Surgical Associates, Princeton, NJ, [4]New York University, New York, NY

EP11. Preliminary Results of a Coated Shunt to Reduce Thrombotic Complications During Prolonged Arterial Shunting

Joel Durinka, MD[1], Rashad Choudry, MD[1], Grisafi Joseph, MD[1], H. Hank Simms, MD[1], Jeffrey Indes, MD[2]

[1]Albert Einstein Medical Center, Philadelphia, PA, [2]Yale University School of Medicine, New Haven, CT

EP12. The Rise and Fall of Renal Artery Angioplasty and Stenting in the United States, 1988–2009

Patric Liang, Rob Hurks, MD, Rodney P. Bensley, MD, Frank Pomposelli, MD, Allen Hamdan, MD, Mark Wyers, MD, Elliot Chaikof, PhD, MD, Marc Schermerhorn, MD

BIDMC, Boston, MA

EP13. Volume Flow Reduction Using Distal Inflow Provides Excellent Intermediate Outcome for Patients with Functioning Autogenous AV Fistula and Dialysis Access Steal Syndrome

Tam T. Huynh, MD[1], Eric K. Peden, MD[2], Javier E. Anaya-Ayala, MD[2], Mark G. Davies, MD, PhD, MBA[2], Joseph J. Naoum[2]

[1]University of Texas MD Anderson Cancer Center and The Methodist Hospital, Houston, TX, [2]The Methodist Hospital, Houston, TX

EP14. Importance of Intravascular Ultrasound During Percutaneous Treatment of May-Thurner Syndrome

Brian G. DeRubertis, MD, Wesley Lew, MD, Sinan Jabori, Ali Alktaifi, MD, Juan C. Jimenez, MD, Peter F. Lawrence, MD

UCLA School of Medicine, Los Angeles, CA

EP15. The Impact of Clinical and Anatomical Factors on the Utility of Computed Tomography in the Workup of Peripheral Arterial Occlusive Disease

Timothy W. Capps, MD, Bryan A. Ehlert, MD, Matthew B. Burruss, MD, Jennifer E. Threatt, BA, Alex J. Ferikes, Chaitanya Madamanchi, Charles S. Powell, MD, William M. Bogey, MD, Frank M. Parker, DO, Michael C. Stoner, MD

East Carolina University, Greenville, NC

EP16. Combined Use of an Endovascular Stent Graft and Ultrasound-Guided Thrombin Injection in the Management of an Iatrogenic Subclavian Pseudoaneurysm and Arteriovenous Fistula

Daniel E. Ramirez, MD, W.C. Sternbergh, III, MD, Taylor Smith, MD, Hernan A. Bazan, MD

Ochsner Medical Center, New Orleans, LA

EP17. The Impact of Limited Vascular Ultrasound Studies on Clinical Decision Making in Patients with Peripheral Arterial Disease

Douglas Wooster, MD[1], Mary Angelson, BSc, RVT[2], Elizabeth Wooster, M.Ed, PhD(c)[1], Andrew Dueck, MD[1]

[1]University of Toronto, Toronto, ON, Canada, [2]Toronto West Vascular Centre, Toronto, ON, Canada

EP18. Synchronous vs. Staged Coronary Revascularization And Abdominal Aortic Aneurysm Open Repair: A Systematic Review

Konstantinos Spanos, Sr., Vasileios Salepsis, Nikolaos Roussas, Sr., Antonios Vouzas, Sr., Christos Argyriou, Sr., Athanasios Giannoukas, Sr., Professor

University Hospital of Larissa, Larissa, Greece

EP19. Subclavian Artery Revascularization–A Changing Practice

Peter Naughton, MD, Manuel Garcia-Toca, Heron Rodriguez, MD, Mark Eskandari, MD, Mark Morasch, MD

Northwestern Memorial Hospital, Chicago, IL

EP20. Factors Influencing Maturation of Native Arteriovenous Fistulas

Karen Woo, Fred A. Weaver, Vincent L. Rowe

University of Southern California, Los Angeles, CA

EP21. Socioeconomic Status Affects Outcome After Vascular Surgery

Tej K Atluri, MD[1], Racheed Ghanami, MD[1], Jeanette Andrews, MS[2], Kimberley J. Hansen, MD[1], Thomas Conlee, MD[1]

[1]Wake Forest University Baptist Medical Center, Winston-Salem, NC, [2]Wake Forest School of Medicine, Winston-Salem, NC

EP22. Cryopreserved Ssphenous Vein Allograft for Infragenicular Bypass in the Presence of Foot Infection

Walaya Methodius Rayford, MD, James M. Combs, MD, Eric D. Wellons, MD, James M. Poindexter, MD, David Rosenthal, MD

Atlanta Medical Center, Atlanta, GA

EP23. Upper Extremity Thrombo-Embolectomy Using Preoperative Ultrasound Duplex as the Sole Diagnostic Imaging Method

Anil Hingorani, MD, Enrico Ascher, MD, Natalie Marks, MD, Dred Usoh, MD, Alexsander Shiferson, DO, Robert Jimenez, MD, Ed Aboian, MDN, Theresa Jacob, PhD, Thomas McIntyre, PA

Maimonides Medical Center, Brooklyn, NY

EP24. Paradigm Shift in Ruptured AAA (RAAA) Management; Twelve Years Experience in a Tertiary Referral Centre of Endovascular Repair of RAAA(REVAR) vs. Open Repair (OR)

Sherif Sultan, MD, FRCS, FASC, EBQS Vascular, Ala Elhelali, MSc, Niamh Hynes, MD, MRCS, MMSc, ENDO

Western Vascular Institute, Galway, Ireland

EP25. Endovascular Treatment of Profunda Femoris Artery Obstructive Disease

Eleonora Tomasyan, Simon Papoyan

Moscow Municipal Hospital, Moscow, Russian Federation

EP26. Use of the Viabahn Stent to Treat Clinically Significant Superficial Femoral Artery Occlusive Disease: A Single Practitioner's Experience

Robert Hacker, MD, Toufic Safa, MD, FACS

Northshore – Longisland Jewish Health System, Manhasset, NY

EP27. Hybrid Approach to Bleeding Aorto-Enteric Fistula in Patients Not Amenable to Traditional Open Repair Using the Renal Artery as a Conduit

Guillermo A. Escobar, MD, Jonathan L. Eliason, MD, Justin B. Hurie, MD

University of Michigan, Ann Arbor, MI

EP28. Ultrasound-Enhanced Catheter-Directed Thrombolysis of Iliofemoral Deep Venous Thrombosis

Paul J. Riesenman, MD, MS, James G. Reeves, MD, Karthikeshwar Kasirajan, MD, Luke P. Brewster, MD, PhD, Ravi K. Veeraswamy, MD, Joseph J. Ricotta II, MD, Mathew A. Corriere, MD, Thomas F. Dodson, MD

Emory University, Atlanta, GA

EP29. Isolated Iliac Artery Aneurysms: Management and Outcomes in the Endovascular Era

Rodney P. Bensley, MD, Rob Hurks, MD, Ruby C. Lo, MD, Frank Pomposelli, MD, Allen Hamdan, MD, Mark Wyers, MD, Elliot Chaikof, MD, Marc Schermerhorn, MD

BIDMC, Boston, MA

EP30. MRV vs. IVUS for the Detection of Iliac Vein Stenosis

Anil Hingorani, MD, Danny Novak, MD, Enrico Ascher, MD, Natalie Marks, MD, RVT, Alexsander Shiferson, DO, Robert Jimenez, MD, Ed Aboian, MD, Theresa Jacob, PhD

Maimonides Medical Center, Brooklyn, NY

EP31. The Evolution of EVAR: Has Surgical Techniques Improved with Increasing Experience?

Jeffrey Jim, MD[1], Jason T. Lee, MD[2], Luis A. Sanchez, MD[1]

[1]Washington University School of Medicine, St. Louis, MO, [2]Stanford University Medical Center, Stanford, CA

EP32. Atherectomy for Radial Artery Calcification (ARC) in Dialysis Access

Richard Schutzer, MD

North Shore/Long Island Jewish, Lake Success, NY

EP33. Treatment and Outcome Analyses of Splenic Artery Aneurysms in a 5-Year Population Based Sample

Matthew T. Allemang, MD[1], Jesse D. Schold, PhD[2], Ryan O. Lakin, MD[1], Vikram S. Kashyap, MD[1]

[1]University Hospitals Case Medical Center, Cleveland, OH, [2]Cleveland Clinic Foundation, Cleveland, OH

EP34. Variability in Carotid Endarterectomy: An Outcome and Cost Analysis

Sibu P. Saha, MD, MBA, David Minion, MD, Eleftherios Xenos, MD, Victor Ferraris, MD, PhD, Daniel Davenport, PhD, Eric Endean, MD

University of KY, Lexington, KY

EP35. Single Surgeon Carotid Endarterectomy Results in a Community Hospital

Kyle Matthew Hines, College Student, Daniel J. McGraw, MD

Camden Clark Medical Center, Parkersburg, WV

EP36. Management of Endoleaks: A Large, Single-Center Experience

Benjamin Lind, MD[1], Chad Jacobs, MD[1], Ferral Hector, MD[1], Peter Hunt, MD[2], Goldin Marshall, MD[1], Robert March, MD[1], Walter McCarthy, MD[1]

[1]Rush University Medical Center, Chicago, IL, [2]Cardiovascular Thoracic Surgery, Rush University Medical Center, Chicago, IL

EP37. Single Center Long-Term Results Utilizing the Talent Aortic Endograft

Lisa M. Louwers, MD, Paul G. Bove, MD, Graham W. Long, MD

William Beaumont Hospital, Royal Oak, MI

EP38. Bowing as an Adjunct for Endovascular Aneurysm Repair

Chen Rubinstein, MD, Eric D. Endean, MD, David J. Minion, MD, Gabriel J. Bietz, MD, Ehab S. Sorial, MD, Shane D. O'Keeffe, MD, Eleftherios S. Xenos, MD, PhD

University of Kentucky, Lexington, KY

EP39. In-patient Adult and Pediatric Vascular Ultrasound: Distribution and Rate of Positive Findings

Anil Hingorani, MD, Danny Novak, Enrico Ascher, MD, Natalie Marks, MD RVT, Alexsander Shiferson, DO, Robert Jimenez, MD, Ed Aboian, MD, Theresa Jacob, PhD

Maimonides Medical Center, Brooklyn, NY

EP40. Prevalence of Coronary Artery Disease in Patients Undergoing Elective Aortoiliac Surgery

Anthony Iacco, MD, O. William Brown, MD, Catherine J. Coleman, RN, BSN, Victoria C. Lucia, PhD

Beaumont Health System, Royal Oak, MI

EP41. Management of Percutaneous Access Complications

Benjamin Lind, MD[1], Chad Jacobs, MD[1], Ferral Hector, MD[1], Peter Hunt, MD[2], Walter McCarthy, MD[1]

[1]Rush University Medical Center, Chicago, IL, [2]Cardiovascular Thoracic Surgery, Rush University Medical Center, Chicago, IL

CONSTITUTION AND BY-LAWS

SOCIETY FOR CLINICAL VASCULAR SURGERY

ARTICLE I

This Society shall be called the "Society for Clinical Vascular Surgery".

ARTICLE II

The purposes of this Society shall be to advance the art and science of vascular surgery, to provide a forum for vascular surgeons, and to improve the delivery of health care in vascular disease to the public.

ARTICLE III

Membership

Section I – Types of Membership. The Society shall consist of Active, Inactive, Senior, Candidate, Affiliate, and Honorary members.

Section II – Active Membership. Active Membership shall be limited to licensed surgeons who are certified by the American Board of Surgery or surgeons who have surgical certification equivalent to the American Board of Surgery. In addition, applicants for Active Membership shall furnish evidence that they have completed an accredited vascular residency training program or submit evidence of otherwise equivalent experience. Applicants who have completed an accredited vascular residency shall supply a letter of recommendation from his or her Program Director. Active Membership may also be granted to physicians who have been actively engaged in the practice of vascular surgery for two years or more after graduation and completion of general surgery residency training. Applicants for Active Membership who have not completed a certified vascular residency shall submit a list of vascular procedures performed the year prior to the application. The vascular procedures listed should include the operative results and complications. Active Members shall pay dues and shall be eligible to vote to and hold office.

Section III – Inactive Membership. Active members who are incapacitated by illness or accident, or are unable to continue in the practice of medicine, and for whom the payment of dues would be a hardship, are eligible for Inactive Membership. The Active Member must submit a written request to the Secretary for Inactive Membership due to hardship. A vote of the Executive Committee shall decide whether to grant the request for the transfer to inactive status. Within three (3) years of Inactive Membership, the Inactive Member must submit a written request to either return to Active status or be transferred to Senior status.

If neither category is applicable, the Executive Committee reserves the right to review the membership status and may determine the appropriate actions. Inactive Members shall not pay dues, shall not be eligible to vote, or hold office.

Section IV – Senior Membership. Senior Membership may be requested by physicians who are 65 years of age or greater and who are no longer actively practicing, for reasons of health or other just cause, may submit a written request to the Secretary to transfer to Senior membership status. This request shall be acted upon by the Council.

Section V – Honorary Membership. Honorary Membership shall be limited to surgeons of special eminence who have made outstanding contributions to vascular surgery. Honorary Members, at their request, may change to Active Membership.

Section VI – Candidate Membership. Candidate Membership shall include residents enrolled in an accredited program of surgical education and/or vascular surgeons enrolled in a research or fellowship program acceptable to the Society. Candidate Membership will be appropriate until such time an individual meets the requirements for Active membership (as outlined in Article III, Section II of these Bylaws). Candidates who enrolled in specialized training programs in vascular surgery may apply directly upon completion of his or her residency training for Active membership in the Society. Candidate Members shall pay an initiation fee but shall not be required to pay annual dues. Candidate members are not eligible to vote and are not eligible to hold office.

Section VII – Affiliate Membership. Affiliate Membership shall include individuals who are surgeons who otherwise do not qualify for Active or Candidate Membership, but have an interest in vascular disease. Affiliate Membership shall also include other healthcare professionals who are not surgeons, but have an interest in vascular disease. Affiliate Members shall pay dues, but are not eligible to vote and are not eligible to hold office.

Section VIII – Rights and Privileges. Senior and Honorary members shall not pay dues or assessments, shall not be eligible to vote and shall not be eligible to hold office. Senior and Honorary Members may elect to receive a subscription of the Society's official Journal at the Active Member subscription rate.

Section IX – Election to Membership

A. ***Active and Candidate Membership.*** Applicants for Active and Candidate Membership shall be admitted following application to the Secretary, approval by the Membership Committee with recommendation to the Active Membership and the Executive Committee and approval by a majority vote of Active Members attending the Annual Business Meeting. Applications for membership must be received by the Secretary by January 1 of each year to be considered and voted on at the next Annual Business Meeting.

B. ***Inactive and Senior Membership.*** Inactive and Senior Members may include Active Members who have submitted a written request to the Secretary, and after review, have been recommended to Inactive or Senior Membership status by the Executive Committee. Inactive and Senior Membership status shall be conferred when after presentation to the Active Members at the Annual Business Meeting upon Executive Committee recommendation, the majority of Active Members vote to approve said written requests.

C. ***Honorary Membership.*** Names of candidates for Honorary Membership should be submitted in writing to the Executive Committee for investigation and approval. A unanimous vote of the Executive Committee shall be required for election to Honorary Membership.

D. ***Corresponding Membership.*** Applicants for Corresponding membership shall have the endorsement of two Active members and shall follow the same application procedures established for Active and Candidate membership.

E. ***Affiliate Membership.*** Affiliate Membership shall follow the same election procedure as Active and Candidate Membership.

Section X – Acceptance of Members. Each new member shall be notified in writing of his election to membership in the Society for Clinical Vascular Surgery. Active, Candidate and Affiliate Members shall be invoiced for dues and assessments upon notification. Said invoice will include the current year's dues and assessments. New members are encouraged to submit an abstract for the program of the Annual Scientific Meeting.

Section XI – Termination of Membership. Termination of membership may be requested by any Member. This request must be presented in writing to the Secretary. Membership may be terminated by the majority vote of the Executive Committee for non-payment of dues after December 31 of the year in which dues are billed, discontinuance of the practice of vascular surgery, early retirement, or incapacity by illness or accident for more than two years. Membership may also be suspended or terminated for unethical or unprofessional conduct.

ARTICLE IV
Council

Section I – Council. The Council shall consist of the President, President-Elect, Vice-President, Secretary, Treasurer, Recorder, three elected members at large, and the three immediate surviving past presidents. The Representative to the Advisory Council for Vascular Surgery of the American College of Surgeons shall be a non-voting member of the Council and shall serve his or her term in accordance with the term set by the Advisory Council for Vascular Surgery of the American College of Surgeons. The Representative to the Board of Governors of the American College of Surgeons shall be a non-voting member of the Council. He/she shall serve his/her term in accordance with the term set by the American College of Surgeons. The chairs of the following standing committees shall serve as ex-officio members of the Council: Membership, Program and Constitution and Bylaws. The Editor of the Newsletter shall be appointed by the President and approved by the Council. The Editor shall be an ex-officio member of the Council. The Editor shall serve in that position until a replacement is deemed necessary. The President, President-Elect and Vice President shall serve a term of one year. The Secretary, Treasurer, and Recorder shall be elected for a three-year term; subject to renomination and vote as described below. The Secretary, Treasurer and Recorder may serve two consecutive three-year terms.

Section II – Nominations. The President-Elect and Vice President shall be nominated by a Nominating Committee and presented for a vote by the Active Members of the Society present at the Annual Business Meeting. Candidate(s) for Secretary, Treasurer, Recorder, and Councilor shall be generated in one of two ways:

1. The Nominating Committee shall provide a list of candidate(s) for these offices at the Annual Business Meeting. The Nominating Committee shall meet at a time prior to the Annual Business Meeting sufficient to conduct the business of the nominations for these positions.
2. Any Active Member in good standing can submit his/her name as a candidate for these offices, if open for election that year, to the Secretary of the Society by December 31. To do so for the position of Secretary, Treasurer, or Recorder requires the Active Member to submit a petition signed by ten percent of the Active Members, a Curriculum Vitae, and a summary which documents the candidates' philosophies for, previous activities in and commitment to the Society. Active Members interested in the position of Councilor (three-year term) need only submit a Curriculum Vita, three letters of recommendation from Active Members of the Society and a brief summary outlining their activities and interest in the position. If more than one candidate has been nominated for a position, whether it is from the Nominating Committee or by separate submission to the Secretary, the Nominating Committee shall post a list of these candidate(s) to the Active Members of the Society by February 1. All such proposed candidates shall be available for review on the Society web page *(the Candidates for office)*. If no member(s) submits his/her name as a candidate for office outside of the Nominating Committee process, then the slate of Candidates shall be provided to the Active Members at the Annual Business Meeting.

Section III – Elections. Election of Officers and the Councilor shall take place each year at the Annual Business Meeting. The slate of Officers for President-Elect, Vice President, Secretary, Treasurer, Recorder, and Councilor shall be presented to the Active Members present at the Annual Business Meeting for a vote. Election of Secretary, Treasurer, Recorder, or Councilor shall be by ballot distributed at the Annual Business Meeting if more than one candidate is to be considered. Voting shall be done by Active Members of the Society present at the Annual Business Meeting.

Section IV – Vacancies. Any vacancy occurring during the year among the Officers of the Society shall be filled by an Active Member of the Society nominated by the President and elected by a majority vote of the Executive Committee. The term of office shall be for the duration of the term of the vacating Officer.

ARTICLE V

Duties of Officers

Section I – President. The President shall preside at the meetings of the Society, preserve order, regulate debates, sign Certificates of Membership, convene the Nominating Committee, serve as ex-officio on committees of the Society as he/she deems appropriate, announce results of elections, and perform all duties legitimately pertaining to his office. He/she shall review, evaluate, and respond to complaints of the membership.

Section II – President-Elect. The President-Elect shall automatically succeed as President of the Society in the year following his election to President-Elect. The President-Elect shall serve as Chair of the Issues Committee. The President-Elect shall preside at all meetings in the absence of the President. He shall succeed to the presidency upon the office becoming vacant by death, resignation or termination of membership.

Section III – Vice-President. The Vice President shall serve as Chair of the Postgraduate Education Committee. The Vice President shall also be the designated Industry Liaison and is responsible for the Society's fundraising efforts for educational activities, including but not limited to symposia and/or training workshops held in conjunction with the Society's annual meeting.

Section IV – Secretary. The Secretary shall keep minutes of meetings of the Society and of the Council and shall attest to all official acts requiring certification with or independent of the President. He/she shall keep in custody the Seal of the Society and affix it to all documents and papers as directed by the Society. He/she shall have printed a yearly list of the membership. The Secretary shall receive no salary but shall be reasonably compensated for his/her expenses incurred on behalf of the Society.

Section V – Treasurer. The Treasurer shall approve all expenses, invoices, and bills of the Society. He/she shall receive all monies and funds belonging to the Society and pay all bills when properly rendered. He/she shall collect all dues as promptly as possible and report to the Society any members in arrears. The Treasurer shall present an annual budget to the Council for review and ratification. The Treasurer shall receive no salary but shall be reasonably compensated for his/her expenses incurred on behalf of the Society.

Section VI – Recorder. The Recorder shall serve as the liaison to the Editor of the journal selected by the Society for publication. The Recorder shall see that manuscripts based on abstracts presented at the Annual Meeting are submitted for review and possible publication in the appropriate journal. The Recorder shall report to the Council the details of the status of publication of the manuscripts.

Section VII – Society Administrator. The Council may delegate to an individual or firm, the responsibilities for organizing and administering the affairs and functions of the Society.

ARTICLE VI

Standing Committees

Section I. The standing committees shall consist of the Executive Committee, Nominating Committee, Membership Committee, Program Committee, Constitution and By-Laws Committee, Postgraduate Education Committee, Issues Committee, and Finance Committee.

Section II – Executive Committee. The Executive Committee of the Council shall consist of the following voting members:

A. President

B. President-Elect

C. Vice-President

D. Secretary

E. Treasurer

F. The most immediate surviving Past President

The Executive Committee will be chaired by the President who will preside over the Executive Committee sessions. Regular meetings of the Executive Committee shall be held at the call of the President in conjunction with the Annual Business Meetings. Special meetings of the Executive Committee may be held on notice from the President. A simple majority of the members of the Executive Committee shall constitute a quorum. When appropriate, the Executive Committee shall act on behalf of the Council when the Council is not in session.

The Executive Committee shall ratify as eligible the names of all proposed candidates and recommend them to the Active Membership for vote at the Annual Business Meeting.

Section III – Nominating Committee. The Nominating Committee shall consist of the President, President-Elect and the three Immediate Past Presidents. The President shall Chair the Nominating Committee.

Section IV – Membership Committee. The Membership Committee shall consist of three members to serve overlapping terms of three years each. The Secretary shall serve as ex-officio. A new member shall be appointed annually by the President. The most senior member of the Membership Committee shall serve as Chair. The Membership Committee shall review all applications for membership and shall present their nominations for Active, Candidate and Affiliate membership to the Executive Committee for review and ratification prior to the Annual Business Meeting.

Section V – Program Committee. The Program Committee shall consist of the President, Secretary, Recorder, and three members to serve overlapping terms of three years each. A new member shall be appointed annually by the President. The most senior of the three appointed members of the Program Committee shall serve as Chair. The Chair shall propose possible programs, modes of presentation and format of the program. The Program Committee shall meet to plan the program, choose submitted abstracts for oral and/or written presentation, and conduct other business as needed to secure the program for the Annual Meeting.

Section VI – Constitution and By-Laws Committee. The Constitution and By-Laws Committee shall consist of three members to serve overlapping terms of three years each. A new member shall be appointed annually by the President. The most senior member of the Constitution and By-Laws Committee shall serve as Chair. The Constitution and By-Laws Committee shall review the Constitution and By-Laws from time to time as directed by the Council and when appropriate, make recommendations regarding amendments.

Section VII – Postgraduate Education Committee. The Vice President shall serve as Chair of the Postgraduate Education Committee. The Chair shall appoint the necessary number of members to the Postgraduate Education Committee for a one-year term. The Postgraduate Education Committee members shall serve as moderators for the annual postgraduate courses. The Postgraduate Education Committee will organize topics, length, program and faculty for postgraduate courses to be held in collaboration with the Annual Meeting.

Section VIII – Issues Committee. The President-Elect shall serve as Chair of the Issues Committee and will be responsible for organizing and producing the Issues Session at the Annual Meeting.

Section IX – Finance Committee. The Finance Committee shall consist of four members: the Treasurer and three members to serve overlapping terms of three years each. A new member shall be appointed annually by the President. The Treasurer shall serve as Chair. The Finance Committee shall review annually the performance of the Society's investment portfolio.

Section X – Committee Participation. Any Society Member may submit his/her name to the President for service on a committee.

ARTICLE VII

Meetings

Section I – Annual Meeting. There shall be an annual business and scientific meeting, the time and place to be decided by the Council.

Section II – Quorum. For the transaction of business, twenty-five (25) of the voting members present at the Annual Business Meeting shall constitute a quorum.

ARTICLE VIII
Funds

Section I – Initiation Fee. There shall be an initiation fee established by the Council, which shall accompany the application for membership.

Section II – Annual Dues. The annual dues shall be set by the Council.

Section III – Assessments. Assessments may be approved by a majority vote of Active Members present at any Annual Business Meeting provided that such an assessment has been duly recommended by the Council.

Section IV – Nonpayment of Dues. Any member in arrears for one year, being notified of the fact by the Treasurer in writing, and not paying his/her dues within 30 days thereafter, shall forfeit his/her membership. It shall be the duty of the Treasurer to notify the Society of such forfeiture, which fact shall be entered in the minutes and the name stricken from the list of members. The notice aforesaid shall contain a copy of this section.

ARTICLE IX
Seal and Certificate of Membership

The Society shall have a distinct Seal as well as a Certificate of Membership. The Certificate of Membership shall be signed by the President and the Secretary. Every member shall be entitled to a Certificate of Membership.

ARTICLE X
Annual Business Meeting

Section I. An Annual Business Meeting shall be held at each annual meeting.

ARTICLE XI
Parliamentary Procedure

Deliberations of the Society shall be governed by parliamentary usage, as contained in Robert's Rules of Order, as amended from time to time, when not in conflict with this Constitution and By-Laws.

ARTICLE XII
Amendments

The Society may amend any Article of the Constitution and By-Laws by a majority vote of those Active Members present at the Annual Business Meeting. Such amendments must be circulated to the membership by mail at least 30 days prior to the Annual Business Meeting of the Society. The Council may, by a 3/4 vote, pass resolutions, which clarify the amendments.

SOCIETY FOR CLINICAL VASCULAR SURGERY

ALPHABETICAL ROSTER

The following member listing is proprietary information of the Society for Clinical Vascular Surgery (SCVS) and may not be distributed or duplicated, in wCenterhole or in part, for any purpose without the prior written consent of the SCVS. Use of the information for telemarketing or any other solicitation of any persons on this list is strictly prohibited.

The information printed here is current as of January 1, 2011. Please use the form at the end of the book to update your membership records. We encourage you to provide a current email address to receive advance meeting information. You may email your update to: scvs@prri.com.

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Falmouth
Nasir Khan, Mohammad U

Fort Fairfield
Shapiro, Ivan

Rockport
White, Julie G

MARYLAND

Annapolis
Martin, John D

Arnold
Clark, Nancy S

Baltimore
Vieta, Paul A, Jr

Baltimore
Buchbinder, Dale
Byrne, Christopher
Flinn, William R
Floyd, Lisa
Freischlag, Julie Ann
Fugate, Mark W
Gopal, Kapil
Heller, Jennifer A
Queral, Luis A
Reifsnyder, Thomas
Williams, Timothy K

Bethesda
Rich, Norman M

Bowie
Hughes, Kakra

Brookeville
Fox, Charles J

Cheverly
Holbrook, William A

Crownsville
Deaton, David H

Davidsonville
Stanziale, Stephen

Frederick
Rosenberg, Garth D

Glen Burnie
Benjamin, Marshall E

Glenn Burnie
Neschis, David G

Rockville
Fox, Robert L
Silva, Richard A
Sulkin, Michael D
Wang, Jeffrey Y

Rosedale
Abu Ghaida, Ahmad M

Silver Spring
Hutton, John E, Jr

MASSACHUSETTS

Andover
Johnson, Hubert A
LeMaitre, George D
Sannella, Nicholas A

Bedford
Lowney, Bruce W

Boston
Belkin, Michael
Brewster, David C
Chaikof, Elliot L
Ciocca, Rocco G
Conrad, Mark F
Farber, Alik
Hamdan, Allen D
Iafrati, Mark D
McBride, Kevin J
Pomposelli, Frank B
Schermerhorn, Marc L
Tan, Tze-Woei
Woodson, Jonathan

Brockton
Becher, Robert M

Burlington
Jewell, Edward R

Canton
Nannery, W. Mark

Fall River
Fogle, Martin A

Falmouth
Skudder, Paul A, Jr

Florence
Jackson, David R

Framingham
Donaldson, Magruder C

Haverhill
Kwass, Walter

Hyannis
Gorin, Daniel R

Lawrence
Gordon, Jonathan K
Muto, Paula M

Newton
Biuckians, G. Tom

North Chelmsford
Burke, Paul M, Jr

Northborough
Maini, Baltej S

Pittsfield
Basile, Richard M
Cohn, Michael S
Curletti, Eugene L

Somerville
Peters, Albert F

Springfield
Hirko, Mark K
Rhee, Sang W

Stoneham
Cantelmo, Nancy L
Nath, Ronald L
Stoughton, Julianne
Tameo, Michael N

West Roxbury
Raffetto, Joseph D

Worcester
Baril, Donald T
Josephs, Leon G

MICHIGAN

Ann Arbor
Coleman, Dawn

Ann Arbor
Escobar, Guillermo
Kabbani, Loay S

Bingham Farms
Brown, O. William

Detrioit
Kadakol, Ajith

Detroit
Esco, Miechia
Menes, Keith C

Detroit
Chacko, John
Millikan, Clark H
Nypaver, Timothy J
Rubin, Jeffrey R

Dexter
Vandy, Frank C

Grand Rapids
Wheatley, Brian

Grand Rapids
Hagelberg, Richard S
Kim, Youn S
Mansour, M. Ashraf
Robson, Larry J

Grosse Pointe Shores
Haddad, Georges K

Kalamazoo
Jain, Krishna M

Livonia
Ramakrishnan, Vellore R
Whitten, James I

luna pier
Bazzi, Mazen M

Mt. Clemens
Buresh, Jarrod A

Northville
Lin, Judith C

Petoskey
Kazmers, Andris

Pontiac
Hernandez, Diego A

Port Huron
Lee, Robert E

Royal Oak
Bove, Paul Guy
Long, Graham W
Shanley, Charles J

Saginaw
Bays, Ronald A

Southfield
Aboulafia, Elie D
Boules, Tamer N

St. Clair Shores
Berg, Richard A
Mattos, Mark A

Troy
Engle, Jennifer S
Rimar, Steven D

West Bloomfield
Granke, Kenneth

MINNESOTA

Duluth
Bunch, Christopher T
Kubista, Theodore P
Monge, James

Minneapolis
Gannon, Paul G
Santilli, Steven M
Sullivan, Timothy M

Plymouth
McMillan, William D

Rochester
Garg, Nitin

Rochester
Bower, Thomas C
Duncan, Audra A
Gloviczki, Peter
Harbuzariu, Catalin
Kalra, Manju
Oderich, Gustavo S
Rits, Yevgeniy M

St. Louis Park
Melin, Matthew MA

MISSISSIPPI

Hattiesburg
Farmer, Charles E, Jr
Thompson, J. Keith

Jackson
Mitchell, Marc E
Rushton, Fred W, Jr

Meridian
Rush, L Vaughan, Jr

MISSOURI

Chesterfield
Alexander, George K

Columbia
Adams, John G, Jr
Humphrey, Paul W

Jefferson City
Exon, C. Stuart

Kansas City
Solomon, Andrew R

St Charles
Schneider, Thomas A, II

St. Joseph
Lukens, Matthew L

St. Louis
Jim, Jeffrey

St. Louis
Allen, Brent T
Kraeger, Russell R
Pennell, Richard C
Rubin, Brian G
Sanchez, Luis A
Smeds, Matthew R
Wittgen, Catherine M

Thayer
Sauer, Paul E

MONTANA

Billings
Dernbach, Timothy A
Kobold, Elmer E

Great Falls
McGregor, William R

NEBRASKA

Norfolk
Almaroof, Babatunde
Bell, Donald D

NEVADA

Carson City
Halow, Kevin D

Las Vegas
Cottrell, Earl D
Leider, Harold J
Luh, Eddy H
McIntyre, Kenneth E, Jr

Reno
Cafferata, H. Treat
Sieffert, George F
Thomassen, J. Paul

NEW HAMPSHIRE

Lebanon
Cronenwett, Jack L

Manchester
Furey, Patricia C

Salem
Miller, Normand

NEW JERSEY

Belleville
Levison, Jonathan A

Berkley Heights
Nitzberg, Richard S

Blackwood
O'Neill, Alissa B

Brick
Sharp, Frank

Camden
Lombardi, Joseph V

Camden
Taylor, Nyali E

Camden
Alexander, James B
Camishion, Rudolph C
Carpenter, Jeffrey P
Kumar, Sanjay

Clifton
Ciocon, Hermogenes L

Edison
Ellman, Barry R

Egg Harbor Twp
Salartash, Khashayar

Emerson
Walsky, Robert S

Englewood
Dardik, Herbert
Elias, Steven
Ibrahim, Ibrahim M
Impeduglia, Theresa M
Kahn, Mark E
Wengerter, Kurt R
Wolodiger, Fred A

Franklin Park
Mousa, Albeir Y

Glen Ridge
Patel, Kumar R

Hackensack
Moss, Charles M

Hainesport
Barnes, Thomas L
Briones, Renato J

Hamburg
Dash, Sarat

Livingston
Brener, Bruce J
Curi, Eli

Lumberton
Rough, William A

Morristown
Moritz, Mark W

New Brunswick
Graham, Alan M
O'Donnell, Paul
Vogel, Todd R

Ocean
Baret, Alexander C

Paramus
Wasserman, Dean H

Pleasantville
Rosenblatt, Alfred

Rockaway
Rupani, Bobby J

Rockleigh
Bernik, Thomas R

Rumson
Gilbertson, Francis E

Somers Point
Feinberg, Gary L
Galler, Leonard
Gosin, Jeffrey S

South Plainfield
Breitbart, Gary B
Richmand, David M

Trenton
Hardesty, William

Voorhees
Fisher, Frederick S
Grabiak, Thomas A
Minor, Robert B

West Long Branch
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Mlynarczyk, Peter
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Whippany
Manicone, John A

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Biggs, Kristen L
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Las Cruces
Lindley, Jearl R

Santa Fe
Martin, Alfred J, Jr

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Albany
Chang, Benjamin B
Darling, R. Clement, III
Kreienberg, Paul B
Lloyd, William E
Mehta, Manish
Ozsvath, Kathleen J
Paty, Philip SK
Roddy, Sean P
Shah, Dhiraj M
Spirig, Andreas M

Amityville
Gensler, Stanley W

Bronx
Riaz, Omer

Bronx
Lipsitz, Evan C
Scher, Larry A

Brooklyn
Ascher, Enrico
Diaz, Carlos A
Hingorani, Anil P
Purcell, Roland R
Semaan, Elie S
Tran, Victor Q
Wright, Albert M

Buffalo
Anain, Joseph M
Anain, Paul
Blochle, Raphael
Dosluoglu, Hasan H
Dryjski, Maciej L
Harris, Linda M
Taheri, Syde A

Fayetteville
Schwartz, Robert A

Floral Park
Mutyala, Manikyam
Patel, Nirav S

Flushing
Deckoff, Stephen L

Fresh Meadows
Pasklinsky, Garri

Glen Cove
Vitale, Gerard F

Great Neck
Purtill, William A

GreenLawn
Gennaro, Mark

Hawthorne
Babu, Sateesh C
Shah, Pravin M

Hewlett
Flores, Lucio

Holland Patent
Max, Theodore C

Lake Success
Chaudhry, Saqib S
Doscher, William
Frankini, Larry A
Krishnasastry, Kamphampaty
Rosca, Mihai
Schutzer, Richard W

Manhasset
Swersky, Robert B

Middletown
Fiorianti, John A
Kulak, Robert G

New York
Connolly, Peter
Dexter, David J, II
Loh, Shang
Salloum, Sasha A
Shrikhande, Gautam

New York
Adelman, Mark A
Aiello, Francesco A
Bush, Harry L, Jr
Davila Santini, Luis R
Dudkiewicz, Michael
Faries, Peter L
Gallagher, Katherine
Harrington, Elizabeth B
Harrington, Martin E
Jacobowitz, Glenn R
Jacobson, Julius H, II
Kim, Billy J
Malik, Rajesh
Marin, Michael L
McKinsey, James F
Mendes, Donna M
Morrissey, Nicholas J

Mussa, Firas F
Nalbandian, Matthew M
O'Connor, David
Poblete, Honesto M
Qin, Feng
Rockman, Caron R
Schanzer, Harry R
Shah, Tejas R
Sundick, Scott
Teodorescu, Victoria J
Veith, Frank J
Xenophontos, Xenophon P

Niskayuna
Gelfand, Michael L

Orchard Park
Rade, Michael P

Pittsford
Rizk, Toufic A

Poughkeepsie
Saltzberg, Stephanie S

Rochester
Balaji, Malur R
Chandra, Ankur
Gargiulo, Nicholas J, III
Geary, Joseph E
Rhodes, Jeffrey M
Schwartz, Seymour I
Svoboda, Jerry J

Roslyn
Chang, John B

Staten Island
Deitch, Jonathan S
Fodera, Maria Elena
Michaluk, Brian T
Raju, Ramanathan

Syosset
Badhey, Mohan R

Syracuse
Amankwah, Kwame S
Gahtan, Vivian

Utica
Lauterbach, Stephen R

Williamsville
Peer, Richard M

Yonkers
Tannenbaum, Gary A

NORTH CAROLINA

Chapel Hill
Farber, Mark A
Vallabhaneni, Raghuveer

Charlotte
Lalka, Stephen G
Marsden, Brent

Durham
O'Brien, Patrick

Durham
Mureebe, Leila

Gastonia
Eze, Augustine R

Greenville
Ehlert, Bryan

Greenville
Bogey, William M, Jr
Powell, C. Steven
Stoner, Michael C

High Point
Shull, Kenneth C

Highlands
Estes, James W

Huntersville
McDougal, Jennifer L

Jacksonville
McCartney, Stephen F

Pinehurst
Averbook, Allen W
Averbook, Beryl D

Richmond
Berman, Joel A

Shallotte
Nelson, Harry M

Winston-Salem
Ghanami, Racheed J
Simpson, Thomas E

NORTH DAKOTA

Bismarck
Swenson, Wayne M

Fargo
Traynor, Michael D

Rugby
Kurihara, Wallace K

OHIO

Akron
Moawad, John

Canton
Prem, Jeffrey T

Chagrin Falls
Savrin, Ronald A

Cincinnati
Jones, Paul
Kuhn, Brian

Cincinnati
Annenberg, Alan J
Giglia, Joseph S
Kempczinski, Richard
Lohr, Joann M
Meier, George H
Muck, Patrick E
Roedersheimer, L. Richard
Welling, Richard E

Cleveland Heights
Arthurs, Zachary M
Constantinou, Constantinos

Cleveland
Ellis, Jennifer
Kaleka, Gurjeet
Rajani, Ravi
Zahradnik, Vladimir

Cleveland
Alexander, J. Jeffrey
Bertin, Vincent J
Brahmanandam, Soma M
Clair, Daniel G
Eagleton, Matthew J
Guzman, Edgar D
Kashyap, Vikram S
Lyden, Sean P
Sarac, Timur P
Weinberger, Jeffrey

Columbus
Hannun, Ghaleb A
Hartranft, Thomas H
Holden, Charles R
Kulwicki, Aaron D
Litzendorf, Maria E
Vermilion, Blair D
Vincent, Gilford S

Dayton
Williams, Philip C

Dover
Miller, M. Todd

Duncan Falls
Katz, Sherman A

Findlay
Malone, Michael D

Hudson
Erzurum, Victor Z

Maumee
Afridi, M. Farooq

Portsmouth
Khoury, Thomas L

Sandusky
Swayngim, Dowzell M, Jr

Shakar Heights
Margni, Mohmmed N

Shaker Heights
Kang, Wade W

Springfield
Neravetla, Surender R

Steubenville
Macedonia, Dominic A

Sylvania
Sbrocchi, Richard D

Toldeo
Aziz, Faisal

Toledo
Di Fiore, Richard

Toledo
Balkany, Louis
Comerota, Anthony J
Nazzal, Munier M
Zelenock, Gerald B

Wheelersburg
Hochstetler, Marion, Jr

Willoughby
Rollins, David L

Youngstown
Kollipara, Venkata SK

OKLAHOMA

Oklahoma City
Mehta, Kautilya A
Riggs, Michael O

Tulsa
Blebea, John
Loughridge, BP

ONTARIO

Toronto
Cardella, Jonathan A

OREGON

Ashland
Cary, Stephen C

Bend
Kelley, Harley D

Eugene
Harris, Robert W
Swangard, Robert J
Watson, Milton R

Medford
Schwartz, John A

Newberg
Acker, Robert L

Portland
Dickson, Alfred H
Eidemiller, Larry R
Inahara, Toshio
Lee, Dae
Leon, Fernando

Salem
Fleming, Mark D

Silverton
Waters, Harris J

West Linn
Holmes, Keith D

Ottawa
Kubelik, Dalibor

PENNSYLVANIA

Abington
Sullivan, Theodore R, Jr

Bethlehem
Rosenfeld, Joel C

Bryn Mawr
Matsumoto, Teruo

Carlisle
Campbell, Joseph J

Chester
DiGiovanni, Robert J

Clarks Summit
Kutz, John A

Danville
Elmore, James R
Gray, John L
Ryer, Evan

Easton
Balshi, James D
Fisher, Jay B
Oskin, Timothy C

Feasterville
Chu, Michael H

Greensburg
Ambrosino, John J
Kenney, David A

Herhsey
Messiner, Ryan

Hershey
Atnip, Robert G
Han, David C

Huntingdon Valley
Pellecchia, Patrick E

Lake Harmony
Klein, Lawrence

Lehigh Valley
Stabile, Jerome G

Lewisburg
Stefan, Todd M

Mars
Marone, Luke K

Meadowbrook
Winkler, Gabor A

North Wales
Samhouri, Farouq Ali

Penn Valley
Weingarten, Michael S

Philadelphia
Blom, Aaron S
Foley, Paul
Moudgill, Neil

Philadelphia
Bagameri, Gabor
Baum, Stanley
Beeman, Brian R
Calligaro, Keith D
DeLaurentis, Dominic A
Dillavou, Ellen D
DiMuzio, Paul J
Dougherty, Matthew J
Eisenberg, Joshua A
Fairman, Ronald M
Golden, Michael A
Hayes, Daniel, Jr
Kerstein, Morris D
Mantell, Mark P
Mohan, Chittur R
Palchik, Eugene
Rakhlin, Elena Y
Raviola, Carol A
Smullens, Stanton N
Soundararajan, Krish
Wagner, F. William, Jr
Wang, Grace J
Woo, Edward Y

Pittsburgh
Detschelt, Elizabeth W
Jeyabalan, Geetha
Ochoa Chaar, Cassius Iyad
Santos, Angelo N
Saqib, Naveed U

Pittsburgh
Al-Khoury, Georges E
Benckart, Daniel H
Celis, Rolando
Chaer, Rabih A
Cho, Jae-Sung
Hirsch, Stanley
Jarrett, Fredric
Leers, Steven A
Makaroun, Michel S
Muluk, Satish C
Rams, James J
Rhee, Robert Y
Rosales, Carlos A
Steed, David L
Webster, Marshall W

Plains
Yavorski, Chester C

Pottsville
Kholoussy, A. Mohsen

Reading
Impellizzeri, Paul

Sayre
Deshmukh, Narayan
Larson, Robert A
Wang, Xiujie

Sellersville
Rilling, David C

Sewickley
Collier, Paul E

St. Clair
Meeran, M. Mohamed

Villanova
Berkowitz, Henry D

West Reading
Brigham, Robert A

Wilkes-Barre
DeRojas, Juan J

Wyndmoor
Kahn, Mark B

York
Castronuovo, John J, Jr

PUERTO RICO

San Juan
Rodriguez, Agustin A

RHODE ISLAND

Providence
Garcia-Toca, Manuel

SOUTH CAROLINA

Charleston
Tonnessen, Britt H

Columbia
Bunt, TJ

Florence
Cunningham, Christopher G

Greenville
Carsten, Christopher G, III
Cornett, VE
Martin, Sloan
Quinn, Brendon M
York, John W
Youkey, Jerry R

Spartanburg
Bottsford, John E, Jr
Calton, William C, Jr

TENNESSEE

Chattanooga
Erdoes, Luke S
Hogan, Michael B
Phade, Sachin
Schoch, Denny
Sprouse, L. Richard, II

Knoxville
Cook, Richard B
Goldman, Mitchell H
Stevens, Scott L

Mountain Home
Massello, Thomas P

Nashville
Naslund, Thomas C
Schumacher, Paul M

TEXAS

Amarillo
Irwin, Chance L

Belton
Marrocco, Christopher S

Corpus Christi
Rutherford, Robert B

Dallas
Bukhari, Hassan
Gable, Dennis R
Kirkwood, Melissa
Pearl, Gregory J
Smith, Sumona,

Fort Worth
Choudhry, Karamat U

Galveston
Diaz-Arrastia, Ramon S
Silva, Michael B, Jr

Horseshoe Bay
Manning, Larry G

Houston
Cheema, Zulfiqar F
Ochoa, Lyssa N

Houston
Aftab, Muhammad
Amer, Hammad
Bechara, Carlos F
Bismuth, Jean
Charlton-Ouw, Kristofer M
Cheng, Charlie
Choi, Lori
Davies, Mark G
El Sayed, Hosam F
Gilani, Ramyar
Howell, Jimmy F
Huynh, Tam T
Iglesias, Jose V
Keyhani, Kourosh
Kougias, Panagiotis
Lin, Peter H
Lumsden, Alan B
Naoum, Joseph J
Peden, Eric K
Safi, Hazim J
Shin, David D
Syed, Fahad A
Younes, Houssam K

Humble
Bhatia, Devinder S

Lantana
Ortega, Raul E

Nacogdoches
Brown, Lyle L

Plano
Baird, David B

Richardson
Koutras, Phoebus

San Antonio
Colt, James
Hartsell, Patrick A
Sheehan, Maureen K
Wengrovitz, Mark

Temple
Rueda, Carlos A

Temple
Bohannon, W. Todd
Buckley, Clifford J
Bush, Ruth L
Warren, Thomas R, II

Tyler
DeCamp, Byron S
Sanfelippo, Peter M

Webster
Martin, Gordon H

UTAH

Salt Lake City
Ihnat, Daniel M
Sarfati, Mark R

South Ogden
Steppacher, Robert C

VIRGINIA

Arlington
Heringman, E. Craig

Charlottesville
Cherry, Kenneth J, Jr
Upchurch, Gilbert R, Jr

Chesapeake
Day, Jarrod D

Falls Church
Aryavand, Behdad

Fredericksburg
Koenig, Frank L

Manassas
Farr, Joseph G

Mechanicsville
Brown, Jeff A

New Market
Paszkowiak, Jacek J

Norfolk
Stout, Christopher

Norfolk
Chen, Brian
Panneton, Jean M

Portsmouth
Arbid, Elias J

Reston
Podolsky, Robert S

Richmond
Amendola, Michael F
Gould, Charles F
Mukherjee, Avik
Pfeifer, John S

Roanoke
Hill, Stephen L
Sibley, William L, III

Virginia Beach
Parent, F. Noel, III
Shah, Rasesh M
Wheeler, Jock R

Williamsburg
Landis, Michael E

WASHINGTON

Belfair
Masley, Arpad L

Port Orchard
Sundaram, Shankar M

Redmond
Gillespie, James T

Seattle
Kremer, Richard M
Sauvage, Lester R
Whitten, Matthew G

Spokane
Lasalle, Andre J
Reilly, M. Kathleen

Tacoma
Graeve, Allen H
McAlexander, Robert A
Quan, Reagan W

Vancouver
Teso, Desarom

Walla Walla
Gibbs, Benjamin F, Jr

WEST VIRGINIA

Charleston
AbuRahma, Ali F

Morgantown
McDowell, Donald E

Parkersburg
McGraw, Daniel J

Wheeling
Rahbar, Ahmad

WISCONSIN

Madison
Acher, Charles W
Hoch, John R
Kent, K. Craig
Matsumura, Jon S
Weiss, Victor J

Milwaukee
Brown, Kellie R
Pasch, Allan R

Racine
Siegert, Robert F

WYOMING

Cody
Collicott, Paul E

MEMBERS OUTSIDE UNITED STATES

AUSTRALIA

NEW SOUTH WALES

Sydney
May, James

QUEENSLAND

Brisbane
Mellick, Selim A

Wyong
Ramanathan, Anantha K

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Montreal
Kvinlaug, Kylie

BRITISH COLUMBIA

Vancouver
Sladen, Joseph G

Montreal
Bruneau, Luc
Page, Arthur

ONTARIO

London
Forbes, Thomas L

Toronto
Wooster, Douglas L

Whitby
Aggett, Paul W

SASKATCHEWAN

Regina
McCarville, Donald J

Toronto
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CYPRUS

Nicosia
Nicolaides, Andrew N

DENMARK

Aarhus N
Paaske, William P

ENGLAND

Channel Islands
Browse, Norman L

ISRAEL

Jerusalem
Spigelman, Auri

LEBANON

Beirut
Hoballah, Jamal J
Shamma, Asad R

PANAMA

Chiriqui
Scobie, T. Keith

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San Juan
Joglar, Fernando L

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Moscow
Papoyan, Simon A

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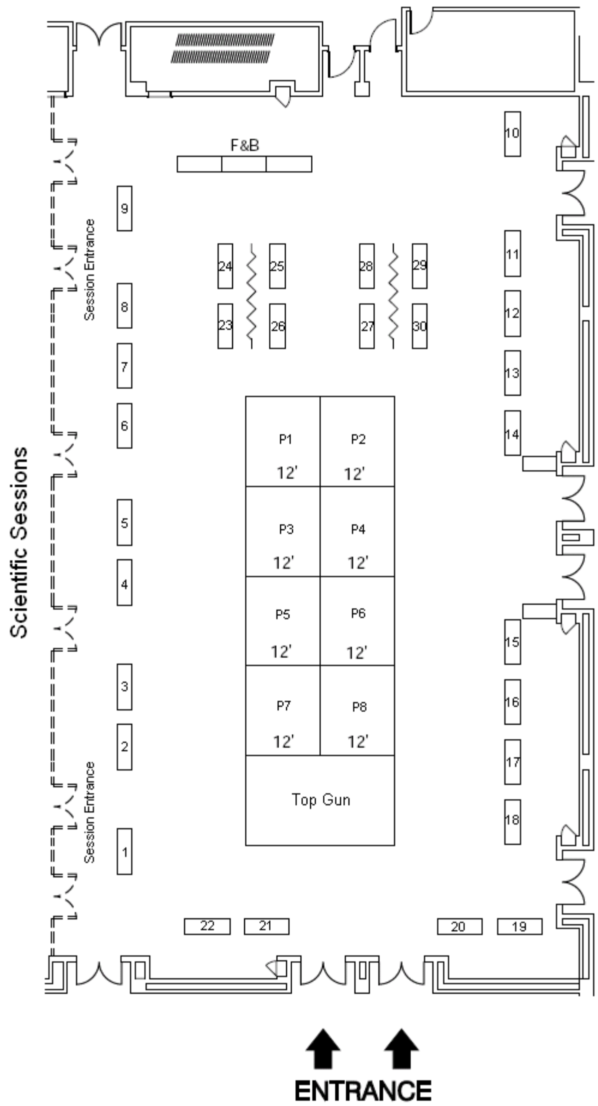
40TH ANNUAL SYMPOSIUM ON VASCULAR SURGERY



SCVS COMMERCIAL EXHIBITORS 2012

EXHIBIT/PAVILION DATES & HOURS

Wednesday, March 14TH	2:00 pm – 6:30 pm
Thursday, March 15TH	7:00 am – 11:30 am 11:30 am – 4:00 pm (Dedicated Pavilion Time)
Friday, March 16TH	7:00 am – 5:00 pm
Saturday, March 17TH	7:30 am – 8:30 am

LOCATION

ANGIODYNAMICS .... **Table 18**
14 Plaza Drive, Latham, NY 12110
www.angiodynamics.com

ARSTASIS .... **Table 4**
740 Bay Road, Redwood City, CA 94063
www.arstasis.com

ATRIUM MEDICAL .... **Table 17**
5 Wentworth Drive, Hudson, NH 03051
www.atriummedical.com

BARD PERIPHERAL VASCULAR .... **Table 9**
1415 West 3rd Street, Tempe, AZ 85281
www.bardpv.com

BOSTON SCIENTIFIC CORPORATION **Table29**
One Scimed Place, Maple Grove, MN 55311
www.bostonscientific.com

CONSENSUS MEDICAL SYSTEMS, INC. .... **Table 13**
205-5631 No. 3 Street, Richmond, BC V6X 2C7, Canada
www.consensusmed.com

COOK MEDICAL .... **Table 22**
PO Box 489, Bloomington, IN 47402
www.cookmedical.com

CORDIS, A J&J CO .... **Table 12**
430 Route 22 East, Bridgewater, NJ 08807
www.cordis.com

COVIDIEN..Pavilion 7
15 Hampshire Street, Mansfield, MA 02048
www.covidien.com

CRYOLIFE, INC. .... Table 1
1655 Roberts Boulevard, Kennesaw, GA 30144
www.cryolife.com

EDWARDS LIFESCIENCES.. Table 28
One Edwards Way, Irvine, CA 92614
www.edwards.com

ENDOLOGIX .... Table 20
11 Studebaker, Irvine, CA 92656
www.endologix.com

GORE & ASSOCIATES .... Pavilion 6&8
1505 North Fourth Street, Flagstaff, AZ 86004
www.goremedical.com

INTERSOCIETAL ACCREDITATION COMMISSION (IAC) Table14
6021 University Blvd., Suite 500, Ellicott City, MD 21043
www.intersocietal.org

IMPLANTABLE DEVICES, INC. .... Table 6
3851 62nd Ave N, Suite A, Pinellas, FL 33781

INAVEIN, LLC.. Table 2
420 Bedford Street, Lexington, MA 02420
www.inavein.com

LEMAITRE VASCULAR, INC.. Table 3
63 Second Avenue, Burlington, MA 01803
www.lemaitre.com

M2S INC. .... Table 8
12 Commerce Avenue, West Lebanon, NH 03784
www.m2s.com

MED STREAMING, LLC .... Table 26
8201 164th Avenue NE, Redmond, WA, 98052
www.medstreaming.com

MEDTRONIC .... Pavilion 3&5
3576 Unocal Place, Santa Rosa, CA 95403
www.medtronic.com/physician/vascular

ORGANOGENESIS INC. .... **Table 5**
85 Dan Road, Canton, MA 02021
www.organogenesis.com, www.apligraf.com

OSBORN MEDICAL ....**Table 11**
100 West Main Street, PO Box 324, Utica, MN 55979
www.osbornmedical.com

PENRAD TECHNOLOGIES .... **Table 7**
10580 Wayzata Blvd., Suite 200, Minnetonka, MN 55305
www.penrad.com

SCANLAN INTERNATIONAL, INC. .... **Table 21**
One Scanlan Plaza, St. Paul, MN 55107
www.scanlaninternational.com

SEMLER SCIENTIFIC, INC. .... **Table 23**
2330 NW Everett Street, Portland, OR 97210
www.flochec.com

SOCIETY FOR VASCULAR SURGERY .... **Table L2**
633 North Saint Clair Street, 22nd Floor, Chicago, IL 60611

SVS PATIENT SAFETY ORGANIZATION .... **Table L1**
633 North Saint Clair Street, 22nd Floor, Chicago, IL 60611

TERUMO CARDIOVASCULAR SYSTEMS .... **Table 27**
6200 Jackson Road, Ann Arbor, MI 48103
www.terumo-cvs.com

VASCULAR TRANSPLANT SERVICES .... **Table 15**
2122 Palmer Drive, Schaumburg, IL 60173
www.vasculartransplantservices.org

VOLCANO CORPORATION .... **Table 30**
3661 Valley Centre Drive Suite 200, San Diego, CA 92130
www.volcanocorp.com

WEXLER SURGICAL SUPPLIES ....**Table 16**
11333 Chimney Rock Road, #110, Houston, TX 77035
www.wexlersurgical.com

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SOCIETY FOR CLINICAL VASCULAR SURGERY

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March 13–17, 2012

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	Session(s) Attended	Available Credits	Earned Credits
Wednesday:	Focused Session:		
	What Made Vascular News 2011	1.25	____________
	Scientific Session 1	1.50	____________
	Scientific Session 2	1.50	____________
Thursday:	Breakfast SIG (Special Interest Group)	1.00	____________
	Scientific Session 3	1.50	____________
	Scientific Session 4	.75	____________
	Distinguished Visiting Professor Address	.75	____________
	SVM Session	.50	____________
Friday:	Scientific Session 5	1.50	____________
	International Panel	1.00	____________
	Presidential Address	1.00	____________
	Poster Session Round 1	.75	____________
	Focused Session:		
	Pushing the Limits of Vascular Technology	1.50	____________
	Scientific Session 6	.75	____________
Saturday:	Breakfast SIG (Special Interest Group)	1.00	____________
	Scientific Session 7	1.00	____________
	Pro/Con Debate	1.00	____________
	Poster Session Final	.75	____________
	Scientific Session 8	1.00	____________
	TOTAL HOURS *(maximum 19.75 hours):*		____________

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