Western Vascular Society

Annual Meeting
September 7 –10, 2024

The Broadmoor
Colorado Springs, CO

FINAL PROGRAM

Western Vascular Society

39th Annual Meeting

September 7-10, 2024
The Broadmoor
Colorado Springs, CO
www.westernvascularsociety.org

TABLE OF CONTENTS

MISSION, VISION, AND VALUES STATEMENTS

MISSION

To promote education, research, advocacy and leadership in the art and science of compassionate vascular health in the Western United States, Canada and the Pacific Rim

VISION

To inspire excellence and innovation in vascular surgery

VALUES

Education

We strive to continue to produce a high quality, balanced scientific meeting to attract the best and brightest into our field, expanding incorporation of new science, techniques and practices

Research

We encourage multi-center collaboration on research initiatives in the Western United States, Canada and the Pacific Rim

Public Awareness

We endeavor to increase public awareness of the prevalence of vascular disease and promote optimizing vascular health through public outreach.

Preserving and promoting the very rich academic heritage and tradition of the Western Vascular Society is of paramount importance.

Advocacy

We encourage professionalism, diversity, and inclusiveness at the highest levels for ethical and compassionate care for patients.

Career Development

We promote leadership development to the WVS membership to cultivate future vascular surgery leaders locally, regionally, nationally, and internationally.

DIVERSITY, EQUITY AND INCLUSION COMMITTEE MISSION

The Mission of the Diversity, Equity and Inclusion Committee for the Western Vascular Society is to promote an academically enriching and supportive climate that allows all members of the Society to thrive and succeed.

The Diversity, Equity and Inclusion Committee will collaborate with members to provide a comprehensive approach to diversity and inclusivity, access, and equity.

Through strategic planning and programmatic development the committee shall empower medical students, residents, fellows and members to build a diverse and inclusive society.

Kenneth Ziegler, MD – Chair
Sharon Kiang, MD
Sherene Shalhub, MD

VASCULAR SURGERY INTEREST GROUP COMMITTEE MISSION

The Mission of the Vascular Surgery Interest Group Committee is to help promote the specialty of vascular surgery among medical students across the United States and to stimulate interest in training within the existing programs encompassed by the Western Vascular Society.

Gregory Magee, MD, MS – Chair
Kay Goshima, MD
Nikhil Kansal, MD

OFFICERS AND COMMITTEES

OFFICERS

Roy M. Fujitani, MD ..... President
Ahmed Abou-Zamzam, Jr., MD ..... President Elect
Niten Singh, MD ..... Recorder
Jason Lee, MD ..... Secretary Treasurer
R. Eugene Zierler, MD ..... Historian
Gregory Magee, MS, MD ..... VSIG Chair
Kenneth Ziegler, MD ..... DEI Chair
Wei Zhou, MD ..... Past President
Vincent Rowe, MD ..... Past President
Michael Conte, MD ..... Past President

PROGRAM COMMITTEE

Jade Hiramoto, MD ..... Chair
Karen Woo, MD, PhD
Benjamin Brooke, MD
Nii Kabu Kabutey, MD

Ex-Officio Program Committee Members

Roy Fujitani, MD ..... President
Ahmed Abou- Zamzam, Jr. MD ..... President Elect
Niten Singh, MD ..... Recorder
Jason Lee, MD ..... Secretary Treasurer

MEMBERSHIP COMMITTEE

Christian Ochoa, MD ..... Chair
Mahmoud Malas, MD
Juan Carlos Jimenez, MD, MBA

WVS REPRESENTATIVE TO THE SVS

Ahmed Abou-Zamzam, Jr., MD

LOCAL ARRANGEMENTS COMMITTEE CHAIR

JeniAnn Yi, MD

PAST MEETINGS

1986	Dana Point, CA	Organizing Committee
1987	Tucson, AZ	W. Sterling Edwards, MD
1988	Monterey, CA	Robert B. Rutherford, MD
1989	Kauai, HI	D. Eugene Strandness, Jr., MD
1990	Coronado, CA	Ronald J. Stoney, MD
1991	Rancho Mirage, CA	Victor M. Bernhard, MD
1992	Maui, HI	Wesley S. Moore, MD
1993	Sonoma, CA	John M. Porter, MD
1994	Santa Barbara, CA	Eugene F. Bernstein, MD
1995	Phoenix, AZ	Robert L. Kistner, MD
1996	Dana Point, CA	Jerry Goldstone, MD
1997	Lana'I, HI	Richard L. Treiman, MD
1998	Whistler, BC, Canada	Kaj H. Johansen, MD
1999	Lake Tahoe, NV	Ralph B. Dilley, MD
2000	Coeur d'Alene, ID	Peter F. Lawrence, MD
2001	Santa Fe, NM	William C. Krupski, MD
2002	Newport Beach, CA	Cornelius Olcott, IV, MD
2003	Kona, HI	Lloyd M. Taylor, Jr., MD
2004	Victoria, BC, Canada	J. Dennis Baker, MD
2005	Park City, UT	Gregory L. Moneta, MD
2006	La Jolla, CA	George Andros, MD
2007	Kona, HI	Jeffrey L. Ballard, MD
2008	Napa, CA	Alexander W. Clowes, MD
2009	Tucson, AZ	Fred A. Weaver, MD
2010	Sunriver, OR	Linda M. Reilly, MD
2011	Kauai, HI	Ronald L. Dalman, MD
2012	Park City, UT	William J. Quinones-Baldrich, MD
2013	Jasper, AB, Canada	Joseph L. Mills, Sr., MD
2014	Coronado, CA	Peter A. Schneider, MD
2015	Wailea, HI	Larry Kraiss, MD
2016	Colorado Springs, CO	William Pevec, MD
2017	Blaine, WA	Steven Katz, MD
2018	Santa Fe, NM	E. John Harris, MD
2019	Wailea, HI	York N. Hsiang, MB, MHSc
2020	Virtual	Benjamin W. Starnes, MD
2021	Teton Village, WY	Michael Conte, MD
2022	Victoria, BC, Canada	Vincent Rowe, MD
2023	Kauai, HI	Wei Zhou, MD

SECRETARY-TREASURERS

1986 - 1990	**Wesley S. Moore, MD**
1990 - 1993	**J. Dennis Baker, MD**
1993 - 1996	**P. Michael McCart, MD**
1996 - 1999	**Gregory L. Moneta, MD**
1999 - 2000	**Terence M. Quigley, MD**
2000 - 2002	**Julie A. Freischlag, MD**
2002 - 2005	**Jeffrey L. Ballard, MD**
2005 - 2008	**Joseph L. Mills, MD**
2008 - 2011	**Larry W. Kraiss, MD**
2011 - 2014	**E. John Harris, Jr., MD**
2014 - 2017	**York N. Hsiang, MB, MHSc**
2017 - 2020	**Roy M. Fujitani, MD**
2020 - 2023	**Ahmed Abou-Zamzam, Jr., MD**
2023 - 2026	**Jason Lee, MD**

RECORDERS

1987 - 1989	**Victor M. Bernhard, MD**
1989 - 1992	**Eugene F. Bernstein, MD**
1992 - 1995	**Peter F. Lawrence, MD**
1995 - 1998	**William C. Krupski, MD**
1998 - 2001	**Roy L. Tawes, MD**
2001 - 2004	**Ronald L. Dalman, MD**
2004 - 2007	**Peter A. Schneider, MD**
2007 - 2010	**William C. Pevec, MD**
2010 - 2013	**Steven Katz, MD**
2013 - 2016	**Benjamin W. Starnes, MD**
2016 - 2019	**Michael Conte, MD**
2019 - 2022	**Matthew Mell, MD**
2022 - 2025	**Niten Singh, MD**

NEW MEMBERS ELECTED IN 2023

Brian Adams
Mark Archie
Evan Brownie
Anthony Chau
Allan Conway
Gabriel Crowl
Kirsten Dansey
Anders Davidson
Trevor DerDerian
Tina Desai
Shaun Gifford
Selena Goss
Jessica Green
Ryan Haqq
Gabriel Herscu
ShihYau Huang
Ahmad Hussain
Erika Ketteler
Derek Klarin
Cody Kraemer
Isabella Kuo
Joyce Lu
Rafael D. Malgor
Barbara Melendez
Abid Mogannam
Kian Mostafavi
Khanh Nguyen
Arne Olsen
Viraj Pandit
Robert Perry
Adam Ring
Joseph Sabat
Gaurav Sharma
Rachael Snow
Ina Soh
Samantha Stradleigh
Katherine Warner
Max Wohlauer
Gary Yang
Devin Zarkowsky
Louis Zhang

WVS PRESIDENTIAL GUEST LECTURERS

1986	**Emerick Szilagyi**
1987	**None**
1988	**James Stanley**
1989	**Brian Thiele**
1990	**Frank Veith**
1991	**Allan Callow**
1992	**Malcolm Perry**
1993	**Norman Hertzer**
1994	**Norman Browse**
1995	**Calvin Ernst**
1996	**Anthony Whittemore**
1997	**None**
1998	**None**
1999	**Jonathan Towne**
2000	**R. Thomas Grayston**
2001	**William Hiatt**
2002	**Thomas R. Russell**
2003	**None**
2004	**None**
2005	**Kevin G. Burnand**
2006	**Jean Pierre Becquemin**
2007	**None**
2008	**John H. N. Wolfe**
2009	**Jack L. Cronenwett**
2010	**None**
2011	**Germano Melissano**
2012	**Roy K. Greenberg**
	Hazim J. Safi
2013	**Spence M. Taylor**
2014	**Alan B. Lumsden**
2015	**Peter Gloviczki**
2016	**Alik Farber**
2017	**Bruce Perler**
2018	**Thomas Wakefield**
2019	**Thomas Forbes**
2020	**Gustavo Oderich**
2021	**Michael Belkin**
2022	**Gilbert Upchurch**
2023	**Alan B. Lumsden**
2024	**Todd Rasmussen**

EDUCATIONAL INFORMATION

EDUCATIONAL OBJECTIVES & METHODS

The 39th Annual Meeting of the Western Vascular Society was established with the specific purpose of advancing the art and science of vascular surgery, a goal that directly addresses competence, practice performance, and patient outcomes. The majority of the educational content includes scientific presentations by members, sponsored guests, and residents, selected by the WVS Program Committee.

WVS 2024 LEARNING OBJECTIVES

This activity is designed for: vascular surgeons, vascular fellows, vascular residents, and general surgeons along with other individuals interested in vascular interventions and treatments. This meeting will feature original oral scientific presentations by members, sponsored guests, and trainees that will serve to expand our knowledge and illustrate the incorporation of new science, techniques, and practices in vascular surgery. CME and Self-Assessment credit hours for the program will be estimated and accessed by AMEDCO in Joint provider ship with Western Vascular Society.

The overall purpose of this activity is to enable the learner to...

1. expand their knowledge and illustrate the incorporation of new science, techniques and practices in the field of vascular surgery.

2. explore the latest research findings and acquire new skills to support achievement of best practice successful patient outcomes.

3. develop professionally in the areas of education, research, advocacy and leadership in the art and science of compassionate vascular health.

EDUCATIONAL INFORMATION continued

EDUCATIONAL METHODS

Authored papers are supported by PowerPoint presentations. Full papers have a primary discussant and ample time provided for questions and discussion from the audience.

DISCLOSURE INFORMATION

In compliance with ACCME Accreditation Criteria, the American College of Surgeons, as the accredited provider of this activity, must ensure that anyone in a position to control the content of the educational activity has disclosed all relevant financial relationships with any commercial interest. All reported conflicts are managed by a designated official to ensure a bias-free presentation.

CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

Continuing Education (CE) Language

Western Vascular Society
2024 WVS Annual Meeting
September 7-10, 2024
Colorado Springs, CO

Joint Accreditation Statement

JOINTLY ACCREDITED PROVIDER™
INTERPROFESSIONAL CONTINUING EDUCATION

n support of improving patient care, this activity has been planned and implemented by Amedco LLC and Western Vascular Society. Amedco LLC is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team. Amedco Joint Accreditation #4008163.

Physicians (ACCME) Credit Designation

Amedco LLC designates this live activity for a maximum of 12.00 *AMA PRA Category 1 Credits*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

American Board of Surgery (ABS) MOC

Successful completion of this CME activity, which includes participation in the evaluation component, enables the learner to earn credit toward the CME and/or Self-Assessment requirements of the American Board of Surgery's Continuous Certification program. It is the CME activity provider's responsibility to submit learner completion information to ACCME for the purpose of granting ABS credit. Up to 12.00 self-assessment hours available. **You must request your certificate within 45 days of the activity to meet the deadline for submission to PARS. Credits are generally reported during the first week of each month for those who claimed during the month prior.**

INSTRUCTIONS FOR CME CREDIT COLLECTION

To claim the 12.00 *AMA PRA Category 1 Credits*™

Physicians must complete the meeting evaluation that is available both on the meeting app and sent via email.

To claim the 12.0 credits for MOC Self Assessment, questions will be provided at the end of each session and available via email or on the meeting app. Certificates will be digitally created upon successful completion of both actions.

Alternatively, you can visit www.westernvascularsociety.org for links on the annual meeting page.

All credit collection must be completed by October 20, 2024.

INSTRUCTIONS TO AUTHORS

Authors presenting papers are reminded that the presentation of the paper shall be limited to the following:

RAPID FIRE PRESENTATION
2 minutes presentation, 3 minutes floor discussion

MINI PRESENTATION
4 minutes presentation, 6 minutes floor discussion

FULL PRESENTATION
8 minutes presentation, 2 minutes invited discussant, and 10 minutes floor discussion

INSTRUCTIONS TO AUTHORS

ROBERT HYE MEMORIAL BEST RESIDENT PRESENTATIONS

To honor the contribution of member Dr. Robert Hye, each year Western Vascular Society Program Chair elects judges to evaluate the best full presentation by a medical student or resident. There are three cash prizes $500, $250, and $100 and official commemorative certificates awarded at the final session of the meeting. In addition there is a certificate and $100 award for the best Rapid Fire Presentation. Hye award eligible presentations are designated on the scientific program.

FOUNDERS AWARD

The Western Vascular Society Founders Award recognizes the best paper presented at the annual meeting by a new member who is within three years of their acceptance to the Society. It is named for the original organizing committee that met in October of 1984 and established the Western Vascular Society. This group consisted of Drs. Wesley Moore, Victor Bernhard, Sterling Edwards, Jerry Goldstone, John Porter, Robert Rutherford, and D. Eugene Strandness. The first meeting of the Western Vascular Society was held in Laguna-Nigel, California from January 23 to 26, 1986. At that meeting, the organizing committee met as the Executive Council and approved bylaws for the new Society and accepted a proposed list of founding members from the Western region. The winner receives $1000 and a commemorative plaque.

2020 Winner — Leigh Ann O'Banion, UCSF Fresno
2021 Winner — Sharon Kiang, Loma Linda University Medical Center
2022 Winner — Mimmie Kwong, UC Davis
2023 Winner — Sundeep Guliani, MD, University of New Mexico

INSTRUCTIONS TO AUTHORS

INVITED DISCUSSION

Two minutes and specifically critique the paper as presented. Visual aids may not be incorporated into the discussion. An electronic copy of the discussion is required to be submitted to the recorder.

MANUSCRIPTS

Authors of Full Presentations are REQUIRED to submit a manuscript of their presentation for possible publication in the Journal of Vascular Surgery Publications within two months of the Annual Meeting. The Editors of the ournal of Vascular Surgery Publications will determine the journal in which accepted manuscripts will be published.

The guidelines for submission of your Manuscript(s) may be found on the Journal of Vascular Surgery Publications website www.editorialmanager.com/jvs. Please refer to the "Instructions for Authors." Once the manuscript is submitted to the Journal by email, please send a confirmation of submission to Niten Singh, MD, singhn2@uw.edu.

SPONSOR ACKNOWLEDGEMENT

Western Vascular Society is grateful for the following companies for the educational grant support:

Boston Scientific

Cook Medical

W.L. Gore and Associates

Western Vascular Society is grateful for the following companies for the exhibit support:

PLATINUM

Abbott Vascular

Cook Medical

Medtronic

Terumo Aortic

W.L. Gore & Associates

GOLD

BD

Boston Scientific

Shockwave Medical

Silk Road Medical

Johnson & Johnson

SILVER

AngioDynamics

Baxter

Asahi Intecc

Cydar Medical

Endologix

Getinge

Penumbra

Shape Memory Medical

Vascular Technology Inc.

SCHEDULE AT A GLANCE

SATURDAY, SEPTEMBER 7, 2024

1:00 PM – 7:00 PM	REGISTRATION
3:00 PM – 4:00 PM	EXECUTIVE COUNCIL MEETING
3:00 PM – 5:00 PM	EXHIBIT SET UP
5:00 PM – 6:00 PM	RAPID FIRE SESSION
6:00 PM – 7:30 PM	SPONSOR WELCOME RECEPTION
7:00 PM – 8:30 PM	PAST PRESIDENT'S DINNER

SUNDAY, SEPTEMBER 8, 2024

6:30 AM – 1:00 PM	REGISTRATION
7:00 AM – 8:00 AM	BREAKFAST
8:30 AM – 9:30 AM	COMPANION BREAKFAST
7:00 AM – 11:45 AM	EXHIBITS
7:45 AM – 8:00 AM	CALL TO ORDER & ANNOUNCEMENTS
8:00 AM – 9:50 AM	SCIENTIFIC SESSION I
9:50 AM – 10:20 AM	COFFEE BREAK WITH EXHIBITORS
10:20 AM – 11:00 AM	PRESIDENTIAL GUEST LECTURE
11:00 AM – 12:30 PM	SCIENTIFIC SESSION II
12:30 PM – 1:30 PM	DEI/VSIG LUNCH ROUNDTABLE MENTORSHIP SYMPOSIUM
1:00 PM – 5:00 PM	GOLF TOURNAMENT
2:00 PM – 5:00 PM	OPTIONAL TICKETED EVENTS: PICKLE BALL, COG RAILWAY
6:00 PM – 8:00 PM	WESTERN FAMILY DINNER

MONDAY, SEPTEMBER 9, 2024

6:30 AM – 1:00 PM	REGISTRATION
7:00 AM – 7:30 AM	TERUMO AORTIC BREAKFAST SYMPOSIUM
8:30 AM – 9:30 AM	COMPANION BREAKFAST
7:00 AM – 11:45 AM	EXHIBITS
7:30 AM – 9:20 AM	SCIENTIFIC SESSION III
9:20 AM – 9:45 AM	COFFEE BREAK WITH EDUCATIONAL EXHIBITORS
9:45 AM – 10:30 AM	PRESIDENTIAL ADDRESS
10:30 AM – 11:50 PM	SCIENTIFIC SESSION IV
11:50 AM – 12:30 PM	WVS BUSINESS MEETING
12:30 PM – 1:30 PM	GORE LUNCH SYMPOSIUYM
2:00 PM – 5:00 PM	OPTIONAL EVENTS: TENNIS ROUND ROBIN OR HIKING
6:00 PM – 7:00 PM	PRIVATE PRESIDENT'S RECEPTION
7:00 PM – 9:00 PM	PRESIDENTIAL BANQUET

TUESDAY, SEPTEMBER 10, 2024

7:00 AM – 7:30 AM	BREAKFAST WITH SPONSORS
7:00 AM – 10:00 AM	EXHIBITS
7:30 AM – 9:00 AM	SCIENTIFIC SESSION V
9:00 AM – 9:15 AM	SVS UPDATE
9:15 AM – 9:45 AM	COFFEE BREAK WITH EDUCATIONAL EXHIBITORS
9:45 AM – 11:00 AM	SCIENTIFIC SESSION VI
11:15 AM – 11:30 AM	AWARDS
11:30 AM	MEETING ADJOURNS

NOTES

SCIENTIFIC PROGRAM

Denotes Hye Resident Award Competition Eligible

Denotes Founders Award Competition Eligible

SATURDAY, SEPTEMBER 7, 2024

1:00 PM – 7:00 PM	**REGISTRATION** Rocky Mountain Foyer
3:00 PM – 4:00 PM	**EXECUTIVE COUNCIL MEETING** Gaylord Boardroom
3:00 PM – 5:00 PM	**EXHIBIT SET UP** Rocky Mountain CD
5:00 PM – 5:50 PM	**RAPID FIRE SESSION** Rocky Mountain AB **Moderators:** *Jade Hiramoto, MD & Karen Woo, MD*

5:00 – 5:05—RF1. Predictors of Mortality Following Blunt Thoracic Aortic Injury: Medical Management versus Endovascular Repair
Sai Divya Yadavall, MD
Beth Israel Deaconess Medical Center

5:05 – 5:10—RF2. Poor 5-year Survival Among Frail Older Adults Undergoing Elective Vascular Surgery: Do Patients Understand their Risk?
Cali E. Johnson, MD, EdD
University of Utah Health

5:10 – 5:15—RF3. Contemporary Trends in Trainee Carotid Artery Disease Interventions
Kraig Hammond
University of Oklahoma – Tulsa

5:15 – 5:20—RF4. Preliminary Results of Utilizing CINE Angiography as an Alternative Modality During Visceral Vessel Cannulation to Reduce Radiation Exposure During F/BEVARs
Nikunj Donde, MD
UC Davis

5:20 – 5:25—RF5. Impact of Skin Closure Methods on Postoperative Outcomes of Lower Extremity Bypass
Mohammed Hamouda, MD
University of California San Diego

5:25 – 5:30—RF6. Clinical and Functional Outcomes of Lower Extremity Oncovascular Reconstructions
Aline Hikari Ishida, MD
University of Colorado

5:30 – 5:35—RF7. Operative Techniques, Graft Variables, and Long-term Outcomes of 11 cases of Complex Aneurysms and Skull Base Tumors Treated with High-Flow Cerebral Revascularization Using Tibial Artery Autografts
Varadaraya S. Shenoy, MD
Harborview Medical Center, University of Washington

5:35 – 5:40—RF8. Midterm Results for Hybrid Aortic Arch Reconstruction Utilizing Overlapping Single Thoracic Branch Endoprostheses in a Dual Branch Configuration
Evan R. Brownie, MD, RPVI
Intermountain Medical Center

5:40 – 5:45—RF9. Disparities in Surgical Management and Inpatient Outcomes of Chronic Limb-Threatening Ischemia in Housed and Unhoused Populations in the United States
Hamza Hanif, MD
University of New Mexico

5:45 – 5:50—RF10. Treating Venous Disease in 2000 Patients in Honduras, A High-Prevalence but Resource-Limited Setting
Eileen Lu, MD
Cedars-Sinai Medical Center

5:50 PM – 6:05 PM	**DEI SCHOLARSHIP RESEARCH UPDATE** Health-Related Quality-of-Life Research in Under-Represented Older Adults **Cali Johnson, MD** *University of Utah*
6:00 PM – 7:30 PM	**SPONSOR WELCOME RECEPTION** Rocky Mountain CD
7:00 PM – 8:30 PM	**PAST PRESIDENT'S DINNER** (By Invite Only) Broadmoor Golf Club

SUNDAY, SEPTEMBER 8, 2024

6:30 AM – 1:00 PM	**REGISTRATION**
7:00 AM – 8:30 AM	**BREAKFAST**
8:00 AM – 9:30 AM	**COMPANION BREAKFAST** Divide Room
7:00 AM – 11:45 AM	**EXHIBITS**
7:45 AM – 8:00 AM	**CALL TO ORDER & ANNOUNCEMENTS**
8:00 AM – 9:50 AM	**SCIENTIFIC SESSION I** – AORTIC I **Moderators:** *Roy M. Fujitani, MD, Niten Singh, MD, Kenneth Ziegler, MD*

8:00 – 8:20 AM—1. Validation of Pedal Acceleration Time for the Assessment of Perfusion in Patients with Chronic Limb Threatening Ischemia
Guistinna Tun, BS
University of California, San Francisco
Invited Discussant: Cali Johnson, MD, EdD

8:20 – 8:30 AM—2. Progression of the Contralateral Limb in Chronic Limb-Threatening Ischemia (CLTI)
Cuneyt Koksoy, MD
Baylor College of Medicine

8:30 – 8:50 AM—3. Smokers with CLTI Should be Preferentially Treated with Open Surgical Bypass – An Assessment of the BEST-CLI Trial
Rohini Patel, MD
University of California San Diego
Invited Discussant: Samuel Chen, MD

Denotes Hye Resident Award Competition Eligible

8:50 – 9:00 AM—4. Outcomes of Arm Vein Grafts Compared to Prosthetic and Biological Grafts in Patients with Chronic Limb Threatening Ischemia
Mohammed Hamouda, MD
University of California San Diego

9:00 – 9:20 AM—5. Validation of Transmetatarsal Pressure as an alternative for evaluating severity of Chronic Limb Threatening Ischemia
Rumi Faizer, MD
University of Minnesota
Invited Discussant: LeAnn Chavez, MD, MBA

9:20 – 9:30 AM—6. Establishing Minimal Clinically Meaningful Difference for PROMIS Physical Function and Predictive Factors for Functional Improvement after Lower Extremity Revascularization for Peripheral Artery Disease
Teryn A. Holeman, MD
University of Utah

9:30 – 9:50 AM—7. Vascular Quality Initiative Compliance with Society for Vascular Surgery Clinical Practice Guidelines for the Treatment of Claudication with Peripheral Vascular Intervention
James C. Iannuzzi, MD,
University of California, San Francisco
Invited Discussant: Mahmoud Malas, MD

9:50 AM – 10:20 AM **COFFEE BREAK WITH EDUCATIONAL EXHIBITORS**

10:20 AM – 11:00 AM **PRESIDENTIAL GUEST LECTURE**
Leave no one Behind: Leadership Amidst the Odyssey to Advance Casualty Care and Improve Wartime Survival
Todd Rasmussen, MD
Mayo Clinic, Rochester

Denotes Founders Award Competition Eligible

11:00 AM – 12:30 PM **SCIENTIFIC SESSION II – PAD I**
Moderators: *Roy M. Fujitani, MD, Jade Hiramoto, MD, Gregory Magee, MD*

11:00 – 11:20 AM—8. A Prospective Randomized Trial of Renal Ischemic Preconditioning for Reducing Nephropathy Risk Following Fenestrated Endovascular Aortic Aneurysm Repair
Kenneth Tran, MD
Stanford University
Invited Discussant: Omid Jazaeri, MD

11:20 – 11:30 AM—9. Autogenous Panelled Femoral Vein Repair for Mycotic Thoracic Aortic Aneurysms
Ningzhi Gu, MD
University of British Columbia

11:30 – 11:50 AM—10. Multi-Center Experience with an Off-The-Shelf Single Retrograde Thoracic Branch Endoprosthesis for Acute Aortic Pathology
Kathryn DiLosa, MD
UC Davis Medical Center
Invited Discussant: Evan Brownie, MD

11:50 – 12:00 PM—11. Early Experience with ECMO and Direct Retransfusion in Open Repair of Thoracoabdominal Aortic Aneurysms Demonstrates Improved Outcomes Over Partial Cardiopulmonary Bypass
Rebecca Sorber, MD
University of Washington

Denotes Hye Resident Award Competition Eligible

Denotes Founders Award Competition Eligible

12:00 – 12:20 PM—12. Same Day Discharge Following EVAR in Select Veteran Patients is Safe and Effective
Harish Krishnamoorthi, MD
Portland VA Medical Center
Invited Discussant: Warren Gasper, MD

12:20 – 12:30 PM—13. Artificial Intelligence (AI)-Assisted Imaging Analysis as a Tool for Preoperative Endovascular Aortic Aneurysm Repair Planning
Colleen P. Flanagan, MD
Kaiser San Francisco

12:30 PM – 1:30 PM	**DEI/VSIG ROUNDTABLE MENTORSHIP LUNCH SYMPOSIUM**
1:30 PM	Cook Medical Planning and Sizing Competition for Trainees
1:00 PM – 5:00 PM	**GOLF TOURNAMENT** East Course, Registration Required
2:00 PM – 5:00 PM	**OPTIONAL EVENTS** – Cog Railway or Pickle Ball
6:00 PM – 8:00 PM	**WESTERN FAMILY DINNER** – Cheyanne Lodge (shuttles from 5:45pm)

Denotes Hye Resident Award Competition Eligible

MONDAY, SEPTEMBER 9, 2024

6:30 AM – 1:00 PM	**REGISTRATION**
7:00 AM – 8:00 AM	**BREAKFAST WITH TERUMO AORTIC** Rocky Mountain AB
8:00 AM – 9:30 AM	**COMPANION BREAKFAST** Divide Room
7:00 AM – 11:45 AM	**EXHIBITS**
7:30 AM – 9:20 AM	**SCIENTIFIC SESSION III – DIALYSIS / CAROTID** **Moderators:** *Benjamin Brooke, MD, Leigh Ann O'Banion, MD, Ali Azizzadeh, MD*

7:30 – 7:50 AM—14. Variables Associated with Functional Patency of Brachiobasilic Fistulas at 12-Months: a Multi-Institutional Study
Mikayla Hurwitz, MD
Harbor-UCLA Medical Center
Invited Discussant: Joyce Lu, MD

7:50 – 8:00 AM—15. Utility of Intravascular Ultrasound in Transcarotid Artery Revascularization: Analysis of Short-Term Outcomes
Daniel Delgadillo, MD
University of California, Irvine

8:00 – 8:20 AM —16. Effect of New Intersocietal Accreditation Commission (IAC) Carotid Duplex Criteria for >50% Internal Carotid Artery (ICA) Stenosis
Phillip Jenkins, MD
Oregon Health & Science University
Invited Discussant: Tina Desai, MD

Denotes Hye Resident Award Competition Eligible

8:20 – 8:30 AM—17. Cerebral Hyperperfusion Syndrome After Carotid Revascularization; Predictors and Complications
Ahmed Abdelkarim, MD
University of California, San Diego

8:30 – 8:50 AM—18. Long-term Clinical Outcomes of Interventions for Internal Carotid Artery Stump Syndrome – A Single Center Experience
Roy M. Fujitani, MD
University of California Irvine Medical Center
Invited Discussant: Graham Donald, MD

8:50 – 9:00 AM—19. Radial Versus Brachial Artery Access for Endovascular Superior Mesenteric Artery and Renal Artery Interventions
Liliana Cajiao-Castro, MD
University of Arizona

9:00 – 9:20 AM—20. Sustained Impact of a "Just in Time" Educational Intervention for Opioid Overprescribing in Dialysis Access Surgery
Riley Brian, MD, MAEd
University of California, San Francisco
Invited Discussant: Isabella Kuo, MD

9:20 AM – 9:45 AM	**COFFEE BREAK WITH EDUCATIONAL EXHIBITORS**
9:45 AM – 10:30 AM	**PRESIDENTIAL ADDRESS** *Roy M. Fujitani, MD, RVT, DFSVS, FACS*
10:30 AM – 11:50 AM	**SCIENTIFIC SESSION IV – POTPURRI** **Moderators:** *Wei Zhou, MD, Matthew Sweet, MD, Nii-Kabu Kabutey, MD*

Denotes Hye Resident Award Competition Eligible

10:30 – 10:50 AM—21. Sex Differences in Vascular Ehlers-Danlos Syndrome Aortopathy and Arteriopathy
Ajit Elhance, BA
Oregon Health & Science University
Invited Discussant: Ali Azizzadeh, MD

10:50 – 11:00 AM—22. Outcome of Non-Surgical Care of Thoracic Outlet Syndrome in a NCAA Division 1 Collegiate Athletic Conference
Stephanie D. Talutis, MD, MPH
University of California Los Angeles

11:00 – 11:20 AM—23. Leveraging the Vascular Quality Initiative to Reduce Length of Stay Following Elective Carotid Endarterectomy and Endovascular Aortic Aneurysm Repair
Shernaz Dossabhoy, MD, MBA
Stanford University
Invited Discussant: Sundeep Guliani, MD

11:20 – 11:30 AM—24. The Impact of Vascular Surgery Procedures on Climate Change
Mingxue Wang, MD
Santa Barbara Cottage Hospital

11:30 – 11:50 AM—25. Pediatric Clinical Consultations in a Vascular Practice within a Children's Hospital
Casey J Reid, MD
Loma Linda University
Invited Discussant: Jason Faulds, MD FRCSC

Denotes Hye Resident Award Competition Eligible

11:50 AM – 12:30 PM	**WVS BUSINESS MEETING**
12:30 PM – 1:30 PM	**W.L. GORE LUNCH SYMPOSIUM**
2:00 PM – 5:00 PM	**OPTIONAL EVENTS** – Hiking and Tennis
6:00 PM – 7:00 PM	**PRIVATE PRESIDENT'S RECEPTION**
7:00 PM – 9:00 PM	**PRESIDENTIAL BANQUET** (Black Tie Optional) Penrose Room

TUESDAY, SEPTEMBER 10, 2024

7:00 AM – 7:30 AM	**BREAKFAST WITH SPONSORS**
7:00 AM – 10:00 AM	**EXHIBITS**
7:30 AM – 9:00 AM	**SCIENTIFIC SESSION V – AORTIC II** **Moderators:** *Ahmed Abou-Zamzam, MD, Jason Lee, MD, Karen Woo, MD, PhD*

7:30 – 7:50 AM—26. Propensity Score Matched Comparison of EndoSuture versus Fenestrated Aortic Aneurysm Repair in Treatment of Abdominal Aortic Aneurysms with Unfavorable Neck Anatomy
Arash Fereydooni, MD
Stanford University
Invited Discussant: Sukgu Han, MD

7:50 – 8:00 AM—27. Management of Moderate Blunt Thoracic Aortic Injuries in Patients with Solid Organ Injury
Nicolas A. Stafforini, MD
University of Washington

8:00 – 8:20 AM —28. Understanding Appropriate Surveillance following Acute Aortic Dissection at a Tertiary Referral Center
Colleen P. Flanagan, MD
University of California, San Francisco
Invited Discussant: Kenneth Ziegler, MD

8:20 – 8:30 AM—29. Comparison of Outcomes and Complications Between Patients Undergoing Zone 2 TBE and Zone 2 TEVAR With Open Left Subclavian Revascularization
Pedro J. Furtado Neves, MD
University of Colorado

Denotes Hye Resident Award Competition Eligible

8:30 – 8:50 AM—30. Contemporary Outcomes of Open Thoracoabdominal Aortic Aneurysm Repair in the Endovascular Era
Alexander D. DiBartolomeo, MD
University of Southern California
Invited Discussant: Jessica Green, MD

8:50 – 9:00 AM—31. Implementation of a Multidisciplinary Aortic Team Positively Impacts Institutional Case Volume and Surgical Complexity
Rebecca Sorber, MD
University of Washington

9:00AM – 9:15AM	**SVS UPDATE –** *SVS President Joseph Mills, MD*
9:15AM – 9:45AM	**COFFEE BREAK WITH EDUCATIONAL EXHIBITORS**
9:45AM – 11:15AM	**SCIENTIFIC SESSION VI – PAD II** **Moderators:** *Ahmed Abou-Zamzam, MD, Michael Conte, MD, Christian Ochoa, MD*

9:45 – 10:05 AM—32. Patients Excluded From BEST-CLI Were More Likely to Get a Major Amputation at a Single U rban Safety Net Hospital
Samuel Schwarz, MD
University of Washington
Invited Discussant: Tze-Woei Tan, MD

10:50 – 10:15 AM—33. Validation of Non-Home Discharge Risk Score after Elective Infrainguinal Bypass Surgery
Elizabeth E. Raby, BS
University of California, San Francisco

Denotes Hye Resident Award Competition Eligible

Denotes Founders Award Competition Eligible

10:15 – 10:35 AM—34. Exploring Outcomes for Hispanic Patients Undergoing Open Bypass in the BEST-CLI Trial
Jesus G. Ulloa, MD
University of California Los Angeles
Invited Discussant: Gabriel Herscu, MD

10:35 – 10:45 AM—35. Toe Brachial Indices Are an Accurate Peripheral Artery Disease Screening Tool in Vascular Deserts
Carolina Aparicio, MD
University of California
San Francisco, Fresno

10:45 – 11:05 AM—36. Applying Mobility Prediction Models to Real World Patients with Major Amputations
Caroline Runco, DO
University of California San Francisco, Fresno
Invited Discussant: Jeniann Yi, MD

11:05 – 11:15 AM—37. Factors Associated with Vascular Testing Prior to Major Lower Extremity Amputation in Diabetic Foot Ulcer Patients
Tze-Woei Tan, MD
University of Southern California

11:15AM – 11:30AM **AWARDS**

11:30AM **MEETING ADJOURNS**

Denotes Founders Award Competition Eligible

NOTES

SCIENTIFIC SESSION ABSTRACTS

SCIENTIFIC SESSION ABSTRACTS

1. Validation of Pedal Acceleration Time for the Assessment of Perfusion in Patients with Chronic Limb Threatening Ischemia

Guistinna Tun, Curtis Woodford, MD, Colleen P. Flanagan, MD, Michael S. Conte, MD, Clara Gomez-Sanchez, MD

University of California, San Francisco, San Francisco, CA

Objective: Hemodynamic assessment of perfusion is critical in evaluation and treatment of patients with chronic limb threatening ischemia (CLTI). As the number of patients with diabetes and chronic kidney disease rises, methods such as ankle-brachial index (ABI) and toe pressures (TP) may be inadequate due to arterial calcification and toe amputations. A novel method of assessment, pedal acceleration time (PAT), has been developed. The objective of this study is to further validate this technique.

Methods: We performed a retrospective review of patients with CLTI (n=46) who had PAT performed during clinical evaluations. These data were correlated with ABI and TP, limb staging, revascularization, major amputation, and mortality. Correlations were compared between highest, lowest, and average PATs as well as occlusive and angiosomal patterns to further explore predictive thresholds for this technique.

Results: Highest PAT measurement positively correlated with wound score (p=0.03) and ischemia score based on TP (p=0.0005). Lowest and average PAT also correlated with TP but less strongly. A high proportion of patients had incompressible ankle pressures; highest PAT did not correlate with ABI (p=0.08). Increased PAT was significantly associated with major amputation at 1 year (p=0.04). Average PAT of the dorsal metatarsal and medial plantar arteries in patients with a wound on the hallux or 2nd digit were higher than patients without a wound in this angiosome (p=0.004). Average PAT of the arcuate and deep plantar arteries in patients with a wound on digits 3-5 were higher than patients without a wound in this angiosome (p=0.006).

Conclusions: PAT is a valuable adjunct to traditional measures of perfusion in patients with calcified, incompressible ankle vessels and should be used when toe pressures are unavailable. Highest PAT value is the most predictive for degree of ischemia in this data set, and PAT measurements correlate anatomically with wound location.

2. Progression of the Contralateral Limb in Chronic Limb-Threatening Ischemia (CLTI)

Cuneyt Koksoy, MD, Ilse Torres, MD, Zachary S Pallister, MD, Ramyar Gilani, MD, Joseph L Mills Sr, MD, Jayer Chung, MD, MSc
Baylor College of Medicine, Houston, TX

Objectives: For patients initially presenting with unilateral chronic limb-threatening ischemia (CLTI), existing guidelines inadequately address the natural history of the contralateral limb (CL). We aim to explore the progression and outcomes of CL-CLTI.

Methods: Single-center, retrospective study of CLTI patients, focusing on comorbidities, wound ischemia and foot infection (WIfI) grades/clinical stages, and outcomes. We employed univariate, regression and Kaplan-Meier (KM) analyses where appropriate.

Results: Over a decade, we analyzed 439 unilateral CLTI patients (53.6% male, median age 69, IQR 62–77). Over 15.5 months (median, IQR 6–39), 36.4% (160) developed CL-CLTI. Variables more prevalent among CL-CLTI were diabetes ($p<.01$), neuropathy ($p<.01$), end-stage renal disease ($p<.001$), history of myocardial infarction (MI; $p<.05$), index leg WIfI stage 4 ($p<.01$), and lower initial CL toe brachial index (TBI; $p<.001$). Logistic regression identified higher CL-TBI as protective (OR 0.03; 95% CI 0.004-0.18; $p<0.001$), while MI and neuropathy increased CL-CLTI risk (OR 4.4 and 2.5; $p<0.001$ and $p=0.03$, respectively). CL-CLTI patients had higher rates of major amputations in both index and CL (47.8% vs 12.7%, and 24.1% vs 10.8%; $p<.001$), underwent more endovascular procedures (mean 1.9 vs 1.4, $p=.001$), with a similar mortality rates (20.3% vs 14.9%, $p<.15$) compared to those with unilateral CLTI. KM estimated amputation-free survival was significantly lower in CL-CLTI (70.9, (95% CI 58.9–82.8) vs. 85.3 (95% CI 76.8–93.9) months, $p<0.001$, Figure 1).

Conclusions: Within 12-18 months of presentation, over one-third of CLTI patients develop CL-CLTI, which is associated with worse outcomes. Patients with a history of MI, neuropathy, and low initial CL-TBI are at particularly high risk of CL-CLTI. These findings clarify the importance of urgency with close surveillance, risk factor modification, and revascularization for patients presenting with CLTI of the contralateral limb.

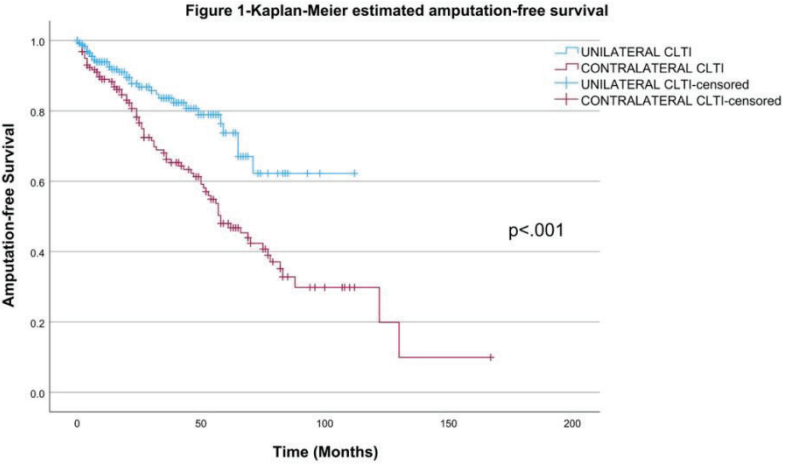


Figure 1-Kaplan-Meier estimated amputation-free survival
Amputation-free Survival
1.0
0.8
0.6
0.4
0.2
0.0
0
50
100
150
200
Time (Months)
UNILATERAL CLTI
CONTRALATERAL CLTI
UNILATERAL CLTI-censored
CONTRALATERAL CLTI-censored
p<.001

3. Smokers with CLTI Should be Preferentially Treated with Open Surgical Bypass – AnAssessment of the BEST-CLI Trial

Rohini Patel, MD[1], Alik Farber, MD[2], Matthew T Manard, MD[3], Maarit Venermo, MD[4], Marc Creager, MD[5], Katie Reitz, MD[6], Michael Strong[3], Kenneth Rosenfield, MD[7], Gheorghe Doros, PhD[8], Michael Dake, MD[9], Rabih A Chaer, MD[6], Andrew Barleben, MD[1]

1 *Division of Vascular and Endovascular Surgery, University of California, San Diego*
2 *Division of Vascular and Endovascular Surgery, Boston Medical Center, Boston University*
3 *Division of Vascular and Endovascular Surgery, Harvard Medical Center*
4 *Department, Vascular Surgery, HUCH Abdominal Centre, Helsinki*
5 *Division of Vascular and Endovascular Surgery, Heart and Vascular Center, Dartmouth-Hitchcock Medical Center*
6 *Division of Vascular Surgery, University of Pittsburgh Medical Center*
7 *Section of Vascular Medicine and Intervention Massachusetts General Hospital, Harvard Medical School*
8 *Department of Biostatics, Boston University, School of Public Health*
9 *Department of Cardiothoracic Surgery, Stanford Hospital and Clinics*

Objectives: Smoking is an established risk factor in many pathologies of the cardiovascular system. The BEST-CLI trial affords an in-depth evaluation into the effect of smoking on critical limb threatening ischemia (CLTI). BEST-CLI's unique prospective, randomized design evaluated outcomes in patients suitable for either open or endovascular intervention and randomized patients between endovascular first intervention (ENDO) versus open surgical bypass (OPEN). We report the outcomes stratified by that of current smokers (CS) compared to non-smokers (NS) which includes either previous smokers or never smokers.

Methods: Endpoints include the primary trial outcomes (major adverse limb event [MALE] or all-cause death), above ankle amputation, all cause death, major or minor reintervention, major adverse cardiac event (MACE), MALE, MALE or peri-operative death (MALE-POD). Multivariable Cox regression models were created with NS serving as the reference group.

Results: Treatments received included SSGSV bypass (n=621), AC bypass (n=236) and ENDO (n=923) procedures. Patients smoking history included NS (n=1137) and CS (n=641). In the total cohort of patients receiving ENDO or OPEN, CS had a higher rate of MALE (HR 1.27 (1.05,1.55), p=0.016) but a lower rate of all cause death (HR 0.80 (0.66,0.97), p=0.021) when compared to NS. In the OPEN group, CS had only a lower rate of all cause death (HR 0.74 (0.56,0.98), p=0.035) when compared to NS (Table 1 A-F). In the ENDO group, CS had a higher rate of above ankle amputation (HR 1.51 (1.04,2.19), p=0.031) and MALE (HR 1.33 (1.04,1.69), p=0.023) (Table 2 A-F).

Conclusion: Current smokers have worse outcomes in the overall cohort with MALE likely driven by the ENDO group that had higher rates of MALE and above ankle amputations following adjustment. OPEN surgery patients tend to be resistant to the deleterious effects of smoking versus ENDO revascularization and should be considered when fit for surgery in patients with CLTI.

Table 1A: Multivariable Cox regression Models - Above the Ankle Amputation

Covariate (Effect)	HR (95% CI), p-value
CKD Grade	0.21
No CKD or Stage < 3	0.99(0.52,1.89), p=0.971
Stage 4 vs No CKD	1.50(0.42,5.40), p=0.537
Stage 5 vs No SKD	0.00(0.00,.), p=0.981
Dialysis Dependent vs No CKD	2.09(0.94,4.62), p=0.070
Functioning renal transplant	2.16(0.48,9.81), p=0.317
Diabetes	0.47
Yes vs No	1.19(0.75,1.89), p=0.467
Infrapopliteal Disease (from Strata)	0.07
Yes vs No	1.55(0.97,2.49), p=0.067
Smoking Status	0.92
Prior vs Never	1.08(0.63,1.84), p=0.786
Current vs Never	1.13(0.64,2.00), p=0.674

Table 1B: Multivariable Cox regression Models - All cause death	
Covariate (Effect)	**HR (95% CI), p-value**
CKD Grade	0.00
No CKD or Stage < 3	0.67(0.48,0.95), p=0.026
Stage 4 vs No CKD	2.41(1.31,4.43), p=0.005
Stage 5 vs No SKD	3.90(0.93,16.29), p=0.062
Dialysis Dependent vs No CKD	2.90(1.93,4.35), p=0.000
Functioning renal transplant	0.70(0.22,2.27), p=0.552
Diabetes	0.01
Yes vs No	1.46(1.09,1.97), p=0.012
Infrapopliteal Disease (from Strata)	0.18
Yes vs No	1.20(0.92,1.58), p=0.176
Smoking Status	0.05
Prior vs Never	1.20(0.89,1.62), p=0.239
Current vs Never	0.84(0.59,1.19), p=0.331

Table 1C: Multivariable Cox regression Models - Any reintervention	
Covariate (Effect)	**HR (95% CI), p-value**
CKD Grade	**0.30**
No CKD or Stage < 3	0.81(0.57,1.16), p=0.248
Stage 4 vs No CKD	1.39(0.67,2.89), p=0.382
Stage 5 vs No SKD	1.01(0.14,7.43), p=0.989
Dialysis Dependent vs No CKD	1.15(0.70,1.90), p=0.585
Functioning renal transplant	0.52(0.13,2.17), p=0.372
Diabetes	0.56
Yes vs No	1.08(0.83,1.40), p=0.558
Infrapopliteal Disease (from Strata)	0.89
Yes vs No	0.98(0.77,1.26), p=0.891
Smoking Status	0.10
Prior vs Never	1.27(0.91,1.79), p=0.162
Current vs Never	1.48(1.04,2.10), p=0.031

Table 1D: Multivariable Cox regression Models - MACE	
Covariate (Effect)	**HR (95% CI), p-value**
CKD Grade	0.00
No CKD or Stage < 3	0.75(0.54,1.04), p=0.089
Stage 4 vs No CKD	2.50(1.41,4.44), p=0.002
Stage 5 vs No SKD	2.75(0.66,11.40), p=0.164
Dialysis Dependent vs No CKD	2.61(1.76,3.87), p=0.000
Functioning renal transplant	0.38(0.09,1.57), p=0.181
Diabetes	0.00
Yes vs No	1.54(1.17,2.01), p=0.002
Infrapopliteal Disease (from Strata)	0.10
Yes vs No	1.23(0.96,1.57), p=0.104
Smoking Status	0.29
Prior vs Never	1.25(0.94,1.67), p=0.127
Current vs Never	1.12(0.81,1.54), p=0.500

Table 1E: Multivariable Cox regression Models – MALE	
Covariate (Effect)	**HR (95% CI), p-value**
CKD Grade	0.03
No CKD or Stage < 3	0.87(0.54,1.42), p=0.587
Stage 4 vs No CKD	2.39(1.04,5.45), p=0.039
Stage 5 vs No SKD	0.00(0.00,7E267), p=0.972
Dialysis Dependent vs No CKD	1.66(0.90,3.08), p=0.106
Functioning renal transplant	1.04(0.24,4.48), p=0.955
Diabetes	0.47
Yes vs No	1.14(0.80,1.61), p=0.469
Infrapopliteal Disease (from Strata)	0.73
Yes vs No	1.06(0.76,1.48), p=0.726
Smoking Status	0.57
Prior vs Never	1.11(0.72,1.70), p=0.639
Current vs Never	1.26(0.81,1.98), p=0.307

Table 1F: Multivariable Cox regression Models - MALE or Death	
Covariate (Effect)	**HR (95% CI), p-value**
CKD Grade	0.00
No CKD or Stage < 3	0.76(0.56,1.03), p=0.079
Stage 4 vs No CKD	2.71(1.57,4.67), p=0.000
Stage 5 vs No SKD	1.79(0.43,7.37), p=0.422
Dialysis Dependent vs No CKD	2.22(1.53,3.22), p=0.000
Functioning renal transplant	0.73(0.26,2.02), p=0.540
Diabetes	0.01
Yes vs No	1.39(1.09,1.78), p=0.008
Infrapopliteal Disease (from Strata)	0.60
Yes vs No	1.06(0.85,1.33), p=0.601
Smoking Status	0.46
Prior vs Never	1.14(0.87,1.49), p=0.344
Current vs Never	1.00(0.74,1.34), p=0.988

Table 2A: Multivariable Cox regression Models - Above the Ankle Amputation	
Covariate (Effect)	**HR (95% CI), p-value**
CKD Grade	0.00
No CKD or Stage < 3	0.85(0.50,1.44), p=0.550
Stage 4 vs No CKD	0.26(0.03,1.98), p=0.195
Stage 5 vs No SKD	2.22(0.50,9.79), p=0.292
Dialysis Dependent vs No CKD	2.17(1.20,3.94), p=0.011
Functioning renal transplant	1.48(0.34,6.42), p=0.602
Diabetes	0.00
Yes vs No	2.42(1.51,3.88), p=0.000
Infrapopliteal Disease (from Strata)	0.09
Yes vs No	1.41(0.95,2.09), p=0.091
Smoking Status	0.10
Prior vs Never	0.99(0.64,1.54), p=0.971
Current vs Never	1.50(0.94,2.39), p=0.090

Table 2B: Multivariable Cox regression Models - All cause death	
Covariate (Effect)	**HR (95% CI), p-value**
CKD Grade	0.00
No CKD or Stage < 3	0.76(0.54,1.08), p=0.125
Stage 4 vs No CKD	1.43(0.75,2.73), p=0.278
Stage 5 vs No SKD	1.43(0.44,4.68), p=0.556
Dialysis Dependent vs No CKD	2.12(1.43,3.15), p=0.000
Functioning renal transplant	1.15(0.41,3.22), p=0.796
Diabetes	0.09
Yes vs No	1.26(0.96,1.65), p=0.094
Infrapopliteal Disease (from Strata)	0.15
Yes vs No	1.21(0.93,1.56), p=0.151
Smoking Status	0.09
Prior vs Never	1.31(0.98,1.73), p=0.065
Current vs Never	1.04(0.75,1.44), p=0.835

Table 2C: Multivariable Cox regression Models - Any reintervention	
Covariate (Effect)	**HR (95% CI), p-value**
CKD Grade	0.62
No CKD or Stage < 3	1.21(0.88,1.67), p=0.233
Stage 4 vs No CKD	1.67(0.86,3.25), p=0.129
Stage 5 vs No SKD	0.00(0.00,4E174), p=0.956
Dialysis Dependent vs No CKD	1.39(0.91,2.12), p=0.124
Functioning renal transplant	1.16(0.41,3.25), p=0.779
Diabetes	0.81
Yes vs No	0.97(0.78,1.21), p=0.808
Infrapopliteal Disease (from Strata)	0.40
Yes vs No	0.91(0.74,1.13), p=0.398
Smoking Status	0.28
Prior vs Never	1.24(0.95,1.63), p=0.118
Current vs Never	1.22(0.91,1.63), p=0.190

Table 2D: Multivariable Cox regression Models - MACE	
Covariate (Effect)	**HR (95% CI), p-value**
CKD Grade	0.00
No CKD or Stage < 3	0.88(0.64,1.22), p=0.453
Stage 4 vs No CKD	1.69(0.92,3.08), p=0.089
Stage 5 vs No SKD	1.20(0.37,3.91), p=0.763
Dialysis Dependent vs No CKD	2.41(1.65,3.51), p=0.000
Functioning renal transplant	1.12(0.40,3.12), p=0.830
Diabetes	0.01
Yes vs No	1.37(1.06,1.76), p=0.015
Infrapopliteal Disease (from Strata)	0.91
Yes vs No	0.99(0.79,1.24), p=0.906
Smoking Status	0.03
Prior vs Never	1.35(1.04,1.76), p=0.026
Current vs Never	1.04(0.77,1.41), p=0.803

Table 2E: Multivariable Cox regression Models – MALE	
Covariate (Effect)	**HR (95% CI), p-value**
CKD Grade	0.06
No CKD or Stage < 3	1.04(0.73,1.49), p=0.825
Stage 4 vs No CKD	0.70(0.27,1.79), p=0.454
Stage 5 vs No SKD	1.09(0.26,4.57), p=0.908
Dialysis Dependent vs No CKD	1.70(1.09,2.65), p=0.019
Functioning renal transplant	1.60(0.56,4.53), p=0.380
Diabetes	0.63
Yes vs No	1.06(0.82,1.37), p=0.631
Infrapopliteal Disease (from Strata)	0.16
Yes vs No	1.20(0.93,1.53), p=0.161
Smoking Status	0.05
Prior vs Never	1.15(0.84,1.57), p=0.373
Current vs Never	1.46(1.06,2.02), p=0.022

Table 2F: Multivariable Cox regression Models - MALE or Death	
Covariate (Effect)	**HR (95% CI), p-value**
CKD Grade	0.00
No CKD or Stage < 3	0.88(0.67,1.15), p=0.342
Stage 4 vs No CKD	1.15(0.67,2.00), p=0.609
Stage 5 vs No SKD	1.08(0.39,3.00), p=0.880
Dialysis Dependent vs No CKD	1.62(1.16,2.26), p=0.005
Functioning renal transplant	1.03(0.41,2.59), p=0.944
Diabetes	0.40
Yes vs No	1.09(0.89,1.34), p=0.402
Infrapopliteal Disease (from Strata)	0.09
Yes vs No	1.19(0.98,1.45), p=0.085
Smoking Status	0.23
Prior vs Never	1.13(0.89,1.42), p=0.316
Current vs Never	1.25(0.97,1.61), p=0.087

4. Outcomes of Arm Vein Grafts Compared to Prosthetic and Biological Grafts in Patients with Chronic Limb Threatening Ischemia

Mohammed Hamouda, MD[1], Sina Zarrintan MD, MS, MPH[1], Nishita Vootukuru BS[2], Jon G. Quatromoni, MD, MTR[3], Mahmoud B. Malas MD, MHS, RPVI, FACS[1], Ann C. Gaffey MD, MS[1]

1 *Division of Vascular and Endovascular Surgery, University of California San Diego, San Diego, CA*
2 *Rutgers New Jersey Medical School, NJ*
3 *Department of Vascular Surgery, Heart & Vascular Institute, Cleveland Clinic, Cleveland, OH*

Background: The optimal conduit for Infrainguinal bypass (IIB) is single segment great saphenous vein (GSV). Unfortunately, GSV is not always available in patients with chronic limb threatening ischemia (CLTI). Other graft choices include Arm Vein (AV), Prosthetic Grafts (PG) or Biologic Grafts (BG). Current data regarding the durability and limb salvage rates of those options is scarce, hence we aimed to investigate the impact of alternative graft types on post-operative and long-term outcomes on IIB in patients with CLTI.

Methods: The VQI database was queried for patients undergoing IIB from January 2012 to December 2022. Patients were stratified into three groups: Arm Vein (Cephalic, Basilic), Prosthetic Graft (Dacron, Polytetrafluoroethylene), and Biologic Graft (Cadaveric, Homograft, or Xenograft). Multivariate Logistic regression analyzed postoperative outcomes [return to operating room (RTOR), prolonged length of stay (PLOS), graft occlusion, transfusion >2 units, and 30-day mortality]; while Cox Regression analyzed 1-year outcomes.

Results: A total of 8037 procedures were included: AV 629 (7.8%); PG 6304 (78.4%); BG 1104 (13.7%). Compared to AV, patients receiving PG had similar in-hospital and one-year outcomes (p>0.05). However, there was a trend of lower hazard of amputation or death at 1 year and lower odds of PLOS with PG compared to AV (HR 0.88, p=0.107; OR 0.81, p=0.053). Compared to AV, patients receiving BG had lower odds of transfusion >2 units (OR 0.65), but higher odds of RTOR (OR 1.43), almost 4 times the odds of graft occlusion (OR 3.77), and 50% higher odds of major amputation at 1 year (HR 1.54)(Table I). Unadjusted Kaplan Meier analysis reveals BG group has the lowest Amputation Free Survival compared to AV and PG (Fig 1).

Conclusions: In cases where no GSV is available, Arm Vein grafts have more favorable postoperative and 1-year outcomes compared to BG, but comparable outcomes to PG. Further research is required to support this conclusion.

Figure 1: Kaplan Meier Amputation Free Survival Curves of AV, PG, and BG

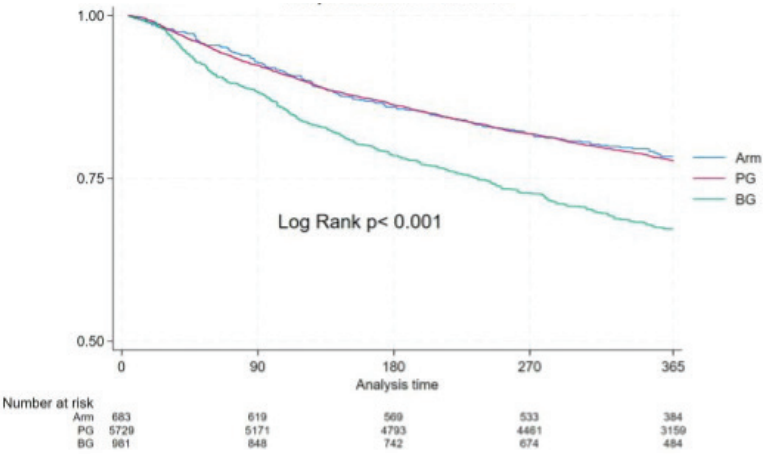


Table I: Postoperative and 1-year outcomes of Prosthetic and Biological Grafts with reference to Arm Vein Grafts in patients undergoing Infrainguinal Bypass:

	Prosthetic Graft vs Arm Vein			Biologic Graft vs Arm Vein		
	aOR/aHR	95% CI	P-value	aOR	95% CI	P-value
RTOR	1.05	0.82 – 1.34	0.722	**1.43**	**1.07 – 1.91**	**0.015**
PLOS	0.81	0.65 – 1.00	0.053	0.94	0.73 – 1.20	0.601
Occluded Graft	2.10	0.82 – 5.41	0.124	**3.77**	**1.38 – 10.28**	**0.010**
Transfusion	0.91	0.72 – 1.15	0.434	**0.65**	**0.50 – 0.85**	**0.002**
30-day Mortality	0.93	0.51 – 1.66	0.798	1.22	0.62 – 2.38	0.564
1-year Mortality	1.02	0.86 – 1.21	0.804	1.06	0.85 – 1.31	0.615
1-year Amputation	0.99	0.75 – 1.32	0.962	**1.54**	**1.14 – 2.09**	**0.005**
1-year Amputation or Death	0.88	0.74 – 1.03	0.107	1.14	0.96 – 1.36	0.132

aOR: adjusted Odds Ratio; aHR: adjusted Hazard ratio; CI: Confidence Interval; RTOR: Return to operating room; PLOS: prolonged length of stay >6 days.

Transfusion: refers to more than >2 units of packed red blood cells; Amputation includes above ankle only. Prosthetic grafts include Dacron and PTFE; Biological grafts include cadaveric, homograft, or xenograft; Arm Vein grafts include cephalic and basilic veins.

Outcomes are adjusted to age, race, ethnicity, medical comorbidities, preoperative anemia, prior procedures, preoperative medication; contralateral major amputation; above vs below knee target; urgency, American Society of Anesthesiology class, and smoking status.

5. Validation of Transmetatarsal Pressure as an alternative for evaluating severity of Chronic Limb Threatening Ischemia

Rumi Faizer, MD, RPVI[1], Bo Claymore, BS[2], Sarah Dike, BS[2], David Dvorak, AAS, ARDMS, RVT[3], Camille Graham, MD, MS, RPVI[4], Yauhen Tarbunou, MD RPVI[1], Sue Duval, PhD[5]

1 Department of Surgery, University of Minnesota, Minneapolis, MN
2 Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN
3 MHealth-Fairview Maplewood Wound and Vascular Center, MN
4 Prisma Health, Richland Hospital, Columbia, SC
5 Cardiovascular Division, University of Minnesota Medical School, Minneapolis, MN

Objective: Objective evaluation of ischemia grade in chronic limb threatening ischemia (CLTI) can be challenging due to both test and patient variability. Adjunctive easily accessible validated techniques for objectively defining ischemia may be beneficial. This study aimed to determine whether transmetatarsal pressure (TMP) is valid in the evaluation of CLTI patients. We also aimed to assess if values for TMP were meaningful in patients with non- compressible ankle-brachial indices (ABI).

Methods: A cohort of patients with peripheral artery disease (PAD) presenting to our vascular center from March 1 to May 1, 2022 underwent TMP measurement concurrent with ABI and toe pressure (TP) measurement using a Parks Industries Flo-Lab 2100-SX machine. Linear and quadratic regression models were used to assess the relation between TMP and TP or ABI. Goodness of fit was assessed with adjusted R-squared.

Results: A total of 117 patients who were being followed for PAD and who were able to have toe pressures performed underwent testing. A majority had an active or healed wound (90% of diabetic and 78% of non-diabetic patients). The relation between TP and TMP was best described by a quadratic formula with an R2 value of 0.46. By combining the existing WIfI ischemia ranges defined by TP and the quadratic formula, new ischemia grades were calculated for TMP. Ischemia grade 0, 1, 2, and 3 corresponded to ranges of TMP pressure (mmHg) of >75, 50-74, 35-49, and <35. There were 26 instances where a patient had a non- compressible ABI. None of these patients had a non-compressible TP or TMP. TP ranged from 31 mmHg to 182 mmHg (mean 87mmHg) and TMP ranged from 82 mmHg to 232 mmHg (mean 140 mmHg).

Conclusion: We demonstrated that TMP can be integrated into the WIfI classification. We believe that TMP evaluation may increase reliability, accuracy, and accessibility of CLTI assessment and management.

Figure 1: Toe pressure vs. transmetatarsal pressure, showing quadratic relation

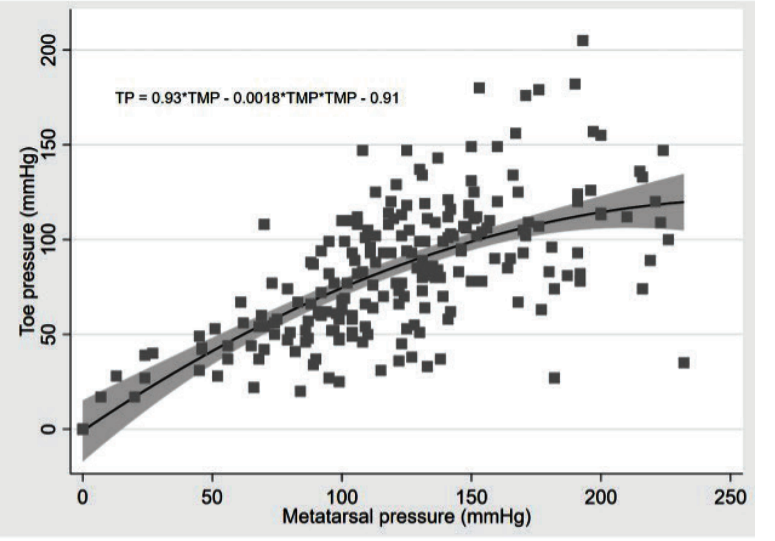


Table 1: Proposed metatarsal pressure ranges corresponding to the WIfI classification system's recognized toe pressure and ABI ranges for ischemia grades

Ischemia Grade	TP (mmHg)	ABI	Calculated TMP (mmHg)	Clinical TMP Categories (mmHg)
0	≥ 60	≥ 0.80	≥ 77	≥ 75
1	40 - 59	0.60 - 0.79	49-76	50-74
2	30 - 39	0.40 - 0.59	36-48	35-49
3	< 30	≤ 0.39	< 35	< 35

TP: Toe pressure; TMP: transmetatarsal pressure

6. Establishing Minimal Clinically Meaningful Difference for PROMIS Physical Function and Predictive Factors for Functional Improvement after Lower Extremity Revascularization for Peripheral Artery Disease

Teryn A. Holeman, MS, Julie B. Hales, RN, MS, Amy Cizik, PhD, Yingjia Wei, MS, Yue Zhang, PhD, Benjamin A. Steinberg, MD, MHS, Benjamin S. Brooke, MD, PhD, DFSVS

University of Utah

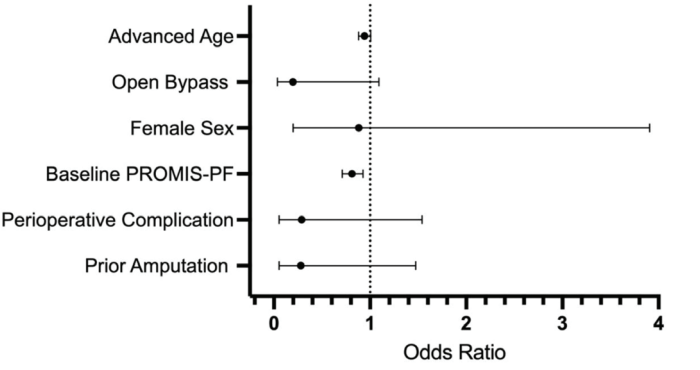
Background: Patients with peripheral arterial disease (PAD) undergo revascularization to improve their physical function, yet meaningful improvement has not been determined. This study aims to define thresholds for minimal clinically important differences (MCID) in patient- reported physical function (PROMIS-PF) outcomes following lower extremity revascularization and determine factors predictive of improvement.

Methods: This is a single-center retrospective analysis of adults undergoing elective percutaneous and open revascularization procedures for PAD 2016-2023 who had pre- and post-operative PROMIS-PF scores. Anchor- and distribution- based approaches were independently used to calculate MCID, and a least absolute shrinkage selection operator (LASSO) selected for covariates that predict whether patients will reach MCID that were inputted into generalized linear mixed model regression.

Results: 132 patients completed the anchor questions and PROMIS-PF at two separate timepoints. Forty five percent of patients (N=60) had an anchor question that changed over time (improved or declined) with an absolute change and corresponding PROMIS-PF MCID value of 5.2 (+/-8.33). The distribution based MCID was calculated from 62 patients with 117 observations. The standard deviation (SD) of the scores was 8.39, with a corresponding MCID (1/2 X SD) of 4.2. The MCID values from both approaches converged on a conservative MCID estimate of 5. Age, sex, procedure type, perioperative complication, prior amputation, and preoperative PROMIS-PF were selected by the LASSO. Patients with higher baseline PROMIS-PF scores (OR 0.81, 95%CI 0.71 – 0.93) and advanced age (OR 0.94, 95%CI 0.88 –1.00) were less likely to meet the MCID (Figure).

Conclusions: In patients with PAD, a 5-point change in PROMIS-PF represents a meaningful improvement after revascularization. Whether a patient will meet the MCID after surgery largely depends on their baseline physical function and age.

Figure: Liklihood to Reach Functional Improvement (MCID)



7. Vascular Quality Initiative Compliance with Society for Vascular Surgery Clinical Practice Guidelines for the Treatment of Claudication with Peripheral Vascular Intervention

James C. Iannuzzi, MD, MPH[1], Shravan Animilli[2], Issam Koleilat, MD[3], Jeff E. Indes, MD[4], Jessica Simons[5], Britt Tonnessen[6], Michael S. Conte, MD[1], Jens Eldrup-Jorgensen[7]

1 University of California, San Francisco
2 Division of Analytics and Reporting, Society for Vascular Surgery Patient Safety Organization
3 Robert Wood Johnson Barnabas Health
4 Montefiore Medical Center, Albert Einstein College of Medicine
5 University of Massachusetts
6 Yale School of Medicine
7 Maine Medical Center, Tufts University School of Medicine

Objective: Society for Vascular Surgery Clinical Practice Guidelines on the management of intermittent claudication (IC) were released in 2015. Uptake of guidelines into clinical practice is unknown. We hypothesized that guideline aligned practice increased after guideline release.

Methods: The Vascular Quality Initiative (VQI) peripheral vascular intervention (PVI) dataset was queried from years 2010-2022 for treatment of IC. Only the first procedure was included. The primary endpoint was compliance with SVS recommendations. Guideline aligned practice (GAP) from 2010-2015 was compared to after publication (2016-2022). A hierarchical regression controlled for hospital level variation due to changing VQI membership over time.

Results: Within 93,654 included cases, 30.9% were before and 69.1% after guideline release. After controlling for hospital level variation, GAP improved for preoperative non-smoking status, P2Y Inhibitor if not aspirin, preoperative statin use, post operative aspirin or P2Y inhibitor, dual antiplatelet, statin and optimal medical therapy (antiplatelet agent, statin, and no smoking status) (Table). Worsening GAP was present in SFA stenting for 5-15cm lesions and infrapopliteal lesions (Table). Social deprivation measured by area deprivation index was associated with increased odds of smoking and decreased odds of post-discharge OMT (OR 0.71, CI 0.65-0.77, p<0.001).

Conclusion: While GAP for PVI improved for medical management, procedural domains did not with a concerning increase in infrapopliteal PVI for IC. SVS guidelines have had only a modest impact on practice and translation of guidelines to clinical care may be limited by both clinician and patient factors.

SVS Clinical Practice Guideline	Short Title	Overall GAP	GAP Before Guidelines (2010-2015)	GAP After Guidelines (2016-2022)	P-Value	Adjusted (OR, 95% CI, p-value)
2.1	ABI performed	71.2%	72.3%	70.8%	<0.001	0.93, 0.76-1.13, p=0.442
4.1	Non-smoking status	59.6%	56.9%	60.8%	<0.001	1.14, 1.05-1.42, p=0.001
4.2	Preoperative Statin	78.6%	74.0%	80.6%	<0.001	1.46, 1.33-1.90, p<0.001
4.5	Preoperative Aspirin	76.8%	76.9%	76.7%	0.717	0.99, 0.90-1.1, p=0.91
4.6	P2Y inhibitor if no aspirin (25%)	34.4%	32.0%	35.3%	<0.001	1.16, 1.05-1.28, p=0.004
5.5	Stent for aortoiliac disease (45.7%)	65.4%	66.8%	64.7%	<0.001	0.91, 0.81-1.02, p=0.110
5.7	Covered Stent for aortoiliac with severe calcification (7.3%)	19.3%	N/A	19.3%	N/A	N/A
5.18	Stent for 5-15 cm lesions	70.0%	73.4%	68.2%	p<0.001	0.764, 0.65-0.905, p=0.002
5.20	No Infrapopliteal treatment	87.6%	90.3%	86.4%	<0.001	0.68, 0.60-0.78, p<0.001
5.24	After Rx OMT (antiplatelet, Statin, & non-smoking)	48.8%	43.7%	51.1%	<0.001	1.35, 1.26-1.44, p<0.001
5.26	Dual antiplatelet at DC	64.2%	62.0%	65.2%	<0.001	1.15, 1.03-1.28, p=0.013

GAP – Guideline aligned practice
OR – Odds Ratio
CI – confidence interval
ABI – Ankle Brachial Index
Rx – Treatment
OMT – Optimal Medical Therapy
DC - Discharge

8. A Prospective Randomized Trial of Renal Ischemic Preconditioning for Reducing Nephropathy Risk Following Fenestrated Endovascular Aortic Aneurysm Repair

Kenneth Tran, MD[1], Shernaz Dossabhoy, MD[1], Shaunak Adkhar, MD[1], Celine Deslarzes- Dubuis, MD[2], Jason Lee, MD[1]

1 Division of Vascular Surgery, Stanford University, Stanford, CA
2 Division of Vascular Surgery, University of Lausanne, Lausanne, Switzerland

Objectives: We sought to evaluate whether renal ischemic preconditioning is effective for reducing postoperative acute kidney injury (AKI) and mid-term renal function decline in patients undergoing elective fenestrated endovascular repair (FEVAR) of juxtarenal aortic aneurysms.

Methods: We performed a single site, blinded, prospective randomized trial of a renal ischemic preconditioning intervention using arm ischemia via manual inflation of arm blood pressure cuff. We evaluated 30-day AKI, determined using RIFLE classification (risk, injury, failure, loss of function, and end-stage and 2-year freedom-from renal function decline, defined as >30% decline in baseline estimated glomerular function (eGFR). The study was powered to detect a >25% difference in renal injury incidence.

Results: We enrolled 80 patients (80% male, mean aneurysm diameter 6.1cm), who were undergoing elective FEVAR using Cook ZFEN devices between July 2018 and August 2023. The 30-day follow-up rate was 95.0%, and mean follow-up duration was 20.2 ± 14.6 months. While there was a trend to older patient age in the treatment group (77.4 ± 7.8 years vs 74.1 ± 7.0 years), this difference did not reach statistical significance (P=.05). The mean baseline eGFR and creatinine were 69.8 ± 21.0 mL/min/1.73m2 and 1.1 ± 0.4 mg/dL respectively, and 30.0% had chronic kidney disease stage ≥3. There were no differences in any other baseline or operative metrics between groups. The rate of AKI at 30 days was 11.3% overall (risk 7.5%, injury 2.5%, failure 1.3%) and did not differ between groups (Table I). There were no 30-day deaths. On Kaplan-Meier analysis, 2-year freedom-from renal function decline trended lower for the treatment group (56.2% vs 81.1%, log-rank P=.12), but this difference was not statistically significant.

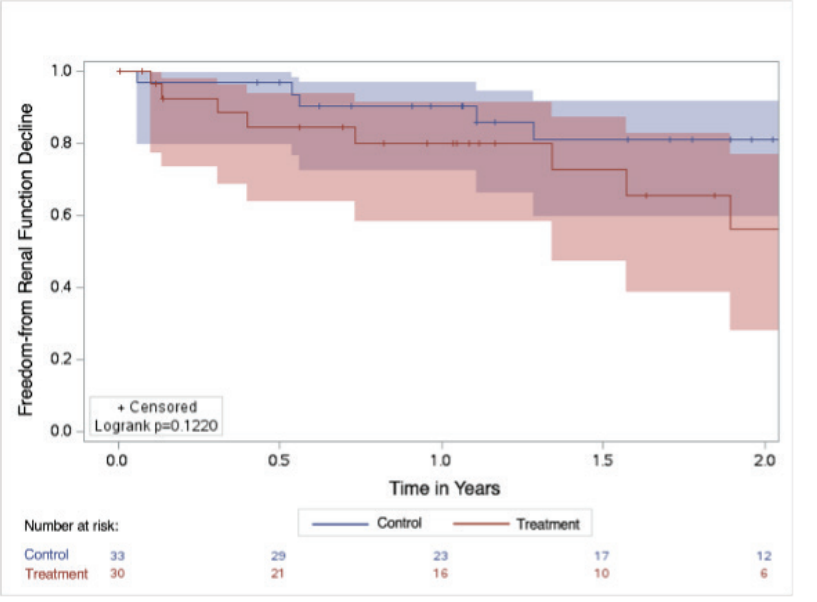
Conclusions: Renal ischemic preconditioning using arm ischemia did not confer a 30-day AKI or mortality or long-term renal protection benefit in patients undergoing elective FEVAR.

Table 1. 30-day acute kidney injury by RIFLE classification, stratified by treatment vs control.

Stage	SCr criteria	Total (N=80)	Treatment (N=40)	Control (N=40)	P value
					.84
Risk	SCr increase 1.5-2x baseline	6 (7.5%)	4 (10.0%)	2 (5.0%)	
Injury	SCr increase 2-3x baseline	2 (2.5%)	1 (2.5%)	1 (2.5%)	
Failure	SCr increase >3x baseline or SCr ≥4 mg/dL	1 (1.3%)	0	1 (2.5%)	
Loss of function	Complete loss of renal function >4 weeks, requires dialysis	0	0	0	
End-stage renal disease	Complete loss of renal function >3 months, requires dialysis	n/a	n/a	n/a	

SCr, serum creatinine. Values reported as number (%).

Figure 1. Freedom from renal function decline, stratified by treatment (red) vs control (blue).



9. Autogenous Panelled Femoral Vein Repair for Mycotic Thoracic Aortic Aneurysms

Ningzhi Gu, MD[1], Eimaan Shergill[2], D. Kirk Lawlor[1], Michael Janusz[3], Joel Price[3], Jason Faulds[1]

1 *Division of Vascular Surgery, University of British Columbia, Vancouver, British Columbia*
2 *Faculty of Medicine, University of British Columbia, Vancouver, British Columbia*
3 *Division of Cardiac Surgery, University of British Columbia, Vancouver, British Columbia*

Objective: Mycotic aortic aneurysms (MTAA) of the descending thoracic and thoracoabdominal aorta are a rare clinical entity. The most common management has been aortic resection, wide debridement, and in-line aortic reconstruction using prosthetic graft. This strategy is associated with significant recurrent infection and perioperative mortality. Hence, we have used autogenous femoral vein for the repair of all MTAA in our institution since 2017. This is the initial description of this technique and the first comparative study of autogenous vein compared to prosthetic for MTAA.

Methods: This is a single centre retrospective cohort study of all patients with MTAA undergoing operative repair. Patients were assigned to the femoral vein (FV) or prosthetic graft (PG) cohorts. Perioperative and long-term outcomes were collected. Univariate logistic regression models were fitted to quantify the strength of differences between the cohorts.

Results: Nineteen patients underwent operative repair for MTAA. The first nine consecutive patients had prosthetic repair and the next 10 consecutive patients were treated with panelled femoral vein grafts. Patients in the FV cohort were more likely to have positive intraoperative cultures (90% vs 33.3%, p=0.02), receive intraoperative transfusions (8 units vs 10 units p=0.08), and have a longer operation (629 min vs 500 min, p=0.07) (Figure 1). There was a trend towards improved in hospital mortality (0 vs. 33%, p=0.088) and long-term mortality (10% vs 55.6%, p=0.57) in the FV cohort. Patients in the FV cohort were more likely to be discharged to home (90% vs 44.4%, p=0.057) (Figure 2). We did not observe any aneurysmal degeneration of the vein graft repair at a mean follow up of 40 months.

Conclusion: Panelled autogenous femoral vein repair is a durable and safe treatment for patients with MTAA. There were no in hospital deaths in our series and there have been no long-term complications related to the vein graft repair.

Figure 1: Comparison of intra-operative outcomes between cohorts.

Variable	Dacron Cohort n(%)	vein Cohort n(%)	p-value[1]
Thoracoabdominal exposure	1 (11.1)	5 (50.0)	0.14
Esophagectomy	4 (44.4)	3 (30.0)	0.65
Circulatory arrest	2 (22.2)	2 (20.0)	0.99
No growth from specimen	6 (66.7)	1 (10.0)	0.02
Highest lactate, median (Q_1-Q_3)	3.1 (2.1, 3.5)	2.4 (2.1, 2.7)	0.71[2]
Lowest pH, median (Q_1-Q_3)	7.28 (7.23, 7.34)	7.26 (7.21, 7.36)	0.65[2]
Lowest GFR, median (Q_1-Q_3)	37.0 (22.0, 62.0)	60.5 (44.0, 99.0)	0.25[2]
Intra-operative RBC transfused (units), median (Q_1-Q_3)	8.0 (4.0, 10.0)	10.0 (6.0, 12.0)	0.08[2]
Total RBC transfused (units), median (Q_1-Q_3)	8.0 (5.0, 12.0)	11.0 (9.0, 14.0)	0.13[2]
Operative time (min), median (Q_1-Q_3)	500.0 (378.0, 532.0)	629.0 (497.0, 897.0)	0.07[2]

[1]All testing based on Fisher's exact test unless otherwise noted; [2]Wilcoxon rank sum test

Figure 2: Post operative and long-term outcomes between cohorts.

Variable	Dacron Cohort n(%)	Vein Cohort n(%)	p-value[1]
In hospital mortality	3 (33.3)	0	0.088
Long term mortality	5 (55.6)	1 (10.0)	0.057
Paraplegia	1 (11.1)	0	0.47
Stroke	0	1 (10.0)	0.99
Myocardial infarction	0	0	-
Days on ventilator, median (Q_1-Q_3)	7.0 (2.0, 10.0)	2.5 (1.0, 4.0)	0.13[2]
Tracheostomy	2 (22.2)	0	0.21
Discharged to home	4 (44.4)	9 (90.0)	0.057
Length of stay (days), median (Q_1-Q_3)	23.0 (14.0, 33.0)	29.0 (19.0, 33.0)	0.71[2]
Unplanned re-operation	0	2 (20.0)	0.47

[1]All testing based on Fisher's exact test unless otherwise noted; [2]Wilcoxon rank sum test

10. Multi-Center Experience with an Off-The-Shelf Single Retrograde Thoracic Branch Endoprosthesis for Acute Aortic Pathology

Kathryn L. DiLosa MD, MPH[1], Michelle Manesh, MD[2], Lucas Ruiter Kanamori, MD[3], Mabel Chan, MD[4], Gregory A. Magee, MD[2], Fernando Fleischman, MD[2], Jason T. Lee, MD[5], Sara L. Zettervall, MD[6], Matthew P. Sweet, MD[6], Joel P. Harding, DO[7], Shahab Toursavadkohi, MD[7], Javairiah Fatima, MD[4], Gustavo S. Oderich, MD[3], Sukgu M. Han, MD, MS[2], Steven Maximus, MD[1]

1 University of California, Davis Health, Sacramento, CA
2 University of Southern California, Los Angeles, CA
3 UT Health Houston, Houston, TX
4 Medstar Health, Washington, DC
5 Stanford University Health, Palo Alto, CA
6 University of Washington Health, Seattle, WA
7 University of Maryland Health, Baltimore, MD

Objectives: In arch pathology, the thoracic branch endoprosthesis (TBE®, WL Gore, Flagstaff AZ) offers an off-the-shelf single retrograde branch for zone 0-2 during thoracic endovascular aortic repair (TEVAR). This study reports outcomes of TBE®-TEVAR for acute pathology.

Methods: Clinical data, imaging, and outcomes of patients treated with TBE®-TEVAR at seven institutions were retrospectively reviewed (March 2017- March 2024). Patients treated for acute aortic dissection (AAD), symptomatic aneurysm/pseudoaneurysm (PSA) or blunt traumatic aortic injury (BTAI) by urgent/emergent repair were included. End-points were 30- day mortality, major adverse events (MAEs: mortality, myocardial infarction, prolonged intubation, stroke, paraplegia, dialysis, or bowel ischemia), and technical success.

Results: Of 356 patients, 107 (69.0% male, mean 60±15 years-old) underwent repair, 70 (65%) AADs, 21 (20%) symptomatic aneurysms/PSA and 16 (15%) BTAIs. In eight (8%) patients repair immediately followed open ascending repair of Type A AAD. Proximal landing zone was 2 in 91 patients (89%) and 0-1 in 11 patients (11%) with cervical debranching. Technical success was achieved in all patients (98%) except one AAD with aneurysmal degeneration requiring staged repair. At 30-days, two (2%) patients died and 22 (21%) developed MAEs (Table 1), including stroke in 6 (6%) and paraplegia in 6 (6%). Five patients (5%; all Zone 2) had retrograde dissections (no mortalities), all had prior AADs >30 days from initial intervention. Mean follow up was 55 171 days and 96 (94%) patients had follow-up imaging. Type IA or III endoleak occurred in seven patients (7%), retrograde branch occlusion in one (1%), and eleven (10%) required re-intervention. Cumulative aortic mortality was three (3%) from aortic rupture and four patients (4%) required open type A AAD repair.

Conclusion: Urgent/emergent TEVAR with the Gore TBE® device in acute pathology offers low mortality, stroke and paraplegia risk.

Table 1: Description of complications by pathology type

Pathology	Number of Patients with complication N (%)	Total (N=80)
Aneurysm/Pseudoaneurysm (N=21)	1 (1.0%) 1 (1.0%)	Death Rupture
Acute aortic dissection (N=70)	2 (2.0%) 2 (2.0%) 6 (5.6%) 6 (5.6%) 4 (3.7%) 2 (1.9%) 2 (1.9%) 3 (3.1%) 2 (2.0%) 5 (5.1%)	Death within 30 days Rupture Stroke Paraplegia Death Rupture Unknown causes Dialysis Prolonged intubation/pneumonia Retrograde dissection
Blunt thoracic aortic injury (N=16)		

Table 2: Description of procedural details by pathology type

Pathology	Procedure Time	Fluoroscopy Time	Dose Area Product (mGycm2)	Contrast Volume (mL)
Aneurysm/ Pseudoaneurysm (N=21)	148 ± 84	27 ± 16	31396 ± 21647	121 ± 72
Acute complicated dissection (N=70)	141 ± 101	27 ± 24	125846 ± 460424	130 ± 76
BTAI (N=16)	121 ± 72	18 ± 7	5712 ± 5111	111 ± 47

11. Early Experience with ECMO and Direct Retransfusion in Open Repair of Thoracoabdominal Aortic Aneurysms Demonstrates Improved Outcomes Over Partial Cardiopulmonary Bypass

Rebecca Sorber, MD, Christopher R. Burke, MD, Scott DeRoo, MD, Sara L. Zettervall, MD, Matthew P. Sweet, MD, MS

University of Washington, Seattle, WA

Objective: This study describes the impact of augmenting distal perfusion during open thoracoabdominal aneurysm (TAAA) repair with an extracorporeal membrane oxygenation (ECMO) circuit and direct retransfusion strategy in comparison with a traditional partial cardiopulmonary bypass (CPB) circuit and pump suction.

Methods: All open TAAA repairs at a single institution were identified from 2019-2024. Cases were excluded if circulatory arrest was utilized, the case was reoperative, patient was symptomatic/ruptured or had a Crawford extent IV TAAA. Transfusion requirement, spinal cord injury (SCI), renal injury, and return to preoperative functional status were compared.

A staged approach with proximal thoracic endovascular stent graft and open thoracoabdominal repair performed in a distal to proximal fashion was used in most cases. The traditional approach (CPB) with partial CPB utilized femoral cannulation with activated clotting time (ACT) over 450 and pump suction. The novel approach (ECMO) uses ECMO for lower body and visceral perfusion with an ACT of 250; whole blood is collected from the operative field with Cell Saver and directly retransfused without being spun.

Results: Of 41 open TAAA repairs in the study period, 22 met inclusion criteria (12 ECMO, 10 CPB; Table 1). Both mean transfusion requirement and length of stay were lower for the ECMO group with decreased sample variance (Table 2). Only 8% of ECMO patients had persistent SCI at discharge compared with 20% of CPB patients. 83% of ECMO patients were able to discharge home (vs 60% CPB) and 92% of the ECMO patients successfully reattained their preoperative functional status following TAAA repair (vs 80% CPB).

Conclusions: In this preliminary series, use of ECMO with direct retransfusion for open TAAA repair suggests decreased morbidity and improved patient centered outcomes. Further experience is required to quantify the potential benefit of ECMO over CPB and refine optimal transfusion strategies.

Table 1: Demographics of patients undergoing open TAAA		
	CPB Circuit with Pump Suction n=10	**ECMO Circuit with Retransfusion n = 12**
Mean age (yrs)	47 +/- 13	48 +/- 15
Male sex	80%	83%
Confirmed genetic aortopathy	30%	100%
Prior TEVAR	70%	100%
Current smoking	30%	0
Hypertension	70%	58%
Hyperlipidemia	40%	25%
Coronary artery disease	10%	0%
Chronic kidney disease	0	25%

Table 2: Outcomes following open TAAA repair		
	CPB Circuit with Pump Suction n=10	**ECMO Circuit with Retransfusion n = 12**
Mean transfusion requirement during hospital stay (units)	30 +/- 26	24 +/- 9
Takeback for bleeding	0	0
Massive resuscitation (>20 units on day of operation)	30%	17%
Persistent SCI at discharge	20%	8%
Temporary dialysis	20%	25%
Permanent dialysis	0	0
Length of stay (days)	25.6 +/- 18	17.9 +/- 6
Survival to discharge	100%	100%
Discharge home	60%	83%
Return to functional status*	80%	92%

** Return to functional status is a composite outcome including return to preoperative independence and with no new end-organ failure (e.g. paralysis, dialysis, etc.) at 6 months from surgery*

12. Same Day Discharge Following EVAR In Select Veteran Patients Is Safe And Effective

Harish Krishnamoorthi, MD[1,2], Asma Mathlouthi, MD[1], Amir Azarbal, MD[1,2], Enjae Jung. MD[1,2], Khanh Nguyen, MD[2], Matthew Koopmann, MD[2]

1 Oregon Health & Science University, Portland, OR
2 Portland VA Medical Center, Portland, OR

Objectives: Decreased length of stay(LOS) after surgery improves costs and resource utilization.We evaluated the safety and efficacy of same day discharge(SDD) after endovascular aortic aneurysm repair(EVAR) in a Veterans Affairs(VA) population.

Methods: We reviewed all EVARs between 2018 and 2024 at a single VA hospital. A protocol was instituted in January 2021 allowing SDD after EVAR for infrarenal aortic or iliac artery aneurysms in patients with an available caregiver for the first 24 hours postoperatively. Exclusions included in-hospital anticoagulation bridging, urgent/emergent repair, anticipated operative time>6 hours, or a concomitant procedure requiring admission. All patients who met the above criteria were divided into two groups: SDD and INPT (patients who met criteria for SDD but had a planned admission). Endpoints included LOS, 30-day complication, ED visits, readmission rates and 30-day mortality.

Results: 168 patients were included in the study with 33(19.6%) planned for SDD. Patients were predominantly male(98.8%), white(91.7%) with a mean age of 74±7years . Demographics and comorbidities were similar between the groups. SDD had higher rates of local anesthesia with monitored anesthesia care compared to INPT (54.6% vs. 20%,P< 0.001). SDD had lower rates of planned adjuncts(15.2% vs. 35.6%,P=0.02) but similar rates of unplanned adjuncts (12.1% vs. 19.3%,P=0.33). LOS was significantly shorter in the SDD group compared to the INPT group (0.15±0.4days vs. 2±1.8days,P< 0.001) with a 13% unplanned admission rate. There were no differences in complications(15.2% vs. 17.8%,P=0.72), ED visits(18.7%vs. 16.3%, P=0.73), readmissions(6.1%vs.8.2%,P=0.68) or mortality(0%vs. 1.5%, P=0.48) at 30 days between the SDD and INPT groups, respectively.

Conclusions: SDD after EVAR is feasible in a VA population with reduced LOS without increased risk of complication or readmission. Larger multicenter studies should be performed prior to VA-wide adoption of this strategy.

Table 1: Main Outcomes By Discharge Groups			
Main outcomes	**SDD N=33 (19.6%)**	**Inpatient N=135 (80.4%)**	**P-value**
Percutaneous access, N(%)	28 (84.8)	120 (88.9)	0.52
Anesthesia, N(%) MAC and local General	18 (54.6) 15 (45.4)	27 (20) 108 (80)	<0.001
Procedure length min, mean±SD	161.5±49.5	186.4±78.8	0.08
Fluoroscopy time min, mean±SD	29.9±10.1	41.7±21.5	0.002
Cumulative Air Kerma mGy, median (IQR)	662(364-961)	1092(624-1859)	<0.001
Contrast ml, mean±SD	101.7±40	131±57	0.007
EBL ml, median (IQR)	100(50-150)	100(100-200)	0.36
Planned Adjuncts, N(%)	5(15.2)	48(35.6)	0.02
Unplanned Adjuncts, N(%)	4(12.1)	26(19.3)	0.33
Length of stay days, mean±SD	0.15±0.4	2±1.8	<0.001
30-day complications, N(%)	5(15.2)	24(17.8)	0.72
30-day ED visits, N(%)	6(18.7)	22(16.3)	0.73
30-day readmission, N(%)	2(6.1)	11(8.2)	0.68
30-day mortality, N(%)	0(0)	2(1.5)	0.48

13. Artificial Intelligence (AI)-Assisted Imaging Analysis as a Tool for Preoperative Endovascular Aortic Aneurysm Repair Planning

Colleen P. Flanagan, MD[1], Heather A. Prentice, PhD[2], Jessica E. Harris, MS[2], Lawrence D. Gerstley, PhD[3], Mark N. Westly[3], Mahesh S. Bulbule, MS[3], Elizabeth M. Lancaster, MD[1], Robert W. Chang, MD[1]

1 UCSF Division of Vascular and Endovascular Surgery
2 Medical Device Surveillance & Assessment, Kaiser Permanente
3 Kaiser Permanente Northern California Division of Research

Objectives: Endovascular aneurysm repair (EVAR) has become the mainstay of treatment for most patients with abdominal aortic aneurysms (AAA). Current practice involves operator- dependent manual imaging analysis for surgical planning. We sought to use AI-enabled software to extract detailed preoperative anatomic information, and to determine risk factors for reintervention following EVAR.

Methods: We performed a retrospective cohort study of a prospectively maintained registry to identify patients who underwent conventional infrarenal EVAR 2010-2020. Patients without a CT scan within 1 year of EVAR were excluded. Nurea PRAEVAorta2®, an AI-enabled image processing software, was used to extract detailed information on aortic anatomy from CTs (Figure 1). Cause-specific multivariable Cox proportional hazards regression was used to identify patient, surgical, and anatomic risk factors for non-type 2 endoleak reintervention following EVAR (mortality as a competing event).

Results: 610 patients were identified. The median follow-up after EVAR was 4.9 years (IQR 3.0-7.7). The mean age at time of EVAR was 74.6 years. The population was 88.7% male and 75.2% white. 20.9% were characterized as having high risk features, which included either neck length <15mm (15.1%), distal iliac seal zone <10mm (2.3%), iliac tortuosity> 60% (2.1%), and/or iliac lumen diameter stenosis ≥50% (2.0%). The overall reintervention incidence at 10- years was 21.1%. Ten-year non-type 2 endoleak reintervention rates were 11.2% and 14.0% for those with/without high-risk anatomic features, respectively. The selected high risk features were not independent predictors of the outcome (Table 1).

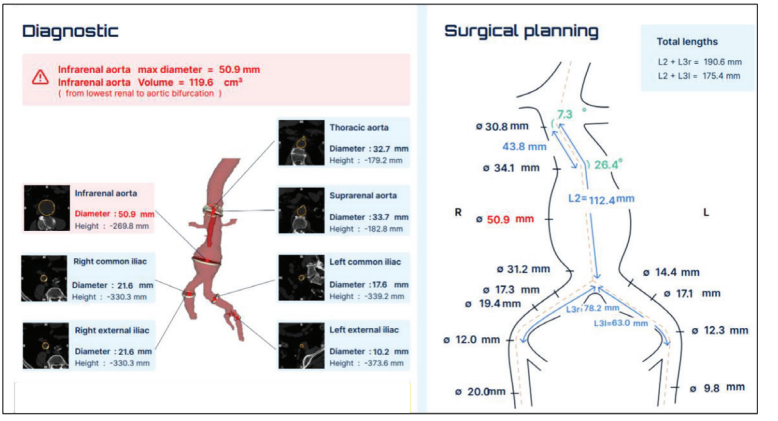
Conclusions: Artificial intelligence can improve and assist detailed anatomic analysis for optimal EVAR device selection. Additionally, automated and standardized imaging assessment will enable higher-quality tracking, facilitate comparisons across devices, and allow monitoring of anatomic changes over time.

Table 1: Multivariate regression model for the outcome of non-type 2 endoleak reintervention following EVAR. The bolded values represent statistical significance at p<0.05.

Variable		Hazard Ratio (95% CI)	P value
Non-White Race		0.51 (0.28-0.95)	**0.034**
Former Smoker		3.94 (1.43-10.88)	**0.008**
Hypothyroidism		4.03 (2.03-7.99)	**<0.001**
ESRD		0.43 (0.21-0.87)	**0.019**
Ruptured (vs. Intact)		11.95 (3.51-40.67)	**<0.001**
Aortic Diameter	5.6-5.99 cm	3.24 (1.05-9.98)	**0.041**
	>6.00 cm	3.20 (1.03-9.92)	**0.043**
Anatomic Criteria	Wide neck ≥33mm	1.47 (0.57-3.83)	0.43
	Short neck (<15mm)	1.30 (0.63-2.69)	0.48
	CIA length <10mm	0.26 (0.03-2.18)	0.22
	CIA tortuosity >60%	0.46 (0.05-4.62)	0.51
	CIA lumen stenosis ≥ 50%	0.13 (0.01-1.16)	0.07

ESR= end stage renal disease, CIA = common iliac artery

Figure 1. Example output from the Nurea PRAEVAorta2® system



14. Variables Associated with Functional Patency of Brachiobasilic Fistulas at 12-Months: A Multi-Institutional Study

Mikayla Hurwitz, MD, Christian de Virgilio, MD, Ramsey Ugarte, MD, Isabela Sandigo- Saballos, MD, Veronica Montero Arcila, MD, Mark Archie, MD

Harbor-UCLA Medical Center, Torrance, CA

Objectives: Superficialization of brachiobasilic AVF (BBAVF) is generally performed by either creating a shelf or dividing and transposing the vein with reanastomosis. This multi- institutional study evaluates the impact of these techniques and other variables on BBAVF functional patency at 12 months.

Methods: A retrospective review of patients undergoing BBAVF between 2014 and 2019 with at least one year follow-up was conducted from five safety net hospitals. The primary endpoint was functional patency at 12 months. Bivariate and multivariate logistic regression models evaluated the relationship between preoperative and intraoperative variables and fistula function at 12 months.

Results: 266 patients underwent basilic vein based AVF creation during the study period and had documented follow up to a year after AVF maturation. The overall 12-month functional patency rate was 72.2%. There was no significant difference in the patency rates for shelfing versus transposition techniques 83.2% versus 89.7%, p=0.173). Use of aspirin (OR 1.839, 95% CI 1.023-3.306, p=0.042), previous arteriovenous fistula or graft (OR 0.479, 95% CI 0.245-0.937, p=0.031), and the use of intraoperative anticoagulation (OR 2.107, 95% CI 1.200-3.699) were associated with AVF function at 12 months.

Conclusions: The use of aspirin and intraoperative heparin are associated with higher functional patency at 12 months. The use of shelfing technique versus transposition did not affect functional patency. In patients with prior access, further studies are needed to determine if a BBAVF is a better option than AV graft.

Risk Factors For 12-Month Brachiobasilic AVF Functional Patency

Variables	Odds Ratio (95% CI)	p-value
History of AVF/AVG	0.479 (0.245-0.937)	0.031
Intra-op Systemic Anticoagulation	2.107 (1.200-3.699)	0.011
Aspirin	1.839 (1.023-3.306)	0.042

15. Utility of Intravascular Ultrasound in Transcarotid Artery Revascularization: Analysis of Short-Term Outcomes

Daniel Delgadillo III, Mennatalla Hegazi, Nishant Sharma, Isabella J. Kuo, Samuel L.Chen, Nii-Kabu Kabutey, Roy M. Fujitani, Anthony H. Chau

Division of Vascular and Endovascular Surgery, University of California, Irvine Medical Center

Objective: Transcarotid artery revascularization (TCAR) has demonstrated superior outcomes compared to transfemoral carotid artery stenting and comparable outcomes to carotid endarterectomy. Conventional angiography is limited by its ability to accurately size vessels, precisely determine the degree of stenosis and length of lesions, characterize lesion morphology, or correctly diagnose postintervention complications. These limitations may be overcome with the use of intravascular ultrasound (IVUS). Our aim is to share our experience with the use of IVUS in TCAR procedures.

Methods: A retrospective, dual-institution review was performed from January 2019 to December 2023. Patients who had undergone TCAR with intraoperative IVUS were included. Patient demographics, perioperative characteristics, and surveillance duplex ultrasound findings were collected.

Results: 60 TCARs using IVUS were performed in 57 patients. The majority were male 40 (70%) with a median age of 73 years. Symptomatic stenosis was observed in 22 patients (36.7%). High risk patients accounted for 63% (36). Procedural details are listed in Table 1 and 2. Eight patients were lost to follow up. Post dilation angioplasty was performed in 25 patients (41.7%)., Myocardial infarction, minor stroke, and cranial nerve injury occurred in 1 patient each (1.6%). Follow up carotid duplex was completed in 52 lesions (86.7%), with mean follow up of 12 months (1 – 45 months). One lesion (1.9%) was found to have severe restenosis (80-99%). There were no carotid reinterventions.

Conclusion: Conventional angiography alone in TCAR may be limited. The use of IVUS as an adjunct may improve accuracy in sizing balloons used for pre/post dilatation angioplasty and stent deployment. Long term surveillance data is needed to provide greater insight on its utility and performance in reducing carotid restenosis.

Table I

Demographics	No. (%)
Study lesions	60
Age, year	73 ± 7
Sex, male	40 (70)
Hypertention	47 (82)
Hyperlipidemia	49 (86)
Smoking status	
Current	8 (14.1)
Former	30 (52.6)
Never	29 (33.3)
Asymptomatic	38 (63.3)
Symptomatic	22 (36.7)
Laterality	
Right	27 (45)
Left	33 (55)
Lesion length (mm)	27 ± 13.2
Risk	
High	36 (63)
Standard	21 (27)
Avg. LOS (days)	2

Avg, Average; LOS, Length of stay

Table II

Intraoperative characteristics	No. (%)
Avg. flow reversal time (min)	28.2 ± 9.7
Avg. fluoroscopy time (min)	8.4 ± 3.8
Avg. procedure time (min)	121.3 ± 29.7
Predilatation angioplasty	60 (100)
IVUS	60 (100)
Postdilatation angioplasty after IVUS	25 (41.7)
Post operative characteristics	**No. (%)**
Follow up DUS	52 (86.7)
Stenosis grade, Overall	
<40%	33
Mild 40-59%	12
Moderate 60-79%	6
Severe 80-99%	1
Complications	N = 3 (5)
MI/Death	1 (1.6)
Minor stroke	1 (1.6)
Cranial nerve injury	1 (1.6)

Avg, Average; IVUS, Intravascular ultrasound; DUS, Duplex ultrasound; MI, Myocardial infarction

16. Effect of New Intersocietal Accreditation Commission (IAC) Carotid Duplex Criteria for >50% Internal Carotid Artery (ICA) Stenosis

Phil Jenkins, MD[1], Hattan Alghamdi, MBBS[2], Mary Street, MD1, Ajit Elhance, BA[1], Gregory Moneta, MD[1], Amani Politano, MD[1]

1 Oregon Health Sciences University, Portland, OR
2 King AbdulAziz University, Jeddah, Saudi Arabia

Objectives: Carotid duplex ultrasound (CDUS) criteria for a >50% internal carotid artery (ICA) stenosis have long been based on a peak systolic velocity (PSV) of >125cm/s. In 2021, the Intersocietal Accreditation Commission (IAC) released updated CDUS diagnostic criteria which recommended increasing the PSV threshold criteria for a >50% stenosis from 125 to 180 cm/sec for 50% ICA stenosis. To date, the clinical impact of this change has not been evaluated. This study aims to determine the potential impact of the new IAC criteria.

Methods: A single-center retrospective cohort study of adult patients undergoing complete bilateral CDUS examination from January to December 2017 was performed. Demographics, comorbidities, PSV measurements, % stenosis based on the prior and new IAC criteria, clinical interventions, and patient outcomes were extracted. Progression from <50% to 50- 69% or to >70% was determined for patients with subsequent CDUS available.

Results: The study period included 811 patients. Mean age was 68 (±12.6), and 55% were men. Comorbidities were common: 69 % hypertension, 58% hyperlipidemia, 56% smoking, and 31% diabetes. Most were asymptomatic (42%); 12%, 19%, and 8% had TIA, stroke, oramaurosis, and 18% syncope. By new IAC criteria, in 118 patients (14.5%) and 130 (8.1%) index ICA CDUS categorization changed from 50-69% to <50% stenosis. Of 183 patients with more than one CDUS (median follow up 33.9 months), censoring for post-operative CDUS, 18 of 365 (4.9%) ICAs changed stenosis category on subsequent CDUS (9 to 50-69%, 9 to >70%, 0 to 100%).

Conclusions: Applying updated IAC CDUS criteria to a historic cohort alters duplex ICA stenosis category from 50-69% to <50% in a small minority of patients. Only a small number of patients progress in the medium term to >50% stenosis with minimal clinical sequelae. This first evaluation of the new IAC criteria for >50% stenosis indicates vascular laboratories can safely adopt the new IAC criteria.

17. Cerebral Hyperperfusion Syndrome After Carotid Revascularization; Predictors and Complications

Ahmed Abdelkarim MD; Mohamed Hammouda MD; Marcos Real MD; Sina Zarrintan MD; Mahmoud B. Malas MD, MHS, RPVI, FACS

Center for Learning and Excellence in Vascular and Endovascular Surgery (CLEVER), Division of Vascular & Endovascular Surgery, Department of Surgery, UC San Diego (UCSD), San Diego, CA

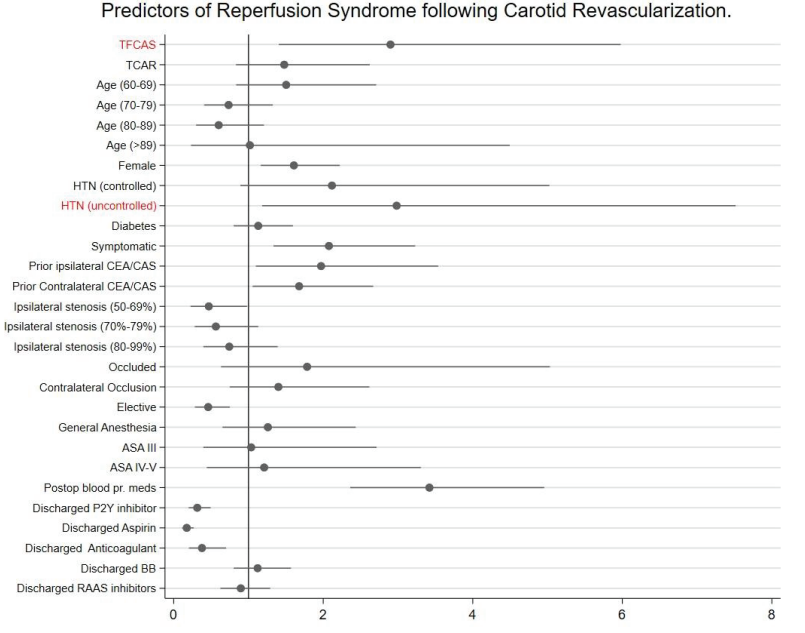
Background: Cerebral hyperperfusion syndrome (CHS) is a rare but serious complication following carotid artery revascularization. Considering the varying rates observed among carotid endarterectomy (CEA), Transfemoral Carotid Artery Stenting (TFCAS), and Transcarotid Artery Revascularization (TCAR), identifying the predictors and complications of CHS is essential for improving patient outcomes. This study utilizes national database to investigate the predictors and complications of CHS following carotid revascularizations.

Methods: We conducted a retrospective analysis of all patients undergoing CEA, TFCAS, and TCAR for carotid artery stenosis in the VQI database from 2020 to 2024. Multivariate logistic regression was applied to identify CHS predictors. Moreover, we compared the 30-day mortality rate following CHS among the three revascularization techniques.

Results: Based on our analysis, TFCAS showed a higher risk of CHS (aOR=2.9[95%CI:1.4-5.9] P<0.004) compared to CEA. TCAR exhibited a comparable risk of CHS to CEA (Fig I). Other predictors of CHS included female sex, uncontrolled hypertension, symptomatic status, prior carotid revascularization, and postoperative use of IV blood pressure medication. Factors associated with lower risk of CHS included elective procedure, discharge on antiplatelet, and RAAS inhibitors (Fig I). Additionally, TFCAS was associated with more than twofold higher risk for 30-day mortality after CHS than CEA (aOR=2.4[95%CI:1.9-3]P<0.001). In contrast, TCAR were comparable to CEA (Table I).

Conclusion: In this multi-institutional national study, we have demonstrated that the type of carotid revascularization significantly influences the risk of CHS and subsequent 30-day Mortality, with TFCAS associated with the highest risk. Uncontrolled hypertension was associated with a 3-fold increased risk of CHS, underscoring the importance of tight blood pressure control. Discharged medications also exhibited potential protection against CHS.

Table: 30-day Mortality after Cerebral hyperperfusion syndrome				
	UNIVARIATE ANALYSIS		MULTIVARIATE ANALYSIS*	
Procedure type (No.)	**No. (%)**	**P value**	**OR (95% CI)**	**P-value**
CEA (88)	25 (28.4)	0.02	Ref	
TFCAS (110)	48 (43.6)		2.4 (1.9-3)	<0.001
TCAR (83)	22 (26.5)		0.8 (0.7-1.1)	0.2
*Adjusted for age, gender, race , smoking, CAD prior CABG/PCI, prior contralateral carotid revascularization, prior ipsilateral carotid revascularization, Symptomatic				



18. Long-term Clinical Outcomes of Interventions for Internal Carotid Artery Stump Syndrome – A Single Center Experience

Roy M. Fujitani, MD, Samuel L. Chen, MD, Nii-Kabu Kabutey, MD, Isabella L. Kuo, MD, Anthony H Chau, MD, Stephen M Kubaska, MD

Division of Vascular and Endovascular Surgery, Department of Surgery, University of California Irvine Medical Center, Orange, CA

Objective: Recurring thromboembolic symptoms (sxs) resulting in transient ischemic attack (TIA) or amaurosis fugax (AF) may follow thrombosis of the internal carotid artery (ICA). A potential source of emboli is the proximal remnant of the occluded ICA or "blind carotid stump" (BCS). The external carotid artery (ECA) provides collaterals to the ipsilateral brain or eye. The effectivelness of surgical treatment for thromboembolic sxs associated with a BCS remains unclear.

Methods: The outcomes of surgical treatment for recurrent embolic sxs attributed to a BCS source thru the ECA was reviewed. Over 25-yrs (Jan 1997–Dec 2022), 21 pts (12 M, 9 F) 52-81 yo were treated for AF (n=13) or TIA (n=8). All patients presented with recurrent sxs despite antiplatelet therapy with no other likely sources of thromboemboli. CT (computed tomography) or catheter-based angiography was used to confirm the duplex scan diagnosis of ICA occlusion & presence of a BCS. Nineteen pts had ECA endarterectomy with patch angioplasty & elimination of the cul-de-sac of the BCS. Two pts had subclavian-ECA bypasses with ICA exclusion. Serial follow-up with clinical evaluation & duplex scanning was performed on all pts with a mean follow-up of 49 +/- 5 mos.

Results: All ECA revascularizations with exclusion of the BCS remained patent. There were no strokes. All patients with AF remained symptom-free postoperatively. Of the other eight pts who presented with TIAs, six had full resolution of sxs, but two had recurrent TIAs referable to the ipsilateral cerebral hemisphere which was mitigated with optimizing anticoagulation therapy.

Conclusions: Symptomatic BCS syndrome with TIA or AF is uncommon. In selected cases, surgical ECA revascularization with exclusion of the BCS is an effective treatment for AF occurring ipsilateral to an ICA occlusion. The results of operation for TIA may be less certain due to potential source of ipsilateral hemispheric embolization from the distal thrombosed ICA.

19. Radial Versus Brachial Artery Access for Endovascular Superior Mesenteric Artery and Renal Artery Interventions

Liliana Cajiao, MD[1], Juan Arias, MD[2], Summan Zahra, MBBS[2], Craig Weinkauf, MD, PhD[2].

1 *Mel and Enid Zuckerman College of Public Health, University of Arizona, Tucson, AZ*

2 *Division of Vascular Surgery, University of Arizona College of Medicine, Tucson, AZ*

Objectives: Upper extremity arterial access is important for endovascular mesenteric, renal, and aortic interventions. For these, brachial artery access remains the standard, yet complication rates are high and open brachial cutdown is frequent. Radial artery access is an alternative to brachial access, but the success rate of interventions and complication rates have been poorly studied in this context. This study aimed to investigate the safety and efficacy of radial access in contrast to brachial artery access for mesenteric, celiac, and renal artery interventions.

Methods: A retrospective review was conducted at a single center from 2017 to 2023. Indications for intervention, patient demographics, and relevant outcomes were quantified. The primary outcome was access site complications defined as pseudoaneurysm, arteriovenous fistula, compartment syndrome, or unplanned cutdown. Statistical analyses were performed to compare the success and complications of interventions in brachial access versus radial access.

Results: The analysis included 30 subjects (Radial = 24, Brachial =6). Upper extremity access was performed for renal (37%) and superior mesenteric artery (63%) interventions. Brachial and radial artery access were used for similar procedures and demonstrated high rates of success. Brachial access required an open cutdown (planned or unplanned) in 50% of the procedures, while radial access had no associated cutdowns. Brachial access had a significantly 20% higher complication rate compared with 4.1% complications rate in the radial access (P =0.4).

Conclusions: Radial artery access exhibits a high success rate and significantly fewer complications compared to brachial access. Given these results, the radial approach may offer a safer treatment access option for endovascular mesenteric, renal, and aortic interventions. This study is limited by a retrospective design with low numbers at a single institution.

20. Sustained Impact of a "Just in Time" Educational Intervention for Opioid Overprescribing in Dialysis Access Surgery

Riley Brian, MD, MAEd, Elizabeth Lancaster, MD, MAS, Jade Hiramoto, MD
Department of Surgery, University of California, San Francisco, CA

Objectives: Opioid overprescribing contributes to opioid misuse among surgical patients. Interventions to educate providers on best opioid prescribing practices can be time and resource intensive. This study sought to identify the effect of a low-cost, timely educational handout on residents' opioid prescribing practices.

Methods: We distributed an educational handout containing opioid prescribing recommendations to residents on the first day of their vascular surgery rotations (Table 1). Opioid prescriptions for dialysis access procedures from four years before and two years after the intervention were reviewed. Lower extremity, inpatient, and revision cases were excluded. Wilcoxon rank-sum test, tests of proportions, and simultaneous logistic regression were used to compare the pre-intervention and intervention groups.

Results: From 2018 to 2023, 368 patients underwent dialysis access procedures. The percentage of patients prescribed opioids decreased from 58% in the pre-intervention period to 35% in the intervention period ($p<0.001$) driven largely by decreased prescribing after arteriovenous fistula procedures (Table 2). For patients prescribed opioids, the oral morphine equivalents prescribed decreased from 90 in the pre-intervention period to 45 in the intervention period ($p<0.001$). Regression with predictor variables including the educational intervention, opioid use history, depression, anxiety, alcohol use disorder, substance use disorders, and pre-operative regional block identified the educational intervention and pre-operative regional block to be significantly associated with decreased opioid prescriptions (both $p<0.001$).

Conclusions: This low-cost timely educational intervention was associated with reduced opioid prescribing after dialysis access cases. Widespread adoption of this approach and application to other surgical procedures could significantly assist with opioid overprescribing.

Table 1. Opioid Prescribing Recommendations for Dialysis Access Cases	
	OPIOID RECOMMENDATION
Radiocephalic fistula	No opioids
Brachiocephalic fistula	No opioids
Brachiobasilic fistula - 1st stage -	No opioids
Brachiobasilic fistula - 2nd stage -	Six tabs of oxycodone 5mg
Arteriovenous graft	Six tabs of oxycodone 5mg

Table 2. Percentage of patients prescribed opioids and median oral morphine equivalents (OME) based on type of arteriovenous dialysis access procedure.

		Total *n = 368*	*Pre-Intervention* *n = 241*	*Post-Intervention* *n = 127*	*p-value*
All cases	Prescribed opioids – n (%)	184/368 (50)	140/241 (58)	44/127 (35)	**<0.001**
	Median OME prescribed (IQR)	75 (45-125)	90 (56.25-150)	45 (45-75)	**<0.001**
Arteriovenous fistula cases	Prescribed opioids – n (%)	115/278 (41)	100/187 (53)	15/91 (16)	**<0.001**
	Median OME prescribed (IQR)	75 (45-150)	85 (50-150)	45 (45-112.5)	0.08
Arteriovenous graft cases	Prescribed opioids – n (%)	29/38 (76)	16/22 (73)	13/16 (81)	0.54
	Median OME prescribed (IQR)	45 (45-75)	75 (61.25-112.5)	45 (45-45)	**0.01**
Brachiobasilic fistula (2nd stage) cases	Prescribed opioids – n (%)	40/52 (77)	24/32 (75)	16/20 (80)	0.68
	Median OME prescribed (IQR)	82.5 (60-125)	100 (75-137.5)	52.5 (45-82.5)	**0.003**

21. Sex Differences in Vascular Ehlers-Danlos Syndrome Aortopathy and Arteriopathy

Ajit Elhance, BA[1], Reid Mahoney, MD[2], David P. Huntley, MPH PE[2], Kathryn W. Holmes, MD MPH[3], Wojciech Wiszniewski, MD PhD FACMG[4], Sherene Shalhub, MD MPH FACS DFSVS[2]

1 Oregon Health & Science University School of Medicine
2 Division of Vascular and Endovascular Surgery, Department of Surgery, Oregon Health & Science University
3 Department of Pediatrics, Oregon Health & Science University
4 Department of Molecular and Medical Genetics, Oregon Health & Science University

Objectives: Vascular Ehlers-Danlos Syndrome (VEDS) is a rare type III collagen disorder caused by pathogenic variants in COL3A1. We sought to delineate sex differences in aortopathy and arteriopathy in this population.

Methods: A cross-sectional analysis of the VEDS Collaborative Natural History Study database was performed to identify individuals with COL3A1 pathogenic variants diagnosed between 1976 and 2022. Demographics, age of genetic diagnosis, comorbid conditions, distribution and age of aortopathy/arteriopathy by vascular bed, aortic and arterial related mortality, and all-cause mortality were compared.

Results: There were 557 individuals with COL3A1 pathogenic variants identified; 248 (44.5%) males and 309 (55.7%) females with males younger than females (mean age 35.8 vs 39.2 years, p=.017). No sex difference was found in age at time of COL3A1 genetic diagnosis (Table). Males had more inguinal hernias than females (10.9% vs 0.6%, p<.001), and spontaneous pneumothorax history (10.5% vs 5.8%, p=.043). Hypertension was more common in males (16.1% vs 8.1%, p=.003). Aortopathy/arteriopathy were more common in males (74.2% vs 57.9%, p<.001). Specifically, males had more aortopathy, and more iliac and visceral arteriopathy, while females had more carotid-cavernous fistulae and spontaneous coronary arterial dissections (Table). The mean age of aortopathy/arteriopathy diagnosis was not different in males vs. females (34.4 vs 37.3 years, p=.057) but males had higher all-cause mortality (32.3% vs 20.4 %, p=.001) and aortic related mortality (53.8% vs 38.1%, p=.063).

Conclusions: The age onset of aortopathy/arteriopathy is similar between males and females with VEDS but frequency, anatomic distribution, and all-cause mortality appear sex- dependent. These sex-based differences in VEDS potentially impact surveillance recommendations. Future research should include sex-based medical management and development of surgical repair criteria stratified for sex and artery.

Table: Aortopathy and arteriopathy and mortality of 557 individuals with Vascular Ehlers- Danlos syndrome compared by sex.

Variable N (%)/Mean + SD		Males (N=248)	Female (N=309)	P
Aortopathy or arteriopathy age of diagnosis		30.8±17.9	33.5±17.7	.110
Vascular Pathology	Aortopathy or arteriopathy	184 (74.2)	179 (57.9)	<.001
	Carotid-cavernous fistula	2 (0.8)	19 (6.2)	.001
	Coronary artery dissection	2 (0.8)	10 (3.2)	.050
	Visceral arteriopathy	72 (29)	57 (18.4)	.003
	Iliac arteriopathy	59 (23.8)	46 (14.9)	.008
	Aortopathy	88 (35.5)	58 (18.8)	<.001
Mortality	All-cause mortality	80 (32.3)	63 (20.4)	.001
	Aortic related mortality	43 (53.8)	24 (38.1)	.063
	Arterial related mortality	17 (21.3)	21 (33.3)	.104

22. Outcome of Non-Surgical Care of Thoracic Outlet Syndrome in a NCAA Division 1 Collegiate Athletic Conference

Stephanie D. Talutis MD, MPH[1], Jesus G. Ulloa MD, MBA[2], Sharon Hame, MD[3], Hugh A. Gelabert MD[2]

1. *Division of Vascular Surgery, Cardiovascular Center, Tufts Medical Center, Boston, MA*
2. *Division of Vascular & Endovascular Surgery, David Geffen School of Medicine at UCLA, Ronald Reagan Medical Center, University of California Los Angeles, Los Angeles, CA*
3 *Department of Orthopedic Surgery, David Geffen School of Medicine at UCLA, Ronald Reagan Medical Center, University of California Los Angeles, Los Angeles, CA*

Objectives: Thoracic outlet syndrome (TOS) is a disabling condition which may end an athletic career. While physical therapy is the initial treatment for this condition, there is a paucity of prospective data as to success. Our goal is to report the outcome of non-surgical care in a NCAA Division 1 athletic conference.

Methods: The prospectively maintained PAC-12 Health Analytics Program Database was searched for athletes with TOS from 2016-2022. Neurogenic (NTOS) and venous (VTOS) categories were identified. Outcomes of non-surgical care and surgery were compared.

Results: 15,609 athletes (6,874 men and 8,735 women) in 21 sports were registered. TOS was identified in 76 (0.48%) athletes: 69 (90.8%) NTOS and 7 (9.2%) VTOS. These included 30 (39.5%) men and 46 (60.5%) women.

Sixty four of the 76 (84.2%) were managed with non-surgical care: 60 (93.7%) NTOS and 4 (6.2%) VTOS). Twelve who required surgery included 9 (75%) NTOS and 3 (25%) VTOS.

Symptom resolution noted in 62 (81.6%) of all, 55 (79.7%) NTOS and 7 (100%) VTOS. Non- surgical management resulted in symptom resolution in 49 (81.7%) NTOS and 4 (100%) VTOS. Surgical care resolved symptoms in 6 (66.6%) NTOS and 3 (100%) of VTOS. Table 1

Attrition (graduated, lost to follow) removed 11 (14.5%). Overall 62 (95.4%) returned to competition without restriction. Return to competition included 51 (96.2%) of NTOS managed without surgery and 6 (85.7%) of NTOS after surgery. All VTOS patients were able to return. Table 2

Conclusion: This report is the first to detail outcome of non-surgical care of TOS in a Division 1 NCAA Collegiate Conference based on a prospective, conference-wide database.

The majority (84%) of athletes were managed with non-surgical care. This was successful with resolution of symptoms in 93% and unrestricted return to competition in 96%.

Non-surgical care is successful and provides effective resolution of TOS symptoms for most elite collegiate athletes.

TABLE 1: RESOLUTION OF SYMPTOMS

		NON-SURGICAL CARE		SURGICAL CARE	
		N	%	N	%
All	Number	64	100.0	12	
	Complete	53	82.8	9	75.0
	Incomplete	11	17.2	3	25.0
NTOS	Number	60		9	
	Complete	49	81.7	6	66.6
	Incomplete	11	18.3	3	33.3
VTOS	Number	4		3	
	Complete	4	100.0	3	100.0
	Incomplete	0	0.0	0	0.0

TABLE 1: RETURN TO COMPETITION

		NON-SURGICAL CARE			SURGICAL CARE	
		N	%		N	%
NTOS	All	60		All	9	
	Graduated	1		Graduated	1	
	Lost	6		Lost	1	
	Available	53		Available	7	
	Returned	51	96.2	Returned	6	85.7
	Restricted	2	3.7	Restricted	1	14.2
VTOS	All	4		All	3	
	Graduated	1		Graduated	1	
	Lost	0		Lost	0	
	Available	3		Available	2	
	Returned	3	100.0	Returned	2	100.0
	Restricted	0	0	Restricted	0	0

23. Leveraging the Vascular Quality Initiative to Reduce Length of Stay following Elective Carotid Endarterectomy and Endovascular Aortic Aneurysm Repair

Shernaz S. Dossabhoy, MD[1], Tara Lahiji-Neary[2], Jocelyn Morta[2], Lauran Miklosey[2], Thelma Flores[2], Carolyn King[2], Carlos Moreno[2], Rouchelyn Fallorina[2], Ani Bagdasarian[2], Shipra Arya, MD[1], Jordan R. Stern, MD[1], Jason T. Lee, MD[1], Ronald L. Dalman, MD[1]

1 Division of Vascular Surgery, Department of Surgery, Stanford University School of Medicine, Stanford, CA
2 Stanford Health Care, Stanford, CA

Objectives: Length of stay (LOS) is a key quality metric for Society for Vascular Surgery's Vascular Quality Initiative (VQI). In 2021, our hospital was an outlier for 'prolonged LOS' after carotid endarterectomy (CEA >1 day, 67% vs target 21%) and endovascular aortic aneurysm repair (EVAR >2 days, 36% vs target 22%). In response, we launched a quality improvement (QI) initiative to reduce LOS following elective CEA and EVAR.

Methods: We completed a retrospective review of all CEA and EVAR (1/2021-3/2022) using VQI. In the intervention phase (4/2022-7/2023), a multidisciplinary team defined the problem state, refined workflows, and used Plan-Do-Study-Act method to address key drivers. Preoperative interventions educated stakeholders (e.g., nurses, case managers, trainees) on LOS benchmarks, communicated expected discharge date and time to patients/families, and screened high-risk LOS patients. After surgery, recovery protocols were standardized: Foley removal midnight POD0 and PT evaluation morning POD1. Primary outcomes, LOS and rates of prolonged LOS, were compared pre/post-intervention.

Results: 120 patients were included (48 CEA, 72 EVAR). Comparing pre/post-intervention, for CEA mean LOS decreased from 2.2 to 1.2 days (52.7 to 27.7 hours) (Table). For EVAR, mean LOS reduced from 2.3 to 1.5 days (55.1 to 36.9 hours). Overall, prolonged LOS significantly decreased for CEA (50% to 15%, P=.01) and for EVAR (26% to 7%, P=.03). These findings were corroborated by our VQI Regional Report (Figure). Patients discharged <1 day also significantly increased from 50% to 85% for CEA and 45% to 76% for EVAR (both P=.01), associated with increased patient satisfaction and hospital 'likelihood to recommend.'

Conclusions: VQI benchmarking identifies system-wide, surgeon-specific QI opportunities. Through engaging multidisciplinary teams and implementing patient-centric interventions across the care continuum, we successfully reduced LOS for CEA and EVAR below VQI targets.

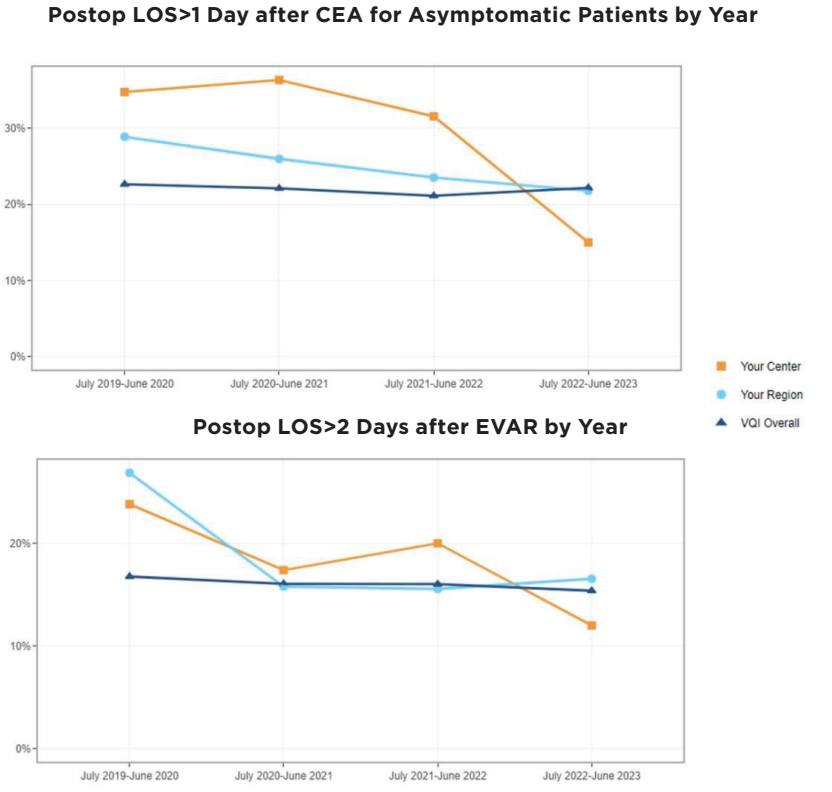


Figure. VQI Regional Report Fall 2023 demonstrating prolonged length of stay (CEA>l day; EVAR >2 days) for elective procedures at our center (orange), compared to our region (light blue), and VQIoverall (dark blue). VQI report data includes July 1 to June 30 annually, whereas our study data was collected from January 2021to March 2022 (pre-intervention) and April 2022 to July 2023 (post-intervention). CEA, carotid endarterectomy; £VAR, endovascular aortic aneurysm repair; LOS, length of stay.

Table. Demographics and post-operative length of stay (LOS) for elective CEA and EVAR patients (N=120).

	Pre-intervention period (1/2021-3/2022)	Post-intervention period (4/2022-7/2023)	P-value
CEA	N=22	N=26	
Age, years	73.4 ± 7.3	71.3 ± 8.6	.37
Males	12 (54.6%)	15 (57.7%)	.83
LOS, days	2.2 ± 3.1	1.2 ± 0.5	.16
LOS, hours	52.7 ± 75.7	27.7 ± 12.0	.14
Prolonged LOS (>1 day)	11 (50.0%)	4 (15.4%)	.01
Discharge within 1 day	11 (50.0%)	22 (84.6%)	.01
EVAR	N=31	N=41	
Age, years	72.0 ± 8.7	71.6 ±12.2	.88
Males	26 (83.9%)	33 (80.5%)	.72
LOS, days	2.3 ± 1.8	1.5 ± 1.5	.06
LOS, hours	55.1 ± 43.2	36.9 ± 35.5	.05
Prolonged LOS (>2 days)	8 (25.8%)	3 (7.3%)	.03
Discharge within 1 day	14 (45.2%)	31 (75.6%)	.01

Values reported as mean ± standard deviation or number (%). CEA, carotid endarterectomy; EVAR, endovascular aortic aneurysm repair; LOS, length of stay.

24. The Impact of Vascular Surgery Procedures on Climate Change

Mingxue Wang, MD, Fares Al-Khouja, MD, Arianne Johnson, PhD, Kevin M Casey, MD, FACS

Dept. of General Surgery, Santa Barbara Cottage Hospital, Santa Barbara, CA

Objectives: If the healthcare sector were an independent nation, it would be the fifth largest greenhouse gas (GHG) emitter in the world. Reducing operative room waste (ORW) decreases hospital GHG emissions. The impact of ORW from vascular surgery procedures remains under examined. The objective of this study was to examine and compare the ORW produced from open, endovascular, and hybrid vascular procedures.

Methods: A single-center, retrospective review was performed examining all vascular procedures over a six-month period. ORW was measured following each case and divided into 3 categories: disposable, biohazard, and recycling. GHG emissions were then calculated based on established historical measurements.

Results: A total of 367 cases were performed by three vascular surgeons at one institution. There was a 95% compliance with data collection by the OR teams. 329 cases met criteria for inclusion: 143 (43%) endovascular, 146 (44%) open, and 40 (12%) hybrid cases.

The mean ORW produced per case was 8.4 kgs. ORW was higher for hybrid cases (11.6 kgs) than for endovascular (8.1 kgs) or open procedures (7.7 kgs). Endovascular cases produced significantly greater biohazard waste (1.7 kgs) compared to open cases (1.1 kgs; $p<0.05$). However, open cases produced significantly more disposable waste (6.1 kgs) compared to endovascular (5.2 kgs; $p <0.05$). Hybrid cases produced significantly more biohazard waste (3 kgs; $p <0.05$) and disposable waste (7.3 kgs; $p <0.05$) compared to open cases.

Conclusion: Endovascular and hybrid vascular procedures produce significantly more biohazard waste compared to open vascular procedures. Biohazard waste creates three times the GHGs produced from non-biohazard ORW. While the healthcare sector must identify numerous ways to reduce its carbon footprint, identification and reduction of waste, particularly biohazard waste, may help to decrease the carbon footprint in the increasingly prominent endovascular realm.

25. Inpatient Pediatric Clinical Consultations to Vascular Surgery within a Childrens Hospital

Casey J Reid, Dakory Lee, Michael Zhang, Ghaleb Darwazeh, Ahmed Abou-Zamzam

Loma Linda University, Loma Linda, CA

Background: Acute pediatric vascular issues are infrequent and result in a diverse, unpredictable experience for vascular surgeons and trainees. We reviewed the indications for consult and resulting interventions provided by the Vascular Surgery (VS) service at a freestanding Children's Hospital (CH) adjacent to a university hospital.

Methods: Consults to VS at our CH were reviewed over a 4.5-year period. The acuity of the patient, nature of the disease (arterial, venous and other) and etiology were documented. Treatments resulting from consultation (medical therapy, observation, and intervention - open/endovascular), and patient outcomes were documented.

Results: One hundred consults to VS occurred. Average patient age was 8.5 years (1 day to 18 years). Ninety consults were for acute conditions. Pathology included arterial (64), venous (20), and other (16). Primary etiologies were iatrogenic injury (41) and trauma (31). Nearly 2/3 of patients were in the ICU (66), and 1/3 of ICU consults were for children < 1 year old. Medical management alone was utilized in 56 cases – 64% receiving anticoagulation, 13% ASA, 7% blood pressure control, 5% antibiotics, and 11% other. In 27 cases no interventions for the vascular query were needed. Overall, 17 consults resulted in 19 surgical interventions (5 primary vascular repairs, 4 bypass/interposition, 3 fasciotomies, 2 angiograms, 2 embolectomies, 1 amputation, 1 thoracic endograft, 1 first rib resection). The one early graft failure required revision. No operative interventions were performed in children < 3 years old. Of 17 deaths, none were due to vascular injury.

Conclusions: Consults to VS in a Childrens Hospital are infrequent and encompass a wide breadth of vascular disease. In contrast to the adult population, medical therapies are frequently utilized while a minority undergo open or endovascular interventions. Exposure to the pediatric population is a small but important niche in vascular education and practice.

26. Propensity Score Matched Comparison of EndoSuture Versus Fenestrated Aortic Aneurysm Repair in Treatment of Abdominal Aortic Aneurysms with Unfavorable Neck Anatomy

Arash Fereydooni, MD, Keyuree Satam, MD, Shernaz Dossabhoy, MD, Sabina Sorondo, MD, Shipra Arya, MD, Brant Ullery, MD, Jason T. Lee, MD
Stanford University, Stanford, CA

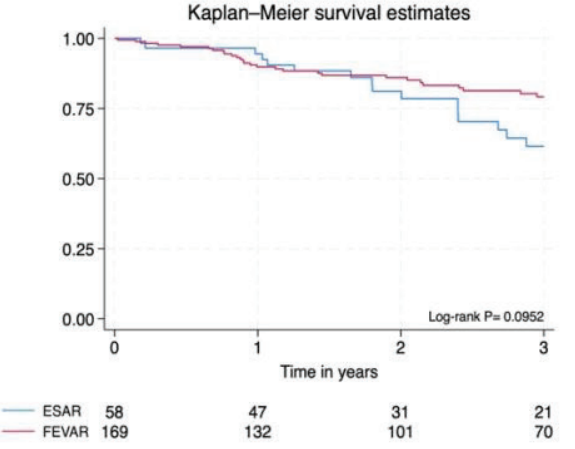
Introduction: Hostile aortic neck is associated with loss of proximal seal and late reinterventions. While EndoSuture aneurysm repair (ESAR) and FEVAR are commercially available options for the treatment of short-neck aneurysms, branch vessel patency is a potential tradeoff for increased seal with FEVAR. This study compares the performance of these two approaches in hostile aortic necks.

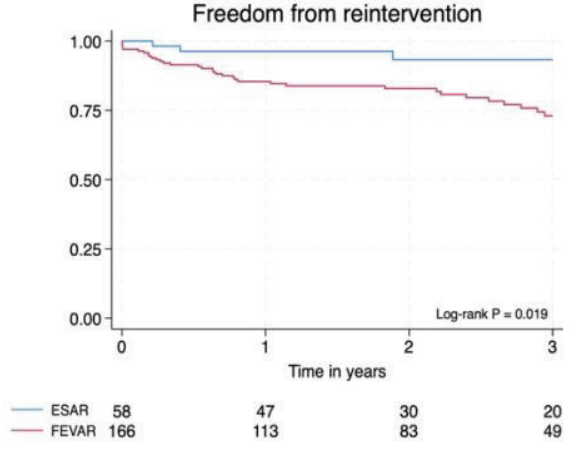
Methods: Patients who underwent elective ESAR or FEVAR for hostile neck AAAs at our center 2012-2024 were retrospectively reviewed. Exclusion criteria were pararenal or TAAA, off-label modifications and non-standard FEVAR configurations. Propensity matching weights were generated based on age, pre-operative eGFR, neck length, diameter and infrarenal angulation. The rates of survival, reintervention, dialysis, CKD progression, type IA endoleak (EL), and sac regression (>5mm) were assessed at latest follow-up.

Results: Out of 391 patients, 60 in ESAR and 207 in FEVAR were included. FEVAR patients were younger (74.4 vs 79.8; P<.001) with larger neck diameter (23.6 vs 25 mm; P=.016), shorter neck length (5 vs 9.8 mm, P<.001), and decreased infrarenal angulation (20 vs 40 deg; P<.001). After propensity-score adjusted regression (58 ESAR, 169 FEVAR), FEVAR was associated with decreased 1A EL and increased sac regression, with no significant association with 30-day major adverse events, AKI, or long-term CKD progression (Table). On Kaplan-Meier analysis, FEVAR was associated with increased reinterventions and a trend towards improved survival with no difference in chronic dialysis (Figure).

Conclusion: In the treatment of AAA with hostile neck anatomy in this propensity-matched cohort, compared to ESAR, FEVAR was associated with reduced type 1A EL and greater sac regression with no detrimental impact on the renal function. We await the current randomized prospective trial comparing these strategies to further determine the impact of these clinical differences on aneurysm-related mortality.

Figure 1. Kaplan-Meier analysis of survival, freedom from reintervention and new-onset chronic dialysis





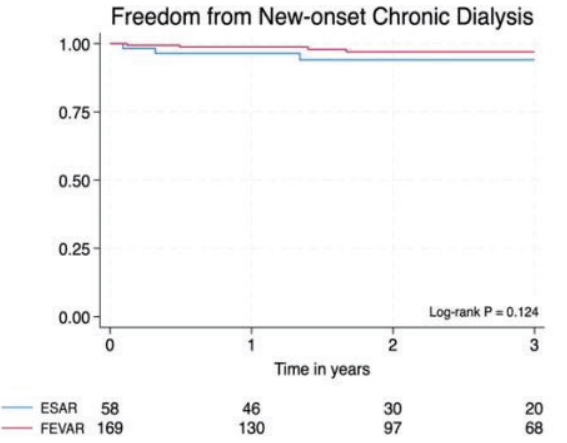


Table: Aortopathy and arteriopathy and mortality of 557 individuals with Vascular Ehlers- Danlos syndrome compared by sex.

FEVAR as Intervention Compared to ESAR	OR	95% CI	P-value
Type 1A endoleak, latest follow-up	0.099	.0152 .645	**0.016***
CKD stage progression, latest follow-up	1.342	.2854 6.315	0.709
Sac regression >5mm, latest follow-up	2.832	1.334 6.011	**0.007***
Any major adverse event, 30 days	0.476	.152 1.489	0.202
AKI, 30 days	1.709	.307 9.496	0.54
Aneurysm-related reintervention, 1 year	4.327	1.115 10.538	**0.046***

27. Management of Moderate Blunt Thoracic Aortic Injuries in Patients with Solid Organ Injury

Nicolas A. Stafforini, MD, Emerald Toth, BS, Niten Singh, MD, Jake Hemingway, MD, Benjamin Starnes, MD, Nam Tran, MD, E lina Quiroga, MD, MPH

Division of Vascular Surgery, Department of Surgery, University of Washington, Seattle, WA

Objective: Blunt Thoracic Aortic Injuries (BTAI) are the second leading cause of trauma- related deaths in the United States. Using the Harborview grading system, BTAI can be classified as minimal, moderate or severe. While moderate BTAI (mBTAI) can undergo semi- elective repair, the optimal management of mBTAI with associated solid organ injury (SOI) is unknown. The aim of this study was to analyze our experience with patients presenting with concomitant mBTAI and SOI.

Methods: We conducted a single-center retrospective study of patients who underwent TEVAR for treatment of mBTAI between March 2015 and December 2023. SOI's and their grades were identified, and our institutional solid organ injury protocol was followed for each patient. Our endpoints included surgical timing, outcomes and the need for reintervention.

Results: 214 patients presented with BTAI during the study period. 88 patients underwent TEVAR for mBTAI and 46 (52 %) of those presented with concomitant SOI. SOI's included liver (63%), splenic (59%) and renal injuries (37%) (Fig 1). Patients with SOI did trend towards longer time from presentation to repair, however, no difference was noted intraoperatively in the dosing of heparin or activated clotting time between the two groups (Fig 2). Only one patient, who underwent systemic heparinization during TEVAR, required a return to the operating room for a splenectomy on postoperative day 1. This patient had previously required an exploratory laparotomy with packing and temporary abdominal closure. Patients with SOI did have a longer length of stay (LOS); however, no aortic-related mortalities were noted in either group. Thirty-day all-cause mortality was 4% for patients with SOI and 5% for non-SOI patients.

Conclusions: Patients with mBTAI and SOI can safely undergo TEVAR with systemic heparinization without an increased risk of complications. Patients with mBTAI and SOI have a longer LOS illustrating the severity of the non-aortic injuries.

Figure 1: Demographic features of patients presenting with and without solid organ injuries			
	SOI n=46	**No SOI n=42**	**PValue**
Male, n (%)	36 (75)	34 (81)	0.76
Age in years, Median (range)	38 (15 - 71)	41 (16- 88)	0.36
Associated spine injury, n (%)	34 (74)	20(48)	<0.01
Associated splenic injury, n (%)	27 (59)	-	-
Grade I	7 (15)	-	-
Grade II	6 (13)	-	-
Grade III	7 (15)	-	-
Grade IV	4(9)	-	-
Grade V	3 (7)	-	-
Associated liver injury, n (%)	29 (63)	-	-
Grade I	4 (14)	-	-
Grade II	8 (28)	-	-
Grade III	12 (41)	-	-
Grade IV	4 (14)	-	-
Grade V	1 (3)	-	-
Associated renal injury, n (%)	17 (37)	-	-
Grade I	5 (29)	-	-
Grade II	4 (23.5)	-	-
Grade III	4 (23.5)	-	-
Grade IV	3 (18)	-	-
GradeV	1 (6)	-	-
Associated hollow viscus injury, n (%)	13 (28)	2(5)	<0.01

Figure 2: Management and outcomes of patients presenting with moderate blunt thoracic aortic injury with and without associated solid organ injury			
	SOI n=46	**No SOI n=42**	**P Value**
Anti-impulse therapy, n (%)	36 (78)	38 (90)	0.12
Time from admission to OR in hours, median (range)	45 (2- 447)	33 (1- 141)	0.07
Systemic heparin during index surgery, n (%)	44(96)	41 (98)	0.61
Units/kg, median (range)	85.8 (25.9 - 129.4)	85.7 (26.7- 125.3)	0.86
Protamine reversal, n (%)	34(74)	36 (86)	0.17
ACT, median (range)	282 (145 - 400)	326 (126 - 400)	0.15
Heparinization time, mean (+-SD)	47.4 (±37.8)	42.8 (±21.9)	0.54
OR time in min, mean (+-SD)	79.8 (±58.1)	83.0 (±29.1)	0.75
Length of stay (LOS) days, mean (+-SD)	42.6 (±43.8)	18.1(±19.7)	<0.01
30-day mortality, n (%)	2 (4)	2 (5)	0.92

28. Understanding Appropriate Surveillance Following Acute Aortic Dissection at a Tertiary Referral Center

Colleen P. Flanagan, MD, Alexander S. Kim, MD, Joel L. Ramirez, MD, Curtis M. Woodford, MD, Sowmya A. Mangipudi, MD, MSc, Eric J.T. Smith, MD, Michael S. Conte, MD, Jade S. Hiramoto, MD

UCSF Division of Vascular & Endovascular Surgery, San Francisco, CA

Objectives: Patients that survive acute aortic dissection (AD) remain at high risk for morbidity/mortality from structural changes of the aorta. Appropriate surveillance is challenging, especially at a tertiary referral center. Our aim was to identify follow-up imaging and appointment rates, and factors associated with incomplete surveillance in patients with acute AD.

Methods. This was a single-center, retrospective study of acute AD patients at a tertiary care center from 7/2012-12/2022 that lived at least 1 year post-AD. We defined appropriate surveillance as having CT or MRI scans of chest/abdomen at 1 month (±14 days), 6 months (±1.5 months), 1 year (±3 months), and yearly thereafter. Data were obtained from the electronic health record. Predictors of absent 1 year imaging were evaluated using multivariable logistic regression.

Results: Of the 370 patients in the study, 66% were male and 38% were white (average age 60±8 years). Type A AD comprised 53% of our cohort; 87% underwent open repair within 1 week of presentation. Of the Type B AD patients (47% of cohort), 56% underwent thoracic endovascular aortic repair within 1 month (Table 1). On multivariate regression, non-English speakers (OR 1.62, 95% CI 1.10-3.67, p=0.0001), residence outside of hospital region (OR 1.26, 95% CI 1.15-3.56, p=0.040), and endovascular repair for TBAD (OR 1.032, 95% CI 1.07-3.99 p=0.034) were independent risk factors for lack of follow-up imaging at 1 year. Only 7% of the cohort was fully concordant with the appropriate surveillance imaging at 1 year. At 1 year, 34% of patients had an imaging study, and 26% saw a cardiovascular provider in follow-up (Table 2). These rates dropped to 15% and 17%, respectively, at 2 years.

Conclusion: This study highlights a low rate of appropriate surveillance for acute AD patients and a significant disparity for non-English speaking patients. This information should inform future quality initiatives to improve aortic surveillance following AD.

Table 1: Comparison of demographic factors for acute aortic dissection patients who did and did not receive 1 year follow-up imaging. Note that the univariate screen assessing this outcome was not performed on the variables in grey.

Variable		N=370	Received Imaging Follow Up at 1 year (n=125)	Did not Receive Imaging Follow Up at 1 year (n=245)	p-value
Age at Dissection (Mean,SD), years		60 (52-68)	62 (58-72)	60 (53-69)	0.520
Sex	Male	243	80 (32.9%)	163 (67.1%)	0.110
	Female	127	45 (35.4%)	82 (64.6%)	
Primary Language	Non-English Speaking	44	8 (18.2%)	36 (81.8%)	0.002
	English	326	117 (35.9%)	209 (64.1%)	
Race/Ethnicity	Non-White Race	229	72 (31.4%)	157 (68.6%)	0.31
	White Race	141	53 (37.6%)	88 (62.4%)	
Local to Hospital Geographic Region		255	110 (43.1%)	145 (56.9%)	0.032
Aortic Dissection Classification	Type A	196	60 (30.6%)	136 (69.4%)	0.065
	Type B	174	65 (37.4%)	109 (62.6%)	
Surgical Intervention for TBAD/ sequelae	None	76	29 (38.2%)	157 (68.6%)	0.01
	Acute or Subacute Intervention	98	48 (49%)	88 (62.4%)	
	Endovascular Repair	95			
	Open Repair (abdominal approach)	2			
	Open Repair (thoracoabdominal approach)	5			
	Other Procedure (extra-anatomic bypass, thrombectomy, other revascularization proc)	7			
Open Type A Repair for TAAD/ sequelae	None	25	11 (44%)	14 (56%)	0.24
	Acute or Subacute Intervention	166	53 (31.9%)	113 (68.1%)	

Table 2: Rates of imaging surveillance and ambulatory follow-up appointments for patients with acute aortic dissection.			
		n	**% of patients (that survive to the time interval)**
Imaging Surveillance by Time Interval	One Month	135	36%
	Six Months	75	20%
	One Year	125	34%
	Fully Concordant within 1 year	*26*	*7%*
	Two Year	56	15%
	Three Year	27	7%
	Four Year	35	9%
Appointments with Vascular Surgery, Cardiothoracic Surgery or Cardiology	One Month		40%
	One Year	96	26%
	Fully Concordant within 1 year	37	10%
	Two Year	63	17%
	Three Year	46	12%
	Four Year	32	9%

29. Comparison of Outcomes and Complications Between Patients Undergoing Zone 2 TBE and Zone 2 TEVAR With Open Left Subclavian Revascularization

Pedro J Furtado Neves, MD[1], Hamza Hanif, MD[2], LeslieAnn S. Kao, MD[1], Branson Taheri, MD[1], Aline H. Ishida, MD[1], Muhammad Aftab, MD[3], Emily A. Malgor, MD[1], T. Brett Reece, MD, MBA[3], Donald L. Jacobs, MD, MS[1], Ross M. Clark, MD[2], Muhammad Ali Rana, MD[2], Rafael Demarchi Malgor, MD, MBA[1]

1. *Division of Vascular Surgery and Endovascular Therapy, University of Colorado, Anschutz Medical Campus, Aurora, CO, USA*
2. *Division of Vascular Surgery, University of New Mexico School of Medicine MSC10 5610, Albuquerque, NM, USA.*
3. *Division of Cardiothoracic Surgery, Department of Surgery, University of Colorado School of Medicine, Aurora, CO, USA.*

Objectives: The Thoracic Branched Endoprosthesis (TBE) is the first US FDA-approved arch device for zone 2 aortic arch endovascular repairs. The aim of this study is to compare procedural, early and mid-term clinical outcomes between a cohort of TBE zone 2 aortic repairs and hybrid repairs at 2 tertiary teaching hospitals.

Methods: A retrospective review was conducted of all consecutive patients that underwent left subclavian artery revascularization and thoracic endovascular repair (group 1), as well as all consecutive patients treated with the Gore TBE device in Zone 2 (group 2) at two tertiary referral institutions from 01/2011 – 12/2023. Outcomes included 30-day reintervention rates, primary patency, morbidity and mortality.

Results: Group 1 consisted of a total of 48 patients (29 male [60.4%], and group 2 consisted of 43 patients (30 male [69.8%]). The average age at time of repair was 65.1 ±14.5 years for Group 1, and 63.3 ± 13.2 years for Group 2. The indications and demographic characteristics of the patients are summarized in Table 1.

The procedural outcomes for the endovascular portion of both revascularizations are summarized in Table 2. No loss of patency for the LSA branch occurred in group 1, while 2 patients had an occlusion of their LSAR within 30 days, one due to compression from a large neck lymphocele, and one due to a large ascending pseudoaneurysm compressing the bypass graft. Group 1 had significantly more wound complications than Group 2. Group 2 had a significantly lower 30-day reintervention rate, as well as a significantly higher 30-day primary patency, and Group 1 had significantly longer follow-up.

Conclusions: These data show promising early results in terms of patency and short-term procedural and clinical outcomes of Zone 2 TBE compared to Zone 2 TEVAR + LSAR, due to lower rates of early reintervention. Long-term prospective data is warranted to demonstrate if durability is comparable.

Table 1. Patient demographics and characteristics

Variable	Group 1: Zone 2 TEVAR + LSA revascularization (n = 48)	Group 2: Zone 2 TBE = (n 43)	P-value
Age	63.5 ± 15.7	63.3 ± 13.2	0.21
BMI	27.7 ± 5.6	27.3 ± 6.7	0.59
Hypertension	44 (91.7%)	38 (88.4%)	0.73
Previous Aortic Surgery Indication	21 (43.8%)	19 (44.2%)	0.98
Dissection	17 (35.4%)	19 (44.2%)	0.52
Degenerative Aneurysm	19 (39.6%)	18 (41.9%)	0.83
Kommerell's Diverticulum	3 (6.3%)	1 (2.3%)	0.61
Blunt Thoracic Aortic Injury	3 (6.3%)	1 (2.3%)	0.62
Miscellaneous	6 (12.5%)	4 (9.3%)	0.27

BMI, body mass index.

Table 2. Outcomes of Zone 2 TEVAR and LSA revascularization compared to Zone 2 TBE.			
Variable	**Zone 2 TEVAR + LSA revascularization (n = 48) N (%) or Median (IQR**	**Zone 2 TBE (n = 43)N (%) or Median (IQR)**	**P-value**
Procedural time, min	169.5 (101.75, 254.75)	130 (102, 155)	0.06
Air Kerma, mGy	748.5 (333.75, 1397)	483 (281.5, 1272.5)	0.47
LOS, days	3 (2, 6.75) days	3 (2, 4) days	0.14
Periprocedural embolic stroke	2 (4.2%)	0 (0)	0.5
Access site complications	2 (4.2%)	2 (4.6%)	1
30-day LSA primary patency*, days	32 (94.1)	43 (100)	<0.001
30-day reintervention rate	8 (23.5)	1 (2.3%)	0.03
30-day major adverse events	4 (8.3%)	0	0.12
30-day mortality**	2 (4.2)	0 (0)	0.5
Clinical follow-up, months	39.4 ± 29.5	3 ± 3.4	<0.001

*1 case lost patency due to a lymphocele compressing the bypass leading to occlusion. The lymph leak was evacuated on POD#1 and patency restored. The other case loss patency due to extrinsic compression on the LCCA from a pseudoaneurysm of the arch repair.

** 1 30-day mortality was due to an event of spinal cord ischemia that was rescued with a therapeutic spinal drain, however, the patient then went on to suffer a massive hemorrhagic stroke. The 2nd 30-day mortality was due to immediate loss of SSEP and MEP signals after the deployment of the 1st endograft, compounded by global colonic ischemia.

IQR, interquartile range; LSA, Left subclavian artery; LOS, Length of stay; TBE, Thoracic Branched Endoprosthesis; TEVAR, thoracic endovascular aortic repair.

30. Contemporary Outcomes of Open Thoracoabdominal Aortic Aneurysm Repair in the Endovascular Era

Alexander D. DiBartolomeo, MD[1], Sebouh Bazikian, BS[1], Jesse Han, BA[1], Fernando Fleischman, MD[2], Fred A. Weaver, MD, MMS[1], Sukgu M. Han, MD, MS[1], Gregory A. Magee, MD, MSc[1]

1 *Division of Vascular Surgery and Endovascular Therapy, Department of Surgery, Keck Medical Center of University of Southern California, Los Angeles, CA*
2 *Division of Cardiothoracic Surgery, Department of Surgery, Keck Medical Center of University of Southern California, Los Angeles, CA*

Objectives: Open thoracoabdominal aortic (TAAA) repair has been associated with high morbidity and mortality prior to the endovascular era, when repair options were limited. Our institution developed a multidisciplinary protocol to standardize patient selection, operative technique and postoperative care to improve outcomes for open repairs. This study aimed to evaluate the protocol's preliminary benefits by comparing outcomes of open TAAA repair on vs off the protocol.

Methods: A retrospective review of consecutive patients who underwent TAAA repair at a single institution from 2013-2023 was completed. Patients who underwent open repair were included and stratified by use of the protocol. The primary outcome was a composite of in- hospital mortality, spinal cord ischemia with paraplegia, or new permanent dialysis. Secondary outcomes included each component, length of stay (LOS), and non-home discharge.

Results: 221 patients underwent TAAA repair at our institution during the study period - 190 endovascular and 31 open. There were 15 in the protocol group and 16 in the non-protocol group. Patient demographics were similar between groups with an overall mean age of 46- years-old. Connective tissue disorder was present in 67% and 50% of protocol and non- protocol patients, respectively. The majority of the patients in both groups presented with extent II TAAA (82% vs 71%). The composite endpoint occurred in 0% of the protocol cohort vs 38% of the non-protocol group (P=.018). Secondary outcomes were dialysis (0% vs 13%, P=.266), paraplegia (0% vs 19%, P=.226), in-hospital mortality (0% vs 13%, P=.484), and non- home discharge (13% vs 43%, P=.109). Median LOS was 7 vs 15 days (P=.027).

Conclusion: In the endovascular era, open TAAA repair can be performed with encouraging outcomes when particular attention is given to patient selection, surgical technique and postoperative care, with rates of mortality, paraplegia, renal failure, and LOS that rival endovascular repair.

31. Implementation of a Multidisciplinary Aortic Team Positively Impacts Institutional Case Volume and Surgical Complexity

Rebecca Sorber, MD[1], Peter H. Byers, MD[2,3], Ulrike Schwarze, MD[3], Yonatan Buber MD[4], James N. Kirkpatrick MD[4], Catherine M. Otto MD[4], Scott C. DeRoo MD[5], Christopher R. Burke, MD[5], Sara L. Zettervall MD, MPH[1], Matthew P. Sweet MD[1]

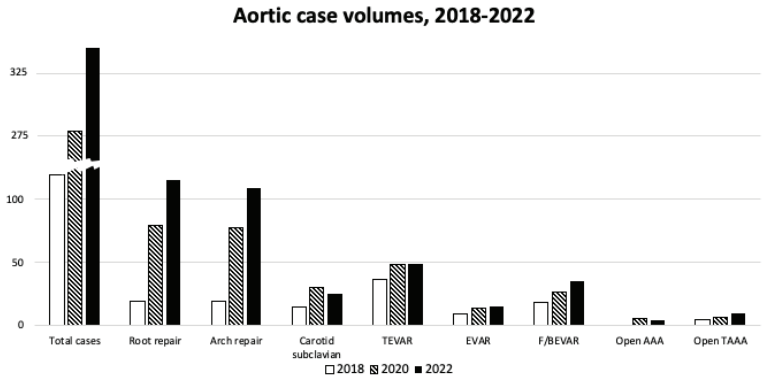
1 *Division of Vascular Surgery, University of Washington, Seattle WA*
2 *Department of Medicine, Division of Medical Genetics, University of Washington, Seattle WA*
3 *Department of Laboratory Medicine and Pathology, University of Washington, Seattle WA*
4 *Division of Cardiology, University of Washington, Seattle WA*
5 *Division of Cardiothoracic Surgery, University of Washington, Seattle WA*

Objectives: The presence of a multidisciplinary aortic team (MAT) is an integral part of the intervention algorithm in several aortic pathologies. This study aims to quantify the effects of implementing a MAT on aortic practice patterns at a single academic institution.

Methods: Aortic procedures were identified using CPT codes; patient characteristics were compared between time periods along with case volumes. Three time periods were defined: two years pre-MAT (2018), full MAT (2020), and two years post-MAT (2022). A full MAT was defined as an having at least one aortic-specific cardiac surgeon, vascular surgeon, cardiologist and medical geneticist.

Result: With a full MAT, volume increased from 119 aortic cases in 2018 to 284 cases in 2020 (+139%); this further increased to 361 in 2022 with the addition of a second aortic-focused cardiac and vascular surgeon (+27%, Figure 1). A significant increase in the proportion of root, arch repairs and TEVAR was noted ($p<0.01$). Patients receiving multiple procedures significantly increased from 2018 to 2020 (70.3% vs. 84.9%) as well as mean procedures per patient (1.98 vs. 2.42, both $p<0.05$). Mean patient distance travelled increased from 168 to 217 miles and there was a trend toward increased internal referrals between 2018 and 2020 (20.9% vs 27.5%, both $p>0.05$). The number of patients receiving genetic aortopathy testing increased steadily during the study period; however, the overall percentage remained static at 23-25%. The number of patients receiving joint evaluation by both cardiac and vascular surgery increased significantly (23.8% 2018 vs 41.1% 2020, $p=0.02$, Table 1).

Conclusions: Implementation of a MAT correlated with dramatically increased aortic case volume as well as increased case complexity, demonstrated by the number of patients requiring multiple procedures. These data suggest that institutional investment in development of a MAT positively drives case volumes across both cardiac and vascular surgery.



	2018	2020	2022	p value (2018 v 2020)	p value (2020 v 2022)
Multidisciplinary procedures (%)	21.6%	23.7%	24.7%	0.48	0.82
Multiple procedures (%)	70.3%	84.9%	83.8%	**<0.01**	0.79
Mean number of procedures (SE)	1.98 (0.16)	2.42 (0.10)	2.41 (0.09)	**0.03**	0.94
Mean distance travelled (mi, (SE))	168 (54)	217 (39)	214 (36)	0.53	0.95
Received genetic testing (%)	23.2%	25.5%	23.7%	0.77	0.71
Genetic variant identified (%)	80.0%	48.7%	40.4%	0.08	0.33
Internal referrals (%)	20.9%	27.5%	29.8%	0.31	0.63
Internal cardiology follow up (%)	25.6%	24.2%	24.9%	0.85	0.67
Joint eval by cardiac & vascular surgery (%)	23.8%	41.1%	43.4%	**0.02**	0.67

32. Patients Excluded from BEST-CLI were More Likely to get a Major Amputation at a Single Urban Safety Net Hospital

Samuel M Schwarz, MD[1], Jake F Hemingway, MD[2], Andrew S Warren, BA, BS[2], Matthew C Smith, MD, PhD[1], Sara Zettervall, MD, MPH[1], Elina Quiroga, MD, MPH[1], Nam T Tran, MD[1], Niten Singh, MD[1], Kirsten D Dansey, MD, MPH[1]

1 *University of Washington Division of Vascular Surgery, Department of Surgery, Seattle, WA*

2 *Pacific Northwest University of Health Sciences, Yakima, WA*

Objectives: BEST-CLI is the largest randomized clinical trial (RCT) for chronic limb- threatening ischemia (CLTI). However, as with any RCT, generalizability is a concern. Our aims were to determine and quantify reasons for trial exclusion in all patients who underwent revascularization for CLTI at an urban safety net hospital, and to compare outcomes between those who did and did not meet criteria for BEST-CLI enrollment.

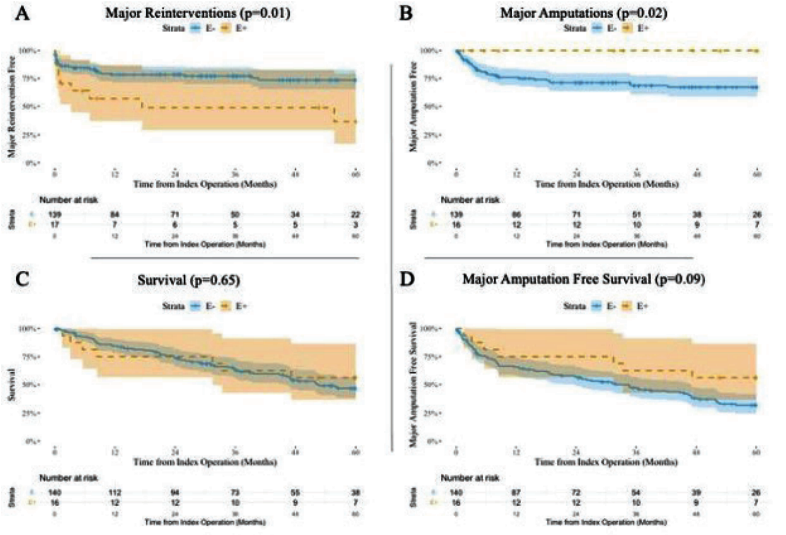
Methods: All patients who underwent revascularization for CLTI from 08/2014-10/2019 at a single center were identified. Trial and site-specific exclusion criteria were assessed and outcomes between those who did and did not meet enrollment criteria were compared. Evaluated outcomes included major amputation, major reintervention, all-cause mortality and amputation-free survival.

Results: Of the 160 patients who underwent revascularization, only 10.6% (n=17) met BEST- CLI enrollment criteria whereas 89.4% (n=143) did not. The index procedure was open bypass in 47% (n=8) vs 21.7% (n=31) of patients who did and did not meet trial enrollment criteria, respectively. Patients who did not meet enrollment criteria had significantly greater five-year major amputation rate (p=.02) and lower major reintervention rate (p=.01), but no difference in all-cause mortality or five-year amputation-free survival (Figure 1). The top reasons for exclusion were anticipated barriers to protocol adherence (39.2%), poor open surgical bypass candidacy (31.5%) and language barriers (18.2%). A more complete list of reasons for exclusion may be seen in table 1.

Conclusions: The majority of patients presenting with CLTI at an urban safety net hospital failed to meet BEST-CLI enrollment criteria and were more likely to experience major amputation. Non-medical factors played a role in exclusion of over half of these patients, which underscores the importance of accommodating these factors in future work to better assess ideal management strategies in this hospital setting.

Table 1. Most frequent reasons patients did not meet BEST-CLI enrollment criteria		
Reason For Exclusion	**Frequency (n=143)**	**%**
Anticipated barriers to protocol adherence	56	39.2
Poor candidacy for bypass	45	31.5
Limited English proficiency	26	18.2
Life Expectancy <2 Years	22	15.4
Lesion did not meet hemodynamic and/or clinical criteria	15	10.5
Infrainguinal intervention within preceding 3 months	14	9.8
Lack of endovascular options	9	6.3

Figure 1. Comparison of outcomes between patients who did (E+) and did not (E-) meet BEST-CLI enrollment criteria



33. Validation of Non-Home Discharge Risk Score after Elective Infrainguinal Bypass Surgery

Elizabeth E. Raby, BS, Richard D. Gutierrez, Zachary A. Matthay, MD, Warren J. Gaspe,r MD, Jade Hiramoto, MD, Michael S. Conte, MD, James C. Iannuzzi, MD, MPH

University of California San Francisco Division of Vascular and Endovascular Surgery

Objectives: Non-home discharge contributes to poor patient quality of life and healthcare costs. Prior Vascular Quality Initiative-based analysis developed a novel risk score for non- home discharge (NHD) following infrainguinal lower extremity bypass (LEB) but has yet to be validated in an external dataset. This study hypothesized that the LEB NHD risk score would be externally validated using unique single institutional data.

Methods: A single institutional quaternary center electronic data warehouse was queried for elective LEB cases from years 2012-2020. The primary endpoint was NHD, defined as discharge to a skilled nursing facility or acute rehab center. Inpatient deaths were excluded. A previously developed risk score was applied (table 1). The risk score's predictive ability for NHD was assessed using a logistic regression, c-statistic, and Hosmer-Lemeshow test. The risk score was then categorized as low risk (score <5), moderate risk (score 5-9), and high risk (score >9) for NHD.

Results: Among 242 included patients, NHD occurred in 22% of cases. The mean age of this cohort was 69. The cohort was 38.0% female and 27.3% non-white (table 2). The NHD proportion by risk category was 34% in high-risk, 26% in moderate-risk, and 4% in low-risk cases. High risk cases represented 17% of the overall population and 27% of all NHD. On logistic regression, higher risk groups had significantly higher odds of NHD in higher risk compared to the low risk category (moderate risk OR:8.8, CI 2.02-38.4, p=0.004, high risk OR: 13.0, CI:2.7-63.1, p=0.001). The risk score successfully predicted NHD with a c-statistic of 0.702 and Hosmer-Lemeshow p=0.748 suggesting the model fit the data.

Conclusion: A novel non-home discharge risk score was validated in an external single institutional dataset. This risk score could be used to provide better pre-operative counseling and streamline post-discharge planning. Future study should prospectively validate the NHD risk score.

Table 1: Risk score components	Points	NHD %
Age (Ref<60)	4.8	
60-69, 70-79, ≥80	+2, +4, +6	19.7, 22.4, 36.2
Sex/non-white status (Ref white male)	19.2	
White female, non-white male, non-white female	+1, +2, +3	24.1, 26.7, 18.2
Non-independent ambulation	+3	25.0
Insulin dependent diabetes	+2	25.2
Anemia	+2	44.8
Tissue loss	+3	30.0

Table 2: Characteristics	Total	NHD	Home discharge
Mean age	69 ± 12.2 years	75 ± 9.2 years	67 ± 12.5 years
% Female	92 (38.0%)	20 (38.5%)	71 (37.3%)
% Non-white	66 (27.3%)	15 (28.8%)	49 (25.8%)
% with insulin dependent Diabetes	115 (47.5%)	28 (53.8%)	86 (45.3%)

34. Exploring Outcomes for Hispanic Patients Undergoing Open Bypass in the BEST-CLI Trial

Jesus G. Ulloa, MD[1], Olamide Alabi, MD[2], Alik Farber, MD[3], Matthew Menard, MD[4], Amber Kernoodle, MD[4], Carla C. Moreira, MD[5], Lee Kirksey, MD[6], Mahmoud Malas, MD[7], Mohammed Hamouda, MD[7], Vincent L. Rowe, MD[1]

1 *David Geffen School of Medicine, UCLA, Los Angeles, CA*
2 *Emory University School of Medicine, Atlanta, GA*
3 *Boston University School of Medicine, Boston, MA*
4 *Brigham and Women's Hospital, Harvard Medical School, Boston, MA*
5 *The Alpert Medical School of Brown University, Providence, RI*
6 *Sydell and Arnold Miller Heart Vascular & Thoracic Institute, The Cleveland Clinic-Cleveland, Cleveland, OH*
7 *University of California San Diego, Health System, San Diego, CA*

Objectives: Hispanic patients have higher prevalence of peripheral artery disease (PAD) risk factors, undergo revascularization at lower rates, and have higher rates of major amputation. This study compares outcomes after open surgical revascularization within the BEST-CLI Trial between Hispanic and Non-Hispanic White patients.

Methods: In a secondary analysis, cohorts were stratified (Cohort 1: suitable single segment GSV, N=484; Cohort 2: lack of suitable single segment GSV, N=150) by ethnicity and examined for the following 1-year endpoints: 1) major amputation; 2) major reintervention; 3) major adverse limb event (MALE, composite of major amputation and major reintervention); and 4) survival by an 'as treated' analysis. Cox regression models were constructed to determine the association between Hispanic ethnicity and selected endpoints.

Results: 634 patients underwent open surgical bypass, 528 (83.3%) were Non-Hispanic White and 106 (16.7%) were Hispanic. Compared to White patients, Hispanic patients were younger (64.6+/-8.6 vs 68.5+/-9.6, p<0.001), had a higher proportion of diabetes (91.5% vs 66.3%, p<0.001), were more never smokers (44.3% vs 16.2%, p<0.001), and were more often on dialysis (15.1% vs 6.8%, p=0.005). Preoperative ankle brachial index was higher among Hispanic patients (0.7+/-0.4 vs 0.5+/-0.3, p<0.001). After controlling for age, sex, diabetes, dialysis, smoking history, infrapopliteal disease, WIFI Stage, and previous lower extremity revascularization, Hispanic ethnicity was not significantly associated with major amputation (aHR 0.67; 95% CI 0.30-1.48), major reintervention (aHR 0.81; 95% CI 0.35-1.87), MALE (aHR 0.64; 95% CI 0.34-1.21), or survival (aHR 0.69; 95% CI 0.42-1.13).

Conclusions: Disparities in limb-related outcomes were not observed for Hispanic patients in the BEST-CLI Trial. Future PAD clinical trials should capture metrics of access to care, and timeliness of care for assessing risk of disparate outcomes among PAD populations.

35. Toe Brachial Indices Are an Accurate Peripheral Artery Disease Screening Tool in Vascular Deserts

Carolina Aparicio, MD[1], Caitlin W. Hicks, MD, MS[3], Clara Gomez-Sanchez, MD[2], Aaron Zaldana, MD[1], Tomas Alamin, BS[2], Leigh Ann O'Banion, MD[1]

1. *Division of Vascular Surgery, Department of Surgery, University of San Francisco California- Fresno Branch Campus*
2. *Division of Vascular Surgery, Department of Surgery, University of San Francisco*
3. *Johns Hopkins University*

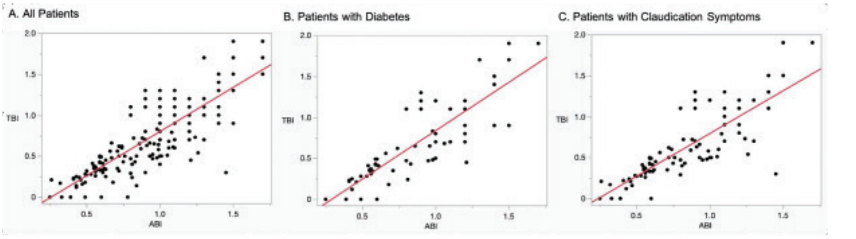
Objective: Screenings in vascular deserts (VD) are necessary to address issues of health literacy and poor access to care in high-risk socioeconomically disadvantaged populations. Guidelines suggest focused screening for peripheral artery disease (PAD) utilizing ankle brachial index (ABI). This study aims to evaluate toe brachial indices (TBI) as an accurate way to effectively screen this patient population.

Methods: We screened patients for PAD at events in VD. Demographics and risk factors for PAD were collected along with ABI and TBI measures. These were combined with 50 new patients seen in the vascular clinic (VC) for a diagnosis of PAD who also underwent ABI/TBI testing. ANOVA and correlation analyses were used to assess relationships between ABI and TBI overall and among patients without NC, stratified by diabetes status and claudication symptoms.

Results: 99 patients were screened for PAD (49 VD, 50 VC). 54% were Hispanic. The average age was 60, with 38% smokers and 36% with a diagnosis of diabetes or a screened HbA1c of >5.7%. 50% of patients reported symptoms of claudication. There were significant and graded associations of TBI with ABI: among patients with ABI<0.9, mean TBI was 0.38 (95% CI 0.31, 0.45), compared to 0.90 (95% CI 0.84, 0.96) among patients with 0.9<ABI<1.4, and 1.33 (95% CI 1.18, 1.48) among patients with ABI>1.4 (P<0.001). There was a strong correlation between ABI and TBI (Pearson's correlation coefficient [PCC] 0.82, P<0.001) overall and among patients with measurable ABI (PCC 0.83, P<0.001), but not among patients with NC ABIs (PCC 0.38, P<0.001). Results were similar in subgroups stratified by diabetes status and claudication symptoms (both, P<001; Figure 1).

Conclusion: TBIs closely mirror ABIs, and are an efficient tool to screen for PAD. This method provides an accurate assessment of patients at risk for PAD, particularly those with DM and non-compressible vessels, and can provide valuable information to providers in VDs.

Figure 1. Correlation between ABI and TBI overall and among patients with diabetes and claudication symptoms.



36. Applying Mobility Prediction Models to Real World Patients with Major Amputations

Caroline Runco, DO[1], Leigh Ann O'Banion, MD[1], Carolina Aparicio, MD[1], Jessica P. Simons, MD, MPH[2], Karen Woo, MD, PhD[3]

1 University of California, San Francisco Fresno, Fresno, CA
2 University of Massachusetts, Worcester, MA
3 University of California, Los Angeles, Los Angeles, CA

Background: Outcome prediction models have become commonplace and are promoted to aid in counseling patients. The aim of this study is to evaluate the performance of existing mobility prediction models for post-major amputation (MA) patients in a real world, socioeconomically disadvantaged population.

Methods: A retrospective review of patients with MA secondary to peripheral arterial disease from 2016-2022 was performed. Patients who were non-ambulatory pre-MA or with contralateral MA were excluded. 3 published prediction models were investigated: 1) AmpPredict (predicts 1 yr mobility) and 2) AMPSIMM, (predicts degree of mobility with prosthesis at 1 yr), both derived from Veteran's Affairs (VA) data; and 3) a Vascular Quality Initiative (VQI) data-derived model (predicts 1 yr mobility). Predicted mobility rates vs actual mobility rates were compared.

Results: The study cohort consisted of 126 patients, 71% male, 60% non-white race, with a mean state Area Deprivation Index of 9/10. Baseline characteristics were significantly different between the study and derivation cohorts (Table I). Actual mobility at 1 yr was 43%. Of the 38 patients with an AmpPredict 1 yr mobility of ≥70%, 45% actually achieved mobility. Of 101 patients with a "high" predicted probability from the VQI score (≥71%), 48% achieved mobility. The mean difference between AmpPredict and VQI for a given patient was 36% (range 1-81). AMPSIMM predicted 87% of patients would be community (vs home) ambulators at 1 yr and 32% of patients actually achieved community ambulation (Sens 91%, Spec 14%, PPV 33%, NPV 79%).

Conclusion: Published models dramatically overestimated the likelihood of mobility in our patient cohort. This may be related to demographics/comorbidities of our cohort being significantly different from the derivation cohorts. We recommend caution when applying prediction models to a population with significantly different characteristics from the population used to derive the model.

	Study Cohort (n=126)	AMP Predict VA Database (n=200)	VQI Database (n=2055)	AMPREDICT PRO VA Database (n=357)
Below Knee Amputation	96 (76%)	111 (56%)	1366 (66%)	266 (75%)
Male Sex	90 (71%)	192 (96%)	1370 (67%)	339 (95%)
Non- White Race	75 (60%)	48 (24%)	848 (41%)	102 (29%)
Preoperative				
Ambulation	126 (100%)	200 (100%)	1018 (50%)	357 (100%)
Coronary Artery Disease	68 (54%)	56 (28%)	635 (31%)	190 (53%)
Married	52 (41%)	105 (53%)	-	163 (47%)
Preoperative Antiplatelet Use	34 (27%)	-	1474 (73%)	-
Diabetes	102 (81%)	156 (78%)	1364 (66%)	322 (90%)
Dialysis	31 (25%)	20 (10%)	307 (15%)	27 (8%)
Smoker	65 (52%)	61 (31%)	1215 (59%)	228 (64%)

37. Factors Associated with Vascular Testing Prior to Major Lower Extremity Amputation in Diabetic Foot Ulcer Patients

Tze-Woei Tan, MD, Hanke Zheng, William Padula, Seth Seabury, David Armstrong

University of Southern California, Los Angeles, CA

Objectives: This study investigates factors associated with the receipt of vascular testing within 12-month prior to major amputation in patients with diabetic foot ulcers (DFUs).

Methods: This retrospective analysis utilized 2010 to 2021 Optum dataset to identify DFU patients who underwent major amputation. The main outcome was receipt of vascular testing (ABI, toe pressure, duplex, CT angiography, or MR angiography) within 12 months before amputations. Multivariate regression analyzed factors associated with pre-amputation testing, including race/ethnicity, comorbidities, DFU severity, income, and education level.

Results: The study sample included 13,711 DFU patients who underwent amputations. Within 12 months pre-amputation, 72.9% received vascular testing (50.8% arterial duplex and 49.4% ABI/toe pressure), and 36.6% underwent revascularization procedures (84.5% endovascular, 31.6% open, 5.9% both) after testing. Patients receiving vascular testing were older, more likely to be Hispanic, had Medicare Advantage, lower education level/income, and presented with gangrene (Table). In multivariable analysis, age (OR 1.02, 95% CI 1.02-1.03), gangrene (OR 2.64, 95% CI 2.42-2.89), and renal failure (OR 1.38, 95% CI 1.23-1.54) were associated with pre-amputation vascular testing. Although there was no association between race and education level, Black patients with education level below high school (OR 0.78, 95% CI 0.63-0.97) were significantly less likely to receive vascular testing prior to amputations.

Conclusions: In this retrospective study, 27% DFU patients underwent major amputations without receiving vascular testing. Older age, presence of gangrene, and comorbidities were associated with a higher likelihood of receiving pre-amputation vascular testings. However, Black patients with lower education levels were less likely to receive vascular testing, highlighting the need for improved management of DFU patients, particularly among underserved populations.

Measure	Overall	No Screening	With Screening	P value	No Revascularization	With Revascularization	P value
Unique Patients	100%	37.2%	72.9%		63.4%	36.6%	
Age, year							
Mean	68.7	65.9	69.8	**	67.5	70.7	**
SD	11.1	11.8	10.6		11.6	9.6	
Range	22-89	24-89	22-89		24-89	22-89	
Male	67.0%	67.7%	66.8%	0.31	67.60%	66.10%	0.07
Race/Ethnicity							
Non-Hispanic White	56.9%	61.1%	55.3%	**	58.6%	53.9%	**
Non-Hispanic Black or African American	22.5%	22.0%	22.7%		22.8%	22.1%	
Non-Hispanic Asian	1.4%	1.5%	1.3%		1.5%	1.1%	
Hispanic	14.6%	10.8%	16.1%		12.6%	18.2%	
Missing/Unknown	4.6%	4.6%	4.6%		4.6%	4.6%	
Region							
Midwest	18.5%	19.5%	18.1%	*	18.9%	17.8%	*
Northeast	10.0%	10.3%	9.9%		9.9%	10.2%	
Southeast	34.5%	35.4%	34.2%		35.4%	33.0%	
Southwest	18.4%	16.1%	19.2%		16.7%	21.3%	
West	18.5%	18.6%	18.4%		19.0%	17.7%	
Unknown	0.1%	0.1%	0.1%		0.1%	0.0%	
Medicare advantage							
Yes	83.8%	78.0%	86.0%	**	81.6%	87.6%	**
Insurance type							
Managed care	30.7%	28.8%	31.3%	**	31.3%	29.5%	**
PPO	16.7%	21.9%	14.7%		18.1%	14.1%	
Other	52.7%	49.2%	54.0%		50.6%	56.4%	
Education							
High School or below	43.2%	41.8%	43.8%	0.03	42.7%	44.1%	0.12
Above high school	53.4%	55.0%	52.8%		53.9%	52.6%	
Unknown	3.4%	3.3%	3.4%		3.4%	3.3%	

Household Income Range							
<$40K	40.5%	38.6%	41.3%	*	40.4%	40.7%	*
$50-75k	28.0%	27.9%	28.0%		26.8%	30.0%	
>75k	18.4%	20.3%	17.7%		18.7%	17.8%	
Unknown	13.1%	13.2%	13.0%		14.0%	11.5%	
Comorbidities							
Hypertension	84.1%	80.0%	85.6%	**	82.4%	87.0%	**
hyperlipidemia	80.0%	74.8%	82.0%	**	77.4%	85.4%	**
Stroke	30.3%	21.2%	33.7%	**	27.2%	35.7%	**
CKD	54.8%	48.2%	57.3%	**	52.8%	58.3%	**
ESRD	17.5%	11.8%	19.7%	**	14.9%	22.1%	**
CHF	44.1%	35.9%	47.1%	**	41.8%	48.1%	**
OPRC	22.2%	18.0%	23.7%	**	20.5%	25.1%	**
AMI	15.1%	11.0%	16.6%	**	12.9%	18.8%	**
Cancer	20.0 %	17.0%	21.1%	**	18.1%	23.2%	**
DFU Severity							
Osteomyelitis	21.9%	22.8%	21.6%	0.13	22.5%	20.9%	0.03
Gangrene	70.8%	53.7%	77.2%	*	63.8%	83.0%	*

* $p < 0.001$; ** $p < 0.0001$.
CKD, chronic kidney disease; ESRD, end-stage renal disease; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; AMI, acute myocardial infarction.

NOTES

CONSTITUTION & BYLAWS

CONSTITUTION & BYLAWS

ARTICLE I – NAME
The name of this corporation is the Western Vascular Society (hereinafter the "Society").

ARTICLE II – PURPOSE
The Purpose of the Society shall be: (1) to promote study and discussion of the art and science of vascular and endovascular surgery; (2) to promote the pooling of the experience and knowledge of the membership; (3) to identify and promote diversity, equity and inclusion in vascular and endovascular surgery; (4) to encourage and promote dissemination of knowledge concerning the field of vascular and endovascular surgery to trainees (medical students, residents, and fellows); (5) to hold annual meetings of the membership; (6) to and engage in any and all lawful activities that may be incidental or related to the foregoing and to have and exercise all powers and authority now or hereafter conferred upon not-for-profit corporations under the laws of the State of California.

Notwithstanding the foregoing, (1) no part of the Corporation's net earnings or assets shall inure to the benefit of any member, director, officer, or other person, except that the Corporation shall be authorized and empowered to pay reasonable compensation for services rendered and to make other payments and distributions in furtherance of the purposes set forth above, and (b) the Corporation shall not carry on any activity not permitted to be carried on by an organization exempt from federal income tax under section 501 (c) (6) of the Internal Revenue Code of 1954, as amended (the "Code") or the corresponding provision of any further United States revenue statute.

WVS Advocacy Statement: *The Western Vascular Society strives toward diversity among its membership and to foster perspectives to model a positive impact on each other, our communities, and our vascular world. The WVS respects and encourages inquiry and supports ongoing dialog among our leadership, members and associates, while acknowledging and embracing our unique differences."*

ARTICLE III – MEMBERSHIP

1. Members shall be drawn from the Western states, provinces, and the Pacific Rim. This will be defined as follows: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oklahoma, Oregon, Utah, Washington, Wyoming, Alberta, British Columbia, and the Pacific Rim.
   Exception to this rule is in the case of any active-duty military personnel who are welcome to membership regardless of their geographic location.

   There shall be six types of members: Active, Senior, Honorary, Associate, Candidate and Adjunct.

2. **Active Members.** Active membership of this Society shall be limited to surgeons who practice primarily vascular surgery, who are in good moral and ethical standing in their community as judged by members of the Society. Candidates for membership shall be certified by the Vascular Surgery Board of the American Board of Surgery or the Royal Canadian College of Surgeons Certificate of Special Competence in Vascular Surgery. In exceptional cases, the Membership Committee may elect to accept equivalent periods of training for formal certification. Active members shall be bound to meeting attendance rules and required to pay annual dues. Active members may hold office, have voting privileges, can serve on committees, can sponsor new member applications, as well as submit and sponsor papers for presentation at the annual meeting.
   a. Prospective active members should have completed a minimum of one (1) year of practice in the geographic confines of the Society after vascular surgery training before applying for membership.
   b. The prospective active member should meet one or more of the following three (3) criteria to be considered for active membership:

      <u>Excellence in Clinical Care</u> – this can be reflected by letters from colleagues and collaborators, regional reputation, years in practice, peer-recognition awards (Chief of Staff, senior surgeon in group, HMO recognition award), service on peer-review organizations, case lists and outcomes, community involvement or participation in clinical trials.

Contributions to Vascular Science – this can be reflected by peer-review publications, non-profit or federal grant support, invited lectures, professorships, faculty appointments, invited publications, participation in clinical trials, device development, active participation in local/regional vascular societies participation in Society for Vascular Surgery Vascular Quality Initiative (SVS VQI) data collection, or serving on hospital committees.

Contributions to Vascular Education – this can be reflected by teaching responsibilities at a vascular or general surgery training program, hospital grand rounds, seminars, proctorship of new vascular procedures or other lectureships.

3. **Senior Members.** Senior members shall consist of active members who have reached the age of sixty-five (65) or who for reasons of health or other just cause, the Council recommends for classification in this category. Senior members shall also be bound to meeting attendance rules and working senior members shall continue to pay annual dues until such time as they have notified the Secretary-Treasurer that they have left active practice and retired. Retired senior members shall not be bound by the requirements for attendance at meetings. Senior members may hold office, have voting privileges, can serve on committees, can sponsor new member applications as well as submit and sponsor papers for presentation at the annual meeting.

4. **Honorary Members**. Honorary membership may be conferred by the Executive Council upon individuals who have distinguished themselves by outstanding achievement in the field of vascular science. Honorary members shall not be bound by the requirements for attendance at meetings. They shall have no voting privileges, cannot serve on committees, nor shall they be required to pay dues. Honorary members may not hold office or serve on committees.

5. **Associate Members**. Associate members of the Society shall consist of those individuals who were previously active members but have moved out of the geographic limits of the Society. Associate members shall not be bound by the requirements for payment of dues and for attendance at meetings. They shall have no voting privileges, nor shall they be

required to pay dues. Associate members may not hold office or serve on committees.

6. **Candidate Members.** Candidate membership may be conferred upon vascular surgery residents and fellows in accredited vascular surgery training programs in the Western Vascular Society region and vascular surgery physicians graduated from accredited vascular surgery programs who do not meet qualifications for active membership. Candidate members may present papers at the annual meeting if sponsored by an active member. Candidate members shall not be bound by the requirements for payment of dues and attendance at meetings. Candidate members may not hold office but may serve on committees. Candidate members who move out of the region of the Society shall cease to be candidate members. Candidate members shall have a maximum term of three consecutive years following completion of training.

7. **Adjunct Members**. Adjunct membership will be granted to those individuals including allied health professionals, who are not vascular surgeons but have made and continue to make meaningful contributions to the science and clinical practice in the field of vascular disease. This category may include non-M.D.s who are working in the field of research. It will also include physicians who actively practice and publish in the field of non-surgical treatment of vascular diseases. Adjunct members shall not be able to hold office, not have voting privileges, not participate on committees, and not be required to pay annual dues.

ARTICLE IV – SELECTION OF MEMBERS

Qualification for membership in the Society will be judged primarily upon evidence of a prospective member's scholarly contributions to the vascular surgery literature.

1. **Active Members**:

The process of election of active members of the Society shall be as follows:

a. Applications for membership shall be available only by request of a member and shall be provided by the Secretary-Treasurer

and available on the Society website.

b. Application including the curriculum vitae of the candidate, two (2) endorsers and a sponsor shall be in the hands of the Secretary-Treasurer at least three (3) months before the executive session at which it is desired that the candidate be considered for election. Applicants must be supported by letters from the sponsor and each endorser.
c. The Secretary shall send to the Chairperson of the Membership Committee these applications with all pertinent data, including supporting letters, at least two (2) months before the annual meeting. The Membership Committee shall review the professional qualifications of the candidates. An additional letter shall be forwarded to the Secretary from the candidate's sponsor for each year that the application remains active.
d. The list of candidates with the data concerning them shall be circulated by the Secretary to all active and senior members of the Society at least one (1) month before the annual meeting.
e. The Chairperson of the Membership Committee shall meet with the Council for the purpose of presenting the recommendations of the Membership Committee.
f. The names of the candidates recommended by the Council for election shall be submitted by the Secretary to the membership in their annual report at the executive session of the Society.
g. Election to the membership shall be by secret ballot, by a three-fourths affirmative vote of the membership present and voting at the annual executive session.
h. A candidate who fails election at one meeting may be presented to the membership at the next two (2) annual meetings of the Society. If they fail election a third time, their name shall be dropped from the list of applications for membership. Such candidate's application may be resubmitted after an interval of two (2) years.

2. **Honorary members**:
   a. Any active or senior member may nominate an individual for honorary membership. The name and brief description of the accomplishments of the nominee must be submitted to the Secretary-Treasurer at least six (6) months prior to the

annual meeting for circulation to an Honorary Membership Committee, which consists of the three (3) past presidents on the Council.

b. The Honorary Membership Committee shall make its recommendations to the Council.
c. Following its deliberation, the Council may recommend that the candidate's name be submitted by the Secretary-Treasurer to the membership in their annual report presented at the executive session of the Society.
d. Election to membership shall be by secret ballot, by a three-fourths affirmative vote of the membership present and voting at the annual Executive Session.

3. **Associate members**:
   a. Any active member in good standing, who leaves the geographic area of the Western Vascular Society, may request transfer in status to associate membership. If a member fails to request such a transfer the member will automatically be dropped from the membership roster.

4. **Candidate members**:
   a. Application forms for candidate membership shall be available to vascular surgery program directors and shall be provided by the Secretary-Treasurer and available on the society website. Completed application forms signed by the proposed Candidate and the proposed Candidate's Program Director shall be delivered to the Secretary-Treasurer. Completed applications shall be reviewed by the Membership Committee, which has the right to accept or reject any application for inclusion in the Society. Once approved by the membership committee and the Executive Council, applicants may be members of the Candidate Group so that they may be invited to the annual meeting. A member of the Candidate Group achieving certification of Vascular Surgery will be asked to become an active member once application criteria are met.

5. **Adjunct members**:
   a. The process of election shall be the same as for active members.

ARTICLE V – BOARD OF DIRECTORS ("COUNCIL")

1. The Board of Directors of the Society shall be called the Council.
2. The Council shall be composed of the President, the President-Elect, the Secretary-Treasurer, the Recorder, and the three (3) most recent available past presidents.
3. The Council shall be the governing body of the Society and shall have full power to manage and act on all affairs of the society except as follows:
    a. It may not without the approval of the Society membership at an annual executive session alter the initiation fees or annual dues, or levy any assessments against the membership, except that it may, in individual cases, waive annual dues or assessments.
    b. It may not amend the Articles of Incorporation or Bylaws.
    c. It may neither elect new members nor alter the status of existing members, other than to apply the provisions of Article XI.
4. The President of the Society shall serve as Chairman of the Council and the Secretary-Treasurer of the Society as its Secretary.
5. Meetings of the Council shall be held at the call of the President of the Society, and each member of the Council must be notified electronically or in writing of the time and place of each such meeting.
6. The annual meeting of the Council shall precede the Executive Session of the Society membership.
7. A majority of the voting members of the Council shall constitute a quorum for the transaction of business. Voting can take place electronically via email or poll.
8. The act of a majority of the members of the Council present at a duly called meeting at which a quorum is present shall be the act of the Council, unless the act of a greater number of required by applicable statute, the Articles of Incorporation, or these Bylaws.
9. Any action which is required by law or the Articles of Incorporation or these Bylaws to be taken at a meeting of the Council, or any other action which may be taken at a meeting of the Council, may be taken without a meeting if a consent in writing, setting forth the action taken, shall be signed by all the members of the Council entitled to vote with respect to the subject matter thereof.

Any consent signed by all the members of the Council shall have the same force and effect as a unanimous vote of a duly called and constituted meeting of the Council.

ARTICLE VI – OFFICERS

1. The Officers of the Society shall be a President, a President-Elect, a Secretary-Treasurer, and a Recorder, all to be elected as provided in these Bylaws. Said officers shall serve ex-officio as voting members of the Council.
2. All Officers of the Society shall be elected for terms of one (1) year each. Secretary-Treasurer and Recorder both serve three (3) year terms. The President may not serve more than one (1) term.
3. Officers of the Society shall be nominated by the Nominating Committee that shall present the slate to the membership at the Executive Session of the annual meeting. Additional nominations may be made from the floor of the Executive Session each year. The election shall take place at the Executive Session and election shall be by a majority of the votes cast.
4. The President shall preside at meetings of the Society and the Council, preserve order, regulate debates, announce results of elections, appoint committees not otherwise provided for, sign Certificates of Membership, and perform the duties of the President's office.
5. The President-Elect, in the absence or incapacity of the President, shall perform the duties of the President's office.
6. In the absence of both the President and the President-Elect, the Chairperson shall be taken by a Chairperson Pro Tem, elected by such members of the Council as are present.
7. The Secretary-Treasurer shall ensure proper archiving of the minutes of the meetings of the Society and Council, attest all official acts requiring certification; notify officers and members of their election; conduct correspondence; take charge of all papers not otherwise provided for. At least thirty (30) days but not more than forty (40) days prior to each annual or special meeting they shall distribute all members of the Society a program of the forthcoming meeting. They shall compile a written report to be read at the annual Executive Session of the Society, to include a list of candidates proposed for membership, as approved by Council. They shall ensure receipt of

all moneys and funds belonging to the Society; ensure payment of all bills; ensure rendering of bills for dues and assessments as soon as possible after the annual meeting; and report to the Council at each annual meeting the names of all members in arrears as to dues. They shall prepare a written report of the finances of the Society to be presented at the Council Meeting and at the Executive Meeting.

8. The Historian shall serve a five-year term and will be appointed by the President. It shall be the duty of the Historian to assemble and preserve the Archives of the Society for storage and reference. The archives shall consist of the roster of the members of the society since its inception and photographs as are available. It shall be their duty to secure and file a photograph of each new member. At the request of the President, the Historian may be asked to provide an appropriate historical comment at either the executive session or the regular meeting. The records of the Western Vascular Society are preserved at the society headquarters and at the UCLA Medical Center by the archivist of the Louise Darling Library.
9. The Recorder shall ensure receipt of all papers and reports of discussions on papers presented before the Society. The Recorder, together with the Program Committee, shall ensure submission of manuscripts to the Journal of Vascular Surgery for publication.

ARTICLE VII – COMMITTEES

1. Standing committees of the Society shall consist of a
   Membership Committee
   Nominating Committee
   Diversity, Equity, and Inclusion Committee
   Vascular Surgery Interest Group Committee
   Program Committee
   Local Arrangements Committee for the annual meeting.

   a) **Membership Committee**. The Membership Committee shall consist of three (3) members who shall be appointed by the President to serve overlapping terms of three (3) years each. The Secretary-Treasurer shall be an ex officio member of the membership committee. The senior member in service on this Committee shall be the Chairperson. Nominations to the Membership Committee

shall be made by the Nominating Committee which shall present the slate to the membership at its annual business meeting. Election shall be by a majority of votes cast at the Executive Session. The functions of the Committee shall be to pass upon the professional and ethical qualifications of the applicants and to advise the membership of these recommendations. One (1) Candidate Member-at-Large shall be appointed by the President to serve for one (1) year.

b) **Nominating Committee.** The Nominating Committee shall consist of the three (3) most recent available past Presidents. The Committee shall be appointed by the President one (1) month before the annual meeting. Its function shall be to make up a slate of officers to be presented at the annual business meeting to the membership.

c) **Diversity, Equity, and Inclusion Committee**. The Diversity, Equity and Inclusion Committee shall consist of three (3) members who shall be appointed by the President to serve overlapping terms of one (1) year each. The senior member in service on this Committee shall be the Chairperson. One (1) Candidate Member-at-Large shall be appointed by the President to serve for one (1) year.

d) **Vascular Surgery Interest Group Committee.** The Vascular Surgery Interest Group Committee shall consist of three (3) members who shall be appointed by the President to serve overlapping terms of one (1) year each. The senior member in service on this Committee shall be the Chairperson. One (1) Candidate Member-at-Large shall be appointed by the President to serve for one (1) year.

e) **Program Committee.** The Program Committee shall consist of four (4) members who shall be appointed by the President to serve overlapping terms of four (4)

years each. The senior member in term of service on this Committee shall be the Chair. The President, Secretary-Treasurer and Recorder shall be ex officio members of the Program Committee. The function of the Program Committee shall be to solicit presentations from members and other individuals and to make up the program for the annual meeting. The appointed members of the Program Committee shall serve as an advisory committee to act, with the Recorder, to ensure editorial review of the submitted manuscripts.

f) **Local Arrangements Committee.** The Chair of the Local Arrangements Committee for the annual meeting shall be appointed by the President and the members of the Committee shall be appointed by the Chair. These individuals will consist of members resident in the general locality in which the annual meeting is to be held, together with the President, the Secretary-Treasurer, acting ex officio. The function of this Committee shall be the making of the general arrangements for the annual meeting.

2. The Council may from time to time establish such other Committees as it deems advisable. Each such Committee shall consist of such persons and shall have such duties and the Council upon establishment of the Committee from time to time may designate powers as thereafter. Unless otherwise provided by the Council, the President shall appoint the members of each such Committee.
3. Any vacancy occurring among the members of any elected Committee of the Society shall be filled by appointment by the President. The Appointee will serve until the next annual meeting of the Society membership.

ARTICLE VIII – MEETINGS

1. The annual meeting of the Society shall be held at a time and place to be determined by the Council at least one year in advance.
2. The Council shall meet on the day prior to the annual meeting, at a time and place designated by the President. The Chair of the Membership Committee, the Nominating Committee and the Local Arrangements Committee shall meet with the Council in an advisory capacity.
3. Twenty (20) voting members present in person shall constitute a quorum at a meeting of the membership.
4. The vote of a majority of the votes entitled to be cast by the members present at a duly called meeting at which a quorum is present shall be necessary for the adoption of any matter voted upon by the members, unless a greater proportion is required by the applicable statute, the Articles of Incorporation, or the Bylaws.
5. Members may not cast their votes by proxy. Voting can be done via electronic means.
6. The Executive Session of the Society, attendance at which shall be limited to active, senior, and honorary members, shall be held at a time and place to be set by the President. The business of the Society shall be conducted at that time.
7. The scientific session of the annual meeting shall consist of original presentations of papers and the discussion of these papers. An active or senior member must be a participant, co-author or sponsor of each presentation selected.
8. Special meetings of the Society may be called at any time by the President. The President must call a special meeting whenever it is requested to do so in writing by ten (10) members of the Society in good standing.
9. Notice of any Executive Session of any annual or special meeting of the Society shall be given to each member of the Society not less than thirty (30) nor more than forty (40) days prior to the Executive Session by written or printed notice delivered personally or by mail, by or at the direction of the Council, the President or the Secretary -Treasurer. Such notice shall state the place, day, and hour of the Executive Session and in the case of a special meeting shall also state the purpose or purposes for which the Executive Session is called.

10. The Council may, by majority vote, revoke the membership of any active member who shall have been absent from three (3) consecutive meetings of the Society without providing the Secretary-Treasurer with an acceptable written explanation of such absence. An active member shall receive a warning letter from the Secretary-Treasurer following two (2) consecutive unexcused absences from the annual meetings, and the Secretary-Treasurer shall, within thirty (30) days after revocation of any active membership pursuant to this section, send written notice of such action to the individual whose active membership has been so revoked. In addition, to emphasize the importance of scholarly participation, it shall be the requirement for each member to be a named author of at least one abstract during a four-year term or to be a named discussant of a paper selected for presentation. An active member shall receive a warning letter from the Secretary-Treasurer following three (3) consecutive years in which the member has failed to participate as described above. The Secretary-Treasurer shall, within thirty-(30) days after revocation of active membership pursuant to this section, send written notice of such action to the individual whose active membership has been so revoked. Any person whose active membership has been revoked by the Council pursuant to this section may, within six (6) months after such revocation, send to the Secretary-Treasurer a written request that the Council at its next meeting reconsider its decision. Such a request must be accompanied by a written statement for the reasons for the consistent absence or lack of participation from annual meetings of the Society. If the Council, upon reconsideration, determines by a majority vote that reinstatement is appropriate, the individual shall be reinstated as an active member upon payment in full of any outstanding dues or other financial obligations to the Society, including any such obligations which may have arisen during the period in which the revocation was in effect.
11. The societies current President and Recorder will moderate the first Scientific Session of the Annual Meeting. The incoming President-Elect and current Recorder will moderate the final Scientific Session of the Annual Meeting. All other moderators for all other sessions will consist of and be chosen by the Program Committee.

ARTICLE IX – INVITED GUESTS

1. A member of the Society may invite one or more guest(s) to attend the Annual Meeting of the Society. Should a member wish to tender an invitation, formal request must be made to the Secretary-Treasurer to send a written invitation to the individual identified by the member. No guest will be admitted to the scientific sessions and/or social events without a formal or email invitation and active registration for the annual meeting.
2. The names of all guests attending the Annual Meeting shall be entered under a separate heading in the attendance list.
3. All invited guests shall be given the privilege of the floor by the President but shall not be present at the Executive Session.

ARTICLE X – FEES AND DUES

1. Initiation fees, dues and assessments shall be levied by the Council and approved by the membership at the annual Executive Session.
2. Any member of the Society in arrears as to dues for one (1) year shall be notified of that fact by the Secretary- Treasurer, by email and registered letter, which shall contain a copy of this Section 2. If the dues are not paid before the next annual Council meeting, or some reasonable explanation of the delinquency is not forthcoming, the name of the delinquent member shall be presented at the Council meeting and on a majority vote of the Council the name may be stricken from the membership list. The Council may reinstate the delinquent member upon payment of the dues in arrears.

ARTICLE XI – RESIGNATIONS AND DISCIPLINE

1. Resignation of members not in arrears as to dues may be accepted at any annual meeting of the Society by a majority vote of the members present.
2. Charges of unprofessional or unethical conduct may be brought against any member of the Society by a written complaint signed by three (3) members of the Society and delivered to the Secretary-Treasurer. The Council shall establish the rules governing disciplinary proceedings based upon such charges from time to time.

ARTICLE XII – PAPERS AND REPORTS

1. All papers and reports read before the Society shall be submitted to the Journal of Vascular Surgery (JVS) prior to the time of their presentation at the Annual Meeting. The Recorder shall be responsible for ensuring the submission of these manuscripts.
2. No paper shall be submitted for publication as having been read before the Society, unless it has been read before the Society.
3. Final submission of a manuscript to the JVS must be done within 2 months of the presentation at the annual meeting. The exception would be if the revisions suggested at the meeting required more time, in which case the request can be made for an extension. The penalty for no or late submission is ineligible abstract submission to the WVS for 1 year.

ARTICLE XIII – PROCEDURE

The proceedings of the Society shall be conducted under Roberts Rules of Order Newly Revised.

ARTICLE XIV – CERTIFICATE OF MEMBERSHIP

Every elected member of the Society shall be entitled to a Certificate of Membership signed by the President and the Secretary-Treasurer and bearing the seal of the Society.

ARTICLE XV – SEAL

This Society shall make, have, and use a seal bearing the name of the Society, the words "Corporate Seal, California," and such other device and description, as the Society shall deem proper.

ARTICLE XVI – NOTICE AND WAIVER OF NOTICE

1. Whenever, under applicable law, these Bylaws, or resolution of the Council, notice is required to be given to any member, Council member or Officer, such notice may be given in writing, by e-mail or standard mail, addressed to such member, Council member or Officer, at their address/electronic address as it appears on the records of the Society. Such mailed notice shall be deemed to be

given when deposited in the United States Mail in a sealed envelope so addressed, with postage therein prepaid.

2. Whenever, under applicable law, these Bylaws, or resolution of the Council, any notice is required to be given, a waiver thereof in writing, signed by the person or persons entitled to such notice. Whether before or after the time stated therein, shall be deemed equivalent to the giving of such notice. In addition, the attendance of a member or Council member at any meeting shall constitute a waiver of notice of such meeting, except where an individual attend the meeting for the express purpose of objecting to the transaction of any business because the meeting is not lawfully called or convened.

ARTICLE XVII – INDEMNIFICATION

1. To the full extent in accordance with the procedure prescribed by the General Not-For-Profit Corporation Act, the Society shall indemnify any and all members of the Council (which members shall hereinafter in this Article be referred to as "Directors") and any and all officers, employees, agents and representatives of the Society for certain expenses and other amounts paid in connection with legal proceedings in which any such person become involved by reason of their serving in any such capacity for the Society.
2. Upon specific authorization by the Council, the Society may purchase and maintain insurance on behalf of any or all Directors, Officers, employees, agents or representatives of the Society against any liability asserted against any such person and incurred in any such capacity, or arising out of the status of serving in any such capacity, whether or not the Society would have the power to indemnify them against such liability under the provisions of Section 1 of this Article.

ARTICLE XVIII – AMENDMENT

These Bylaws may be amended by a three-fourths vote of the members present and voting at a properly called and convened Executive Session at an Annual or Special Meeting of the Society, provided that the proposed Amendment has been submitted to

the Secretary-Treasurer by at least three (3) voting members of the Society at least three (3) months prior to the Executive Session of the Society. The Secretary-Treasurer shall mail the proposed Amendment at least thirty (30) days prior to the Executive Session, accompanied by notice that such Amendment will be acted upon that Executive Session.

ARTICLE XIX – RULES AND REGULATIONS

The Society may enact from time-to-time rules and regulations that will govern the actions of the Society. Such Rules and Regulations shall be enacted, amended, or deleted by a majority (>50%) vote of those attending the annual business meeting. Proposed rules and regulations require notification of the membership no less than 30 days prior to the annual meeting. Amendments to a proposed Rule and Regulation made at the time of the business meeting may be voted upon at the same business meeting and do not require an additional 30-day notification of members. All Rules and Regulations must be in conformity with the bylaws of the Society.

Amended January 2017
Amended May 9, 2019
Amended September 29, 2022
Amended April 4, 2023

SPONSOR ACKNOWLEDGEMENT

Western Vascular Society is grateful for the following companies for the educational grant support:

Boston Scientific

Cook Medical

W.L. Gore and Associates

Western Vascular Society is grateful for the following companies for the exhibit support:

PLATINUM

Abbott Vascular

Cook Medical

Medtronic

Terumo Aortic

W.L. Gore & Associates

GOLD

BD

Boston Scientific

Shockwave Medical

Silk Road Medical

Johnson & Johnson

SILVER

AngioDynamics

Baxter

Asahi Intecc

Cydar Medical

Endologix

Getinge

Penumbra

Shape Memory Medical

Vascular Technology Inc.

FUTURE MEETINGS

40th Annual Meeting
September 14-17, 2025
Ojai Valley Inn, Ojai, CA

For more information:

WESTERN VASCULAR SOCIETY

Administrative Office

1415 Commercial Ave. Ste. 257

Anacortes, WA, 98221 | USA

Telephone: 360-420-6906 | Fax: 360-261-6077

www.westernvascularsociety.org

Printed in the USA