

# PROGRAM



Southern California Vascular Surgical Society

# 40th Annual Meeting

**April 29 – May 1, 2022**

Marriott Coronado Island Resort and Spa  
Coronado, CA

# ACKNOWLEDGEMENT

Southern California Vascular Surgical Society would like to acknowledge the following companies for their educational grant support of our educational program:

**Cook Medical**

**W.L. Gore & Associates**

Southern California Vascular Surgical Society would like to acknowledge the following companies for their exhibit support at our educational program:

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# Southern California Vascular Surgical Society

## **40th Annual Meeting**

April 29 - May 1, 2022

Marriott Coronado Island Resort and Spa

Coronado, CA

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## **History of the Southern California Vascular Surgical Society**

On April 28, 1980, a group of well-known vascular surgeons representing various Southern California areas and local medical schools met for the purpose of forming a regional vascular surgical society. Max Gaspar initiated the first organizational meeting which was held at the Old Ranch Country Club in Long Beach on May 22, 1980. The founding members present were doctors John Ball, Max Gaspar, James McKittrick, Wesley Moore, Herbert Movius, Louis Smith and Richard Treiman. Doctors Wiley Barker, Eugene Bernstein, John Connolly and Peter Samuels were unable to attend.

The second organizational meeting was held at the Los Angeles County Medical Association building on April 12, 1981. A list of prospective members was reviewed and acted upon. Doctor Richard Treiman was selected as acting Secretary. A third organizational meeting was held at Yamamoto Restaurant in Los Angeles on May 13, 1981. The format of annual scientific meetings was discussed. Doctor Louis Smith offered to host the first Annual Meeting at Loma Linda University. The meeting was held at the Jerry L. Pettis Memorial Veterans Administration Hospital in Loma Linda on March 31, 1982. Seventy members and ten guests were in attendance. Doctor Richard Treiman was elected President and Doctor Louis Smith, Secretary.



# Southern California Vascular Surgical Society

## 2022 Executive Council

<b>Theodore Teruya, MD</b> .....	President
<b>Jason T. Chiriano, MD</b> .....	First President-Elect
<b>Jessica O'Connell, MD</b> .....	Second President-Elect
<b>Kevin Patel, MD</b> .....	Secretary/Treasurer (2023)
<b>Juan Carlos Jimenez, MD, MBA</b> .....	Past President
<b>Karen Woo, MD, PhD</b> .....	Past President
<b>Andrew Barleben, MD</b> .....	Recorder

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<b>Nii- Kabu Kabutey, MD</b> .....	Councilor At-Large
<b>Ali Azizzadeh, MD</b> .....	Councilor At-Large
<b>Kelley Hodgkiss-Harlow, MD</b> .....	Councilor At-Large

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<b>Afshin Michael Molkara, MD</b> .....	Membership Committee Chair
<b>Gregory Magee, MD</b> .....	2022 Program Committee Chair

# Meetings of the Southern California Vascular Surgical Society

<b>Year</b>	<b>City</b>	<b>President</b>
1982	Loma Linda	Richard L. Treiman
1983	Los Angeles	Treiman Moore
1984	Los Angeles	Wesley S. Moore
1985	Santa Barbara	James E. McKittrick
1986	Long Beach	Max R. Gaspar
1987	Lake Arrowhead	Louis L. Smith
1988	San Diego	Eugene F. Bernstein
1989	Santa Barbara	Richard A. Lim
1990	Newport Beach	P. Michael McCart
1991	Marina Del Rey	Albert E. Yellin
1992	Dana Point Rey	Wiley F. Barker
1993	Coronado	Robert S. Ozeran
1994	Coronado	Samuel E. Wilson
1995	La Jolla	Ralph B. Dilley
1996	Dana Point	Rodney A. White
1998	La Jolla	John J. Bergan
1999	Ojai	Fred A. Weaver
2000	Indian Wells	D. Preston Flanigan
2001	Santa Barbara	George Andros
2002	San Diego	J. Dennis Baker
2003	Carlsbad	William J. Quinones-Baldrich
2004	La Jolla	Robert J. Hye
2005	La Quinta	Steven G. Katz
2006	Temecula	Jeffrey L. Ballard
2007	Coronado	Willis H. Wagner
2008	Westlake Village	Samuel S. Ahn
2009	Dana Point	Peter F. Lawrence
2010	Carlsbad (North San Diego)	Hugh A. Gelabert
2011	Ranchos Palos Verdes	Roy M. Fujitani
2012	Ojai	Paul L. Cisek
2013	Rancho Mirage	Christian de Virgilio
2014	Carlsbad	Carlos E. Donayre
2015	San Diego	Ahmed M. Abou-Zamzam, Jr.
2016	La Jolla	Vincent J. Guzzetta
2017	Rancho Mirage	Vincent L. Rowe
2018	Laguna Beach	John S. Lane, III
2019	Rancho Mirage	David A. Rigberg
2020	Virtual	Juan Carlos Jimenez
2021	Ojai	Karen Woo
2022	Coronado Island	Theodore Teruya

# Past Leadership of the Southern California Vascular Surgical Society

## Secretary-Treasurers

Louis L. Smith	1982-1985
P. Michael McCart	1985-1988
Robert S. Ozeran	1988-1991
Rodney A. White	1991-1994
D. Preston Flanigan	1994-1998
William J. Quinones-Baldrich	1998-2001
Willis H. Wagner	2001-2004
Roy M. Fujitani	2004-2007
Christian de Virgilio	2007-2010
Niren Angle	2010-2013
Juan Carlos Jimenez	2013-2016
Jason T. Chiriano	2016-2019
Kevin (Kaushal) Patel	2019 -2021

## Recorders

Ahmed M. Abou-Zamzam, Jr.	2006-2009
Theodore H. Teruya	2009-2012
Vincent L. Rowe	2012-2015
Jessica Beth O'Connell	2015-2018
Andrew Barleben	2018-2021

## Councilors

John D. Ball	1982
Wesley S. Moore	1982-1983
James E. McKittrick	1982-1984
P. Michael McCart	1982-1985
Wiley F. Barker	1982-1990
Eugene F Bernstein	1983-1986
Robert S. Ozeran	1984-1987
Robert F. Foran	1985-1988
John S. Pierrandozzi	1986-1989
J. Paul Thomassen	1987-1990
Samuel E. Wilson	1988-1991

# Past Leadership of the Southern California Vascular Surgical Society (continued)

## Councilors (continued)

Ralph B. Dilley	1989-1992
Robert W. Harris	1990-1992
John N. Goodwin	1991-1995
George Andros	1992-1995
Donald D. Bell	1992-1993
Robert J. Hye	1993-1995
Fred A. Weaver	1993-1996
Steven G. Katz	1995-1998
Jeffrey L. Ballard	1995-1999
Robert J. Hye	1996-2000
Roy M. Fujitani	1999-2001
Willis H. Wagner	2000-2001
Carlos E. Donayre	2001-2003
Steven Sparks	2002-2004
Alan Williamson	2001-2004
Samuel S. Ahn	2002-2005
Wayne S. Gradman	2004-2006
Hugh A. Gelabert	2004-2007
James T. Dunn	2005-2008
Stephen R. Lauterbach	2006-2009
Niren Angle	2007-2010
Vincent L. Rowe	2008-2011
Vincent J. Guzzetta	2009-2012
Ian L. Gordon	2010-2013
John S. Lane	2011-2014
David A. Rigberg	2012-2015
Karen Woo	2013-2016
Brian G. DeRubertis	2014-2017
Theodore J. Teruya	2015-2018
Kevin (Kausal) Patel	2016-2019
Christian Ochoa	2017-2020
Scott Musicant	2018-2021
Nii - Kabu Kabutey	2019-2022
Jessica O'Connell	2020-2023
Ali Azizzadeh	2021-2024
Kelley Hodgkiss-Harlow	2021-2024



# Invited Guest Speakers

- 1986 E. Stanley Crawford, MD
- 1987 John Porter, MD
- 1988 Larry Harker MD & Ronald Stoney, MD
- 1989 Larry Hollier, MD & Charles Peterson, MD
- 1990 Norman Hertzler, MD, Eugene Strandness, MD & Christopher Zarins, MD
- 1991 Allan Callow, MD, PhD & Richard Dean, MD
- 1992 Larry Hollier, MD & Ronald Stoney, MD
- 1993 Alexander Clowes, MD & Robert Hobson, MD
- 1994 Frank J. Veith, MD & Enrico Ascher, MD
- 1995 Kaj Johansen, MD, PhD & David Brewster, MD
- 1996 Keith Calligaro, MD & Thomas Fogarty, MD
- 1998 Peter Gloviczki, MD & William H. Pearce, MD
- 1999 Richard Cambria, MD & Kim Hodgson, MD
- 2000 Robert W. Hobson, II, MD & Donald Sliver, MD
- 2001 Peter Bell, MD, Keith Berwick, PhD & Richard M. Green, MD
- 2002 Thomas F. O'Donnell, Jr. MD & Gregorio A. Sicard, MD
- 2003 Enrico Ascher, MD & Anthony J. Comerota, MD
- 2004 K. Craig Kent, MD, Jon S. Matsumura, MD & Murray N. Ross, PhD
- 2005 Bruce A. Perler, MD, MBA
- 2006 Gregory L. Moneta, MD, Brenda K. Zierler, PhD & R. Eugene Zierler, MD
- 2007 Ronald L. Dalman, MD & Hazim J. Safi, MD
- 2008 Sean P. Roddy, MD & Blair Keagy, MD
- 2009 Anton N. Sidawy, MD & Michael S. Conte, MD
- 2010 Jack L. Cronenwett, MD & Roy K. Greenberg, MD
- 2011 R. James Valentine, MD & Daniel Clair, MD
- 2012 W. Darrin Clouse, MD FACS RPVI & Anthony J. Comerota, MD
- 2013 Alan B. Lumsden, MD & Jason T. Lee, MD
- 2014 Timothy A.M. Chuter, MD & Karl A. Illig, MD
- 2015 Elna M. Masuda, MD & David G. Armstrong, DPM, MD, PhD
- 2016 Julie A. Frieschlag, MD & Peter A. Schneider, MD
- 2017 Scott L. Stevens, MD
- 2018 Timothy A. M. Chuter, MD & Matt Thompson, MD
- 2019 Jeffrey Jim, MD, MPH & Malachi G. Sheahan III, MD
- 2020 John Ullmen, PhD & Benjamin W. Starnes, MD
- 2021 Melina Kibbe, MD & Gretchen Schwarze, MD
- 2022 Alik Farber, MD & Mark Nehler, MD

# Robert J. Hye Best Trainee Awards

(BEST PAPER PRESENTATIONS)

## 2021 FIRST PLACE

**The Order of Operative Repair Does Not Influence Outcomes in Patients with Concomitant Popliteal Artery and Orthopedic Injuries**

*Shauna Trinh, MD, Riverside University Health*

## SECOND PLACE TIE

**Opioid Prescription for Index Hemodialysis Access Creation**

*Timothy Copeland, MPP, University of California, Los Angeles*

## SECOND PLACE TIE

**Balancing Outcomes, Costs and Quality of Life in the Treatment of Chronic Mesenteric Ischemia: A Cost-Effectiveness Analysis**

*Christina Cui, MAS, University of California, San Diego*

## SECOND PLACE TIE

**Carotid Duplex is not Warranted Before Transcatheter Aortic Valve Replacement**

*Cameron St. Hilaire, MD, Santa Barbara Cottage Hospital*

## THIRD PLACE

**Endovenous Microfoam Ablation of Truncal Veins with a Large Diameter Saphenofemoral and Saphenopopliteal Junction Results in Excellent Closure and Low Thrombotic Complication Rates**

*Amanda Chin, MD, University of California, Los Angeles*

## 2020 FIRST PLACE

**Anesthetic Choice During Transcarotid Artery Revascularization (Tcar) and Carotid Endarterectomy Impacts Risk of Myocardial Infarction (Mi)**

*RA Marmor MD MAS, University of California, San Diego*

## SECOND PLACE

**Dual Antiplatelet Therapy Is Associated With Increased Risk of Bleeding and Decreased Risk of Stroke Following Carotid Endarterectomy**

*RA Marmor MD, University of California, San Diego*

# Robert J. Hye Best Trainee Awards (continued)

## (BEST PAPER PRESENTATIONS)

### THIRD PLACE

#### **Arteriovenous Fistula Maturation: Physical Exam vs Flow Study**

*BC Caputo MS3, Loma Linda University*

### THIRD PLACE

#### **The Influence of Ethnicity On Outcomes of Peripheral Artery Disease in Southern California**

*JA Gabel MD, Loma Linda University Health*

### THIRD PLACE

#### **Cost-Effectiveness Analysis of Carotid Endarterectomy Versus Transcarotid Artery Stenting**

*CL Cui BS, University of California, San Diego*

2019

### FIRST PLACE

#### **ACS-NSQIP Targeted Database Evaluation of Obesity as a Risk Factor for Endovascular Aortic Aneurysm Repair Outcomes**

*S Maithel, University of California Irvine, Irvine, CA*

### SECOND PLACE

#### **Variations in Lower Extremity Use Endovascular Interventions and Atherectomy by Indication, Site of Service and Geographic Region**

*T Chiou, University of California Los Angeles, Los Angeles, CA*

### THIRD PLACE

#### **Paneled Saphenous Vein Grafts Compared to Internal Jugular Vein Grafts in Venous Reconstruction After Pancreaticoduodenectomy**

*J Pantoja, University of California Los Angeles, Los Angeles, CA*

2018

### FIRST PLACE

#### **Endovascular Reconstruction of the Subclavian Artery for Arterial Thoracic Outlet Syndrome**

**Meena M. Archie, MD**

*Ronald Reagan UCLA Medical Center, Los Angeles, CA*

# Robert J. Hye Best Trainee Awards (continued)

(BEST PAPER PRESENTATIONS)

## SECOND PLACE

### **Early Experience with Fenestrated and Branched Endografts for Endovascular Treatment of Complex Aortic Aneurysms**

**Antonio J. Covarrubias, MD**

*University of California, San Diego, La Jolla, CA*

## THIRD PLACE

### **Debranching of Supra-aortic Vessels with Femoral Artery Inflow for Late Ascending Aortic Rupture**

**Joshua A. Gabel, MD**

*Loma Linda University Medical Center, Loma Linda, CA*

2017

## FIRST PLACE

### **Ultrasound Vein and Artery Mapping by General Surgery Residents During Initial Consult Can Decrease Time to Dialysis Access Creation**

**Kelsey Gray, MD**

*Harbor-UCLA, Torrance, CA*

## SECOND PLACE

### **Most Common Surgical Missteps in the Management of Venous Thoracic Outlet Syndrome Which Lead to Re-Operation**

**Mena Archie, MD**

*UCLA, Los Angeles, CA*

## THIRD PLACE

### **Pre-Operative Cardiac Stress Testing in the So Cal VOICE**

**Kaelan Chan, MD**

*UCLA, Los Angeles, CA*

2016

## FIRST PLACE

### **Dialysis Access Hemorrhage: Access Rescue from Surgical Emergency**

**Tazo Inui, MD**

*University of California, San Diego, La Jolla, CA*

# Robert J. Hye Best Trainee Awards (continued)

(BEST PAPER PRESENTATIONS)

## SECOND PLACE

**Access to Post-Hospitalization Acute Care Facilities Depends on Payer Status for Open Abdominal Aortic Repair and Lower Extremity Bypass in the VQI**

Jesus G. Ulloa, MD

*University of California, Los Angeles, Los Angeles, CA*

## THIRD PLACE

**Significance of Blunted Venous Waveforms Seen on Upper Extremity Ultrasound**

Xuan-Binh D. Pham

*Harbor-UCLA Medical Center, Torrance, CA*

2015

## FIRST PLACE

**The Addition of Ultrasound Arterial Examination to Preoperative Upper Extremity Vein Mapping**

Jerry J. Kim, MD

*Harbor-UCLA Medical Center, Torrance, CA*

## SECOND PLACE

**Differential Endoleaks Rates After Endovascular Treatment of Infraarenal Abdominal Aortic Aneurysm Using Modular Bifurcated and Unibody Stent Grafts**

Phong T. Dargon, MD

*Loma Linda University Medical Center, Loma Linda, CA*

## THIRD PLACE

**Vascular Access Complications Associated With Extracorporeal Membranous Oxygenation**

Allan W. Tulloch, MD

*University of California, Los Angeles, CA*

2014

## FIRST PLACE

**Management of Spontaneous Isolated Visceral Artery Dissection: A Retrospective Review**

Sae Hee Ko, MD

*University of California at San Diego Medical Center, San Diego, CA*

# Robert J. Hye Best Trainee Awards (continued)

(BEST PAPER PRESENTATIONS)

## SECOND PLACE

### **Late Consequences of Type II Endoleak After EVAR**

**Vincent E. Kirkpatrick, MD**

*University California Irvine Medical Center, Orange, CA*

## THIRD PLACE (TIE)

### **The Management of Thoracic Aortic Aneurysms In Patients With Rare Aortic Anomalies Using Endovascular Techniques: Case Report and Review of Literature**

**Ankur Gupta, MD**

*Harbor-UCLA Medical Center, Torrance, CA*

## THIRD PLACE (TIE)

### **A Rare Case of Acroangiokeratosis Associated With A Congenital Arteriovenous Malformation (Stewart-Bluefarb Syndrome) In A Young Veteran: Case Report and Review of the Literature**

**Mark Archie, MD**

*UCLA Medical Center, Gonda (Goldschmied) Vascular Ctr, Los Angeles, CA*

2013

## FIRST PLACE

### **Contemporary Medical Management of Asymptomatic Carotid Artery Stenosis In A Mixed Population**

**Jason Chang MD**

*Kaiser Permanente Southern California, Los Angeles, CA*

## SECOND PLACE

### **A Prospective Randomized Study Assessing Optimal Method For Teaching Vascular Anastomoses Using A High Fidelity Model**

**Samuel Schwartz MD**

*Harbor-UCLA Medical Center, Torrance, CA*

# Robert J. Hye Best Trainee Awards (continued)

(BEST PAPER PRESENTATIONS)

## THIRD PLACE

**Initial Experience With Off Label Use of Commercial Devices In Patients Unfit For Open Repair of Perivisceral Aortic Aneurysms**

**Andrew Barleben MD**

*UCLA Gonda Medical Center, Los Angeles, CA*

## 2012 FIRST PLACE

**Is Heparin Reversal Required for Safe Performance of Percutaneous Endovascular Aortic Aneurysm Repair?**

**Sinan Jabori - Medical Student**

*UCLA, Gonda (Goldschmied) Vascular Center, Los Angeles, CA*

## SECOND PLACE

**Evaluation of Superficial Femoral Artery Remote Endarterectomy For the Treatment of Critical Limb Ischemia In Patients With Limited Autogenous Conduit**

**Neha Sheng MD**

*Jerry L. Pettis VA Hospital, Loma Linda, CA*

## THIRD PLACE

**Claudication In Young Patients: Uncommon Symptoms Suggest Uncommon Pathology**

**Andrew Barleben MD MPH**

*UCLA Gonda (Goldschmied) Vascular Center, Los Angeles, CA*

## 2011 FIRST PLACE

**Impact of Sac Anchoring Prosthesis On Type II Endoleaks Following Endoluminal Exclusion of Abdominal Aortic Aneurysms**

**Houman Sahedi, MD**

*Harbor-UCLA Medical Center, Torrance, CA and Nellix International Investigators*

# Robert J. Hye Best Trainee Awards (continued)

(BEST PAPER PRESENTATIONS)

## SECOND PLACE

### **Outcomes of Retrieval Intent of Optional Inferior Vena Cava Filters: A Single Center Experience**

Abid C. Mogannam

*UC Irvine Medical Center, Irvine, CA*

## THIRD PLACE

### **Thoracic Outlet Syndrome In the Teenaged Athlete**

Allan Tulloch, MD

*UCLA Medical Center, Los Angeles, CA*

2010

## FIRST PLACE

### **Smaller Common Femoral Artery Diameter In African Americans: Implications For Peripheral Arterial Disease**

Amy M. Tolan, MD

*Harbor-UCLA Medical Center, Torrance, CA*

## SECOND PLACE

### **CTA As the Primary Diagnostic Modality In Penetrating Lower Extremity Vascular Injuries**

Dina Wallin, BA

*Harbor-UCLA Medical Center, Torrance, CA*

## THIRD PLACE

### **Carotid Endarterectomy In Academic Versus Community Hospitals: The NSQIP Data**

Joy Garg, MD

*Scripps Clinic Torrey Pines, La Jolla, CA*

2009

## FIRST PLACE

### **Open Surgical Repair of Renal Artery Aneurysms In the Endovascular Era: A Safe, Effective Treatment For Both Aneurysm and Associated Hypertension**

Ankur Chandra, MD

*UCLA Gonda (Goldschmied) Vascular Center, Los Angeles, CA*



# Robert J. Hye Best Trainee Awards (continued)

(BEST PAPER PRESENTATIONS)

## SECOND PLACE

### **Will Carotid Endarterectomy For Asymptomatic Stenosis Match the Results of Best Medical Management?**

**Karen Woo MD**

*Scripps Green Hospital, La Jolla, CA*

## THIRD PLACE

### **Fasciotomy In Acute Limb Ischemia - Cui Bono?**

**Kelley D. Hodgkiss**

*UCSD Vascular & Endovascular Surgery, San Diego, CA*

## 2008 **Endovascular Management of Mycotic Aortic Aneurysms & Associated Aorto-Aerodigestive Fistulae**

**Wesley K Lew MD**

*USC Vascular Surgery and Endovascular, Therapy, Los Angeles, CA*

### **Regional Variations In the Utilization of Carotid Endarterectomy**

**David P Magner MD**

*Cedars-Sinai Medical Center, Los Angeles, CA*

### **Traumatic Injuries of the Inferior Vena Cava: The 20-Year Experience of a Level I Trauma Center**

**Jessica Deree MD**

*UCSD Division of Trauma/Critical Care, San Diego, CA*

## 2007 **Carotid Reconstruction In Nonagenarians: Is Surgery Still A Good Option?**

**Kelly L. Killeen, MD**

*Cedars-Sinai Medical Center, Los Angeles, CA*

# **Robert J. Hye Best Trainee Awards** (continued)

**(BEST PAPER PRESENTATIONS)**

- 2006     **Effect of Turbulence on Transit-Time Ultrasound Flow  
Waveform – Voltage/Frequency Analysis**  
Scott Tobias, BS  
*University of California, Irvine, Medical Center, Orange, CA*
- 2005     **Increased Incidence of Renal Cysts in Patients with  
Abdominal Aortic Aneurysms: A Common Pathogenesis?**  
Arezou Yaghoubian, BS  
*Harbor-UCLA Medical Center, Torrance, CA*
- 2004     **Endovascular Repair of A Thoracic Aorta Pseudoaneurysm  
Via the Axillary Artery**  
Leoncio Kaw, Jr., MD  
*University of California, San Diego, Medical Center, San Diego, CA*
- 2003     **Superiority of Autogenous Arteriovenous Hemodialysis  
Access: Maintenance of Function With Fewer Secondary  
Interventions**  
Ganesha Perera, MD  
*University of California, Irvine, Medical Center, Orange, CA*

# Program Planning Committee

**Gregory Magee, MD**

## Course Objectives

Topics will be presented which relate to the clinical treatment of vascular surgery patients. Presentations will focus on best surgical practice and expert opinion. At the end of this activity, participants will be able to:

1. Describe treatment modalities for complex aortic aneurysm repair using various techniques.
2. Develop a personal algorithm for treating juxtarenal or more complex aneurysms or a referral center to send these complex patients to.
3. Describe the impact of frailty on patients undergoing infrarenal aortic aneurysm repair.
4. Describe anatomical factors predictive of surgical difficulty in carotid endarterectomy
5. Describe the outcomes of RFA vs. cyanoacrylate embolization on patients with lower extremity venous disease.
6. Describe outcomes of TEVAR in patients on dialysis.

# Accreditation

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of Amedco, LLC and the Southern California Vascular Surgical Society. Amedco is accredited by the ACCME to provide continuing medical education for physicians.

In support of improving patient care, this activity has been planned and implemented by Amedco, LLC and Southern California Vascular Surgical 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.

# Credit Designation Statement

## **Southern California Vascular Surgical Society/SCVSS**

### **2022 Southern California Vascular Surgery Society Annual Meeting**

April 29 – May 1, 2022 | Coronada, CA

#### **Accreditation Statement**



In support of improving patient care, this activity has been planned and implemented by Amedco LLC and Southern California Vascular Surgical 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.

#### **Physicians (ACCME) Credit Designation**

Amedco LLC designates this live activity for a maximum of 7.00 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

#### **American Board of Pediatrics (ABPeds) MOC Part 2 Credits**



Successful completion of this CME activity, which includes participation in the activity, with individual assessments of the participant and feedback to the participant, enables the participant to earn 7.00 MOC Part 2 points in the American Board of Pediatrics' (ABP) Maintenance of Certification (MOC) program. It is the CME activity provider's responsibility to submit participant completion information to ACCME for the purpose of granting ABP MOC credit. Participant must complete the assessment within 30 days of the activity. Participant information will be uploaded to ABP 30 days post activity. **You must request your certificate within 30 days of the activity to meet the deadline for submission to PARS.**

# Notes



# Scientific Program



*Denotes presentation is eligible for the Hye Best Trainee Competition*

# Scientific Program

FRIDAY APRIL 29, 2022

## FRIDAY APRIL 29, 2022

10:00 AM - 4:00 PM

**SOCAL VOICE MEETING**

3:00 PM - 6:00 PM

**SPONSOR AND EXHIBITOR SET UP**

4:00 PM - 5:00 PM

**EXECUTIVE MEETING**

6:00 PM - 7:00 PM

**WELCOME RECEPTION**

7:00 PM - 8:00 PM

**PAST PRESIDENTS DINNER (INVITE ONLY)**



## SATURDAY APRIL 30, 2022

7:00 AM - 9:00 AM

### **BREAKFAST WITH SPONSORS**

7:00 AM - 12:30 PM

### **REGISTRATION**

7:00 AM - 1:30 PM

### **EXHIBITS**

8:00 AM - 9:12 AM

### **SESSION I: AORTA I**

Moderators: G. Magee, MD and T. Teruya, MD



8:00 AM - 8:09 AM

#### **1. CUSTOMIZED LOW DOSE COMPUTED TOMOGRAPHY ANGIOGRAPHY FOR ENDOLEAK MONITORING POST EVAR: OUR TECHNIQUE AND REVIEW OF THE LITERATURE**

Peter Layman, DO, *Kaiser Permanente San Diego*

**Authors:** PF Layman DO, KD Hodgkiss-Harlow MD, A Goyal MD



8:09 AM - 8:18 AM

#### **2. POSTOPERATIVE FEVER IN PATIENTS FOLLOWING ELECTIVE EVAR**

Ashley Lim, MD, *Community Health Ventura*

**Authors:** A Lim MD, M Bilal DO, K Major MD



8:18 AM - 8:27 AM

#### **3. THE IMPACT OF HOUSING INSTABILITY ON ABDOMINAL AORTIC ANEURYSM REPAIR: OUTCOMES IN A VETERAN POPULATION**

Savannah Yeh, BS, *Greater Los Angeles Veterans Affairs*

**Authors:** SL Yeh BS, AJ Chen BA, JG Ulloa MD, HA Gelabert MD, DA Rigberg MD, CM de Virgilio MD, JB O'Connell MD



8:27 AM - 8:36 AM

**4. LASER FENESTRATION IN COMPLEX AORTIC REPAIR: VERSATILE OPTION IN DIFFICULT ANATOMY, EMERGENCIES AND BAILOUTS**

Peter Layman, DO, *University of California, San Diego*

**Authors:** PF Layman DO, AR Barleben MD, D Tew DO, J Hallsten MD

8:36 AM - 8:42AM

**5. UTILITY OF LASER IN-SITU SEPTAL FENESTRATION TO BRIDGE FALSE AND TRUE LUMEN DURING ENDOVASCULAR REPAIR OF AORTIC DISSECTIONS**

Elizabeth Miranda, MD, MPH, *University of Southern California*

**Authors:** E Miranda MD, SM Han MD MS, GA Magee MD MSc

8:42 AM - 8:48 AM

**6. BILATERAL SUBCLAVIAN ARTERY RETROGRADE IN-SITU LASER FENESTRATION IN TEVAR FOR GRADE III BLUNT THORACIC AORTIC INJURY IN THE SETTING OF ABERRANT RIGHT SUBCLAVIAN ARTERY**

Maksim Gusev, MD, *Loma Linda University*

**Authors:** M Gusev MD, R Kar MD, A Murga MD, A Abou-Zamzam MD, B Leong MD, K Mannoia MD, ST Patel MD, TH Teruya MD

8:48 AM - 8:54 AM

**7. UTILIZATION OF RETROGRADE LEFT SUBCLAVIAN BRANCH PORTAL OF GORE TAG THORACIC BRANCHED ENDOPROSTHESIS (TBE) FOR PRELOADED PHYSICIAN-MODIFIED FENESTRATED BRANCHED ENDOVASCULAR REPAIR OF THORACOABDOMINAL AORTIC ANEURYSM**

Elizabeth Miranda, MD, MPH, *University of Southern California*

**Authors:** E Miranda MD, A Pyun MD, GA Magee MD MSc, KR Ziegler MD, J Paige MSN, K O'Donnell MPH, SM Han MD MS

8:54 AM - 9:00 AM

**8. HYBRID REPAIR OF AORTIC ARCH ANEURYSM AND DISSECTION USING NEXUS STENT GRAFT**

Arielle M Lee, MD, *University of California, San Diego*

**Authors:** AM Lee MD, A Barleben MD, MB Malas MD, E Golts MD, JS Lane MD

9:00 AM - 9:06 AM

**9. PRIMARY AORTOPULMONARY FISTULA AS A LATE COMPLICATION OF AORTIC DISSECTION**

Sally Schonefeld, MD, *Cedars-Sinai Medical Center*

**Authors:** S Schonefeld MD, CN Arbabi MD, A Shah MD, E Ray MD, T Imai MD, A Azizzadeh MD

9:06 AM - 9:12 AM

**10. DUAL LUMEN BRANCH STENTING OF A FULLY DISSECTED SUPERIOR MESENTERIC ARTERY DURING FENESTRATED BRANCHED ENDOVASCULAR AORTIC REPAIR OF A POST-DISSECTION THORACOABDOMINAL AORTIC ANEURYSM**

Elizabeth Miranda, MD, MPH, *University of Southern California*

**Authors:** EA Miranda MD, A Pyun MD, GA Magee MD MSc, KR Ziegler MD, K O'Donnell MPH, J Paige MSN, SM Han MD MS

9:12 AM - 10:00 AM

**COFFEE BREAK WITH EDUCATIONAL EXHIBITS**

10:00 AM - 11:00 AM

## **SESSION II: LOWER EXTREMITY**

Moderators: K. Major, MD and K. Hodgkiss-Harlow, MD



10:00 AM - 10:09 AM

### **11. IMPACT OF ANTIPLATELET THERAPY AND ANTICOAGULATION ON MORTALITY AND MAJOR ADVERSE LIMB EVENTS FOLLOWING LOWER EXTREMITY BYPASS**

Nadin Elsayed, MD, *University of California, San Diego*

**Authors:** N Elsayed MD, S Schonefeld MD, A Azzizadeh MD, M Malas MD, DT Baril MD



10:09 AM - 10:18 AM

### **12. POSTOPERATIVE OUTCOMES AND ONE-YEAR MORTALITY OF PATIENTS ON PREOPERATIVE ANTICOAGULATION UNDERGOING INFRAINGUINAL BYPASS**

Christopher Chow, MD, *University of California, San Diego*

**Authors:** CY Chow MD, S Zarrintan MD MSC MPH, N Elsayed MD, MB Malas MD MHS



10:18 AM - 10:27 AM

### **13. EVALUATING OUTCOMES FOLLOWING INFRAINGUINAL BYPASS AND PERIPHERAL VASCULAR INTERVENTIONS IN PATIENTS WITH AND WITHOUT PRIOR MAJOR AMPUTATION**

Maryam Ali Khan, *University of California, San Diego*

**Authors:** MA Khan, A Mathlouthi MD, M Ramachandran MBBS PhD, JJ Syracuse MD, O Al-Nouri MD, MB Malas MD

10:27 AM - 10:33 AM

### **14. ACUTE LIMB ISCHEMIA SECONDARY TO DISSEMINATED HISTOPLASMA CAPSULATUM**

Sally Schonefeld, MD, *Cedars-Sinai Medical Center*

**Authors:** S Schonefeld MD, D Miles MD, B Bluen MD, CO Freitas MD, R Bakkar MD, A Azzizadeh MD, CN Arbabi MD

10:33 AM - 10:39 AM

**15. MECHANICAL THROMBECTOMY OF SQUAMOUS CELL CARCINOMA TUMOR THROMBUS PRESENTING AS EXTENSIVE DEEP VEIN THROMBOSIS**

Jeffrey Qiu, MD, Harbor-UCLA Medical Center

**Authors:** J Qiu MD, S Kapadia MD, N Bowens MD, C de Virgilio MD, N Kansal MD, J McCallum MD, MA Archie MD

10:39 AM - 10:45 AM

**16. MYCOTIC COMMON FEMORAL ARTERY PSEUDOANEURYSM SECONDARY TO MYCOBACTERIUM BOVIS INFECTION AFTER INTRAVESICAL BACILLUS CALMETTE-GUÉRIN THERAPY**

Sebouh Bazikian, BS, Keck School of Medicine of USC

**Authors:** SJ Bazikian BS, AV Ganapathy MD, J Gibbs MD, KR Ziegler MD

10:45 AM - 10:51 AM

**17. BILATERAL PERCUTANEOUS DEEP VEIN ARTERIALIZATION IN AN IMMUNOSUPPRESSED LUNG TRANSPLANT PATIENT WITH NO-OPTION CRITICAL LIMB THREATENING ISCHEMIA**

Mikayla Hurwitz, MD, Harbor-UCLA Medical Center

**Authors:** M Hurwitz MD, N Bowens MD, A Miller DPM, S Khademi DPM, M Archie MD

11:00 AM - 12:00 PM

**18. INVITED GUEST LECTURER - DR. MARK NEHLER  
"VOYAGER PAD: Lessons Learned To Date"**

6:00 PM - 8:30 PM

**PRESIDENTIAL BANQUET**

## SUNDAY MAY 1, 2022

7:00 AM - 10:30 AM

**SPONSOR DISPLAYS OPEN**

7:00 AM - 8:00 AM

**BREAKFAST BUFFET**

7:00 AM - 12:00 PM

**REGISTRATION**

8:00 AM - 9:00 AM

**19. BAKER HONORARY INVITED GUEST LECTURER -  
DR. ALIK FARBER**

**"A Personal Journey Through Chronic Limb Threatening Ischemia"**

9:00 AM - 10:30 AM

**SESSION III: CAROTID/VENOUS/MISC**

Moderators: J. O'Connell, MD and JC Jimenez, MD, MBA



9:00 AM - 9:09 AM

**20. PREDICTING SURGICAL DIFFICULTY IN CAROTID  
ENDARTERECTOMY BY USE OF ANATOMICAL  
MEASUREMENTS**

Seyed Pairawan, MD, *Loma Linda University Health*

**Authors:** SS Pairawan MD, TH Teruya MD



9:09 AM - 9:18 AM

**21. CYANOACRYLATE EMBOLIZATION VERSUS  
RADIOFREQUENCY ABLATION OF THE GREATER  
SAPHENOUS VEIN: CLINICAL OUTCOMES WITHIN A HEALTH  
MANAGEMENT ORGANIZATION**

Caryssa Lim, MPH, *Kaiser Permanente Fontana*

**Authors:** CN Lim MPH, J Hsu MD, T Vo MD, J Behseresht MD,  
M Tayyarah MD, I Andacheh MD



9:18 AM - 9:27 AM

**22. WHEN HEALING HANDS HURT - THORACIC OUTLET SYNDROME IN MEDICAL PROVIDERS**

Stephanie Talutis, MD, MPH, *University of California, Los Angeles*

**Authors:** SD Talutis MD MPH, J Ulloa MD, HA Gelabert MD



9:27 AM - 9:36 AM

**23. OUTCOMES FOLLOWING MEDIAN ARCUATE LIGAMENT RELEASE**

Savannah Yeh, BS, *University of California, Los Angeles*

**Authors:** SL Yeh BS, AJ Chen BA, YK Dhindsa BS, PF Lawrence MD, K Woo MD PhD



9:36 AM - 9:45 AM

**24. SINGLE-STAGE AND TWO-STAGE ARTERIOVENOUS FISTULAS HAVE SIMILAR OUTCOMES**

Rohini Patel, MD, MPH, *University of California, San Diego*

**Authors:** RJ Patel MD MPH, S Zarrintan MD, N Elsayed MD, MB Malas MD MHS



9:45 AM - 9:54 AM

**25. PROMPT IDENTIFICATION AND INTERVENTION FOR ISCHEMIC MONOMELIC NEUROPATHY IN PREVENTING MAJOR PATIENT DISABILITY**

Raja GnanaDev, MD, *Kaiser Fontana/Arrowhead Regional Medical Center*

**Authors:** R GnanaDev MD, J Beheresht MD, M Tayyarah MD, TD Vo MD, J Hsu MD, I Andacheh MD

9:54 AM - 10:00 AM

**26. CAVERNO-SAPHENOUS SHUNT FOR RECURRENT PRIAPISM: A CASE REPORT**

Jade Nguyen, MD, *Huntington Memorial Hospital*

**Authors:** J Nguyen MD, S Abdoli MD, C Ochoa MD

10:00 AM - 10:06 AM

**27. COMMON CAROTID WEB AS A RARE CAUSE OF STROKE FOR A YOUNG FEMALE PATIENT**

Jaideep Das Gupta, MD, *Kaiser Permanente San Diego*

**Authors:** J Das Gupta MD, KD Hodgkiss-Harlow MD

10:06 AM - 10:12 AM

**28. TRANSCAROTID ARTERY REVASCULARIZATION IN THE SETTING OF PREVIOUS IPSILATERAL CAROTID-SUBCLAVIAN BYPASS - TECHNICAL CONSIDERATIONS IN A CASE REPORT**

Alexander Schurman, *University of California Riverside/Riverside University Health System*

**Authors:** AS Schurman, M Tayyarah MD, AK Son MD

10:12 AM - 10:18 AM

**29. NOVEL ENDOVASCULAR APPROACH TO SUPERIOR MESENTERIC ARTERIOVENOUS FISTULA WITH PORTAL VEIN ANEURYSM**

Ashley Hsu, BS, *Keck Medical Center of USC*

**Authors:** AC Hsu BS, AD DiBartolomeo MD, FA Weaver MD, GA Magee MD

10:18 AM - 10:24AM

**30. ENDOVASCULAR MANAGEMENT OF A POST-TRAUMATIC RENAL ARTERIOVENOUS FISTULA**

Lucille Yao, MD, *Cedars-Sinai Medical Center*

**Authors:** L Yao MD, D Miles MD, S Schonefeld MD, D Baril MD, A Azizzadeh MD

10:24 AM - 10:30 AM

**31. ENDOVASCULAR REPAIR OF TRACHEO-INNOMINATE ARTERY FISTULA: TWO CASE REPORTS AND A REVIEW OF THE LITERATURE**

Hans Boggs, MD, *Loma Linda University Medical Center*

**Authors:** HK Boggs MD, SC Kiang MD, RT Tomihama MD, AM Abou-Zamzam Jr MD

10:30 AM - 11:09 AM

**COFFEE BREAK WITH EDUCATIONAL EXHIBITS**



11:09 AM - 12:00PM

## **SESSION IV: AORTA II**

Moderators: J. Chiriano, MD and S. Han, MD



11:09 AM - 11:18 AM

### **32. FRAILTY AMONGST VETERANS UNDERGOING INFRARENAL AORTIC ANEURYSM REPAIR**

Alina Chen, BA, *Greater Los Angeles Veterans Affairs*

**Authors:** AJ Chen BA, SL Yeh BS, JG Ulloa MD, HA Gelabert MD, DA Rigberg MD, CM de Virgilio MD, JB O'Connell MD



11:18 AM - 11:27 AM

### **33. OUTCOMES OF THORACIC ENDOVASCULAR AORTIC REPAIR IN DIALYSIS PATIENTS**

Nadin Elsayed, MD, *University of California, San Diego*

**Authors:** N Elsayed MD, J Unkart MD, T Dodo-Williams BS, MB Malas MD MHS



11:27 AM - 11:36 AM

### **34. SHORT-TERM PATIENT AND CLINICAL OUTCOMES WITH THE GORE EXCLUDER AAA ENDOGRAFT FOR HIGHLY-ANGULATED PROXIMAL NECK ANATOMY**

Raja GnanaDev, MD, *Kaiser Fontana/Arrowhead Regional Medical Center*

**Authors:** R GnanaDev MD, J Beheresht MD, M Tayyarah MD, TD Vo MD, J Hsu MD, I Andacheh MD

11:36 AM - 11:42 AM

### **35. ENDOVASCULAR-FIRST APPROACH TO MANAGEMENT OF INADVERTENT SUBCLAVIAN ARTERY CANNULATION DURING CENTRAL VENOUS CATHETER INSERTION**

Samuel Chen, MD, *UC Irvine Health*

**Authors:** SL Chen MD, NK Kabutey MD, IJ Kuo MD, AH Chau MD, RM Fujitani MD

11:42 AM - 11:48 AM

**36. PHYSICIAN MODIFIED INFERIOR MESENTERIC ARTERY FENESTRATION IN MESENTERIC ATHEROSCLEROTIC DISEASE: PUSHING THE IFU FOR EVAR**

Amarseen Mikael, MD, *UC Riverside School of Medicine/Riverside Community Hospital*

**Authors:** A Mikael MD, A Yufa MD, I Andacheh MD

11:48 AM - 11:54 AM

**37. RUPTURED MYCOTIC ANEURYSM DUE TO CLOSTRIDIUM SEPTICUM FROM CECAL PERFORATION**

Adrian Bahn, BS, MS, *Kaiser Permanente Downey Medical Center*

**Authors:** AJ Bahn MS, A Osheroov BS, DL Lau MD, BA Safran MD, MB Brewer MD

11:54 AM - 12:00 PM

**38. ENDOVASCULAR RETRIEVAL OF SEPTAL OCCLUDER IN PATIENT WITH ATRIAL SEPTAL DEFECT**

Jane Xu, MD, *Loma Linda University Health*

**Authors:** J Xu MD, R Kar MD, B Leong MD, K Mannoia MD, ST Patel MD, T Teruya MD, A Abou-Zamzam MD, A Murga MD

12:00 PM - 12:15 PM

**DR. ROBERT HYE MEMORIAL AWARDS AND ADJOURNMENT**

12:15 PM - 1:00 PM

**SCVSS BUSINESS MEETING**



*Denotes presentation is eligible for the Hye Best Trainee Competition*



# Scientific Session Abstracts



*Denotes presentation is eligible for the Hye Best Trainee Competition*



## **\*1. CUSTOMIZED LOW DOSE COMPUTED TOMOGRAPHY ANGIOGRAPHY FOR ENDOLEAK MONITORING POST EVAR: OUR TECHNIQUE AND REVIEW OF THE LITERATURE**

**PF Layman DO**, KD Hodgkiss-Harlow MD, A Goyal MD  
*Kaiser Permanente San Diego, San Diego CA*

**Background:** CTA (Computed Tomography Angiography) and Duplex Ultrasound (DUS) surveillance of abdominal aortic aneurysms post endovascular aortic repair is a well-established practice and meets the current major societal guidelines for best practice. Complications associated with imaging, however, as well as unwillingness to adhere to the recommended screening have often been identified as a serious flaw in the current follow-up management protocols. The major impediment to the desire for continued repeat imaging is the contrast and radiation exposure associated with CTA. In the literature there have been few reports on customizing the dosing and exposure and still obtaining adequate imaging. These methods allow have great theoretical advantage however they are limited to case reports and lack standardization. We describe our technique at Kaiser Permanente San Diego and review the current literature on the topic.

**Methods:** Technical description of our current technique for CTA post EVAR for endoleak surveillance. Total contrast administration and radiation dose vs. standard CTA is reviewed. Literature review performed via PubMed.

**Results:** Our technique involves decreasing the kilovoltage (kV) and increasing the milliamperere second (mA) at physician dictated timing to optimize contrast bolus through each desired vessel. Total contrast for this customized technique as well as Dose length product (DLP) vs. Standard CTA was 40mL vs. 120ml and 1431 mGy-cm vs. 1913.5 mGy-cm. Five publications were identified that described the use of modulated CTA imagery to evaluate endoleaks post EVAR repair, only one other case report was noted to have decreased volume of contrast similar to ours. Mean decrease in radiation was 49%.

**Discussion:** Both CTA and DUS have been shown to accurately diagnose endoleaks post EVAR. The choice for modality is often based on the patient's considerations and clinical concerns as there are limitations on what DUS can accurately diagnose. DUS has a clear advantage in terms of renal and radio protection, however, requires expertise to produce



## **\*2. POSTOPERATIVE FEVER IN PATIENTS FOLLOWING ELECTIVE EVAR**

**A Lim MD**, M Bilal DO, K Major MD

*Community Memorial Health System, Ventura CA*

**Introduction:** Postoperative fevers occur in up to 25% of patients after endovascular aortic aneurysm repair. Postoperative fevers are believed to be the result of post surgical or post inflammatory implantation response, infection, atelectasis, drug reactions. This study is to determine whether postoperative fevers can also be secondary to sac thrombosis after the exclusion of aneurysmal sac from circulation.

**Methods:** Retrospective chart review was performed on all patients from Community Memorial Health System and St. John's Regional Medical Center who underwent elective, endovascular infrarenal aortic aneurysm repair between 07/2017 to 02/2020. Any patient with concomitant coiling of internal iliacs were excluded. Age, gender, graft manufacturer, presence of endoleak during final run and presence of endoleak on follow up imaging after discharge were recorded. Temperature documentation was reviewed. A post operative fever was defined as temperature greater than 100.4°F or 38°C.

**Results:** 68 were identified. 8 (1.4%) patients had documented fever. 21 (30.8%) patients had an endoleak on final run. 5 (62.5%) patients in the postop fever group had an endoleak on final run. And 4 (80%) went on to thrombose the aneurysm sac on follow up imaging.

**Conclusion:** Fever in the immediate post op period following elective, uneventful EVAR is uncommon. However, in this small subgroup, the fever may represent sac thrombosis.



### \*3. THE IMPACT OF HOUSING INSTABILITY ON ABDOMINAL AORTIC ANEURYSM REPAIR: OUTCOMES IN A VETERAN POPULATION

**SL Yeh BS**, AJ Chen BA, JG Ulloa MD, HA Gelabert MD, DA Rigberg MD, CM de Virgilio MD, JB O'Connell MD  
*Greater Los Angeles Veterans Affairs, Los Angeles CA*

**Background:** Veterans are disproportionately affected by housing instability (HI), which can lead to poorer health outcomes and reduced life expectancy. We sought to examine the role of housing status on the care and outcomes of Veterans who underwent abdominal aortic aneurysm (AAA) repair at our regional VA Medical Center.

**Methods:** Retrospective chart review was performed on patients who underwent AAA repair at our institution between January 1, 2000 and December 31, 2020. We examined medical history, procedure details, hospitalization course, and outcomes. Housing instability was defined as past or current diagnosis of homelessness or inadequate housing, including both sheltered and unsheltered, at time of procedure. Primary endpoints were average total duration of follow-up, mean survival, and mortality rate. Secondary endpoints were presence of psychiatric diagnosis, preoperative frailty, hospital length of stay, and perioperative complications. Tests of association were performed with t-test and chi-square analysis. Survival analysis was conducted using Kaplan-Meier estimation and log-rank tests.

**Results:** Of the 314 Veterans that underwent AAA repair (mean age of 71.4  $\pm$  7.8 years, 99.7% male) over the 21-year period, we identified 39 (12.4%) patients with a history of HI. Patients with HI (mean age of 69.3  $\pm$  8.2 years, 100% male) mostly self-identified as non-Hispanic white (66.7%) and African American (25.6%). HI was associated with a positive smoking history (100% vs 88.0%,  $p=0.022$ ), lower rate of hypertension diagnosis (69.2% vs 84.0%,  $p=0.024$ ), and increased surgical site infections (10.3% vs 1.8%,  $p=0.003$ ). Of the patients with HI, psychiatric illness was identified in 22 (56.4%) and frailty was identified in 15 (38.5%). There were no significant differences in average total duration of follow-up, mean survival, mortality, frailty, or hospital length of stay between the housed and unhoused.

**Conclusion:** HI was prevalent in our Veteran population undergoing AAA repair. Patients with HI were associated with a positive smoking history and increased risk of surgical site infections. However, HI was not associated with increased length of stay, total follow-up duration, mean survival, or mortality, which may reflect the effectiveness of the VA's programs for homeless Veterans.



## **\*4. LASER FENESTRATION IN COMPLEX AORTIC REPAIR: VERSATILE OPTION IN DIFFICULT ANATOMY, EMERGENCIES AND BAILOUTS**

**PF Layman DO**, AR Barleben MD, D Tew DO, J Hallsten MD  
*University of California San Diego, La Jolla CA*

**Background:** Branched/fenestrated endovascular aortic repair (b/fEVAR) for thoracoabdominal aortic disease as well as thoracic endovascular aortic repair (TEVAR) has been well described and has increased utilization over time. As more practitioners become confident with these and other complex aortic repair there is growing need for in situ endovascular options for both vessel fenestration and endoleak repair. Laser fenestration has been described for its role in bailout of EVAR (endovascular aortic repair) particularly in fenestration for internal iliac arteries but has not been well described in b/fEVAR or TEVAR with most data limited to case series. We sought to review our single institution experience with this technique.

**Methods:** Single institution retrospective review of aortic laser fenestration during initial b/fEVAR, TEVAR from 2020 to 2022. Laser fenestrations post original b/fEVAR or TEVAR for endoleak repair were also included. Perioperative outcomes were obtained as well as angiographic results. Detailed operative techniques are discussed.

**Results:** A total of 9 patients were identified with 9 laser fenestrations. 7 were planned preoperatively and 2 were not. The indications for surgery were type B aortic dissection (3), thoracoabdominal aortic aneurysm (TAAA) (5) and Type III endoleak post b/EVAR (1). Laser fenestration was used in conjunction of 5 TEVAR and 4 (b/fEVAR). The distribution of vessels fenestrated was: 3 left renal artery (LRA), 2 right renal artery (RRA), 4 left subclavian artery (LSCA). Technical success was achieved in all 9 cases with no 30-day mortalities, no post op dissection or spinal cord ischemia. There were 2 cases of post operative endoleak, 1 type II and 1 type III.

**Conclusion:** In situ laser fenestration of aortic stent grafts in b/fEVAR and TEVAR is useful as a bailout in complex aortic repair with high likelihood of technical success and low morbidity.

## **5. UTILITY OF LASER IN-SITU SEPTAL FENESTRATION TO BRIDGE FALSE AND TRUE LUMEN DURING ENDOVASCULAR REPAIR OF AORTIC DISSECTIONS**

**E Miranda MD**, SM Han MD MS, GA Magee MD MSc  
*University of Southern California, Los Angeles CA*

**Background:** Endovascular repair of type B aortic dissections (TBAD) may require bridging between the false and true lumens of the dissection. When natural, preexisting fenestrations are not present in the location needed, creating a new fenestration may be necessary. This may occur when there is inadvertent false lumen deployment of a frozen elephant trunk or thoracic endovascular aortic repair (TEVAR), or during complex endovascular repair of aortic dissection.

**Methods:** We report the technical aspects of using laser in-situ fenestration of the aortic septum during endovascular repair of a type B aortic dissection. In one case, a 56-year-old man had false lumen deployment of a frozen elephant trunk graft during open total arch repair and developed an enlarging thoracoabdominal aortic aneurysm. Another patient required fenestrated endovascular aortic repair (FEVAR) with a target branch vessel off the false lumen with no usable natural fenestration.

**Results:** Wire access was obtained into both true and false lumens, confirmed with intravascular ultrasound and angiography. The fluoroscopy obliquity was adjusted to be orthogonal to the aortic septum and the location of the septum was marked. An articulating sheath was placed at the level of the desired fenestration and a laser probe (Spectranetics, Colorado Springs, CO) was adjusted to be flush with the aortic septum. The wire was advanced into the proximal aorta and the new fenestration was ballooned to enlarge it. In the first case, a TEVAR extension was then bridged from the false lumen elephant trunk into the thoracic true lumen and confirmed on angiograph. In the second case, the target vessel was cannulated and then bridged to the FEVAR with a balloon expandable stent. Completion angiogram confirmed adequate apposition and brisk true lumen filling with no endoleak.

**Conclusions:** Laser in-situ fenestration of aortic dissection septum is a feasible and controlled option to enable passage between true and false lumens during endovascular repair of aortic dissections.



## **6. BILATERAL SUBCLAVIAN ARTERY RETROGRADE IN-SITU LASER FENESTRATION IN TEVAR FOR GRADE III BLUNT THORACIC AORTIC INJURY IN THE SETTING OF ABERRANT RIGHT SUBCLAVIAN ARTERY**

**M Gusev MD**, R Kar MD, A Murga MD, A Abou-Zamzam MD, B Leong MD, K Mannoia MD, ST Patel MD, TH Teruya MD

*Loma Linda University, Loma Linda CA*

**Purpose:** To report bilateral subclavian artery revascularization via in-situ laser fenestrations during TEVAR for emergent repair of Grade III blunt thoracic aortic injury in the setting of an aberrant right subclavian artery.

**Case Summary:** 51 year old male was brought in by ambulance with multiple injuries sustained after motor vehicle accident. Patient was found to have Grade III blunt thoracic aortic injury. Appropriate anti-impulse therapy was initiated. Acute injuries requiring emergent interventions were ruled out. Decision was made to proceed with endovascular repair with the plan to revascularize subclavian arteries in order to minimize risks for upper extremity steal syndrome, posterior circulation stroke and spinal cord ischemia. Cook Zenith Alpha stent was deployed in zone 2 just distal to the shared common carotid artery origin. Laser catheter was advanced through right subclavian artery and thoracic endograft was fenestrated. Fenestration was balloon dilated, Gore VBX stent was deployed and flared proximally. Subsequently this was repeated with the left subclavian artery as well in the same fashion. Completion angiogram was performed with no evidence of endoleak, patent bilateral subclavian, carotid and vertebral arteries. Patient recovered appropriately and was discharged to a rehabilitation center after all other acute traumatic injuries were treated. Subsequent 6 week CT angiogram was performed and he was found to have successful exclusion of the pseudoaneurysm, no endoleaks and patent subclavian arteries.

**Conclusion:** Using in-situ laser fenestration for revascularization of left subclavian artery in the setting of TEVAR has been extensively reported. However to our knowledge we are the first to report bilateral subclavian artery retrograde in-situ laser fenestration in TEVAR for Grade III blunt thoracic aortic injury in the setting of right aberrant subclavian artery. This case illustrates benefits of using in-situ laser fenestration technique for revascularization of subclavian vessels in the setting of TEVAR even with aberrant aortic anatomy.

## **7. UTILIZATION OF RETROGRADE LEFT SUBCLAVIAN BRANCH PORTAL OF GORE TAG THORACIC BRANCHED ENDOPROSTHESIS (TBE) FOR PRELOADED PHYSICIAN-MODIFIED FENESTRATED BRANCHED ENDOVASCULAR REPAIR OF THORACOABDOMINAL AORTIC ANEURYSM**

**E Miranda MD**, A Pyun MD, GA Magee MD MSc, KR Ziegler MD, J Paige MSN, K O'Donnell MPH, SM Han MD MS  
*University of Southern California, Los Angeles CA*

**Background:** Patients presenting with thoracoabdominal aortic aneurysms (TAAAs) often require multiple endovascular procedures in planned, staged operations, or due to progression of aneurysmal degeneration. While conventional left subclavian artery (LSA) revascularization involves cervical debranching with carotid-subclavian bypass or subclavian-carotid transposition, the advent of TBE allows endovascular incorporation of LSA through a dedicated branch portal. We describe a case whereby the retrograde design of the LSA portal facilitated endovascular repair of TAAA using preloaded physician-modified endovascular grafting (PMEG) technique.

**Methods:** A 75-year-old male who underwent zone 2 endovascular repair of symptomatic penetrating aortic ulcer using Gore TAG Thoracic Branched Endoprosthesis (TBE) (W.L. Gore & Associates, Flagstaff, AZ) 5 years prior, presented with a progressively enlarging extent I TAAA distal to the TBE. Following the incorporation of the LSA using the 8mm portal TBE device, the patient's TAAA continued to increase in size on surveillance to 6.2cm. The patient was deemed high risk for open repair at the multi-disciplinary aortic conference. Therefore, the patient was enrolled in a prospective Physician-Sponsored Investigational Device Exemption (PS-IDE) trial (FDA: G200159, NCI: APP-20-04282) for PMEG. The common hepatic artery and superior mesenteric artery were noted to have a common trunk, with a separate origin of the splenic artery. The infrarenal aorta was free of aneurysmal disease.

**Results:** A custom five vessel fenestrated, branched endograft containing 2 inner branches and 3 fenestrations was created using a tapered Zenith Alpha Thoracic stent graft (Cook Medical, Bloomington, IN). Four preloaded wires were placed across the inner branches and renal fenestrations. Through open left brachial access, the retrograde TBE portal was navigated with a 12Fr x 45cm sheath. After distal extension using two tapered Zenith TX2 thoracic endografts (Cook Medical, Bloomington, IN), the fenestrated, branched endograft was deployed in a staggered fashion while sequentially catheterizing the visceral renal target vessels from the left brachial approach. The last fenestration was deployed aligning to a pair of lumbar arteries. The patient recovered without complications and was discharged home on postoperative day 5. At 6 months follow-up, the patient remains asymptomatic, with CTA demonstrating successful repair with no evidence of endoleak (Figure).

**Conclusion:** Retrograde left subclavian branch portal of Gore TAG TBE can be accessed to facilitate fenestrated branched endovascular repair of TAAA. Long-term follow-up is planned to determine the durability and interaction of these two investigational devices.

## 8. HYBRID REPAIR OF AORTIC ARCH ANEURYSM AND DISSECTION USING NEXUS STENT GRAFT

**AM Lee MD**, A Barleben MD, MB Malas MD, E Golts MD, JS Lane MD  
*University of California San Diego, La Jolla CA*

Treatment of aortic arch disease was historically treated with full/partial arch replacement under hypothermic arrest, carrying significant perioperative morbidity and mortality. All-endovascular approaches are in clinical trials, using single and double-vessel branch design, and typically require partial debranching of the arch. The NEXUS aortic stent graft system offers an alternative design, with arch debranching based off the brachiocephalic artery (BCA), and single large branch extension into the ascending aorta (ASC).

**Case report:** The patient is a 77-year-old male with history of Type A dissection repair 1-year prior with ascending arch and aortic valve replacement. He presents with arch degeneration, distal arch aneurysm (5.5cm), residual Type B dissection. Cardiovascular risk factors include atrial fibrillation treated with ablation and systemic anticoagulation.

Stage 1 involved aortic arch debranching based off the BCA, via bilateral cervical incisions. Right common carotid artery (CCA) to left subclavian artery (SCA) bypass was performed using Dacron. The L CCA was transected and proximally ligated, and end-to-end anastomosis was performed between the distal L CCA and Dacron bypass.

Stage 2 was performed 5 days after. Endovascular repair of the arch aneurysm/dissection was accomplished using the Nexus stent graft system. Bilateral percutaneous common femoral access was obtained, with right axillary artery cutdown. We positioned a temporary pacing catheter in the right ventricle through the L femoral vein. A rail-wire was introduced via the right upper extremity and externalized through the right groin. The graft was introduced through the femoral rail-wire. The main body was deployed starting with the BCA branch, followed by the aortic arch component, ensuring good apposition with the lesser curve of the arch. The ASC module was introduced via a buddy guidewire, placed in the left ventricle. Aortogram confirmed coronary artery location. The device was deployed during rapid ventricular pacing, with appropriate overlap of ASC and aortic arch stent grafts. We performed left axillary cutdown and plug embolization of the L SCA at its origin. Completion aortogram demonstrated no evidence of Endoleak, with good filling of all aortic branch vessels via BCA bypasses. Procedure time was 290 minutes, fluoroscopy 63 minutes, contrast volume 190ml. The patient did well post-operatively and did not experience neurologic deficits. Transient post-operative dysphagia from retropharyngeal edema treated with high dose steroids.

**Conclusions:** Hybrid repair of aortic arch pathology can be accomplished via cervical debranching and endovascular branched stent grafts. The NEXUS stent graft design simplifies the arch reconstruction by landing the device in the BCA and performing proximal extension into the ASC aorta. This obviates the use of arch vessel cannulation during the procedure and may reduce perioperative stroke risk and procedure time.

## 9. PRIMARY AORTOPULMONARY FISTULA AS A LATE COMPLICATION OF AORTIC DISSECTION

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**Background:** A 65-year-old man with prior type A dissection status post ascending and hemiarch replacement, presented with chronic residual type B dissection and massive hemoptysis. Computerized Tomography revealed a new periaortic hematoma with adjacent inflammatory changes concerning for aortopulmonary fistula (APF).

**Method:** Bronchoscopy revealed old blood in the trachea but no active bleeding. A thoracoabdominal incision was made and a latissimus dorsi flap was prepared by plastic surgery. Cardiopulmonary bypass (CPB) via left femoral cannulation was initiated with systemic hypothermia to 20 C. The left lower lobe (LLL) was adherent to the thoracic aorta in the area of the suspected APF. Circulatory arrest was initiated and the lower thoracic aorta was clamped allowing for distal aortic perfusion. A 2 cm connection between the LLL and false lumen of the aorta was identified, consistent with APF. The aorta was transected distal to the left subclavian artery and a proximal fenestration of the septum was created extending into the arch. An open proximal anastomosis was performed with a 32mm rifampin soaked Dacron graft with reverse elephant trunk. Central arterial cannulation was then carried out via the side branch and antegrade flow was restored. Systemic rewarming was initiated and the distal anastomosis was completed. A wedge resection of the LLL fistula was performed by thoracic surgery. The latissimus dorsi pedicled flap was wrapped around the graft for protection. The patient was weaned from CPB, chest tubes were placed and the wound was closed.

**Results:** The patient's recovery was uneventful. Mechanical ventilation was discontinued on post-operative day one. Intra-operative cultures yielded no growth, and the patient was discharged in stable condition at 14 days post surgery. He was maintained on antibiotic therapy for 6 weeks and was doing well at 3 months follow-up.

**Conclusion:** A primary APF is a rare phenomenon and is uniformly fatal if untreated. A high index of suspicion and early recognition are critical to good patient outcomes. Patients with aortic pathology who present with hemoptysis should be evaluated for APF. A multidisciplinary approach involving cardiac, vascular, thoracic and plastic surgery resulted in a life-saving procedure in the face of a complex presentation.

## 10. DUAL LUMEN BRANCH STENTING OF A FULLY DISSECTED SUPERIOR MESENTERIC ARTERY DURING FENESTRATED BRANCHED ENDOVASCULAR AORTIC REPAIR OF A POST-DISSECTION THORACOABDOMINAL AORTIC ANEURYSM

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**Background:** Aortic dissections involving long segments of branch vessels are typically considered a contraindication for fenestrated branched endovascular aortic repair (FBEVAR). While false lumen embolization or balloon angioplasty of the true lumen of the target vessels have been performed to facilitate branch incorporation, these adjunctive techniques are unsuitable when the true and false lumen of the dissected target vessel supply separate secondary branches. Here, we describe a dual lumen branch stenting, which enabled incorporation of a fully-dissected superior mesenteric artery (SMA) during endovascular repair of a post-dissection TAAA.

**Methods:** A 67-year-old male with morbid obesity, hypertension, and atrial fibrillation, who underwent a zone 2 thoracic endovascular aortic repair with carotid-subclavian bypass for type B2-10 aortic dissection 4 years prior, presented with an enlarging extent III thoracoabdominal aortic aneurysm (TAAA). Custom physician-modified fenestrated/branched endovascular aortic aneurysm repair (FBEVAR) was planned. High complexity of the dissected TAAA was illustrated by spiral dissection septum extending into the celiac artery origin and the full length of the superior mesenteric artery (SMA), two left renal arteries, false-lumen perfused right renal, and bilateral common iliac aneurysms.

**Results:** The patient first underwent stenting of the celiac, SMA, and renal arteries. The true and false lumens of the dissected SMA were noted to be supplying different branches, requiring preservation of both using a double-barrel configuration at the SMA origin.

Two days later, the patient underwent physician-modified FBEVAR via open right axillary exposure and bilateral percutaneous femoral access. Following the deployment of bilateral Iliac Branched Endoprostheses(IBE) (W.L. Gore & Associates, Flagstaff, AZ), a tapered Alpha thoracic (Cook Medical, Bloomington, IN) endograft, modified to contain 5 fenestrations and 1 branch cuff, was introduced over the right axillary to left femoral through-and-through access with preloaded wires. Celiac, true-lumen SMA, and three renal arteries were sequentially catheterized from the right axillary approach using staggered deployment of the modified endograft. From the right femoral approach, the false lumen SMA stent was catheterized via the branch cuff. Molded parallel grafting ("Eye-of-the-Tiger") technique was used to achieve double D configuration between the true and false lumen branch stents across the SMA origin. Postoperative CTA confirmed complete exclusion of the aneurysm with patent true and false lumen SMA branch stents. Patient was discharged home on postoperative day 4 without complications.

**Conclusion:** Dual lumen branch stenting of a dissected SMA is feasible during FBEVAR. Advanced imaging guidance and meticulous planning is required for this technique. Long-term follow-up is planned to assess durability of this technique.



## **\*11. IMPACT OF ANTIPLATELET THERAPY AND ANTICOAGULATION ON MORTALITY AND MAJOR ADVERSE LIMB EVENTS FOLLOWING LOWER EXTREMITY BYPASS**

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**Background:** Optimal antithrombotic management after lower extremity bypass (LEB) remains unclear. Although there is evidence that all patients with peripheral arterial disease (PAD) should be maintained on antiplatelet therapy (APT), there is growing data to support the use of additional agents to decrease major adverse limb events and mortality. The objective of this study was to determine the impact of antithrombotic therapies on mortality and amputation-free survival following LEB.

**Methods:** A retrospective analysis of infrainguinal LEB operations entered in the VQI-VISION (2003-2018) was performed. Patients discharged on aspirin monotherapy (ASA), dual antiplatelet therapy (DAPT), warfarin and APT, and factor Xa inhibitors (FXai) and APT were identified. Primary outcomes were 1 and 3-year mortality and amputation-free survival. Secondary outcomes were freedom from amputation and freedom from target lesion revascularization.

**Results:** Of the 23,926, LEB procedures investigated, 36.7% were discharged on ASA, 38.4% on DAPT, 21.6% on warfarin+APT, and 3.3% on a FXai+APT. Patients on ASA alone had lower rates of prior revascularizations and had higher rates of vein graft usage when compared to the other groups. There were no significant differences in mortality between the groups at 1 year, but worse survival in the warfarin+APT group (HR 1.1 (1.0-1.2),  $P < 0.049$ ) at 3 years compared to ASA. There was lower amputation-free survival in the warfarin+APT group at both 1 year (HR 1.2 (1.1-1.3),  $P < 0.001$ ) and 3 years (HR 1.2 (1.1-1.3),  $P < 0.001$ ). There was a greater risk of amputation for both the warfarin+APT group at 1 year (HR 1.4 (1.2-1.6),  $P < 0.001$ ) and 3 years (HR 1.5 (1.4-1.7),  $P < 0.001$ ) and the FXai+APT group at 1 year (HR 1.4 (1.0-1.8),  $P = 0.022$ ) and 3 years (HR 1.3 (1.0-1.7),  $P = 0.027$ ). When compared to ASA alone, there was a greater risk of target lesion revascularization in all three groups at 1 year (DAPT (HR 1.1 (1.0-1.2),  $P = 0.045$ ), (Warfarin+APT (HR 1.2 (1.1-1.3),  $P = 0.001$ ), FXai+APT (HR 1.2 (1.0-1.4),  $P = 0.037$ )) and 3 years DAPT (HR 1.1 (1.0-1.2),  $P = 0.024$ ), (Warfarin+APT (HR 1.2 (1.1-1.3),  $P < 0.001$ ), FXai+APT (HR 1.2 (1.0-1.4),  $P = 0.014$ )).

**Conclusion:** The majority of patients undergoing LEB are discharged on additional antithrombotic agents beyond aspirin monotherapy. Patients discharged on warfarin+APT and FXai+APT are at greater risk of amputation. Patients discharged on additional antithrombotic agents beyond ASA have an increased need for target lesion revascularization. Further study is needed to determine the impact of the newer antithrombotic agents on PAD patients undergoing LEB.



## **\*12. POSTOPERATIVE OUTCOMES AND ONE-YEAR MORTALITY OF PATIENTS ON PREOPERATIVE ANTICOAGULATION UNDERGOING INFRAINGUINAL BYPASS**

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**Background:** It is not uncommon for patients requiring open infrainguinal bypass (IIB) to be on preoperative anticoagulation medications. Managing these medications before surgery can be challenging. This study aims to evaluate postoperative outcomes and one-year mortality of patients already on anticoagulation undergoing IIB, using data obtained from the Vascular Quality Initiative (VQI).

**Methods:** Patients on warfarin or any direct oral anticoagulants within 30 days of surgery, regardless of if stopped before surgery, were compared with patients not on anti-coagulants. All IIBs performed between January 2011 to October 2021 were queried. The primary outcome was 30-day mortality. The secondary outcomes included in-hospital death, one-year mortality, return to the operating room (OR) for bleeding, graft revision or thrombosis, prolonged length of hospital stay, (defined as greater than 75th percentile of all patients), intraoperative blood loss, and need for intraoperative packed red blood cell transfusion (pRBC). Emergent cases and aneurysmal disease were excluded. Multivariate logistic regression, Kaplan Meier survival and Cox regression analyses were used to analyze the data for postoperative and one-year outcomes, respectively.

**Results:** There were a total of 55,076 patients who underwent IIB during the study period of which 11,547 (20.97%) were on preoperative anticoagulation prior to surgery. The two cohorts differed significantly in almost every demographic and clinical characteristic. Multivariate analyses adjusting for 49 potential confounders, revealed that there was no significant difference in 30-day mortality, in-hospital death and one-year mortality, although the anticoagulation cohort experienced significantly lower rates of postoperative MI (adjusted odds ratio [aOR], 0.74; 95% confidence interval [CI], 0.64-0.86;  $p < 0.001$ ). These patients also had a slightly greater rate of intraoperative blood loss of more than 500 mL (aOR, 1.12; 95% CI, 1.04-1.21;  $p = 0.002$ ) and a greater need for pRBC transfusion (aOR, 1.07, 95% CI, 1.00-1.15;  $p = 0.041$ ). The total procedure time for the anticoagulation cohort was on average  $11.46 \pm 2.16$  minutes longer ( $p < 0.001$ ) and there was a greater risk of prolonged length of stay in the hospital (aOR, 1.19, 95% CI, 1.13-1.26;  $p < 0.001$ ). These patients also returned to the OR for graft revision at a greater rate (aOR, 1.21, 95% CI, 1.04-1.40;  $p = 0.016$ ) and demonstrated a significantly lower rate of graft patency at discharge (aOR, 0.59, 95% CI, 0.43-0.81;  $p = 0.001$ ).

**Conclusion:** Patients taking anticoagulation medications 30 days prior to infrainguinal bypasses may require more blood transfusions, stay in the hospital longer, and return to the OR at a greater rate. They are also at an increased risk for loss of graft patency. However, these patients are not at increased risk of operative or one year mortality. Infrainguinal bypass can therefore be performed safely in patients taking anticoagulation medications.



## **\*13. EVALUATING OUTCOMES FOLLOWING INFRAINGUINAL BYPASS AND PERIPHERAL VASCULAR INTERVENTIONS IN PATIENTS WITH AND WITHOUT PRIOR MAJOR AMPUTATION**

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**Introduction:** Patients with Prior Contralateral Major Amputation (PCMA) represent a high-risk group that merit special consideration amongst patients with peripheral arterial disease (PAD). Thorough risk assessment in these patients could potentially guide further management. However, there is a paucity of literature addressing the impact of history of contralateral amputation on outcomes after Infrainguinal bypass (IB) and peripheral vascular interventions (PVI) on the intact limb. The purpose of this study is to compare 30-day and 1-year outcomes for IB and PVI in patients with PCMA to patients with no prior major amputation.

**Methods:** All patients who underwent IB or PVI for PAD between 2005 and 2018 in the VQI-VISION database were included. Patients were stratified based on whether they had previously undergone a PCMA. The primary outcome was major amputation/death at 1 year. Secondary outcomes included death, major amputation, and reintervention for revascularization. Logistic regression was performed for 30-day outcomes and survival analysis was performed using Kaplan-Meier and Cox regression models to assess the impact of PCMA on 1-year outcomes in patients undergoing IB and PVI. Outcomes between IB and PVI was also performed in patients with PCMA only.

**Results:** During the study period, 27,854 patients underwent IB, and 56,892 patients underwent PVI, with 1,584 (5.7%) and 3,814 (6.70%) having PCMA, respectively. After adjusting for potential confounders, there was no difference in the risk of 30-day mortality between the two groups but almost 50% increased risk of 30-day amputation for patients with PCMA who underwent IB or PVI. At 1-year, PCMA was associated with significantly higher risk of amputation/death (aHR: 1.4(1.2-1.5)  $p < 0.001$ ), major amputation (aHR: 1.7(1.5-1.9),  $p < 0.001$ ), and death (aHR: 1.2(1.1-1.4),  $p = 0.005$ ) in patients undergoing IB. Similarly, with PVI, PCMA was associated with a significantly higher risk of amputation/death (aHR: 1.4(1.3-1.5)  $p < 0.001$ ), major amputation (aHR: 1.8(1.5-2.1),  $p < 0.001$ ), and death (aHR: 1.1(1.0-1.3),  $p = 0.042$ ). When looking at re-intervention rates between two groups, PCMA was associated with decreased risk in both IB and PVI. In patients with PCMA undergoing either procedure, PVI patients fared worse with a higher risk of amputation/death, amputation and death.

**Conclusion:** Patients with PCMA are at a significantly higher risk for limb loss and death after IB and PVI on the intact limb. Furthermore, this group has better outcomes following IB in comparison to the PVI. These findings underpin the need for optimized medical management and close surveillance to monitor for disease progression and risk factor management in this population.



## 14. ACUTE LIMB ISCHEMIA SECONDARY TO DISSEMINATED HISTOPLASMA CAPSULATUM

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**Background:** A 57-year-old man with a history of aortic stenosis and infrarenal abdominal aortic aneurysm who previously underwent transcatheter aortic valve replacement and endovascular aortic repair presented with acute onset of right upper extremity pain and associated paresthesia. On physical exam he had non-palpable radial and ulnar pulses. Arterial duplex ultrasound revealed an occlusive thrombus of the right brachial artery with distal reconstitution of the ulnar artery, consistent with acute limb ischemia.

**Method:** The patient was systemically heparinized and taken emergently to the operating room for revascularization. An open brachial artery Fogarty thromboembolectomy was performed. In addition to fresh thrombus, there was a large, organized, fibrinous plaque. Given the morphology of the embolus, this appeared to be from a cardiac source. Following revascularization, the patient had a palpable radial and ulnar pulse as well as multiphasic palmar arch and digital Doppler signals.

**Results:** Post-operatively, the patient was maintained on anticoagulation and underwent workup for thromboembolism. Transesophageal echocardiogram revealed a 0.6 cm vegetation involving the bioprosthetic aortic valve. He was treated empirically for bacterial endocarditis pending culture results. Bacterial causes of endocarditis were negative, however, blood Karius assay was positive for *Histoplasma capsulatum*. Grocott methenamine silver (GMS) staining of the thrombus demonstrated a significant burden of *Histoplasma* not seen on initial Hematoxylin and Eosin stain. Urine *Histoplasma* antigen was also confirmed positive. He was transitioned to itraconazole indefinite therapy. He continued to improve clinically post discharge. Urine *Histoplasma* antigen values were down trending with treatment over time. An interval transesophageal echocardiogram at five months showed no vegetations on the bioprosthetic valve.

**Conclusion:** Histoplasmosis is a common endemic mycosis in the Midwestern United States, although occasionally can be found in the Southwestern region. Infection is caused by inhaling spores of the fungus, which are frequently found in bird and bat droppings. Further history revealed this patient had recurrent exposure to pigeon droppings when cleaning outdoor handball courts. Cardiovascular complications from Histoplasmosis are seldom reported. This is an extremely rare case of disseminated *Histoplasma capsulatum* that manifested as fungal infective endocarditis and peripheral septic embolism, ultimately resulting in acute limb-threatening ischemia. A multidisciplinary approach with Vascular Surgery and Infectious Disease led to a successful limb-salvage operation and diagnosis of this rare phenomenon. This patient will require life-long systemic antifungal therapy given the existing bioprosthetic aortic valve and infra-renal aortic stent graft.

## **15. MECHANICAL THROMBECTOMY OF SQUAMOUS CELL CARCINOMA TUMOR THROMBUS PRESENTING AS EXTENSIVE DEEP VEIN THROMBOSIS**

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**Background:** The treatment of ilio-femoral deep vein thrombosis (DVT) has evolved with the advent of the ClotTriever device (Inari, Irvine, CA). Patients may undergo percutaneous mechanical thrombectomy for thrombus removal and restoration of venous drainage. As opposed to anticoagulation alone or lytic therapy, mechanical thrombectomy with the ClotTriever yields specimens that can be sent for laboratory analysis.

**Method:** We present the case of a 42-year-old male who presented to the emergency department with a 3-day history of right lower extremity edema, pain, and paresthesia. He had a history of penile squamous cell carcinoma, status-post chemotherapy, total penectomy, and radiation approximately one year prior. An ultrasound in the ED revealed thrombosis from the external iliac vein to the popliteal vein, with CT Venogram of the abdomen and pelvis showing proximal extension to the common iliac vein and the inferior vena cava (IVC). A head CT showed evidence of previously undocumented brain mass, which precluded lytic therapy. We elected to perform percutaneous mechanical thrombectomy using the ClotTriever system.

**Results:** Following five passes of the ClotTriever device, there was resolution of the ilio-caval and femoro-popliteal DVT. The patient's edema and symptoms resolved following the procedure and he was maintained on therapeutic anticoagulation. The specimen was sent to pathology, revealing both thrombus and squamous cell carcinoma. Given recurrence of disease, he was referred to medical oncology and urology.

**Conclusion:** Until recently, most venous thromboembolic disease has been treated with anticoagulation with or without lytic therapy. As a result of these methods, specimens have rarely been available for laboratory analysis. The ClotTriever device allows for single-session therapy without thrombolytics and specimen evaluation. Having access to these specimens may aid in elucidating the mechanisms of venous thromboembolism associated with malignancies in the future.

## 16. MYCOTIC COMMON FEMORAL ARTERY PSEUDOANEURYSM SECONDARY TO MYCOBACTERIUM BOVIS INFECTION AFTER INTRAVESICAL BACILLUS CALMETTE-GUÉRIN THERAPY

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**Background:** Bacillus Calmette-Guérin (BCG) therapy for early-stage bladder cancer is effective and safe. Although exceedingly rare, BCG-related vascular infections are a known complication. Here, we describe a common femoral artery (CFA) pseudoaneurysm (PSA) secondary to Mycobacterium bovis (M. bovis) infection after intravesical BCG therapy.

**Method:** This is a case report on a single patient at a large tertiary-care university hospital.

**Results:** An 88-year-old male with history of recurrent bladder cancer with failed surgical resection and 2 BCG therapies (4 years and 1.5 years prior), presented to his urologist with right lower extremity weakness and worsening right pelvic pain and swelling. Computed tomography (CT) scan revealed a right CFA PSA measuring 8cm with a large mural thrombus.

After hospital admission, he underwent open CFA excision with synthetic interposition grafting. Intraoperatively, an ulcerated plaque eroding through the posterior CFA wall was noted with lymph-like fluid. The excised tissue was sent to pathology and the patient was given a 10 day course of doxycycline. He was discharged on post-operative day 4.

The patient presented 2 weeks later with surgical site bleeding and drainage. Wound cultures revealed a polymicrobial infection, which was treated empirically. CT scan showed a complex fluid collection concerning for infected hematoma versus seroma in the surgical bed.

Surgical exploration was performed revealing a seroma without purulence or active bleeding. The graft remained patent and was covered with a sartorius flap. Intraoperative cultures were taken, subsequently identified as a polymicrobial infection, and treated empirically. Nineteen days after his index operation, the cultures isolated acid-fast bacilli identified as M. bovis. Infectious disease services were consulted and recommended multiantibiotic therapy with isoniazid, rifampin, and ethambutol for 9 months. The patient had no respiratory involvement. Follow-up imaging showed no additional vascular involvement.

At 2 month follow up, the patient remained asymptomatic without concern for additional vascular involvement and was compliant with his antibiotic therapy.

**Conclusion:** Arterial mycotic aneurysms are an uncommon but known complication of BCG therapy, typically involving the aorta and other major arteries. Isolated common femoral PSAs are even more uncommon in these patients. We recommend a high index of suspicion for femoral artery involvement in patients with vague abdominal and groin symptoms with prior BCG therapy. Close clinical monitoring, especially for additional vascular involvement, is paramount for follow up care during and after intervention and anti-TB therapy with a multidisciplinary approach.

## **17. BILATERAL PERCUTANEOUS DEEP VEIN ARTERIALIZATION IN AN IMMUNOSUPPRESSED LUNG TRANSPLANT PATIENT WITH NO-OPTION CRITICAL LIMB THREATENING ISCHEMIA**

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**Background:** Patients with no-option critical limb threatening ischemia (CLTI) often require major amputations for source and/or pain control. Furthermore, their comorbidities can inhibit proper wound healing. Percutaneous deep venous arterialization (pDVA) has resulted in mixed, though mostly favorable outcomes, even in patients with multiple comorbid conditions.

**Methods:** We present the case of a 58-year-old-male with a history of insulin-dependent type 2 diabetes mellitus (HbA1c 8.4%) and idiopathic pulmonary fibrosis, status-post lung transplantation, on immunosuppression who presented with bilateral Rutherford Class 6 CLTI. The patient was referred for below-knee amputations, following multiple failed interventions. The patient elected to undergo left, followed by right lower extremity pDVA as a last attempt toward limb salvage. He subsequently underwent bilateral guillotine trans-metatarsal (gTMA) amputations. The patient was maintained on therapeutic oral anticoagulation, as well as prednisone and tacrolimus for the lung transplant.

**Results:** The patient remains free from major amputation following initial pDVA creation at 17 months on the left and 6 months on the right. Following the initial pDVA creations, the patient required bilateral secondary interventions to maintain patency of the circuits and to alleviate ischemic steal. The gTMA wound healed completely by secondary intention. The right gTMA wound showed healthy granulation tissue and a skin substitute (Amniocell Medical, Vinings, GA) was placed for tissue coverage.

**Conclusion:** pDVA has evolved into a viable therapy for revascularization in patients with no option CLTI, even in the setting of multiple comorbid conditions and immunosuppression. While we have seen success in this patient population, further studies are necessary to identify those who are most likely to benefit from this procedure.



## **\*20. PREDICTING SURGICAL DIFFICULTY IN CAROTID ENDARTERECTOMY BY USE OF ANATOMICAL MEASUREMENTS**

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**Background:** Carotid endarterectomy (CEA) remains as one of the main procedures performed to prevent stroke in both symptomatic and asymptomatic carotid stenosis; however, predicting which patients who are at risk for surgical difficulty poses a challenge for vascular surgeons and its association with anatomical measurements remains unknown. We sought to determine if anatomical measurements could be used to predict surgical difficulty during CEA.

**Methods:** A retrospective analysis was performed of patients who underwent CEA for both high-grade asymptomatic and symptomatic carotid disease at a Veterans Health Administration institution. Operative time was used as a surrogate variable for surgical difficulty, which was measured in minutes and defined as procedural start time until procedural stop time. Anatomical measurements were obtained from preoperative computed tomographic imaging which included and measured in millimeter: angle of mandible to carotid bifurcation (AOM-CB) distance, base of skull to carotid bifurcation (BOS-CB) distance, skin to carotid bifurcation distance coursing through the sternocleidomastoid muscle, clavicle to carotid bifurcation (Clavicle-CB) and level of carotid bifurcation in relationship to the vertebral bodies (VB). Univariate and multivariate analyses were conducted.

**Results:** A total of 94 patients were identified. Median age and BMI was 67 years and 28.5, respectively. Majority of patients were of male gender (98%). Mean estimated blood loss (EBL) during the procedures was 96.6 mL. Overall postoperative myocardial infarction and stroke rate was 1.1% and 5.3%, respectively. No mortalities were noted in our cohort. Median BOS-CB was 61.3 mm; AOM-CB 26.9 mm; Clav-CB 74.5 mm, and skin to carotid bifurcation distance was 33.9 mm. Carotid bifurcation was located at the level of C3 VB in 33 patients (35.1%); C4 VB in 46 patients (48.9%); and C5 VB in 15 patients (15.9%). EBL >100 mL, and skin to bifurcation distance >34 mm was associated with prolonged operative time on univariate analysis ( $p = 0.01$  and  $p = 0.041$ , respectively). Patients with carotid bifurcations at the level of C3 VB was noted to have longer operative time compared to other levels, however this was not statistically significant ( $p=0.09$ ). AOM-CB, BOS-CB and Clavicle-CB were not associated with prolonged operative time on univariate analysis. On multivariate analysis, EBL >100 mL (OR 3.3,  $p=0.02$ ), carotid bifurcation at the level of C3 VB (OR 10.2,  $p=0.038$ ) and skin to carotid bifurcation distance >34 mm (OR 3.8,  $p=0.022$ ) were independently associated with prolonged OT.

**Conclusion:** In patients who underwent CEA, skin to carotid bifurcation distance >34 mm and carotid bifurcation at the level of C3 VB were independently associated with surgical difficulty. Further studies are needed to determine if patients with these anatomical considerations would benefit from other treatment options.



## **\*21. CYANOACRYLATE EMBOLIZATION VERSUS RADIOFREQUENCY ABLATION OF THE GREATER SAPHENOUS VEIN: CLINICAL OUTCOMES WITHIN A HEALTH MANAGEMENT ORGANIZATION**

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**Background:** Treatment and management for greater saphenous vein (GSV) reflux has continued to evolve in the last 20 years, with the advent of thermal and non-thermal closure techniques. To date, there has been only one feasibility trial comparing radiofrequency ablation (RFA) to cyanoacrylate embolization (Venaseal). We examine a comparison of clinical outcomes between the two techniques within our health management organization (HMO).

**Methods:** Between May 2020 and the present, 87 patients underwent 98 total procedures. Patients had GSV closure via Venaseal (n=55) or RFA (n=43); procedure type was at the discretion of the operating surgeon. Patient data gathered included demographics, indications for treatment, treatment details, post-operative complications (saphenofemoral junction thrombosis, deep vein thrombosis, skin reaction), post-procedural urgent care and emergency room visits, adjunctive vein procedures (sclerotherapy, stab phlebectomy).

**Results:** Mean follow up time from date of procedure to present was 11 months, with one patient lost to follow up due to death. All procedures utilized intra-operative ultrasound, and saphenofemoral junction thrombosis was not observed in any patient immediately post-procedure. The average age of Venaseal and RFA groups was 60.7 and 59.0 years, respectively. The average number of access sites during the procedure for Venaseal and RFA was 1.56 and 1.20, respectively. Of the 55 Venaseal treatments, 9.1% of patients reported post-operative skin reactions, and 9.1% of patients underwent subsequent stab phlebectomy (22 stabs on average). Of the 43 RFA treatments, 7.1% of patients reported post-operative skin reactions, and 9.5% underwent subsequent stab phlebectomy (36 stabs on average). The percentage of patients who had post-operative urgent care or emergency department visits related to the procedure in the Venaseal versus RFA group was 3.6% and 2.4%, respectively. On post-procedure visit, no patients demonstrated DVT nor saphenofemoral junction thrombosis. Ninety-nine percent of the patients remain enrolled in our health plan.

**Conclusion:** Both Venaseal and RFA demonstrate effective vein closure of the greater saphenous vein at 11 months average follow-up, with Venaseal demonstrating continued noninferiority to RFA. Measured outcomes were comparable between Venaseal and RFA groups, with the Venaseal group showing a slightly higher rate of post-procedural skin reactions. Despite a similar percentage of patients requiring post-procedural stab phlebectomy, the Venaseal patients required fewer phlebectomies at the time of surgery. While benefits to the Venaseal technique are suggested, further study is warranted.



## **\*22. WHEN HEALING HANDS HURT - THORACIC OUTLET SYNDROME IN MEDICAL PROVIDERS**

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**Background:** Thoracic outlet syndrome (TOS) is an infrequent condition which results in disability in use of upper extremity. While is often associated with manual labor, industrial workers and accidents, it has not been reported in a physician population. Given the investment of time and effort in training to become a physician, the impact of TOS may be devastating. Our objective is to report the presentation and outcome of TOS in physicians.

**Methods:** A prospectively surgical database was reviewed for physicians who sought care of disabling TOS between 1997 and 2022. Demographic, clinical, outcome and pathological data were reviewed. Outcomes were assessed based on Somatic Pain Scale (SPS), Quick DASH scores, and Derkash scores. Results were also assessed based on return to employment.

**Results:** A total of 19 MDs were identified, from 1687 TOS cases. The group included 13 (63%) men, 6 (31%) women, average age 45 year (range 27-57). Presentations included 1 (5.3%) Arterial TOS (ATOS), 9 (47.4%) Venous TOS (VTOS), and 9 (47.4) Neurogenic TOS (NTOS). All patients were right handed, index side was dominant hand in 7 (37%).

Etiologies included repetitive motion injury, athletic injury, and congenital bony abnormalities. Repetitive motion was associated with 3/9 (33%) NTOS. Significant athletic activities were noted in 12 of 19 (63%), including 8/9 (89%) VTOS and 4/9 (44%) NTOS. Athletic activities associated with VTOS included triathletes (2), rock climbing (1), long distance swimming (2), weight lifting (3). Of the 9 NTOS cases, 3 weight lifting, 1 skiing. Congenital causes included 1 (5%) abnormal first rib, and 1 (5%) cervical rib.

Time from symptoms to consultation varied significantly according to diagnosis: ATOS 6 days, VTOS 97 days, NTOS 2,335 days ( $p<0.05$ ). All underwent first rib resection (FRR), and four (4) required contralateral FRR. Time from surgery to last follow up averaged 1,005 days (range: 37 to 4535 days).

Standardized outcomes (SPS, Quick DASH, Derkash score) improved in all metrics:

On presentation, 6 were work disabled, 13 were work restricted. Following surgery 4 remained work restricted with mild to moderate symptoms. All who were initially disabled returned to work without restriction. Significant non-TOS related co-morbidities were present in all who had residual restriction. Return to work was documented in all.

**Conclusion:** Although it has not been reported, physicians are subject to developing TOS. Causes include repetitive motions, athletic injuries, and congenital bony abnormalities. Surgical decompression is beneficial with significant reduction in pain and disability. Physicians are highly motivate and insightful, accordingly they have a very high probability of successful work resumption, with all returning to their medical positions.



## **\*23. OUTCOMES FOLLOWING MEDIAN ARCUATE LIGAMENT RELEASE**

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**Objective:** Median arcuate ligament syndrome (MALS) is an uncommon diagnosis that is often associated with a variable clinical presentation and inconsistent response to treatment. Due to the nature of MALS, the optimal treatment modality and outcomes remain unclear.

**Methods:** A retrospective review was performed of all median arcuate ligament release (MALR) procedures at a single academic institution between 2000-2020. Variables examined included patient demographics, symptom characteristics, operative technique (open, robotic, laparoscopic), patient symptoms prior to release, symptom relief within 1 year, and recurrence of symptoms between release and last clinical follow-up.

**Results:** During the study period, 53 patients (75% female, mean age 42.1 years) underwent MALR with 19 (36%) robotic, 18 (34%) open, 14 (26%) laparoscopic, and 2 (4%) laparoscopic converted to open procedures. Abdominal pain, weight loss, and nausea and vomiting were the most common symptoms. Postoperatively, 19 (40%) had complete symptom relief within one year, 18 (38%) had partial relief, and 10 (21%) had no symptom improvement. 6 were excluded due to loss of follow-up. Laparoscopic and open procedures had the highest rate of complete symptom relief by year one with 7 (58%) and 8 (50%) respectively. 21 (57%) patients had recurrence with the greatest rate of recurrence seen among laparoscopic (80%), compared to robotic (57%) and open (38%). Patients reporting a weight loss of 20 pounds or more prior to surgery were more likely to have partial or complete symptom relief after one year compared to those reporting less than 20-pound weight loss (92% vs 64%). Furthermore, 84% of patients younger than 60 years old reported partial or complete symptom relief compared to only 56% of those older than 60.

**Conclusion:** MALS continues to be a rare disorder with widely variable surgical outcomes, requiring further study. While our patients presented with a number of gastrointestinal symptoms, the most common was postprandial pain. Our center employed laparoscopic, open, and robotic operative techniques with varying success rates, in terms of symptom relief and recurrence. Consistent with current literature, our study found greater surgical success among patients younger than 60 years old and MALS associated with a weight loss of greater than 20 pounds, regardless of operative technique. This suggests the need for better predictors to determine which patients are likely to have complete or prolonged remission of symptoms following MALR.





## **\*24. SINGLE-STAGE AND TWO-STAGE ARTERIOVENOUS FISTULAS HAVE SIMILAR OUTCOMES**

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**Background:** Traditionally, arteriovenous fistulas (AVF) involving the basilic vein (BV) have been created in single or two stages to allow time for the vein to enlarge before superficialization for potential better fistula maturation. Previous single institution studies and meta-analyses have found conflicting outcomes between single and two stage procedures. Our study aims to use a large national database to assess the difference in outcomes between single and two stage procedures for dialysis access.

**Methods:** We studied all patients undergoing BV AVF in VQI over eight years. Patients were split into single stage or planned two stage procedure for dialysis access. Primary outcomes included dialysis use with index fistula, maturity rate, and number of days from surgery to fistula use. Secondary outcomes included patency (defined by physical exam or imaging on follow-up), 30-day mortality and postoperative complications (bleeding, steal syndrome, thrombosis or neuropathy). Logistic regression models were used to assess the association between staged dialysis access procedures and primary outcomes of interest.

**Results:** The cohort consisted of 19,642 individuals of which 10,211 (52%) had a two staged dialysis access procedure and 9,431 (48%) had a single staged procedure. Average follow-up was 231 days in the single stage and 327 days for two stage. Baseline characteristics were significantly different between the two groups with the single stage group having more medical comorbidities. Primary outcomes were significant for more patients in the single stage group undergoing dialysis with the index fistula compared to two stage (40.7% versus 38.1%,  $p=0.005$ ), significant decrease in days to use (93.6 days single stage versus 141.1 days two stage,  $p=0.041$ ), and no difference in maturity at follow-up (39.6% single stage and 55.6% two stage,  $p=0.208$ ). Secondary outcomes revealed no difference in 30-day mortality or postoperative complications but a significant difference in patency with a single stage procedure compared to two-stage (89.4% versus 91.2%,  $p=0.008$ ). However, this difference in patency did not persist after adjusting for potential confounders

**Conclusions:** This study demonstrates that when dialysis access fistulas are created using the BV, there is no difference in maturity rate or one year patency when assessing single versus two stage procedures. However, two stage procedures significantly delay the time of first use of the fistula. Therefore, we suggest performing single stage procedures to minimize patient exposure to multiple procedures and expedite time to maturity.



## **\*25. PROMPT IDENTIFICATION AND INTERVENTION FOR ISCHEMIC MONOMELIC NEUROPATHY IN PREVENTING MAJOR PATIENT DISABILITY**

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**Background:** Ischemic monomelic neuropathy (IMN) is a rare complication of arteriovenous fistulas (AVFs) and arteriovenous grafts (AVGs). Signs and symptoms of IMN include arm or hand weakness and pain shortly after surgery. Diagnosis of the condition is often delayed, with debilitating outcomes for patients. We present two cases of IMN at our institution in which prompt identification and intervention prevented major disability.

**Methods:** Two cases of IMN, performed by different surgeons, were seen in our institution in July 2021.

**Results:** The first case involved an 84 year-old female with chronic kidney disease (Stage 4), diabetes mellitus, and atrial fibrillation who underwent a left upper extremity brachioaxillary AVG. The procedure was performed under local anesthesia and a 4-7 mm tapered PTFE Propaten graft was used. At the conclusion of the case a palpable radial artery pulse was noted. In the post-op anesthesia unit (PACU), the patient had ipsilateral increasing arm and hand pain. Time from procedure completion to documentation of symptoms was 103 minutes. On exam, the patient had a cool left hand with a 2+ radial pulse. The patient was taken back to the operating room and the arteriovenous graft was ligated with repair of the brachial artery.

The second case involved a 64 year-old male with end-stage renal disease, coronary artery disease, heart failure with an ejection fraction of 15-20%, and chronic lymphocytic leukemia (CLL). He had a prior right radiocephalic AVF which thrombosed; fistulogram demonstrated a diseased radial artery. Patient underwent a single-staged right brachiobasilic AVF with transposition; single-stage was performed to expedite patient's chemotherapy treatments for CLL. Surgery was performed with local and regional block. At case completion the patient was noted to have a palpable radial pulse with an excellent thrill through the transposed basilic vein. In the PACU, patient had increased pain and paralysis to the right hand. Time from procedure completion to documentation of symptoms was 217 minutes. Patient's right hand was warm with a 2+ radial pulse; however, patient had complete paralysis of his fingers and reported severe forearm pain. Within 10 minutes of fistula ligation under local anesthesia, his symptoms resolved.

**Conclusion:** Previous authors have asked that all cases be reported given the rarity and poorly-understood nature of IMN. We present two cases, performed by different surgeons, involving different arteriovenous access conduits. The mean time from procedure completion to reported onset of symptoms was 269 minutes; and mean time from symptoms onset to surgical incision was 73 minutes. Early recognition, diagnosis, and management of IMN in these cases protected patients from major long-term morbidity. Owing to this pathology, post-op observation protocols and even re-admission protocols should be set after hemodialysis access creation in order to avoid delays in diagnosis and patient disability.

## 26. CAVERNO-SAPHENOUS SHUNT FOR RECURRENT PRIAPISM: A CASE REPORT

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**Introduction:** We present a case of priapism refractory to conventional urologic methods that was successfully treated with caverno-saphenous bypass also known as a Grayhack procedure.

**Case History:** A 60-year-old male with a history of priapism secondary to self-injected Trimix (alprostadil, papaverine, phentolamine) presented to the emergency department with an erection of 10 hours duration. Detumescence was not achieved with self administration of phenylephrine. Urology unsuccessfully performed corporal irrigation and two attempts at T shunting including transglanular tunneling of bilateral corpora. After 48 hours of consecutive erection despite being on dual antiplatelet therapy, the phallic tissue began demonstrating ischemic changes at the tip. Penile doppler ultrasound confirmed no arterial flow within the corpora cavernosa. Vascular surgery was consulted to create a caverno-saphenous shunt. We began by dissecting out the proximal 10cm of the right greater saphenous vein and ligating it distally. Urology then performed a lateral corporotomy by making a 3cm incision longitudinally toward the base of the penis on the right side. This was dissected down until tense corpora was encountered. The corporotomy was dilated and dark blood was drained until lighter, oxygenated blood was seen. The dissected saphenous vein was then rotated medially and tunneled under the skin such that it would exit at the site of the corporotomy. We performed an anastomosis with 5-0 prolene suture. Doppler sounds were audible and increased with compression of the penis consistent with visualized distension of the new vein shunt. Post-operatively, the patient was prescribed a prophylactic dose oral anticoagulation and aspirin. In the days following his procedure, his penis remained in the semi-erect position. This prevented further ischemia or discomfort and he was able to continue his usual sexual activities.

**Discussion:** The treatment of priapism follows a stepwise algorithm that starts with aspiration with irrigation, then intra-cavernosal phenylephrine, then distal shunting, and finally proximal shunting. The operation described by Grayhack et al in 1964 allows for drainage of the cavernosa through an autologous shunt into venous drainage of the leg.

A review of the literature found four reports describing eleven patients undergoing the Grayhack procedure. Ihekwaba et al. described two cases, one with sickle cell hemoglobinopathy induced priapism and the second with idiopathic priapism. Both resulted in potency within six months of the operation. In contrast, Lehtonen et al. discussed three cases of idiopathic priapism treated with proximal shunting that all resulted in impotence. Despite divergence in post-operative sequelae, all studies concur that early intervention is the most important step to achieving sustainable detumescence.

## **27. COMMON CAROTID WEB AS A RARE CAUSE OF STROKE FOR A YOUNG FEMALE PATIENT**

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**Background:** Carotid web, also known as atypical fibromuscular dysplasia, is a rare, underdiagnosed shelf-like fibrous tissue arising from the posterior carotid artery bulb. These lesions are a potential underrecognized cause of cryptogenic embolic strokes.

**Method:** We present a case of a young female patient with a symptomatic embolic ischemia stroke secondary to a carotid web.

**Results:** A 29 year-old female with no personal or family history of cardiovascular risk factors presented with acute onset of severe expressive aphasia. A stroke workup revealed an occlusion of the left M2 branch. The patient underwent emergent endovascular treatment with mechanical thrombectomy of the M2 embolic lesion with recanalization of the segment. CTA and angiogram imaging showed a left side carotid web. MRI demonstrated greater than 30% left-sided ischemic stroke. By post-operative day two, patient had significant improvement of her aphasia symptoms. The patient was started on dual antiplatelet therapy and statin and one month after discharge patient underwent carotid endarterectomy with excision of carotid web flaps and repair with bovine pericardial patch angioplasty. Patient in the post-operative period exhibit no signs of stroke recurrence with full recover of expressive aphasia symptoms.

**Conclusion:** Carotid webs represent an underrecognized etiology for stroke, particularly in younger patients who often do not have typical stroke risk factors and are often misdiagnosed as self-limited carotid artery dissections. In recent years, increased awareness and improved vascular imaging techniques have greatly contributed to the increase in diagnosis of carotid webs. No consistent management guidelines currently exist, and thus optimal management remains debated. More case series/reports would be helpful in determining protocols for management.

## **28. TRANSCAROTID ARTERY REVASCLARIZATION IN THE SETTING OF PREVIOUS IPSILATERAL CAROTID-SUBCLAVIAN BYPASS - TECHNICAL CONSIDERATIONS IN A CASE REPORT**

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Transcarotid Artery Revascularization (TCAR) has expanded eligibility for high-risk patients in treating atherosclerotic carotid disease. Concomitant vascular disease is not uncommon and can complicate treatment algorithms. TCAR has been routinely used for recurrent carotid stenosis after previous carotid surgery, but the use of flow reversal with a pre-existing bypass graft has not been documented. We present a case of left TCAR for carotid artery stenosis (CAS) in a patient with a previous ipsilateral carotid endarterectomy and carotid-subclavian bypass.

A 70-year-old female with a previous left carotid endarterectomy (CEA) for symptomatic carotid artery stenosis and an ipsilateral carotid-subclavian bypass for ischemic subclavian steal syndrome presented after a transient episode of right arm neuropathy, confusion, and aphasia. Duplex ultrasonography measured a peak systolic velocity > 440 cm/s in the left internal carotid artery. CT angiography demonstrated atherosclerotic disease with 70% stenosis of the internal carotid artery and a patent subclavian bypass graft. No cerebral infarct was appreciated on magnetic resonance imaging. She was already on aspirin and high dose statin therapy. After adding Clopidogrel to her medication regimen, TCAR was elected for treatment of her symptomatic recurrent carotid stenosis. Common carotid artery cutdown was performed exposing the base of the artery proximal to the bypass anastomosis for sheath access. Angiogram demonstrated 80% stenosis. The Enroute Neuro-protection system was used, and the right femoral vein was accessed under ultrasound guidance. Reversal of flow was obtained, and pre-dilation angioplasty was accomplished with a 5 x 30 mm balloon. An 8 x 40 mm Silkroad self-expanding stent was deployed, and completion angiogram showed approximately 30% residual stenosis due to calcification. She emerged from general anesthesia with a normal neurologic exam and was discharged on post-operative day 1.

Vascular patient's comorbidities can commonly complicate treatment approaches. TCAR used in the presence of ipsilateral subclavian-bypass pass is rare and lead to a successful neurologic outcome in our case. Previous reports indicate that CEA in the presence of comorbid subclavian bypass have demonstrated adverse neurologic outcomes but investigation into endovascular approaches to carotid procedures with this modified anatomy have not been documented. The effects of flow reversal on subclavian-bypass grafts are also unknown. TCAR has been used to treat brachiocephalic disease but to utilize flow reversal adjacent to a subclavian bypass graft is a novel approach.

## **29. NOVEL ENDOVASCULAR APPROACH TO SUPERIOR MESENTERIC ARTERIOVENOUS FISTULA WITH PORTAL VEIN ANEURYSM**

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**Background:** Superior mesenteric arteriovenous fistulas (SMAVFs) are rare, can cause aneurysms of the portal venous system, and left untreated, can result in portal hypertension, rupture, heart failure, and death. Management includes either open surgical or endovascular repair with covered stents or embolization. We report a novel in-stent coil embolization technique successfully used for repair of a challenging SMAVF.

**Method:** A 56-year-old man presented with an enlarging SMV and portal vein aneurysm. His history was significant for a small bowel resection of a desmoid tumor 14 years previously. He complained of vague right-sided abdominal pain and right umbilical area pulsations. Computed tomography (CT) angiography revealed a high-flow SMAVF in the midsegment of the superior mesenteric artery (SMA), and the patient was taken to the operating room for endovascular repair.

Embolization was initially attempted with detachable coils, but this approach was aborted as the coils did not have sufficient purchase to anchor securely and migrated into the fistula and portal venous system prior to full release and deployment. Placement of a covered stent in the SMA to exclude the fistulous connection was not feasible due to the presence of multiple adjacent major SMA branches. Therefore, a covered stent funnel was created across the fistula, into which embolization coils were able to nest without migrating. This was achieved with the use of multiple buddy wires to deploy a VBX stent graft across the fistulous connection and crush the distal end of the stent with a buddy balloon. The funneled covered stent was then packed with embolization coils, and subsequent angiography and intravascular ultrasound demonstrated complete occlusion of the fistula. A distal dissection in the SMA was noted and repaired with an EverFlex stent.

**Results:** Completion angiography confirmed complete occlusion of the SMAVF and filling of all SMA branches. A 6-month postoperative surveillance CT demonstrated continued resolution of the fistula.

**Conclusion:** This case demonstrates a novel endovascular technique to create a funneled covered stent across a high-flow SMAVF as a platform to enable embolization and prevent coil migration. This in-stent coil embolization technique is a viable option for cases in which embolization coils and covered stents fail or are unsuitable.

## **30. ENDOVASCULAR MANAGEMENT OF A POST-TRAUMATIC RENAL ARTERIOVENOUS FISTULA**

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**Background:** Renal arteriovenous fistula (RAVF) with or without concomitant arterial or venous aneurysm is a rare but potentially fatal condition. Traditionally, open surgical repair has been the treatment of choice. However, novel endovascular techniques to treat RAVF have become first-line as they are well tolerated with few complications. We present successful endovascular repair of renal arteriovenous fistula with concomitant venous aneurysm using embolization.

**Method:** The patient is a 64-year-old male with history of hypertension, hyperlipidemia, Factor V Leiden, lower extremity deep vein thrombus and pulmonary embolism on lifelong anticoagulation with Apixaban. The patient had suffered blunt trauma 43 years previously necessitating a left nephrectomy and splenectomy who presented with a pulsatile abdominal mass. He underwent CT angiography, which demonstrated a left renal arteriovenous fistula along with an ectatic 12mm renal artery stump and a 4.5cm renal vein aneurysm. The patient was taken to the hybrid suite where the right common femoral artery was accessed. A selective left renal artery angiogram was performed, which confirmed a large arteriovenous fistula as well as associated venous aneurysm. A 12mm Amplatzer Vascular Plug II (Abbott Medical, Chicago, IL), two Ruby 14mm x 60mm coils (Penumbra, Alameda, CA) and a 60mm packing coil were placed. Completion angiogram showed occlusion of the fistula.

**Results:** The patient recovered uneventfully and was discharged without issue on the same day. He has been maintained on his pre-operative regimen of Apixaban, high-intensity statin, and antihypertensive agents. The patient has been followed clinically without signs of abdominal or flank pain.

**Conclusion:** Post-traumatic fistula is an uncommon complication of nephrectomy. Endovascular embolization is a safe, effective, and minimally invasive approach to treat renal arteriovenous fistulae.

## **31. ENDOVASCULAR REPAIR OF TRACHEO-INNOMINATE ARTERY FISTULA: TWO CASE REPORTS AND A REVIEW OF THE LITERATURE**

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**Background:** Tracheo-innominate fistula (TIF) is a rare and highly fatal complication of tracheostomy. Traditional management includes open surgical exploration with ligation and division of the involved artery, with or without bypass grafting. Endovascular techniques have been increasingly described as useful alternatives for patients not suitable for open repair. However, the true risk of a graft or other implanted foreign body infection given intravascular communication to the aerodigestive tract remains unclear. We sought to describe our institution's experience with endovascular repair of TIF and to assess rates of complication, infection risk, and durability within the literature.

**Methods:** Two patients with massive hemoptysis suspected of TIF were treated successfully with endovascular exclusion. Also, 35 reports describing 39 cases of TIF treated with endovascular intervention were identified between 2001 and 2020 in the world literature.

**Results:** Both patients treated at our institution survived to discharge and were free of recurrent bleeding and infection at follow-up (range: 6 mo - 2 years). Of 39 cases of TIF treated endovascularly in the literature, 33 (85%) patients had successful treatment and were followed on average for 10 months without further bleeding or infection. 3 patients required subsequent open repair. There were 3 perioperative mortalities in total (8%), all related to recurrent bleeding. Complications included issues with stent durability and recurrent bleeding. There were no reports of graft infection.

**Conclusions:** Though still infrequently described and not without complications, endovascular repair of TIF appears to be associated with a lower infection risk than expected and is generally well-tolerated despite concerns regarding long-term durability.





## **\*32. FRAILTY AMONGST VETERANS UNDERGOING INFRARENAL AORTIC ANEURYSM REPAIR**

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**Background:** Frailty is a known risk factor for adverse outcomes following surgery and affects at least 3 of every 10 U.S. Veterans aged 65 years and older. We designed a study to characterize the association between frailty and complications after endovascular aneurysm repair (EVAR) compared to open aneurysm repair (OAR) at our regional Veterans Affairs Medical Center.

**Method:** Veterans who underwent either OAR or EVAR at our institution between January 1, 2000 and December 31, 2020 were identified. We examined medical history, procedure characteristics, perioperative complications, and frailty as measured by the modified 5-Factor Frailty Index (mFI-5). Frailty was defined as a mFI-5 score  $\geq 2$ . Primary endpoints were postoperative complications, duration of surgery, and length of hospital stay. Tests of association were performed with t-test and chi-square analysis.

**Results:** Over the 21-year period, we identified 314 patients that underwent AAA repair with 115 (36.6%) OAR and 199 EVAR (63.4%) procedures. Patients undergoing EVAR were on average older (72.1 vs. 70.2 years) and had a higher average modified 5-Factor Frailty Index compared to open (1.49 vs 1.23,  $p=0.036$ ). When comparing EVAR and OAR cohorts, patients undergoing OAR had a higher AAA diameter (6.5 cm, SD 1.5) compared to EVAR (5.5 cm, SD 1.1  $p<0.0001$ ). Fewer frail patients underwent OAR ( $n=40$ , 34.8%) compared to EVAR ( $n=86$ , 43.2%), and frail EVAR patients had higher AAA diameter (5.8 cm, SD 1.0) compared to non-frail EVAR patients (5.3 cm, SD 1.2),  $p=0.003$ . Among OAR procedures, frail patients had longer operative times (296 min vs 253 min,  $p=0.013$ ) and higher incidence of pneumonia (17.5% vs 5.3%,  $p=0.035$ ). Among frail EVAR patients, operative time and perioperative complications including wound dehiscence, surgical site infection, and pneumonia were not significantly different than their non-frail counterparts. Overall, frail patients had more early complications ( $n=55$ , 43.7%) as compared to non-frail patients ( $n=48$ , 25.5%,  $p=0.001$ ). OAR patients had higher rates of post-operative complications including wound dehiscence (7.0% vs 0.5%,  $p=0.001$ ), surgical site infections (7.0% vs 1.0%,  $p=0.003$ ), and pneumonia (9.6% vs 0.5%,  $p<0.0001$ ). Open repair was also associated with longer average ICU stays (11.0 days vs 1.6 days,  $p<0.0001$ ) and longer average hospitalizations (13.5 days vs 2.4 days,  $p<0.0001$ ) as compared to EVAR.

**Conclusion:** Our findings demonstrate that frailty is associated with higher rates of adverse outcomes in open repair compared to EVAR. Patients who underwent open repair had higher rates of wound dehiscence, surgical site infection, and pneumonia, compared to those undergoing endovascular repair. Frailty was associated with higher AAA diameter in the EVAR cohort and longer operative times and higher frequency of postoperative pneumonia in the OAR cohort. Frailty is a strong non-modifiable risk factor that should be considered in the management of aortic aneurysms.



## **\*33. OUTCOMES OF THORACIC ENDOVASCULAR AORTIC REPAIR IN DIALYSIS PATIENTS**

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**Background:** Thoracic endovascular aortic repair (TEVAR) and complex endovascular aneurysm repair (cEVAR) are effective and minimally invasive treatment options for preventing rupture and decreasing mortality of aortic aneurysms. Patients with renal insufficiency are prone to worse postoperative cardiovascular morbidity and mortality due to the atherosclerosis burden as well as increased levels of angiotensin II. Nonetheless, knowledge about the outcomes of aortic stent graft therapy in dialysis patients is scarce. This study aimed to examine outcomes after TEVAR and cEVAR in patients on dialysis.

**Methods:** Utilizing data from the Vascular Quality Initiative (VQI) Vascular Implant Surveillance and Interventional Outcomes Network (VISION) database, we retrospectively evaluated patients who underwent TEVAR or cEVAR from 2003 to 2018. Patients were divided into dialysis and non-dialysis groups. Outcomes were in-hospital stroke, myocardial infarction (MI), spinal cord ischemia (SCI), 30-day mortality, one-year mortality, aneurysmal rupture, and reintervention. In-hospital outcomes were assessed using multivariable logistic regression analysis and one-year outcomes were evaluated using Kaplan Meier Survival and Cox regression analyses.

**Results:** Our cohort included 4,775 non-dialysis and 126 dialysis patients. Dialysis patients were more likely to be black, diabetics, hypertensive, with history of congestive heart failure, and symptomatic on presentation. There was no difference between the two groups in the risk of in-hospital MI (OR:0.6, 95%CI (0.15-2.4), P=0.467), stroke (OR:1.2, 95%CI (0.3-4.9), P=0.794), or SCI (OR: 2.4, 95%CI (0.9-6.03), P= 0.072). The dialysis group had higher risk of one-year mortality (HR: 2.1, 95%CI (1.4-3.2), P<0.001). However, there was no significant difference between the two groups in the risk of one-year aneurysmal rupture (aHR:1.4, 95%CI (0.6-3.2), P=0.402) and reintervention (aHR:1.5, 95%CI (0.7-2.9), P=0.281).

**Conclusion:** Among patients undergoing TEVAR or cEVAR, there was no significant difference in the risk of in-hospital stroke, MI, SCI, one-year aneurysmal rupture and reintervention based on dialysis status. However, patients on dialysis had twice the risk of one-year all-cause mortality. Although TEVAR and cEVAR can be performed safely in dialysis patients, the long term benefit of these procedures could be diminished with the lower overall survival of this group.



## **\*34. SHORT-TERM PATIENT AND CLINICAL OUTCOMES WITH THE GORE EXCLUDER AAA ENDOGRAFT FOR HIGHLY-ANGULATED PROXIMAL NECK ANATOMY**

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**Background:** The GORE Excluder Conformable Abdominal Aortic Aneurysm (AAA) Endoprosthesis, approved by the Food and Drug Administration (FDA) in December of 2020, dramatically expands the range of Endovascular Aneurysm Repair (EVAR) instructions for use (IFU) to treat highly angulated and short proximal neck abdominal aortic aneurysms. Owing to its recent approval, short-term clinical outcomes with this device remain scarce.

**Methods:** From 2021 to the present, a total of three patients underwent EVAR using the GORE Excluder Conformable device at our institution, Kaiser Permanente San Bernardino Medical Center. Endografts were deployed in a radiology suite using standard 2D angiography in conjunction with Cydar Medical (Wilmington, Delaware) reconstructed 3D over-layer. Standard post-op imaging follow-up at 1-month and 1-year were obtained with computer tomography angiography (CTA).

**Results:** Patient ages were 85, 67, and 85 years for these cases. Maximal AAA diameter was 6.0 centimeters (cm), 5.9 cm, and 8.9 cm, respectively; mean diameter for these cases was 6.9 cm. Healthy proximal neck length was 2.2 cm, 3 cm, and 1.2 cm, respectively; mean neck length was 2.1 cm. Proximal neck angulation was 85 degrees, 74 degrees, and 90 degrees, respectively; mean angulation was 83 degrees. Mean device diameter used was 31 millimeters. Mean operative time, total fluoroscopy time, and contrast used was 190 minutes, 28.3 minutes, and 83 milliliters, respectively. All cases were performed under general anesthesia.

No adjunctive procedures, such as proximal cuff or endo-anchors, were used in these cases. On completion angiogram, no Type I endoleaks were seen. Average patient length of stay was 2 days. No major adverse events were seen in these patients. All patients had post-op imaging; two patients showed complete thrombosis of their AAA, while one patient had a Type II endoleak from the inferior mesenteric artery (IMA). Mean follow-up time is 9 months, and all patients remain enrolled within our health maintenance organization (HMO) health plan.

**Conclusion:** The GORE Excluder Conformable Endoprosthesis expands the (IFU) in the endovascular management of AAA. Our early experience with this device demonstrates good patient outcomes and excellent clinical outcomes in highly angulated neck anatomy. No adjunctive maneuvers were needed to achieve proximal seal with this device at the time of surgery. Longer follow-up is needed to determine mid- and long-term outcomes with this device.

## **35. ENDOVASCULAR-FIRST APPROACH TO MANAGEMENT OF INADVERTENT SUBCLAVIAN ARTERY CANNULATION DURING CENTRAL VENOUS CATHETER INSERTION**

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**Background:** Inadvertent arterial catheterization of major arteries during attempted central venous catheter insertion can be a devastating complication in critically ill patients resulting in hematoma, hemothorax, thromboembolism, stroke, or limb ischemia. We present our management of three cases of inadvertent subclavian artery cannulations during attempted placement of triple lumen central venous catheters.

**Methods:** During 2021, three patients had attempted placement of 7 French triple lumen central venous catheters, with ultimate placement into the arterial system; two with attempted subclavian vein insertion, one with attempted ultrasound-guided internal jugular vein insertion. The first case was an 89 year old trauma patient who suffered significant blunt force trauma to the torso, head and extremities from a motor vehicle accident. Ultrasound-guided right internal jugular central venous catheter placement was attempted, with post-procedural chest radiograph showing the catheter tip in the innominate artery with arterial waveform transduction. The second case was a 23 year old female hospitalized for over a month with refractory status epilepticus, renal failure and hypoxic respiratory failure. A left subclavian central venous catheter placement was attempted, with post-procedural chest radiograph demonstrating the tip in the descending thoracic aorta and arterial waveform transduction. The third case was a 19 year old patient who presented with a seizure due to a hemorrhagic intracranial mass and underwent attempted placement of a right subclavian vein central venous catheter. In the ensuing days, there was noted to be mottling of the right hand, and an arterial waveform was transduced off the line.

**Results:** In all cases, a CT angiogram was performed confirming the position of the catheter tip and when identified to be arterial, a dilute heparinized saline drip was initiated through the line to minimize risk of thrombus accumulation along the catheter. In the first two cases, an aortic arch angiogram and selective subclavian catheterization was performed, with ultimate successful percutaneous suture-mediated closure device (6Fr Abbott Proglide) deployment along the trajectory of the catheter insertion, without need for adjunctive balloon occlusion, covered stent-grafting or open exploration. On the third case, in which the Proglide device was inserted along the infraclavicular tract, the footplate jammed and was unable to deploy. A subsequent infraclavicular open cutdown was performed and the subclavian artery was repaired primarily after removing the Proglide device. There were no adverse sequelae noted from the arteriotomy closures.

**Conclusion:** Certain inadvertent arterial catheterizations during attempted central line insertions can be closed percutaneously with good success if catheter size and trajectory is favorable. We have found being prepared for open exploration in the hybrid operating room is helpful for these cases.

## **36. PHYSICIAN MODIFIED INFERIOR MESENTERIC ARTERY FENESTRATION IN MESENTERIC ATHEROSCLEROTIC DISEASE: PUSHING THE IFU FOR EVAR**

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**Background:** Current instructions for use (IFU) for endovascular aortic repair (EVAR) prohibit the use of the endograft in the setting of mesenteric atherosclerotic disease with a large patent inferior mesenteric artery (IMA). Studies have shown that up to 18% of patients older than 65 have significant stenosis or occlusion of either the superior mesenteric artery (SMA) or celiac artery without any apparent symptoms due to collateral flow. We present a unique case of a physician-modified endograft for a 5.8 cm abdominal aortic aneurysm (AAA) necessitating an IMA fenestration due to an occluded SMA. Cases such as this may serve to push the current IFU limitations for EVAR.

**Method:** A 71 year-old male with history of coronary artery bypass grafting and chronic obstructive pulmonary disease was referred for a 5.8 cm AAA. The patient was not a candidate for standard EVAR given that he was found to have an occluded SMA on computed tomography angiogram (CTA). Moreover, the patient was also found to have a 6 mm IMA. Prior attempts at recanalization of the SMA were unsuccessful. It was noted that the bilateral hypogastric arteries were also occluded. In addition to the bowel, the IMA appeared to be the principal blood supply to the pelvis.

**Results:** Given the patient's comorbidities, he was deemed a high-risk candidate for open repair. A physician-modified fenestrated endovascular aneurysm repair (f-EVAR) with selective fenestration and stenting of the IMA was recommended. Modification was performed on 32 mm by 109 mm Cook Alpha device. The IMA was stented using a 6 mm x 29 mm balloon-expandable Viabahn stent. Post-operative course was not complicated, and he was discharged home on day 2. CT imaging at 3 months post-op showed complete thrombosis of the sac with preserved flow through visceral stents.

**Conclusion:** Only one case of f-EVAR with fenestration of the IMA has previously been reported. However, we present the first case in which the SMA is also occluded. Our case demonstrates that f-EVAR may serve as an option for select patients who do not meet IFU for standard EVAR due to mesenteric atherosclerotic disease.

## **37. RUPTURED MYCOTIC ANEURYSM DUE TO CLOSTRIDIUM SEPTICUM FROM CECAL PERFORATION**

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Mycotic aortic aneurysms represent about 1% of abdominal aortic aneurysms and up to 55% may present as ruptured. Risk factors include preexisting infection, immunocompromise, and vascular injury, although younger patients and those without typical vascular risk factors can also be affected. Mycotic aortic aneurysms have traditionally been associated with *Staphylococcus* or *Salmonella*, though associations with a broad spectrum of bacterial species have now been described. *Clostridium septicum* is an obligate anaerobic gram-positive spore-forming rod that is a rare cause of mycotic aortic aneurysm and myonecrosis. Nontraumatic *C. septicum* aortitis is thought to occur through bacteremic seeding from damaged gastrointestinal mucosa and is particularly associated with malignancies of the colon. If not treated quickly and aggressively, mycotic aortic aneurysms with *C. septicum* are fulminant and invariably fatal. We present a case of a ruptured mycotic infrarenal abdominal aortic aneurysm due to *C. septicum* in a 79-year old man with cecal diverticulitis. The patient was taken for emergent open repair and was found to have a large cecal perforation. The patient underwent right hemicolectomy, aortic debridement, and aneurysm repair with rifampin-soaked Dacron graft. The patient survived surgery and was treated aggressively in the ICU until post-operative day 5 when he succumbed to worsening septic shock and multisystem organ failure. Surgical pathology of the resected colon indicated a perforated cecal ulcer with severe inflammation isolated to the area of perforation that may have been secondary to diverticulitis. Operative cultures from the aorta grew *C. septicum*. Mycotic aortic aneurysm due to *C. septicum* is a grave diagnosis that has been associated with colonic malignancies. Cecal diverticulitis may be an underrecognized association with *C. septicum* infection.

## **38. ENDOVASCULAR RETRIEVAL OF SEPTAL OCCLUDER IN PATIENT WITH ATRIAL SEPTAL DEFECT**

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**Introduction and objectives:** Transcatheter closure is a widespread technique used to treat secundum atrial septal defects (ASD), with almost 85–90% of all secundum ASD closed by using a transcatheter approach.

**Methods and results:** We report a case where the ASD occluder device was dislodged from the septum after deployment and lodged in the inferior vena cava after multiple attempts to remove it. We successfully retrieved the device endovascularly using a 24Fr Gore Dryseal sheath through right femoral vein access and balloon occlusion of the left iliac vein from the right internal jugular access. Endobronchial forceps were used to grab the device in a ‘telescope’ technique and the device was brought within the sheath and successfully removed. The patient recovered well from surgery without any complications and was discharged on the first postoperative day.

**Conclusion:** To our knowledge, this is the first report of endovascular retrieval of an ASD occluder device.

# Notes







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