

Gestion des accès ilio-fémoraux complexes dans l'exclusion endovasculaire aortique

J Sobocinski, R Azzaoui, Th Mesnard, C Jeanneau

Centre de l'aorte, Chirurgie vasculaire,

CHU Lille, Fr

SRES Marseille 2025



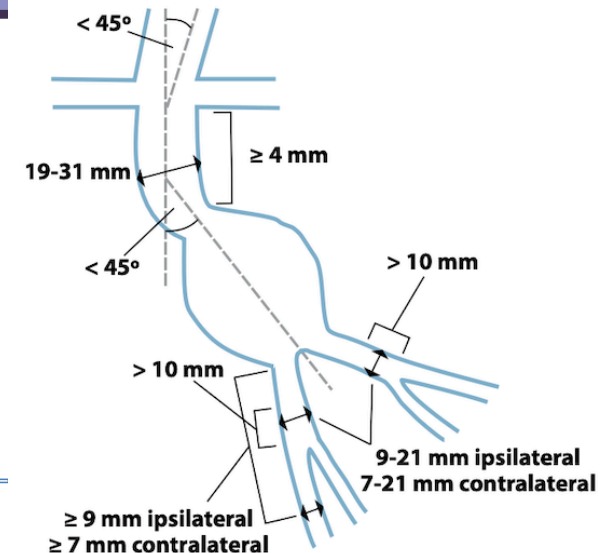
Conflits d'intérêt

- *COOKMEDICAL: speaker, consulting, proctoring fees & travel expenses*
- *GEHC: speaker & consulting fees*
- *WLGORE : consulting fees; educational grants*
- *AbbottVascular : speaker, consulting fees*
- *Shockwave : consulting fees*

Iliac / access issues in Endovascular Aortic repairs

ESVS guidelines EVAR - IFU

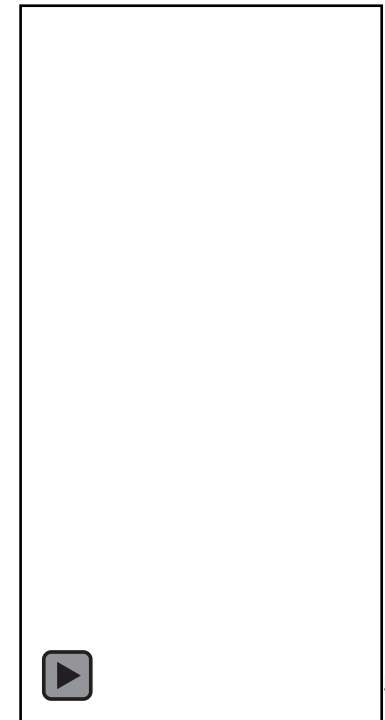
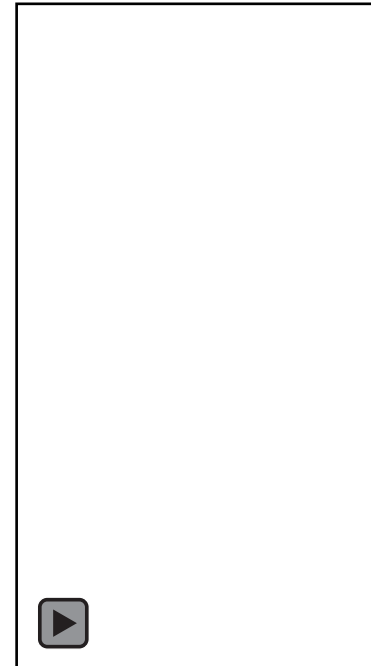
Recommendation 60	Cor	Loe
In most patients with suitable anatomy and reasonable life expectancy, endovascular abdominal aortic aneurysm repair should be considered as the preferred treatment modality.	Ia	B
Recommendation 74	Cor	Loe
In patients with ruptured abdominal aortic aneurysm and suitable anatomy, endovascular repair is recommended as a first option.	I	B
Recommendation 96	Cor	Loe
In complex endovascular repair of juxtarenal abdominal aortic aneurysm, endovascular repair with fenestrated stent grafts should be considered the preferred treatment option when feasible.	Ia	C



Iliac / access issues in Endovascular Aortic repairs

Access complications after EVAR – main cause of early open conversion

Up to 20% of elective cases rejected due to bad access – Women & TEVAR +++

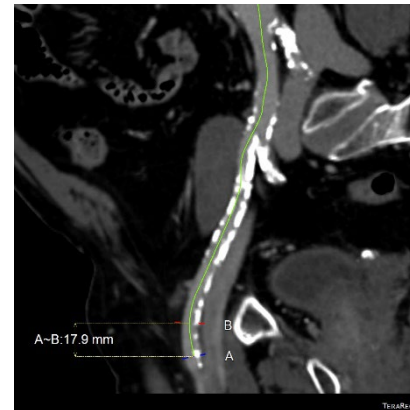


Lee WA et al. JVS 2003

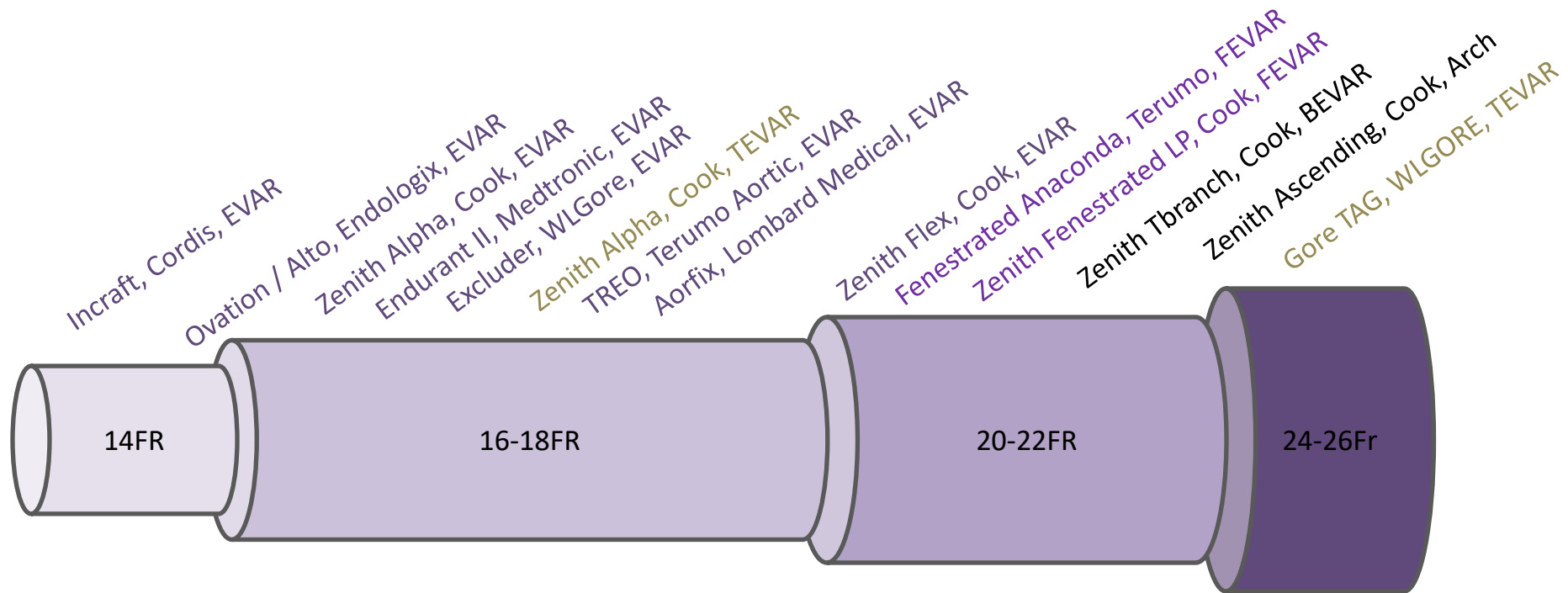
Piffaretti G et al. EurJ Cardiothoracic Surg 2024

Understanding Iliac Access Challenges – not only a matter of diameter !

- **Arterial calcification:** excentric or concentric
- Tortuosity
- **From tight Stenosis to complete occlusion**
- Vessel diameter / Prior stenting (self-expandable)
- Hypogastric patency
- Associated lesions of CFA
- **Other factors:** Obesity, previous interventions, and anatomical variations.

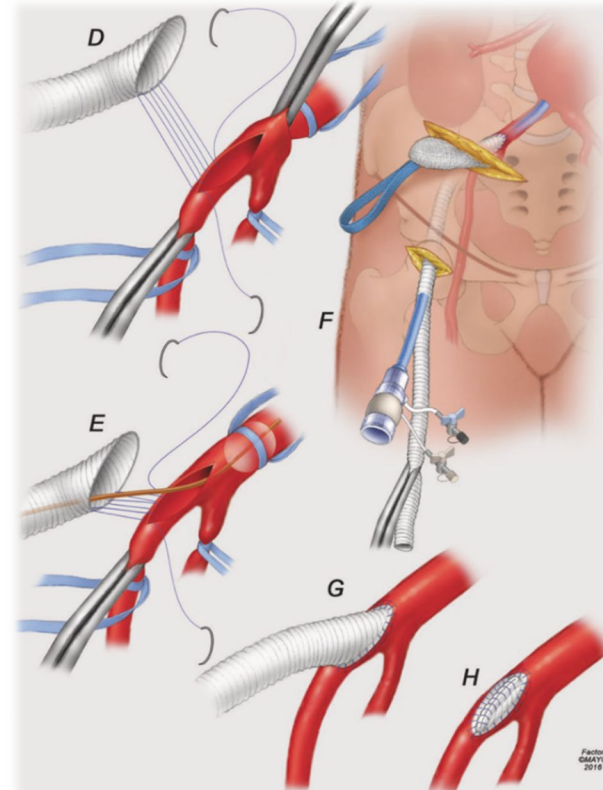
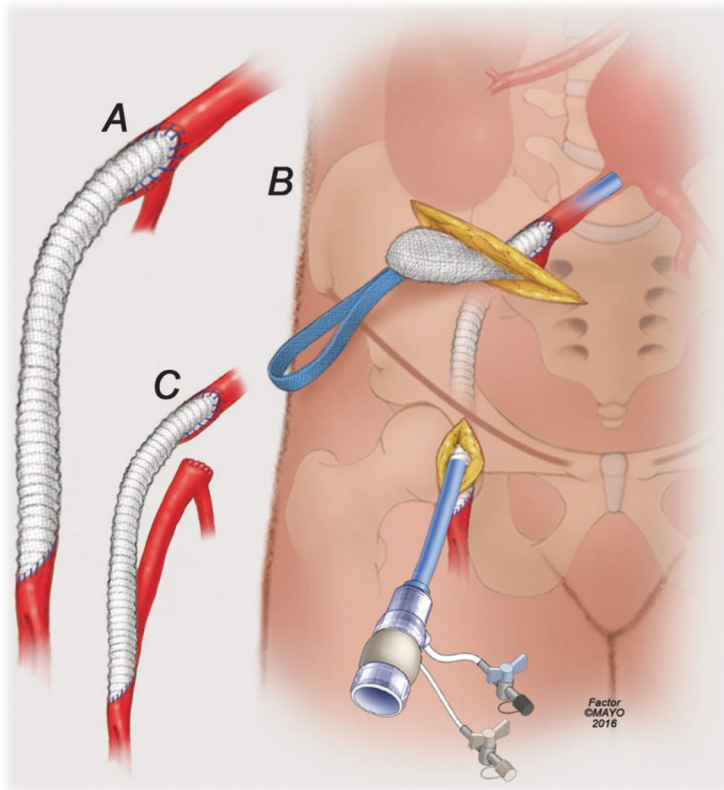


Gallitto E et al. JVS 2017



Distribution in delivery system profiles

Open surgical conduits for EVAR



- ↑ morbimortality : x1.8
- Up to 40% of patients left untreated with their AAA after conduit

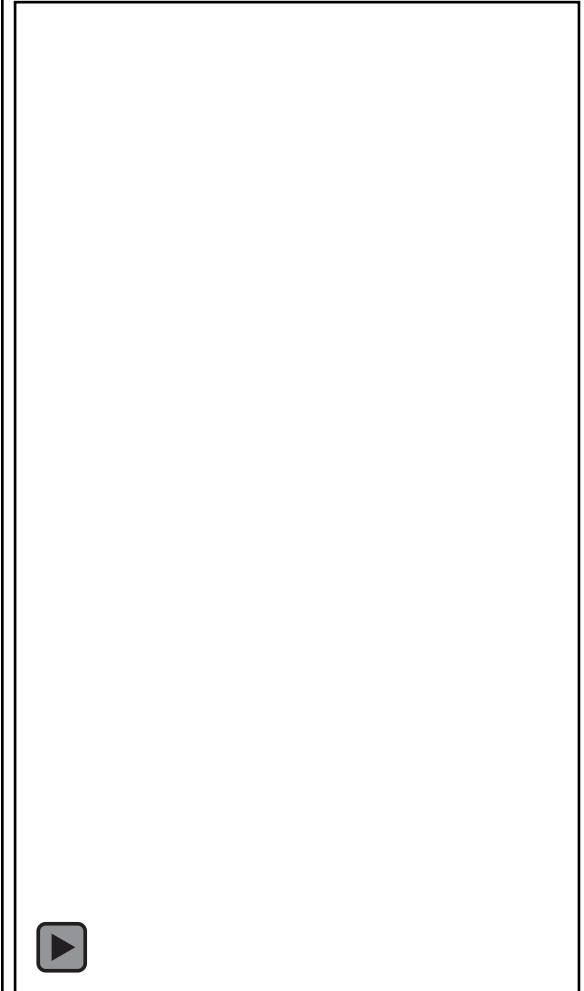
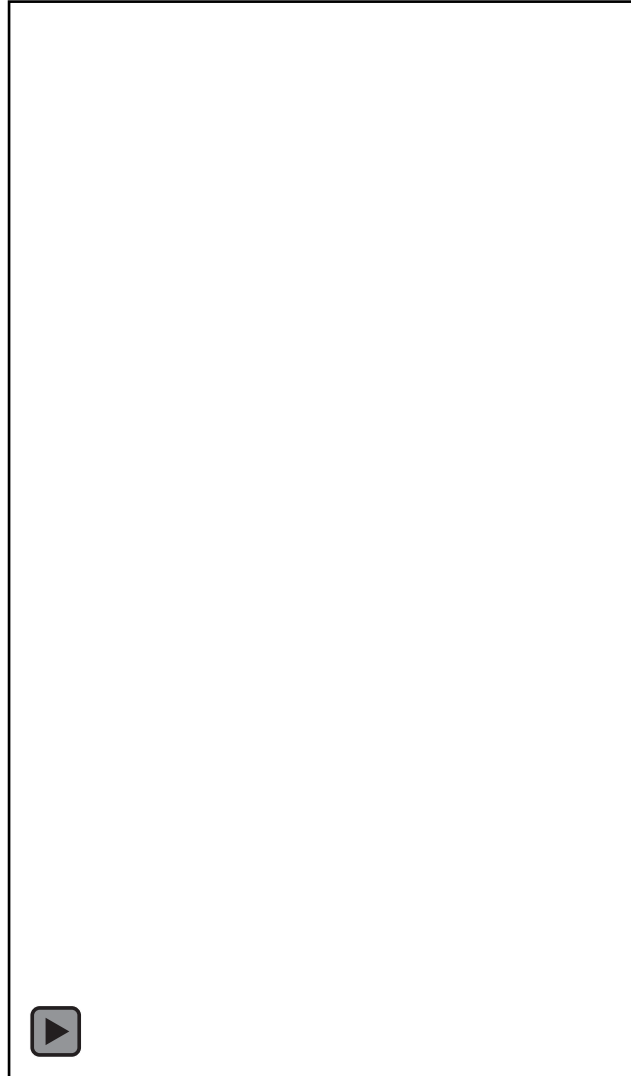
Lee WA JVS 2003

Richarz S et al. Swiss Med Wkly 2021

Tong Y et al. JVS 2023

Early experience to cross iliac lesions in EVAR: Initial tips

POBA / external maneuvers

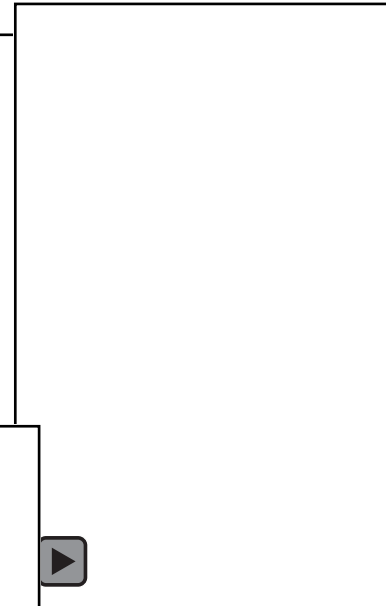
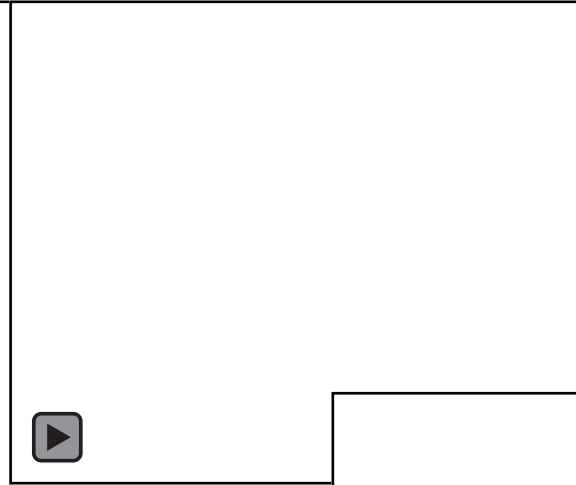
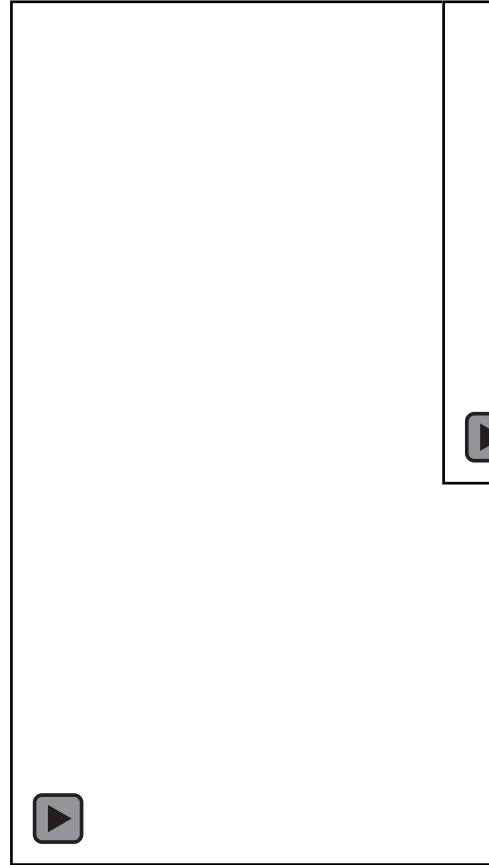
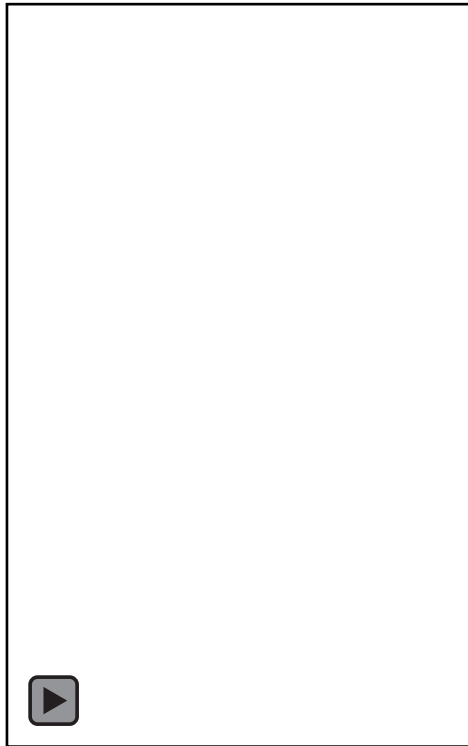


Operators gaining experiences with EVAR: « through-and-through » wire (telepheric)

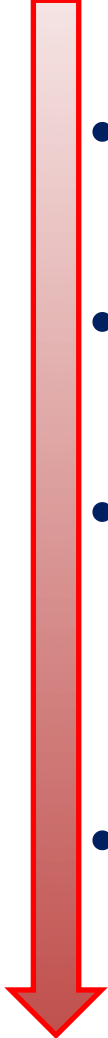
Case Reports > Eur J Vasc Endovasc Surg. 2017 Apr;53(4):532.
doi: 10.1016/j.ejvs.2017.01.005. Epub 2017 Feb 10.

Successful TEVAR with a Through and Through Guidewire in an Extremely Tortuous Aorta

B Fiorucci¹, N Tselimpakis²

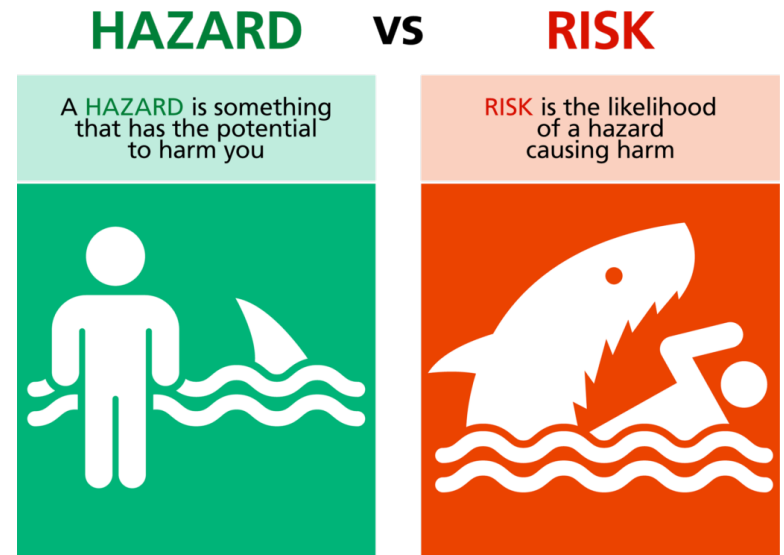


Towards the « pave & crack technique » and iliac endoconduit

- 
- 2001 : Yano OJ & al. JVS
 - First description
 - 2005 : Makaroun MS JVS 2005
 - TAG registry : 15% of endoconduit
 - 2006 : Mell M & al. J EVT
 - No buttock claudication when hypogastric coverage required – but limited data and concerns with the spinal cord ischemia risk
 - 2008: Peterson BG & al JVS
 - CMD WLGore Stentgraft

Main Identified Risks / complications

- Arterial dissection
- Arterial Rupture – bleeding
- Post-operative limb ischemia
- Hypogastric loose :
 - Buttock claudication
 - Pelvic ischemia
 - higher SCI risk



GAME CHANGERS



Propaten technology
Up to 13mm diameter
5 to 15cm length

Internal endoconduit: An innovative technique to address unfavorable iliac artery anatomy encountered during thoracic endovascular aortic repair

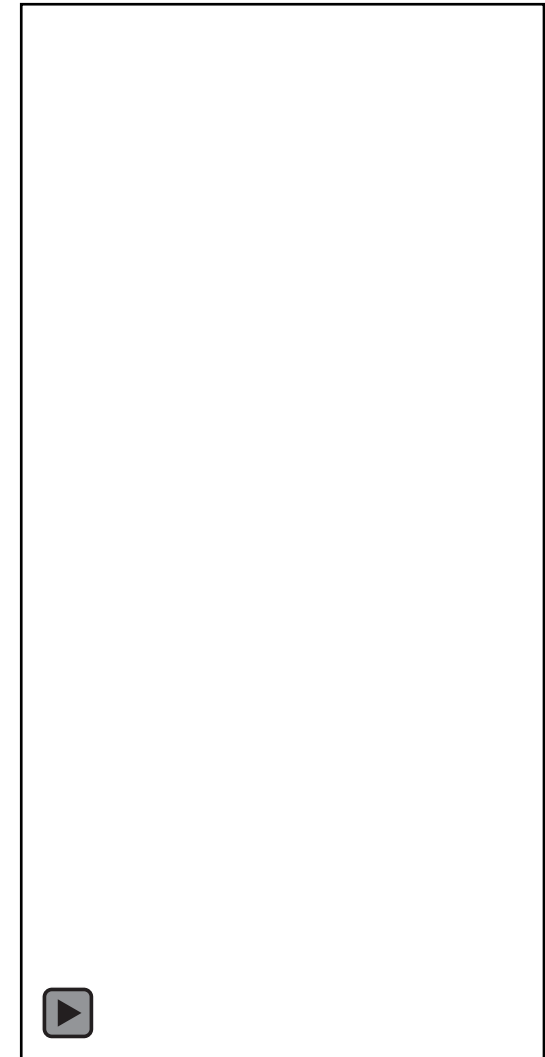
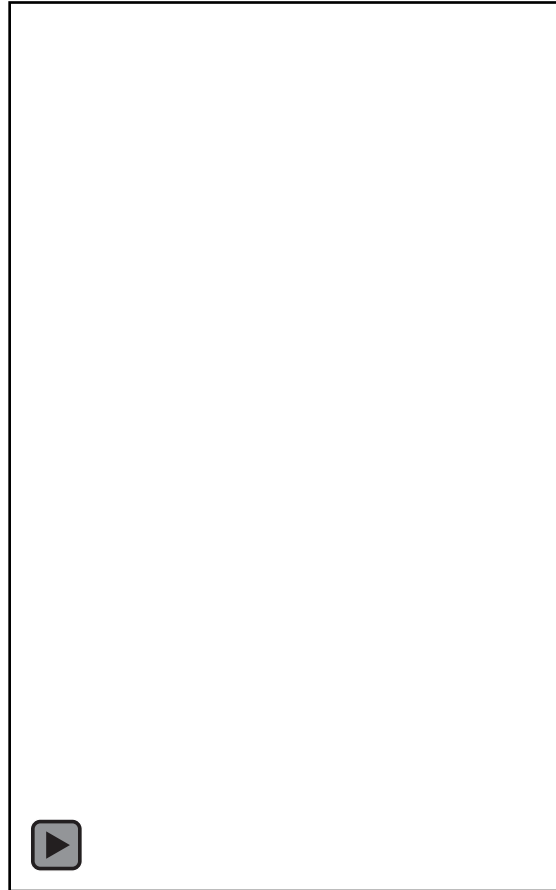
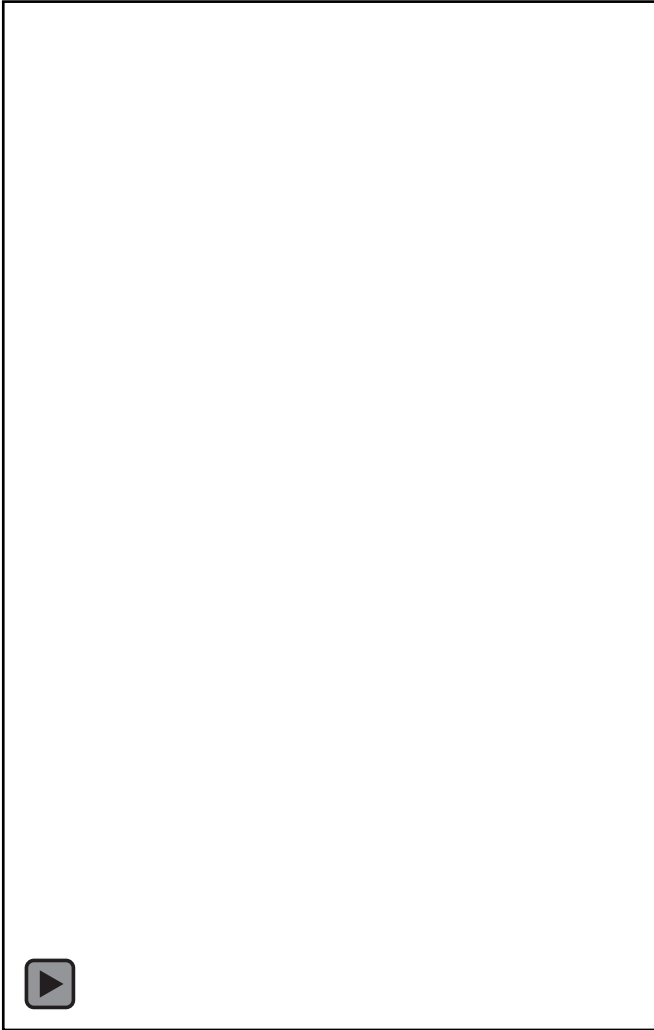
Brian G. Peterson, MD,^a and Jon S. Matsumura, MD,^b *Saint Louis, Mo; and Chicago, Ill*

> [Acta Cardiol Sin.](#) 2018 Jan;34(1):37-48. doi: 10.6515/ACS.201801_34(1).20170911A.

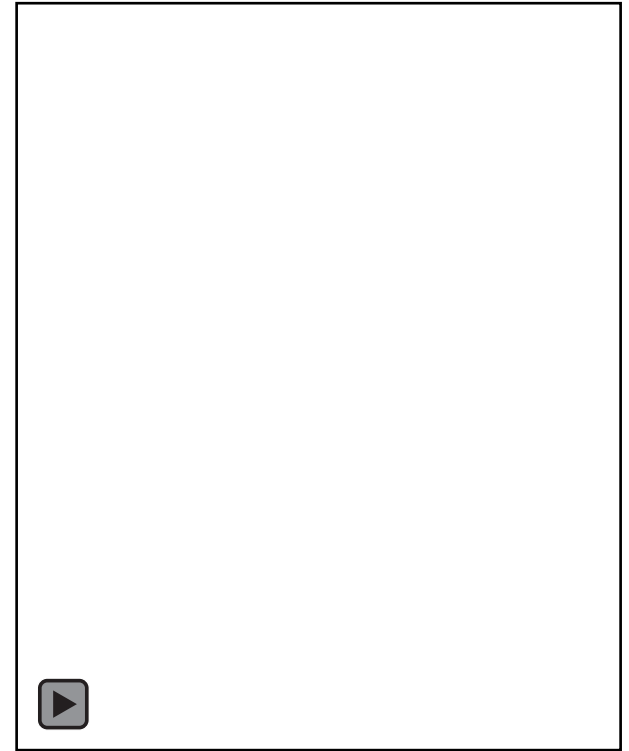
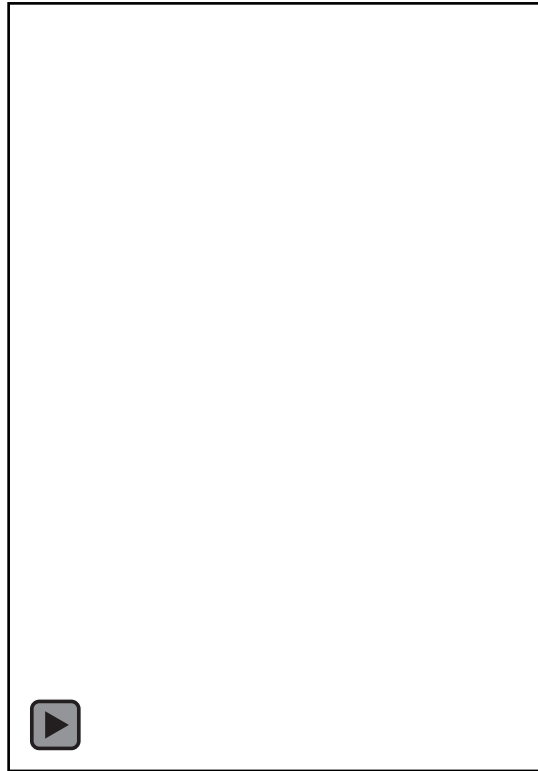
Use of Internal Endoconduit for Unfavorable Iliac Artery Anatomy in Patients Undergoing Transcatheter Aortic Valve Replacement – A Single Center Experience

Yung-Tsai Lee ¹, Wei-Hsian Yin ^{1 2}, Ho-Ping Yu ¹, Jeng Wei ¹

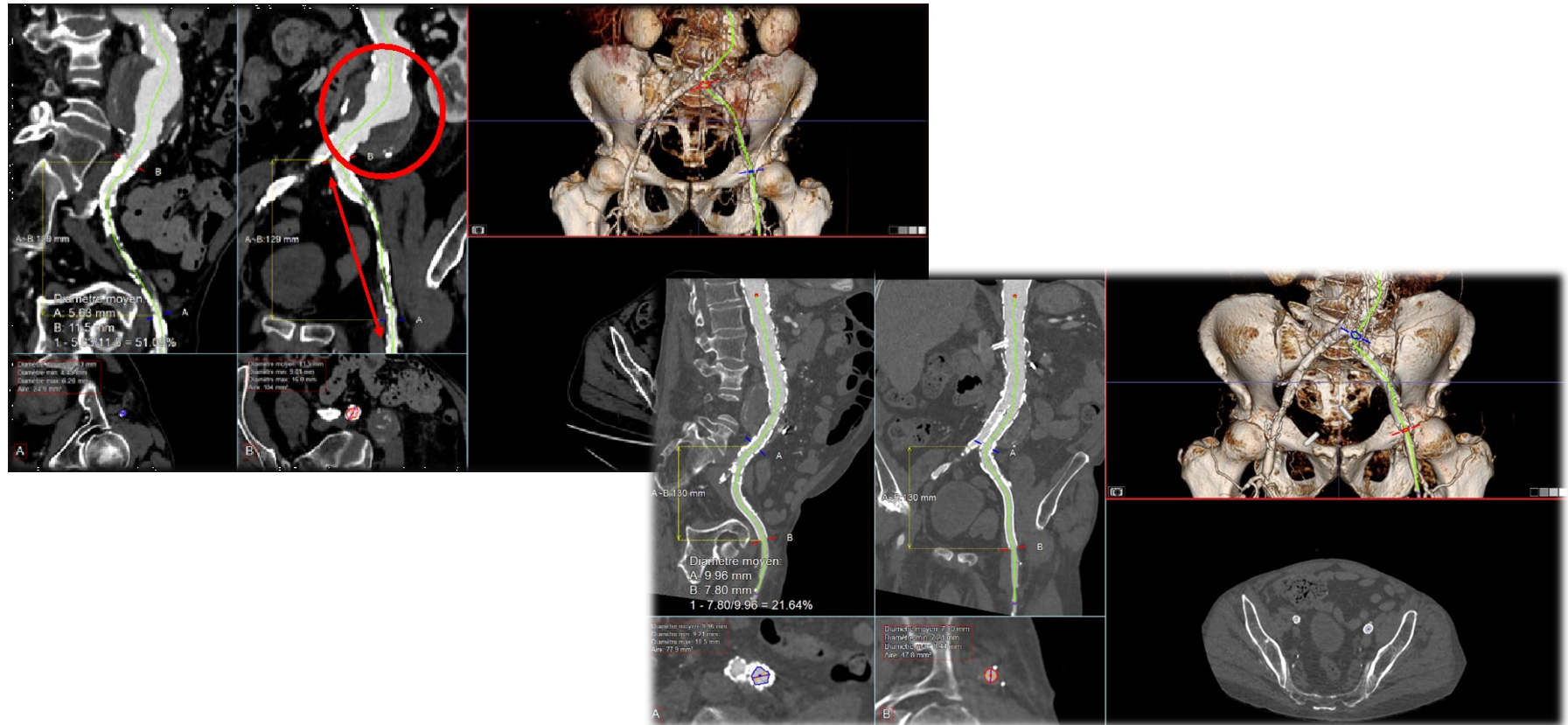
Case #1 - endoconduit



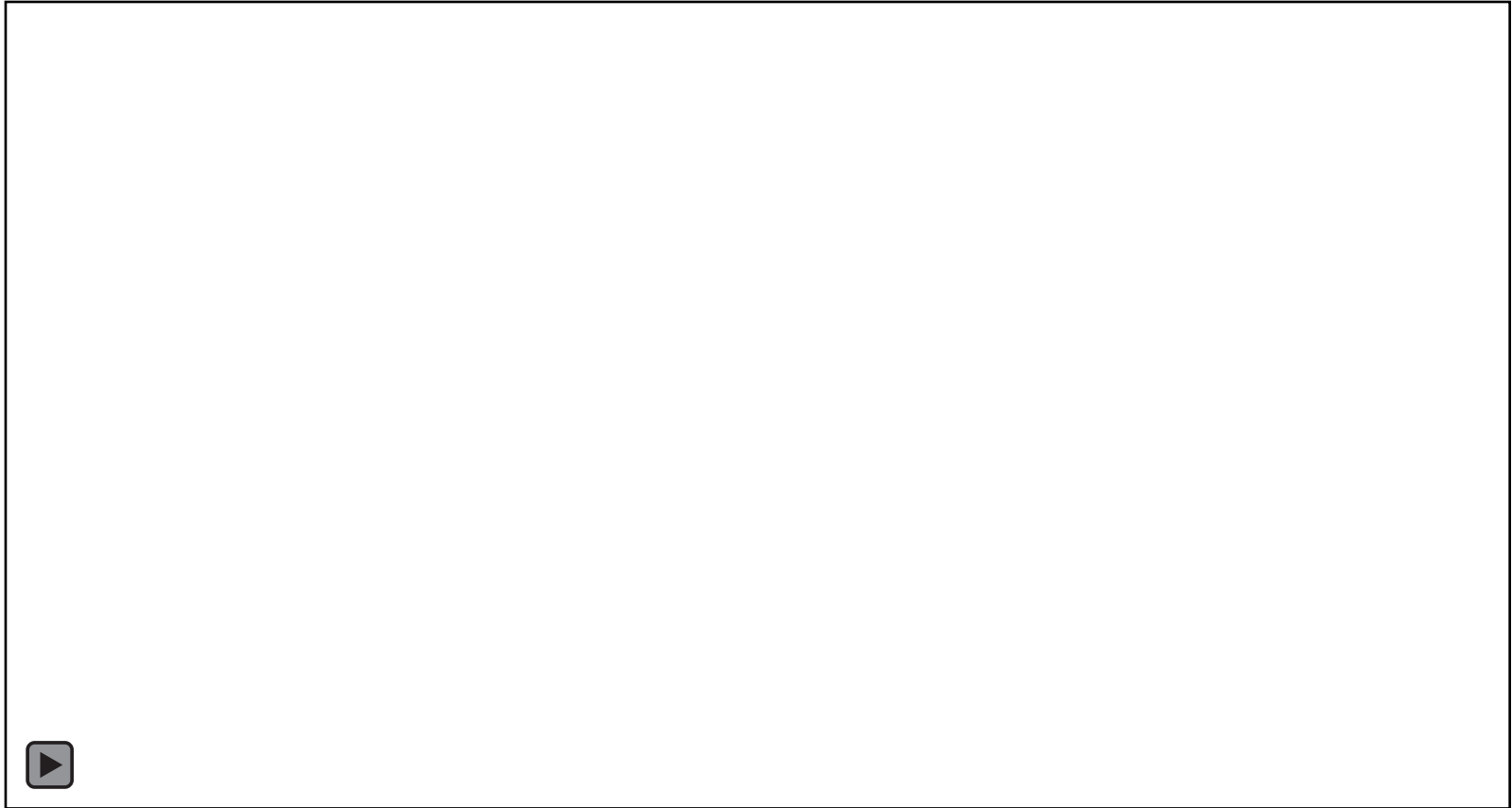
Case #2 – endoconduit



Case #3 – endoconduit



GAME CHANGERS - DISRUPTIVE TECHNOLOGY.IES



GAME CHANGERS - DISRUPTIVE TECHNOLOGIES



SHOCKWAVE | L⁶

CRACK CALCIUM IN LARGE VESSELS

Count On It

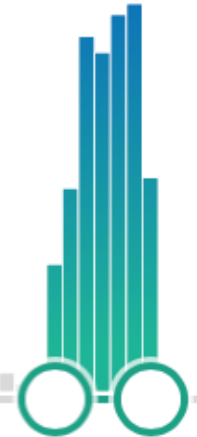
- LARGE VESSEL TREATMENT**
8.0, 9.0, 10.0 & 12.0 mm diameter sizes
- CONSISTENT HIGH ENERGY**
Compact emitter design
- ULTRA-LOW PRESSURE**
IVL therapy at 2-4 atm
- SUPPORT YOU NEED**
.018" guidewire

The advertisement features a black and blue color scheme. A central image shows a catheter with a yellow wire and blue shockwave emitters. A control unit with a digital display showing '300' and two green knobs is connected to the catheter. The background has wavy blue lines.

GAME CHANGERS - DISRUPTIVE TECHNOLOGIES

Intravascular Lithotripsy
1 single device on the market
Safety & efficacy
Not reimbursed (in France)
What about cost-effectiveness?

298 publications – IVL



2019-2025

Characteristics, Trends, and Outcomes of Intravascular Lithotripsy-Assisted Transfemoral Transcatheter Aortic Valve Replacement in United States

Hafiz M. Imran, MD,^{a,b} Phinnara Has, MS,^b Nicholas Kassis, MD,^{a,b} Ernie Shippey, MS,^c Ahmed Elkaryoni, MD,^{a,b} Paul C. Gordon, MD,^{a,b} Barry L. Sharaf, MD,^{a,b} Peter A. Soukas, MD,^{a,b} Omar N. Hyder, MD,^{a,b} Frank Sellke, MD,^{a,d} Afshin Ehsan, MD,^{a,d} Neel Sodha, MD,^{a,d} Amgad Mentias, MD, MS,^e Islam Y. Elgendy, MD,^f Mohamad Alkhouli, MD,^g J. Dawn Abbott, MD,^{a,b} Herbert D. Aronow, MD, MPH,^h Marwan Saad, MD, PhD^{a,b}

ABSTRACT

BACKGROUND Transfemoral (TF) access is the preferred approach for transcatheter aortic valve replacement (TAVR). Limited data exist regarding the outcomes of intravascular lithotripsy (IVL)-assisted TF TAVR in patients with peripheral artery disease.

OBJECTIVES This study sought to examine contemporary characteristics, trends, and outcomes of IVL TAVR in the United States.

METHODS The Vizient Clinical Database was queried for patients who underwent percutaneous TAVR between October 1, 2020, and November 30, 2023. Outcomes with IVL TAVR vs non-IVL TAVR were examined after propensity score matching. The primary outcome was a composite of in-hospital death, stroke, vascular complications, surgical vascular intervention, and major bleeding.

RESULTS Over the study period, 129,655 patients (mean age of 78.4 years, 42.2% women, 87.1% White) underwent percutaneous TAVR at 361 hospitals, 1,242 (0.96%) of whom underwent IVL TAVR. There was an uptrend in IVL TAVR, but the frequency remained low. IVL TAVR patients had a higher median Elixhauser comorbidity score (5 [Q1-Q3: 4-7] vs 4 [Q1-Q3: 3-6]) compared to non-IVL TAVR. TAVR was completed via the TF approach in 1,238 (99.7%) IVL TAVR patients. In a 3:1 propensity score matching analysis, IVL TAVR was associated with a higher rate of the primary composite outcome (21.9% vs 13.7%; $P < 0.001$) driven by higher rates of vascular complications, surgical vascular intervention, and major bleeding. In-hospital death and stroke were similar in both groups.

CONCLUSIONS In the United States, IVL is increasingly adopted to facilitate TF TAVR. IVL TAVR patients exhibited a higher burden of comorbidities and experienced more complications compared to non-IVL TAVR patients. Further studies are needed to identify appropriate anatomical and clinical use criteria for IVL TAVR and to compare its outcomes vs alternative non-TF TAVR. (JACC Cardiovasc Interv. 2024;17:2367-2376) © 2024 by the American College of Cardiology Foundation.



Journal of Vascular Surgery

Available online 22 April 2025

In Press, Journal Pre-proof [What's this?](#)



Mid-term Outcomes of Shockwave Intravascular Lithotripsy in the IVLIAC Registry for the Treatment of Calcified Iliac Occlusive Disease

Stefano Fazzini MD, PhD ¹ , Valerio Turriziani MD ¹, Chiara Lomazzi MD ², Edoardo Forcella MD ³, Ludovica Grazioli MD ⁴, Sara Allievi MD ⁴, Davide Mastrorilli MD ³, Alberto Maria Settembrini MD, FEBVS, FACS ⁵, Eugenio Martelli MD ¹, Santi Trimarchi MD, PhD ², Luca Garriboli MD ³, Stefano Bonvini MD, PhD ⁴

GAME CHANGERS - DISRUPTIVE TECHNOLOGY.IES

Intravascular Lithotripsy

1 single device on the market

Safety & efficacy

Not reimbursed (in France)

What about cost-effectiveness?

PubMed®

IVL AND EVAR

Advanced Create alert Create RSS User Guide

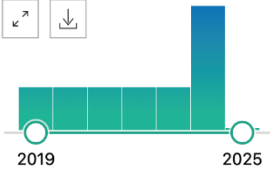
Save Email Send to Sort by: Publication date Display options

MY CUSTOM FILTERS

6 results

Page 1 of 1

RESULTS BY YEAR



PUBLICATION DATE

1 year 5 years 10 years

1 **Integrating Intravascular Lithotripsy to Overcome Severe Aorto-Iliac Atherosclerosis in Standard Endovascular Aortic Repair: A Case Report.**

Cite Mastropalo G, Cumino A, Zandrino F, Pomatto S, Pasta V, Ambrogio I, Pecchio A.

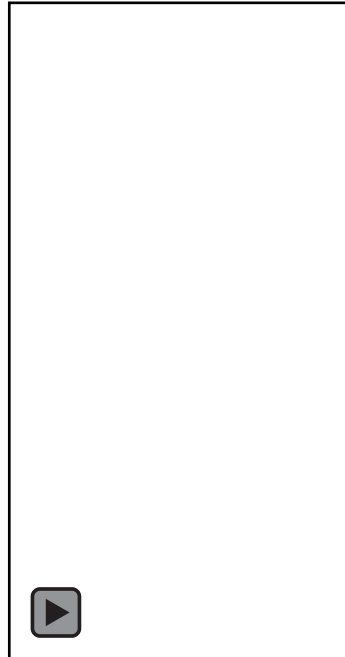
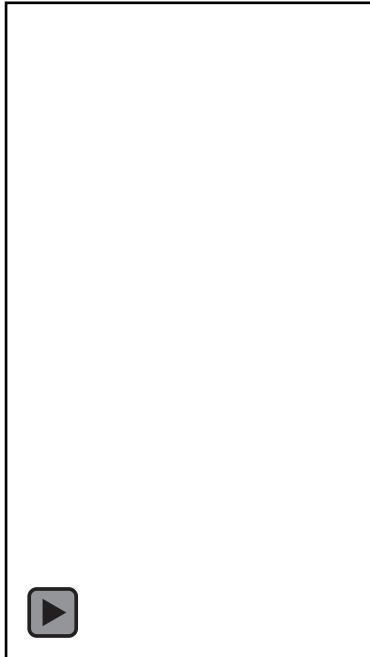
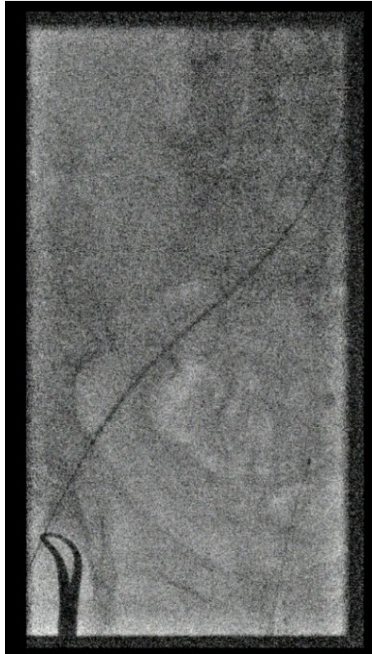
Share EJVES Vasc Forum. 2024 Sep 25;62:78-82. doi: 10.1016/j.ejvsvf.2024.09.005. eCollection 2024. PMID: 39507586 **Free PMC article.**

Intravascular lithotripsy (IVL) has emerged as an alternative treatment to address severe iliofemoral atherosclerosis, aiding trackability of devices in **EVAR**. ...However, further studies and long term follow up are needed to define the efficacy and safety of integra ...

2 **Intravascular Iliac Artery Lithotripsy to Facilitate Aortic Endograft Delivery: Midterm Results of a Dual-Center Experience.**

Cite Fazzini S, Pennetta FF, Torsello G, Turriziani V, Vona S, Ascoli Marchetti A, Ippoliti A, Austermann M, Bosiers M.J.

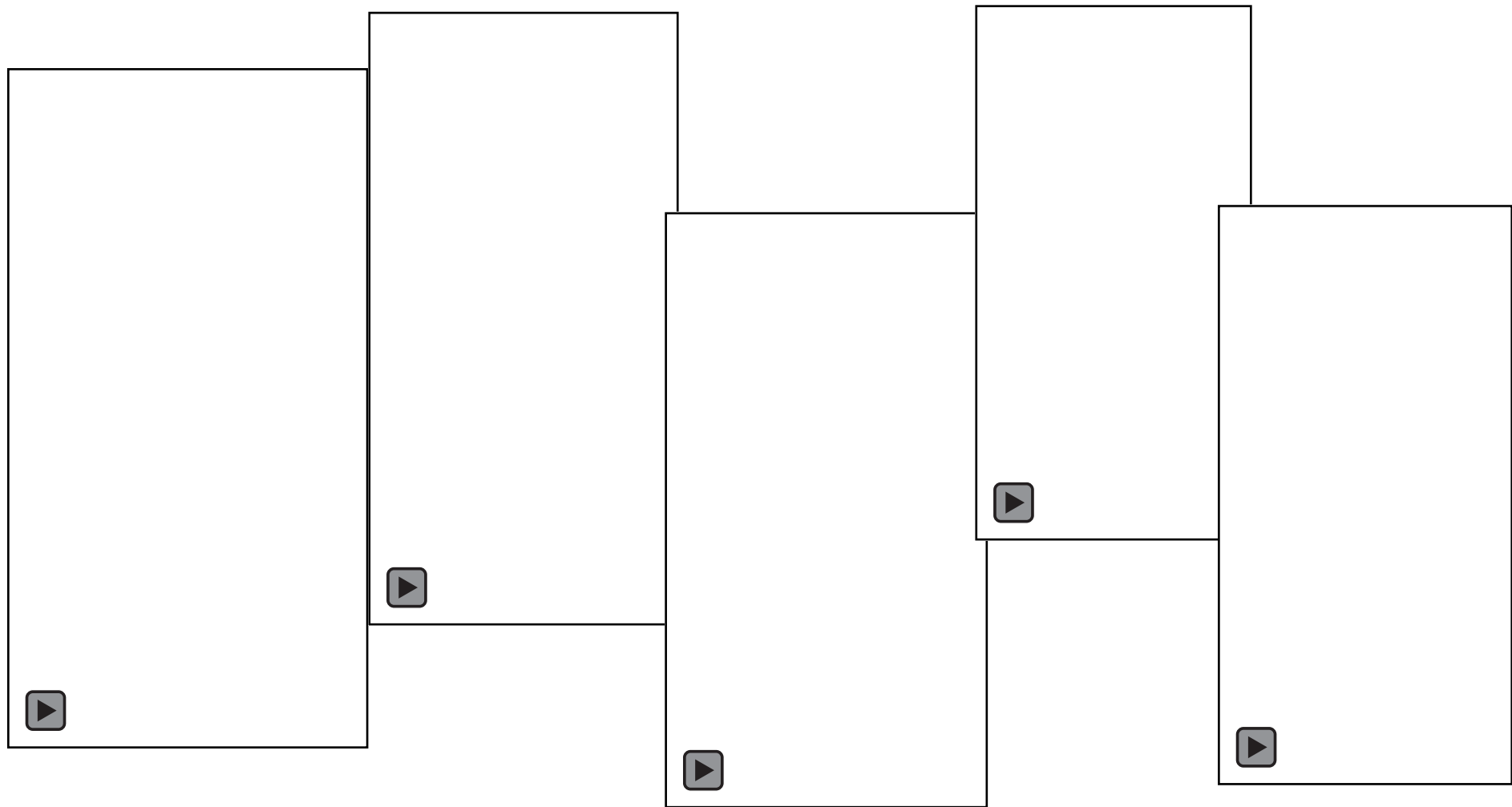
Case #4 – endoconduit + IVL



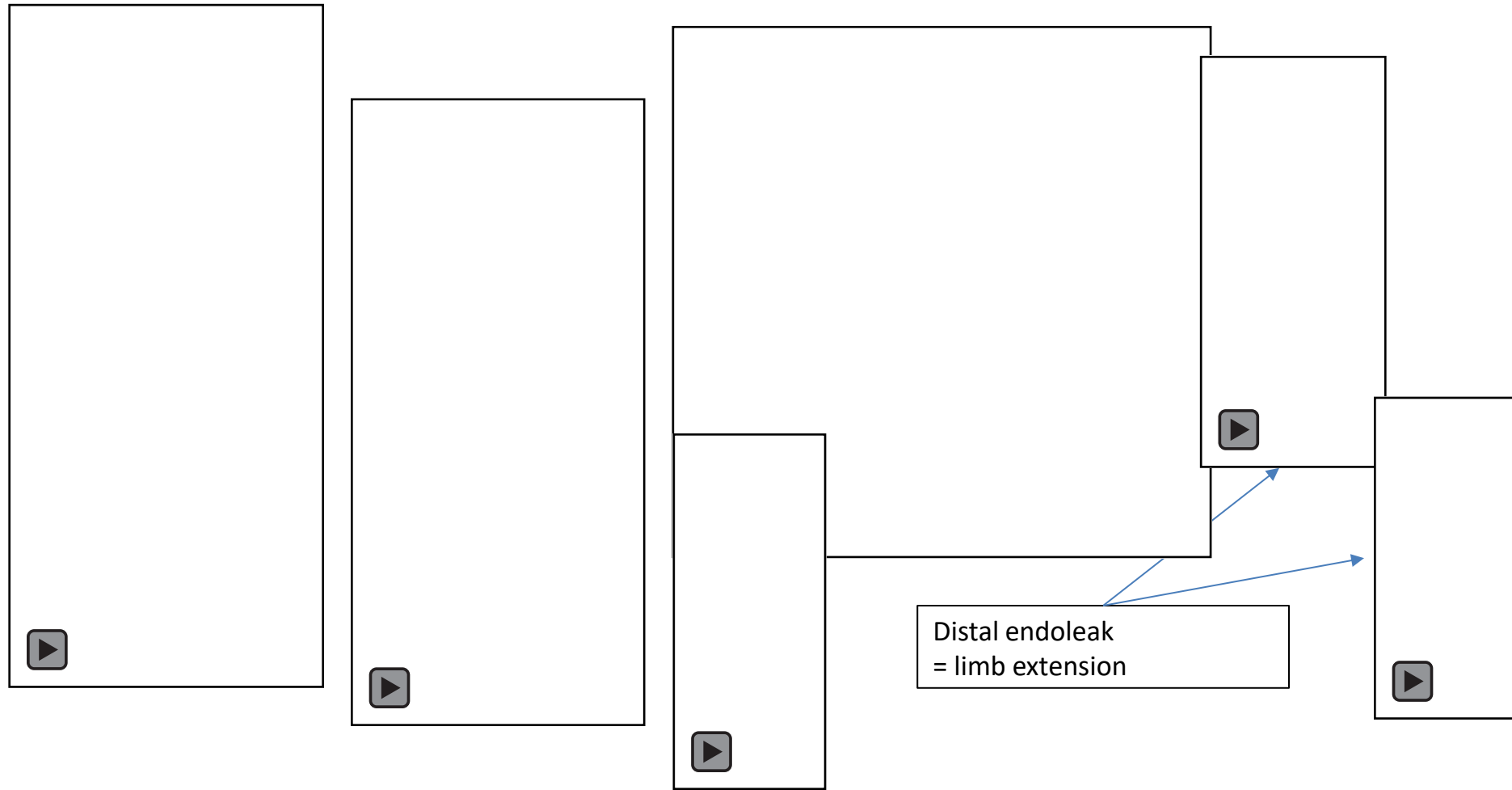
Make sure not to open the VBH in the sheath

Decision of deploying the VBH before angioplasty depending on the iliac diameter

Case #4 – endoconduit + IVL

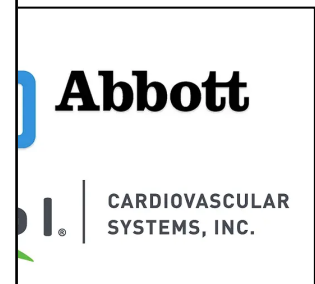
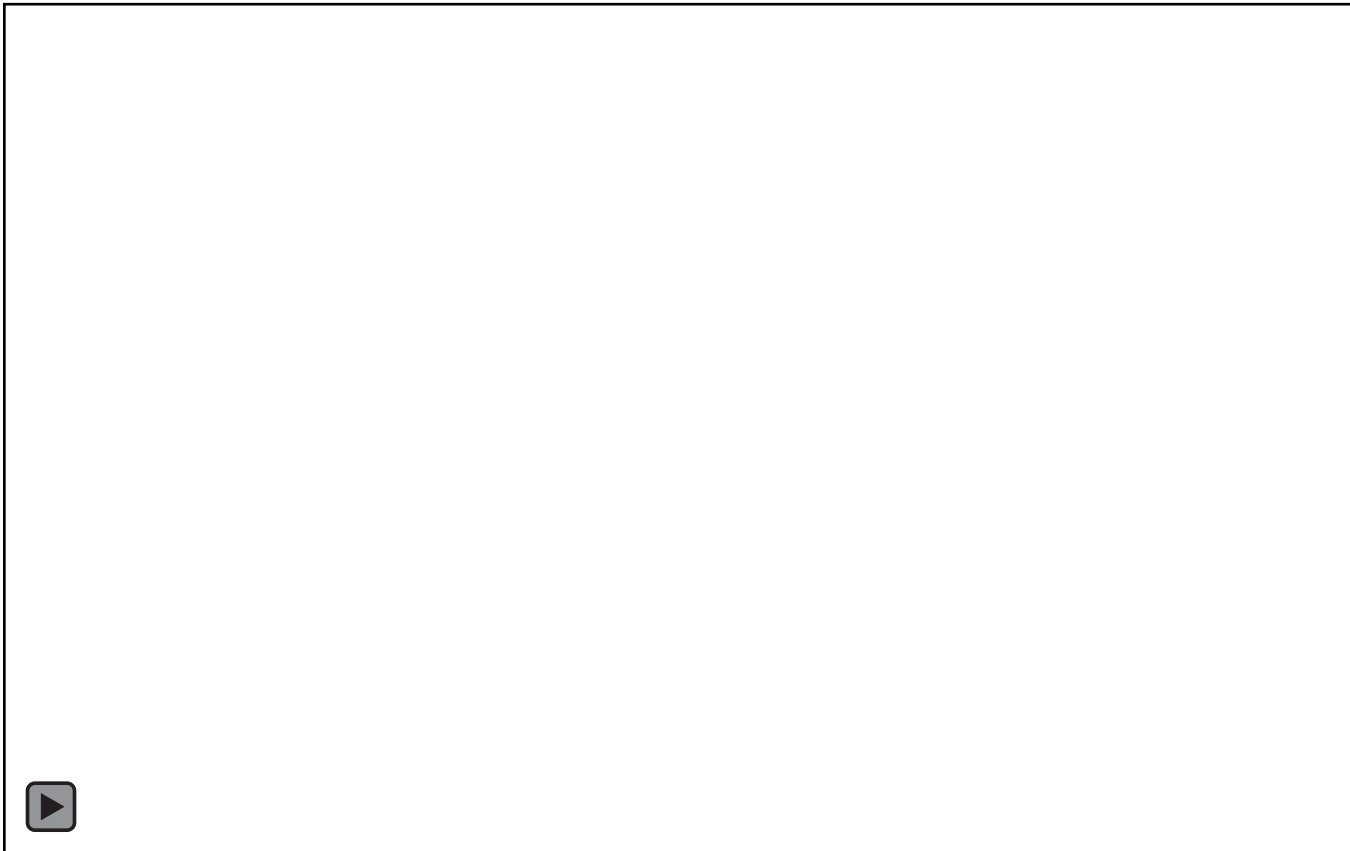


Case #4 – endoconduit + IVL

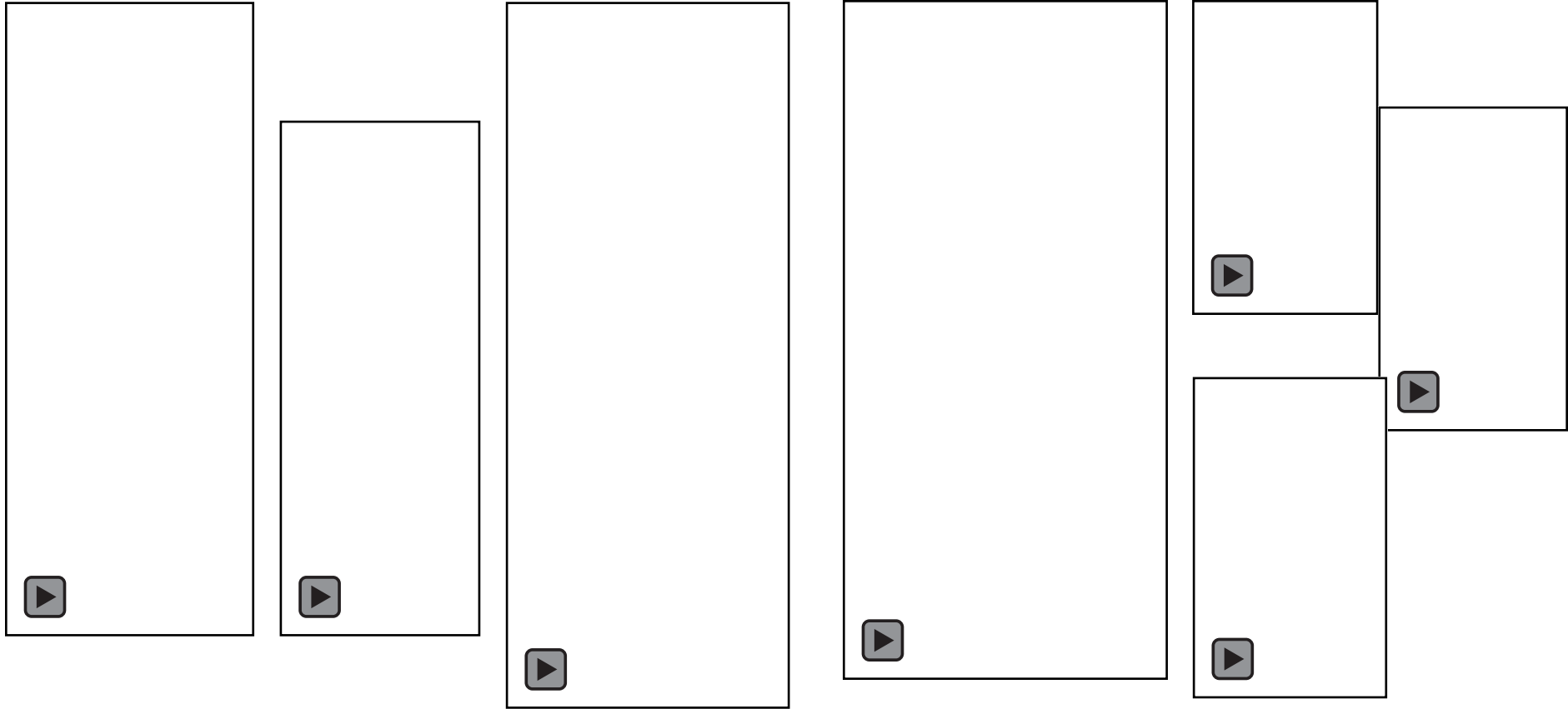


Additional DISRUPTIVE TECHNOLOGY.IES

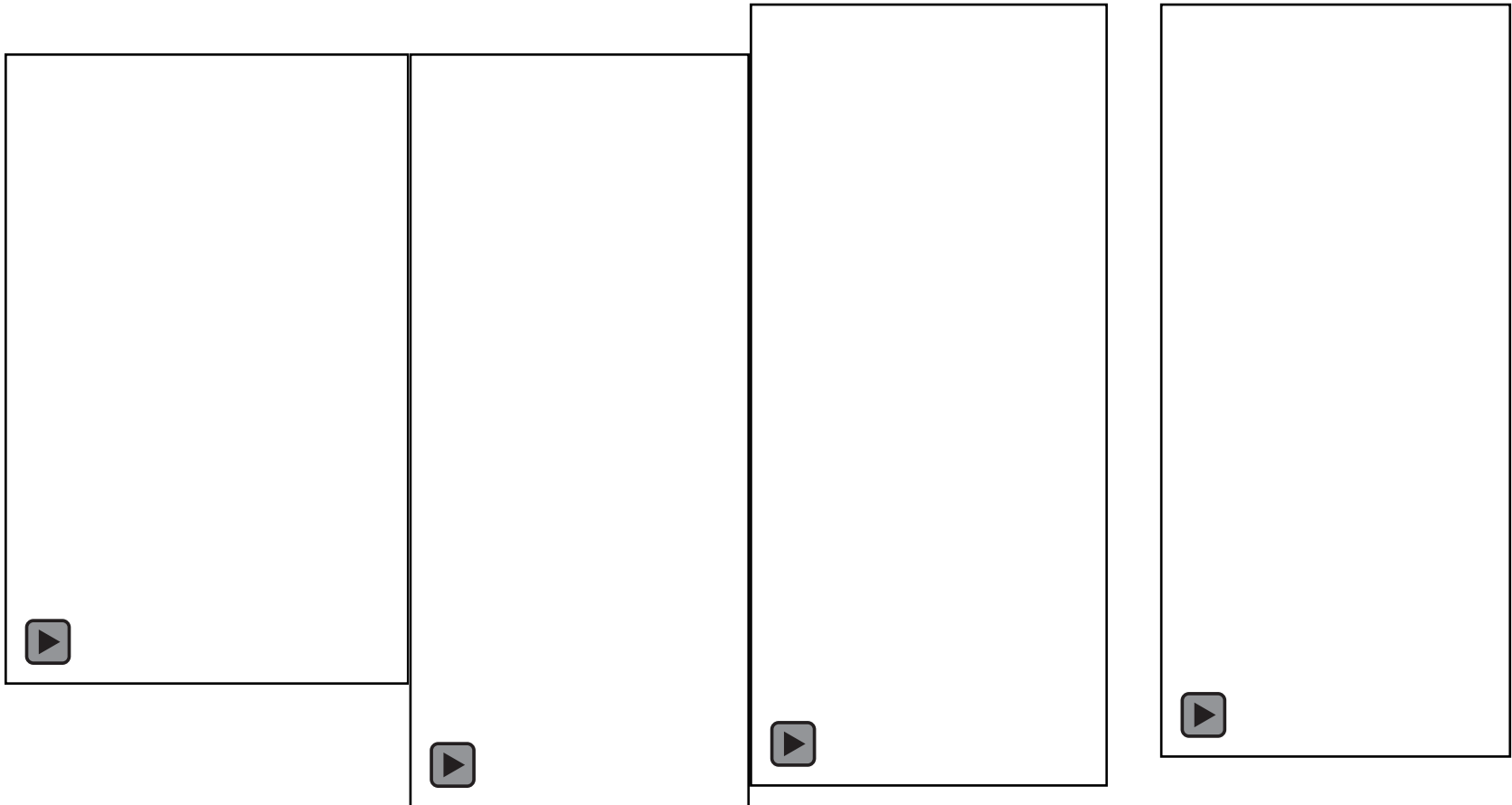
Orbital atherectomy – debulking & plaque fracturation



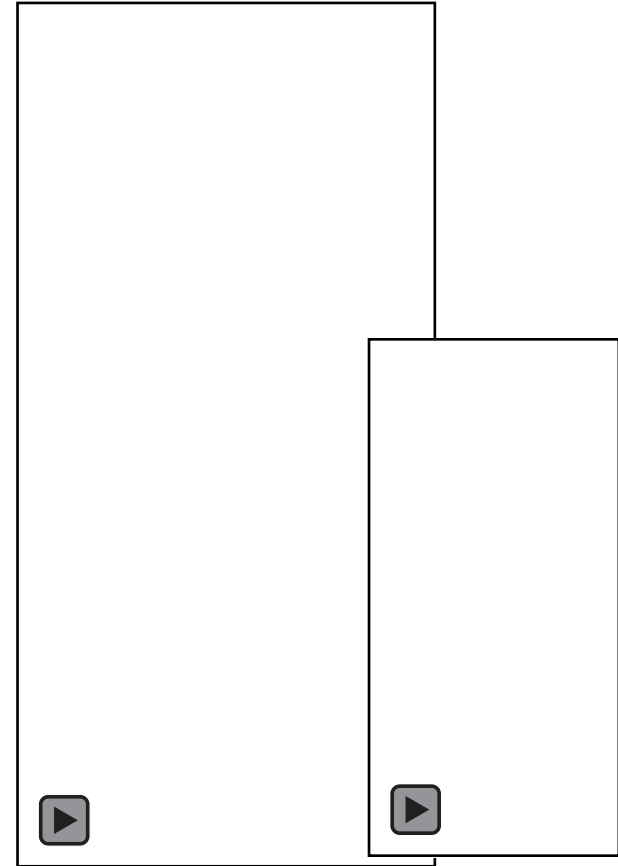
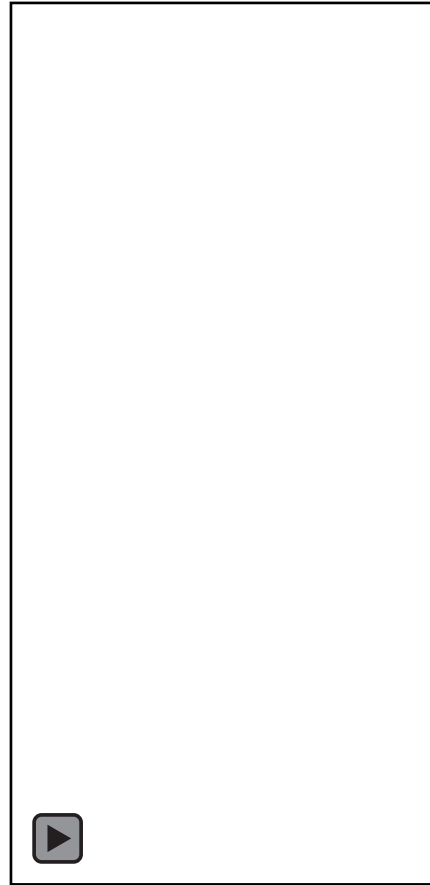
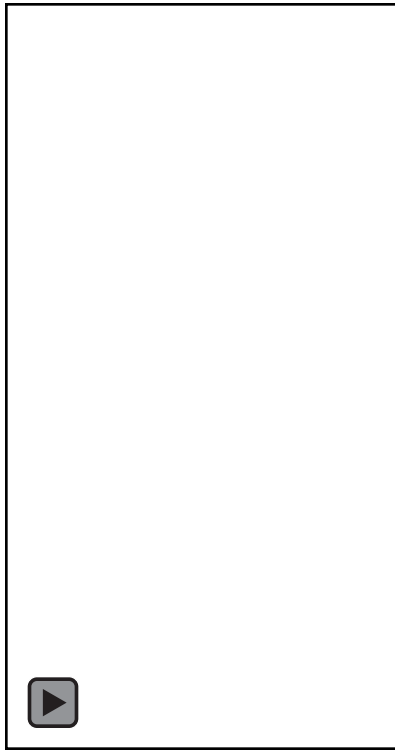
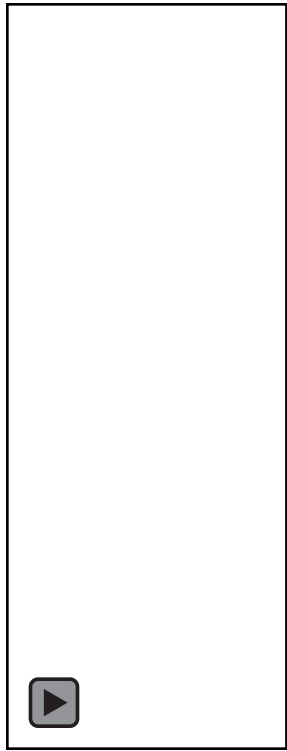
Case #5 – IVL + bail-out CI stenting



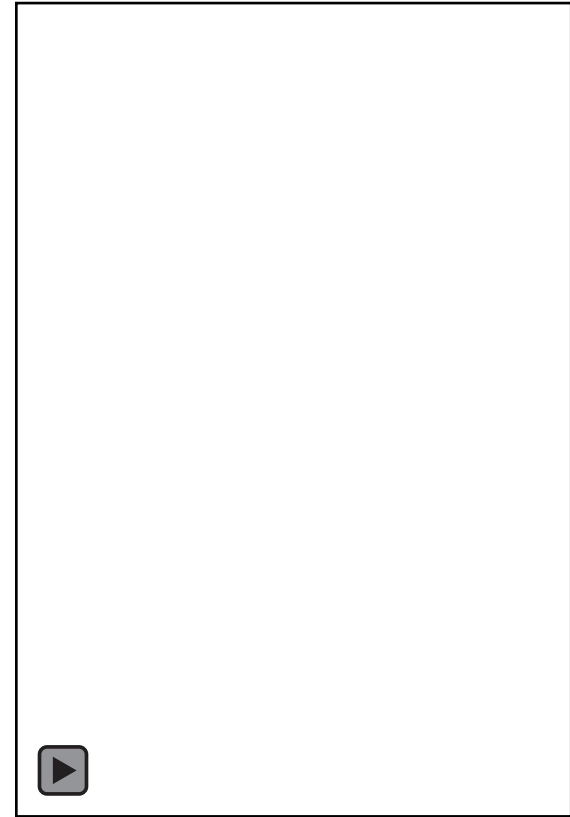
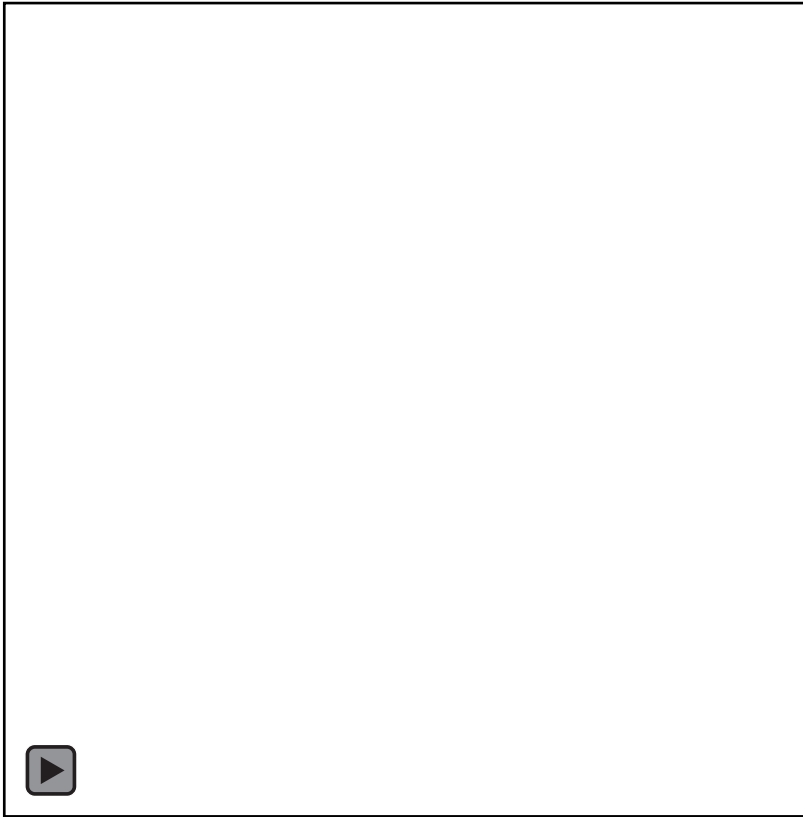
Case #5 – IVL + bail-out CI stenting



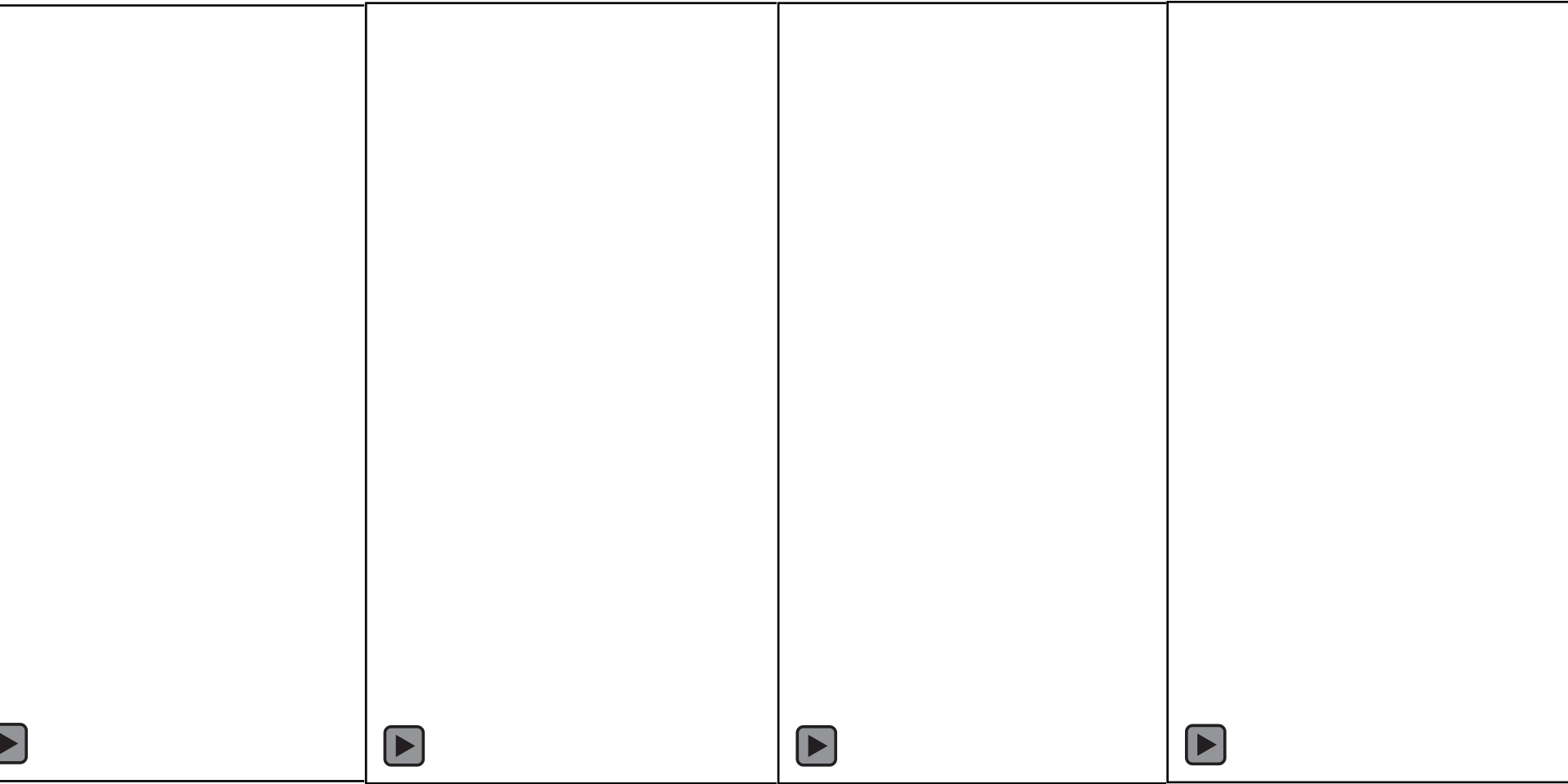
Case #5 – IVL + bail-out CI stenting



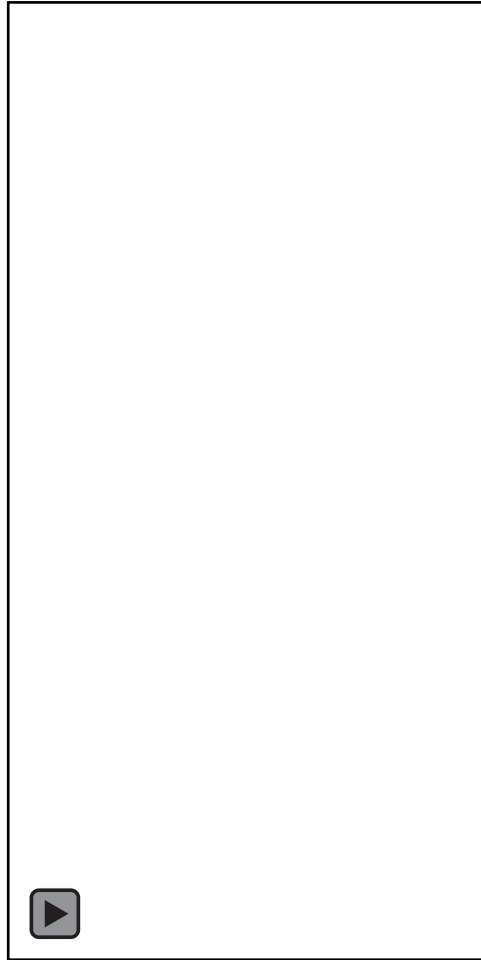
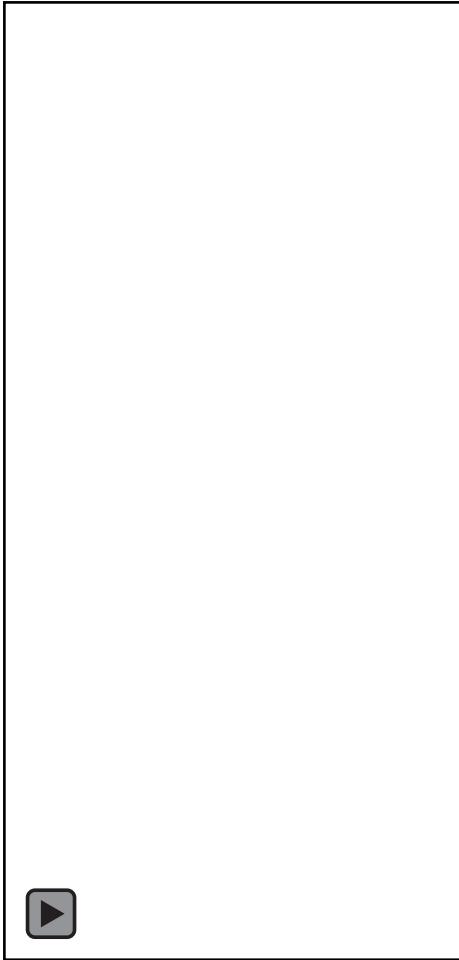
Case #5 – IVL + bail-out CI stenting



Case #6 – VBH only



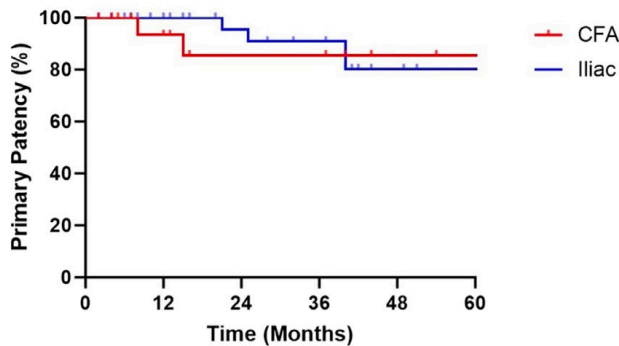
Case #6 – VBH only



Literature review & data

Fair results so far !

Mean FU 34mo



From the Western Vascular Society

Check for updates

Long-term outcomes of staged iliofemoral endoconduits prior to complex endovascular aortic aneurysm repair

Andres V. Figueroa, MD, Mira T. Tanenbaum, MD, Jose Eduardo Costa Filho, MD, Marilisa Soto Gonzalez, MD, Natalia I. Coronel, MD, Mirza S. Baig, MD, and Carlos H. Timaran, MD, Dallas, TX

ABSTRACT

Objective: Adverse iliofemoral anatomy may preclude complex endovascular aortic aneurysm repair (EVAR). In our practice, staged iliofemoral endoconduits (ECs) are planned prior to complex EVAR to improve vascular access and decrease operative time while allowing the stented vessel to heal. This study describes the long-term results of iliofemoral ECs prior to complex EVAR.

Methods: Between 2012 and 2023, 59 patients (44% male; median age, 75 ± 6 years) underwent ECs before complex EVAR using self-expanding covered stents (Viabahn). For common femoral artery (CFA) disease, ECs were delivered percutaneously from contralateral femoral access and extended into the CFA to preserve the future access site for stent graft delivery. Internal iliac artery patency was maintained when feasible. During complex EVAR, the EC extended into the CFA was directly accessed and sequentially dilated until it could accommodate the endograft. Technical success was defined as successful access, closure, and delivery of the endograft during complex EVAR. Endpoints were vascular injury or EC disruption, secondary interventions, and EC patency.

Results: Unilateral EC was performed in 45 patients (76%). ECs were extended into the CFA in 21 patients (35%). Median diameters of the native common iliac, external iliac, and CFA were 7 mm (interquartile range [IQR], 6-8 mm), 6 mm (IQR, 5-7 mm), and 6 mm (IQR, 6-7 mm), respectively. Internal iliac artery was inadvertently excluded in 10 patients (17%). Six patients (10%) had an intraoperative vascular injury during the EC procedure, and six patients (10%) had EC disruption during complex EVAR, including five EC collapses requiring re-stenting and one EC fracture requiring open cut-down and reconstruction with patch angioplasty. In 23 patients (39%), 22 Fr OD devices were used; 20 Fr were used in 22 patients (37%), and 18 Fr in 14 patients (24%). Technical success for accessing EC was 89%. There was no difference in major adverse events at 30 days between the iliac ECs and iliofemoral ECs. Primary patency by Kaplan-Meier estimates at 1, 3, and 5 years were 97.5%, 89%, and 82%, respectively. There was no difference in primary patency between iliac and iliofemoral ECs. Six secondary interventions (10%) were required. The mean follow-up was 34 ± 27 months; no limb loss or amputations occurred during the follow-up.

Conclusions: ECs improve vascular access, and their use prior to complex EVAR is associated with low rates of vascular injury, high technical success, and optimal long-term patency. Complex EVAR procedures can be performed percutaneously by accessing the EC directly under ultrasound guidance and using sequential dilation to avoid EC disruption. (J Vasc Surg 2024;80:45-52.)

Keywords: Common femoral artery; Common iliac artery; Covered stent; Endoconduit; External iliac artery; Iliofoemoral

In Addition

- Preservation of hypogastric artery with Self expandable uncovered stent when possible (cracking of the artery at a reasonable distance of its origin)
- Access preparation can be staged to EVAR
- Full percutaneous approach possible – but...
- associated femoral endarterectomy can be required
- BEWARE of the risk of Ischemia-Reperfusion Syndrom !!

Take-Home Messages from my practice

Access Preparation : various &/or combined techniques available

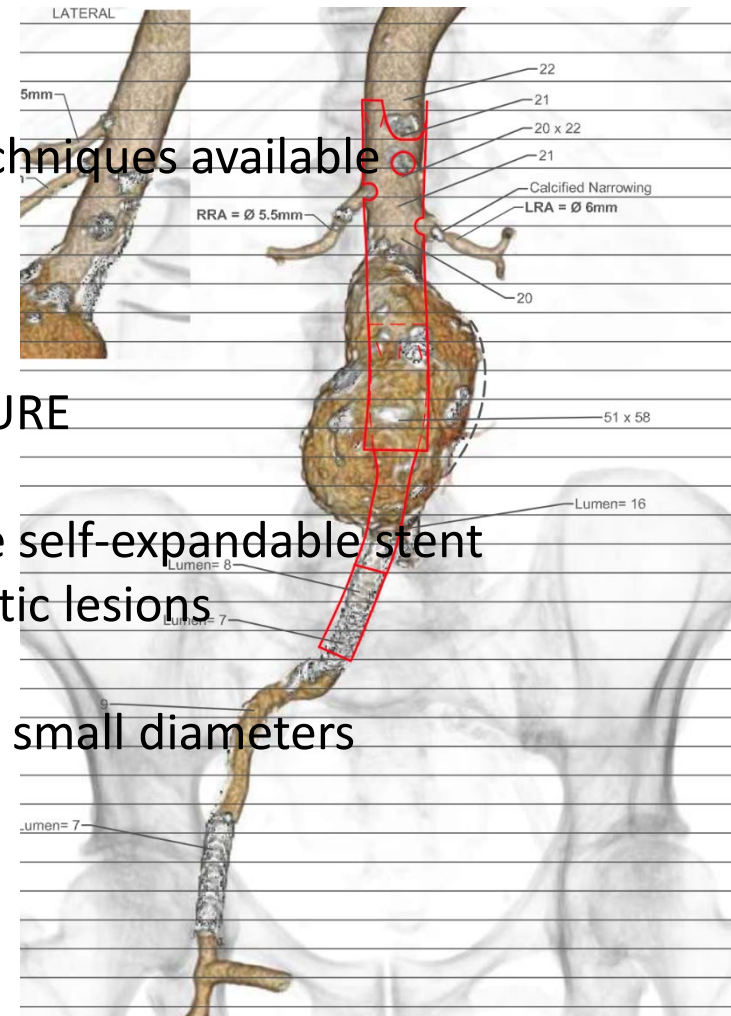
Safe and efficient in most but selected cases

Anticipation – prepare the access before RUPTURE

Hypogastric preservation+++ crossing with bare self-expandable stent whenever possible – especially in extended aortic lesions

Limitations : Tortuosity & heavy calcifications & small diameters

→ **the worst combo !**



Gestion des accès ilio-fémoraux complexes dans l'exclusion endovasculaire aortique

J Sobocinski, R Azzaoui, Th Mesnard, C Jeanneau

Centre de l'aorte, Chirurgie vasculaire,

CHU Lille, Fr

SRES Marseille 2025

