



THE 26TH INTERNATIONAL EXPERTS SYMPOSIUM
CRITICAL ISSUES
IN AORTIC ENDOGRAFTING

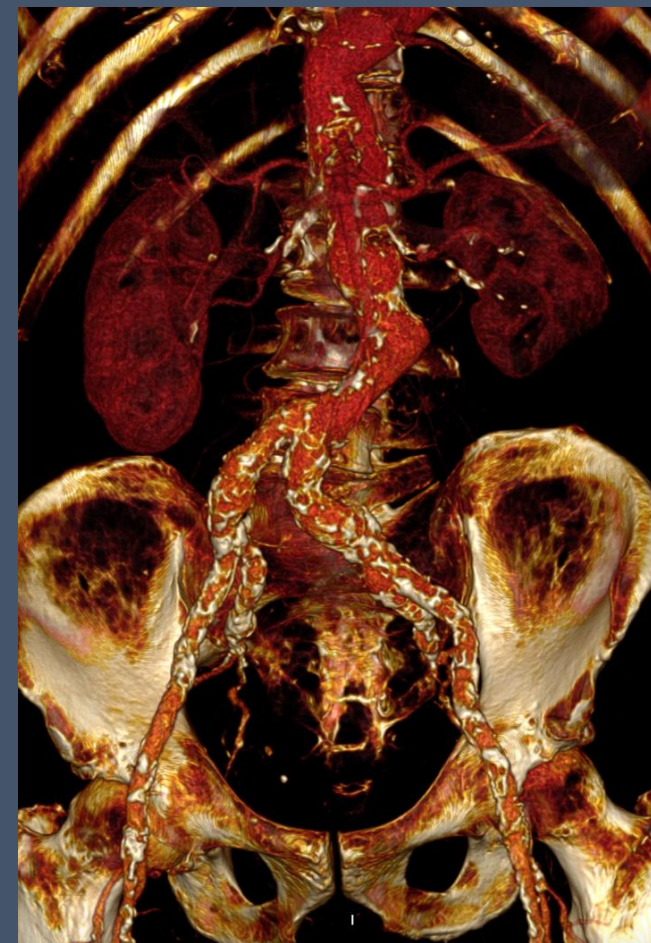
MARCH 21 & 22 2024
COPENHAGEN/MALMÖ
SCANDIC TRIANGELN, MALMÖ



A safe and Effective Strategy to Facilitate Endograft Delivery in Hostile Calcified Access

Michele Antonello

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No Disclosure





Alternative Access: Frequent for TAVR

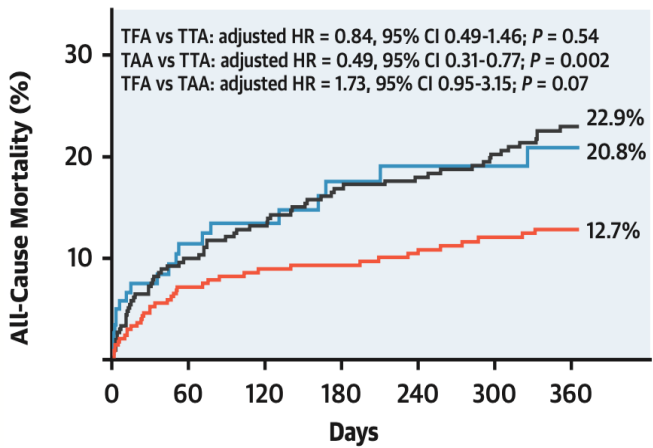
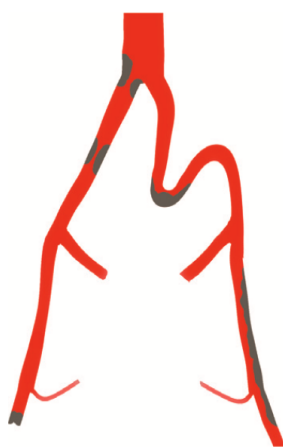
Vascular Access in Patients With Peripheral Arterial Disease Undergoing TAVR

The Hostile Registry

Tullio Palmerini, MD,^{a,b} Francesco Saia, MD, PhD,^{a,b} Won-Keun Kim, MD,^c Matthias Renker, MD,^c Alessandro Iadanza, MD,^d Massimo Fineschi, MD,^d Antonio Giulio Bruno, MD,^{a,b} Gabriele Ghetti, MD,^{a,b} Maarten Vanhaverbeke, MD,^e Lars Søndergaard, MD,^e Ole De Backer, MD,^e Enrico Romagnoli, MD,^f Francesco Burzotta, MD,^f Carlo Trani, MD,^f Rik Adrichem, MD,^g Nicolas M. Van Mieghem, MD,^g Elena Nardi, MSTAT,^a Francesco Chietera, MD,^{a,b} Mateusz Orzalkiewicz, MD,^{a,b} Daijiro Tomii, MD,^h Thomas Pilgrim, MD, MSc,^h Tiziana Claudia Aranzulla, MD, MSc,ⁱ Giuseppe Musumeci, MD,ⁱ Matti Adam, MD,^j Max M. Meertens, MD,^j Nevio Taglieri, MD,^{a,b} Cinzia Marrozzini, MD,^{a,b} Hector Alfonso Alvarez Covarrubias, MD,^{k,l} Michael Joner, MD,^k Giulia Nardi, MD,^m Francesca Maria Di Muro, MD,^m Carlo Di Mario, MD,^m Lucca Loretz, MD,ⁿ Stefan Toggweiler, MD,ⁿ Enrico Gallitto, MD,^o Mauro Gargiulo, MD,^o Luca Testa, MD,^p Francesco Bedogni, MD,^p Sergio Berti, MD,^q Marco B. Ancona, MD,^r Matteo Montorfano, MD,^r Alessandro Leone, MD,^s Carlo Savini, MD,^s Davide Pacini, MD,^s Jonas Gmeiner, MD,^t Daniel Braun, MD,^t Roberto Nerla, MD,^u Fausto Castriota, MD,^u Marco De Carlo, MD,^v Anna Sonia Petronio, MD,^v Marco Barbanti, MD,^w Giuliano Costa, MD,^w Corrado Tamburino, MD,^w Pier Pasquale Leone, MD,^x Bernhard Reimers, MD,^x Giulio Stefanini, MD,^x Mitsumasa Sudo, MD,^y Georg Nickenig, MD,^y Tommaso Piva, MD,^z Andrea Scotti, MD,^{aa,bb} Azeem Latib, MD,^{aa,bb} Matteo Vercellino, MD,^{cc} Italo Porto, MD,^{cc} Pablo Codner, MD,^{dd} Ran Kornowski, MD,^{dd} Antonio L. Bartorelli, MD,^{ee,ff} Giuseppe Tarantini, MD,^{gg} Chiara Fracarro, MD,^{gg} Mohamed Abdel-Wahab, MD,^{hh} Eberhard Grube, MD,^{hh} Nazzareno Galié, MD,^{ab} Gregg W. Stone, MDⁱⁱ

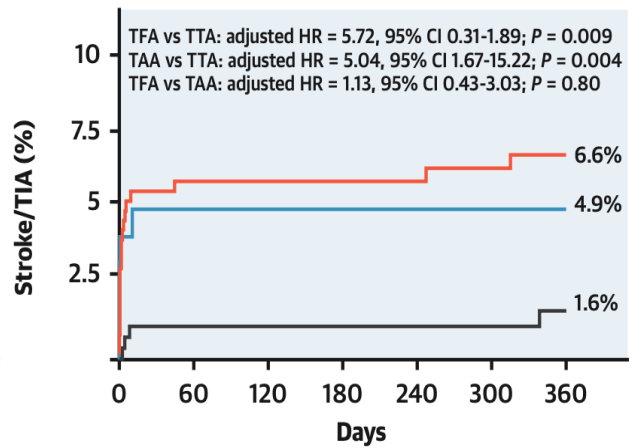


High Hostile Score



No. at risk:

	0	60	120	180	240	300	360
TFA	125	87	71	58	52	48	41
TTA	288	254	237	222	218	211	190
TAA	327	276	250	239	230	220	210



No. at risk:

	0	60	120	180	240	300	360
TFA	125	81	65	54	48	44	37
TTA	288	251	235	220	216	209	188
TAA	327	264	240	229	221	212	202

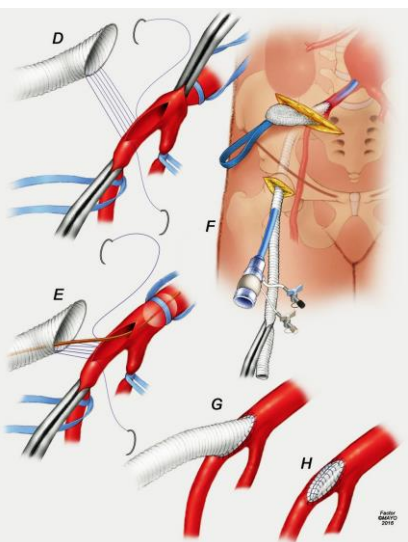
— TFA — TAA — TTA

HIGHER MORTALITY and STROKE
in Trans Femoral Access with HIGHER HOSTILE SCORE

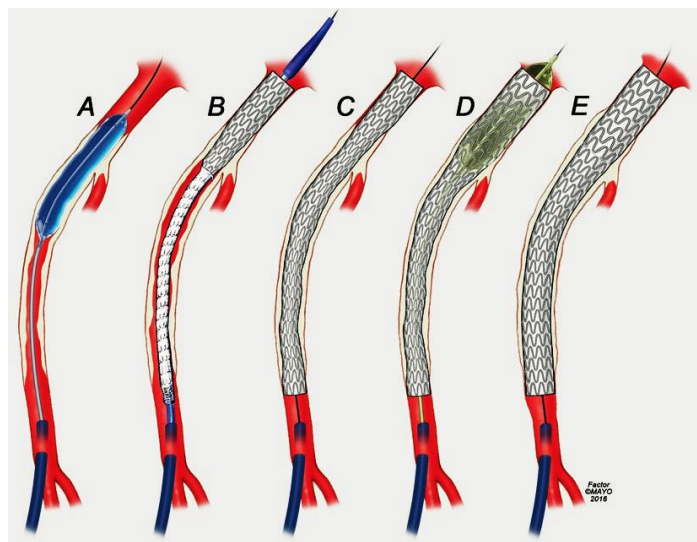
Palmerini T, et al. *J Am Coll Cardiol Intv.* 2023;16(4):396–411.

Hostile Iliac Access: Which options?

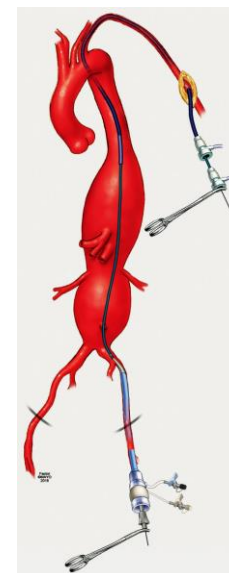
OPEN CONDUIT



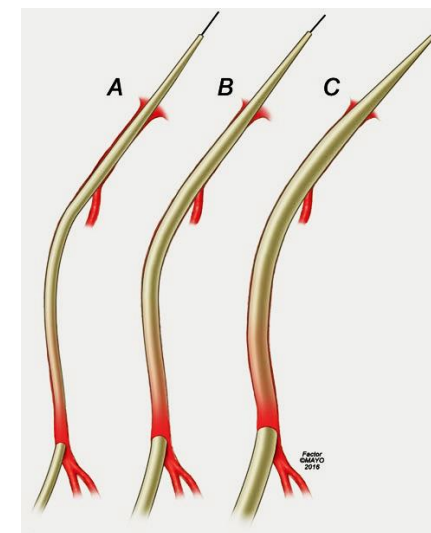
ENDO-CONDUIT



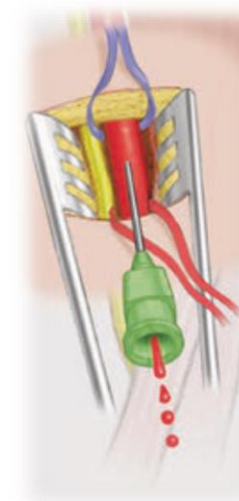
BRACH-FEM



DOTTERING

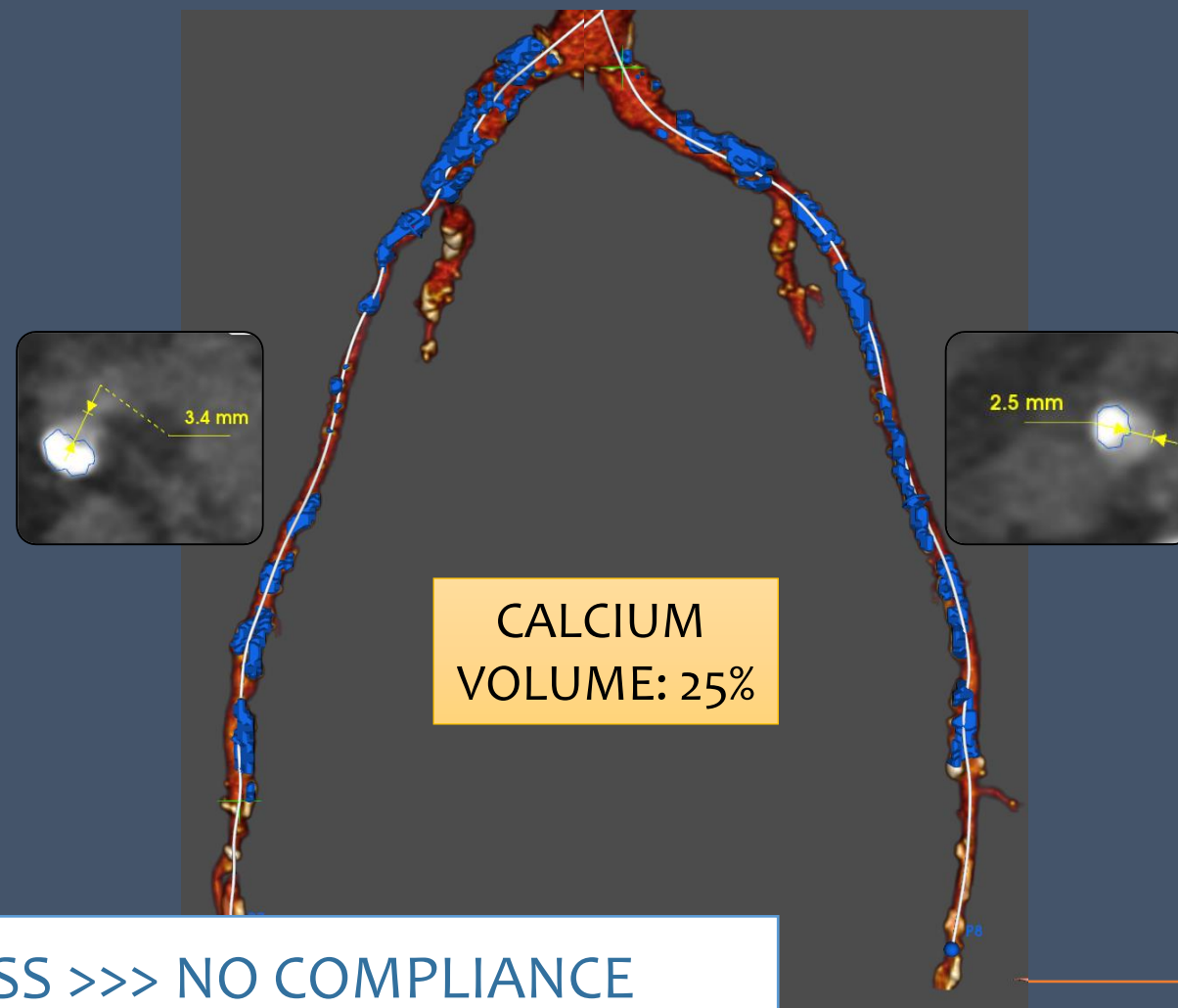
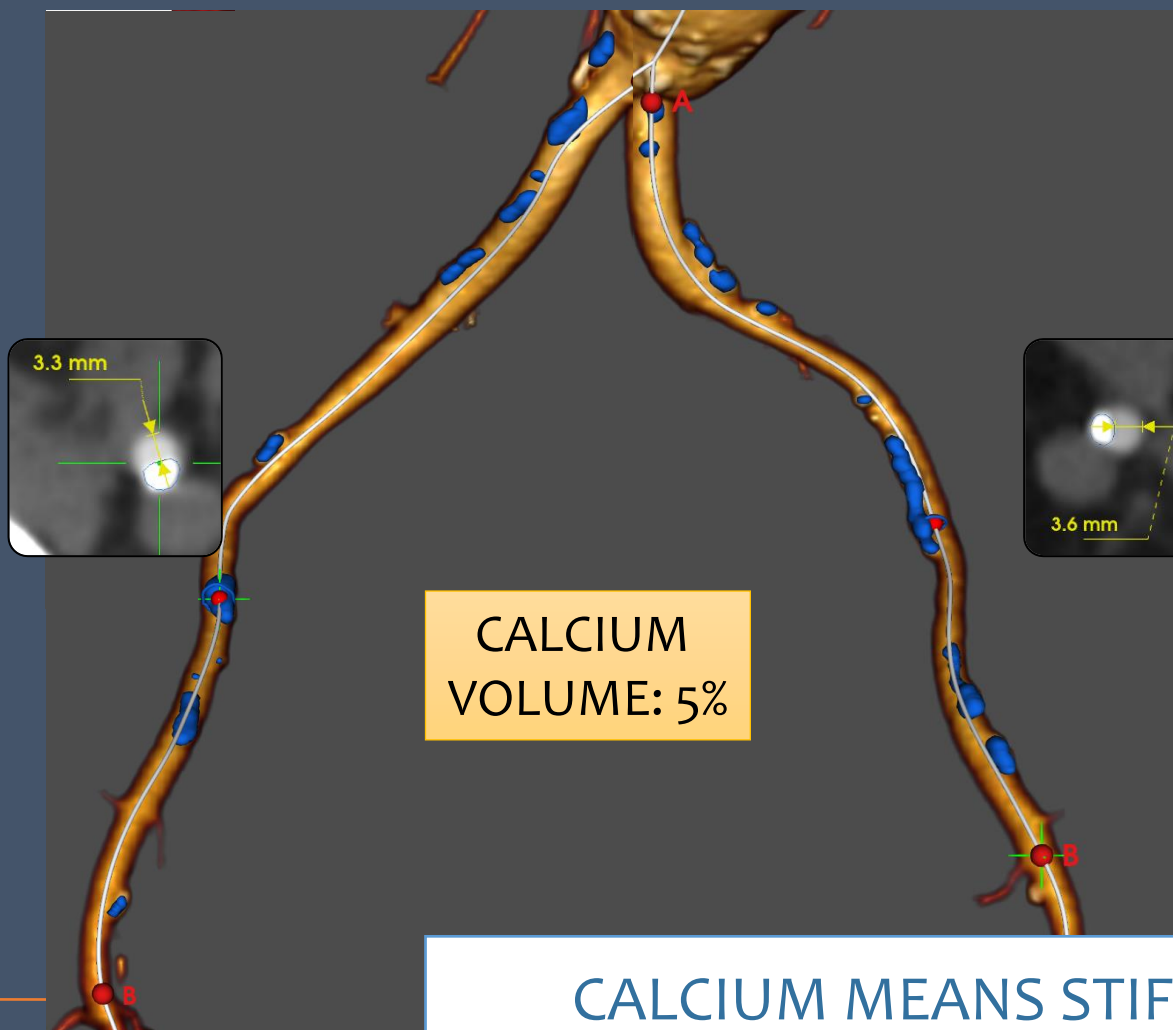


FEM EXP





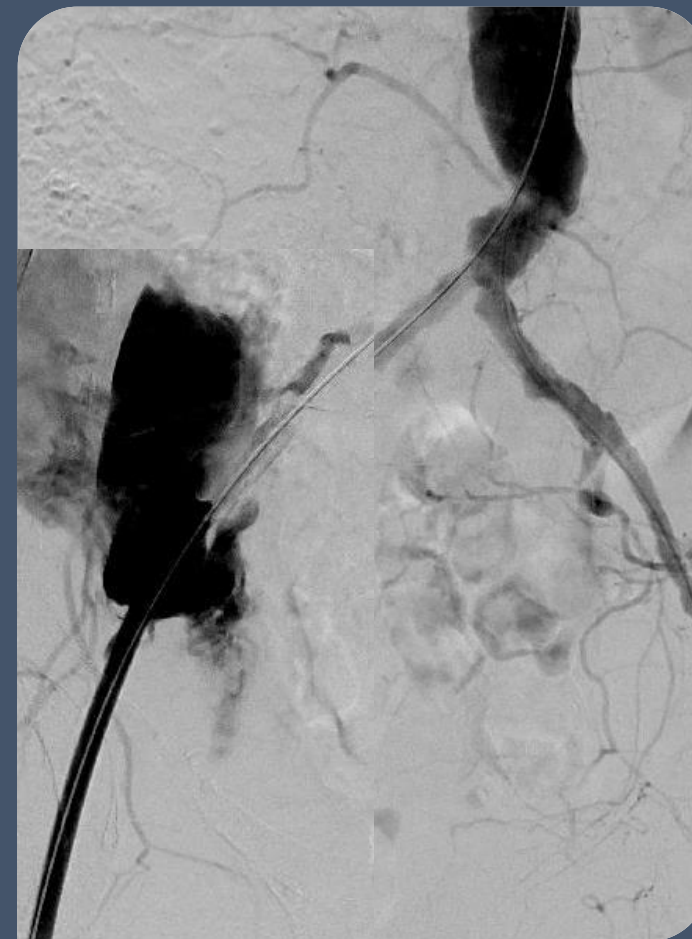
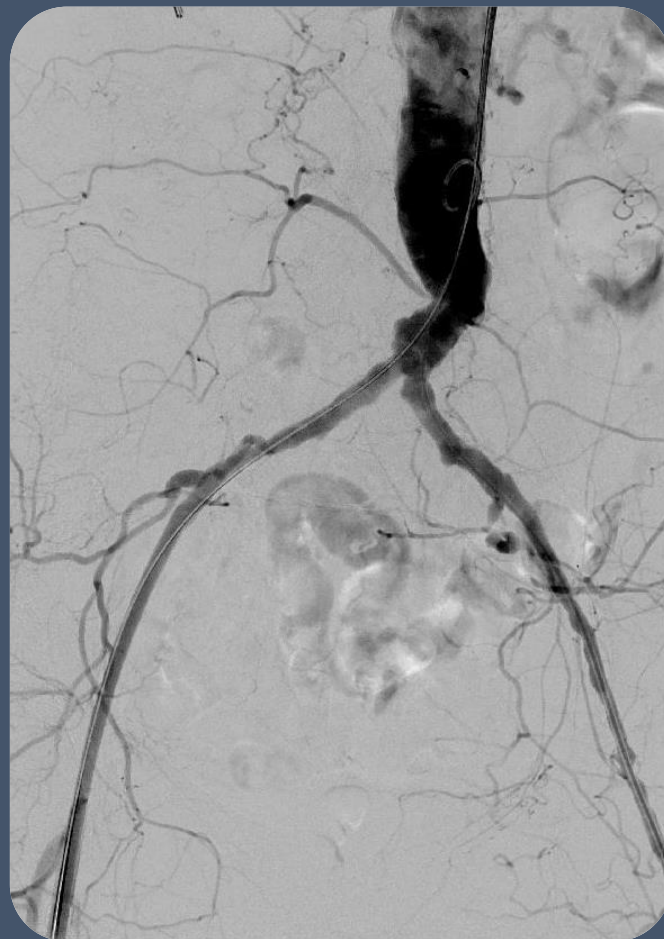
THE AMOUNT OF CALCIUM MAKES DIFFERENCE



CALCIUM MEANS STIFFNESS >>> NO COMPLIANCE



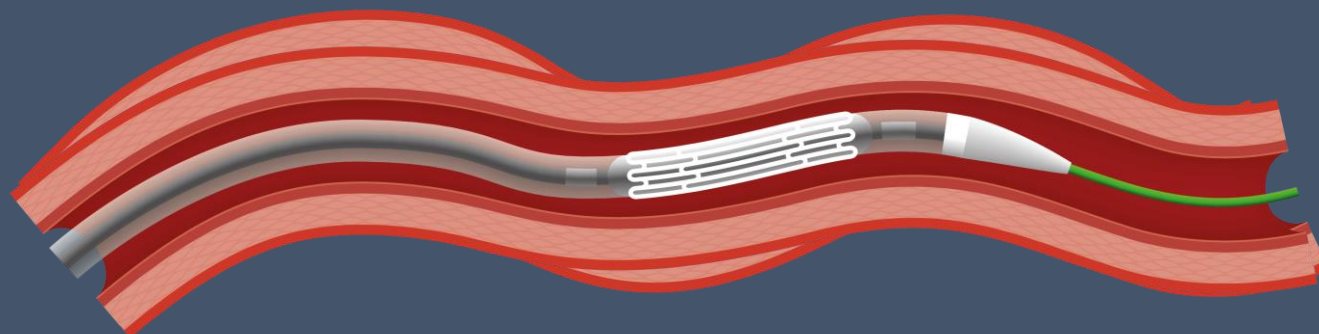
What can go wrong with **CALCIFIED ACCESS**



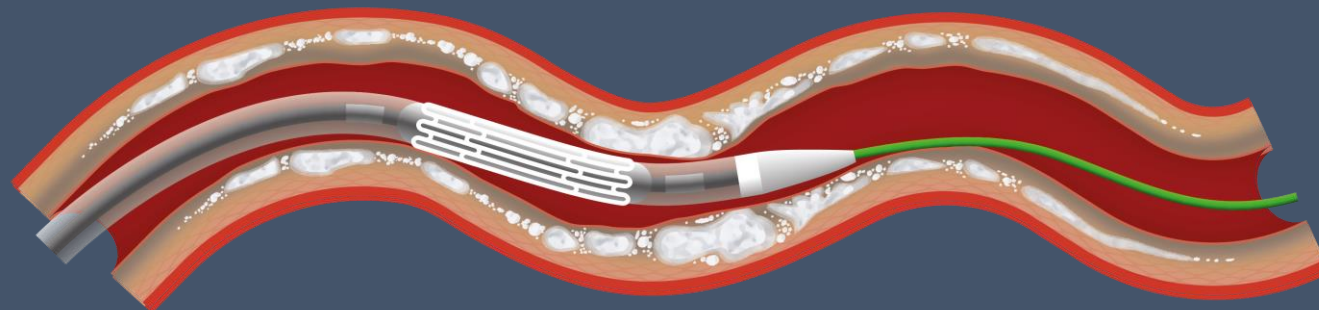


Compliance is a critical component of arterial distensibility

Tortuosity and decrease compliance restrict device delivery



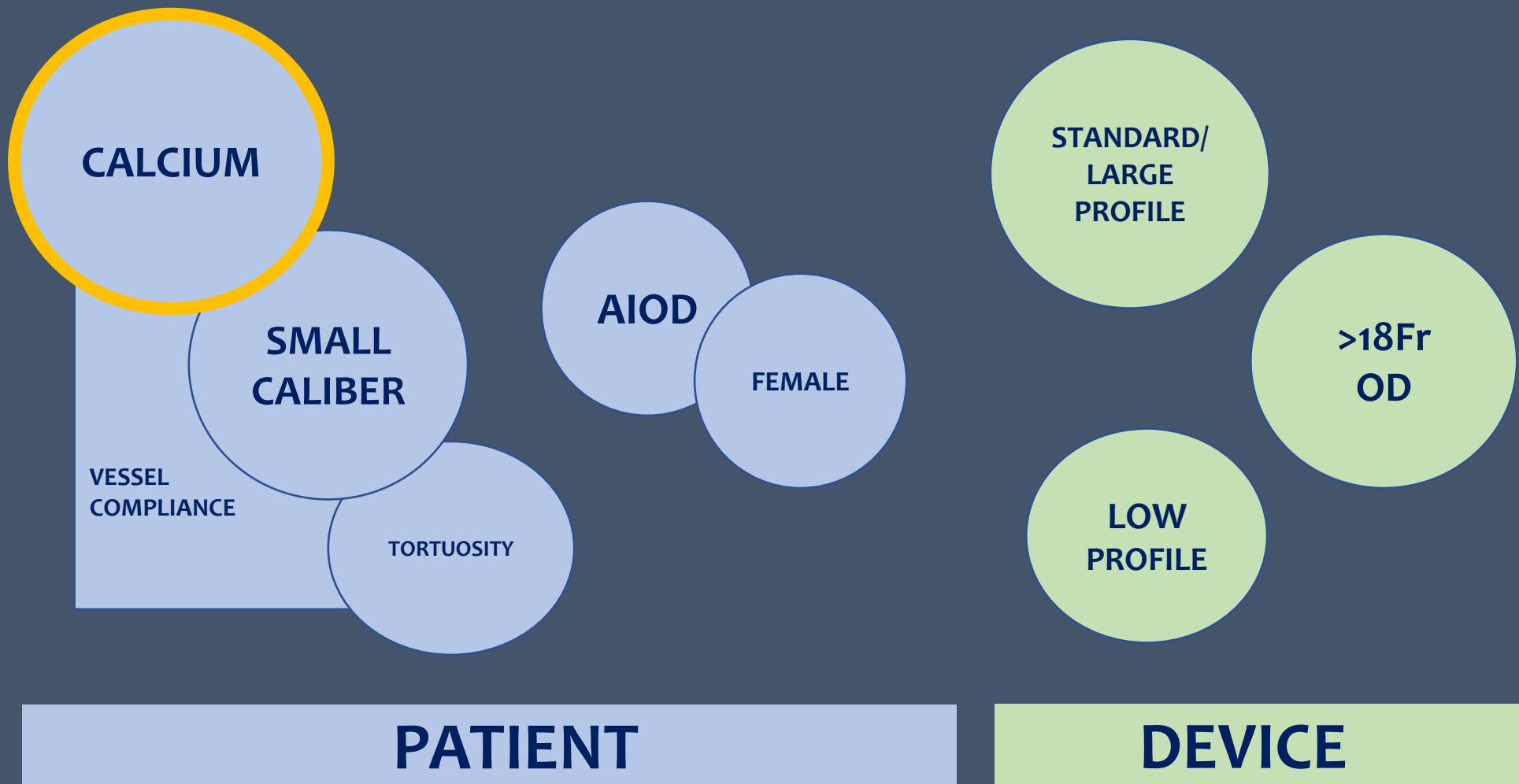
Elastic vessel will deform, facilitating device delivery



Inelastic, calcific vessel will remain rigid and resist device passage



**HOSTILE
ILIAC
ACCESS**



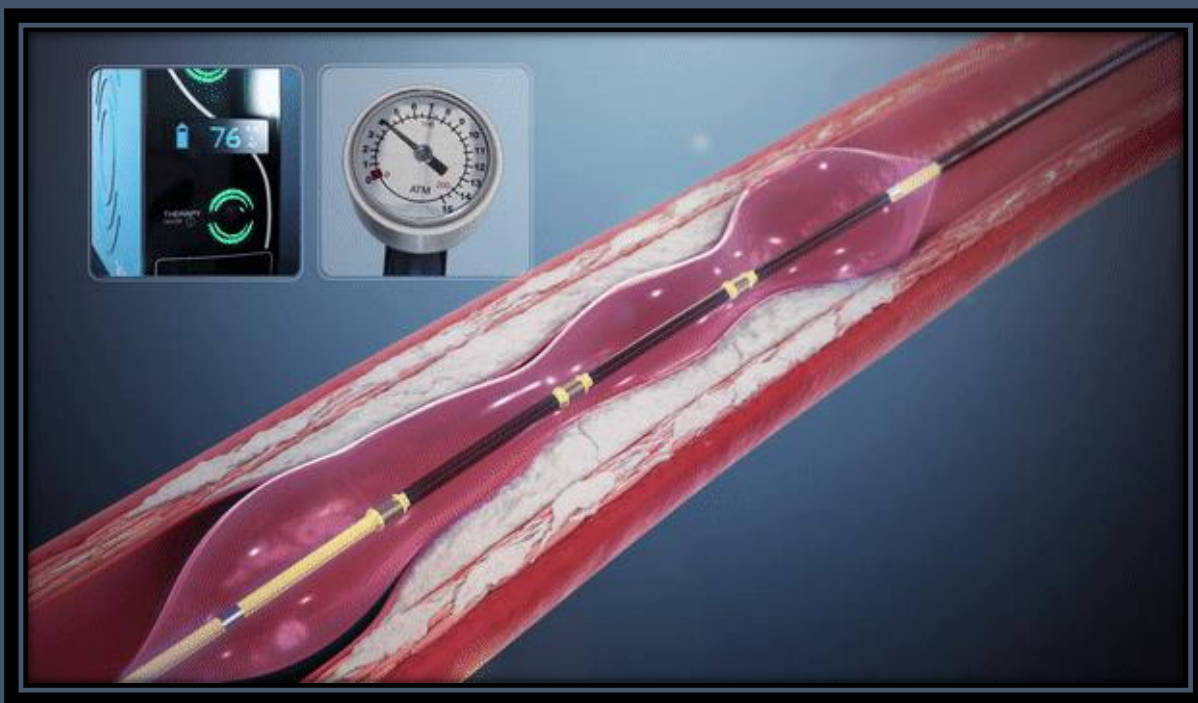


IVL Technology





IVL Safety



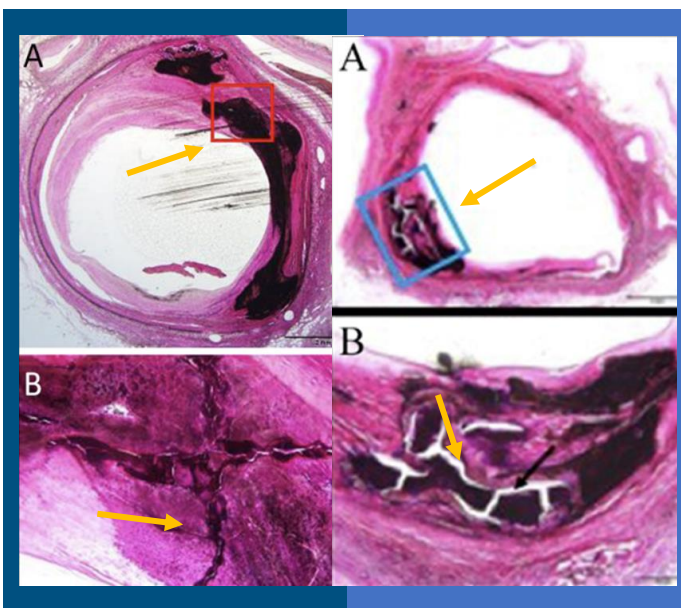
Nothing effect on the healthy wall



IVL Result

Calcium Challenges

Microfractures in superficial calcium



Microfractures in deep calcium

Linear and transversal safely fractures



Not embolic risk



IVL and Hostile Access

HOSTILE ACCESS

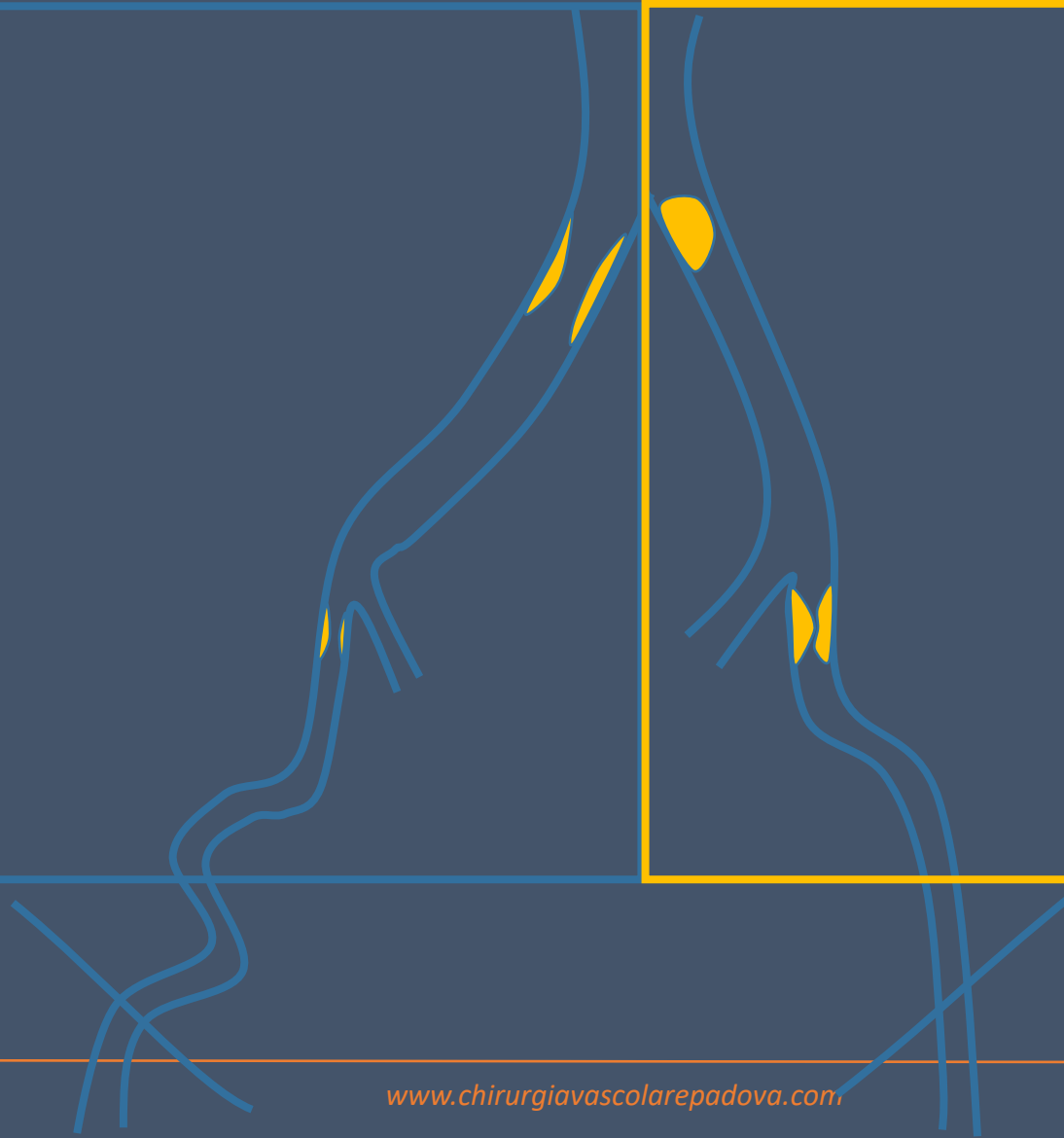
(1) To facilitate:
Endograft Delivery

To avoid:
Trauma
Rupture
Dissection
Stenting

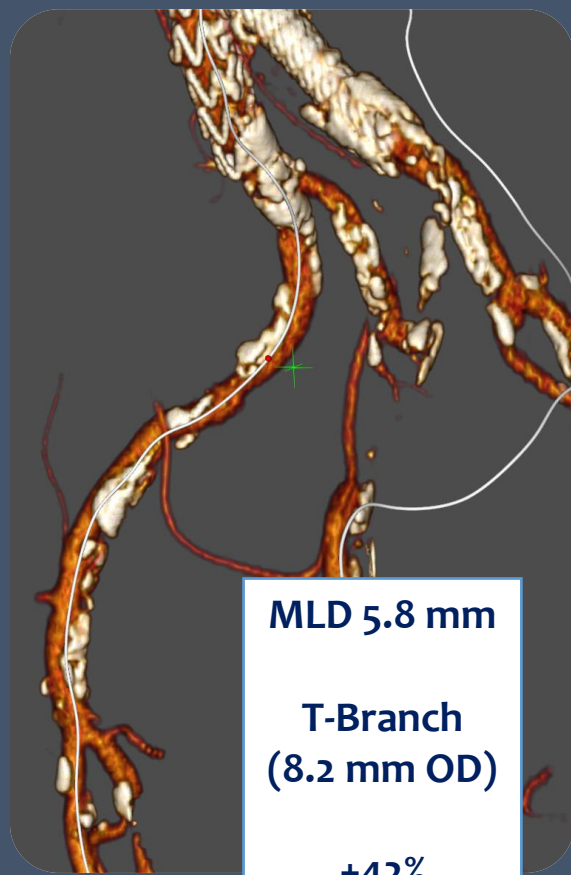
HOSTILE ACCESS + AIOD

(2) To facilitate:
Endograft Delivery
+ Improve Luminal Gain

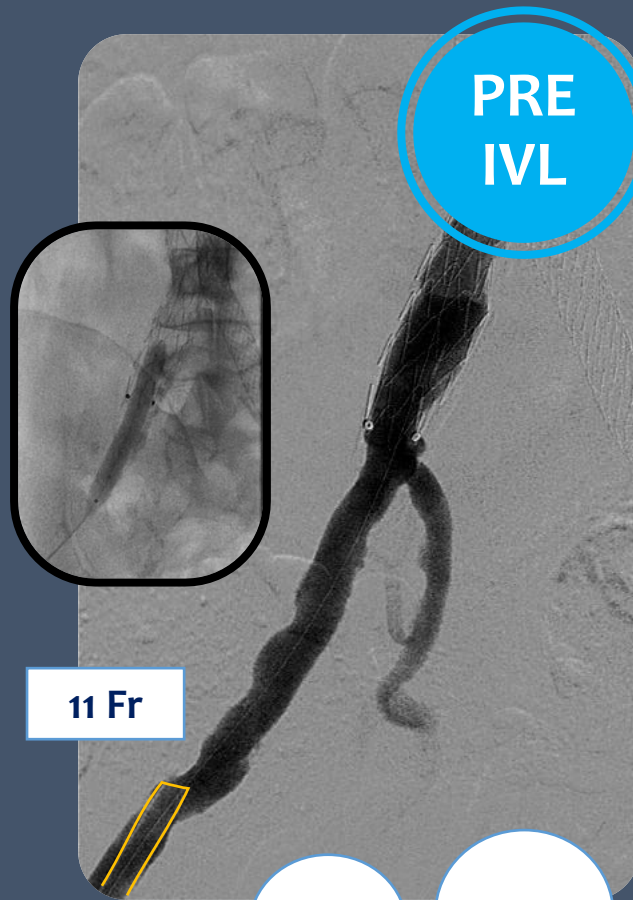
(3) Improve
Limb Expansion



CALCIFIED SINGLE ACCESS: IVL + BEVAR



MLD 5.8 mm
T-Branch
(8.2 mm OD)
+42%



11 Fr

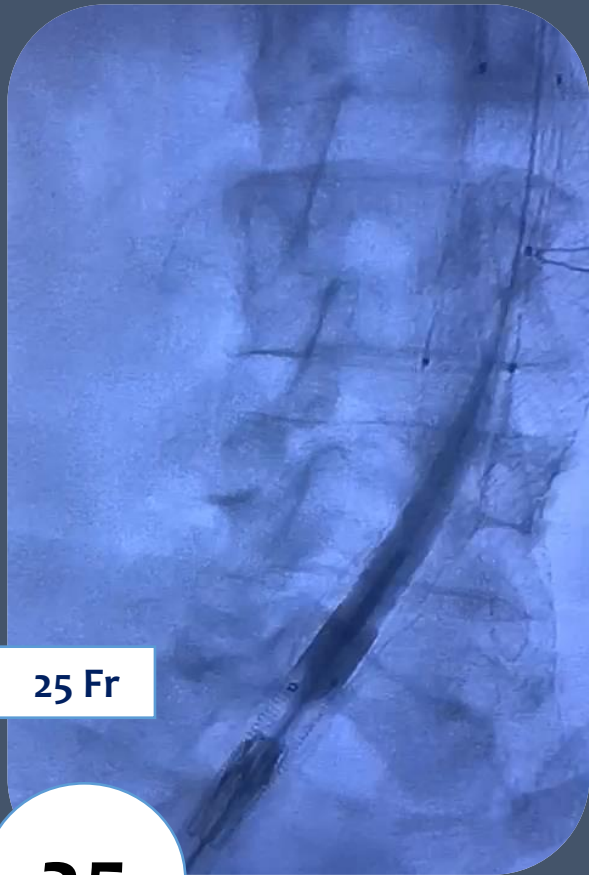
PRE
IVL

11

18

22

25



25 Fr

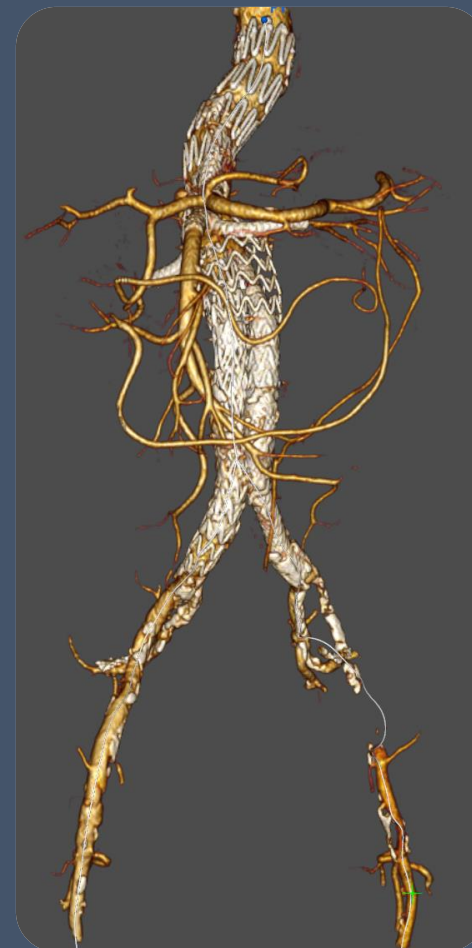
Dottering + IVL



POST
IVL



CALCIFIED SINGLE ACCESS: IVL + BEVAR

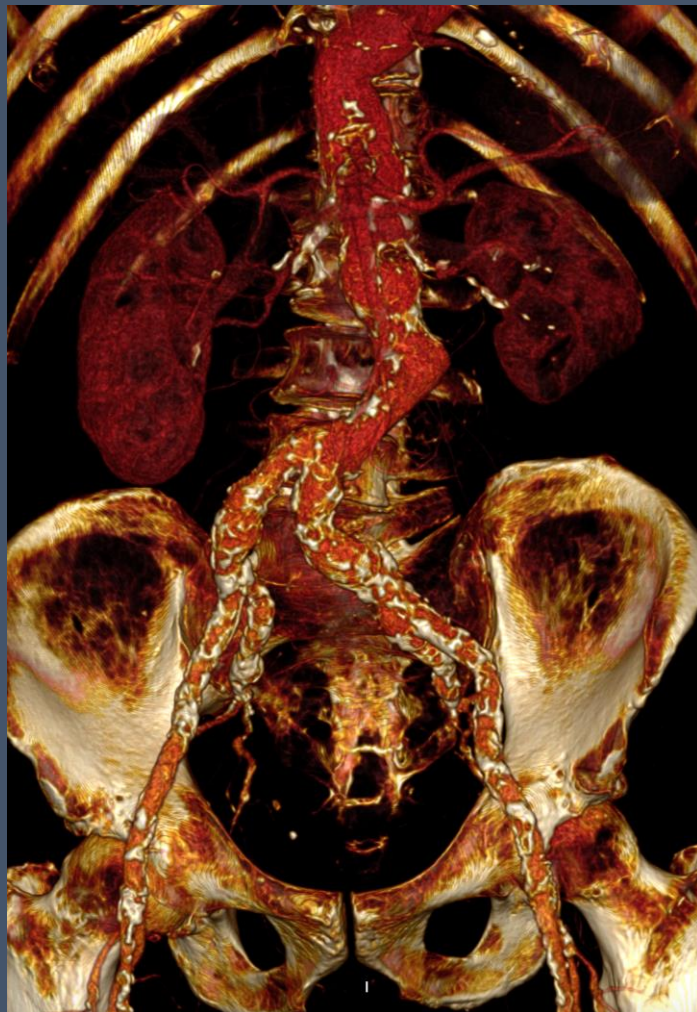




CASE REPORT

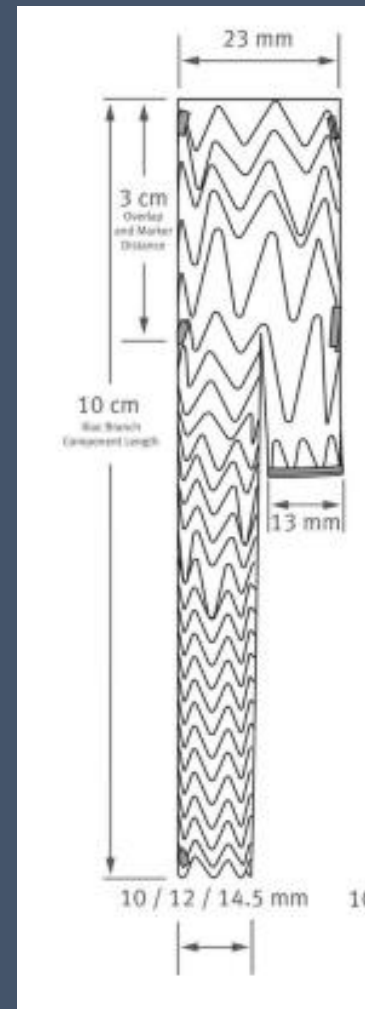
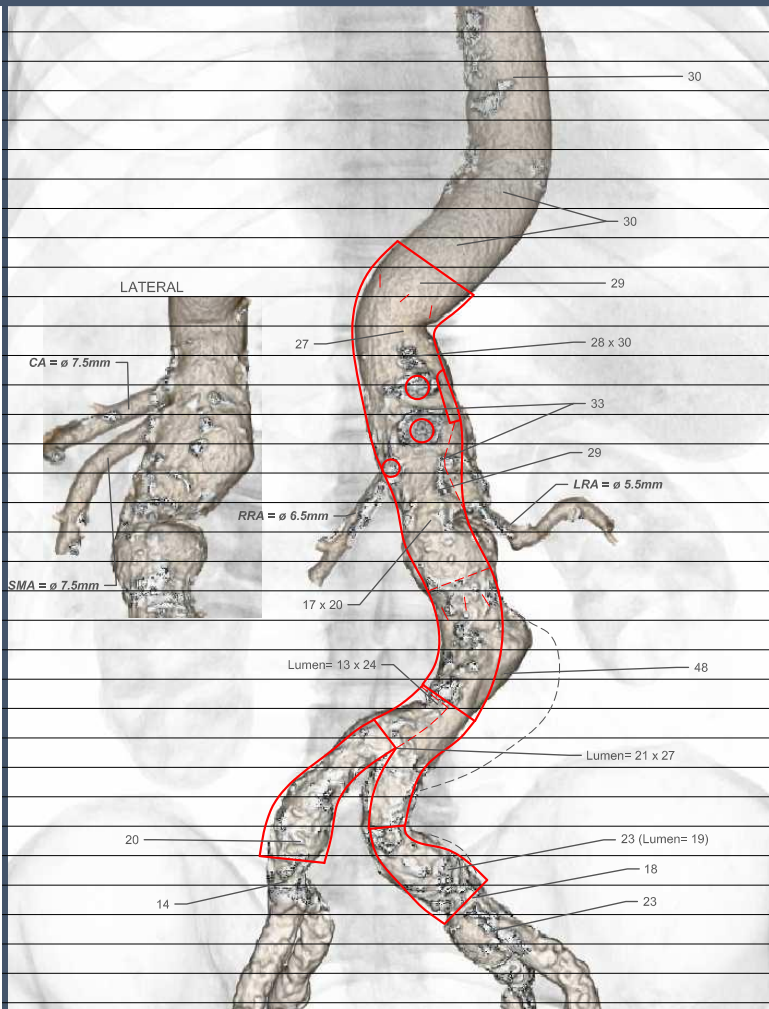
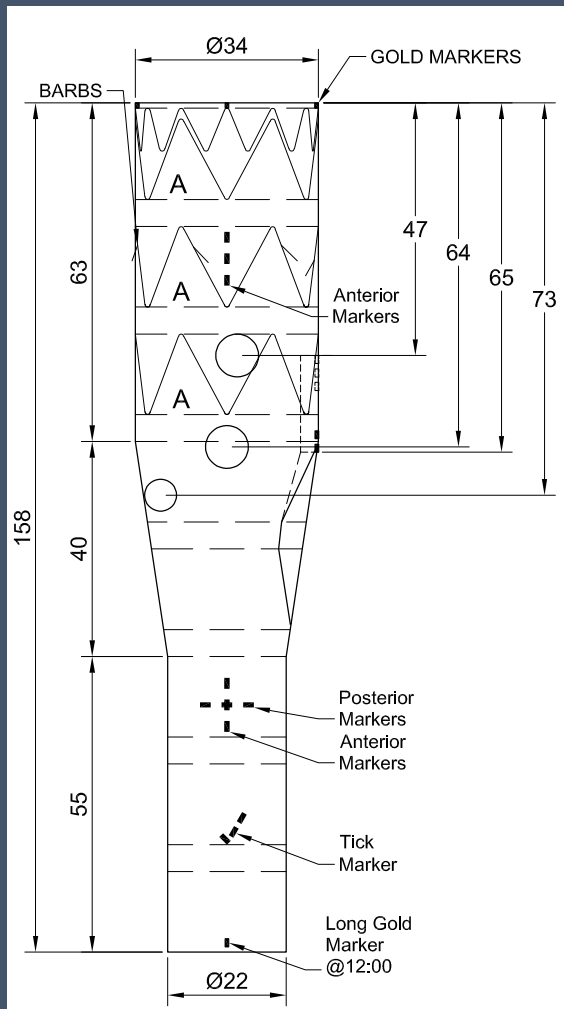


- 78 yrs
- COPD
- CABG
- PTCA
- IPA
- CEA 2022
- EF: 65%
- ASA 3



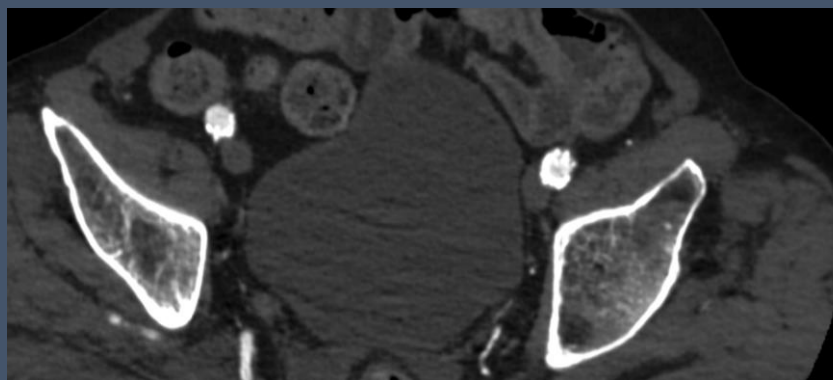
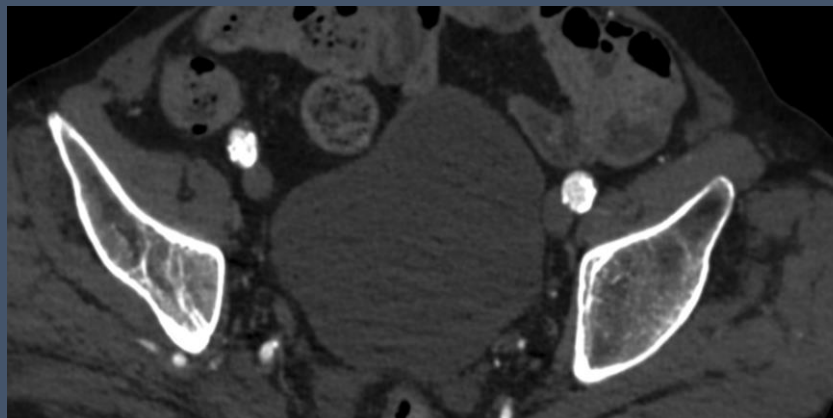
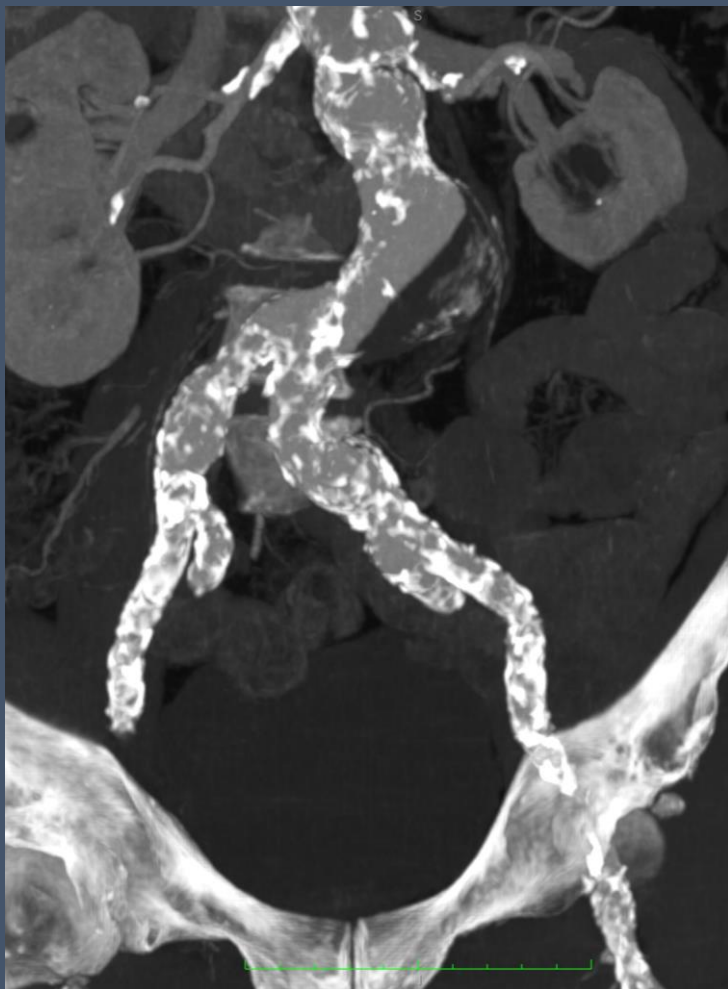


CASE REPORT





ACCESS



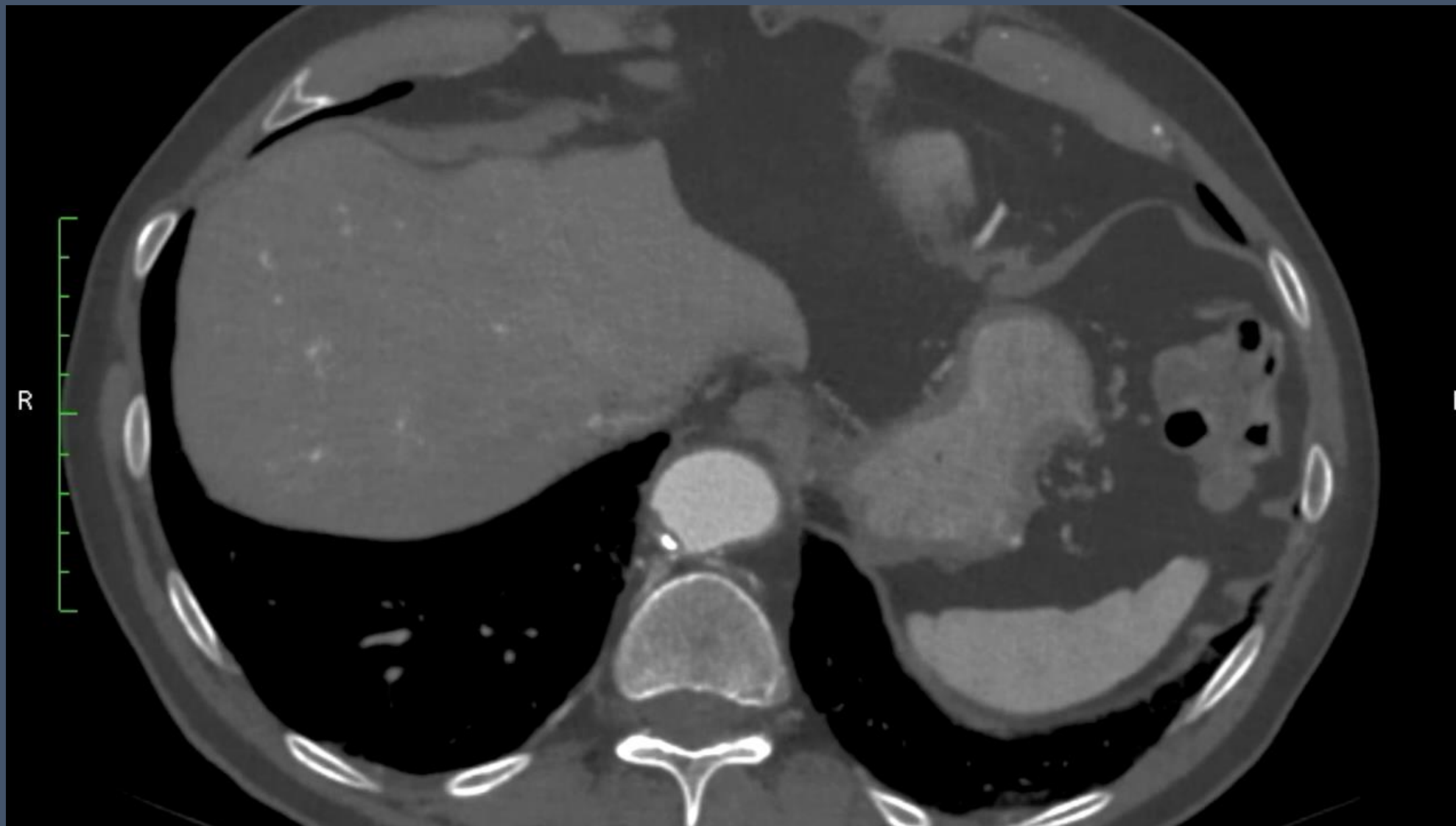
EIA Diam: 10 mm



RA: 6 mm
EIA: 8mm

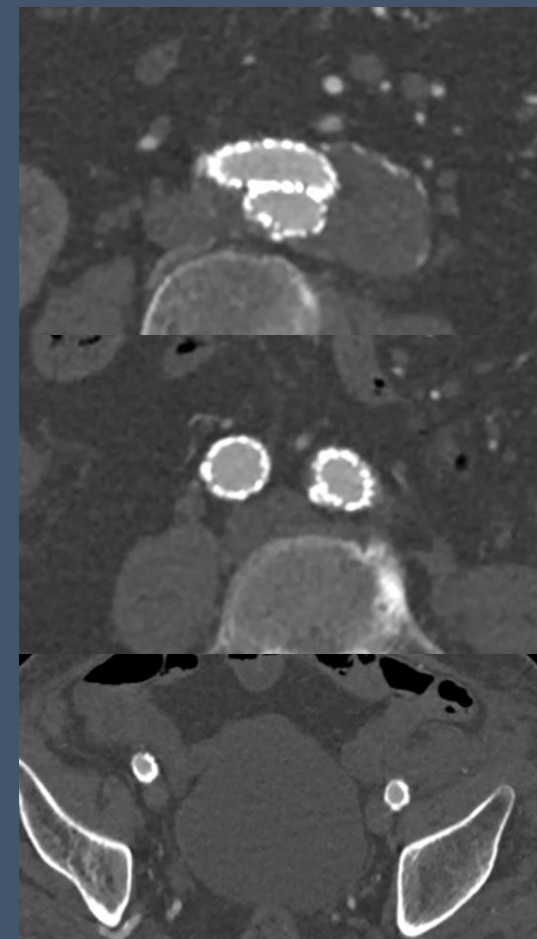
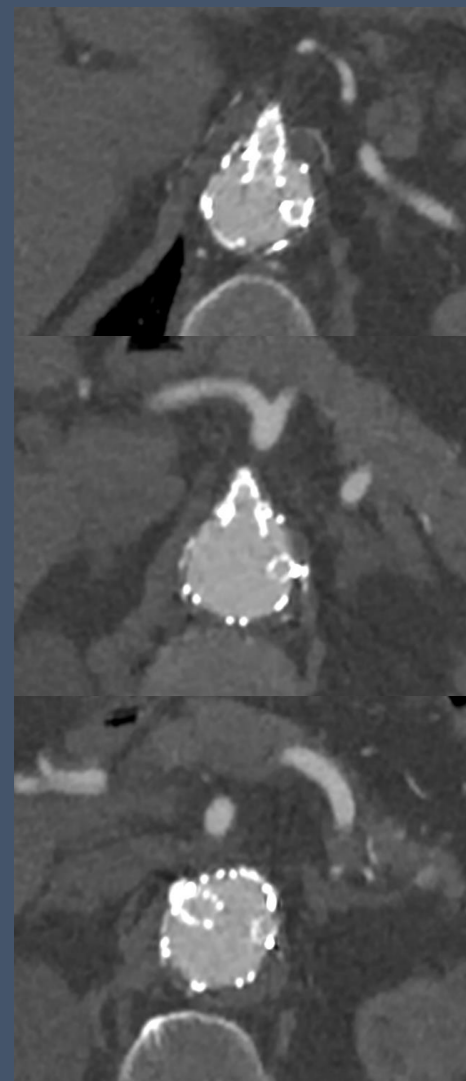


PROCEDURE





ANGIO-CT @ 1 month





Shockwave lithotripsy facilitates large-bore vascular access through calcified arteries

Lucyna Z. Price, MD,^a Scott R. Safir, MD,^a Peter L. Faries, MD,^a James F. McKinsey, MD,^a Gilbert H. L. Tang, MD, MD,^b and Rami O. Tadros, MD,^a New York, NY

Journal of Vascular Surgery Cases and Innovative Techniques
March 2021

Patient Identifier	Target Vessel	Length of Lesion(s) (mm)	Maximal Degree of Circumferential Calcification	Pre-Treatment Inner/Outer Diameter (mm)	Maximum OD Passed (mm)
1	L CIA and EIA	56.2, 15.1, 15, 13.1		3.59/8.15	6.33
2	L CIA and EIA	104, 15.8		3.56/10.3	7.5
3	R CIA and EIA	109, 29.6		2.44/10.4	6.33
4	R EIA and CFA	85.9, 43.8		1.95/7.53	6.7
5	R CIA	66.6		4.14/10.9	7.1
6	L CIA	52		1.87/13.5	6.3
7	R CIA and EIA	82.4, 53.6		3.96/8.64	8.5
8	R EIA	48.1, 36.2, 22.5, 15		4.72/7.83	8.8
9	R CIA and EIA	7.88, 68.7, 12.8, 8.99, 5.69		4.25/8.51	7.3





IVL-ASSISTED AORTIC ENDOVASCULAR TREATMENT: MID-TERM RESULTS



11

28 iliac axis (20 patients)

AIOD: 70%

PACSS: 89%

CASS: 14 ± 2



9

MAIN RESULTS

MEAN FOLLOW UP	26.5 ± 6.2 M
SUCCESSFUL ENDOGRAFT DELIVERY	100%
IVL RELATED DISSECTION	0%
EMBOLIZATION	0%
LIMB OCCLUSION	0%
ILIAC RUPTURE	0%
BAIL-OUT STENTING	1 (3.4%)



SHOCK-ACCESS

**PILOT STUDY
PROSPECTIVE
MULTICENTER
POST-MARKETING
CORE-LAB**

To evaluate the efficacy and safety of Shockwave M5+ (and L6) IVL Catheter (Intravascular Lithotripsy) in Hostile and Calcified iliac Access to facilitate aortic endovascular repair



Padua
Bologna
Florence
Perugia
Rome

**NEW SCORE
CALCIFIED/HOSTILE
ILIAC ACCESS**

5 PARAMETERS

- CALCIUM SCORE
- MLD
- SG-OD/MLD
- LESION LENGTH
- TORTUOSITY INDEX



TAKE HOME MESSAGES

SHOCKWAVE IVL facilitates a safe and effective delivery of aortic endografts,
increasing the compliance of calcified vessel

SHOCKWAVE IVL reduces the risk of complications
(iliac ruptures, dissections) and the use of paving and cracking

These promising initial results need further studies:
SHOCK-ACCESS = PROSPECTIVE, MULTICENTER, ITALIAN PILOT STUDY



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