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VEITH SYMPOSIUM

SAFE Large Sheath Percutaneous Femoral Access and Closure For Complex AAA EVAR In Obese Or Scarred Groins Even With Calcified Arteries

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Heart+Vascular Center

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Disclosures

Barend Mees, MD PhD FEBVS

I have the following potential conflicts of interest to report:

- Honoraria: Philips, Cook, Gore, Terumo, Abbott, Bentley
- Research funding: Cook, Bentley, Philips

The use of trade name in this talk is strictly educational to demonstrate closure techniques using the Proglide/Prostyle Perclose® device (Abbott Medical), Manta™ device (Essential Medical) and Angioseal™ device (Terumo).

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Arterial access is essential part of (complex) endovascular aortic surgery

- Safely getting in
- Safely getting through
- Safely getting out

- Complicated access prevents technical success and is associated with increased morbidity and mortality.

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Percutaneous large-bore closure

- **Pre-close Technique**
- Closure of 8-26 Fr OD punctures (>12 Fr two devices)
- Suture-based
- Ability to downsize during procedure (essential in complex EVAR)

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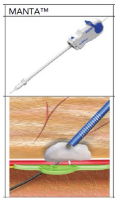
Percutaneous large-bore closure

- **Post-close Technique**
- Closure of 10-25 Fr OD punctures (14 Fr or 18 Fr device)
- Plug-based
- Fast (rAAA)



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Outcomes with plug-based versus suture-based vascular closure device after transfemoral transcatheter aortic valve replacement: A systematic review and meta-analysis

Ramy Sedhom MD[1] | Alexander T. Dang MD[2] | Amr Elwagdy MD[3] | Michael Megaly MD[4] | Islam Y. Elgendy MD[5] | Firas Zahr MD[6] | Samir Gafoor MD[7] | Mamas Mamas MD[8,9] | Ayman Elbadawi MD[10]

2 RCT's and 8 observational studies
1358 MANTA™ and 1755 ProGlide®/Prostar XL® patients

Conclusion: In patients undergoing TF-TAVR, large-bore access site closure with plug-based VCD was associated with a similar safety profile as suture-based VCD. However, subgroup analysis showed that plug-based VCD was associated with higher incidence of vascular and bleeding complications in RCTs.

Catheter Cardiovasc Interv. 2023;101:817–827.

Factors associated with challenging percutaneous access

- Calcification
- Diameter
- High bifurcation
- Tortuosity
- Previous groin interventions
- Obesity
- Connective Tissue Disease

Safe percutaneous (complex) EVAR needs meticulous:

- Patient selection (preparation)
- Puncture site selection (skill)
- Technique selection (skill)
- Material selection (preparation)

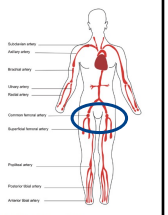
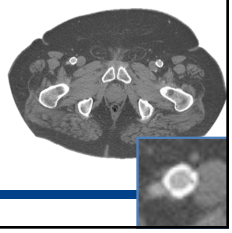


Figure 1: Typical arterial access vessels

Technical tips

Calcification (circumferential)

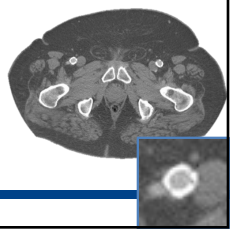
- US-guided puncture in least calcified zone
- Careful handling of foot plate of ProStyle® (45 degrees and **US-guided**)
- Be prepared for ProStyle® failure
  - Continue with 1 ProStyle® and deal with it later



Technical tips

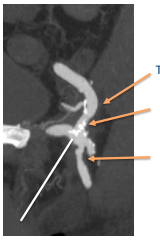
Calcification (circumferential)

- US-guided puncture in least calcified zone
- Careful handling of foot plate of ProStyle® (45 degrees and **US-guided**)
- Be prepared for ProStyle® failure
  - Continue with 1 ProStyle® and deal with it later
- *Circumferential calcification without stenosis may be good indication for use of Manta® device*



Redo-groin

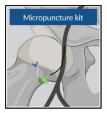
- EVAR 2013
- Fem X-over for limb occlusion 2015
- Type IB endoleak L



Technical tips

Previous open groin interventions

- 4 Fr micropuncture set
- progressive dilation
- stiff guidewire (75 cm Amplatz)
- regular Preclose technique



- A very small needle (21 G) is used to access the CFA
- A 4 F sheath is inserted and an angiogram is done
- If the position is good, the 4 F sheath is replaced with a bigger sheath over a .035" wire

Postop

- Percutaneous EVAR extension
- Postoperative course uncomplicated
- ABI 93% L
- ABI 85% R

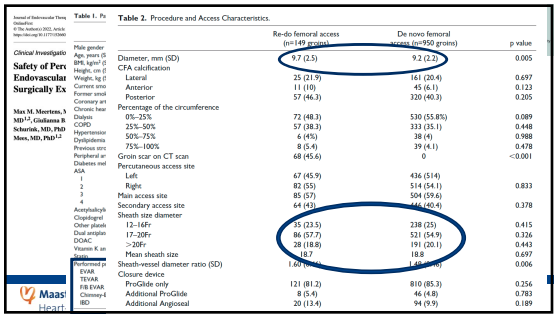
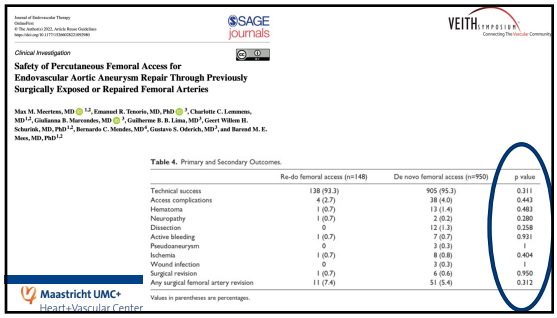


Table 2. Procedure and Access Characteristics.

	Re-do femoral access (n=149 groins)	De novo femoral access (n=950 groins)	p value
Diameter, mm (SD)	9.7 (2.5)	9.2 (2.2)	0.005
CFA calcification			
Lateral	25 (21.9)	161 (20.4)	0.697
Anterior	11 (10)	45 (6.1)	0.123
Posterior	57 (46.3)	320 (40.3)	0.205
Percentage of the circumference			
0%–25%	72 (48.3)	530 (55.8%)	0.089
25%–50%	57 (38.3)	333 (35.1)	0.448
50%–75%	6 (4%)	38 (4)	0.988
75%–100%	8 (5.4)	39 (4.1)	0.478
Groin scar on CT scan	68 (45.6)	0	<0.001
Percutaneous access site			
Left	67 (45.9)	436 (514)	
Right	82 (55)	514 (54.1)	0.833
Main access site	85 (57)	504 (59.6)	
Secondary access site	64 (43)	446 (40.4)	0.378
Sheath size diameter			
12–16Fr	35 (23.5)	238 (25)	0.415
17–20Fr	86 (57.7)	521 (54.9)	0.326
>20Fr	28 (18.8)	191 (20.1)	0.443
Mean sheath size	18.7	18.8	0.697
Sheath-vessel diameter ratio (SD)	1.69 (0.2)	1.68 (0.18)	0.006
Closure device			
ProGlide only	121 (81.2)	810 (85.3)	0.256
Additional ProGlide	8 (5.4)	46 (4.8)	0.783
Additional Angioseal	20 (13.4)	94 (9.9)	0.189



SAGE journals

Clinical Investigation

Safety of Percutaneous Femoral Access for Endovascular Aortic Aneurysm Repair Through Previously Surgically Exposed or Repaired Femoral Arteries

Max M. Meertens, MD [1,2], Emanuel R. Tenorio, MD, PhD [3], Charlotte C. Lemmens, MD [1,2], Giuliana B. Marcondes, MD [3], Guilherme B. B. Lima, MD[3], Geert Willem H. Schurink, MD, PhD[1,2], Bernardo C. Mendes, MD[4], Gustavo S. Oderich, MD[3], and Barend M. E. Mees, MD, PhD[1,2]

Table 4. Primary and Secondary Outcomes.

	Re-do femoral access (n=148)	De novo femoral access (n=950)	p value
Technical success	138 (93.3)	905 (95.3)	0.311
Access complications	4 (2.7)	38 (4.0)	0.443
Hematoma	1 (0.7)	13 (1.4)	0.483
Neuropathy	1 (0.7)	2 (0.2)	0.280
Dissection	0	12 (1.3)	0.258
Active bleeding	1 (0.7)	7 (0.7)	0.931
Pseudoaneurysm	0	3 (0.3)	1
Ischemia	1 (0.7)	8 (0.8)	0.404
Wound infection	0	3 (0.3)	1
Surgical revision	1 (0.7)	6 (0.6)	0.950
Any surgical femoral artery revision	11 (7.4)	51 (5.4)	0.312

Values in parentheses are percentages.

Obese patients benefit most from p-EVAR (suture-based closure)

From the Society for Clinical Vascular Surgery

Percutaneous endovascular aneurysm repair in morbidly obese patients

Jason A. Chin, MD,[a] Laura Skrip, MPH,[b] Bauer E. Sumpio, MD, PhD,[a] Jonathan A. Cardella, MD,[a] Jeffrey E. Indes, MD,[a] Timur P. Sarac, MD,[a] Alan Dardik, MD, PhD,[a] *and* Cassius I. Ochoa Chaar, MD, MS,[a] *New Haven and Farmington, Conn*

BMI>40

Results: There were 833 MO patients (470 CEVAR and 363 PEVAR) constituting 3.0% of all patients undergoing EVAR. The use of PEVAR in MO patients significantly increased from 27.3% of total EVARs in the years 2005 to 2006 to 48.6% in 2013

Conclusions: PEVAR is increasingly used in MO patients and decreases operating time and rates of wound infection compared with CEVAR. The advantages of PEVAR seem to be lost in the superobese patients. (J Vasc Surg 2017;65:643-50.)

RESEARCH LETTER

Effectiveness of the MANTA Vascular Closure Device for Endovascular Aneurysm Repair in the Obese: a Prospective Pilot Audit

Arindam Chaudhuri[1]

Bedfordshire — Milton Keynes Vascular Centre, Bedfordshire Hospitals NHS Foundation Trust, Bedford, UK

BMI>30

Procedures		
EVAR	18 (78)	All via large bore punctures
TEVAR	4 (17)	Retrograde femoral punctures
PEVAR	1 (4)	Retrograde femoral punctures
		Antegrade femoral puncture

Admission and follow up outcomes		
Length of stay — d	1 (2)	–
Check imaging time — w	5 (5)	–
Complications, pseudoaneurysm	2	Spontaneously resolved

Eur J Vasc Endovasc Surg (2022) 64, 577—578

Technical tips

Obesity

- Extra long puncture needle
- Use stiff guidewire and leave in as long as possible when introducing ProStyle®
- May do a limited dissection with mosquito
- Make sure no subcutaneous tissue in suture threads
- Use slender knot pusher in case regular pusher does not go down well

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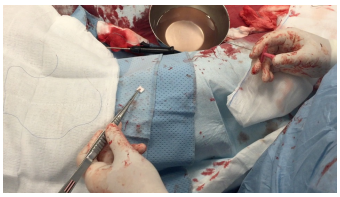
Technical tips for closure: persistent (minor) bleeding

- Manual compression
- Pledget
- Third ProStyle®
- Angioseal® 6-8 Fr



Courtesy of Stephan Haulon; Paris

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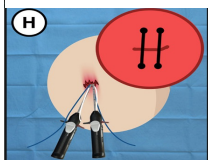
Technical tips for closure: persistent (major) bleeding

- Double wire technique
- US-guided MANTA™

Progressive closure:



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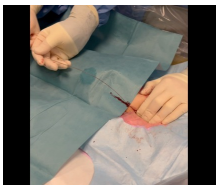
US-guided plug-based closure



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Summary and Conclusions

- **SAFE** challenging (groin) **access** is all about **preparation** and using a **meticulous approach** with appropriate materials, such as micropuncture kit, stiff short guidewires
- Use **ultrasound** to puncture and close
- Both **preclose** and **postclosure** techniques have a role
- **Total percutaneous (complex) EVAR is feasible in majority of patients, even with obese, calcified or scarred groins**

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Thank you for your attention

EVC®

28th European Vascular Course
March 9-11 2025, Maastricht, the Netherlands

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