



VASCUPEDIA

# Fully Percutaneous Transaxillary Transcatheter Aortic Valve Implantation in patients with a patent left internal mammary graft

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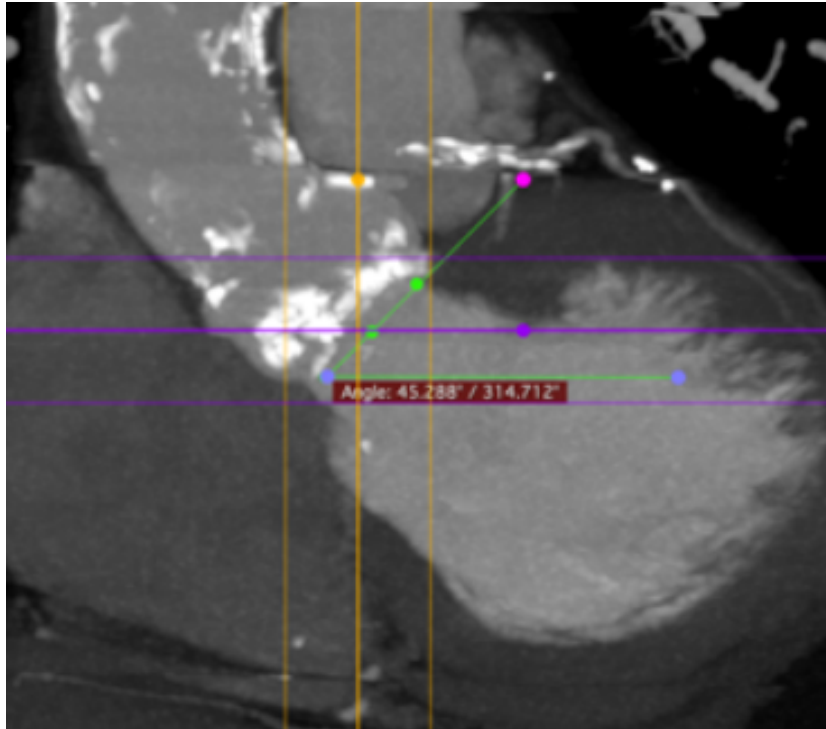
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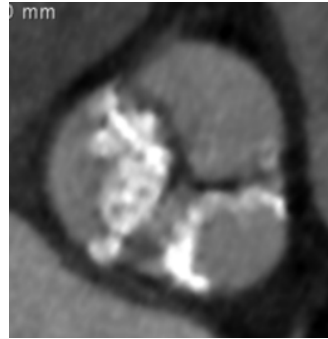
# Case presentation

- 80 year-old male
- Dyspnea on exertion (NYHA II-III)
- Hypertension, dyslipidemia, COPD (moderate/severe), CKD (eGFR 45 ml/min/1,73m<sup>2</sup>)
- CAD: Previous CABG (LIMA-LAD; SVG-MO-PDA)
  - April 2018: **patent LIMA-LAD**, occluded SVG and RCA, critical LCX → DES
- PAD: aorto-bifemoral bypass, PTA of bil.SFA
- Severe aortic stenosis (meanG 60 mmHg), normal LVEF
- EuroSCORE II = 9,3%, STS = 6%

# Preoperative imaging



**Aortic-VBR angle:** 45 °



## **Aortic Valve**

Moderate-severe calcifications  
tricuspid valve

## **Aortic Annulus**

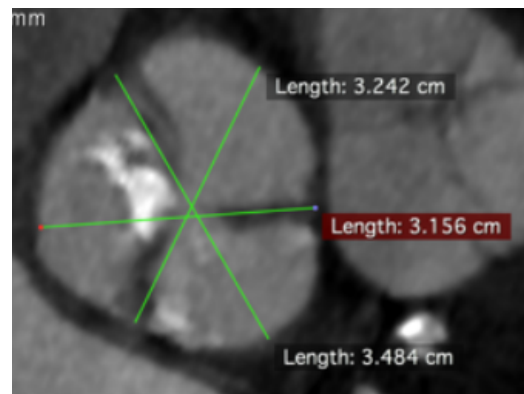
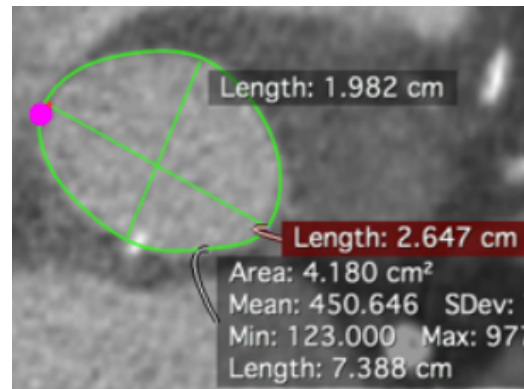
Diameters: 19 x 26,4 mm  
Per. der. diam: 23,5 mm  
Perimeter: 74 mm  
Area: 418 mm<sup>2</sup>

## **LVOT**

Diameters: 17 x 28 mm

## **Coronary ostia height**

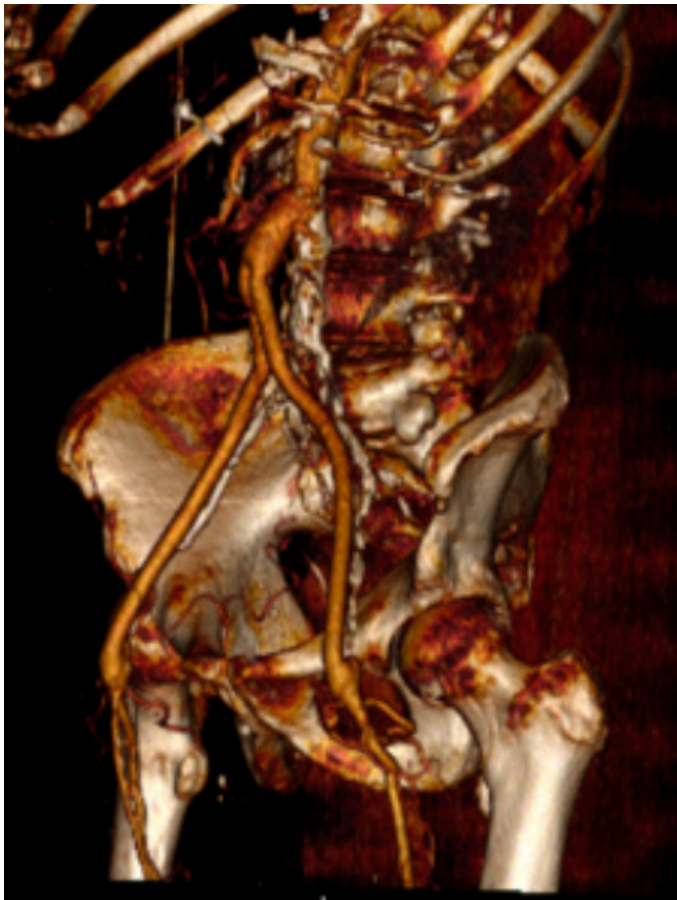
LCA 13 mm / RCA 16 mm



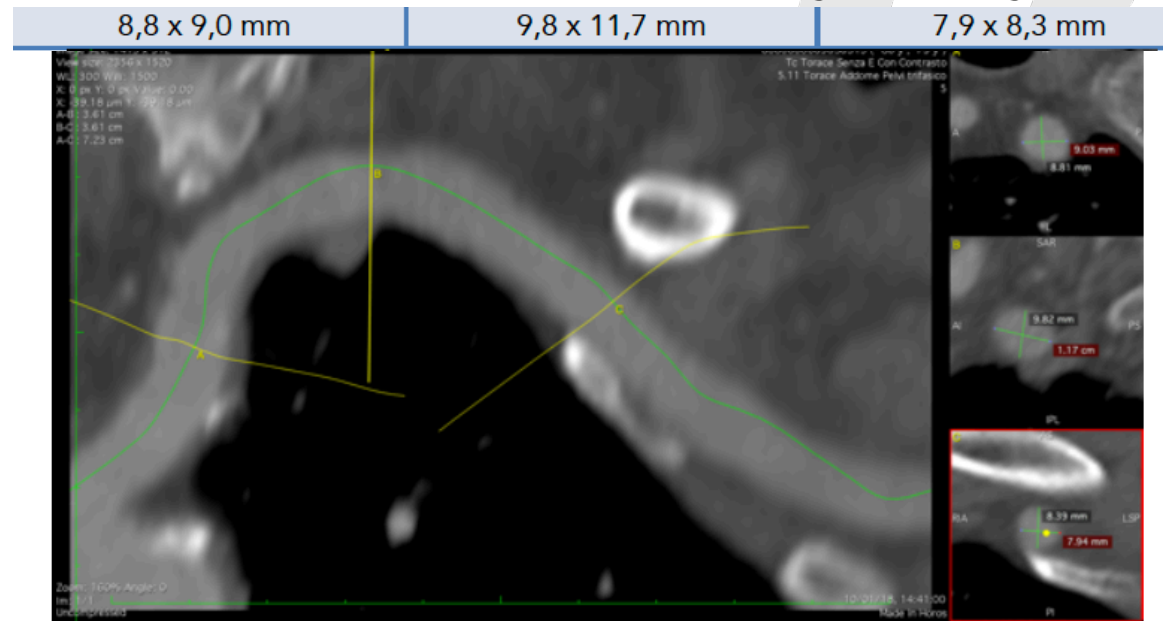
# Preoperative imaging

Aorto-bifemoral bypass

→ Not suitable for Transfemoral approach



## *Subclavian and axillary artery*

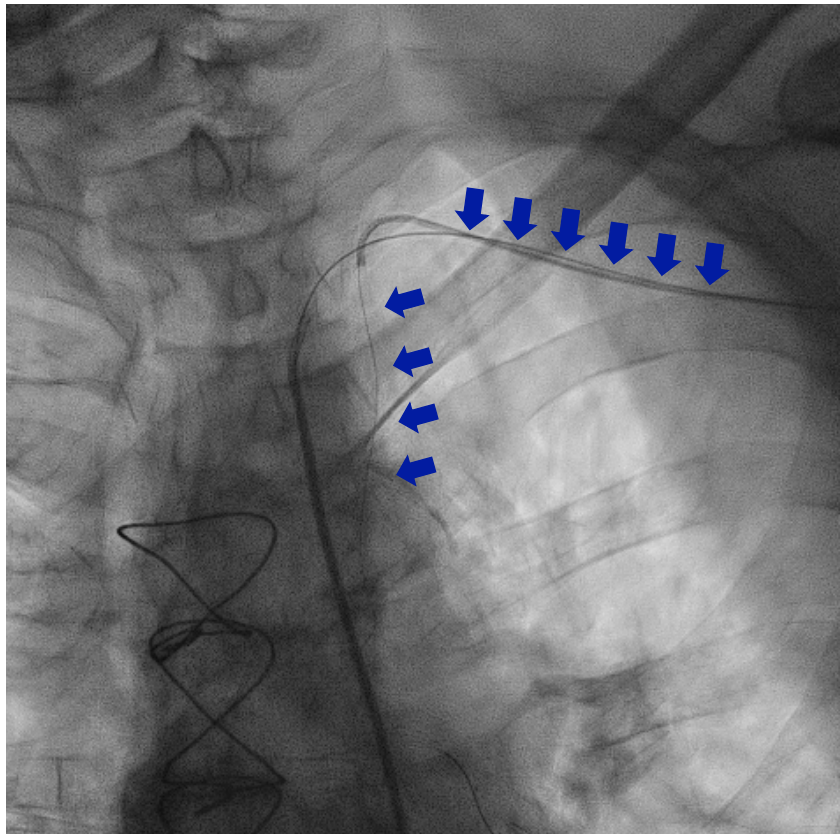
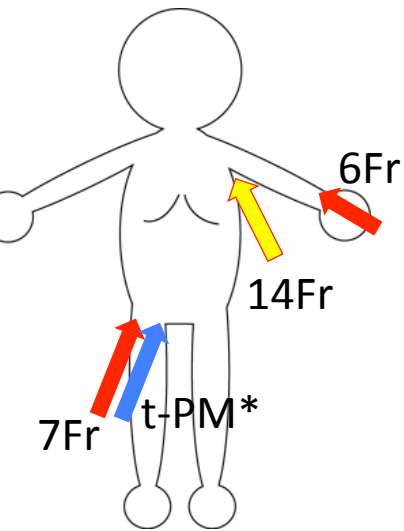


Good caliber and mild calc / Suitable for EnveoR 14Fr

→ **Transaxillary approach**

# Our treatment

## Wire placement

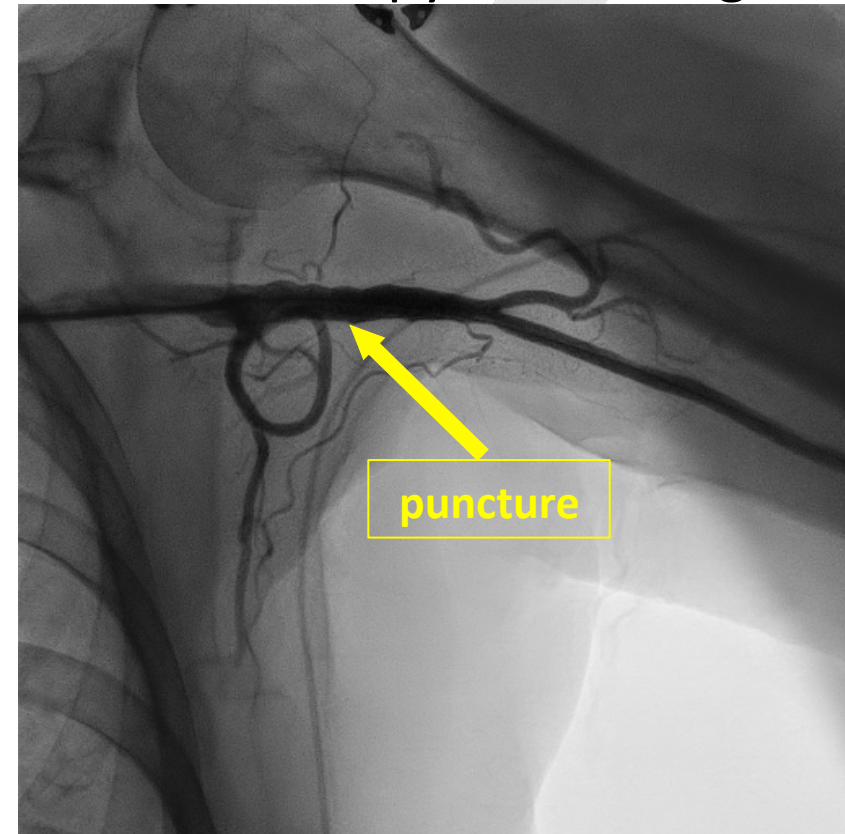


\*temporary-pacemaker

Lt. radial (6Fr) → LIMA as a safety net during TAVI

Rt. femoral (7Fr) → Lt. axillary artery for orientation to puncture

## Direct transaxillary puncture Under fluoroscopy and echo guided

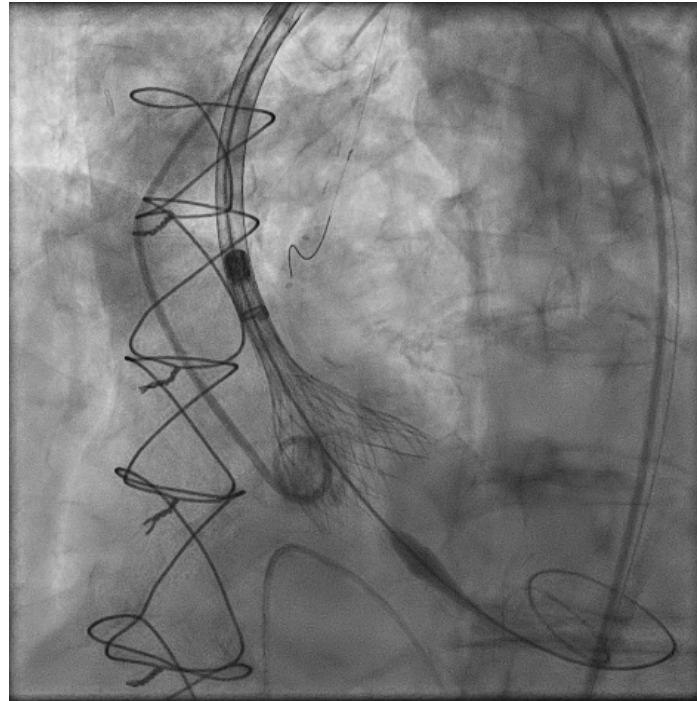


Pre-closure with 2 ProGlide  
EnveoR 14Fr inserted

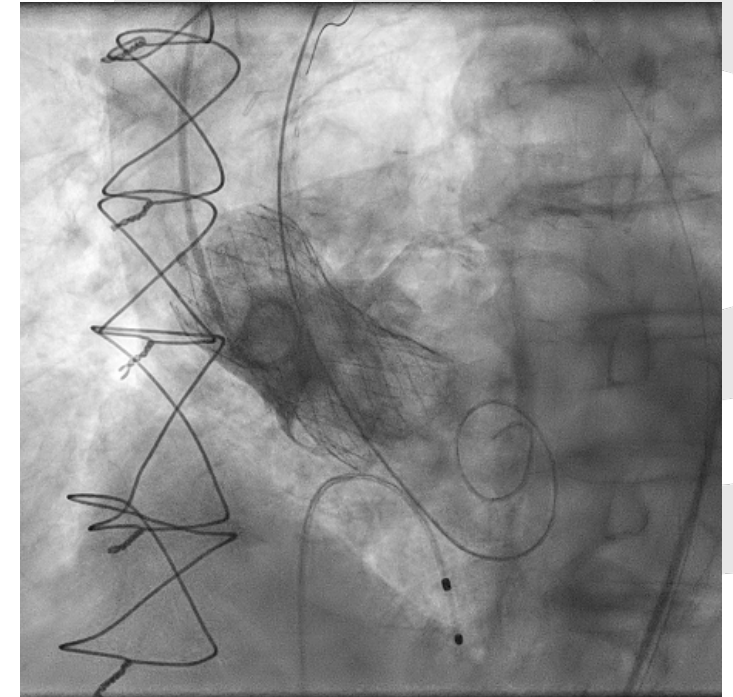
# Our treatment



Deliver system  
over the INNOWI wire



Evolut R 29mm implantation

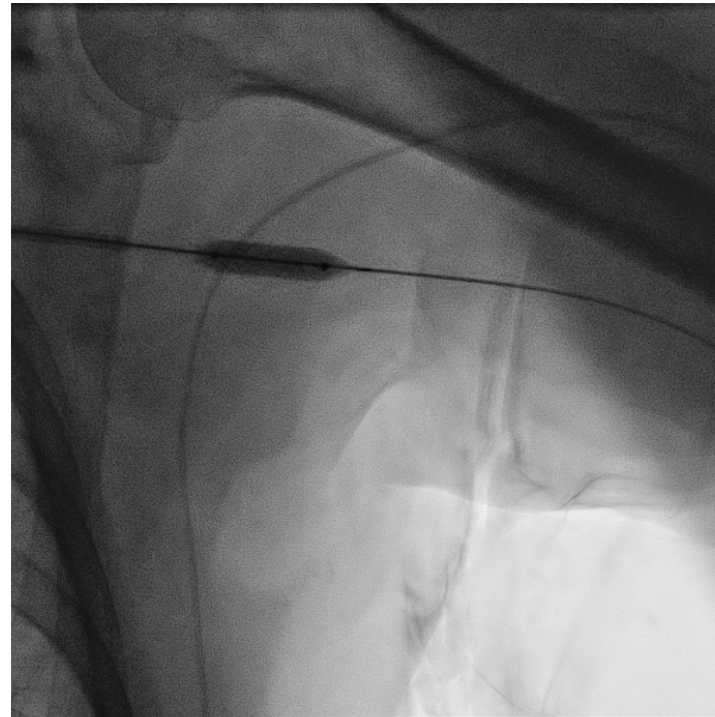


Mild PVL

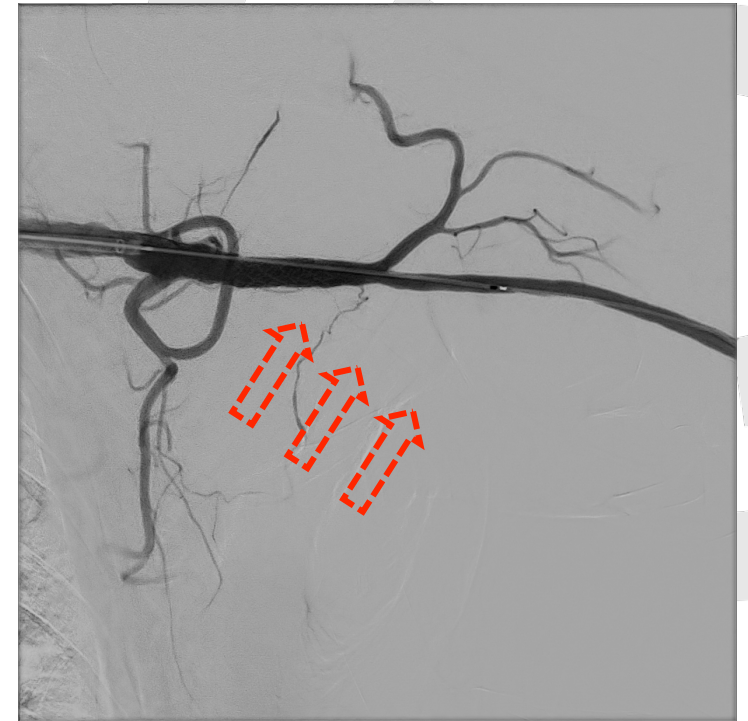
# Our treatment



After 2 ProGlide closure,  
extravasation

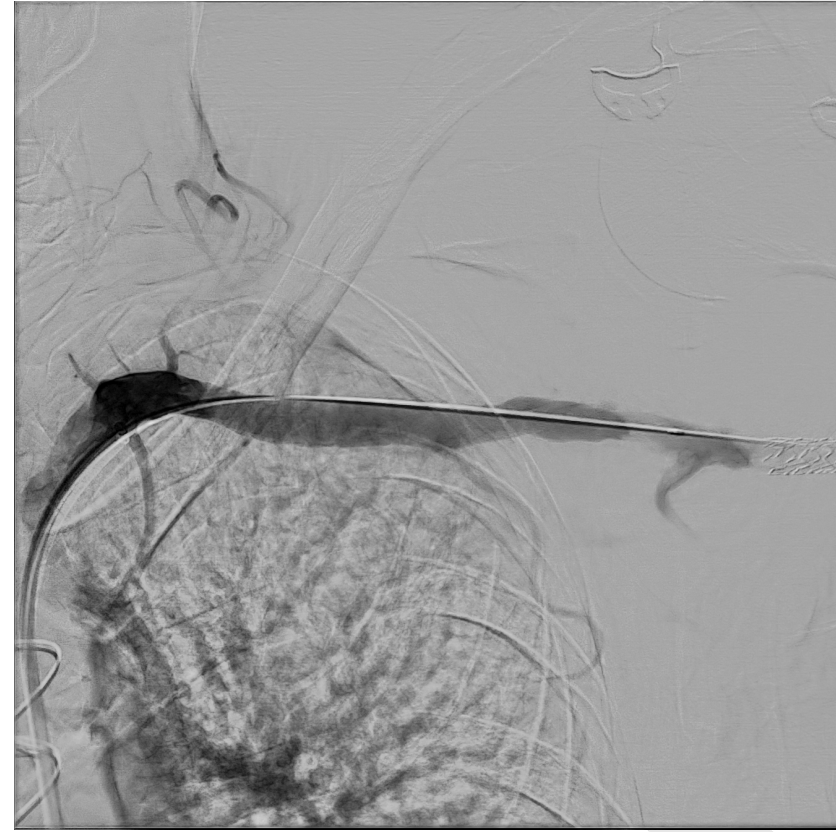
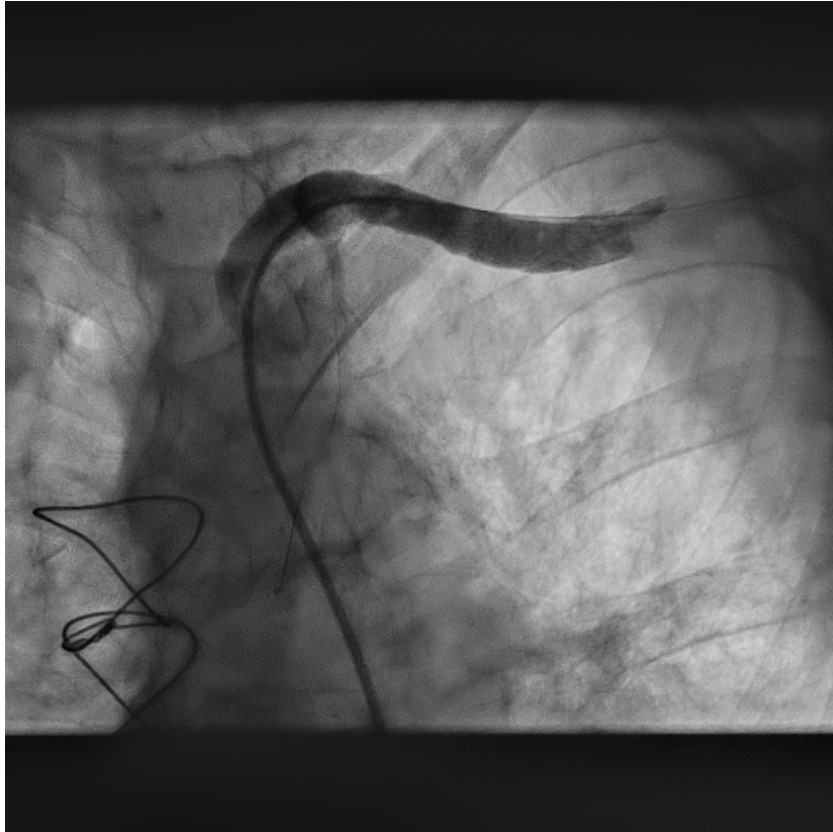


Covered stent (7×24mm)  
implantation



Final angiography

# Our treatment



Patent LIMA after TAVI  
No vessel injury



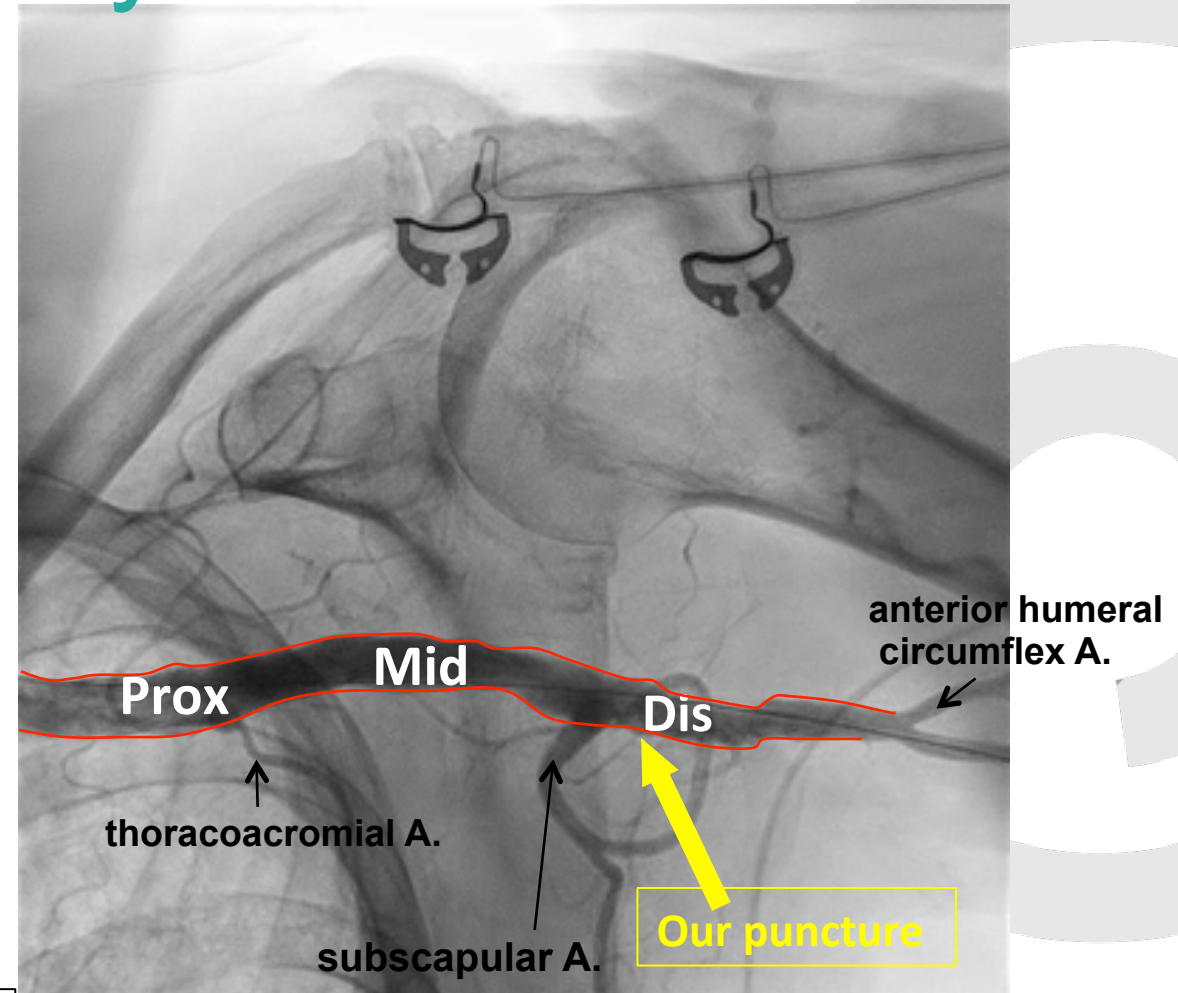
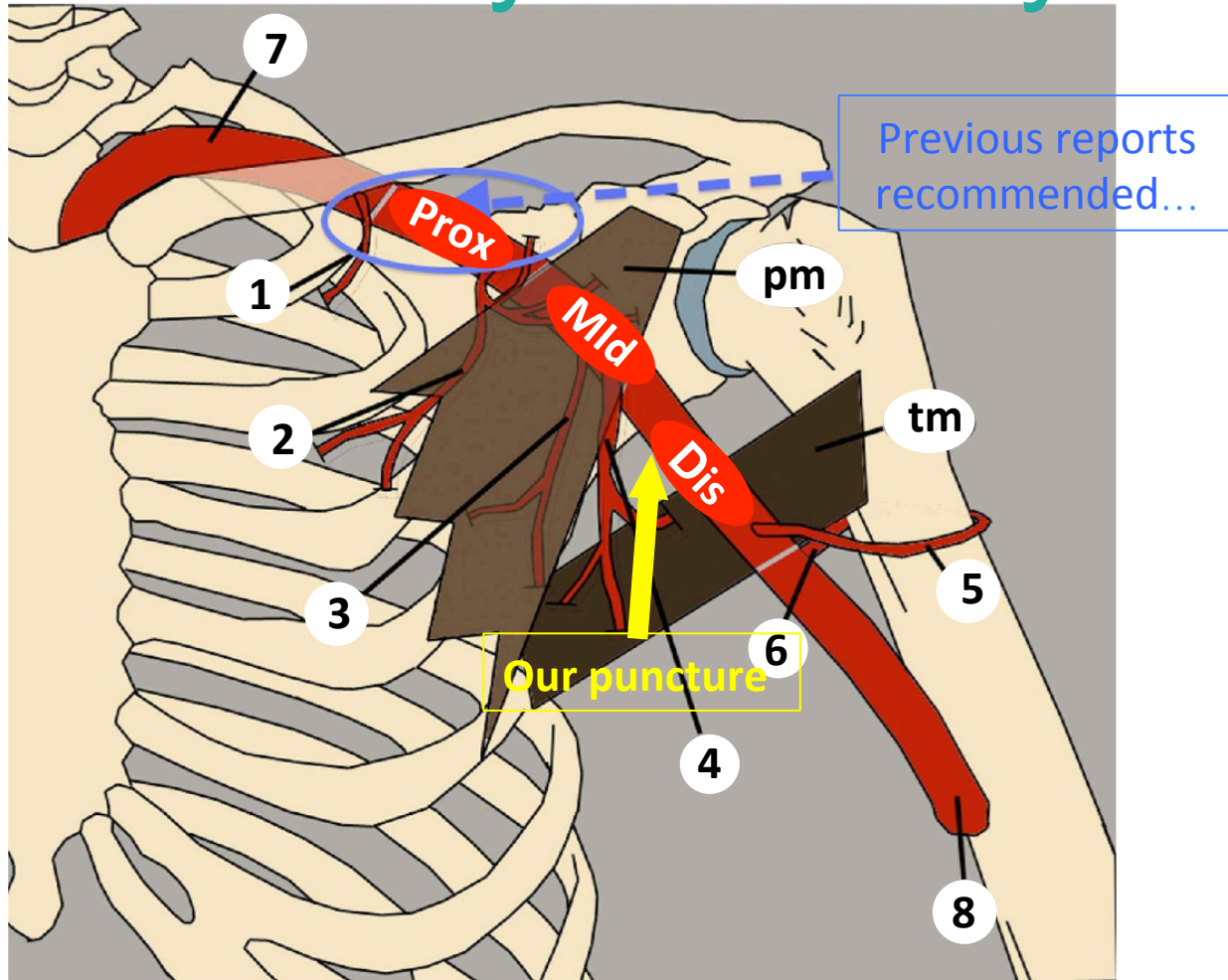
# After TAVI



1POD; Axillary access is fine, only small hematoma

4POD; Discharge without complication

# Anatomy of Axillary Artery



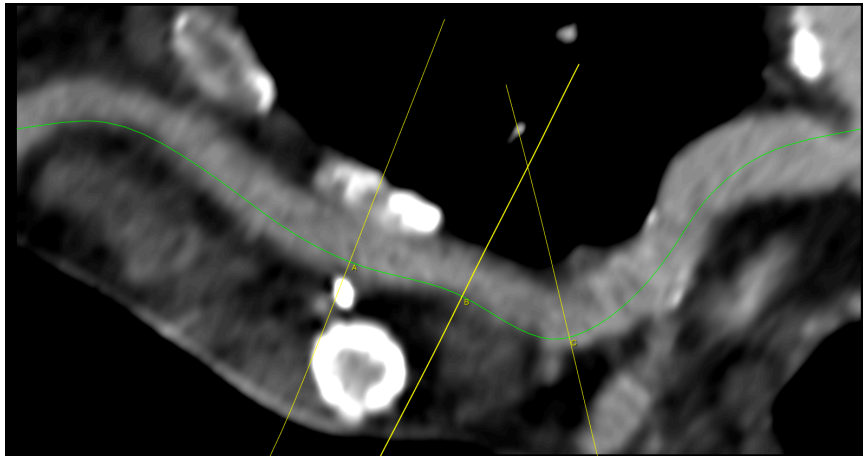
pm; pectoralis minor muscle, tm;teres major muscle.  
 (1) superior thoracic artery, (2) thoracoacromial artery, (3) lateral thoracic artery,  
 (4) subscapular artery, (5) anterior humeral circumflex artery, (6) posterior  
 humeral circumflex artery (7) subclavian artery (8) brachial artery

## Advantage in puncture of distal segment...

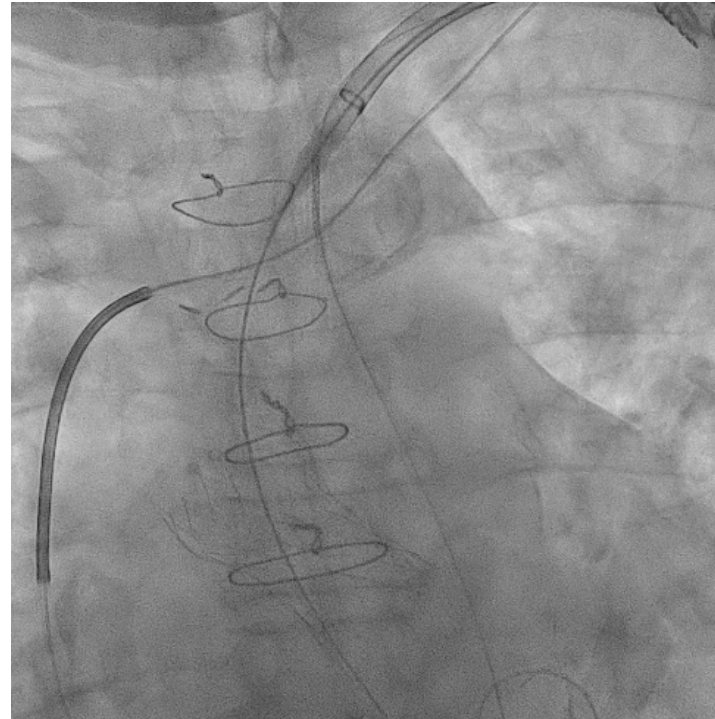
- Easy to check pulse and echo
- Possible to compression just in case

# Other experience

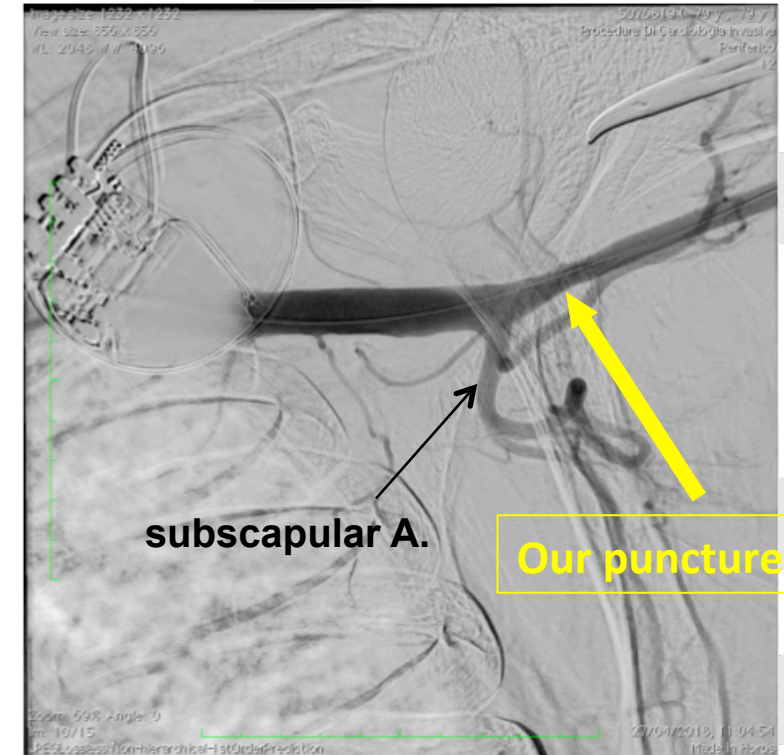
*Subclavian and axillary artery*



Preoperative CT  
Good caliber with mild calc



Transaxillary TAVI



Perfect hemostasis  
only with 2 ProGlide

# Transaxillary TAVI in patients with LIMA graft

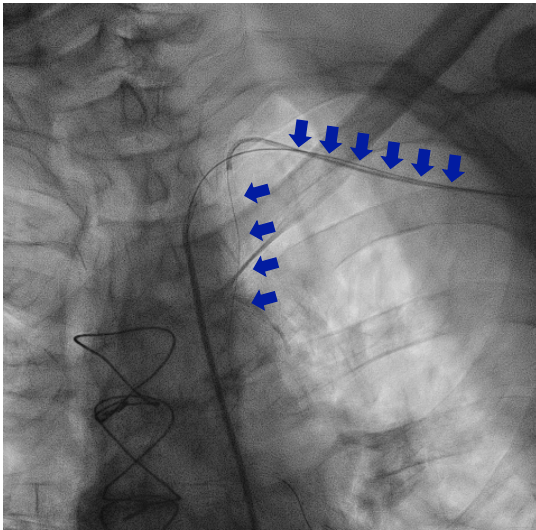


Previous report suggested...

- No impairment of LIMA flow despite 18Fr sheath in subclavian artery
- Safe approach in a minimum 7.5mm subclavian artery diameter

Modine T. et al. Transcutaneous aortic valve implantation using the axillary/subclavian access with patent left internal thoracic artery to left anterior descending artery: feasibility and early clinical outcomes. *J Thorac Cardiovasc Surg.* 2012;144:1416-20.

- Gentle procedures are needed to avoid vessel injury
- Careful ECG monitoring during TAVI
- Wire protection of LIMA is useful



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# Take Home Message

- Our experience suggests that fully percutaneous transaxillary approach without surgical cut-down is feasible and safe with a satisfactory short-term outcome.
- This approach has the potential to become an alternative artery access in patients with non-suitable for transfemoral or transapical TAVI, even in patients with a patent LIMA to LAD.