

TAVI – Summit 2012  
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TAVI

# Various Access Sites

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# Disclosure Statement of Financial Interest

Within the past 12 months, the presenter or their spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

## Physician Name

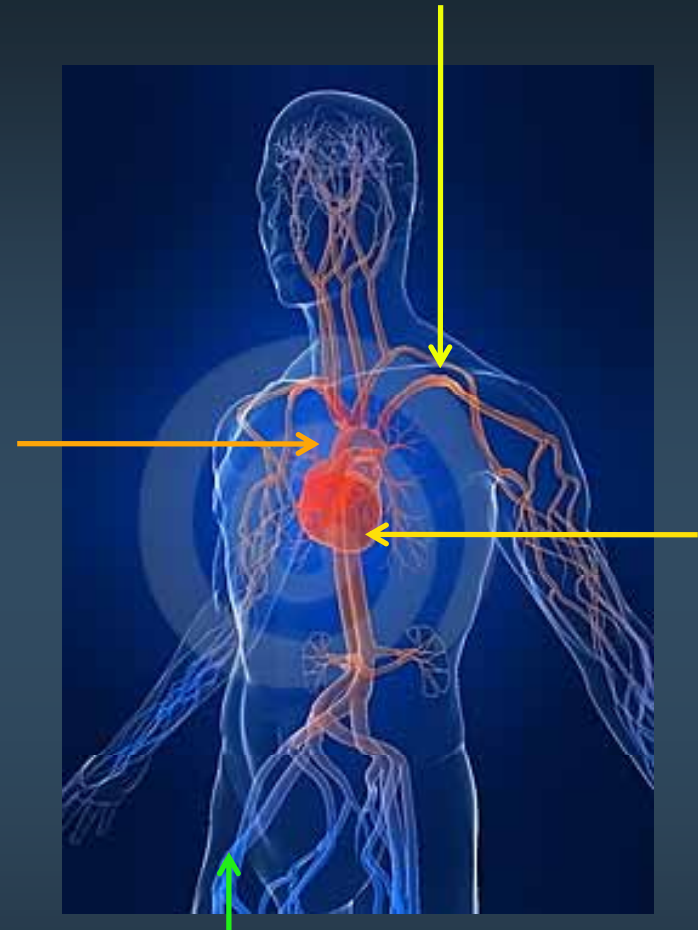
## Company/Relationship

Eberhard Grube, MD

Medtronic, CoreValve: C, SB, AB, OF  
Sadra Medical: E, C, SB, AB  
Direct Flow: C, SB, AB  
Mitralign: AB, SB, E  
Symetis: AB  
Boston Scientific: C, SB, AB  
Biosensors: E, SB, C, AB  
Cordis: AB  
Abbott Vascular: AB  
Capella: SB, C, AB  
InSeal Medical: AB  
Valtec: E, SB  
Claret, SB

# Access Choice

- Invasiveness
  - Peripheral access
    - » Transfemoral
    - » Axillary
  - Direct access
    - » Apical
    - » Ascending aorta
- Decision making factors
  - General vs local anesthesia
  - Risk of malpositioning
  - Risk of complications

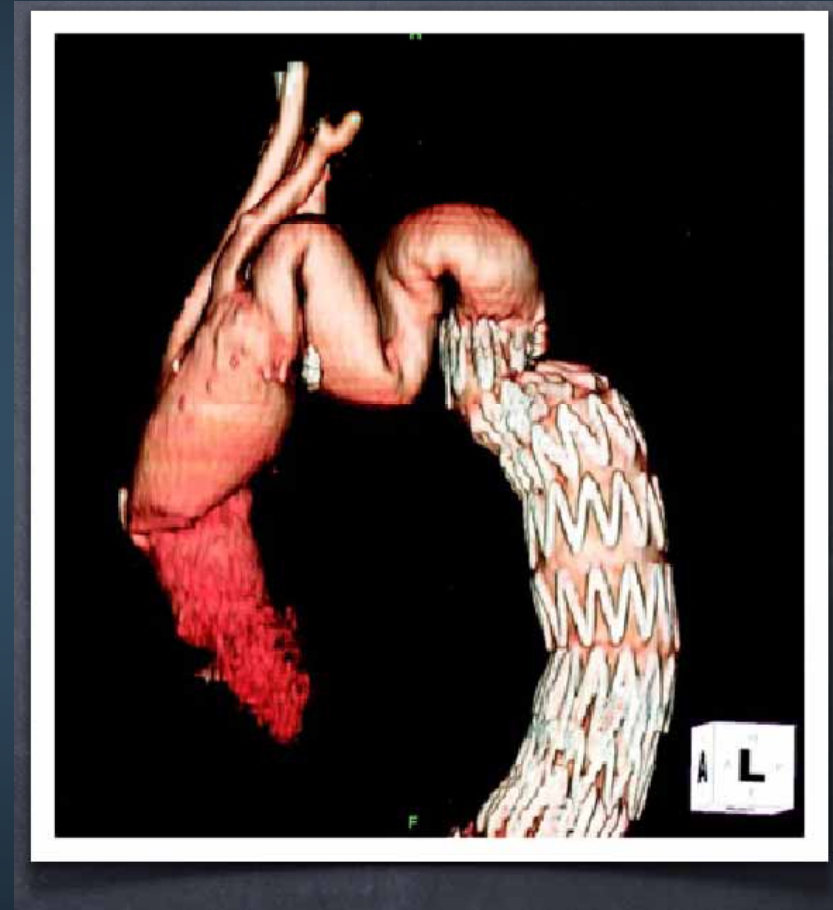


***Alternative routes  
are necessary in  
15% of TAVI***

# Why do we need an alternative access to the transfemoral approach?

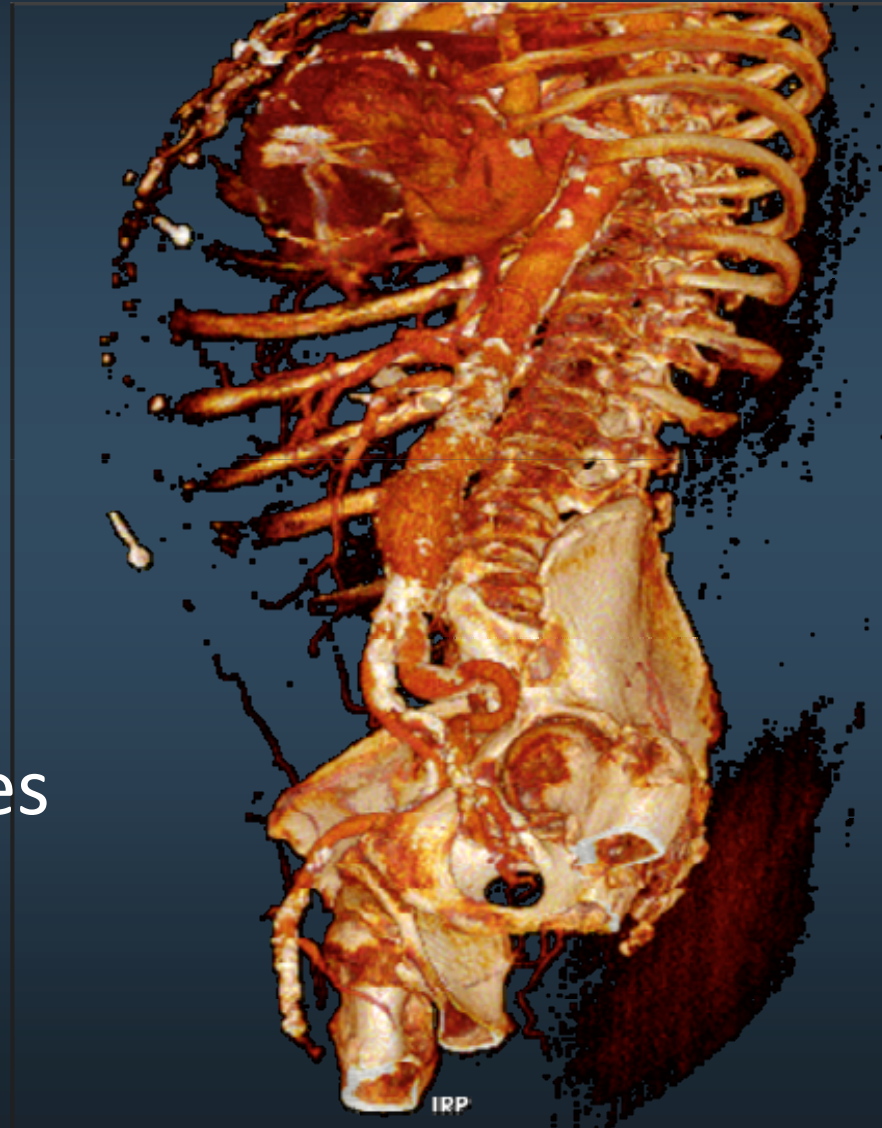


Sometimes there just isn't enough room  
or excess tortuosity



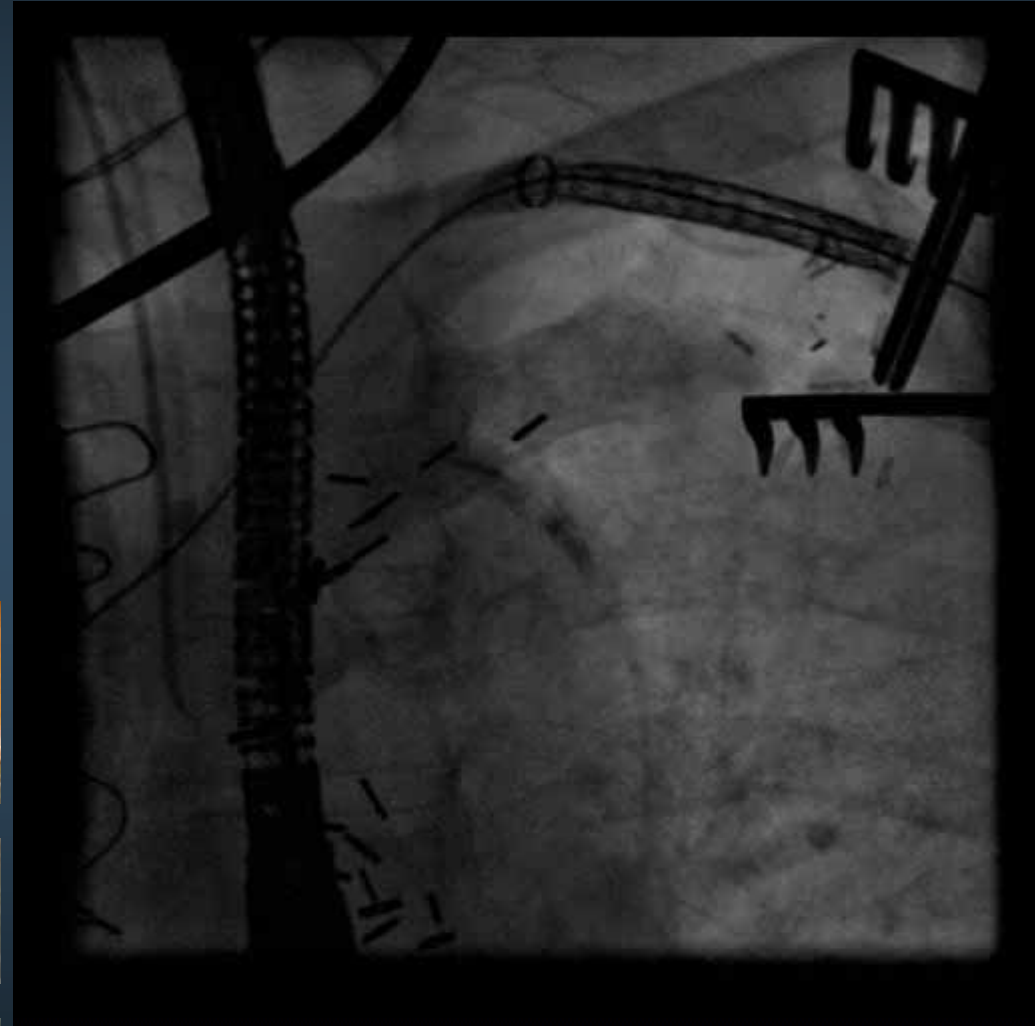
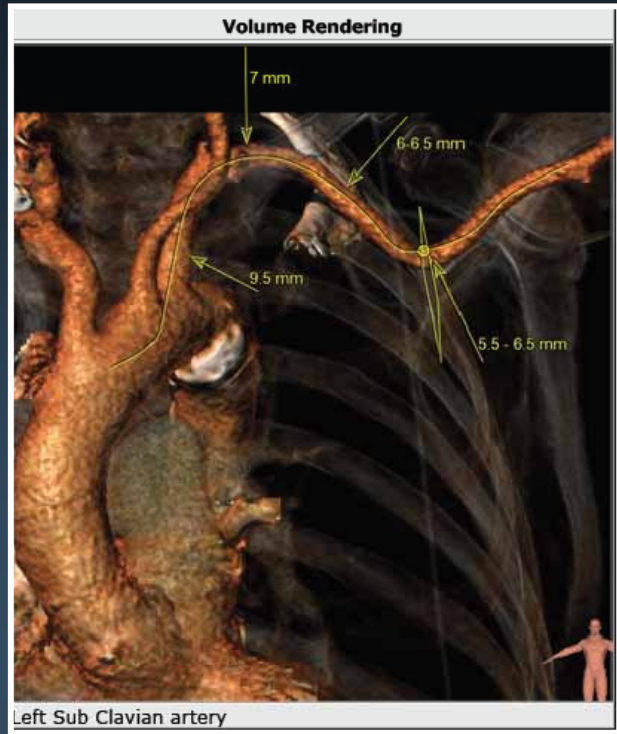
# Iliac and abdominal Aortic Access

- Direct access or with graft interposition
- Epidural or general anesthesia required
- Often more diseased than the femoral arteries



# Subclavian Access

# Subclavian Access



# Subclavian approach

## Patient selection

- Vessel size
  - 6mm (Corevalve only)
- Atherosclerotic lesions
- Tortuosity ???
- Patent LIMA graft
  - Relative contraindication
- Right approach also possible, but...
  - Risk of lesion of the right carotid
  - Suboptimal aiming with Corevalve





Image size: 471 x 244  
View size: 1272 x 660  
WL: 324 WW: 856

298609 ( 80 y, 79 y)

5.11 AORTA-TOR/ADDOMIALE GATED - AORTA -TORACE GATING

1257  
3



Zoom: 100% Angle: 0  
Im: 1/1  
Uncompressed

05/02/09 11:15:30  
Made in OsiriX

# Key tips for a successful subclavian approach

- Local anesthesia
- Diagnostic access via the right radial artery
- Surgical exposure of the first portion of the axillary artery
- Direct puncture (vs T grafting)
- Surgical closure of the artery

# Subclavian Artery Approach

## Advantages

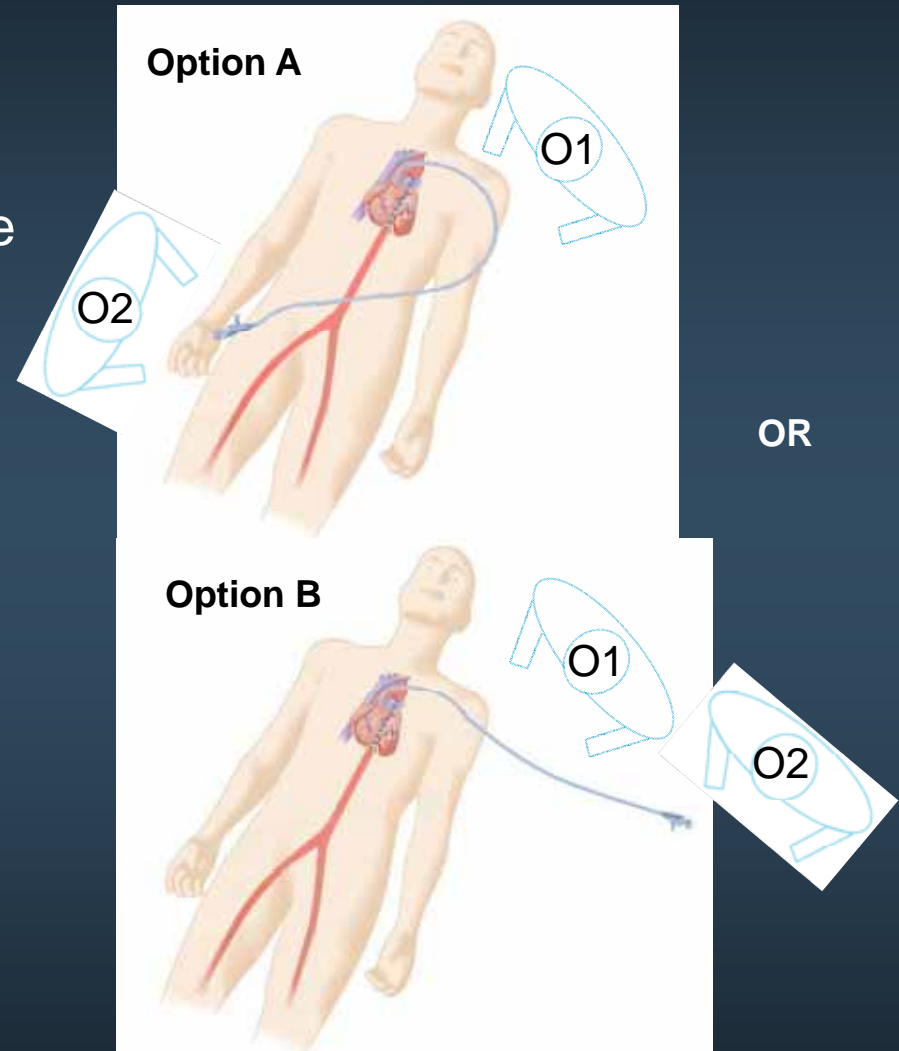
- No groin access, early mobilization
- Shorter route to the valve
  - more control
- Less manipulation in the arch
- Feasible under local anesthesia in most patients
- Option for concomitant PM implant

## Disadvantages

- Requires surgical exposure
- Subclavian artery lesions
- Open LIMA
- Neurologic embolic events (retrograde approach vs TA approach)
- Nerve lesions

# Room Setup

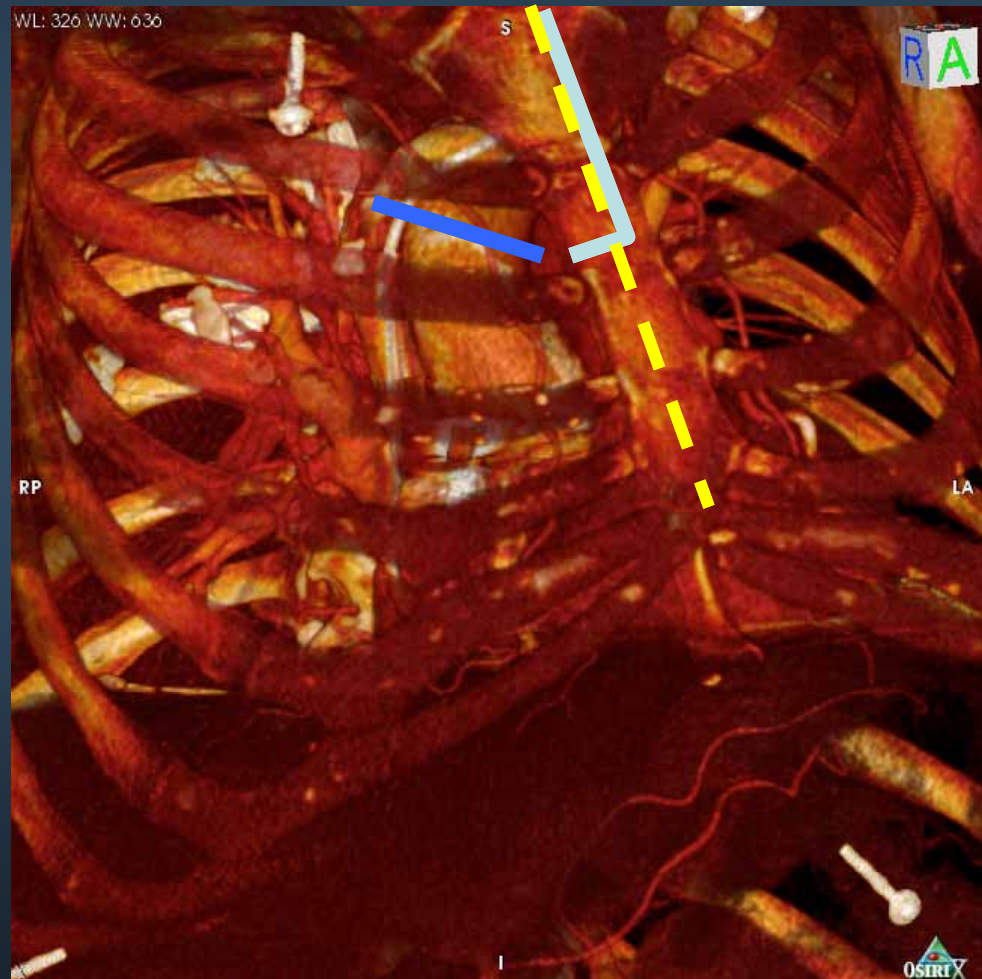
- Operator 1 (O1) needs to be at subclavian/axillary access site to have control of access site and delivery catheter
- Operator 1 (O1) and Operator 2 (O2) must be in comfortable working positions with clear and close view of imaging screens. Note: Option B operators may be on opposite side of catheter facing patient's head (versus patient's feet) depending on monitor position and preferences.



# Direct Aortic Access

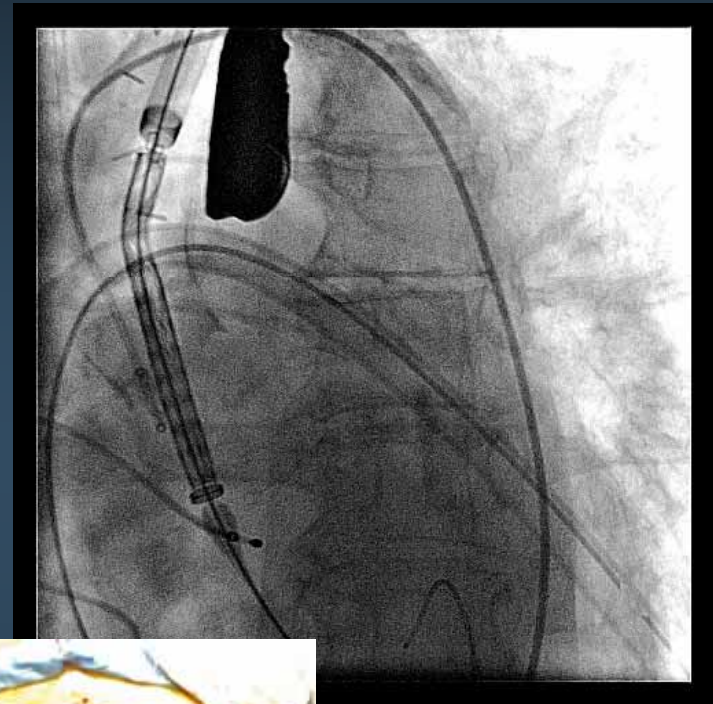
# Transaortic Direct Access

- Midline sternotomy
- Ministernotomy
- Minimal right thoracotomy



"By failing to prepare,  
you are preparing to fail."

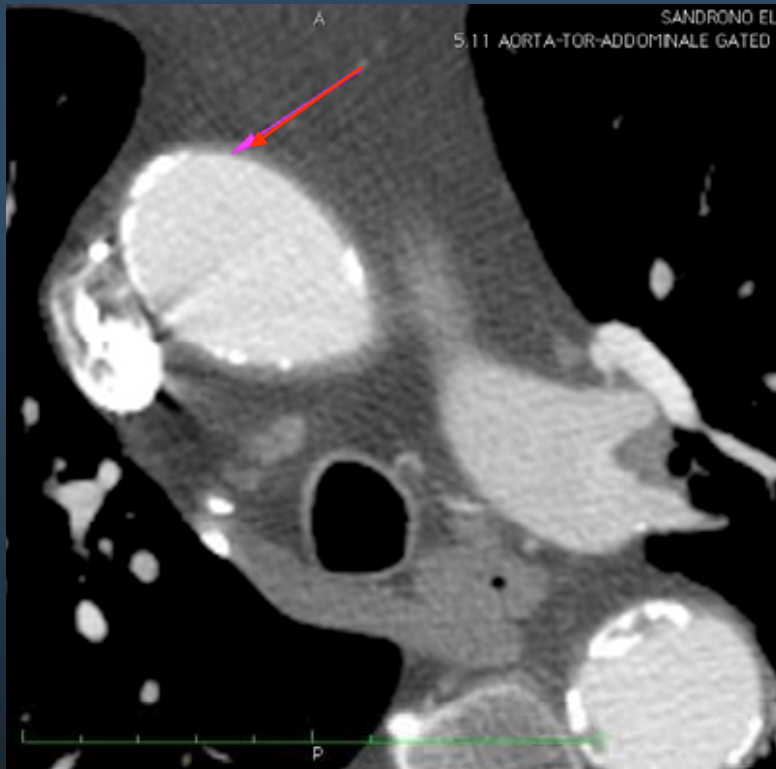
Benjamin Franklin



Siegburg Heart Center, June 2007  
J.Felderhoff, E.Grube.U.Gerckens

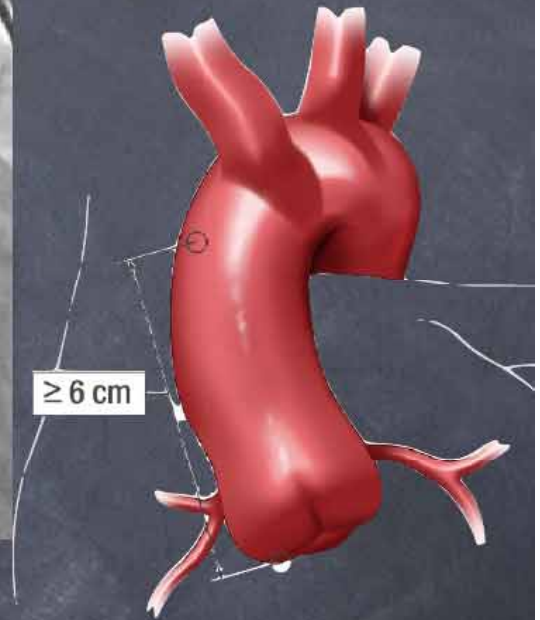
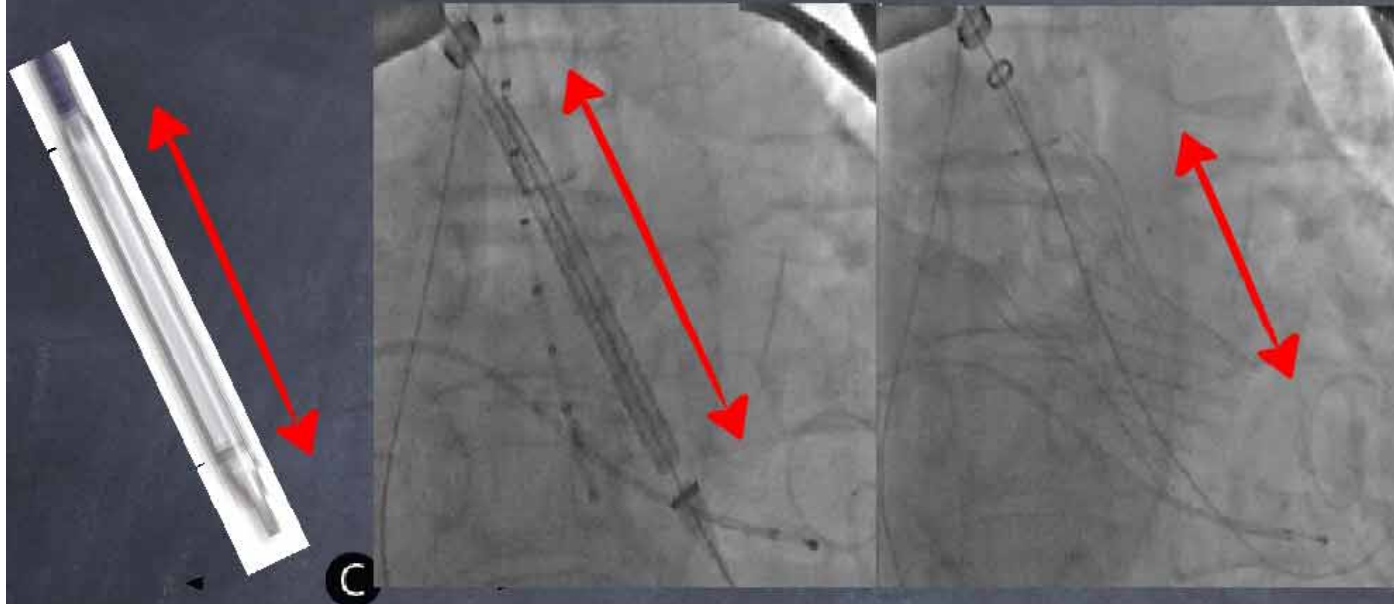
# Determining working length

- Minimum 6 cm from access to annular level





# Determining working length



CRS-26	CRS-29	CRS-31
A= 26 mm	A= 29 mm	A= 31 mm
B= 22 mm	B= 24 mm	B= 25 mm
C= 40 mm	C= 43 mm	C= 44 mm
D= 55 mm	D= 53 mm	D= 52 mm



# Direct Aortic Access Route

- Surgical access performed via minimally invasive thoracotomy (e.g. right anterior mini-thoracotomy) or sternotomy (e.g. upper partial mini-sternotomy)
- Mini-sternotomy versus mini-thoracotomy decision may be based on
  - Clinical preference (e.g. familiarization with approach)
  - Anatomy
    - Distance between vascular access site and basal plane
    - Aortic root angulation / coaxial alignment
    - Intended access site with respect to surrounding anatomical structures
  - Comorbidities (e.g. avoiding pleural space with COPD)

Mini-Sternotomy

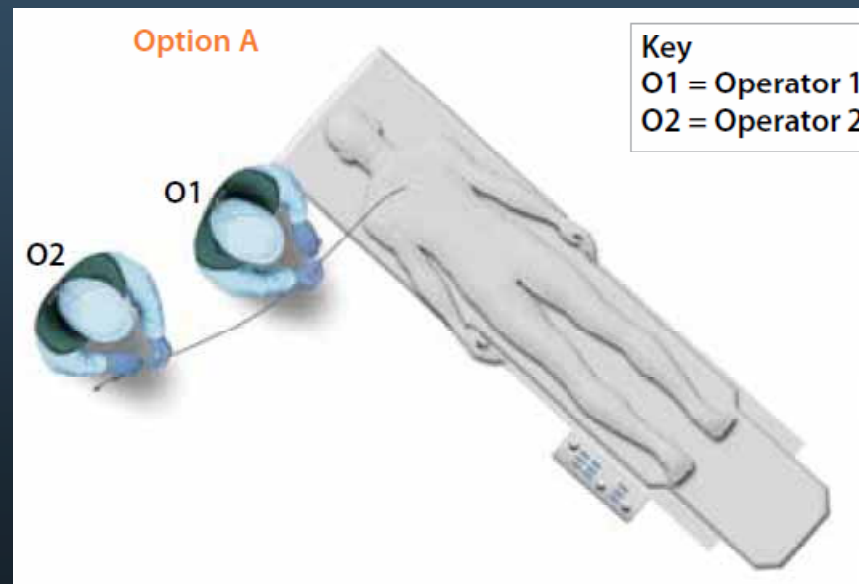


Mini-Thoracotomy



# Room Setup

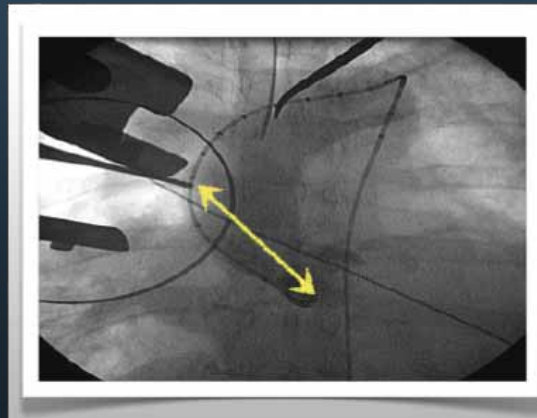
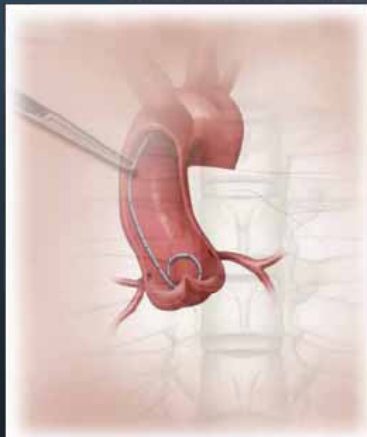
- Operator 1 (O1) needs to be at access site to have control of access site and delivery catheter system. Meticulous access site management is critical to avoiding access site complications
- Consider use of third operator on patient's left side to maintain dedicated control of introducer sheath throughout procedure



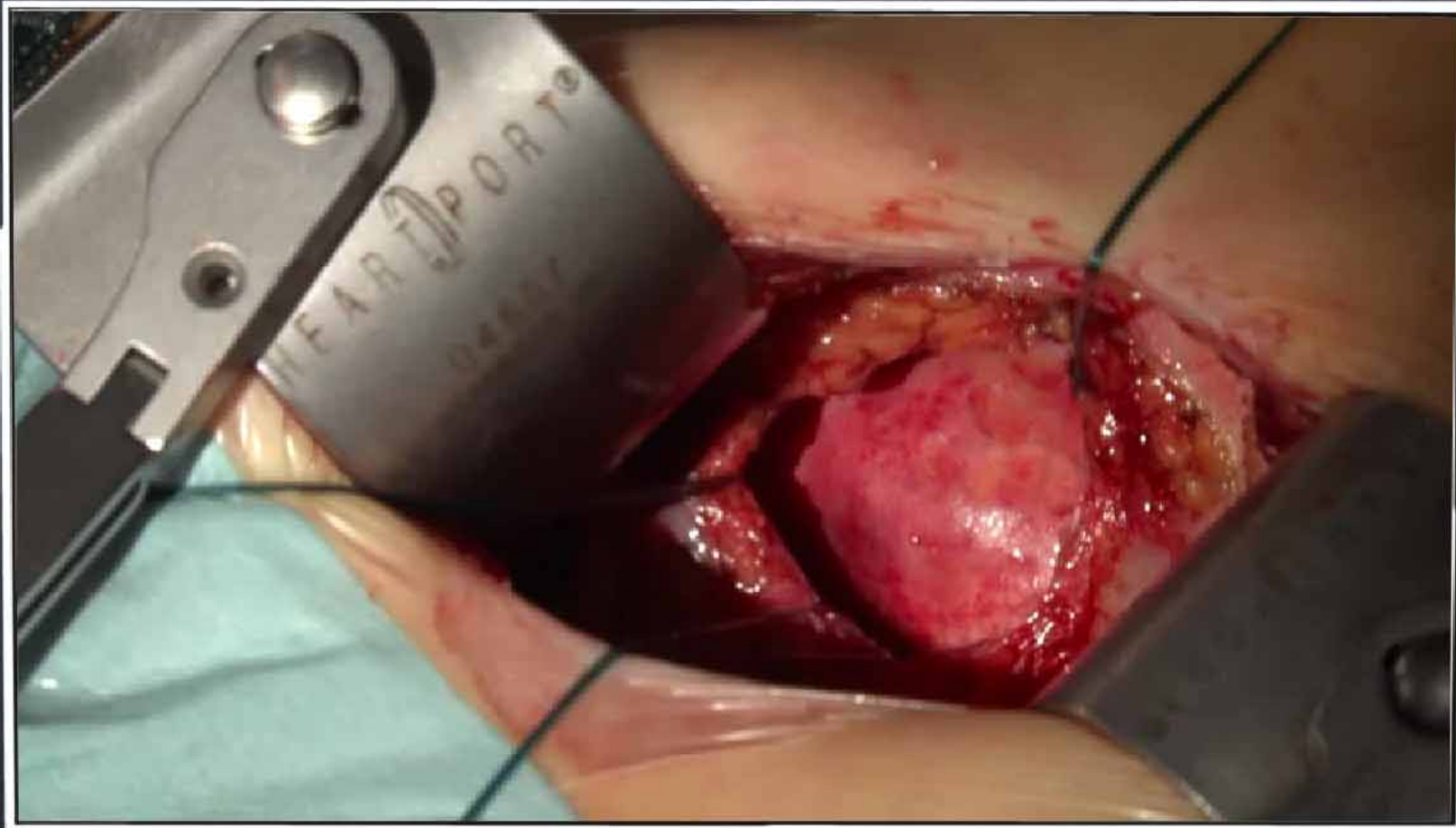
Room Setup Example

Key  
O1 = Operator 1  
O2 = Operator 2

# Entry Site Evaluation



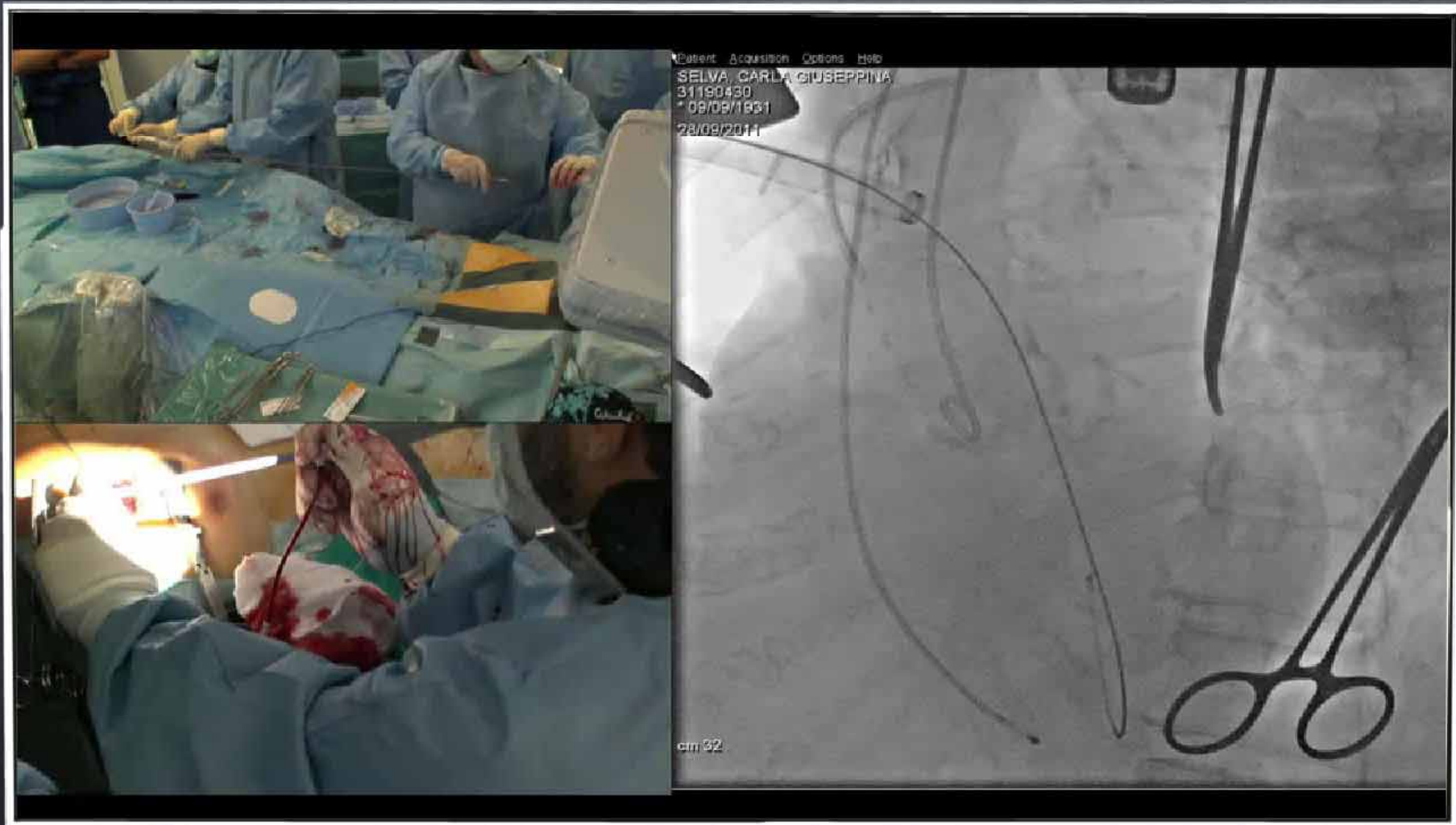
# Surgical Field



The pericardium is incised and stay sutures are placed  
The working field is perfectly exposed



# Retrograde CoreValve Implantation



- Usually the valve is oriented towards the left coronary sinus and opens towards the right coronary sinus.



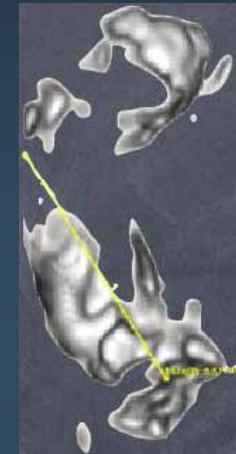
# Direct Aortic Implantation Advantages

- Direct, short distance
- Better valve deployment control
- No Valve navigation into the aorta
- No femoral & iliac injury
- Precise positioning
- Multiple options (sheath/ diameter)
- Less contrast
- Aorta purse-strings are familiar to surgeons...
- ... are safer and has no effect on LV function



# Direct Aortic Implantation Disadvantages

- RIMA crossing the midline
- In “porcelain” aorta it should be possible to find a safety spot
- Increased radiation dose to operators



V. Bapat : TCT-785: Is 'PorcelainAorta'a real Contraindication for Transaortic TranscatheterAortic Valve Replacement?

**Occupational radiation dose during transcatheter aortic valve implantation** 

Loes D. Sauren PhD<sup>1,\*†</sup>, Leen van Garsse MD<sup>2</sup>, Vincent van Ommen MD, PhD<sup>3</sup>, Gerrit J. Kemerink PhD<sup>4</sup>

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Issue



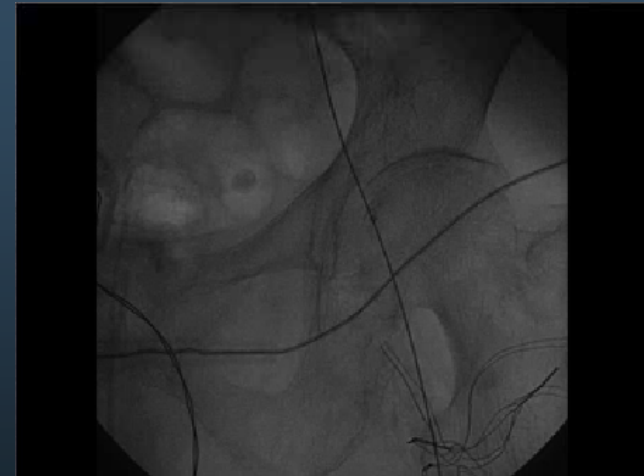
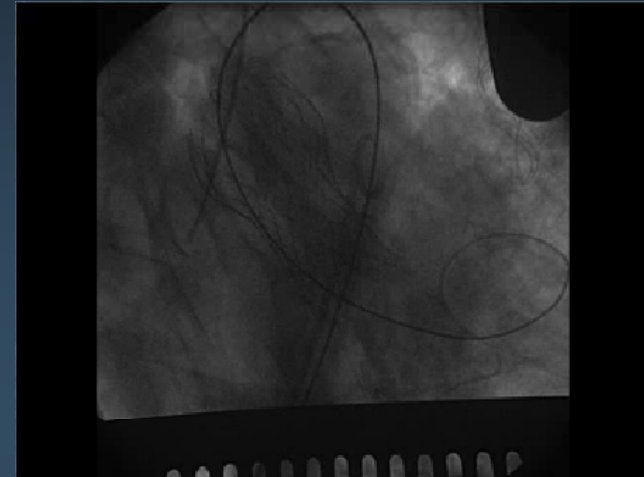
Catheterization and Cardiovascular Interventions  
Accepted Article (Accepted, unedited articles published online for future issues)





# Complications

There's no Rose without a Thorn



# The Beauty of Roses



2<sup>nd</sup> Post OP Day

