# Tips and Tricks to Deliver a Stengraft to the Ascending Aorta

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# Disclosures

- Research-grants, travelling, proctoring speaking-fees, IP with Cook.
- Research-grant, travelling, speaking-fees with Cordis
- Research-grant, proctoring with Atrium

# Clinical Relevance

* Type A Dissection
* Ascending aneurysm
* Re-Do after open surgery
* Adjunct to endovascular arch repair

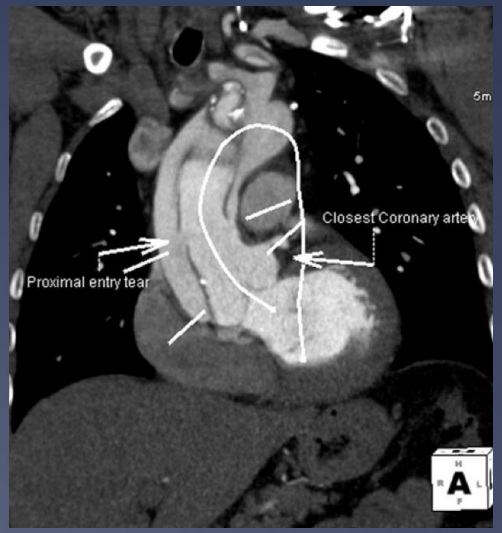
# Type A Dissection:
## Approachability for Endovascular Repair

**Endovascular Approaches to Acute Aortic Type A Dissection: A CT-Based Feasibility Study**

J. Sobocinski [a], N. O'Brien [a], B. Maurel [b], M. Bartoli [c], Y. Goueffic [d], T. Sassard [e], M. Midulla [f], M. Koussa [a], A. Vincentelli [a], S. Haulon [a,*]

### Conclusion

Approximately half of the patients currently undergoing open repair of an acute type A dissection could potentially be candidates for an endovascular repair. It is reasonable to extrapolate that the same proportion of patients who currently refused surgery on the basis of being unfit for open repair would have anatomy suitable for an endovascular repair. Clinical studies should be conducted in this subgroup of patients to determine a potential future role of endovascular repair in acute type A dissections.



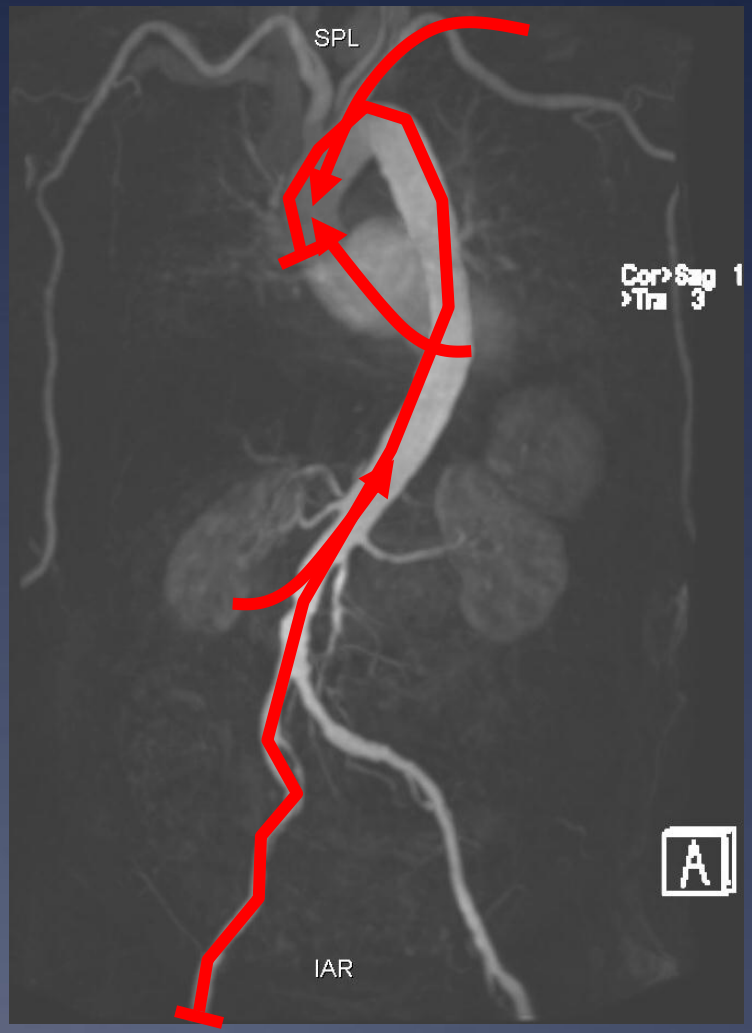

Sobocinski et al 2011, EJVES 42: 442-7

# Endovascular Limitations in the Ascending Aorta

- Distance from transfemoral access
- Length and diameter of endograft
- Tortuosity and kinking
- Left ventricular wire-position
- Hemodynamic forces of the ascending aorta
- Apposition

# Distance from Transfemoral Access

- Length of sheath:
  75 - 95cm can be too short
- Individual distance on preop-CT
- Conduit access
- Alternative access routes
  - Subclavian
  - Antegrade

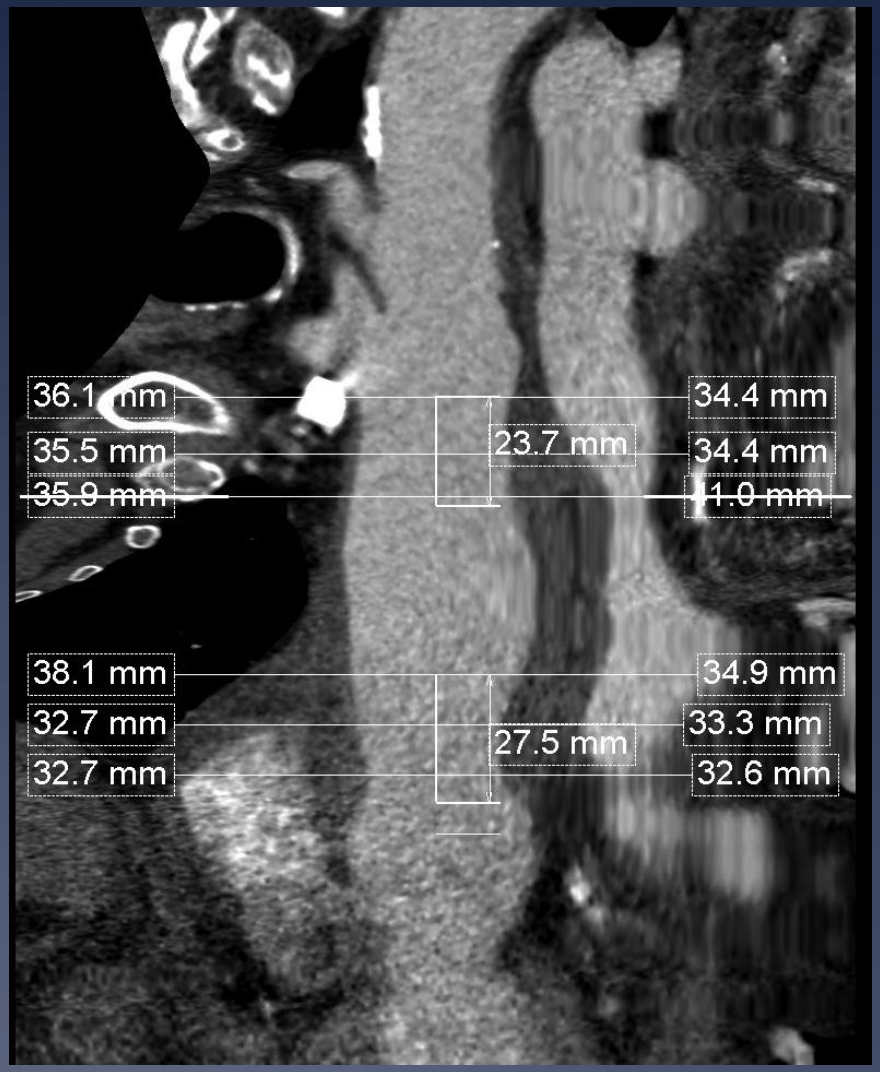


# Graft-Specifications

| Brand | Diameter (mm) | Length (mm) | System-Length (mm) | Sheath-Diameter ID (F) |
|---|---|---|---|---|
| Cook Zenith TX2 ProForm | 22-42 | 77-216 | 75 | 20-22 |
| Medtronic Valiant Captivia | 22-46 | 110-226 | 88 | 22-25 |
| Gore CTAG | 21-45 | 100-200 | 115 | 18-24 |
| Bolton Relay | 22-46 | 100-250 | 90 + x | 22-24 |
| Jotec Evita 3G | 24-44 | 130-230 | 95 | 20-24 |

# Endograft Length and Diameter

- Length:
  measure at outer curve 6-10cm
- Diameter:
  measure on Centerline
- Tapered grafts
  - Reverse tapering
- On-table customization



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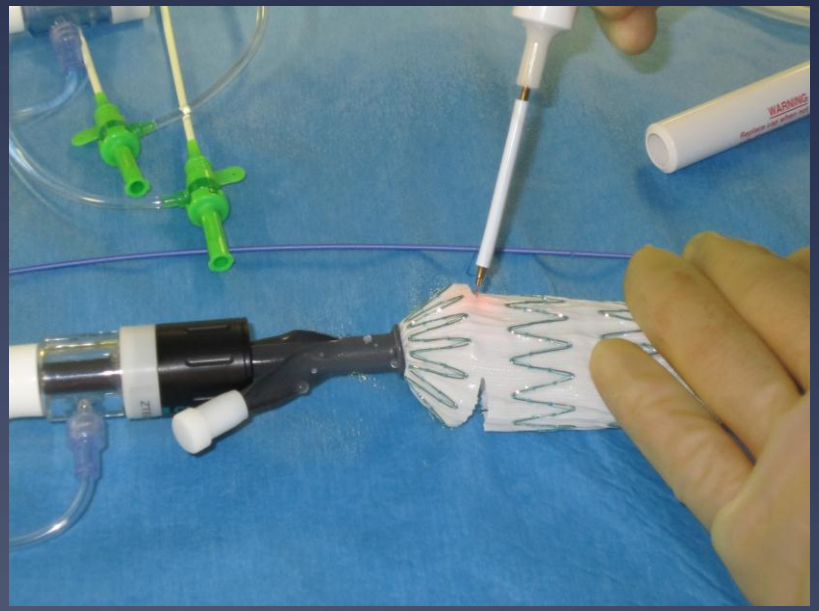

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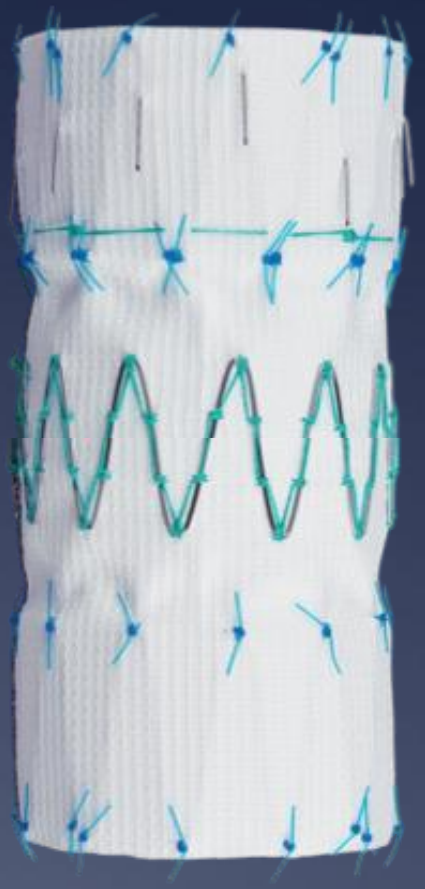



Cook Zenith TBE ProForm

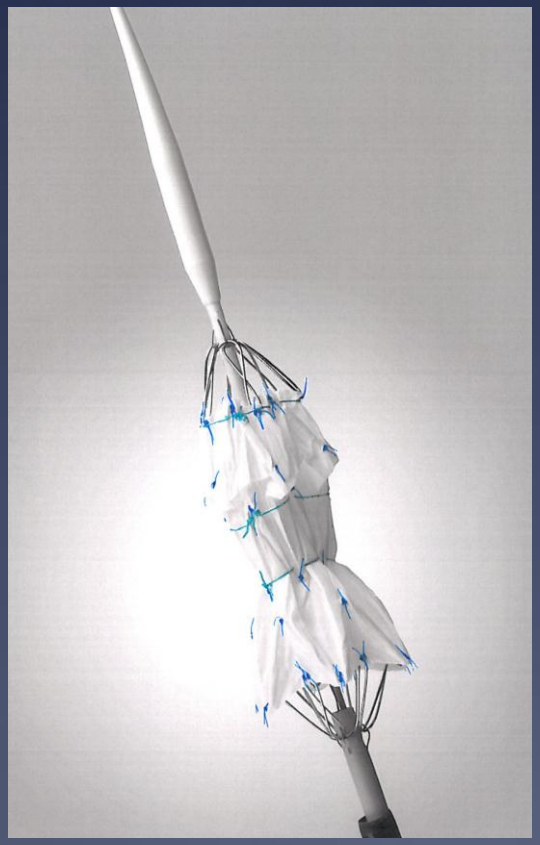
# Zenith® Ascend

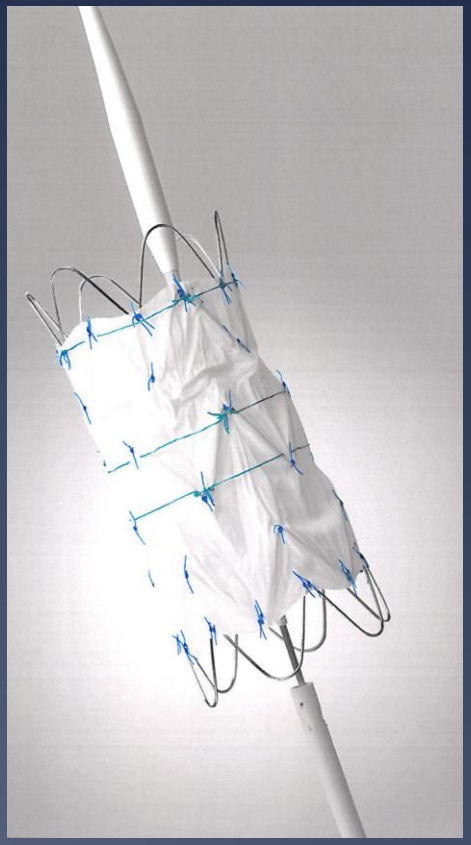
## ZTLP-A

- Type A Dissection
- Low Profile (16-20F)
- 100cm Sheath length
- 28mm – 46mm Diameter
- Length: 65mm/83mm
- Proximal and distal Barestents
- Controlled Deployment: ProForm

Not available, No CE-mark, Not FDA-approved

# Zenith® Ascend





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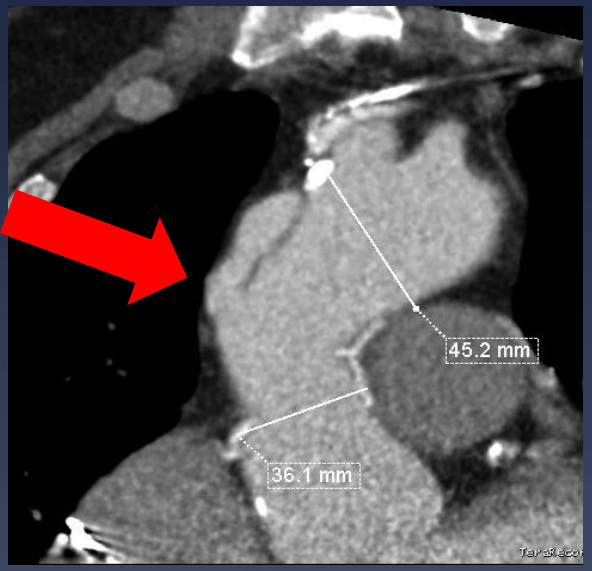


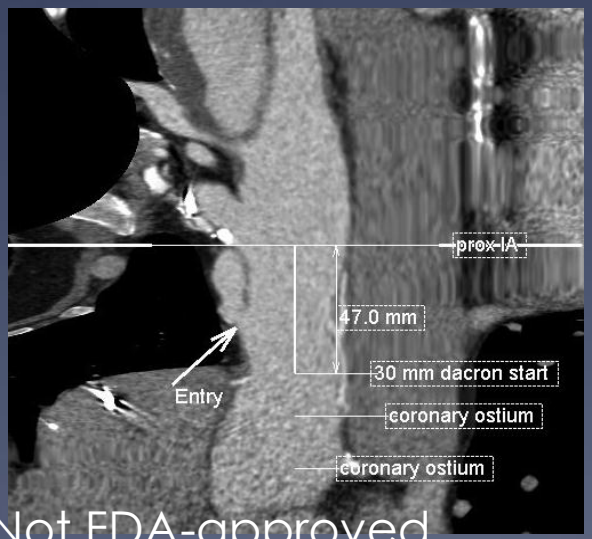


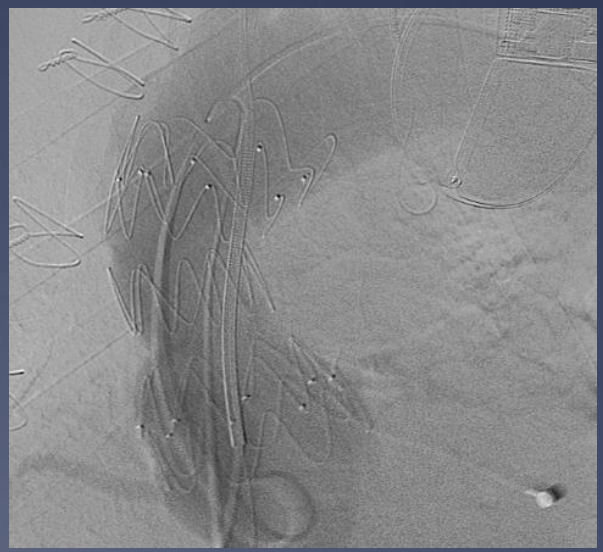

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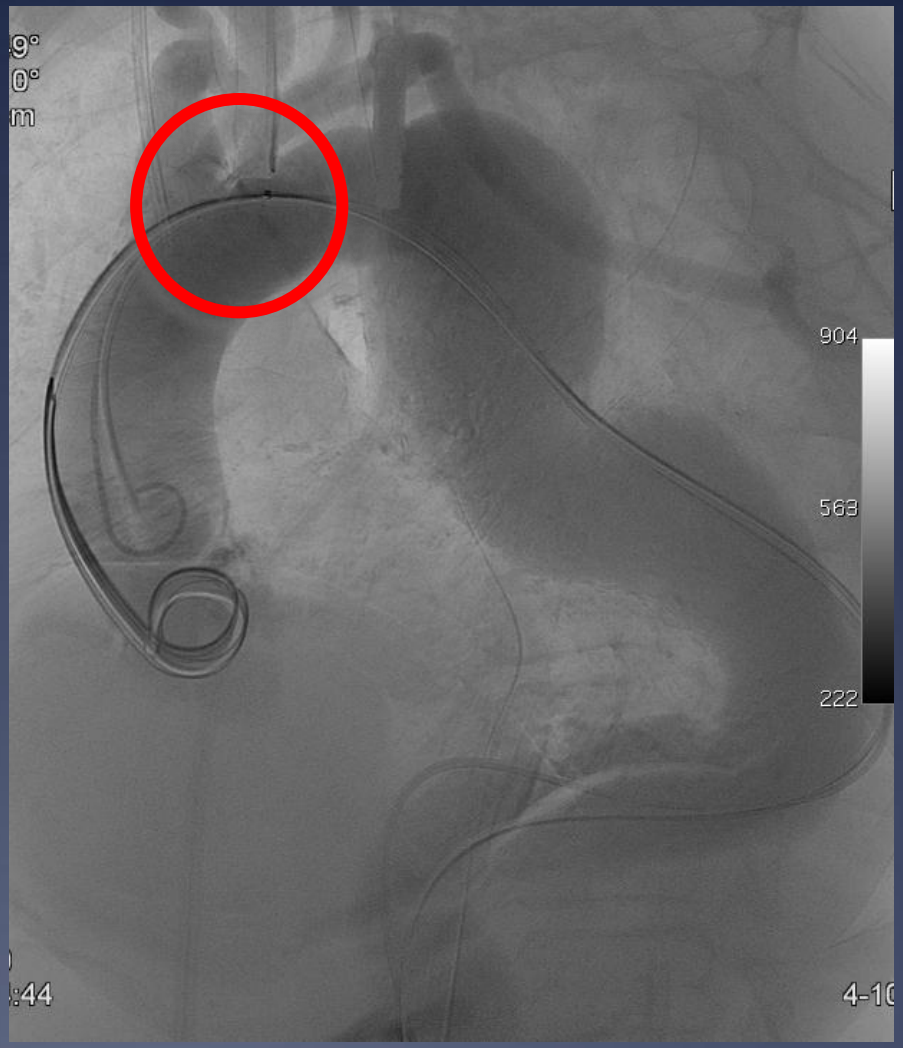
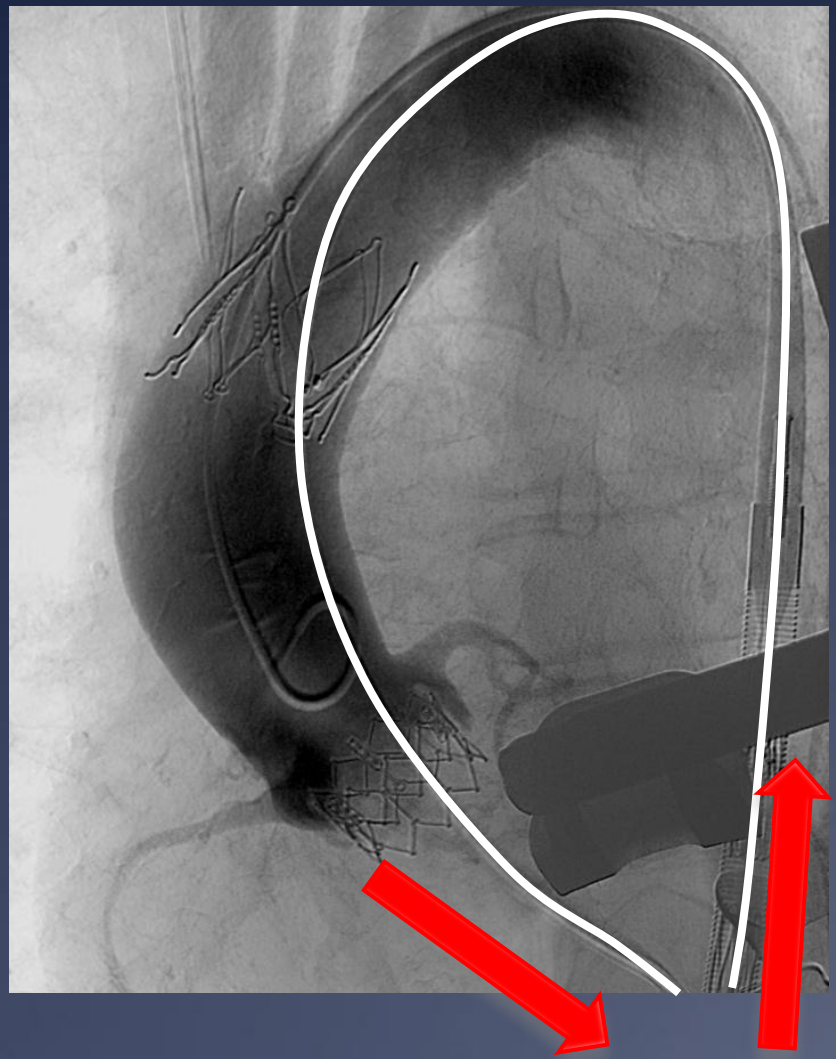
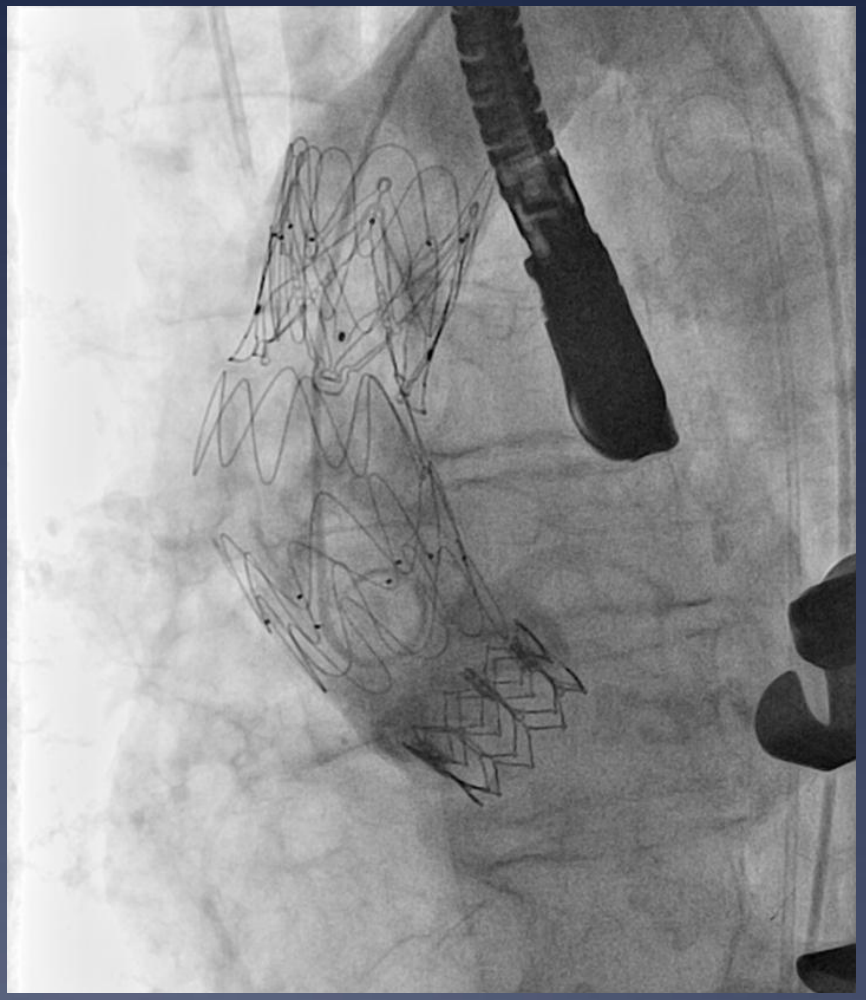
# Tortuosity and Kinking

- Stiff Buddy wire
- Throughwire-access:
  - Transbrachial
  - Transseptal
  - Transapical
- Alternative access routes:
  - transcardiac,
  - subclavian artery

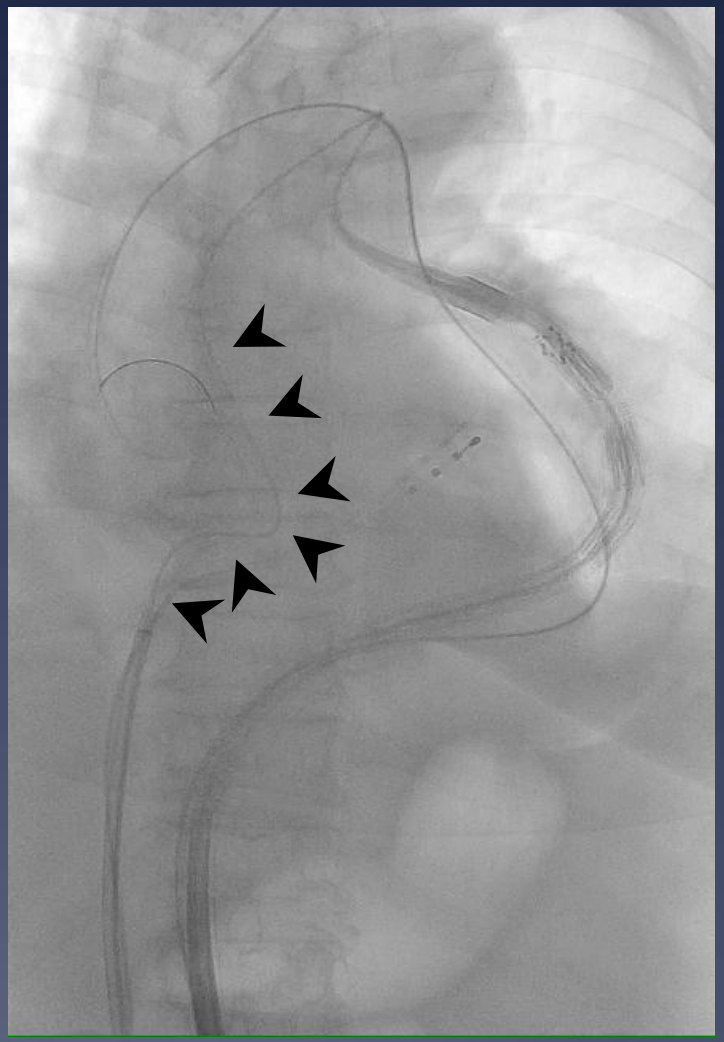


# Transapical Through & Through





# Transseptal Through & Through

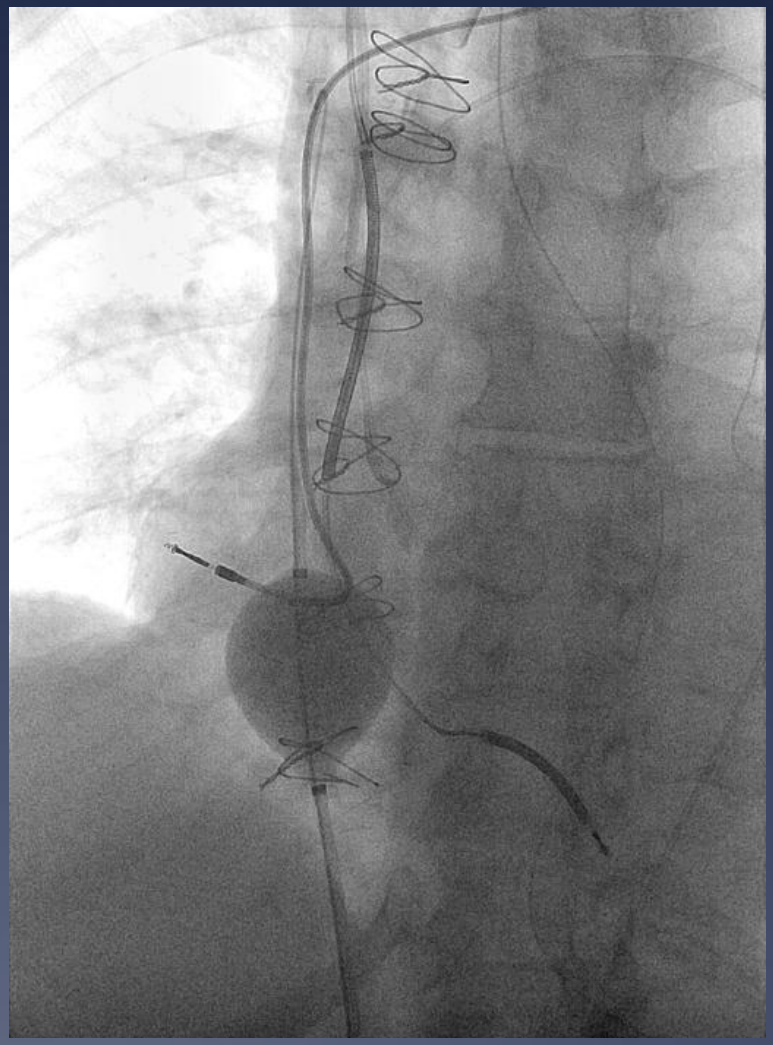


# Left ventricular wire-position

- Crossing the aortic valve:
  - Preop echocardiography: AV-stenosis, opening-area
  - Long,soft hydrophilic wire
- Prevent perforation:
  - Stiff double precurved wire
  - Position well into the left ventricle
  - Constant observation

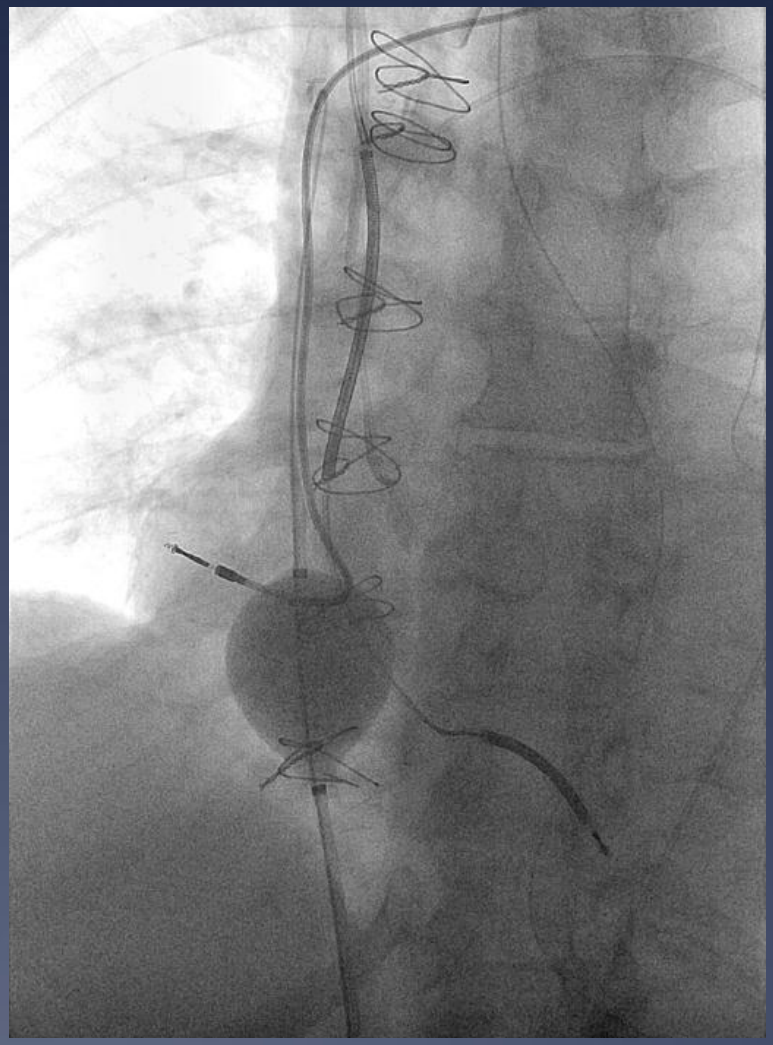
# Hemodynamic forces

- Windsocket effect
  - Proximal fixation
  - Throughwire-access
  - Cardiac output reduction
- Pulsatility
  - 15% in the ascending aorta

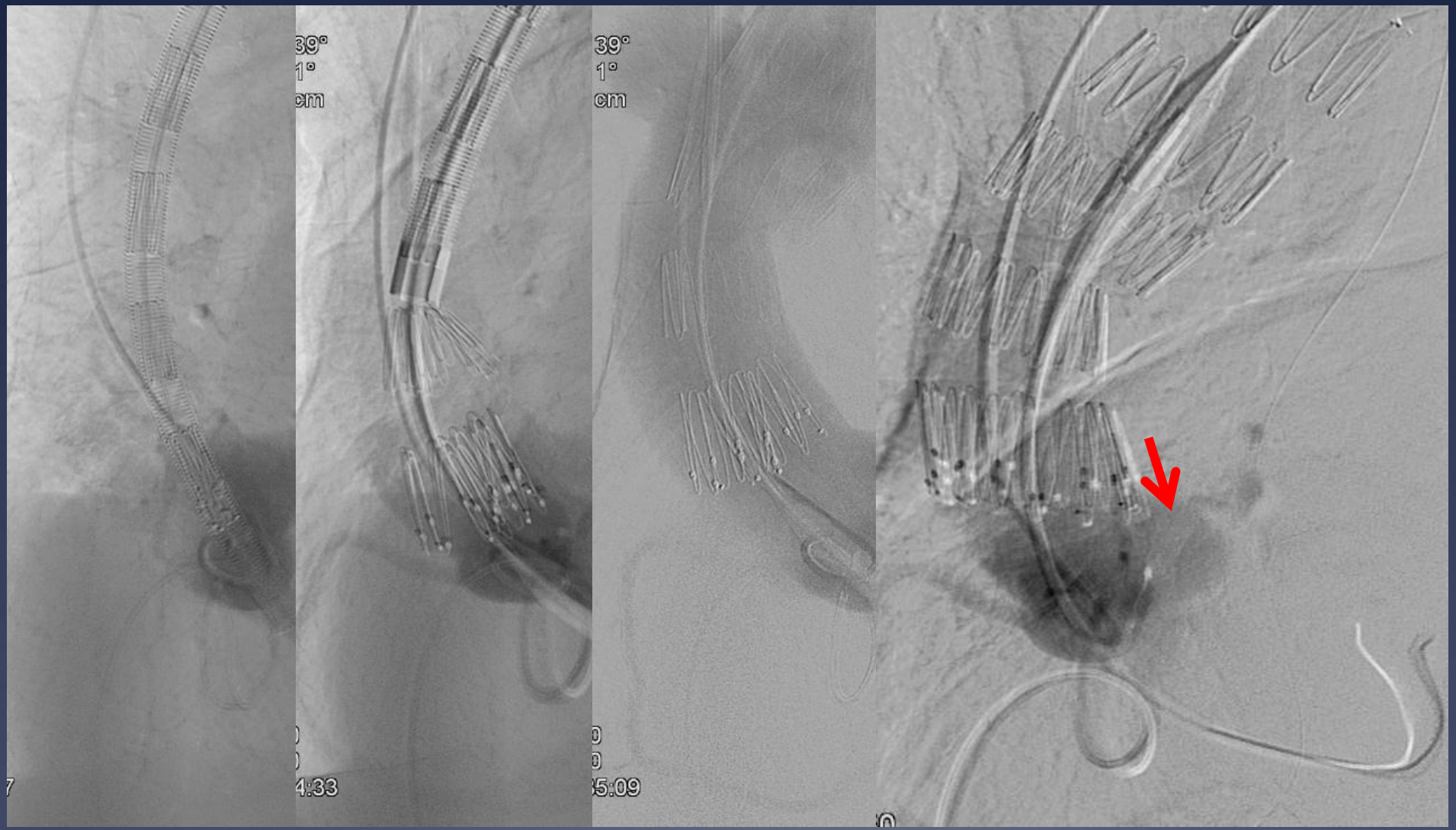


# Hemodynamic forces

- Windsocket effect
  - Proximal fixation
  - Throughwire-access
  - Cardiac output reduction
- Pulsatility
  - 15% in the ascending aorta
- Arch movements
  - Cardiac cycle
  - Breathing



# Apposition



# Alternative Access Routes

* Subclavian Artery
* Transapical Access
* Transseptal Access

# Transsubclavian Access

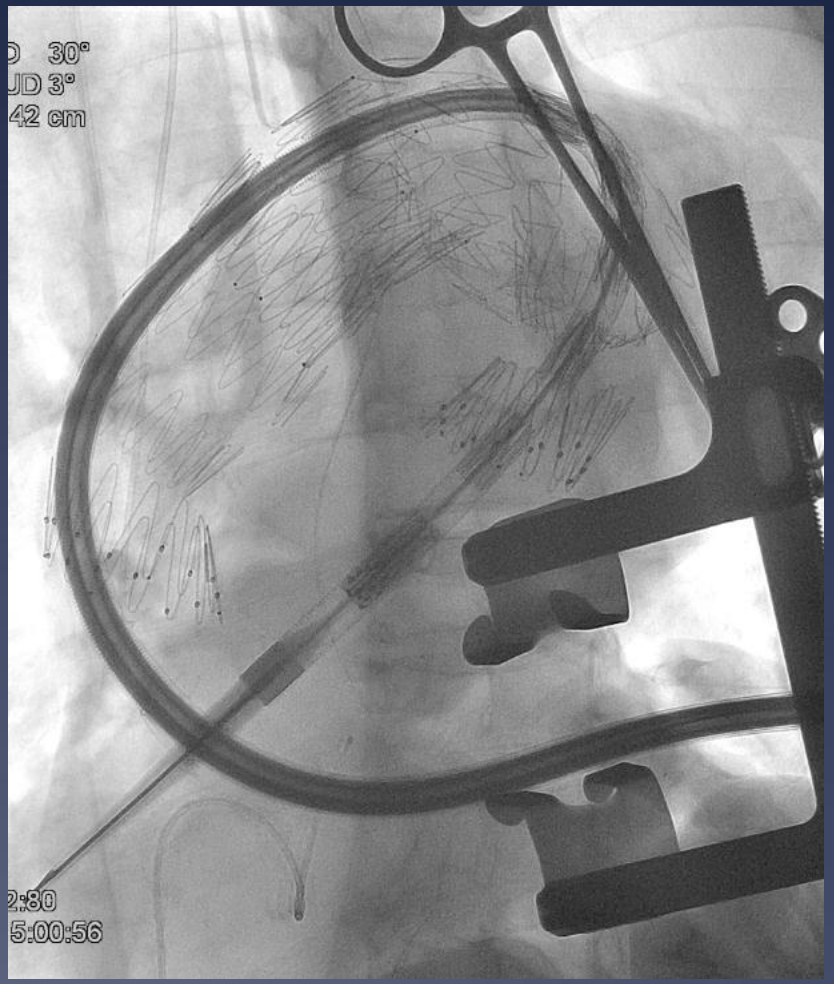
# Transsubclavian Access

- Straight access in mature arches
- May require conduit
- Stroke risk

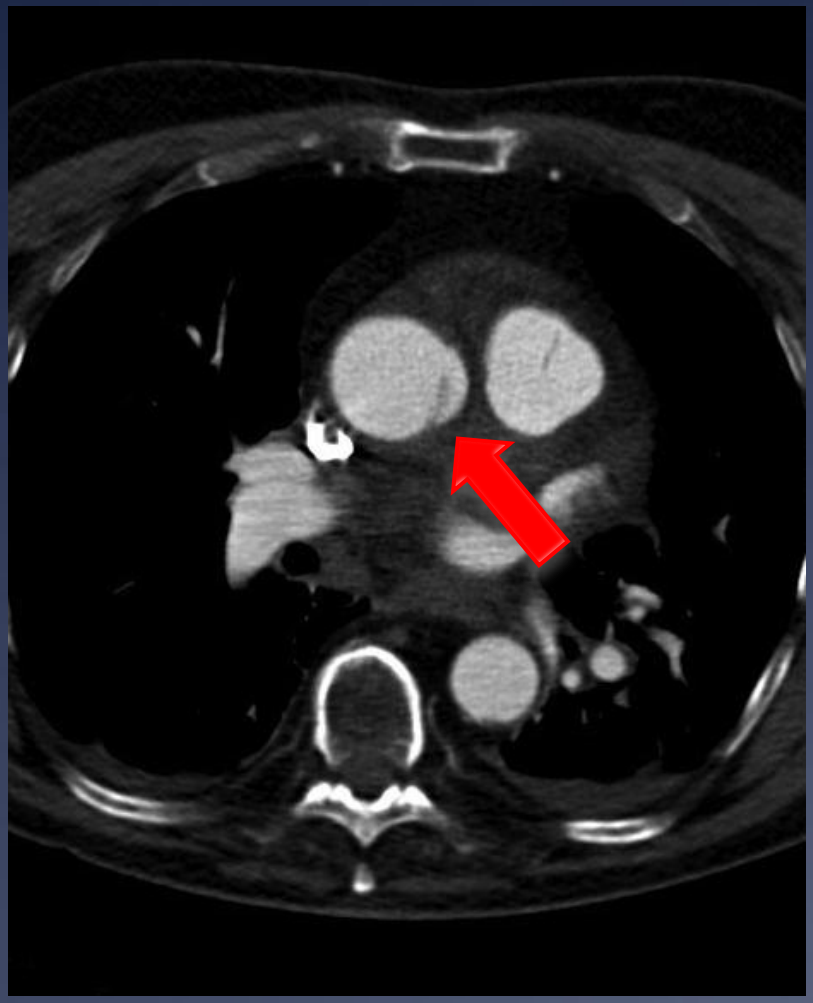
# Transapical Access

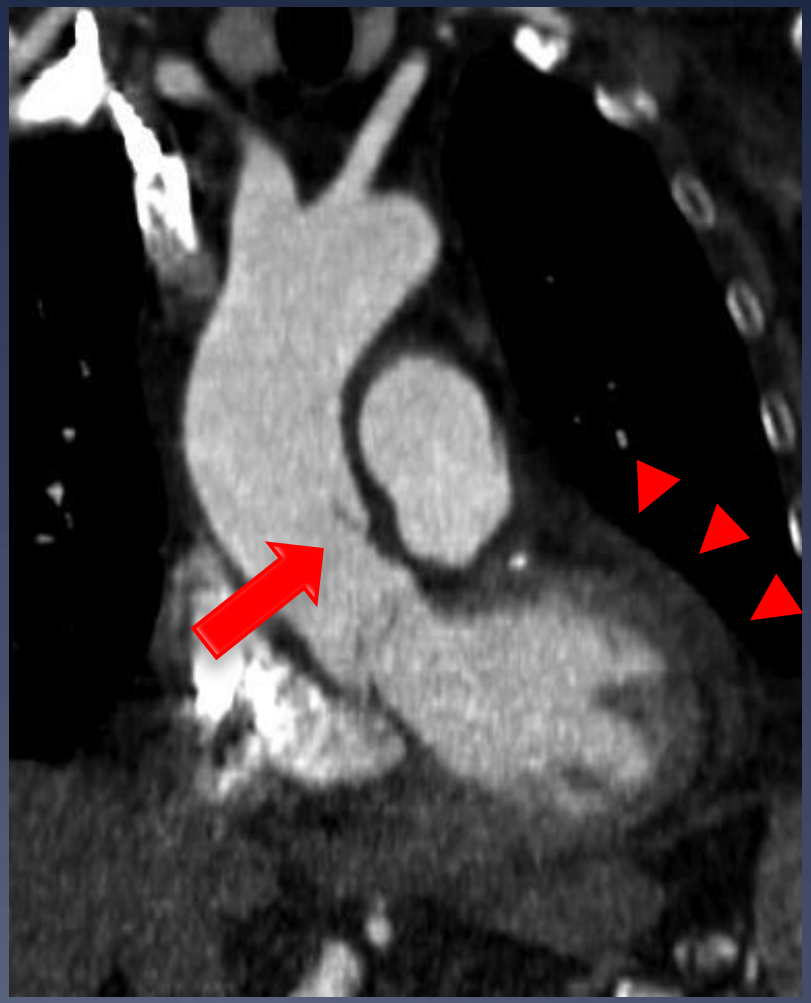
# Transapical TEVAR

- Short, straight route
- Well established Access
- Cardiac axis



# Transapical TEVAR in Acute Type A Dissection





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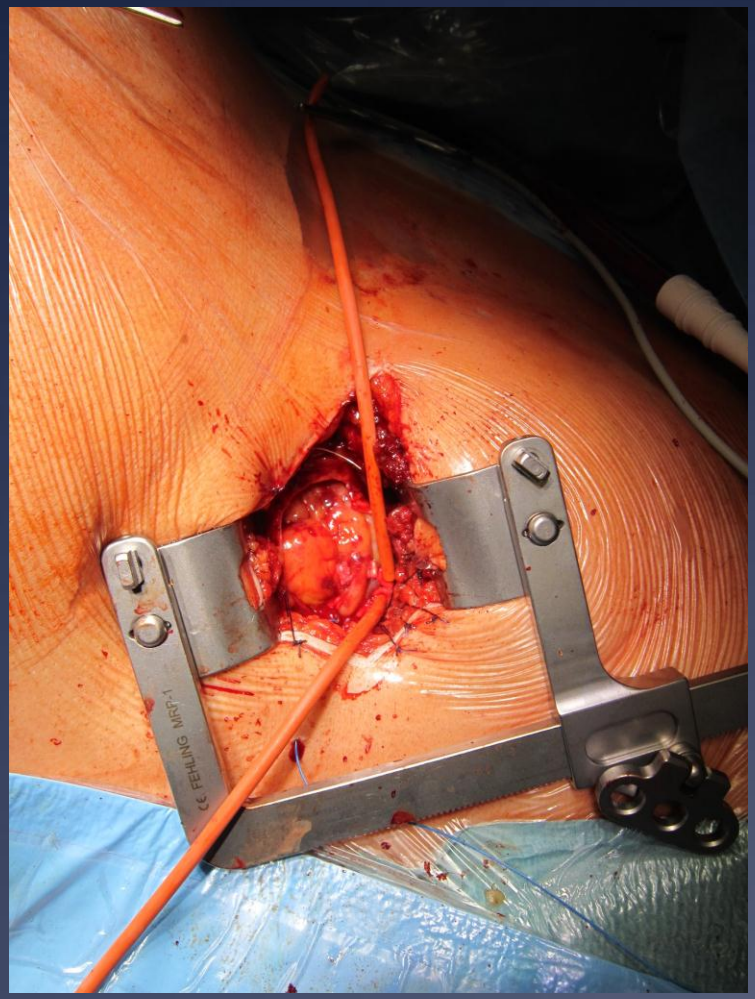


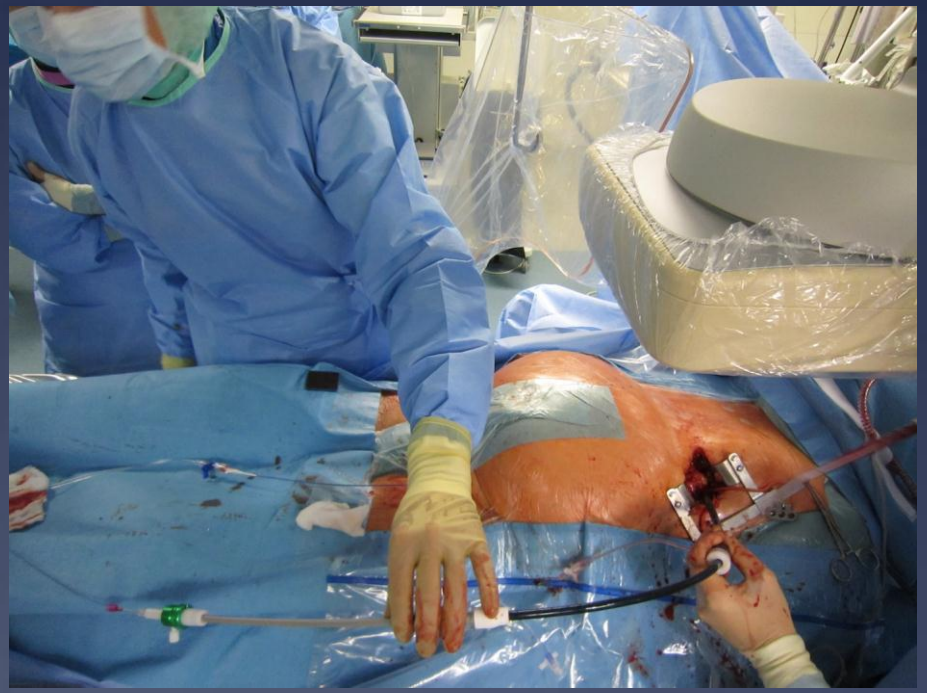

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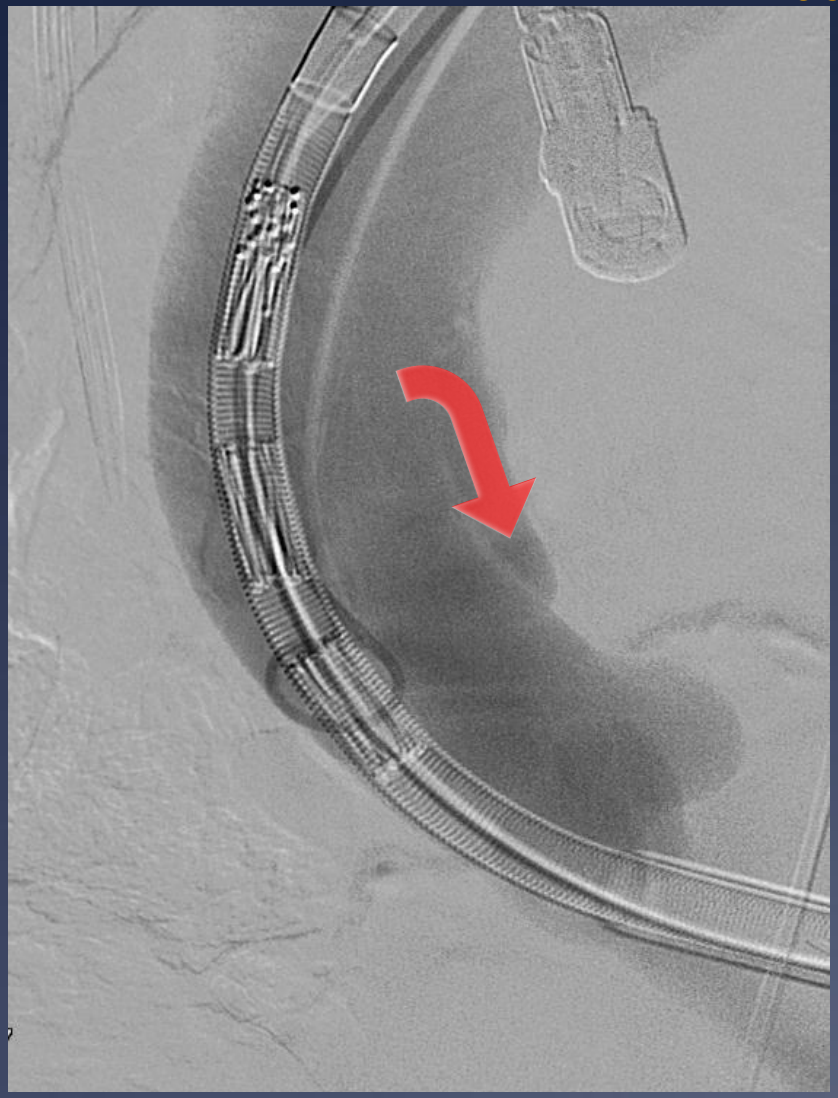

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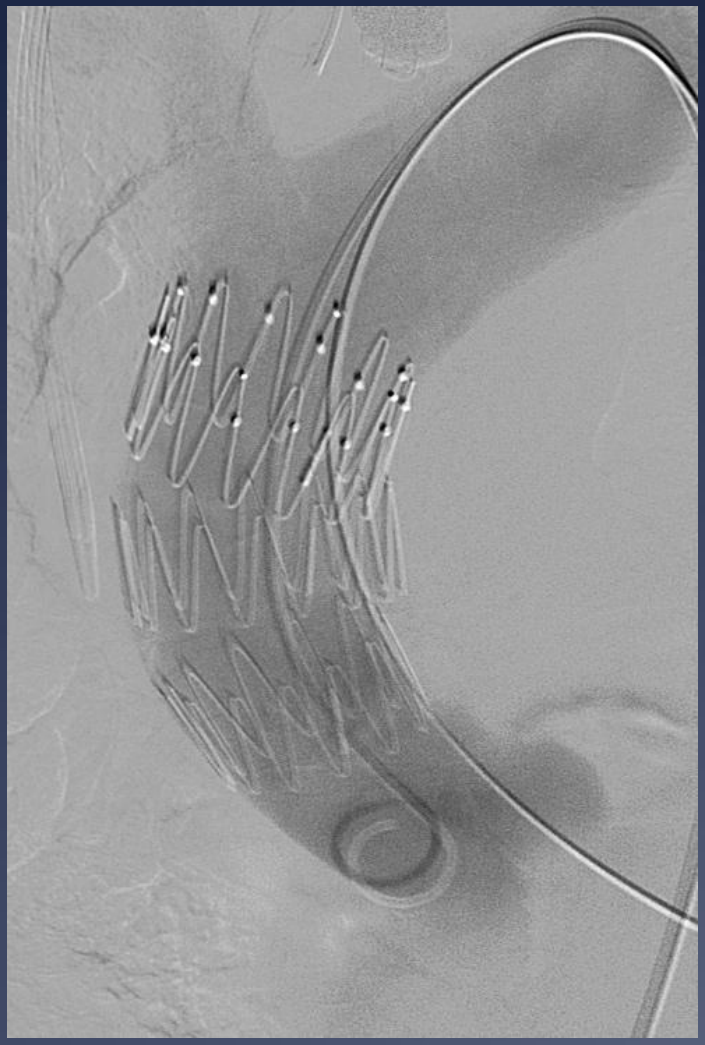
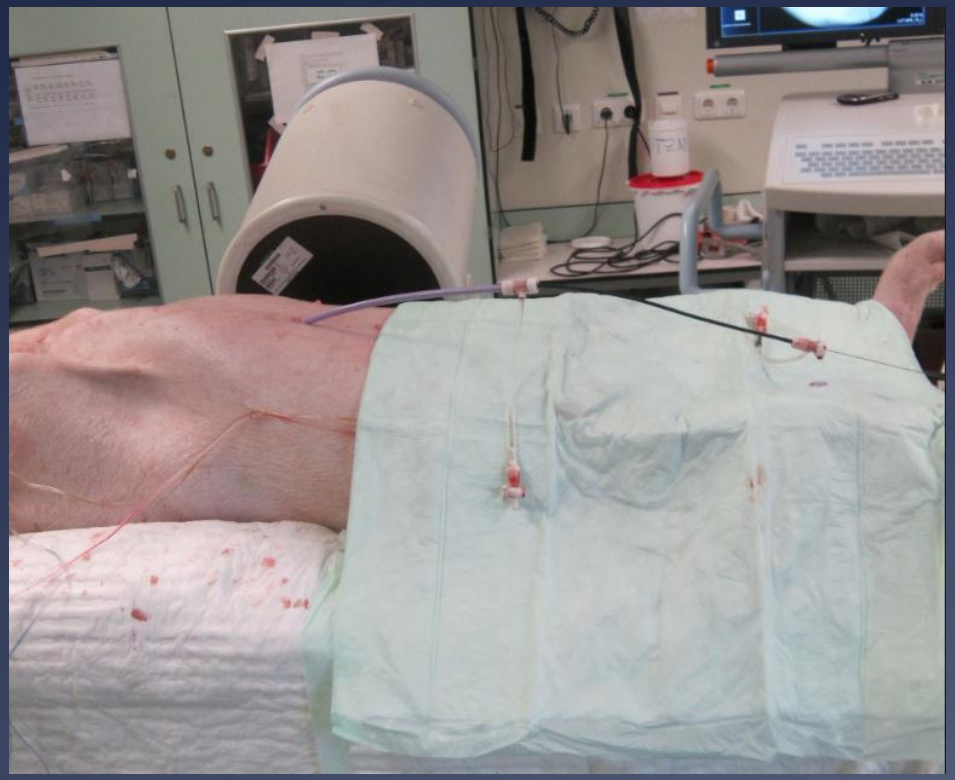
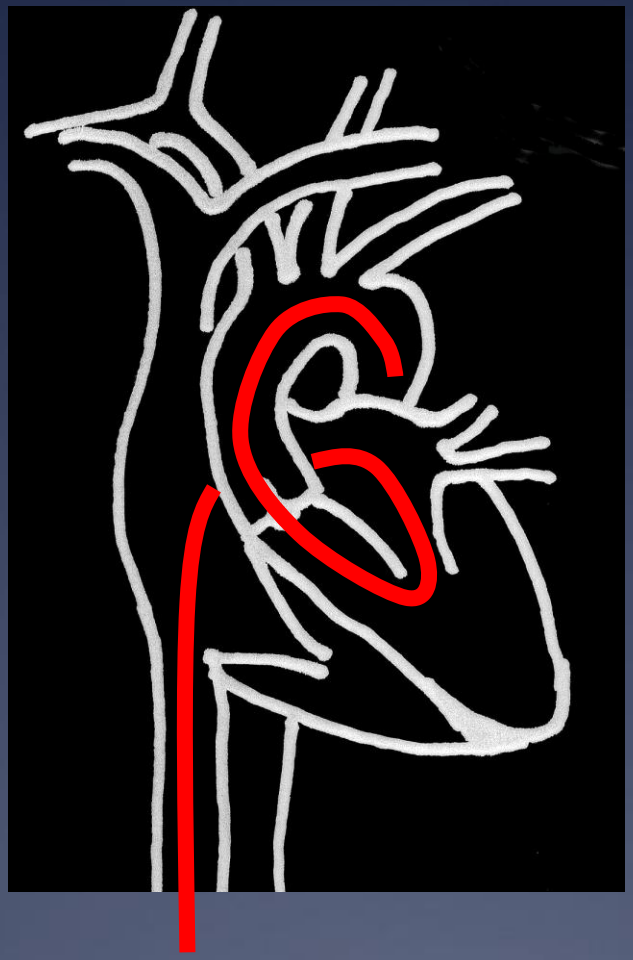


# Percutaneous Transapical TEVAR



# Transseptal Access



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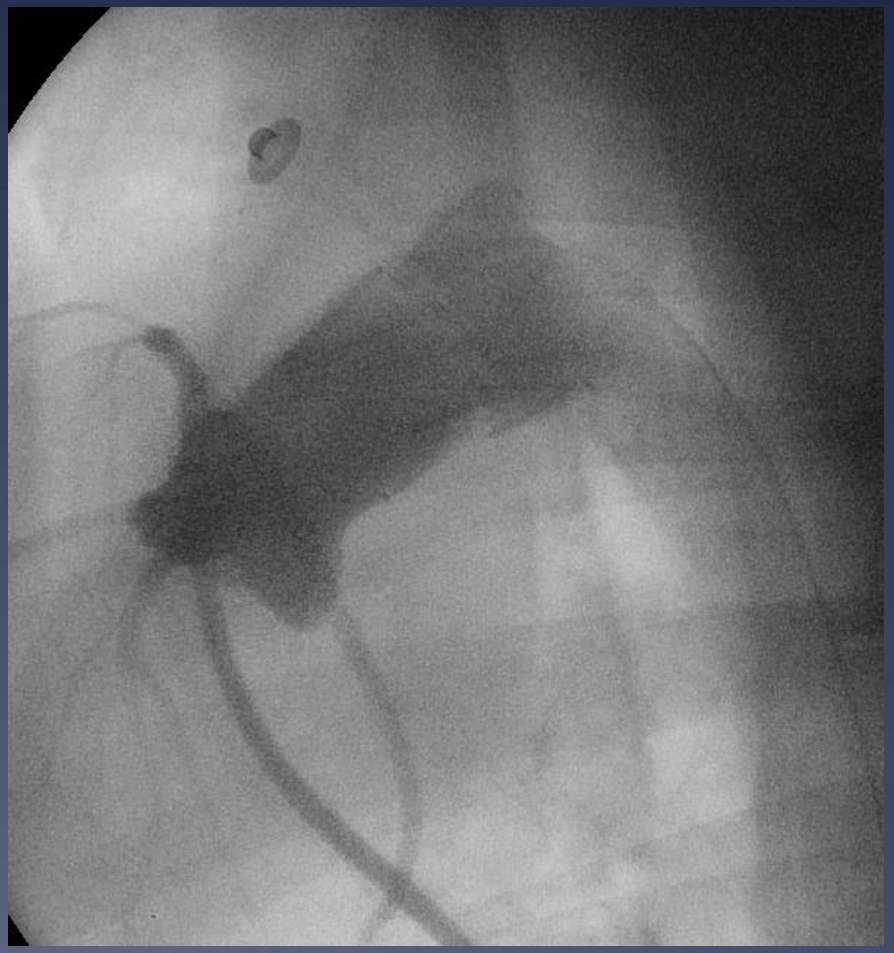

# Summary

- Stent-graft delivery to the ascending aorta can be challenging because of distance, tortuosity and hemodynamic differences.
- Currently available stent-grafts do not meet requirements.
- Alternative access routes can provide improved control.
- Role of endovascular treatment in the ascending aorta yet to be defined.