



University Heart Center
Hamburg

GERMAN
AORTIC CENTER
HAMBURG



Percutaneous Transseptal and Transapical Access

Tilo Kölbel, Nikos Tsilimparis,
Sebastian Debus, Sabine Wipper

German Aortic Center Hamburg
University Heart Center
University Hospital Eppendorf

20TH INTERNATIONAL EXPERTS SYMPOSIUM

CRITICAL ISSUES

in aortic endografting 2016

May 20 & 21 - LILLE - FRANCE





Disclosures

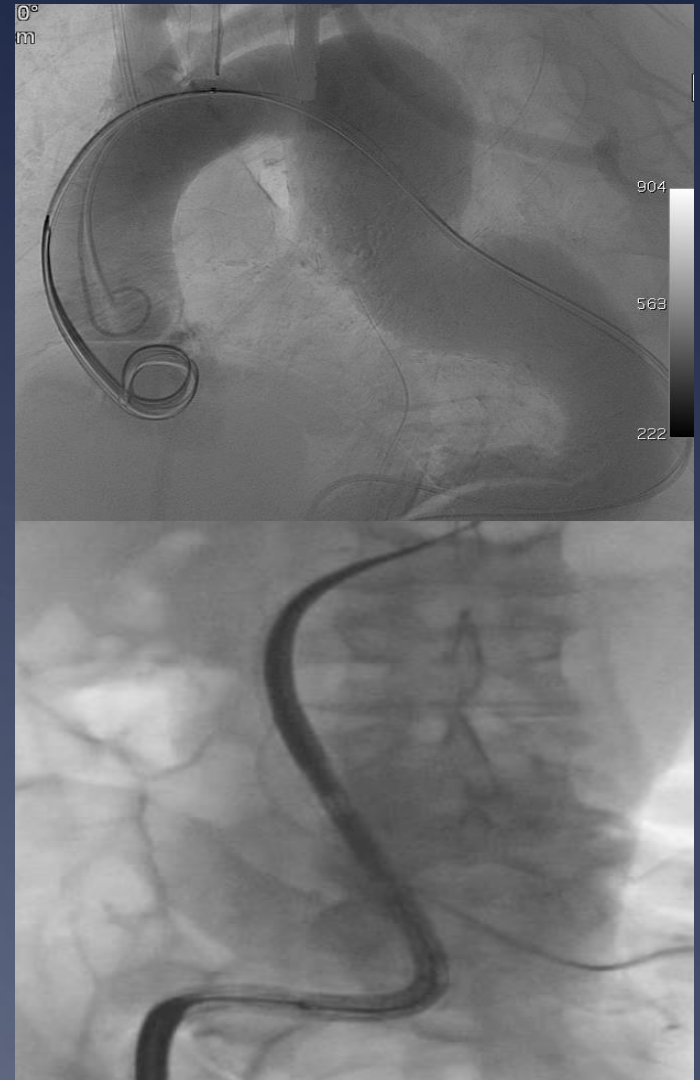


- * Research-grants, travelling, proctoring speaking-fees, IP with Cook.

Limitations of Transfemoral Access



- * Distance to ascending and arch
- * Tortuosity and kinking
- * Hemodynamic forces
- * Left ventricular wire-position
- * Difficult true lumen access
- * Apposition



Unusual Access Routes



Retrograde:

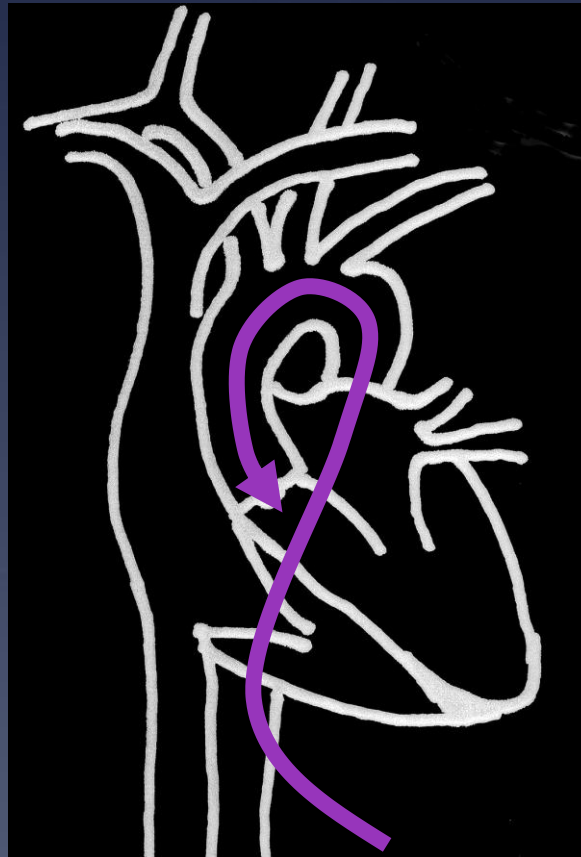
- * Transsubclavian
- * Thoracoscopic

Antegrade:

- * Transapical
- * Transseptal

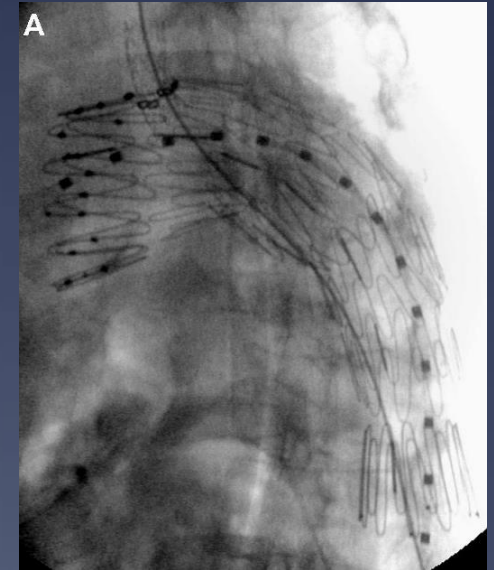
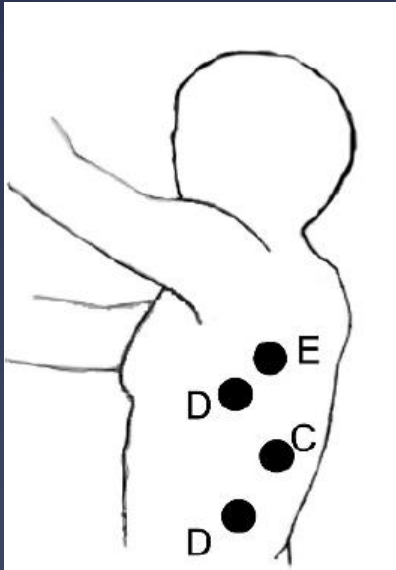


Thoracoscopic Access

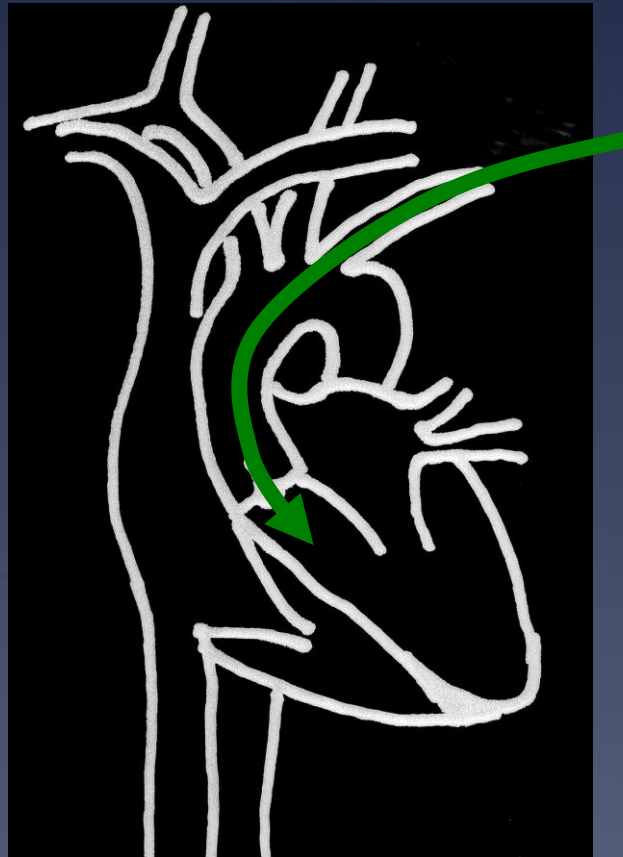


◆ EXPERIMENTAL INVESTIGATION ◆

Direct Videoscopic Approach to the Thoracic Aorta for Aortic Endograft Delivery: Evaluation in a Human Cadaver Circulation Model



Transsubclavian Access



Transsubclavian Access



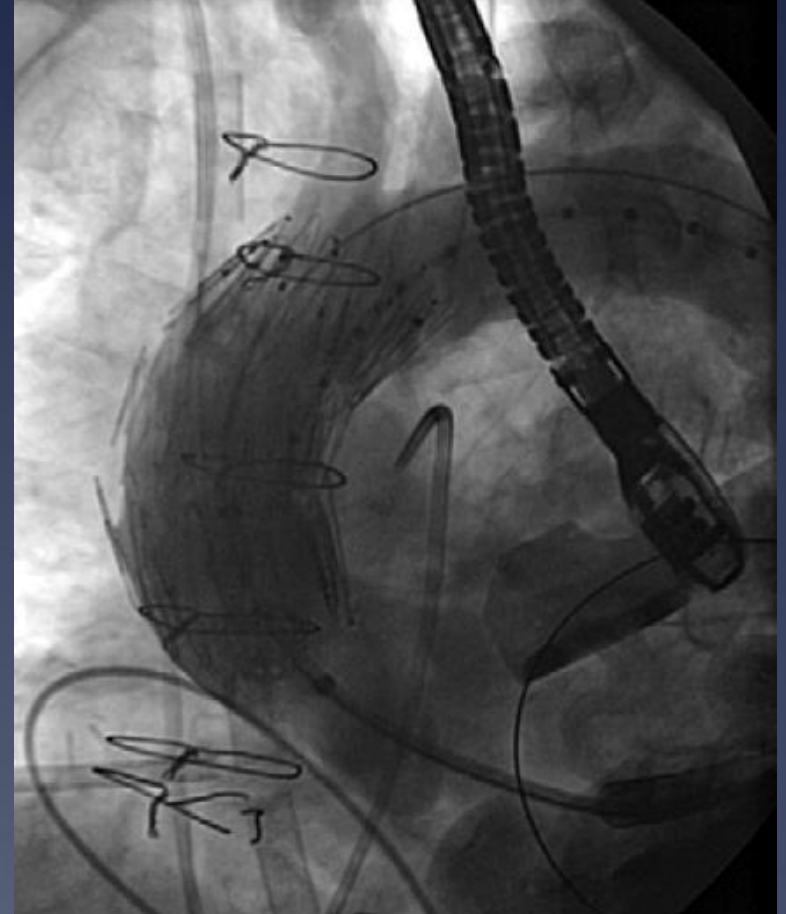
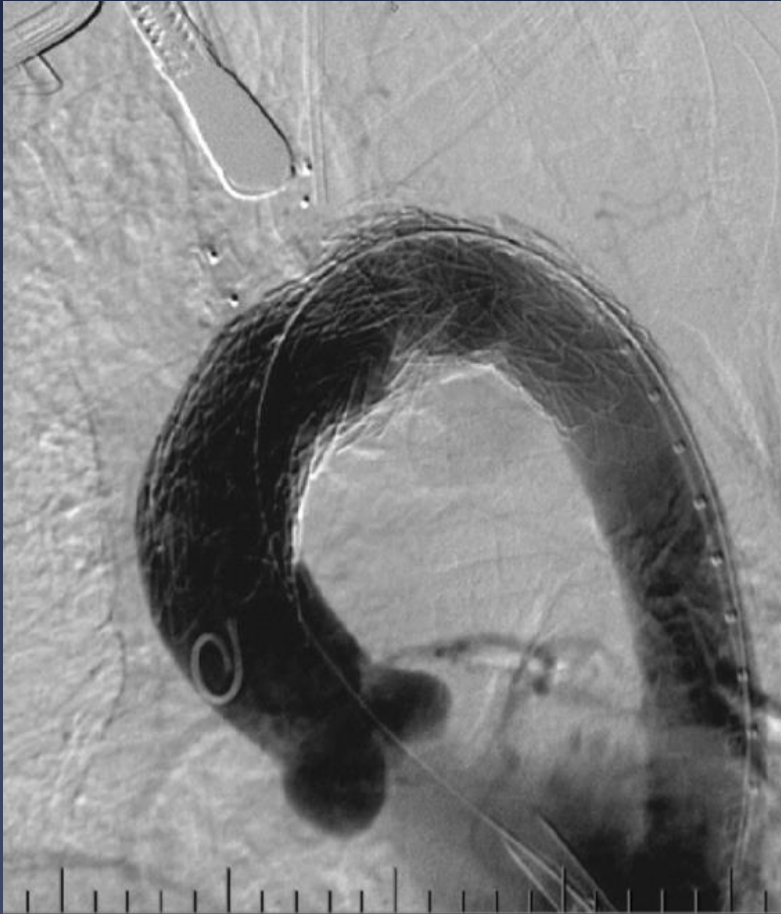
- * Straight access in mature arches
- * May require conduit
- * Restricted diameter
- * Arch manipulation and stroke risk



Transapical Access



Transapical TEVAR



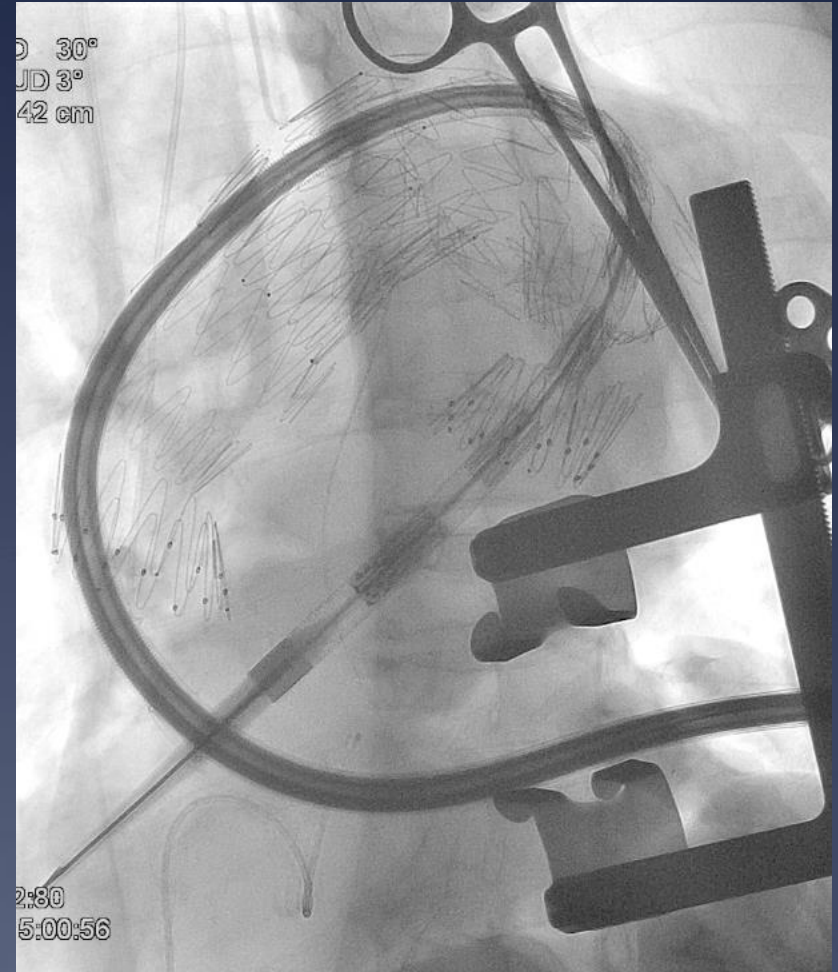
MacDonald et al 2009, JVS 49: 759-62

Szeto et al 2010, Ann Thorac Surg 89: 616-8

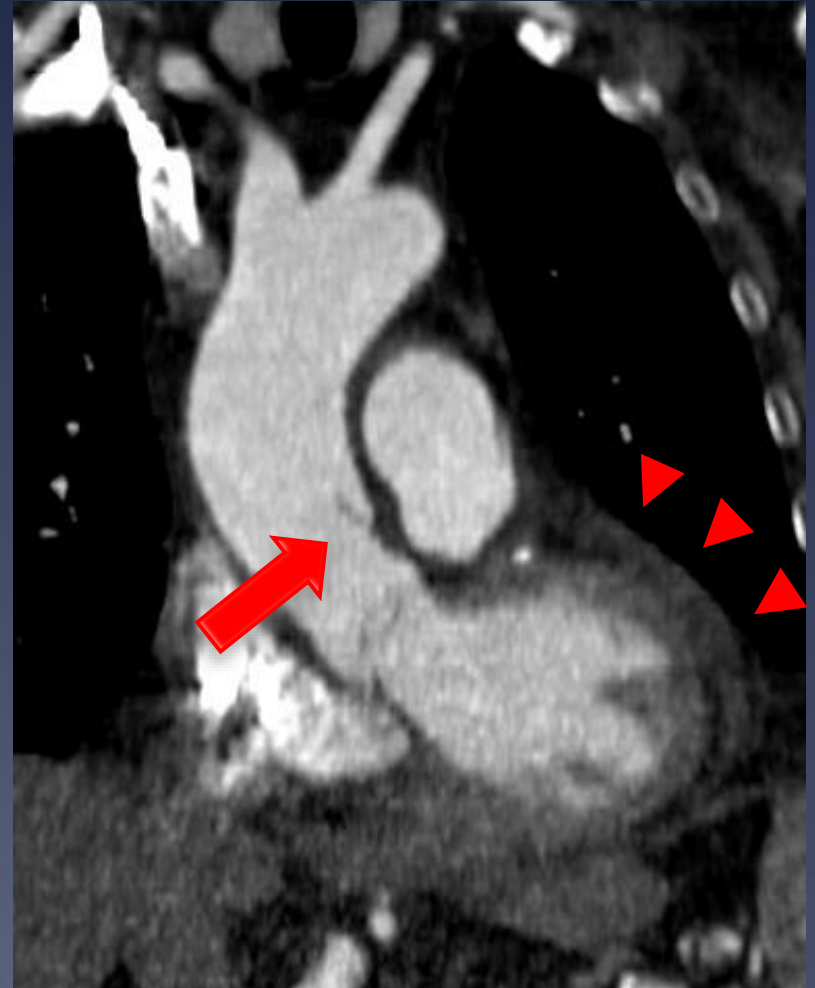
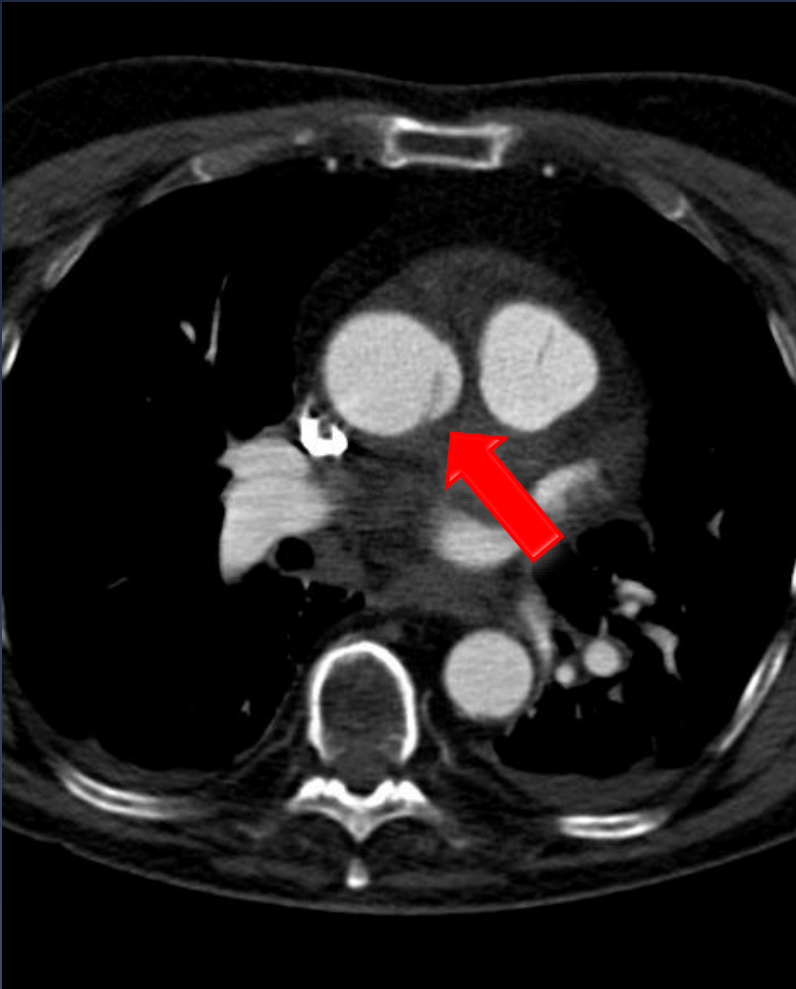
Transapical TEVAR



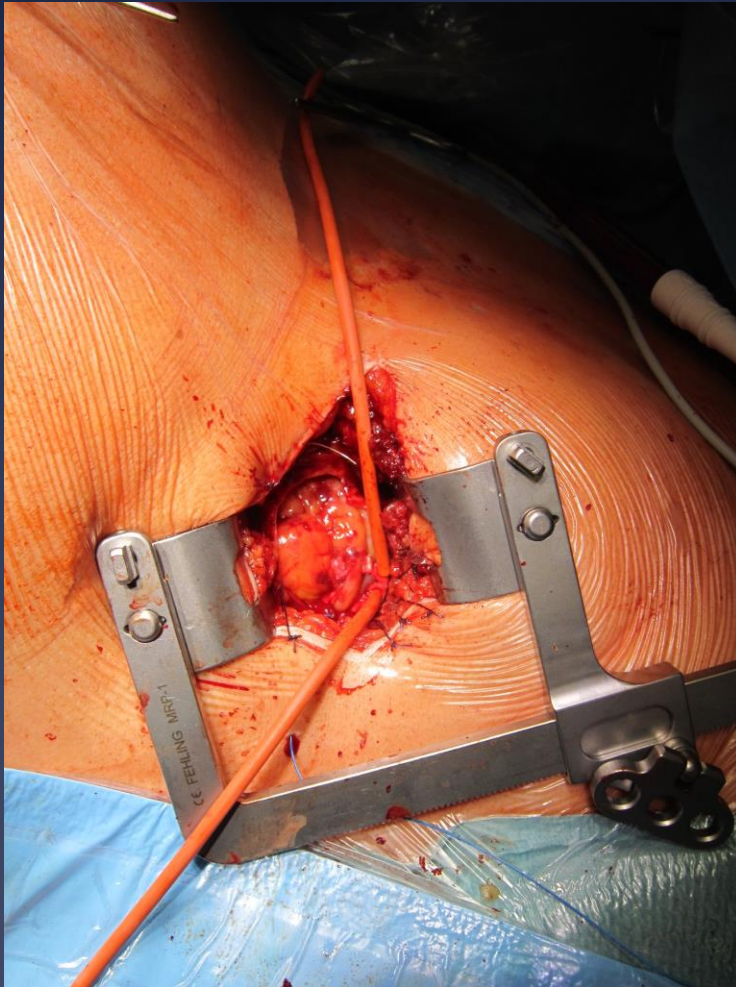
- * Short, straight route
- * Well established Access
- * Easy access to the aortic valve and true lumen
- * Pericardiac drainage



Transapical TEVAR



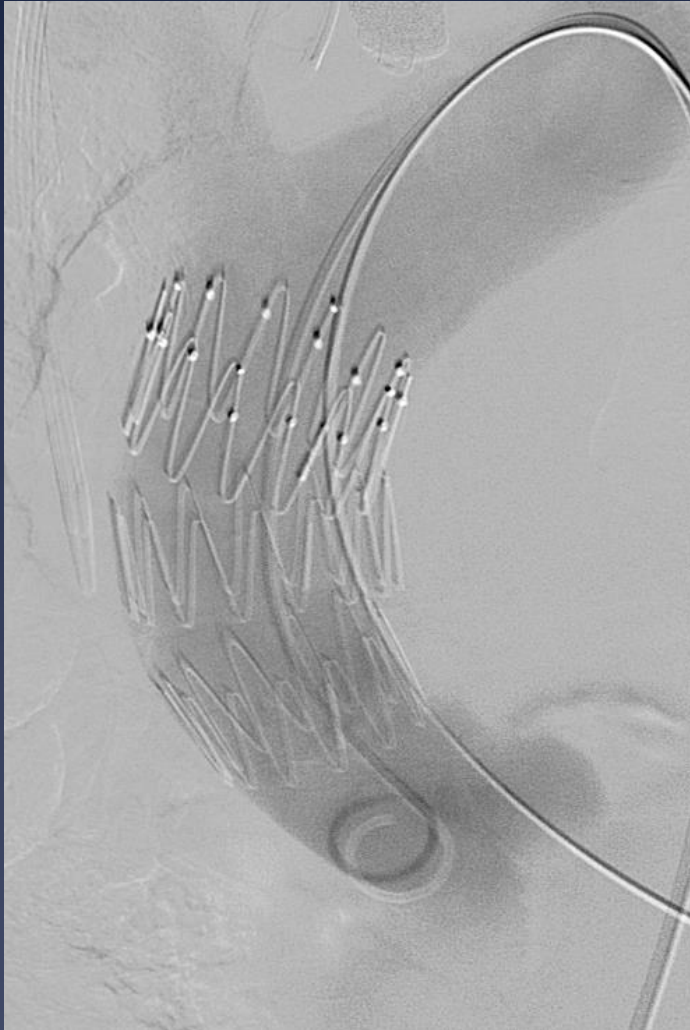
Transapical TEVAR



Transapical TEVAR



Transapical TEVAR



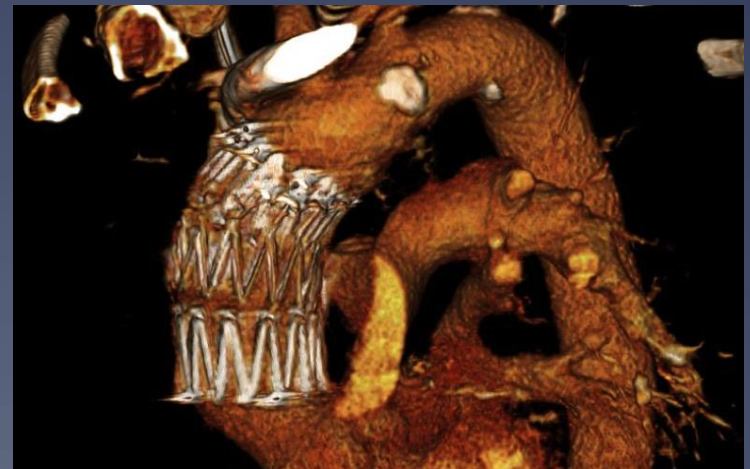
12h postop.

Transapical TEVAR



48m postop.

Transapical TEVAR



Percutaneous Transapical Access



Clinical Experience With Percutaneous Left Ventricular Transapical Access for Interventions in Structural Heart Defects

A Safe Access and Secure Exit

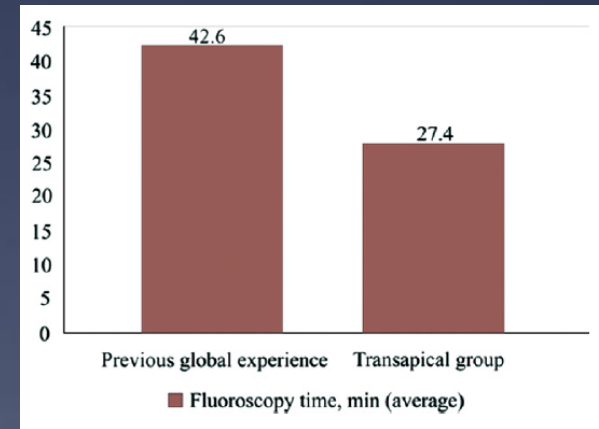
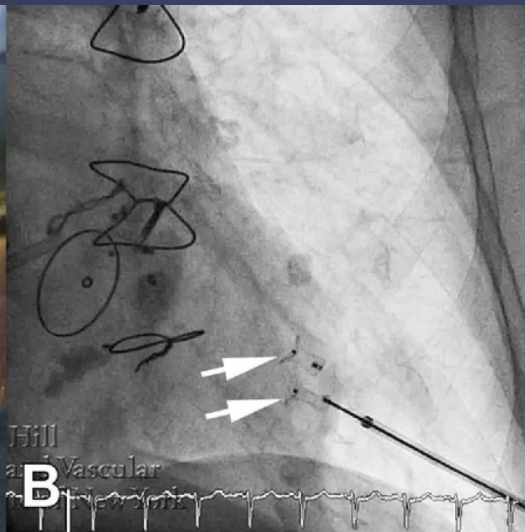
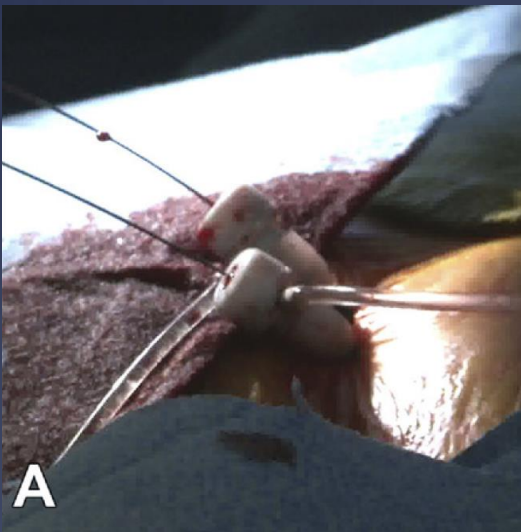
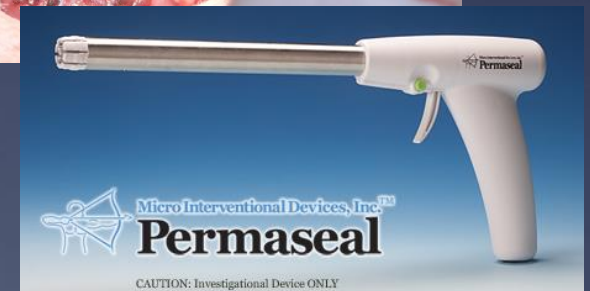
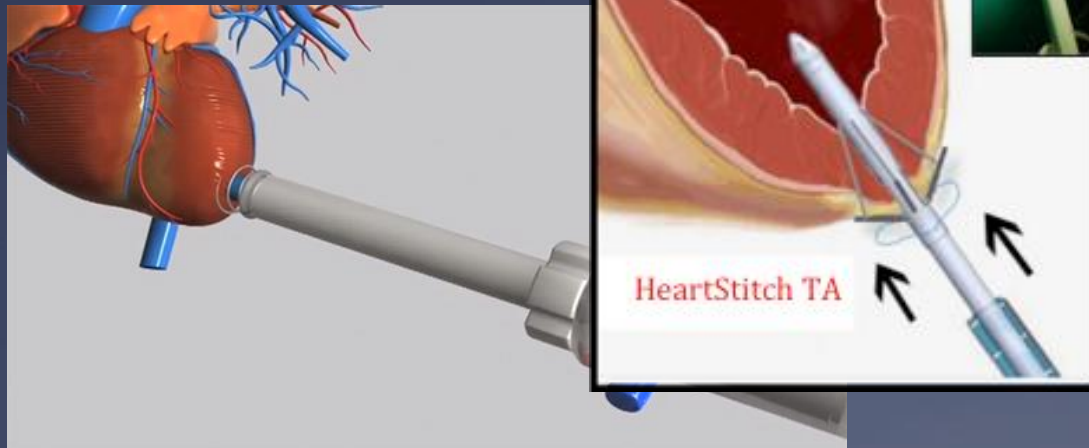
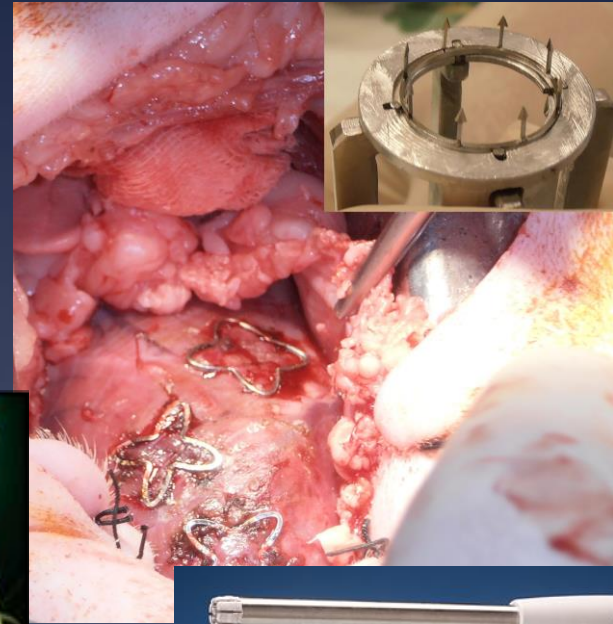
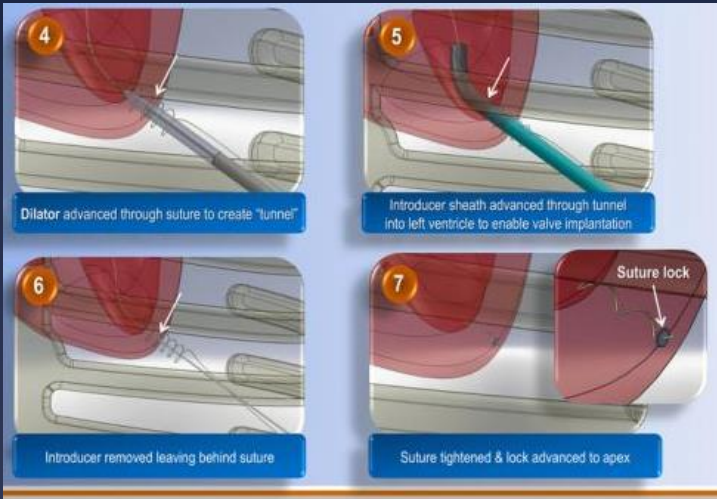


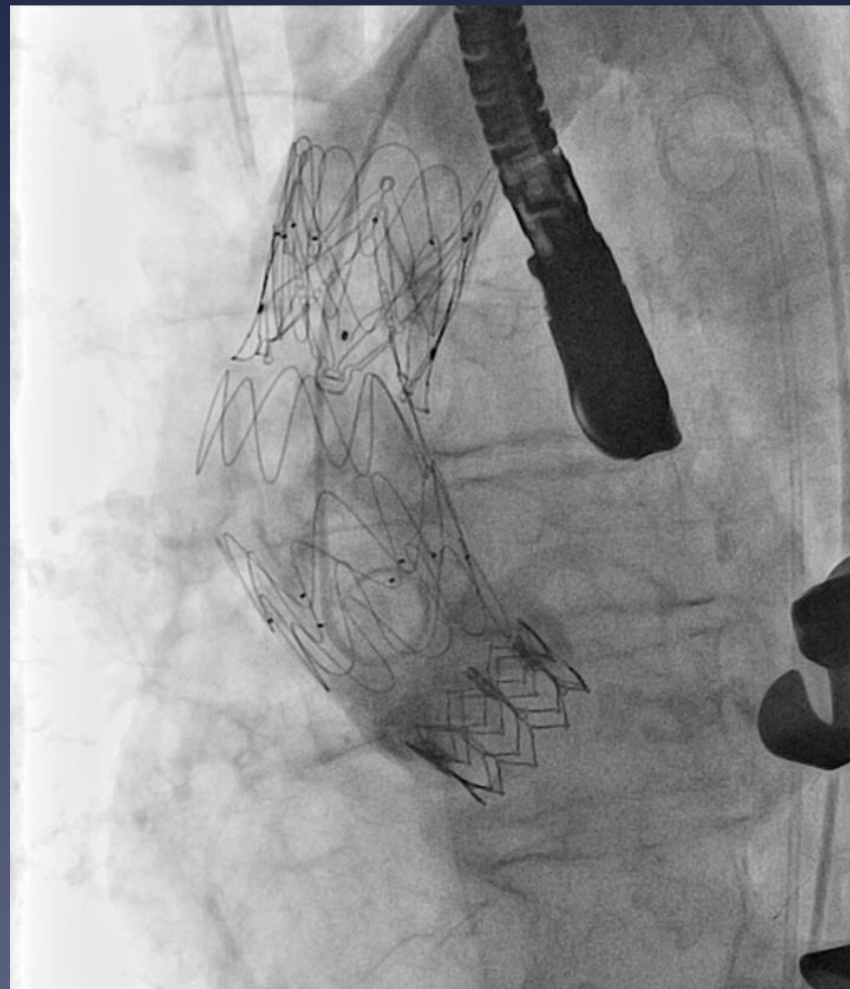
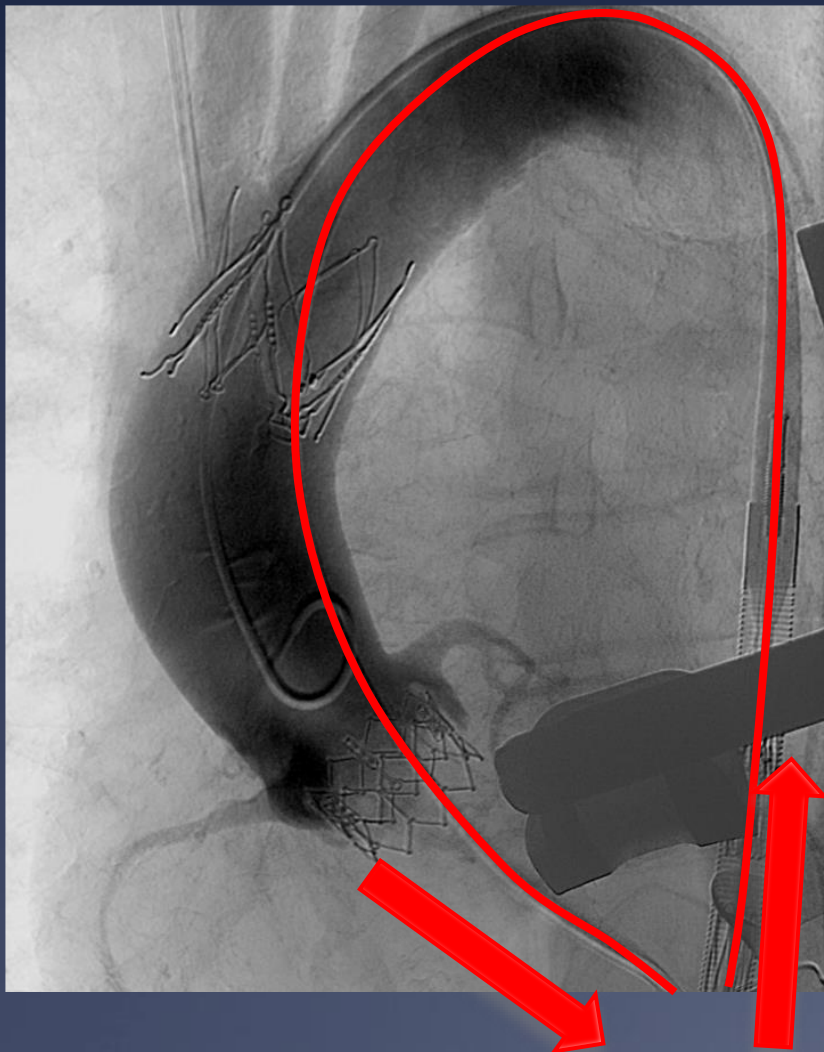
Figure 7. Average Fluoroscopy Time for Mitral Paravalvular Leaks Closure

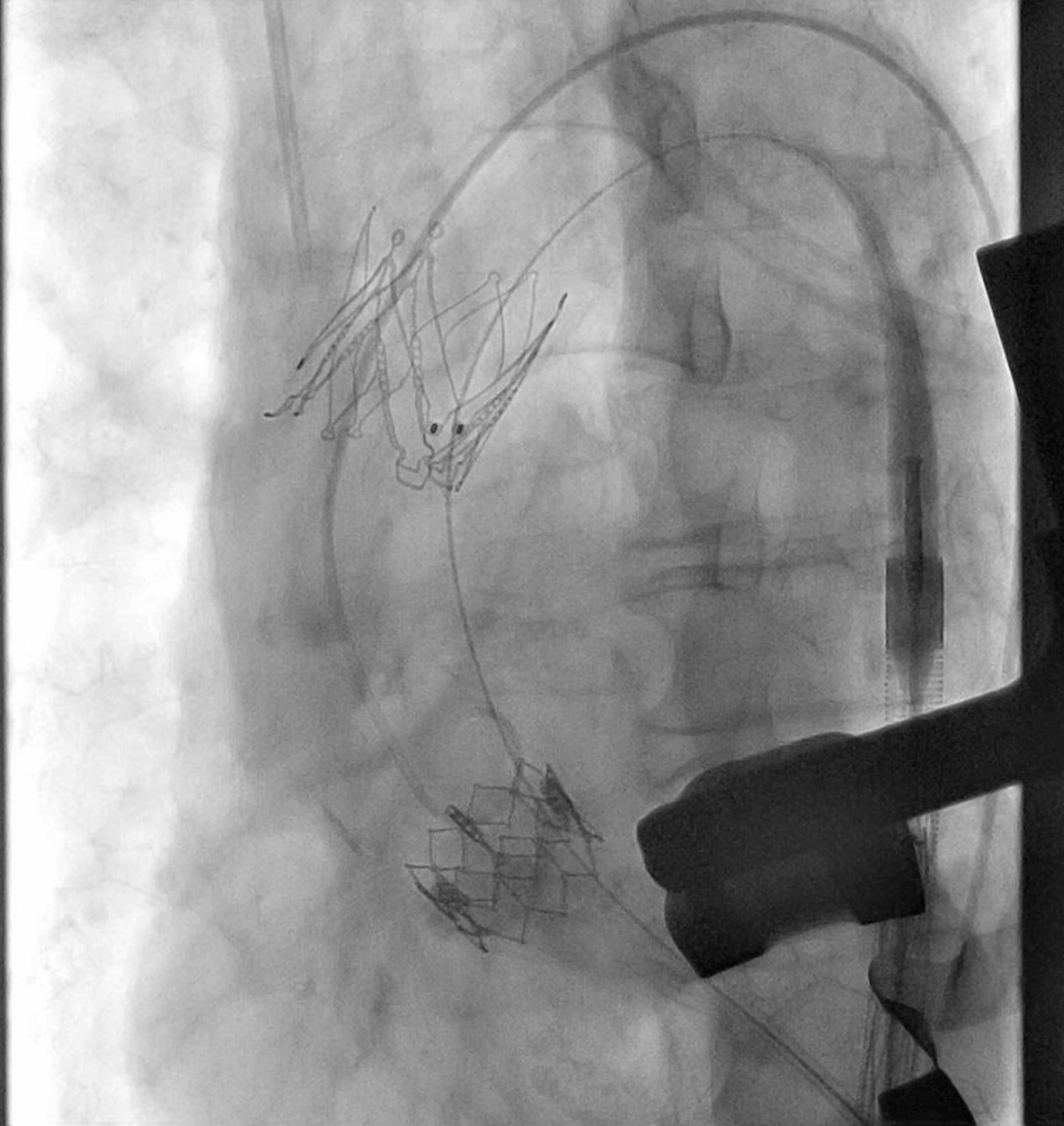
Comparison between primary intended transapical approach versus our own global experience.

Transapical Closure

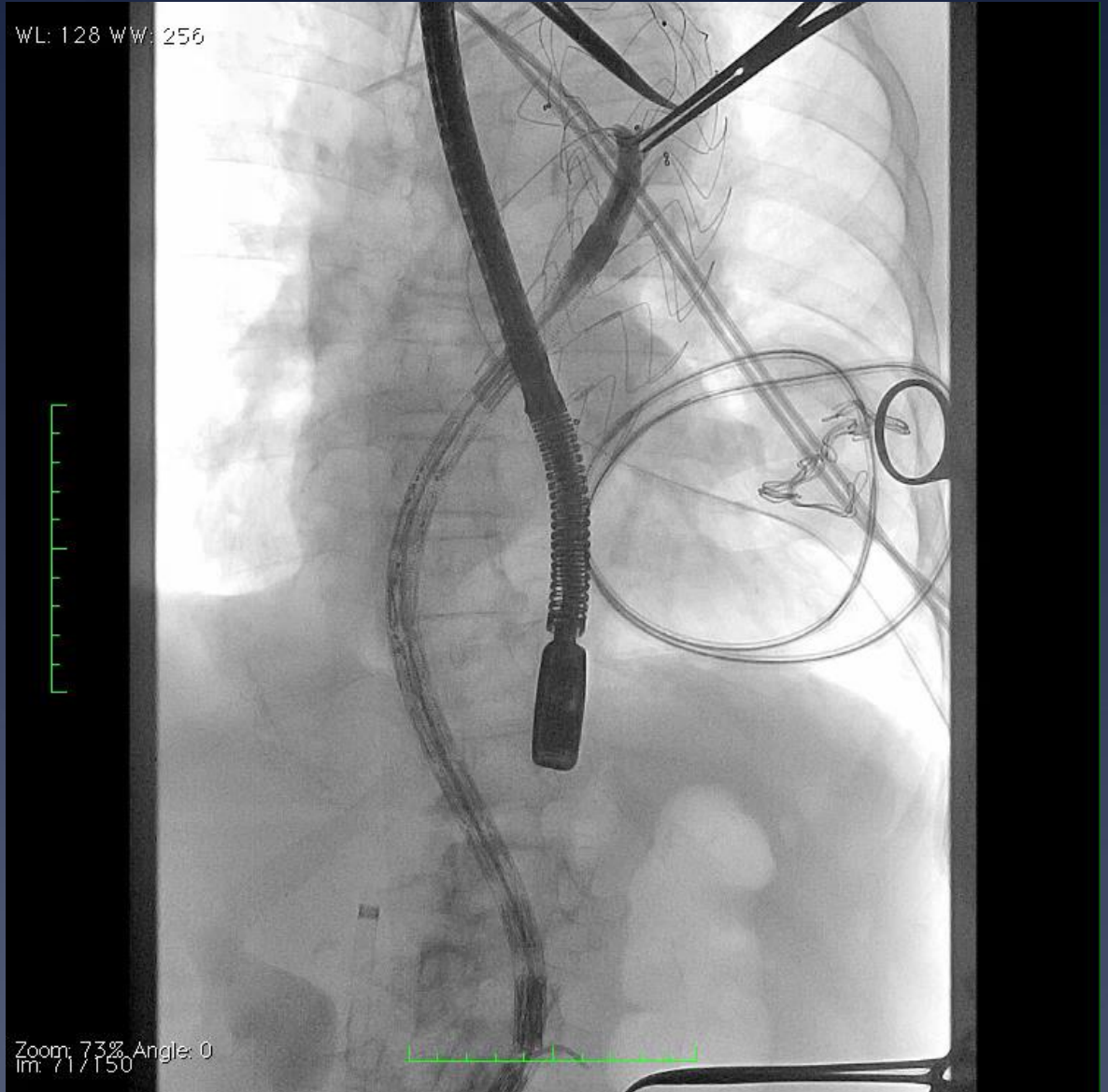


Transapical Through & Through

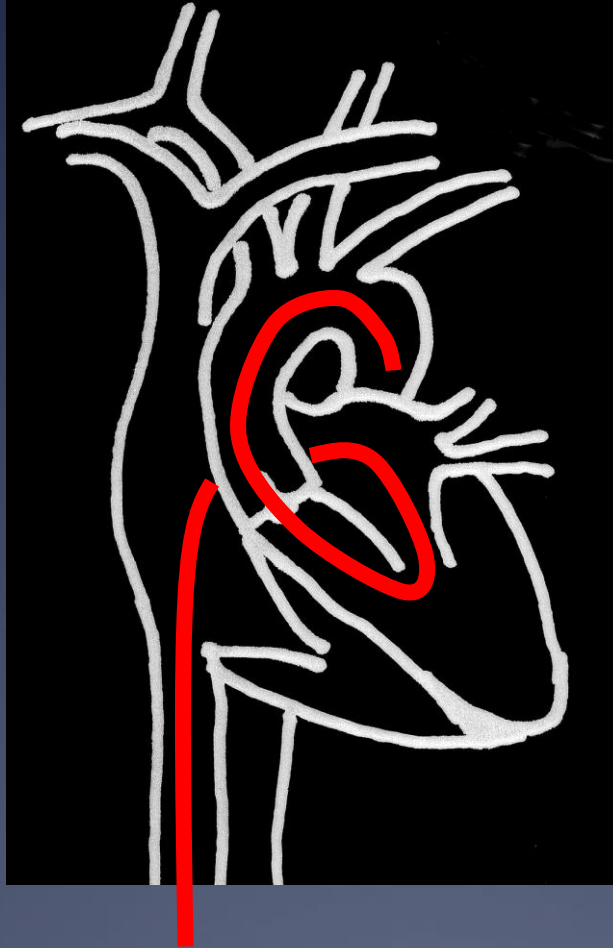




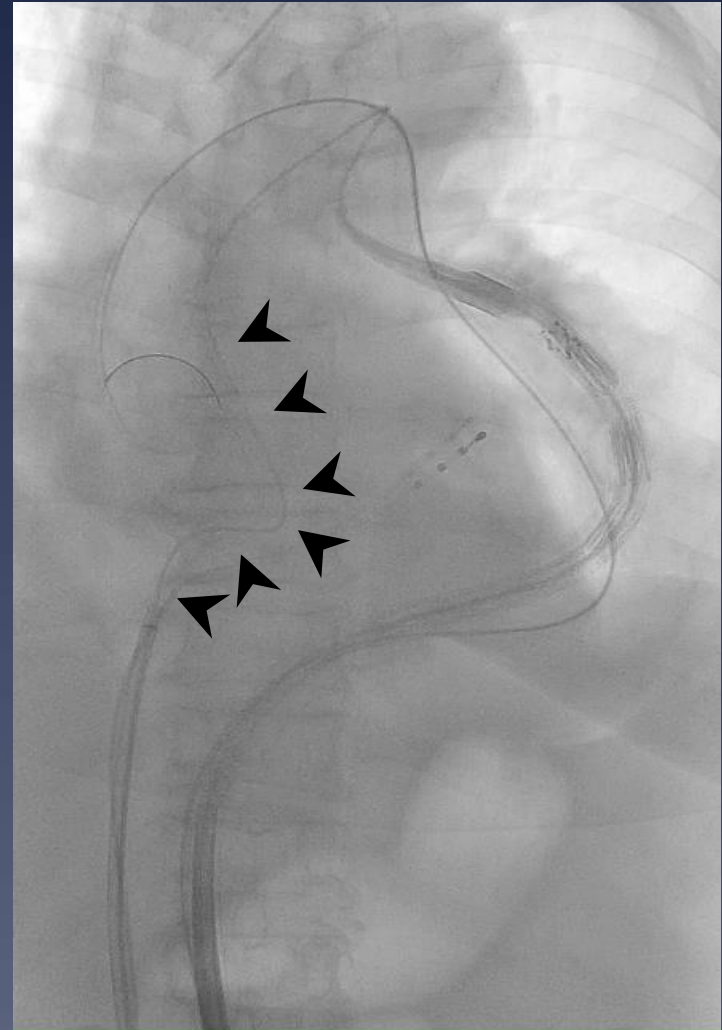
Transapical Through & Through

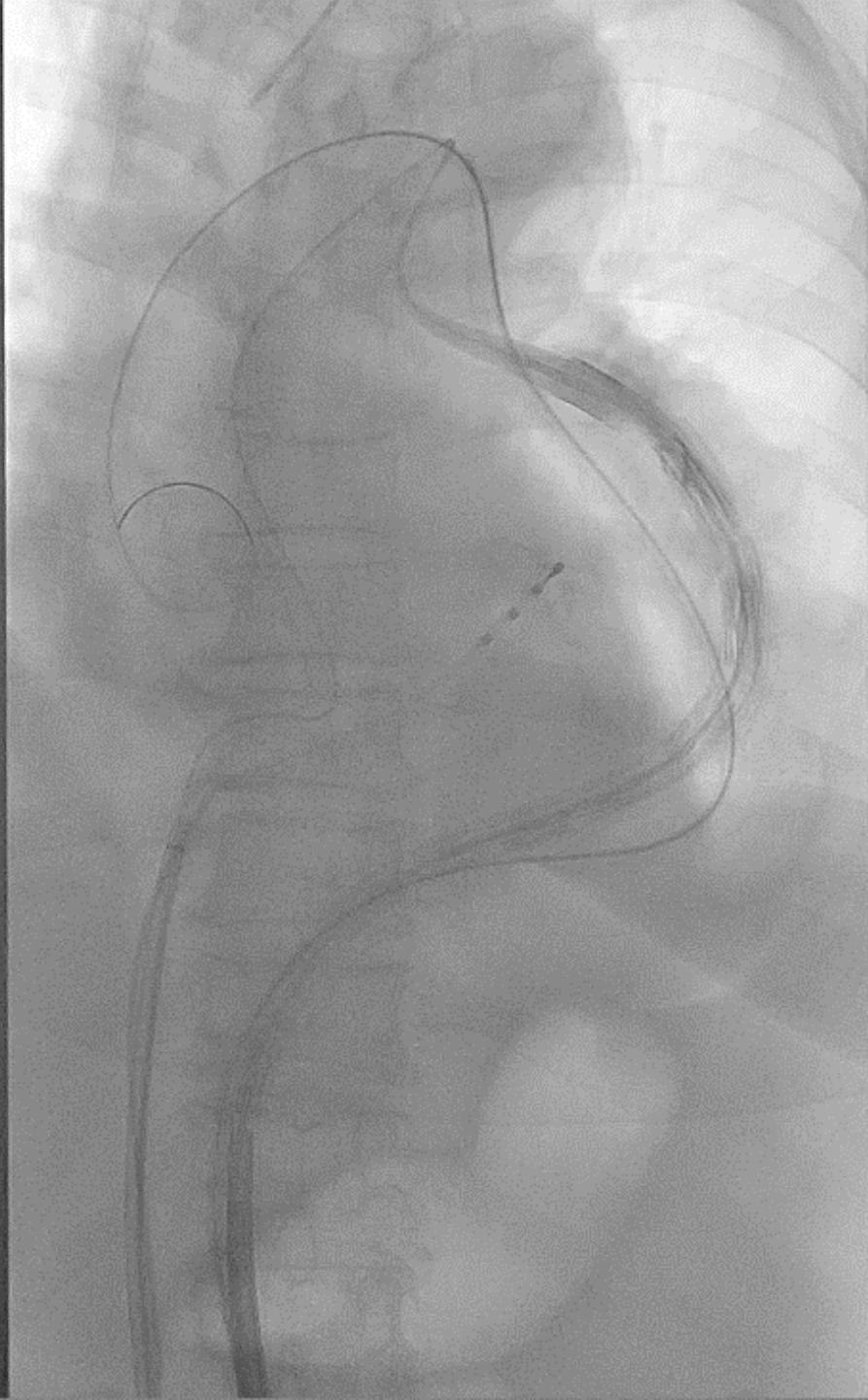


Transseptal Access



Transseptal Through & Through





The Future?



Thoracoscopic
Transsubclavian

Transapical

Transseptal

Advantages (Transapical):



- * Short and straight route
- * Unlimited diameter
- * Easy to establish throughwire
- * Easy passage of aortic valve into true lumen
- * Standardized and wide-spread access
- * Reduced radiation (and operating-time)

Limitations(Transapical):



- * Cardiac surgeon and mini-thoracotomy required
- * Specific risks: tamponade, drain required
- * Graft-design made for retrograde delivery
- * Access to descending aorta limited

Precautions (Transapical):



- * Careful case-planning
- * Careful graft- and patient-selection
- * Preop TEE
- * Through and throughwire to the groin
- * Output-reduction by IVC-occlusion

Conclusion



- * Transfemoral delivery challenging because of distance, tortuosity and hemodynamics.
- * Transapical access route potentially easier.
- * Currently available stent-grafts do not meet requirements.