

TAVR Failures ***Optimal management***

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We use Tissue Valves for two reasons

Avoid
Anticoagulation

Avoid
Reoperation

All tissue valves will eventually fail !

- Based on current predictions TAVR will last for 10 years
- Hence, if we implant it in
 - EU/NA at age < 65, or
 - Japan/Korea < 70

Reintervention for SVD will not be uncommon

Second Intervention will be..

TAVR in
TAVR

Promise !

Explant
TAVR and
Implant
SAVR

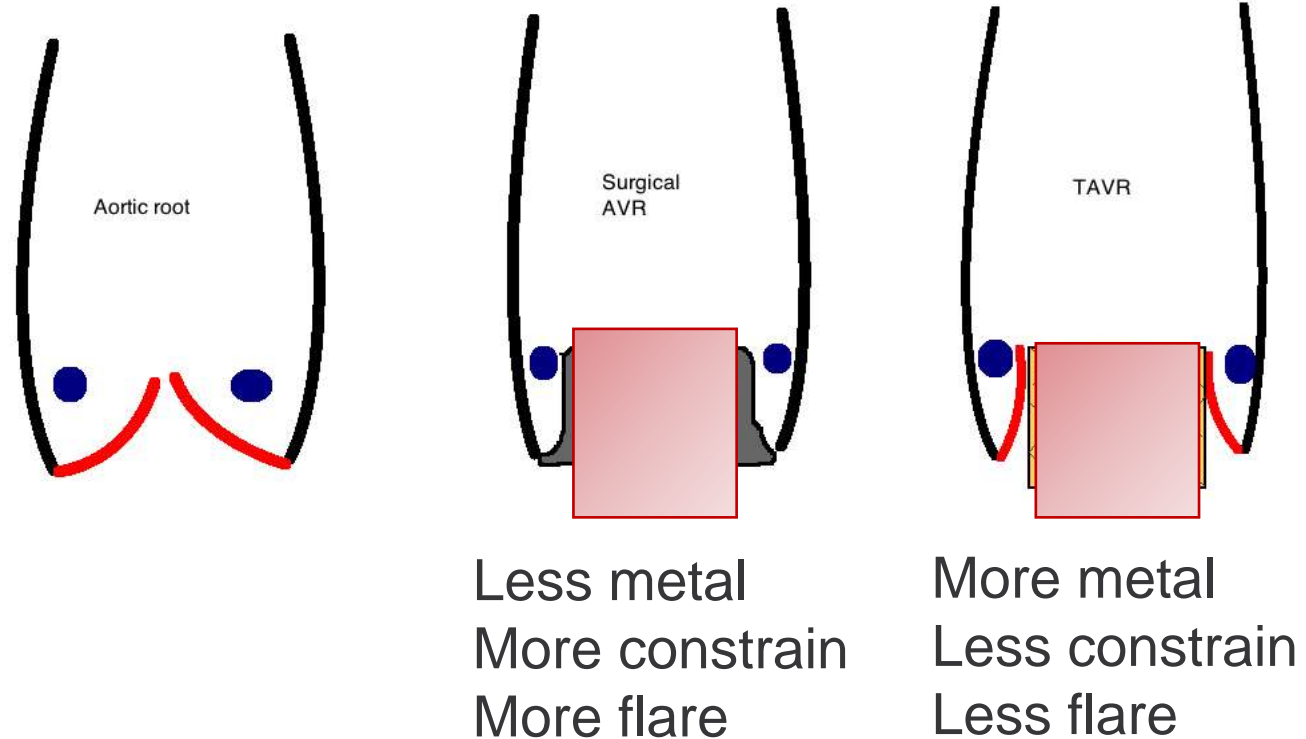
Reality !

Which
is
better??

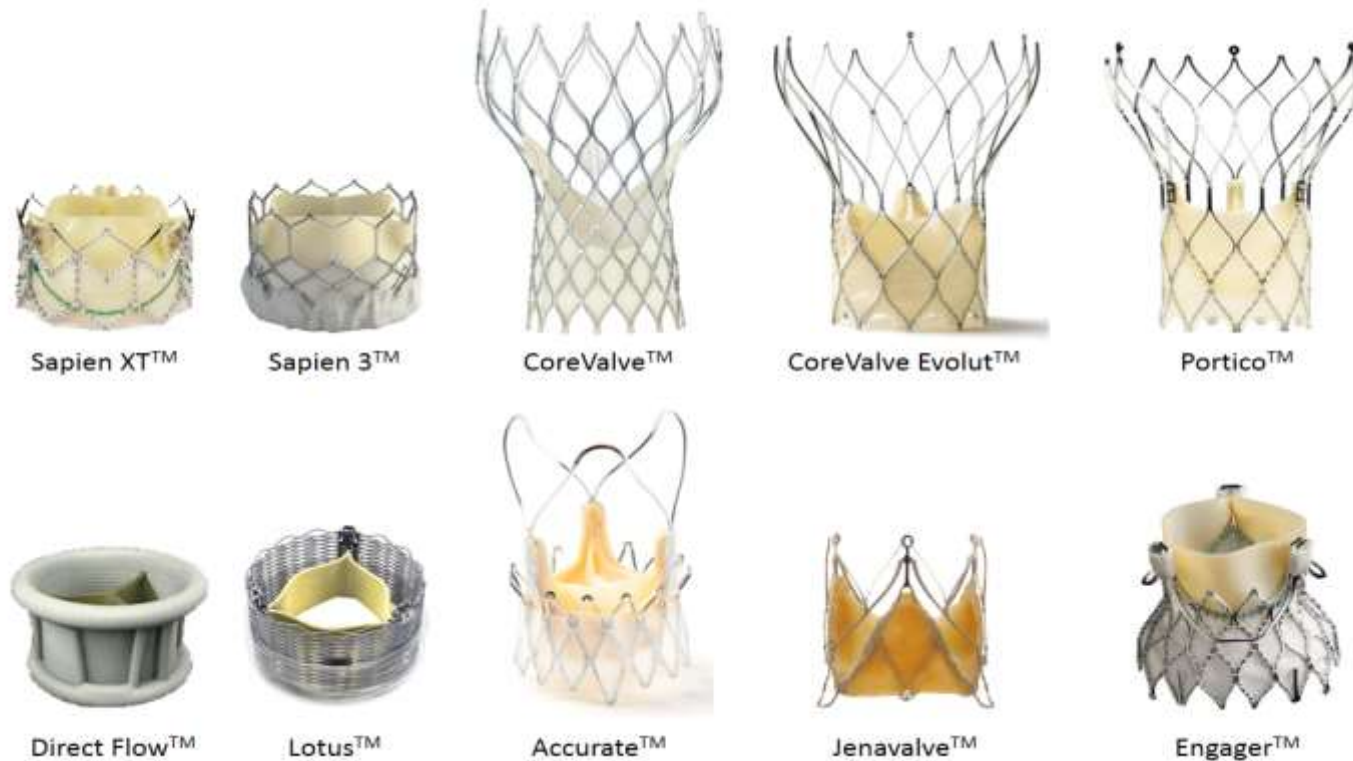
Let us not assume that we know
The answer

THV in THV – good strategy for low risk patients?

- Very few cases till to date
- Most are elderly – inferior hemodynamics are acceptable
- Risk of Valve thrombosis? **
- Need for anticoagulation? **
- Risk of poor hemodynamics? **



TAVR valves vary in Construct and interaction with native anatomy and also wen used to treat another TAVR failure

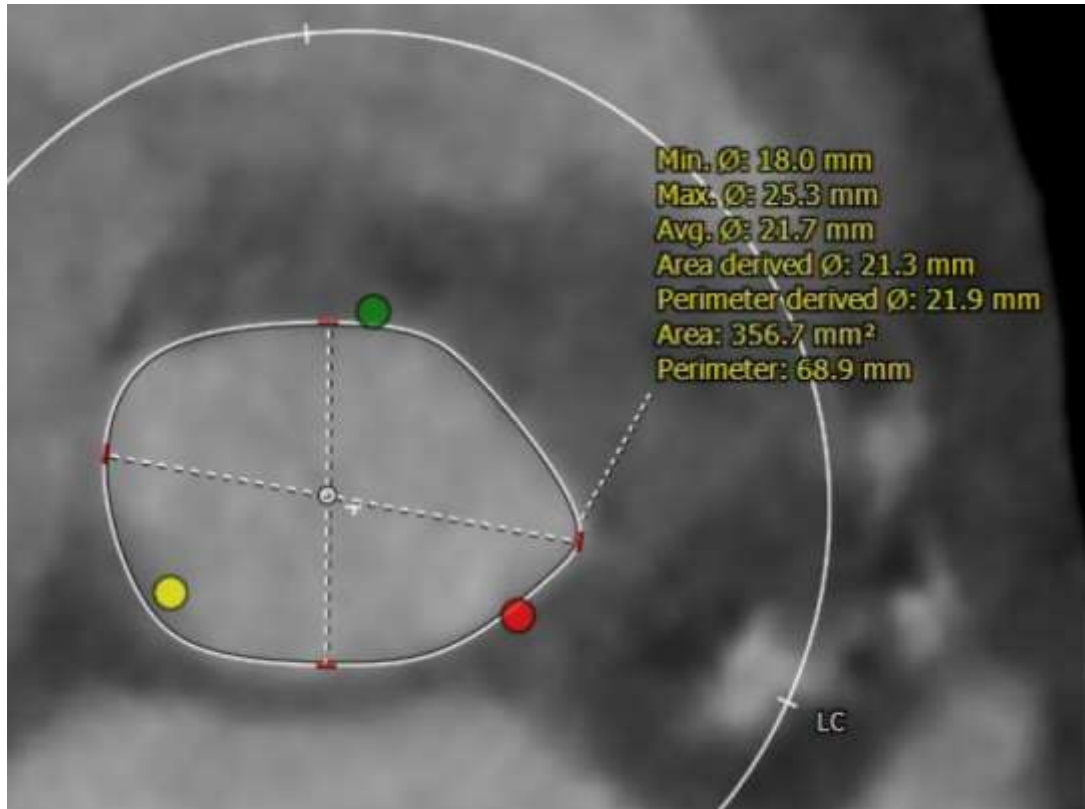


Case History

Patient Information	
Age	75
Gender	F
STS Score	4.3
NYHA Class	II
Height	68 in.
Weight	206 lb.
BMI	31.3
Creatinine	2.8
HGB	14.5

- **Relevant History:**
 - HTN; CAD
 - COPD
 - Good Femoral access
 - Discussed in Heart team (another hospital)
 - Planned TAVR

CT Analysis

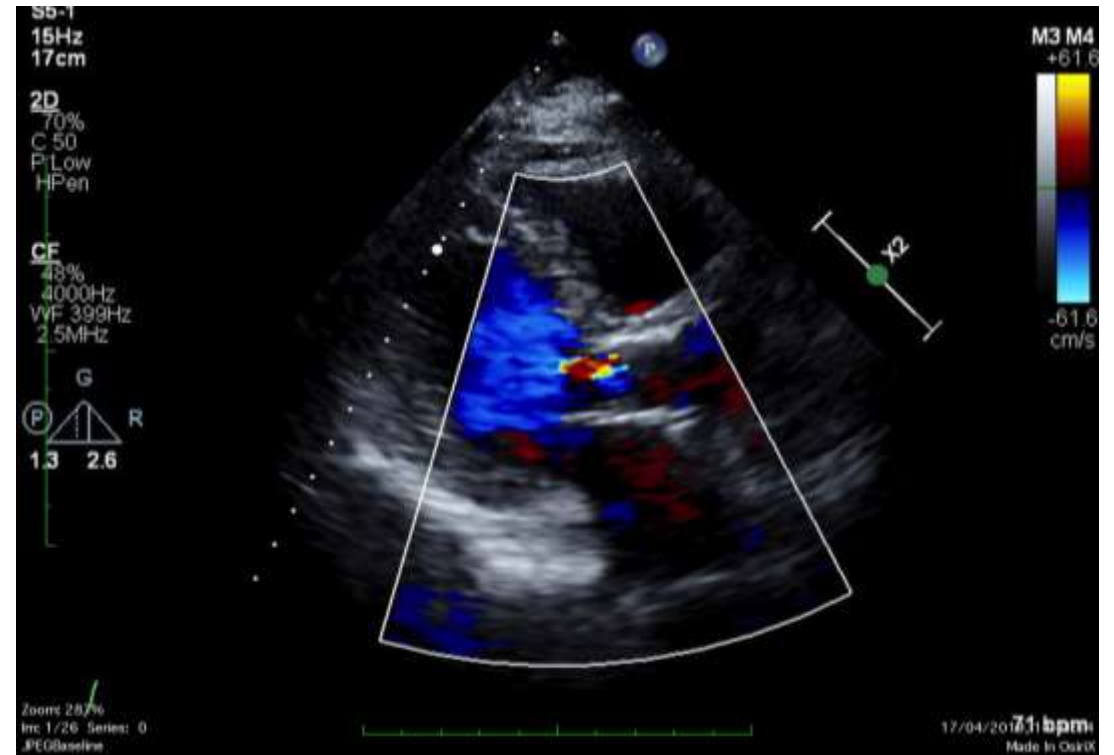


Aortic Annulus	Measure
Short Annulus Diameter	18
Long Annulus Diameter	25
Annular Area	356
% Oversizing	13%
Planned Valve Size	23

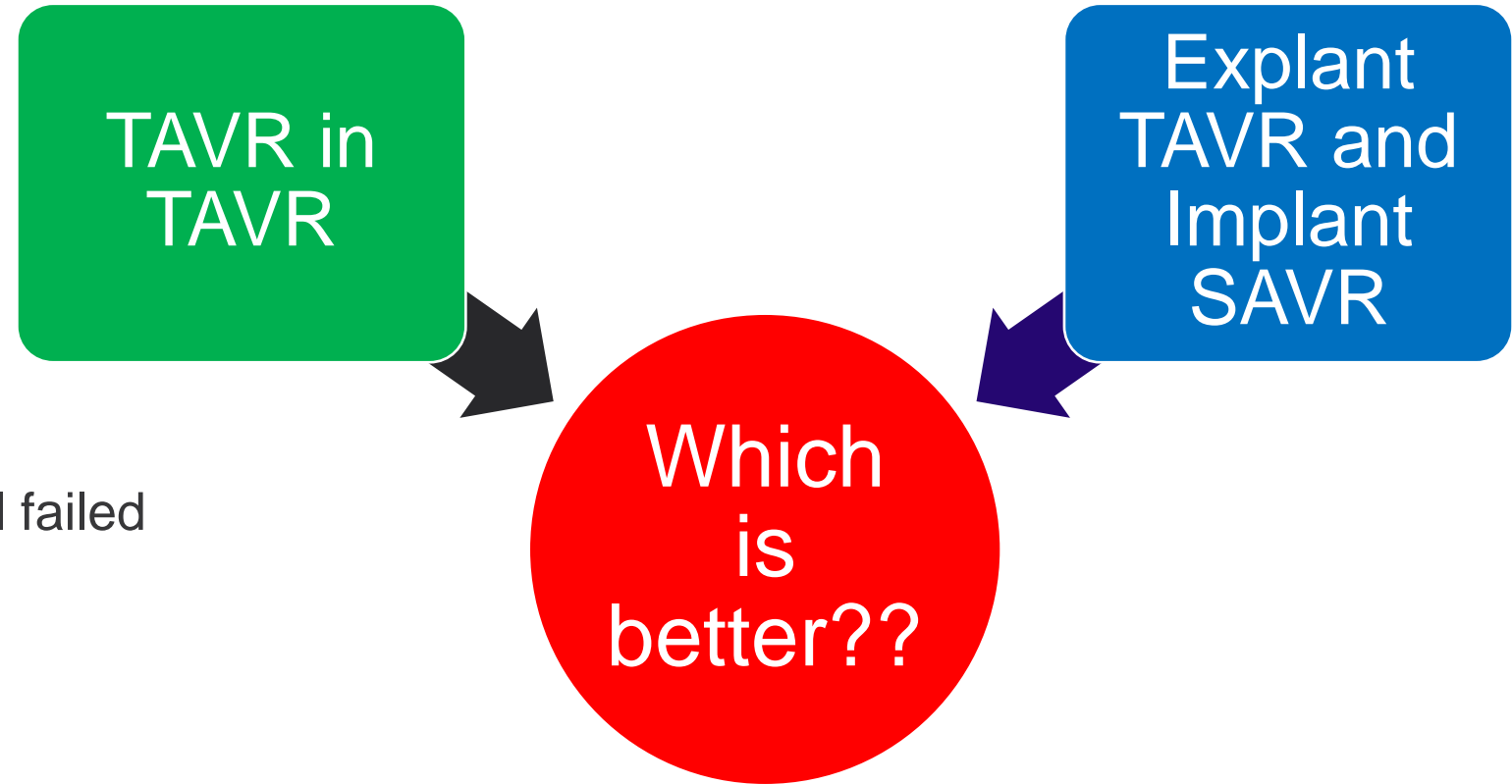
TAVR SAPIEN 3 23
Uneventful

Echo Early 2019

Increased Gradients, Symptomatic Patient



- SVD ?
- Leaflet thrombosis?
- Options: Anticoagulation trial failed



TAVR in TAVR assessment wit CT

Risk of – Coronary obstruction
Sinus Sequestration at STJ
Annular damage due to over-expansion?

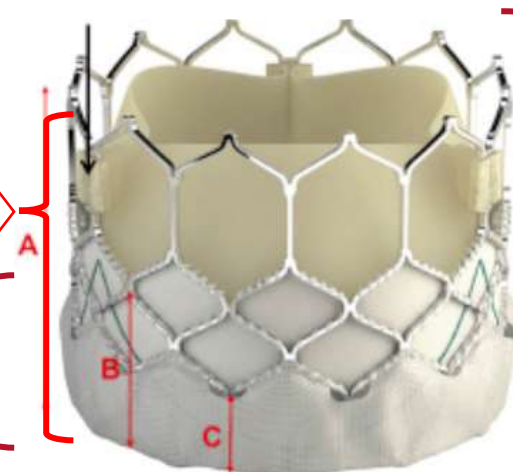
Neo-Skirt height

18 mm

Skirt height

Inner (B) 10mm

Outer (C) 7mm



Height 18 mm

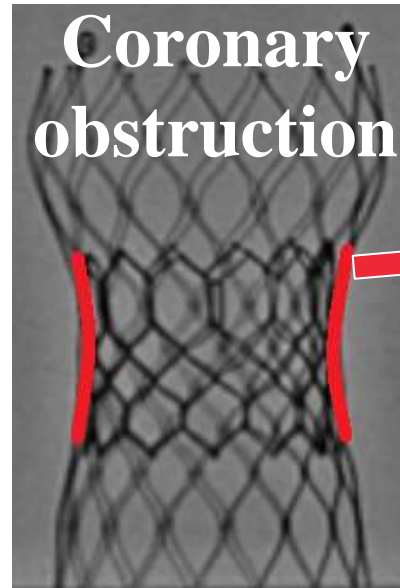
Diameter 23 mm

Annulus 18.5-22 mm

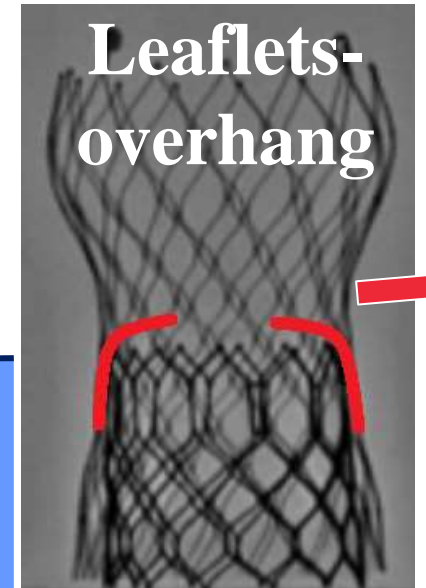
Leaflet Overhang

- Unique phenomenon
- Observed when Shorter THV device is implanted within Taller THV device

High implant

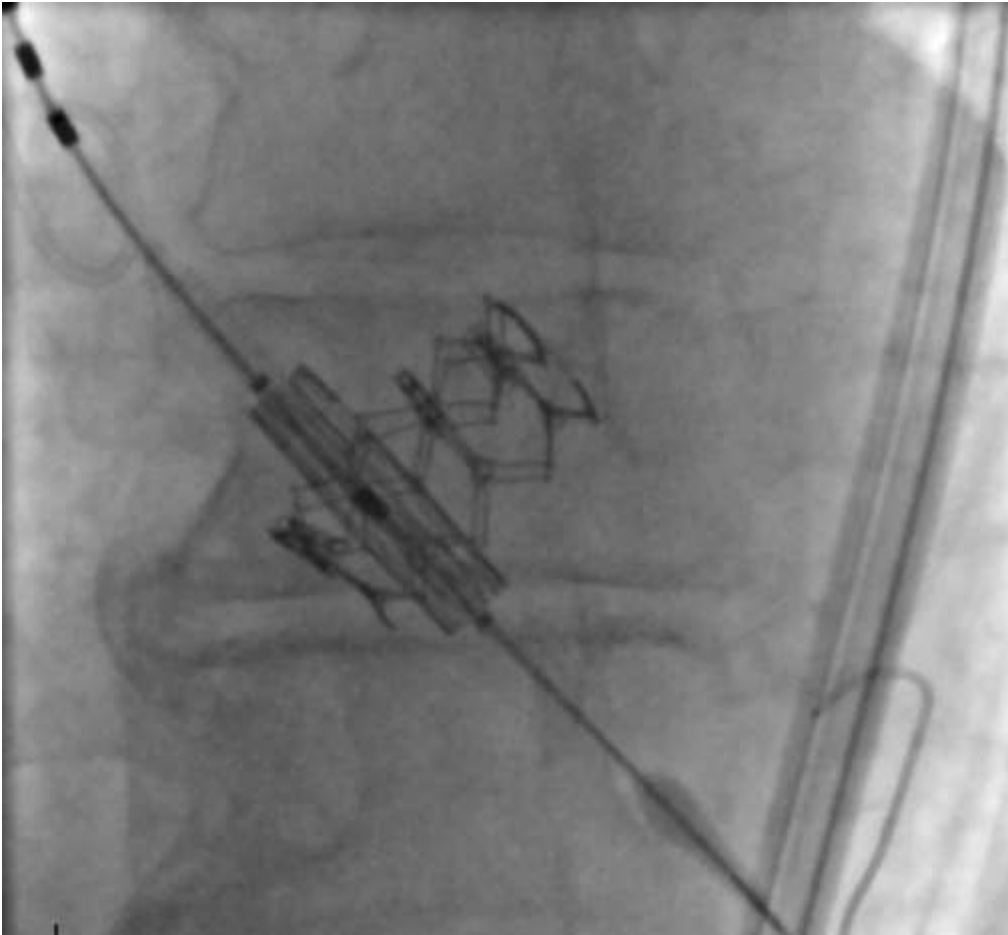


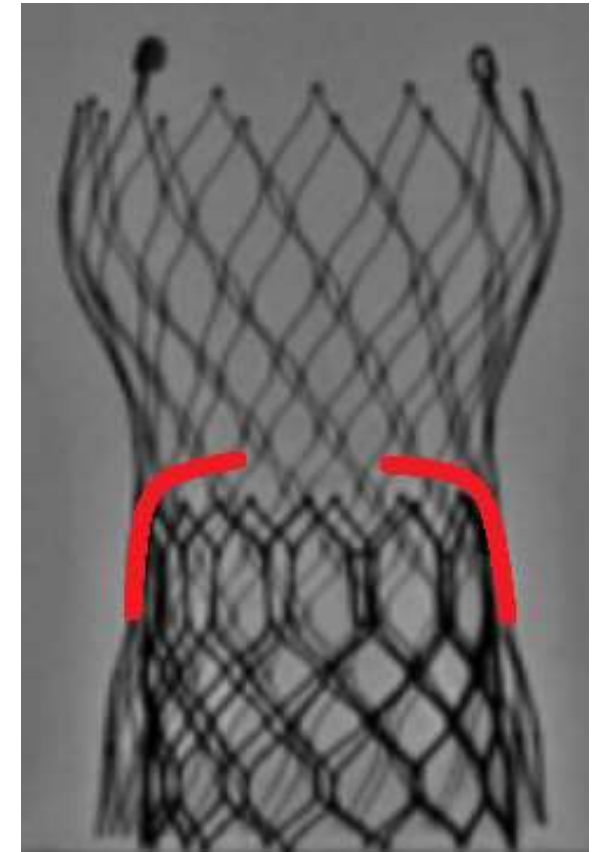
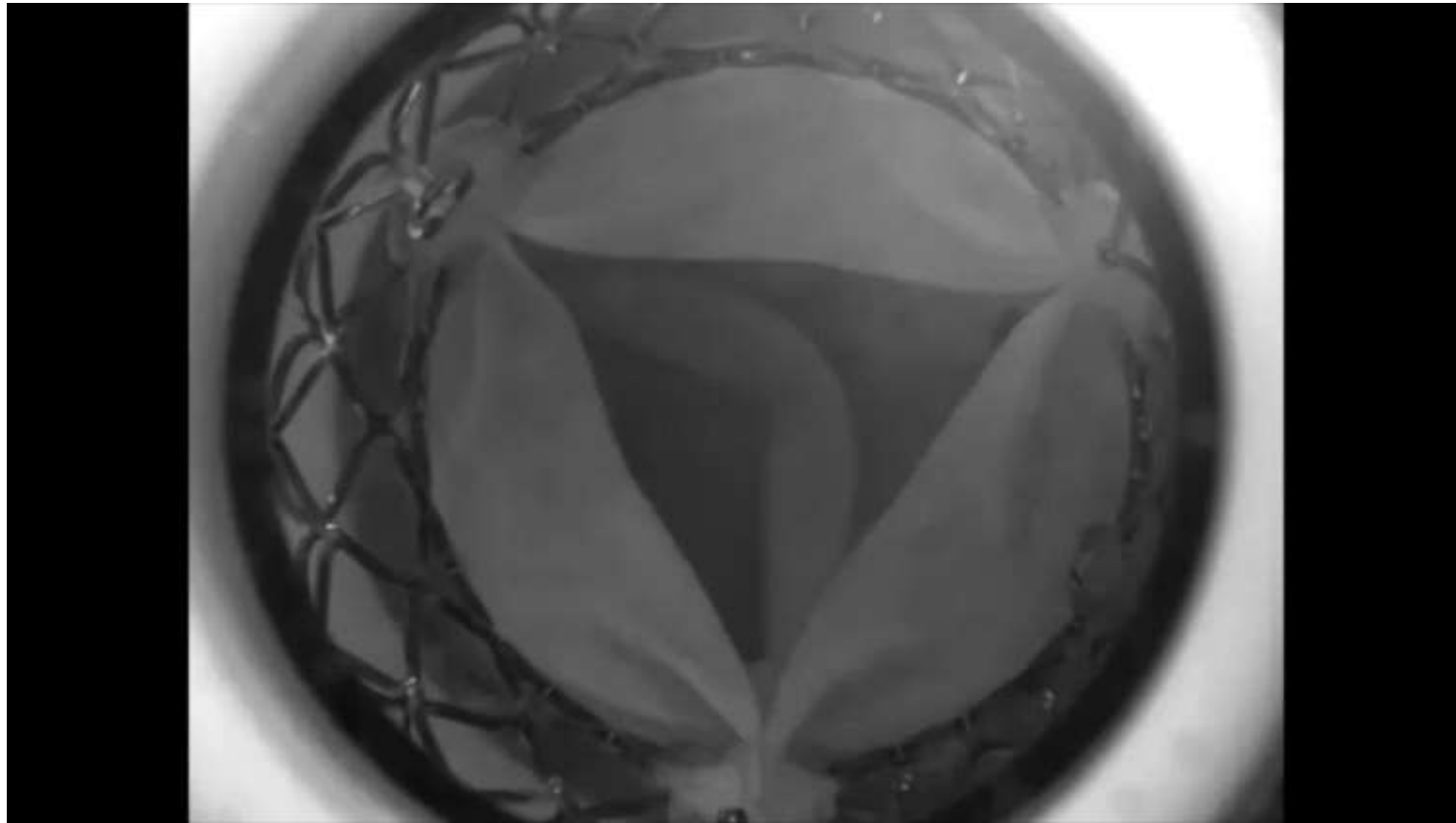
Low implant



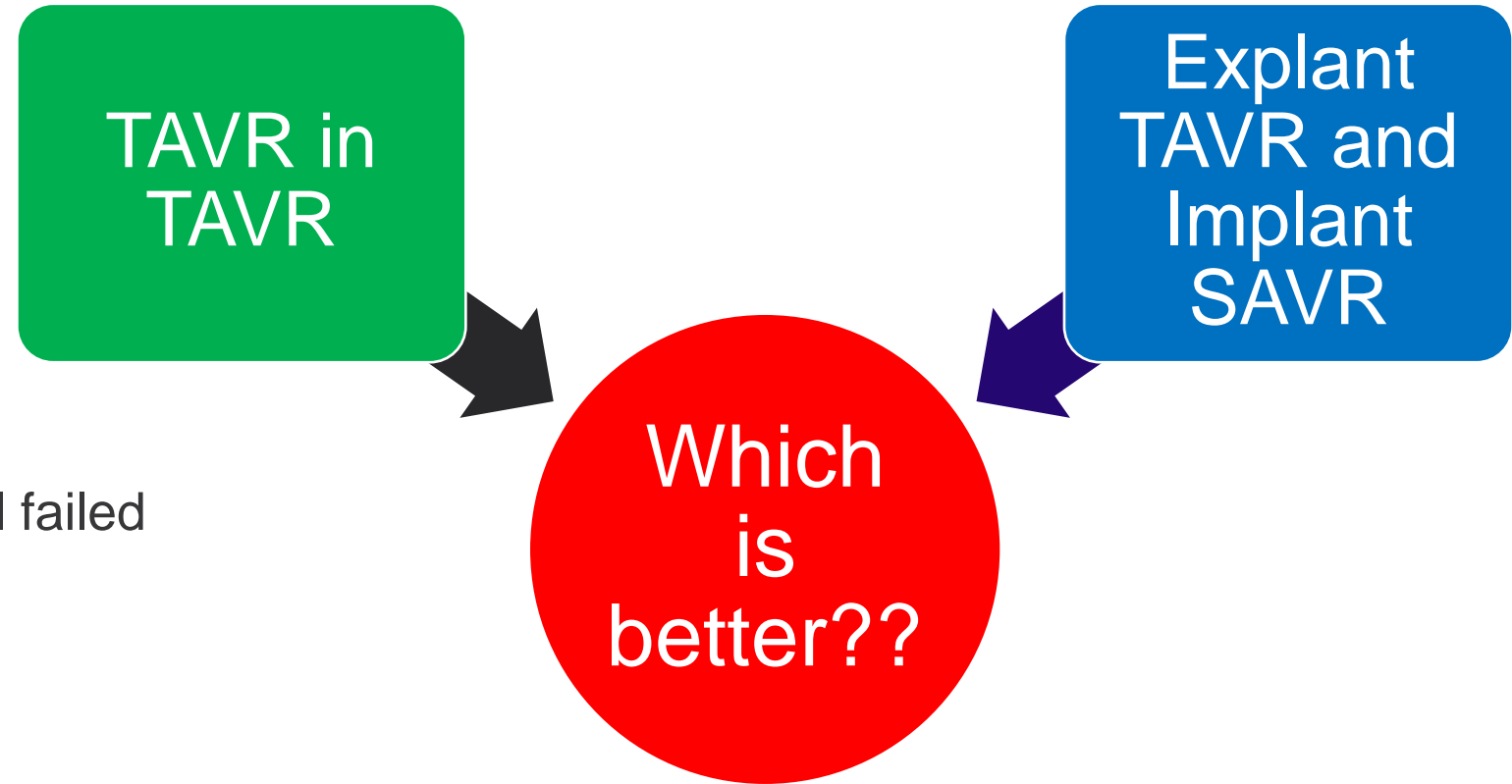
Neo-skirt

Not possible !



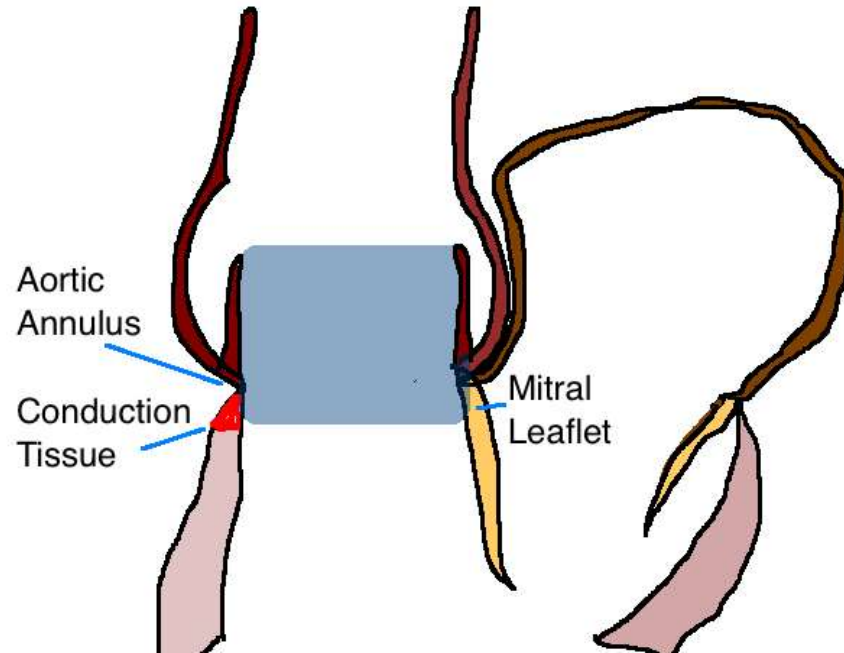


- SVD ?
- Leaflet thrombosis?
- Options: Anticoagulation trial failed



Other Important Considerations

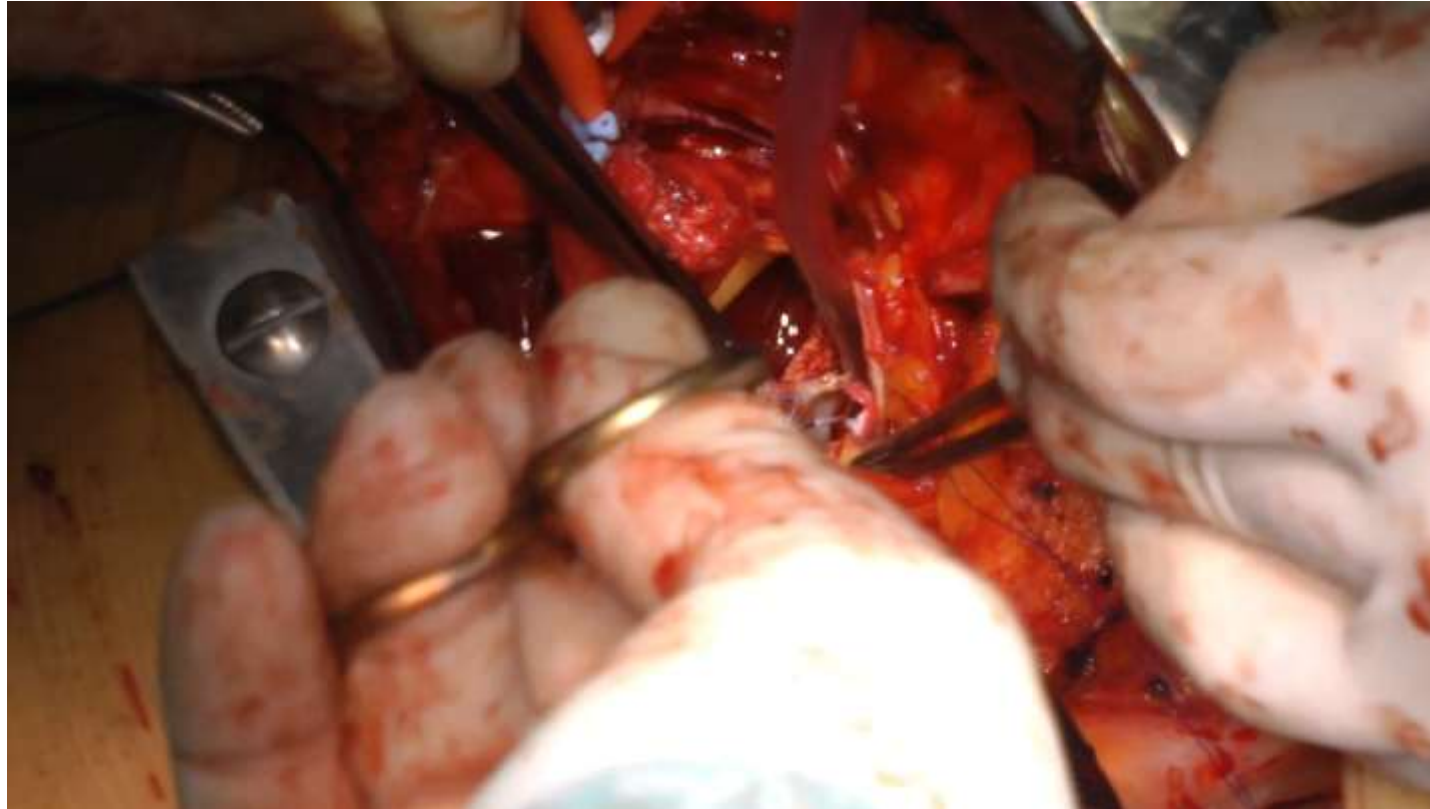
Shorter profile valves



1. Annular damage?
2. Leaflets ?
3. LVOT flare**
4. Mitral leaflet proximity
5. Conduction tissue proximity

Concern: Will Root replacement needed?

Explantation of Sapien 3 after 4 years



Crocodile Roll

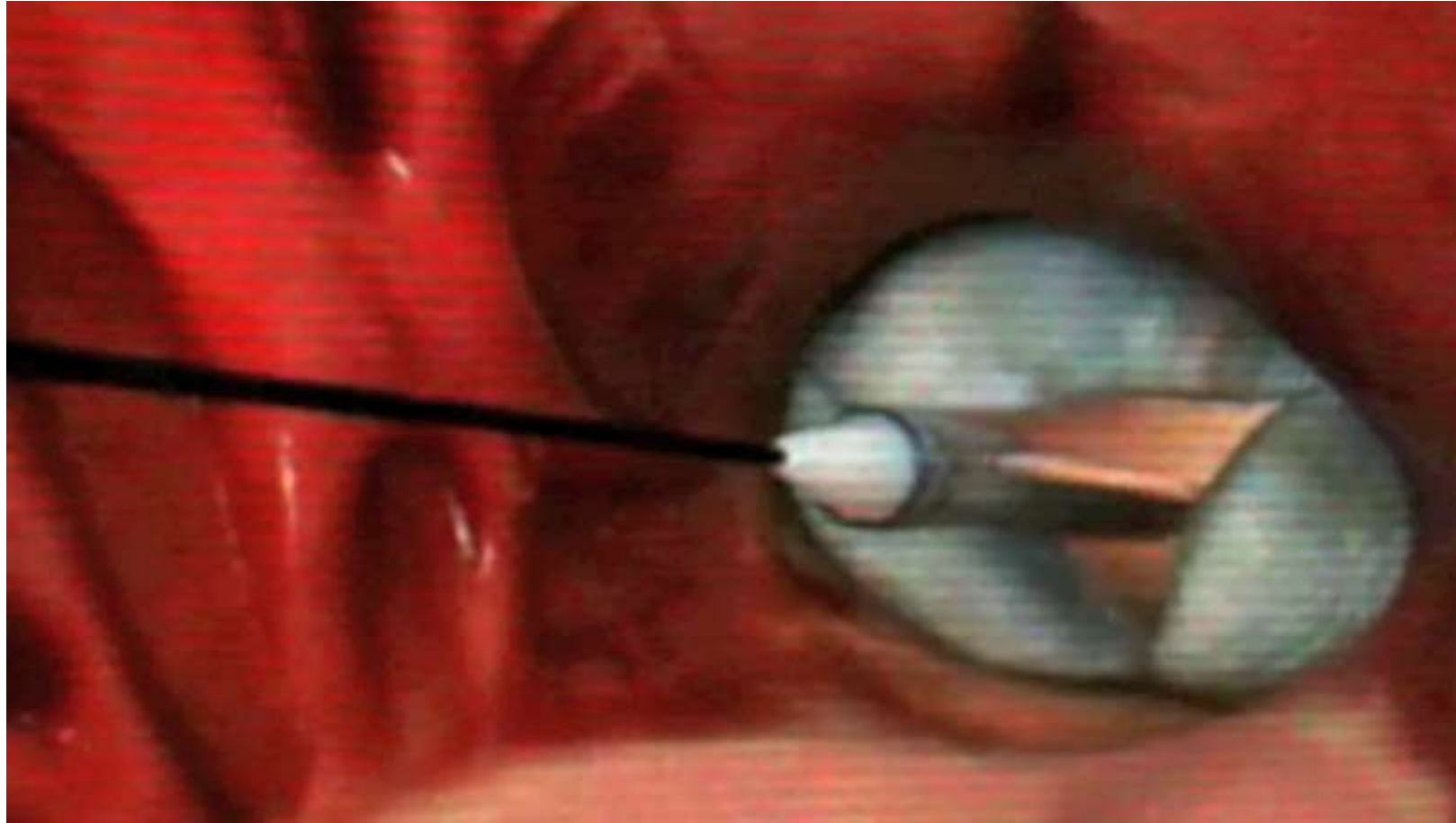


Another way to explant to minimize the trauma



Bend it inward and remove

Directflow



82 yrs old female with
DirectFlow, 23 mm
TAVI 11/2016
Recently restenosis
Mean gradient 52 mmHg
Normal coronary arteries, normal LV Fx
No serious comorbidities



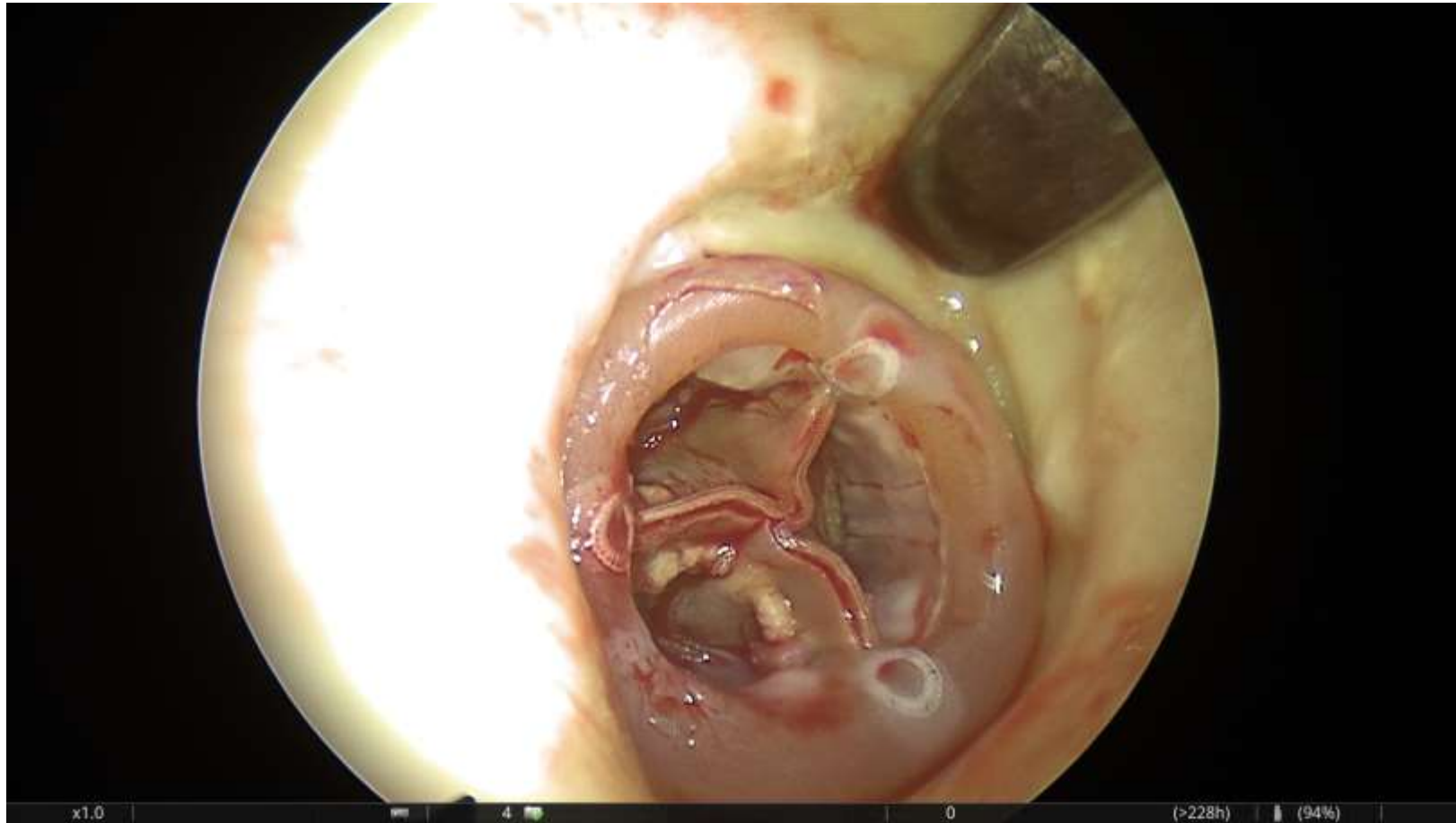
Discussion about V-iV versus Re-do-Operation

After CT and all other imaging modalities honestly talk with patient and family
Final decision: re-do-Operation with Bio-AVR, Edwards Perimount

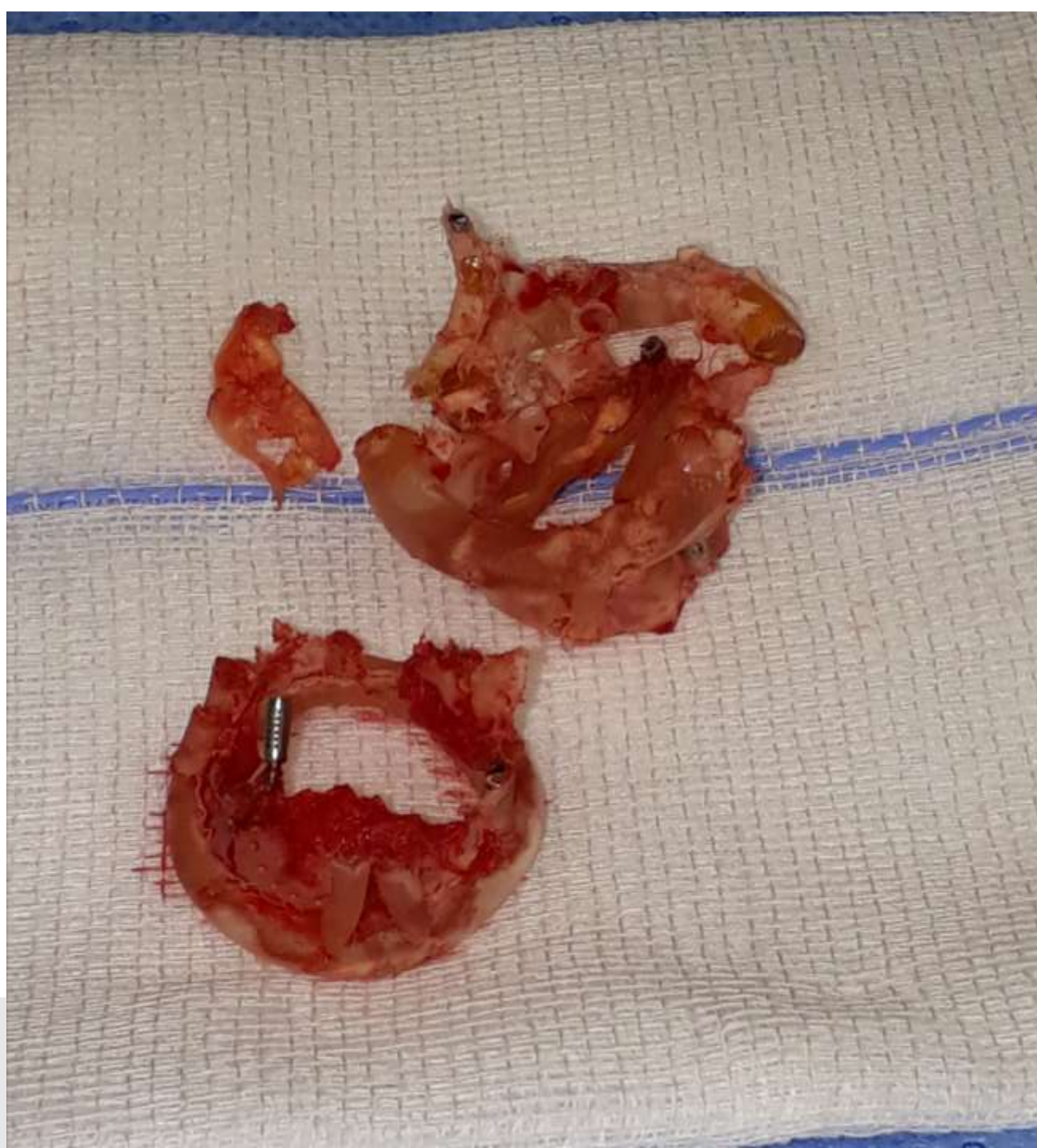
Patient was finally discharged three weeks later in good conditions.

- Stapel BWAS 42 Bilder
- LCA BWAS 1 Bild
- RCA BWAS 1 Bild
- Linke Beckenstrombahn 2 Bilder
- Rechte Beckenstromb... 2 Bilder
- 3D 37 Bilder
- Aorta cor 136 Bilder
- Aorta sag 136 Bilder
- Dose Report 2 Bilder



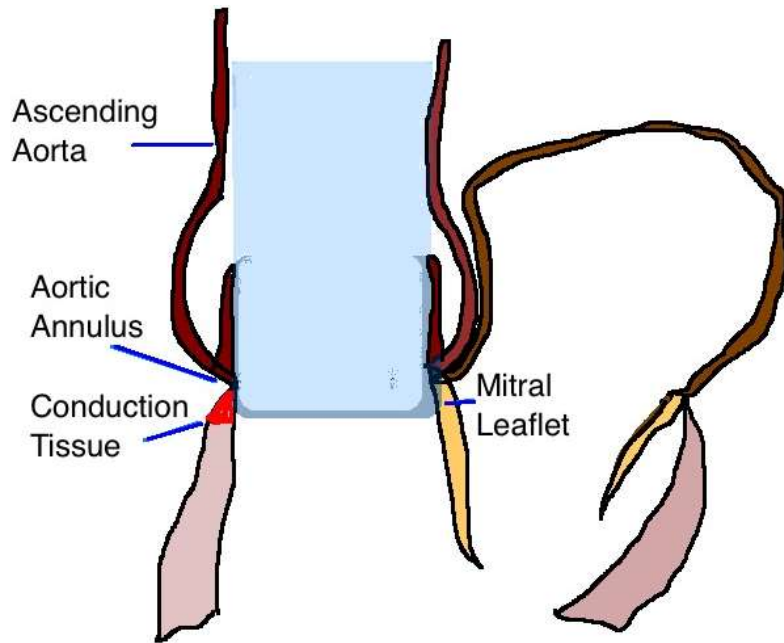






Other Important Considerations

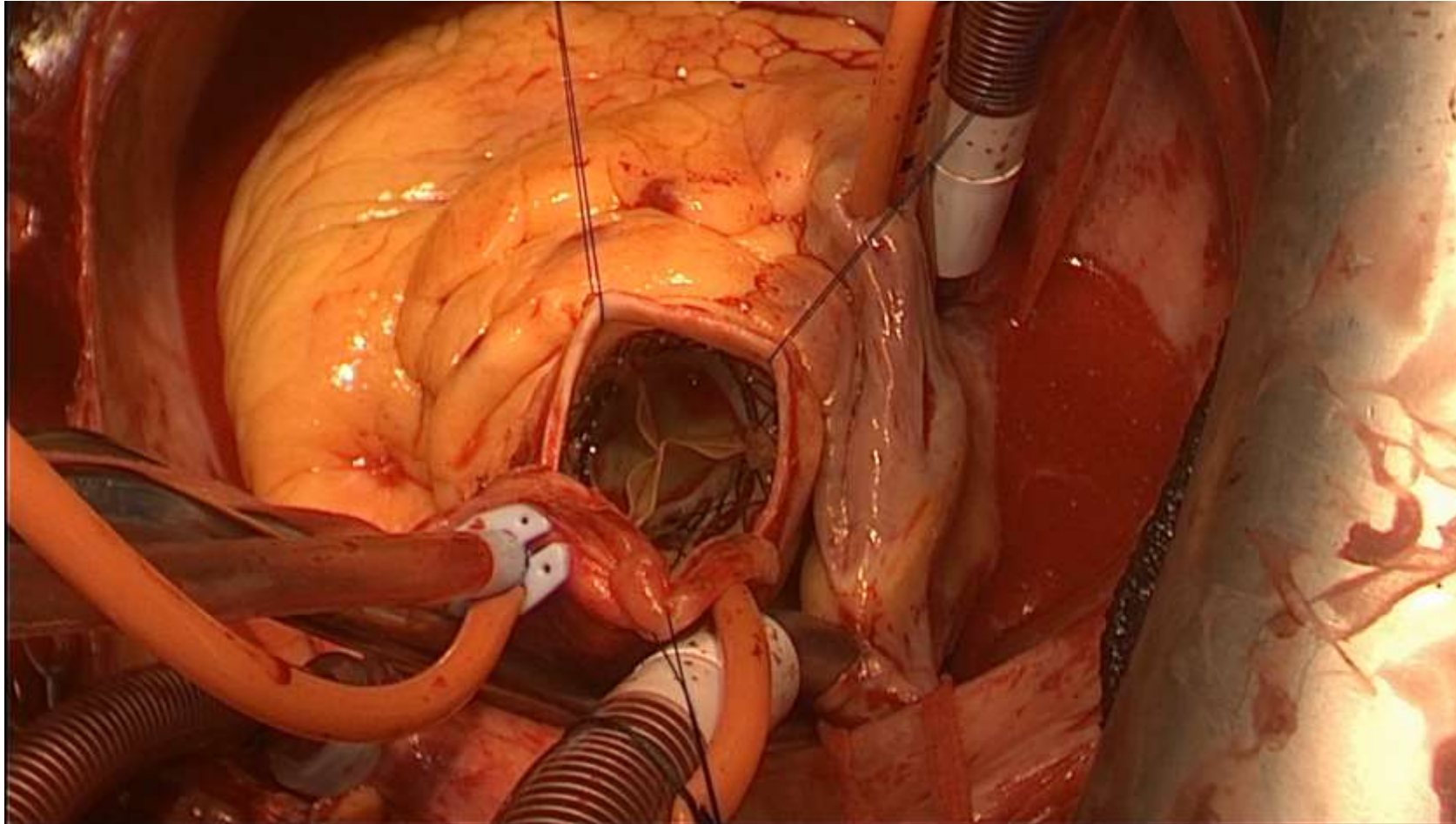
Taller profile valves



1. Ascending aorta?
2. Annular damage?
3. Leaflets ?
4. LVOT flare
5. Mitral leaflet proximity
6. Conduction tissue proximity
7. Clamping and Aortotomy**

Concern: Will Ascending and Root replacement needed?

Explantation of Evolut R after 2 years



38 Centers, 223 Patients

Canada

- University of Laval
- London Health Sciences Centre
- University Health Network
- Ottawa Heart Institute
- Montreal Heart Institute

USA

- Baylor, Scott & White Health
- University of Michigan
- Houston Methodist Hospital
- University of Pennsylvania
- MedStar Washington Hospital Center
- Valley Health, Winchester
- Columbia University Medical Center
- Intermountain Healthcare
- St. Francis Hospital
- Westchester Medical Center
- Vanderbilt University
- Yale University
- Emory University
- Brigham & Women's Hospital
- University of Texas Houston
- Medical College of Wisconsin
- Morton Plant Hospital, Florida

Austria

- Medical University of Vienna

France

- CHU Bordeaux

Germany

- LMU Klinikum, Munich
- German Heart Center, Munich
- University of Hamburg
- German Heart Center, Bad Neuheim

Italy

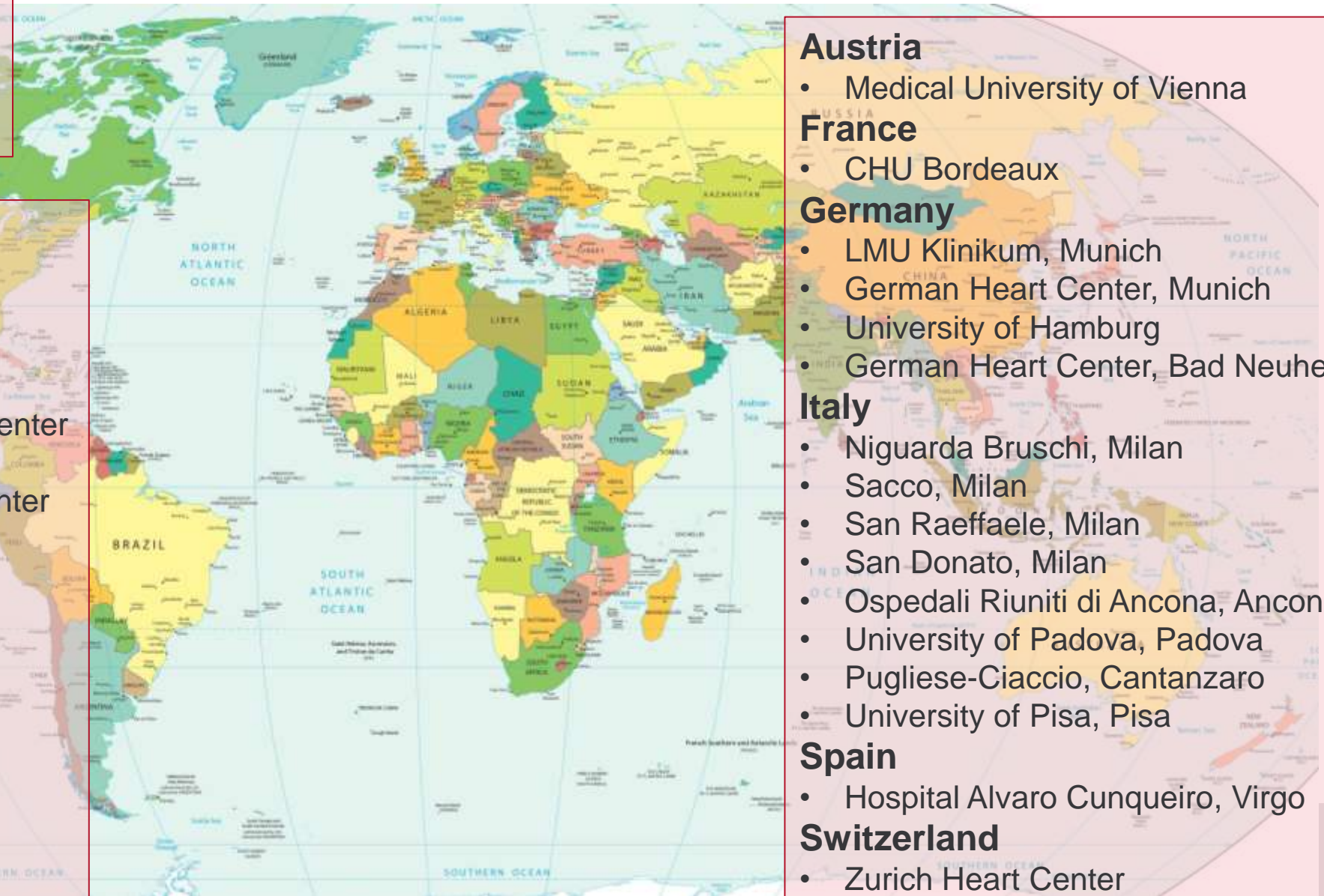
- Niguarda Bruschi, Milan
- Sacco, Milan
- San Raffaele, Milan
- San Donato, Milan
- Ospedali Riuniti di Ancona, Ancona
- University of Padova, Padova
- Pugliese-Ciaccio, Cantanzaro
- University of Pisa, Pisa

Spain

- Hospital Alvaro Cunqueiro, Virgo

Switzerland

- Zurich Heart Center



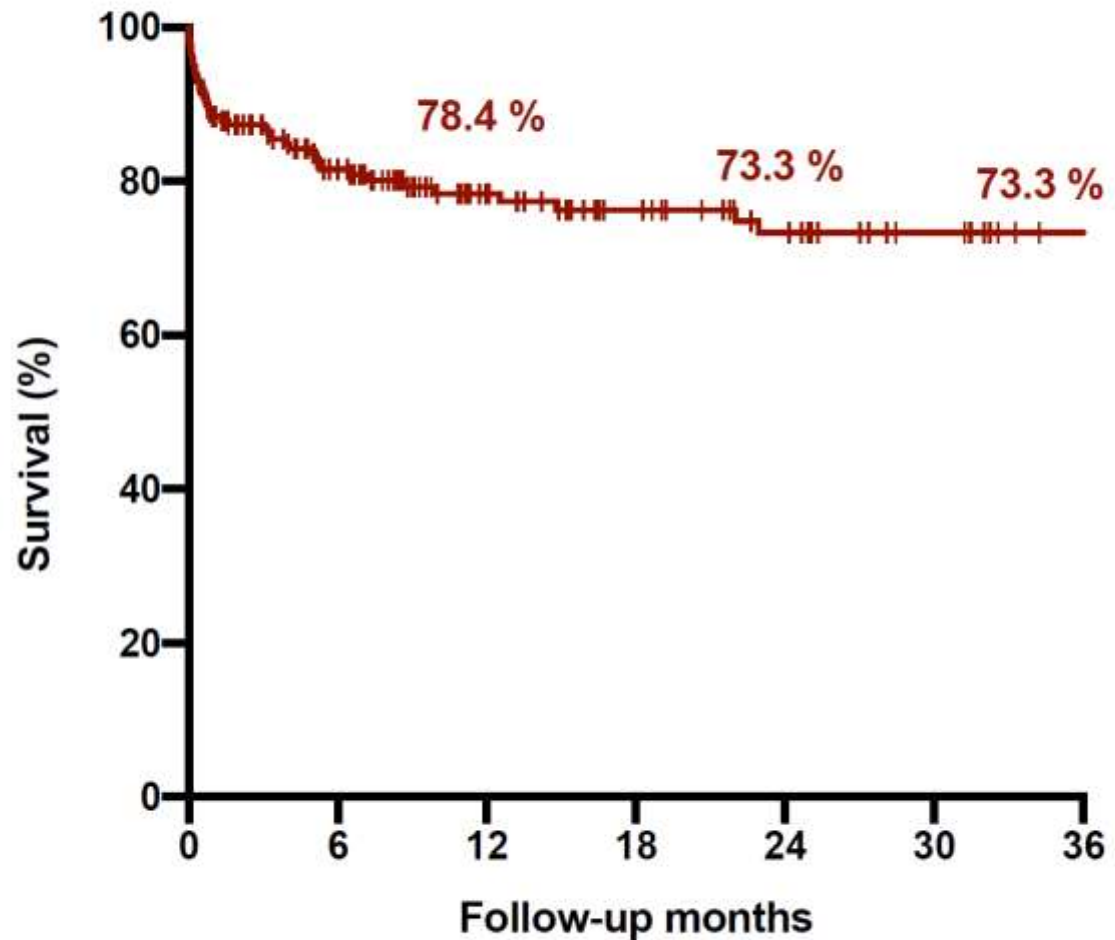
Key Findings

- Mean patient's age was 72+/-10 years
- At index TAVR, mean STS risk score was 4.8+/-4.7% (0.5-29.3%) and 28.0% of patients were deemed low surgical risk
- Unfavorable anatomy for redo-TAVR was present in 19.1% of cases
- Median time to surgical explant was 12.9 months (IQR: 5.1-35.3 months)
- Balloon-expandable (BE) and self-/mechanically expandable (S/ME) valves accounted for 53.4% and 46.6% respectively

Key Findings

- Indications for explant include:
 - Endocarditis 41.4%
 - Structural valve degeneration 23.6%
 - Paravalvular leak 15.9%
 - Prosthesis-patient mismatch 7.3%
 - Valve migration 3.2%
 - Other 8.7%
- Urgent/emergent cases comprised 47.9% of the cohort

Overall Survival after TAVR Explant



At Risk

218 119 80 62 50 41 33

Conclusion

- TAVR failure is going to be common
- Heart team discussion on Risks of TAVR in TAVR vs TAVR explant is critical
- Specific risks for TAVR in TAVR are
 - Coronary obstruction
 - Russian Doll effect
 - Leaflet overhang
- Specific Risks for TAVR explant are
 - Injury to aorta or mitral valve
 - Need for root replacement