

Structural Show and Tell

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Director, Structural Heart Program

Schroeder Chair in Structural and Valve Innovation

St. Michael's

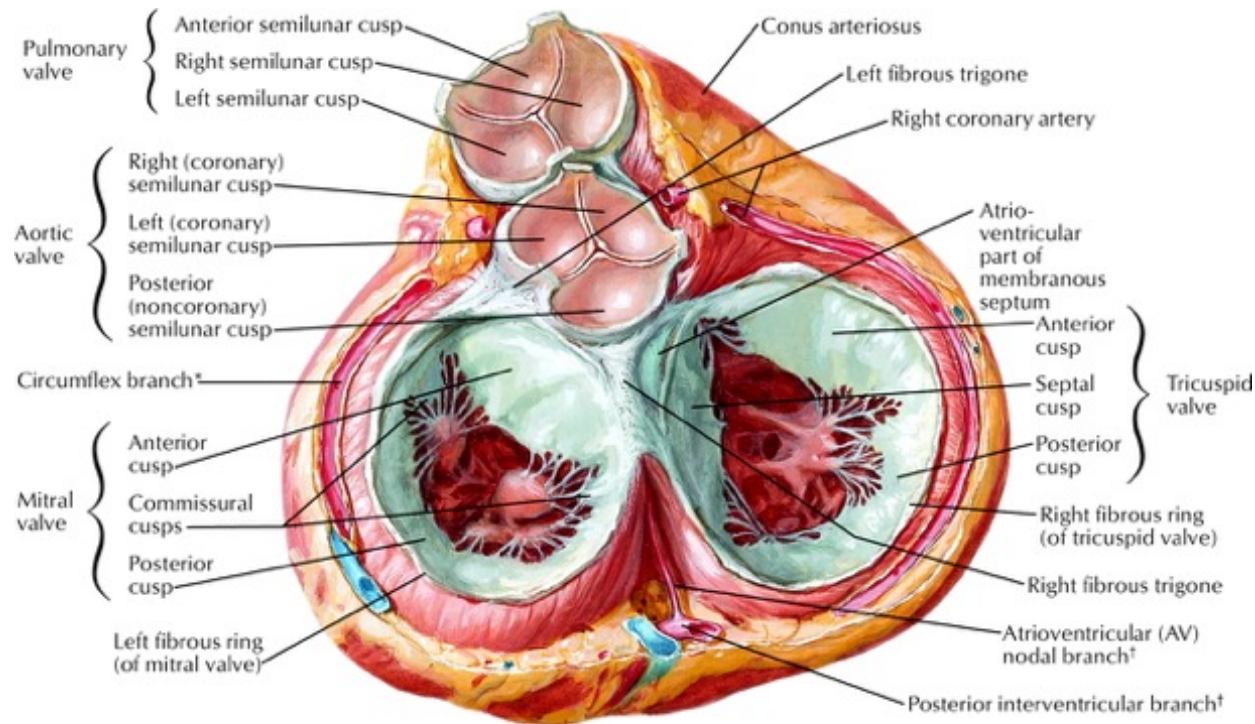
Inspired Care. Inspiring Science.



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TORONTO

Disclosures

- Consultant-Edwards, Abbott, Medtronic, Cardiovalve



**Heart in diastole:
viewed from base with atria removed**

Objectives

1. Discuss the recent advances in TAVI, mitral and tricuspid intervention
2. Review interesting cases

ORIGINAL ARTICLE

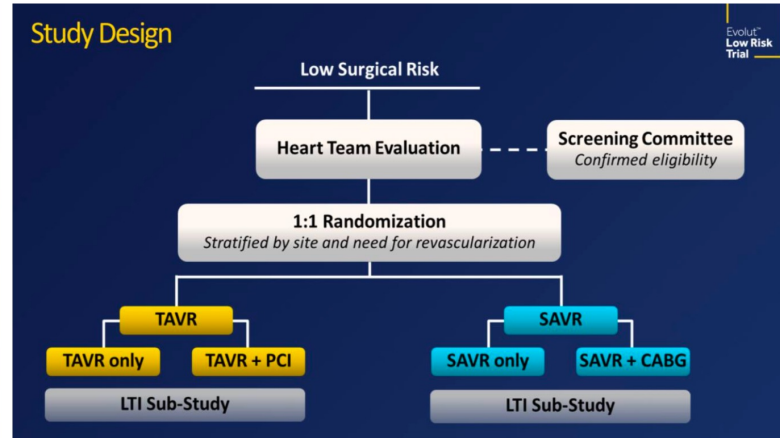
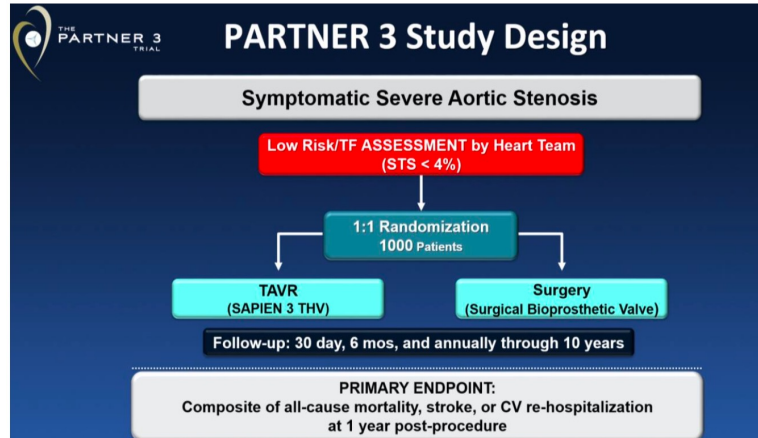
Transcatheter Aortic-Valve Replacement with a Balloon-Expandable Valve in Low-Risk Patients

M.J. Mack, M.B. Leon, V.H. Thourani, R. Makkar, S.K. Kodali, M. Russo, S.R. Kapadia, S.C. Malaisrie, D.J. Cohen, P. Pibarot, J. Leipsic, R.T. Hahn, P. Blanke, M.R. Williams, J.M. McCabe, D.L. Brown, V. Babaliaros, S. Goldman, W.Y. Szeto, P. Genereux, A. Pershad, S.J. Pocock, M.C. Alu, J.G. Webb, and C.R. Smith, for the PARTNER 3 Investigators*

ORIGINAL ARTICLE

Transcatheter Aortic-Valve Replacement with a Self-Expanding Valve in Low-Risk Patients

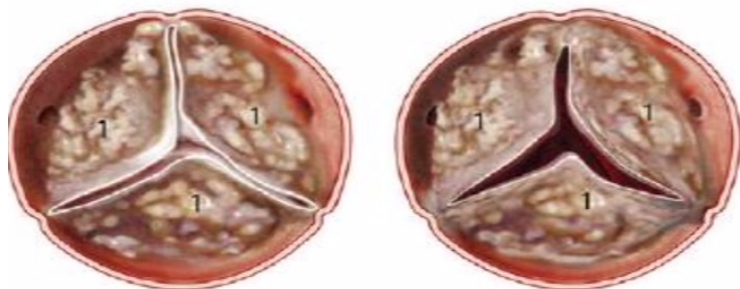
Jeffrey J. Popma, M.D., G. Michael Deeb, M.D., Steven J. Yakubov, M.D., Mubashir Mumtaz, M.D., Hernal Gada, M.D., Daniel O'Hair, M.D., Tarvir Bajwa, M.D., John C. Heiser, M.D., William Merhi, D.O., Neal S. Kleiman, M.D., Judah Askew, M.D., Paul Sorajja, M.D., Joshua Rovin, M.D., Stanley J. Chetcuti, M.D., David H. Adams, M.D., Paul S. Teirstein, M.D., George L. Zorn III, M.D., John K. Forrest, M.D., Didier Tchétché, M.D., Jon Resar, M.D., Antony Walton, M.D., Nicolo Piazza, M.D., Ph.D., Basel Ramlawi, M.D., Newell Robinson, M.D., George Petrossian, M.D., Thomas G. Gleason, M.D., Jae K. Oh, M.D., Michael J. Boulware, Ph.D., Hongyan Qiao, Ph.D., Andrew S. Mugglin, Ph.D., and Michael J. Reardon, M.D., for the Evolut Low Risk Trial Investigators*



Morphological Features of Aortic Valve Stenosis or Regurgitation

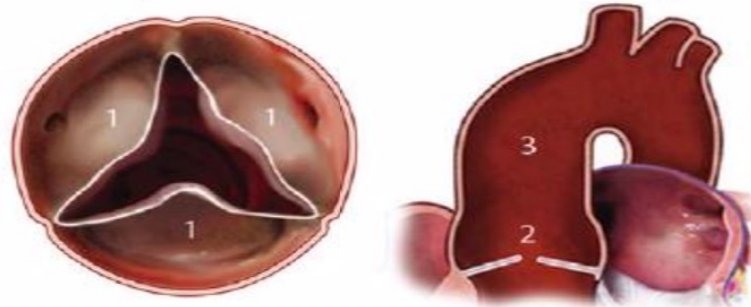
Calcific Aortic Valve Stenosis

1- Nodular calcific deposits on aortic side



Aortic Valve Regurgitation

- 1- Minimal or absent cusp calcification
- 2- Dilated aortic root
- 3- Frequent coexistence of dilated ascending aorta



Technical Challenges of TAVR in Aortic Valve Regurgitation

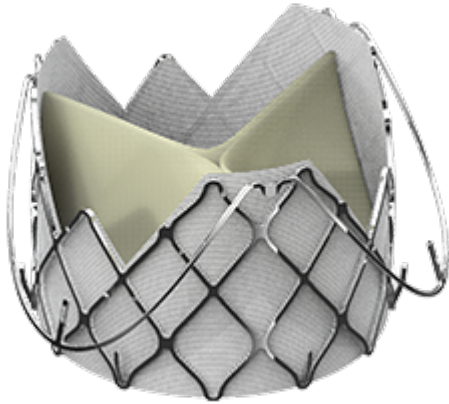
Suboptimal Fluoroscopic Visualization of the Native Valve

Insufficient Anchoring and Sealing of the Transcatheter Device

Risk of Misplacement and Migration of the Device

Risk of Residual Valvular Regurgitation

Dedicated TAVIs for AR



J valve

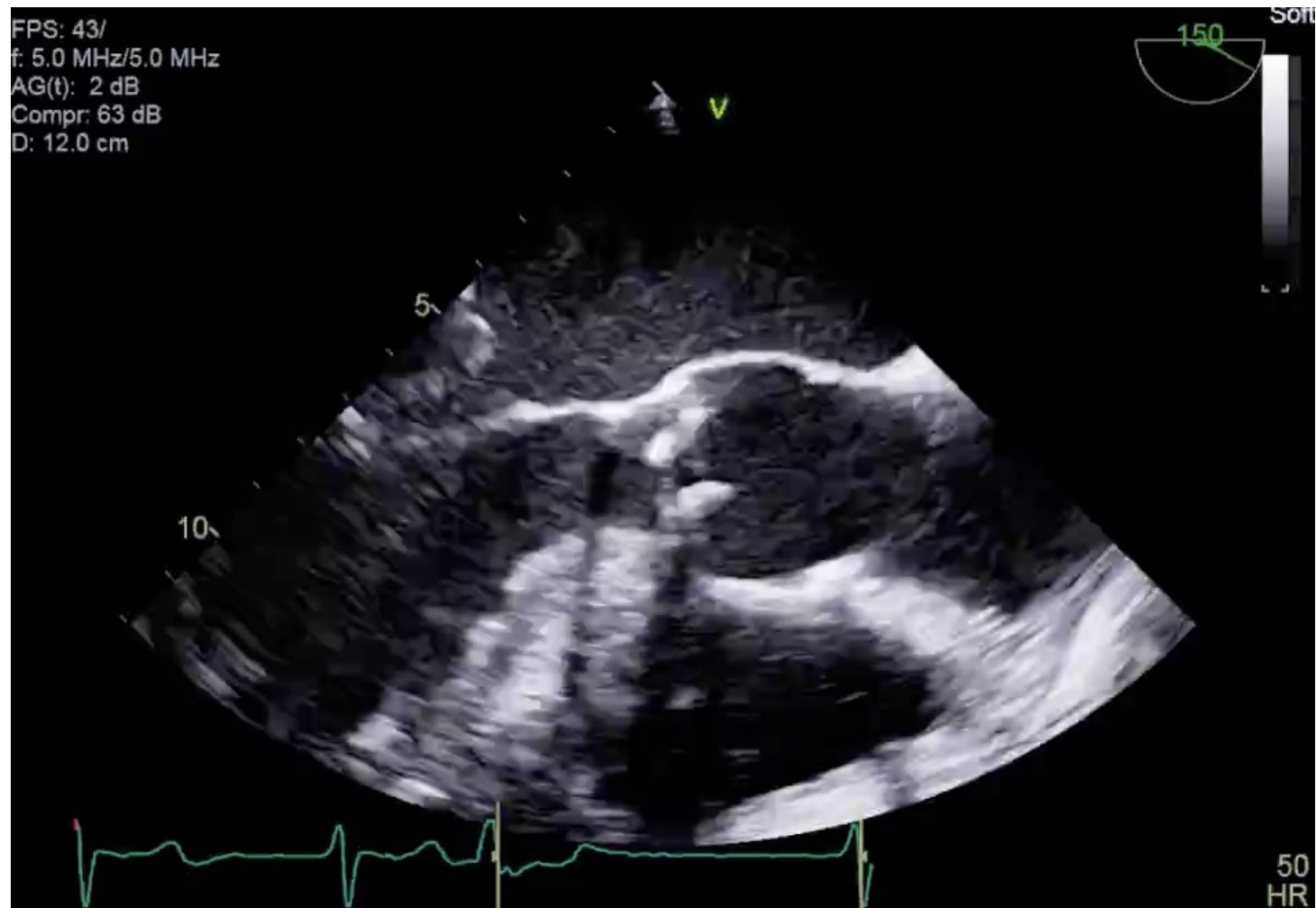


Jena Trilogy valve

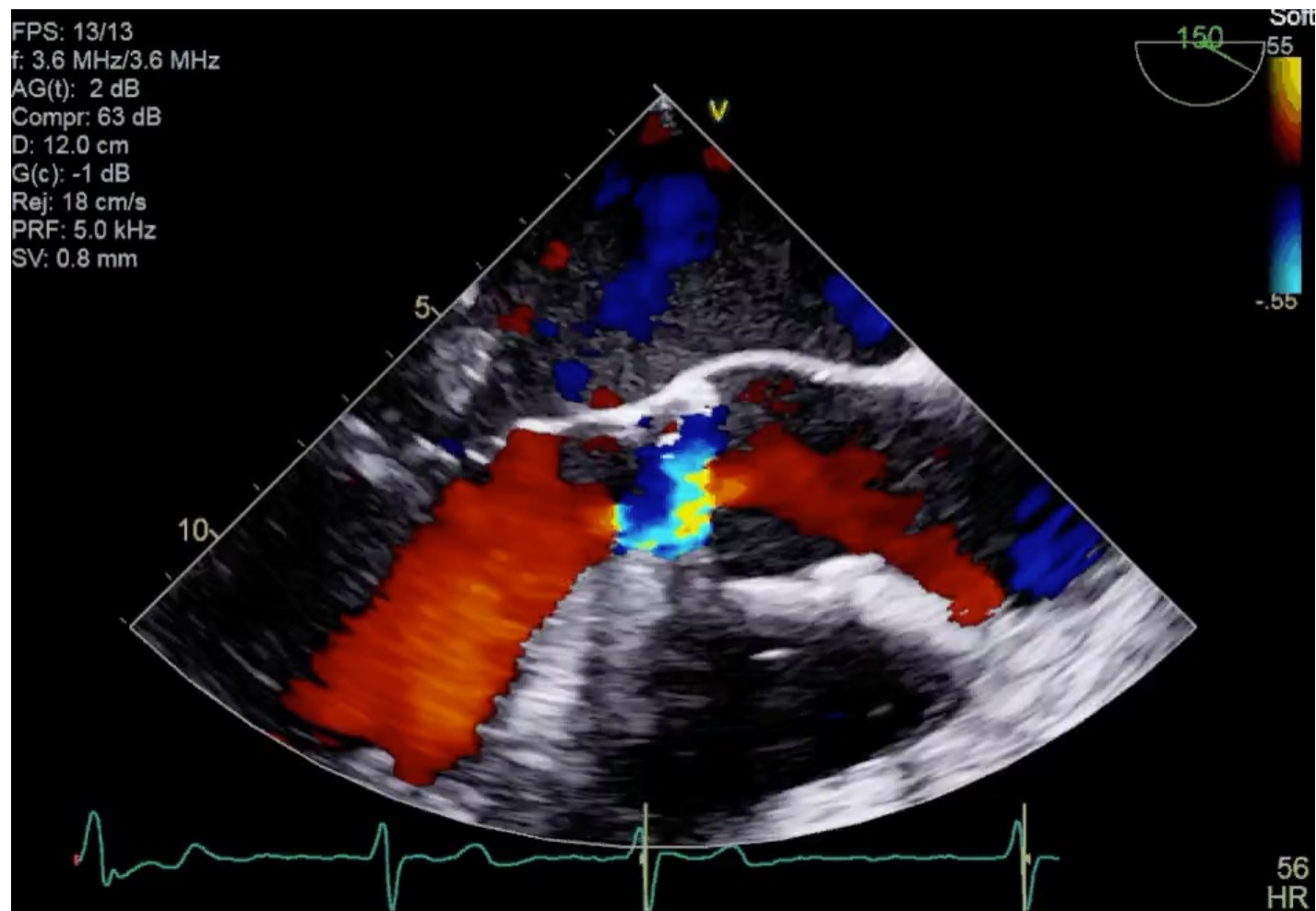
Case

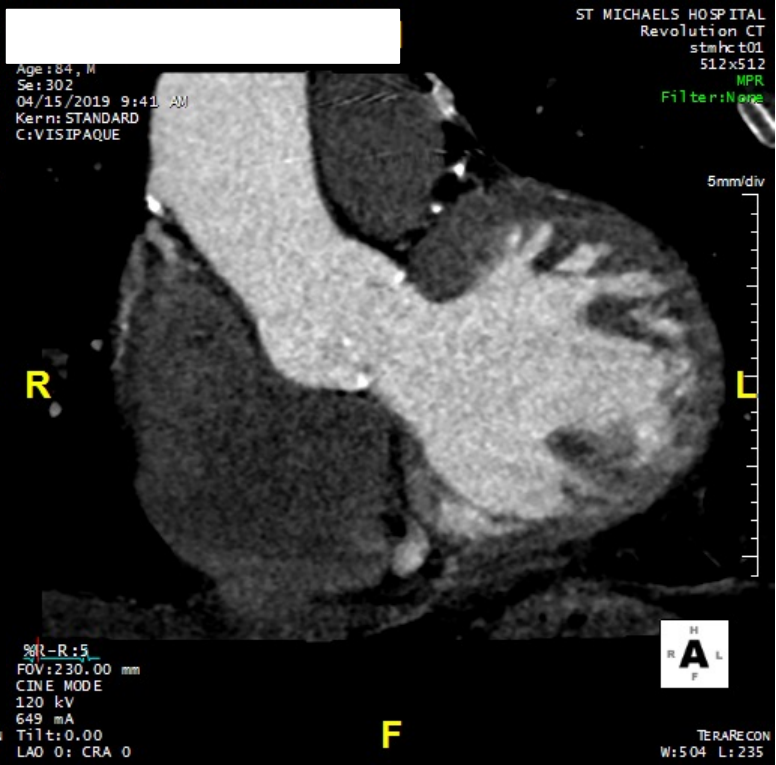
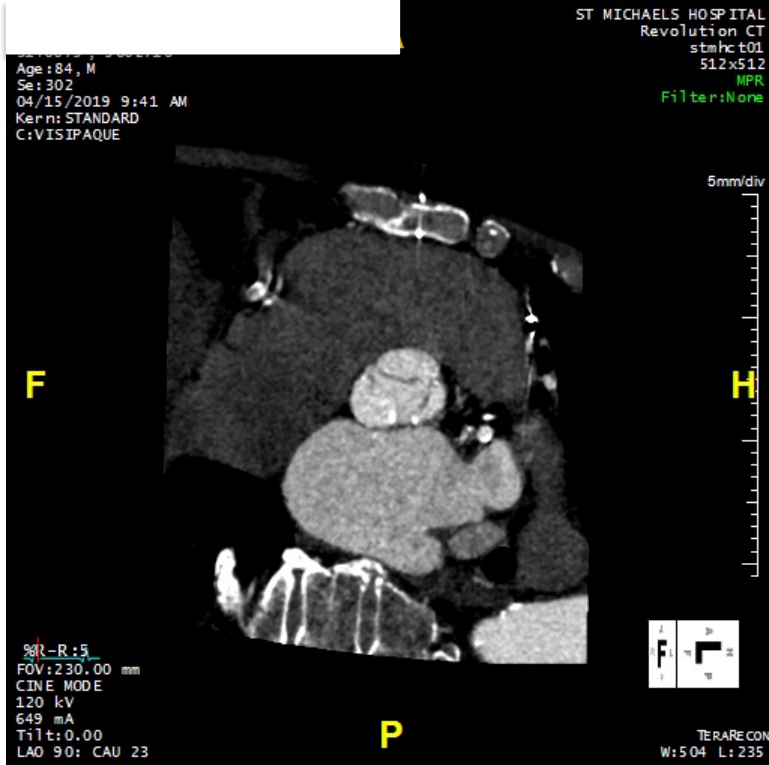
- 84M progressive NYHA 3 dyspnea, HF hospitalization
- CABG 1998 (patent LIMA-LAD, SVG to D1-OM-RCA) PCI 2011
- AF, DM, HTN, CKD
- EF 50%, severe AR, severe MR, mod TR, PA=80
- STS score 11%

FPS: 43/
f: 5.0 MHz/5.0 MHz
AG(t): 2 dB
Compr: 63 dB
D: 12.0 cm

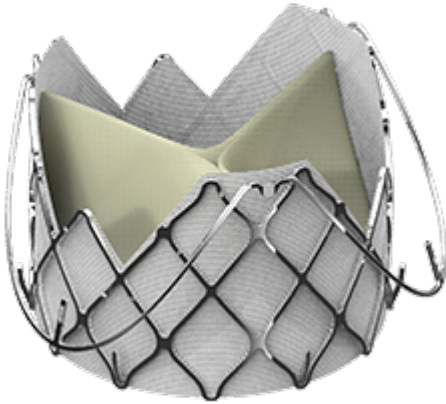


FPS: 13/13
f: 3.6 MHz/3.6 MHz
AG(t): 2 dB
Compr: 63 dB
D: 12.0 cm
G(c): -1 dB
Rej: 18 cm/s
PRF: 5.0 kHz
SV: 0.8 mm





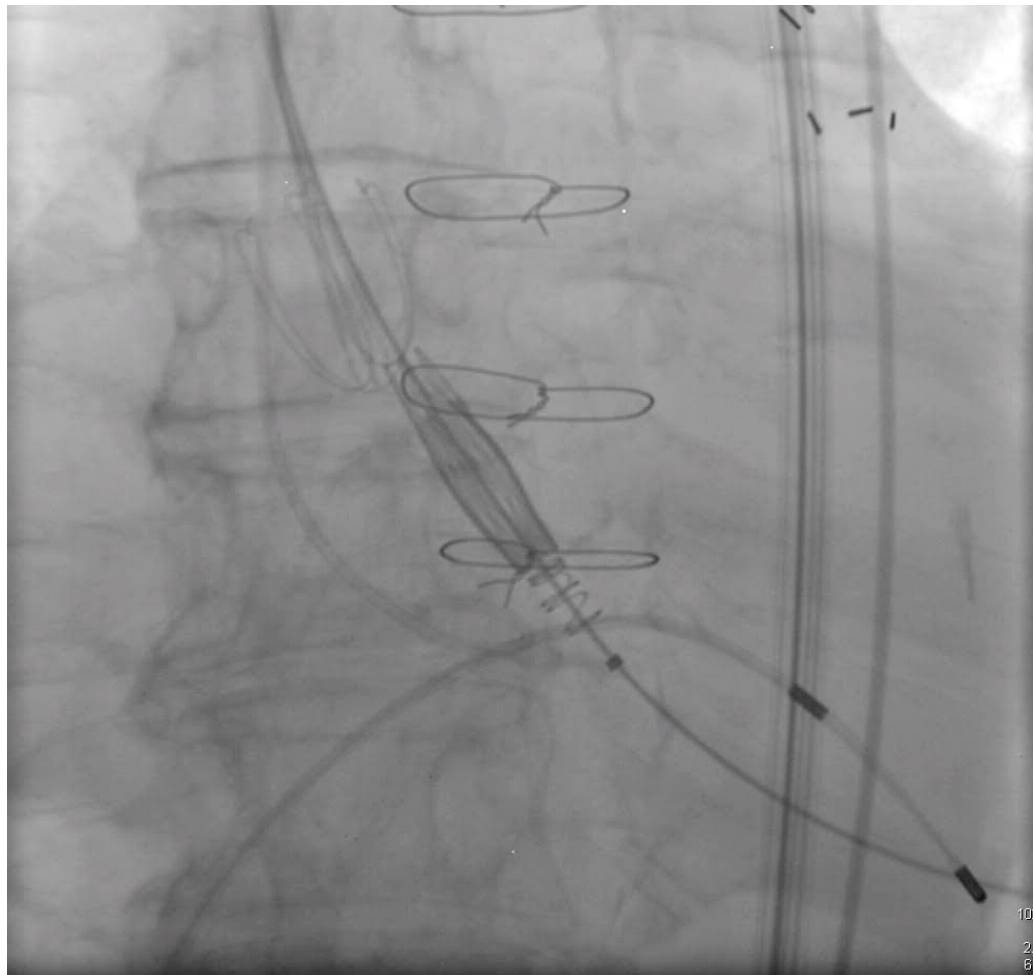
J Valve

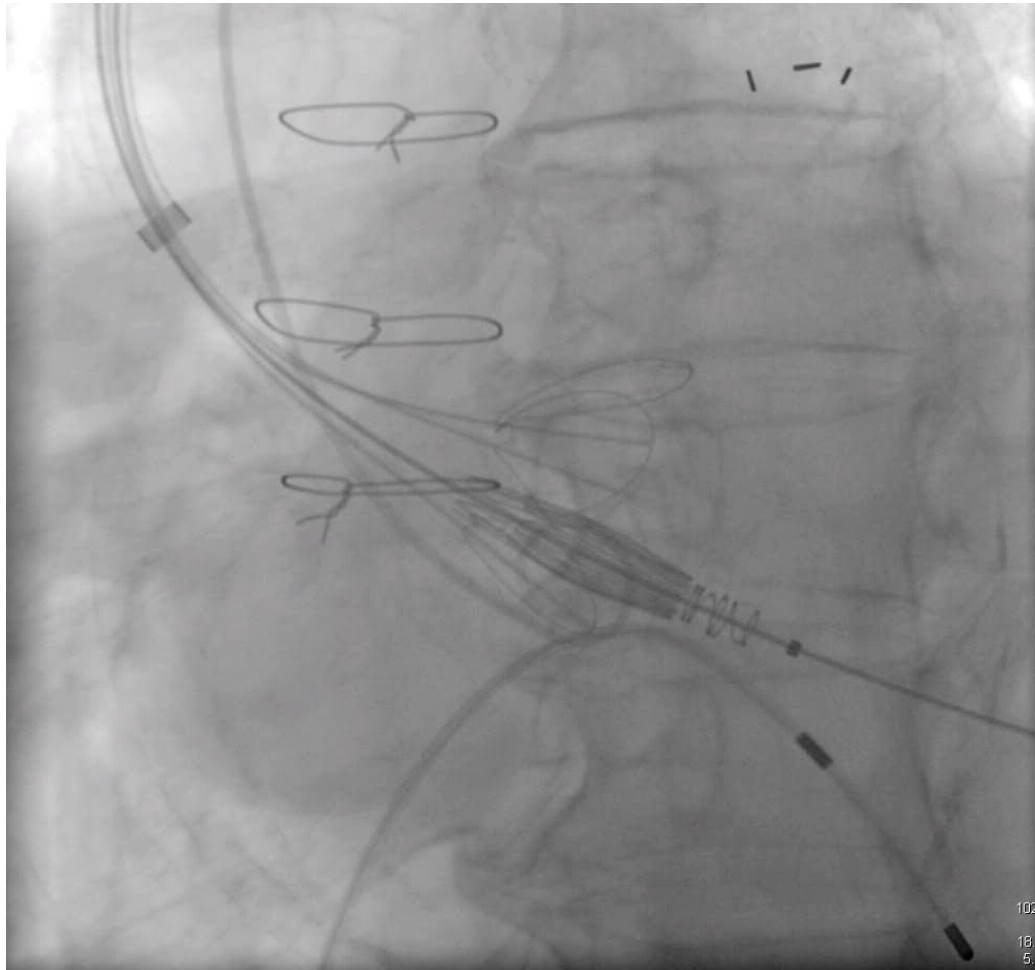


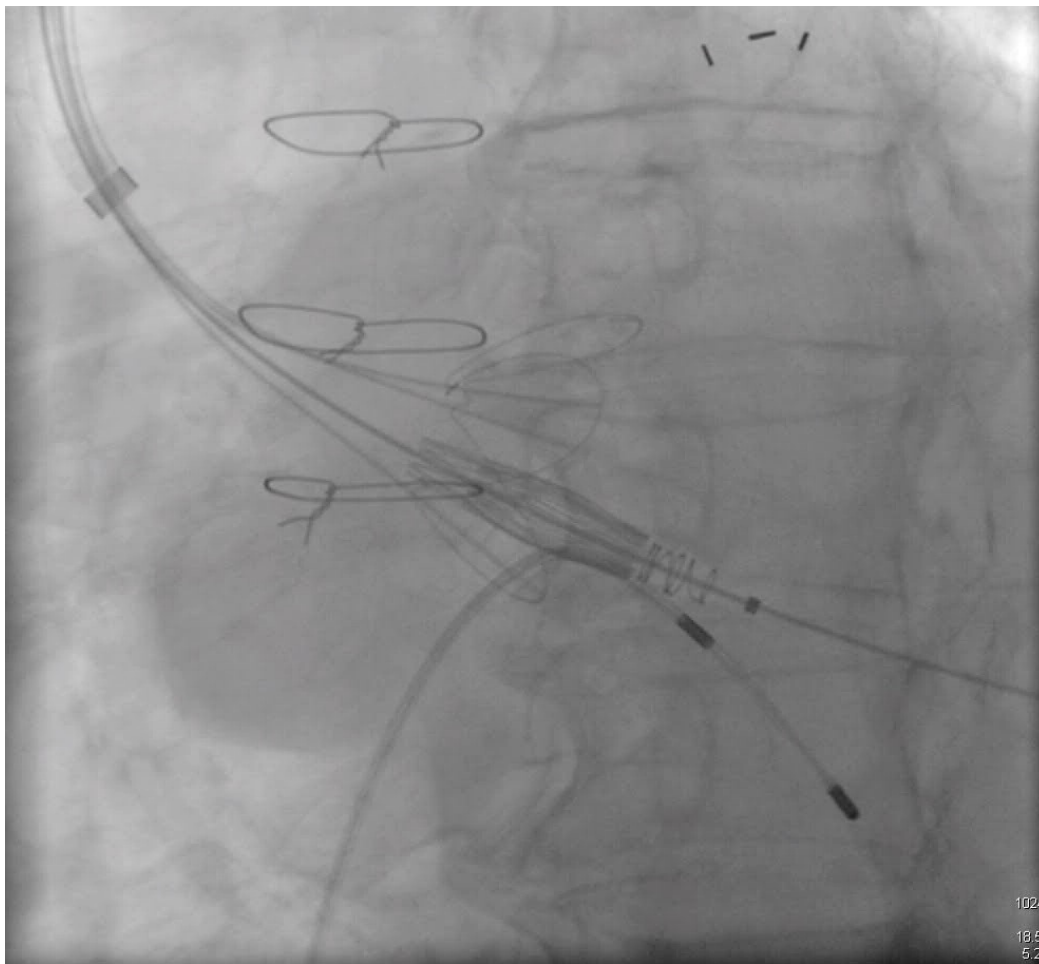
Nitinol self expandable valve, porcine leaflet valve. Orients itself by anchoring in the native sinuses with 3 anchor rings and grasping of the native leaflets



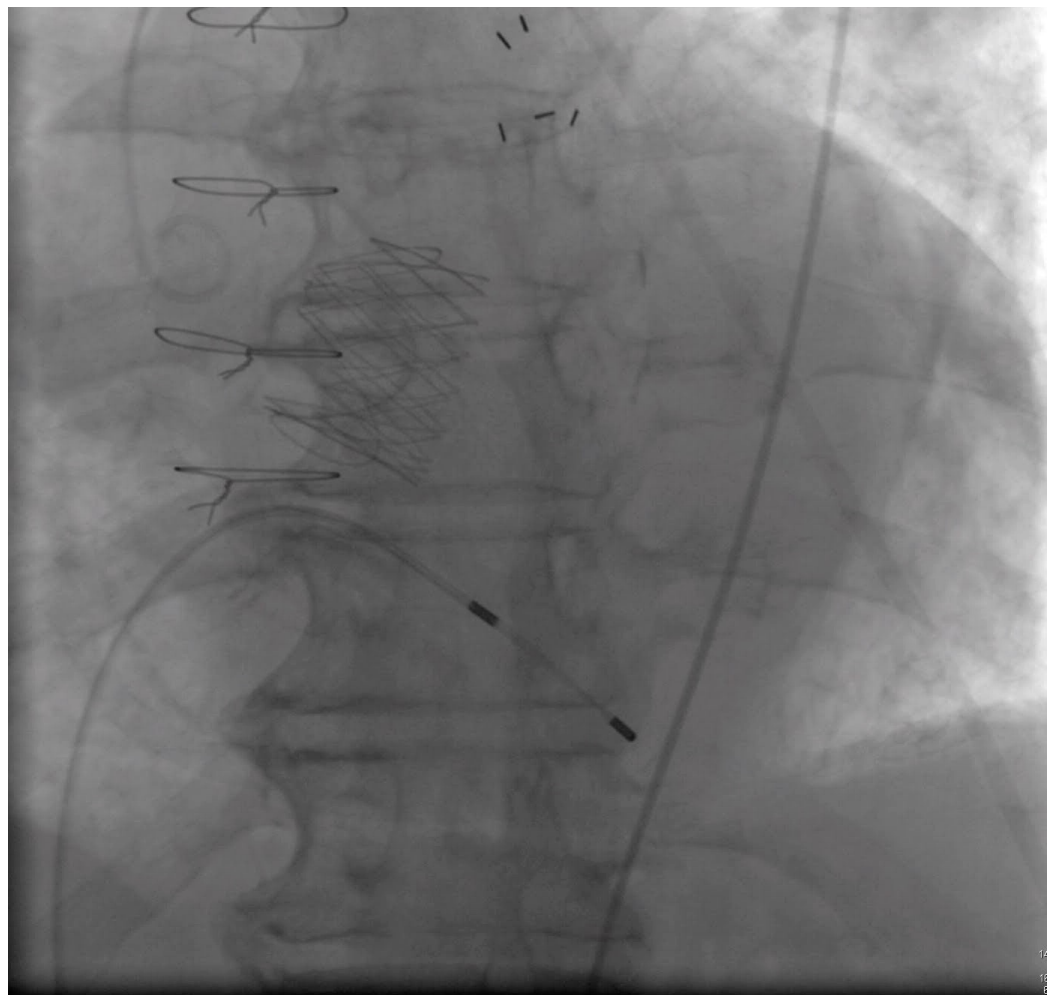
18F Transfemoral system
Treats up to 34mm annulus

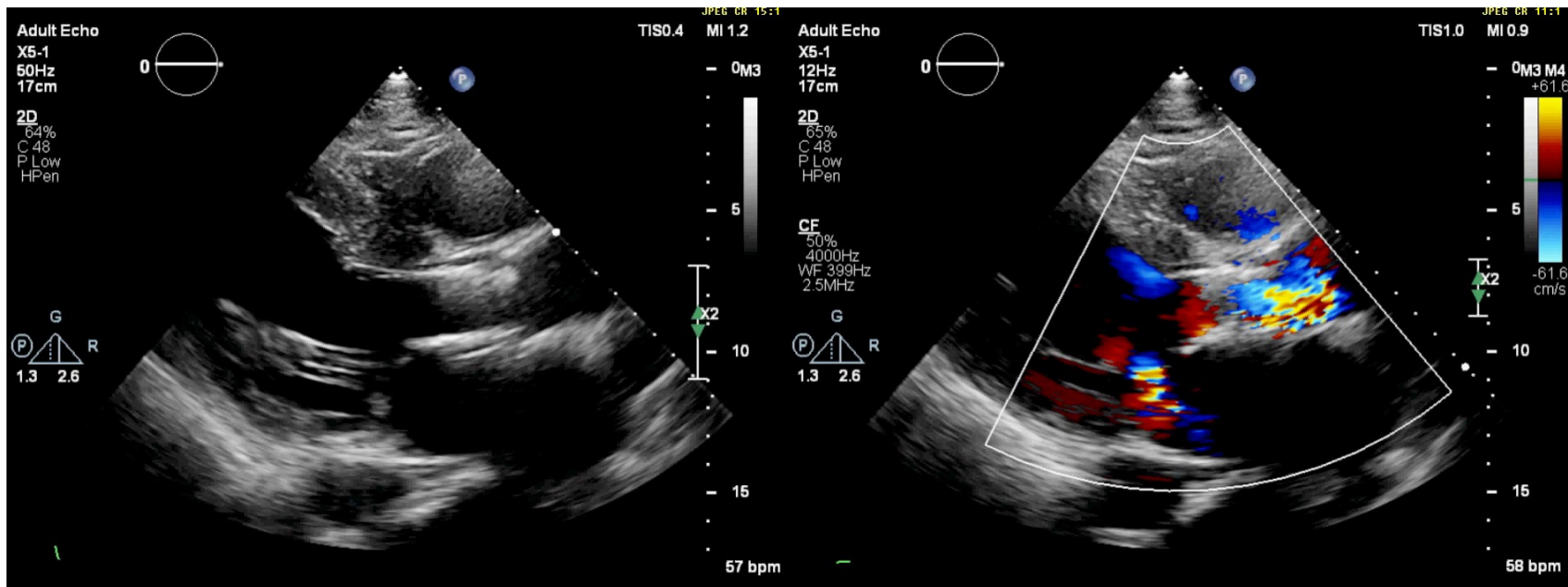




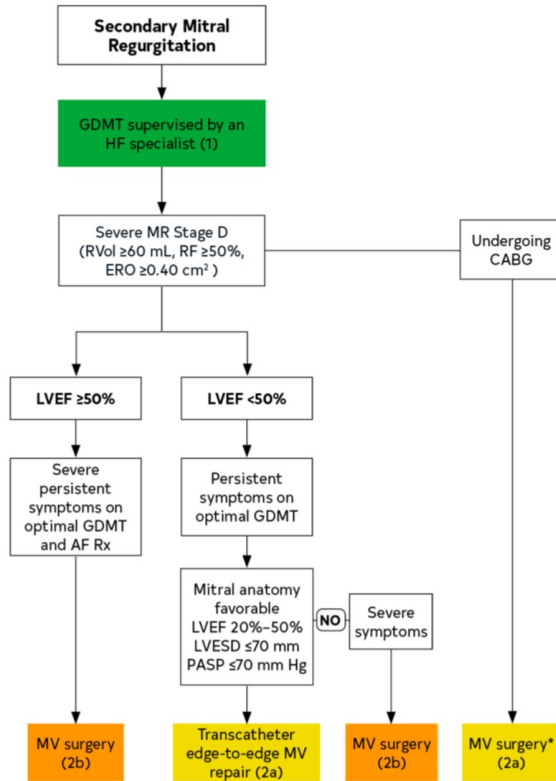


1024
18.5
5.2

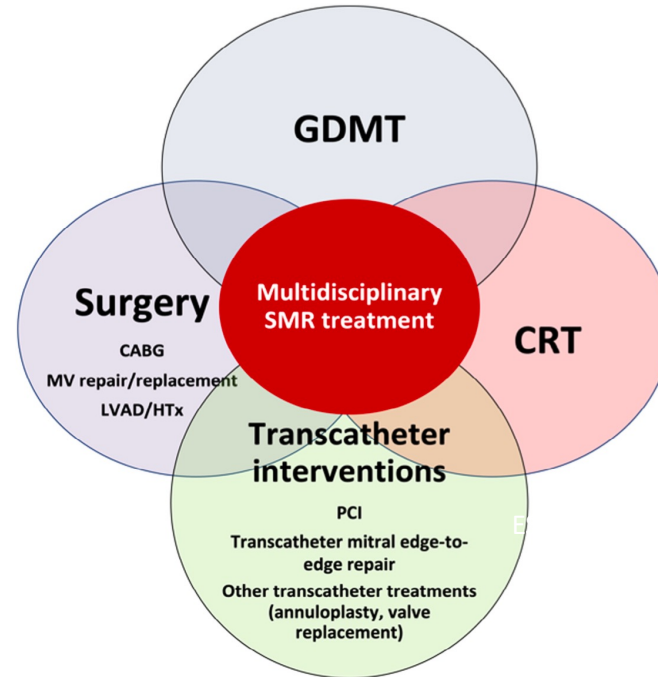




TEER for MR

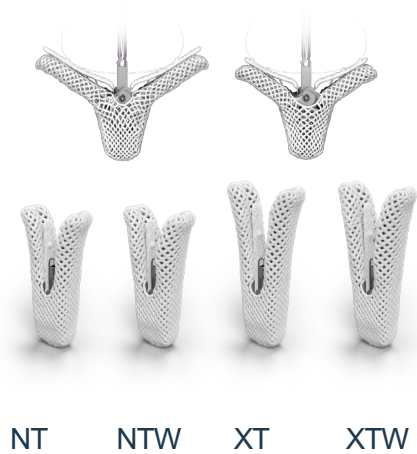


AHA/ACC 2020 Guidelines



ESC 2021

TEER Toolbox

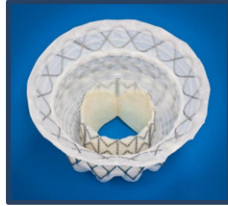


MitraClip G4

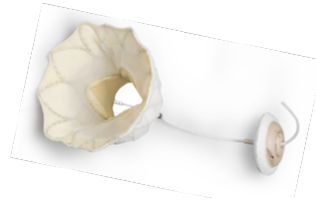


TMVRs in Trials

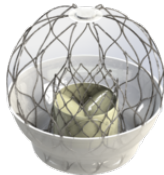
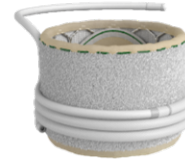
**Intrepid
(Medtronic)**



Tendyne (Abbott)



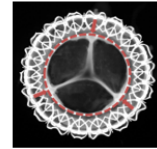
M3 (Edwards)



AltaValve



CardioValve



Cephea



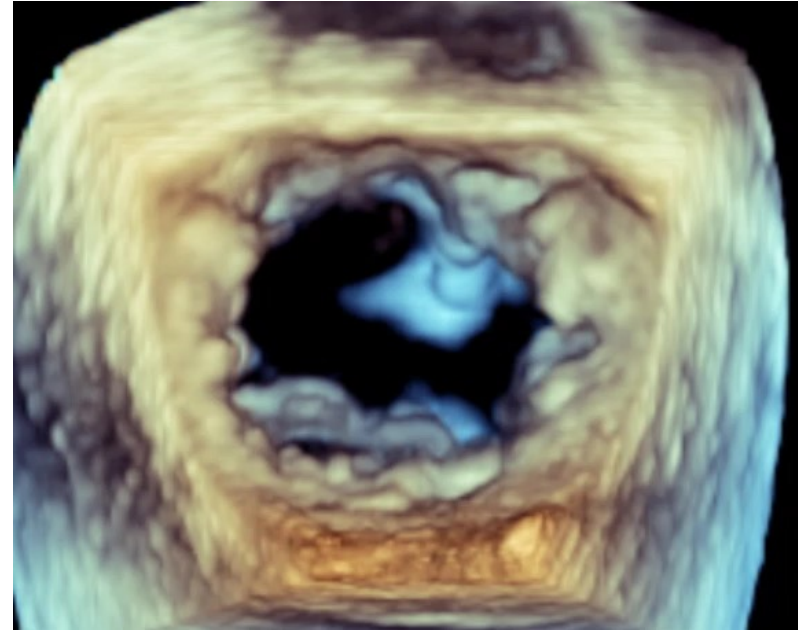
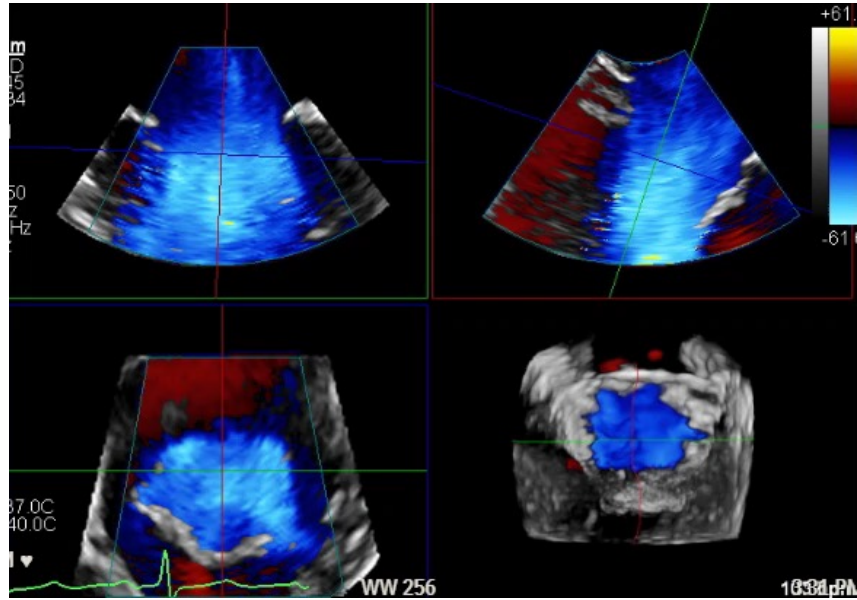
Highlife

Case 2

83 year old female with symptomatic severe MR

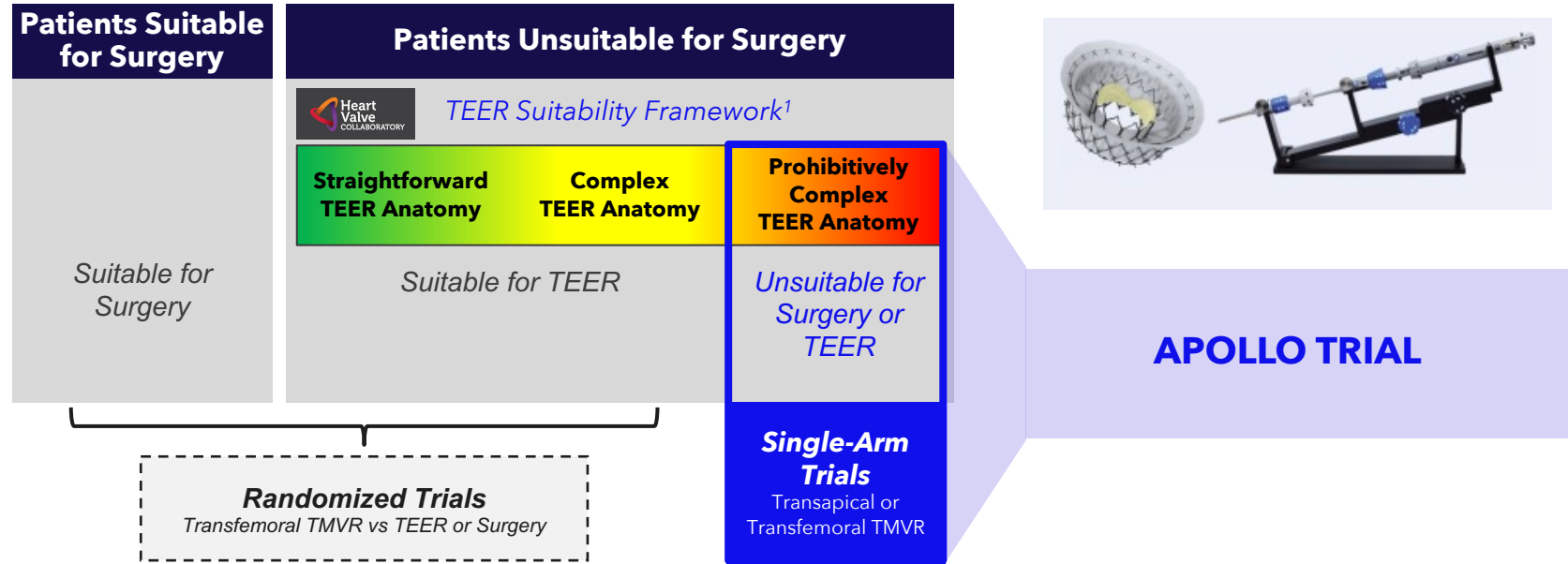
- NYHA III symptoms, one year history of peripheral edema, orthopnea, PND
- Severe primary MR with P3 prolapse and MAC on initial workup
- DM, HTN
- EF 45%, normal coronaries

TEE – baseline



APOLLO Trial

Investigating TMVR System for Patients Unsuitable for Authorized Transcatheter Repair or Surgical Mitral Valve Intervention

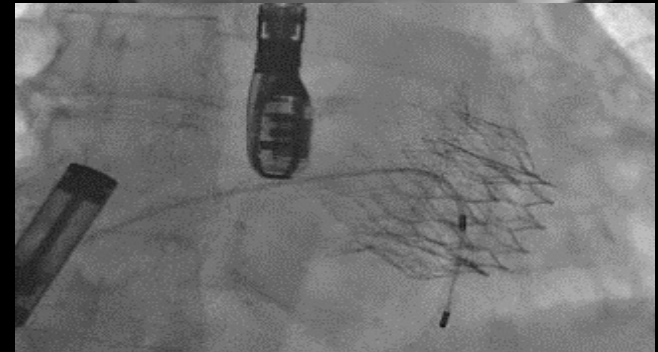
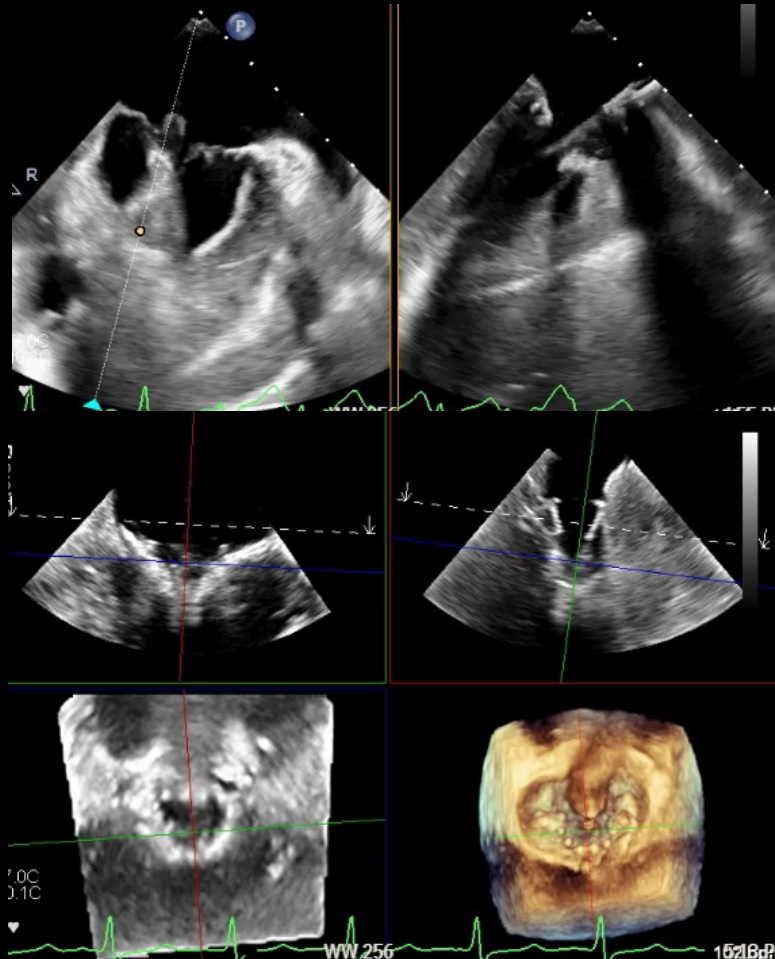


© Scott et al. (2021); Consensus Document on Non-Suitability for Transcatheter Mitral Valve Repair by Edge-to-Edge Therapy, Structural Heart, DOI: 10.1080/24748706.2021.1902595

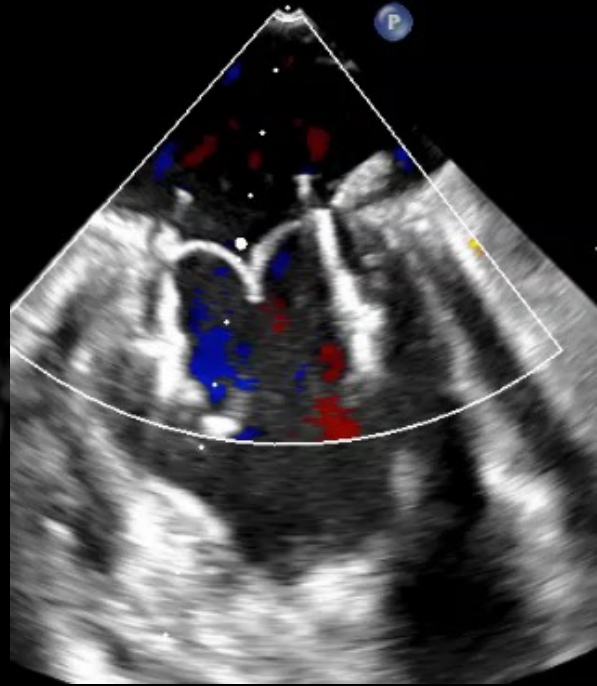
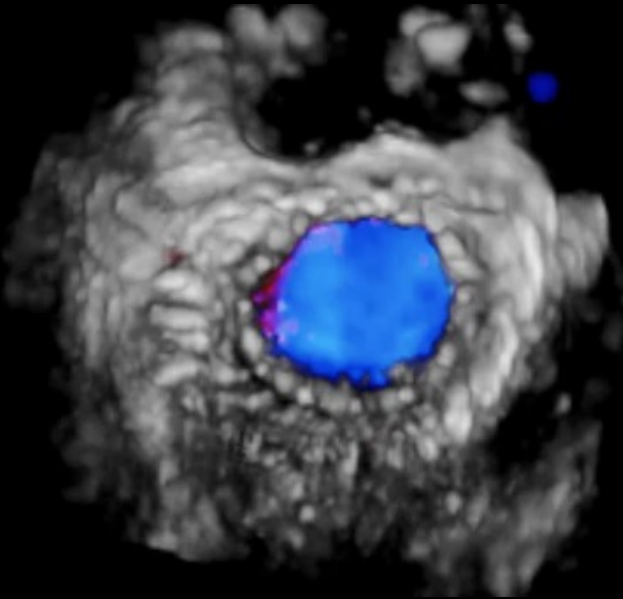
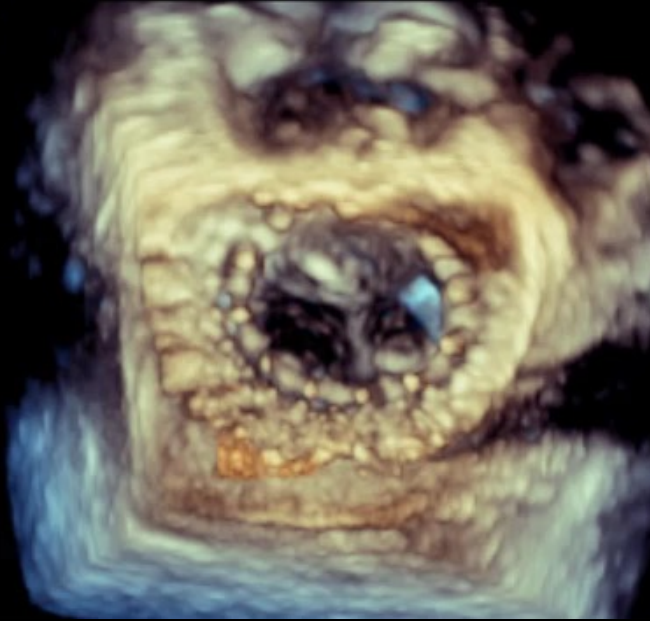
CAUTION: Investigational Device. To be Used by Qualified Investigators Only. Exclusively for Clinical Investigations.

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Inspired Care. Inspiring Science.

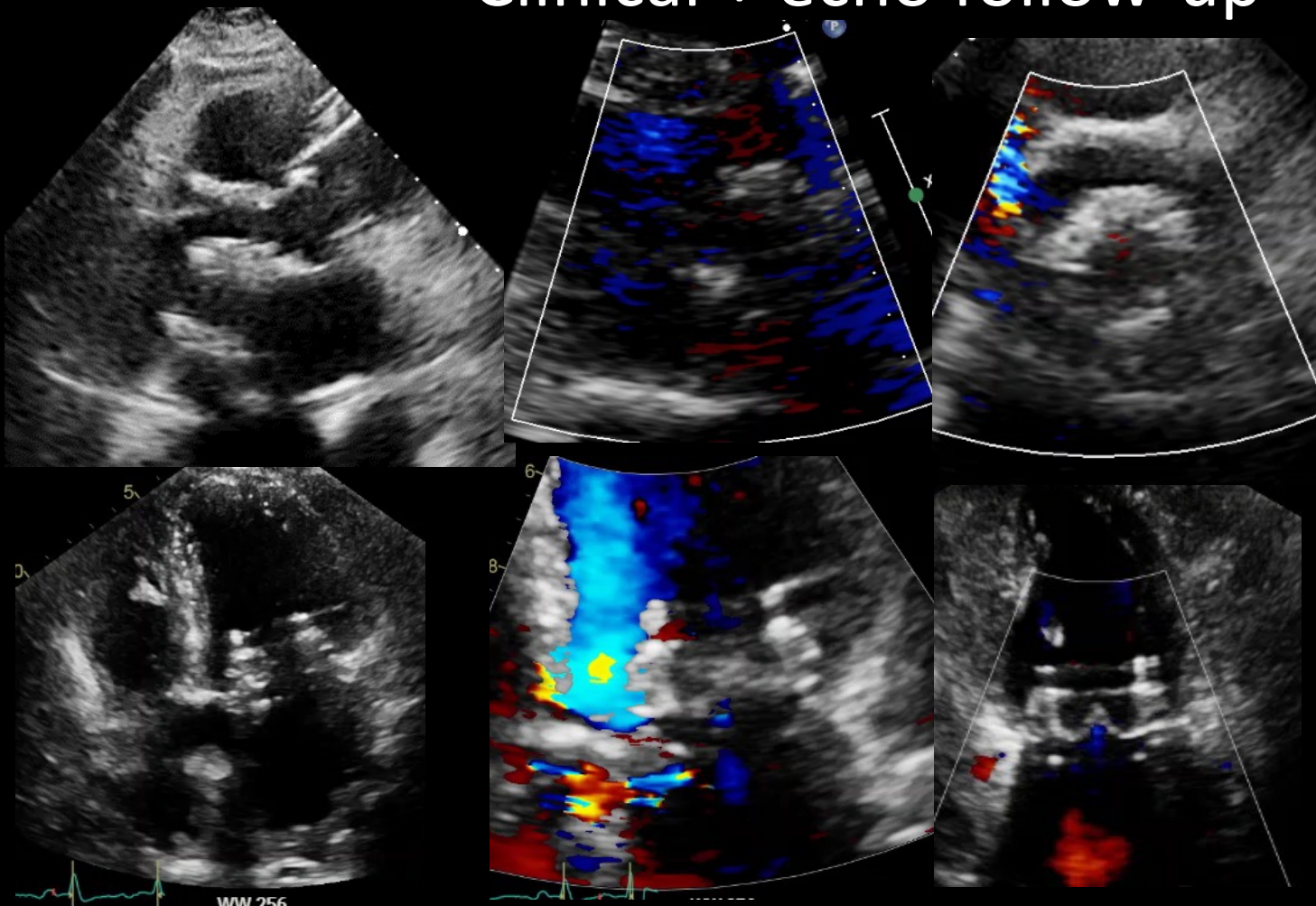
Procedural imaging



Procedural imaging



Clinical + echo follow-up

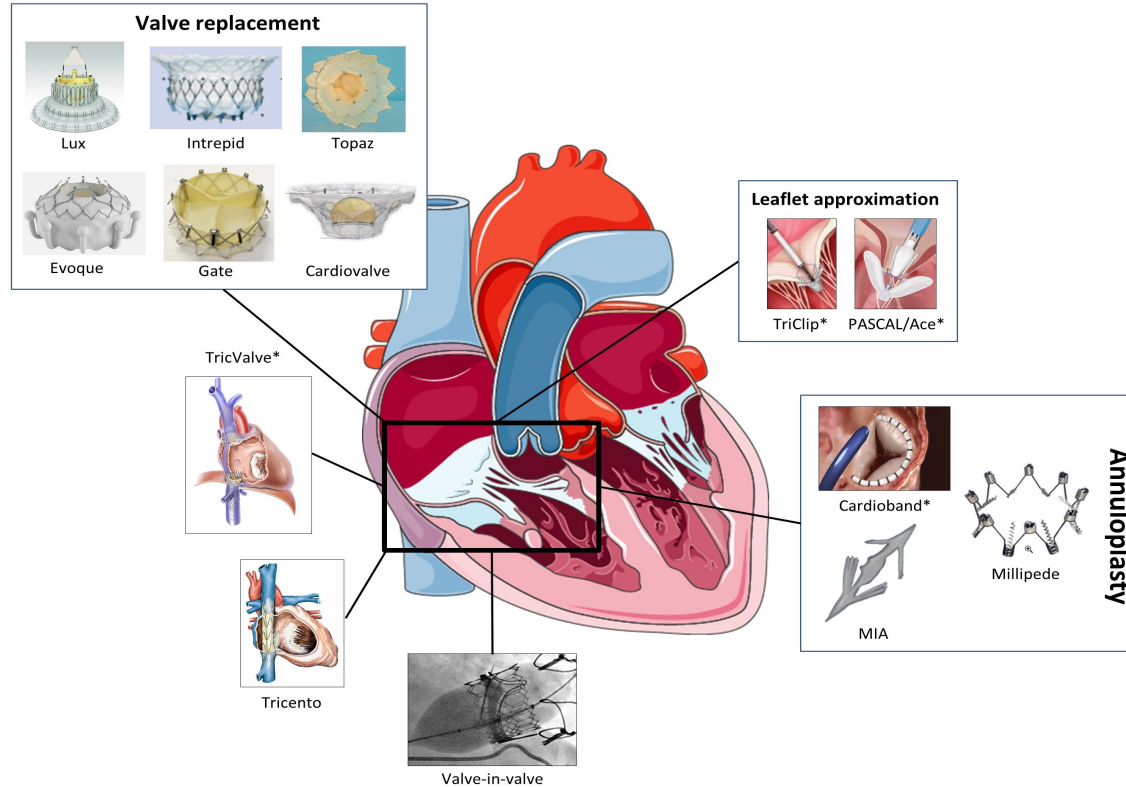


Measurements

LVEDD	55 mm
LVESD	53 mm
LVEF	42%

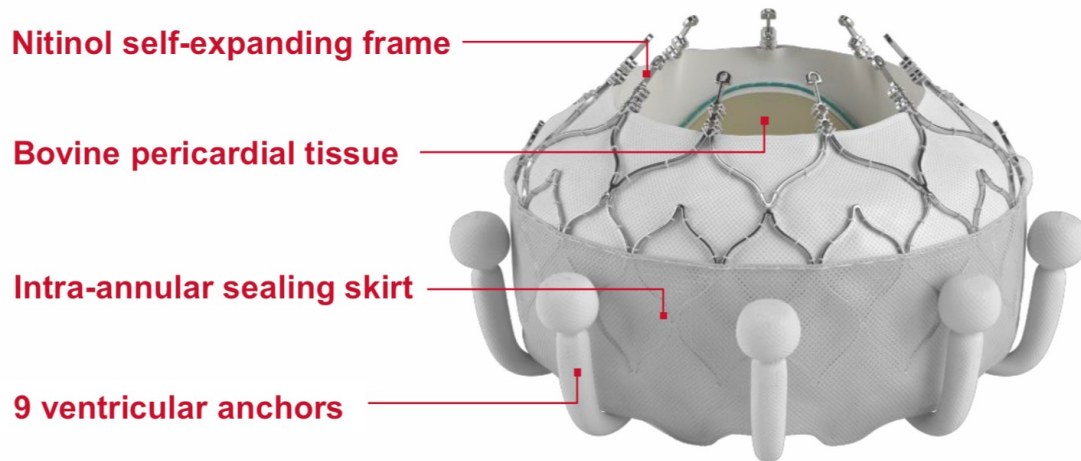
- Improved to NYHA II at 1-month follow-up, gradual uptitration of GDMT

Current TTVI Device Landscape

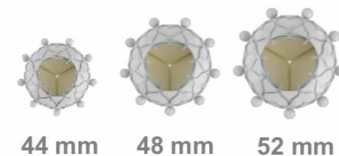


EVOQUE Transcatheter Tricuspid Valve Replacement System

EVOQUE Valve



Available in three sizes



EVOQUE Delivery System

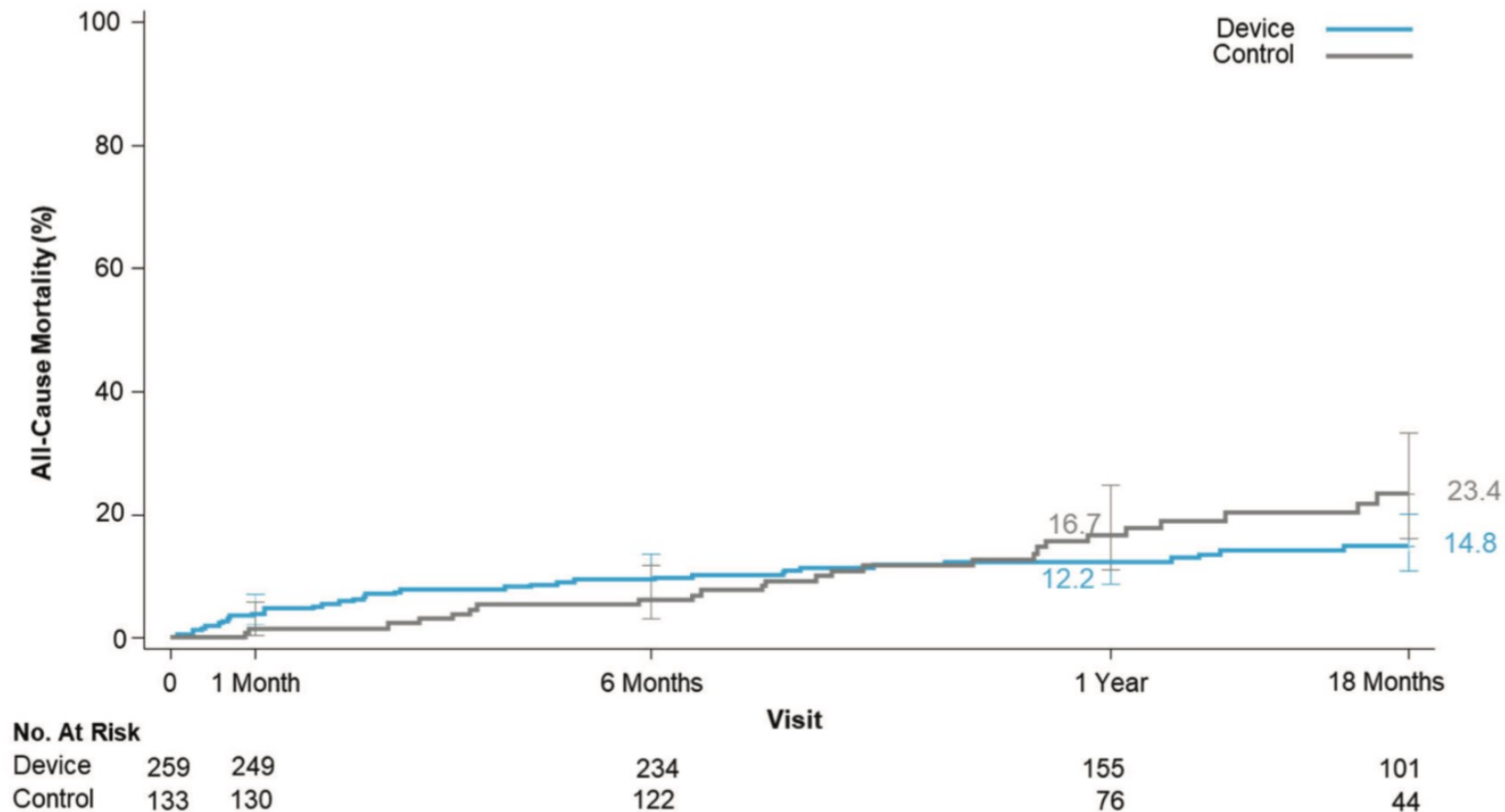
Transfemoral

28 Fr outer diameter

3 planes of movement



TRISCEND II: All-Cause Mortality

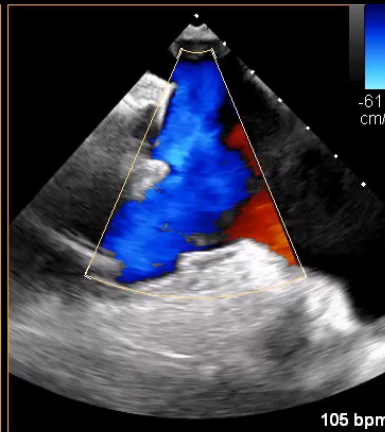
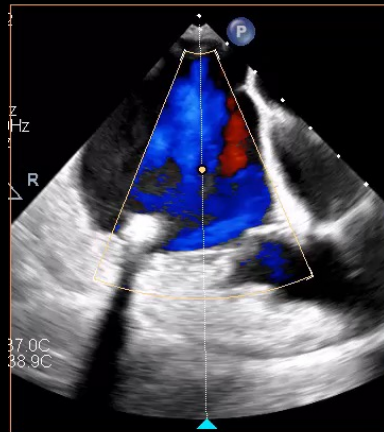
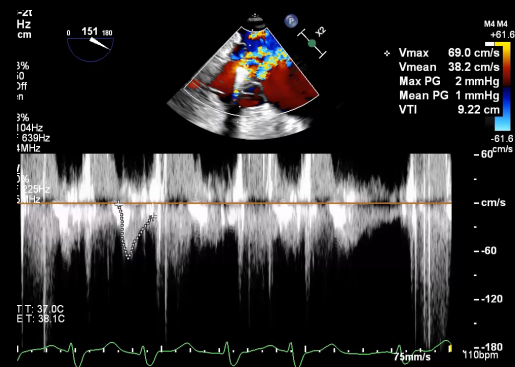
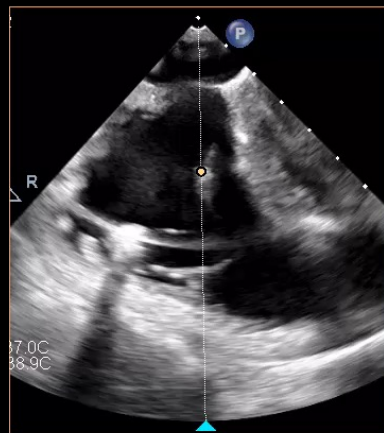


Case 3

80 yo female w/ HFpEF and torrential TR

- struggling with tricuspid regurgitation since 2022
- Tricuspid TEER January 2023 in QC: torrential to moderate-severe
- FU February 2023: SLDA of both clips (one attached to septal, other to anterior leaflet)
- symptoms slowly progressive and currently NYHA III and peripheral edema despite diuretics

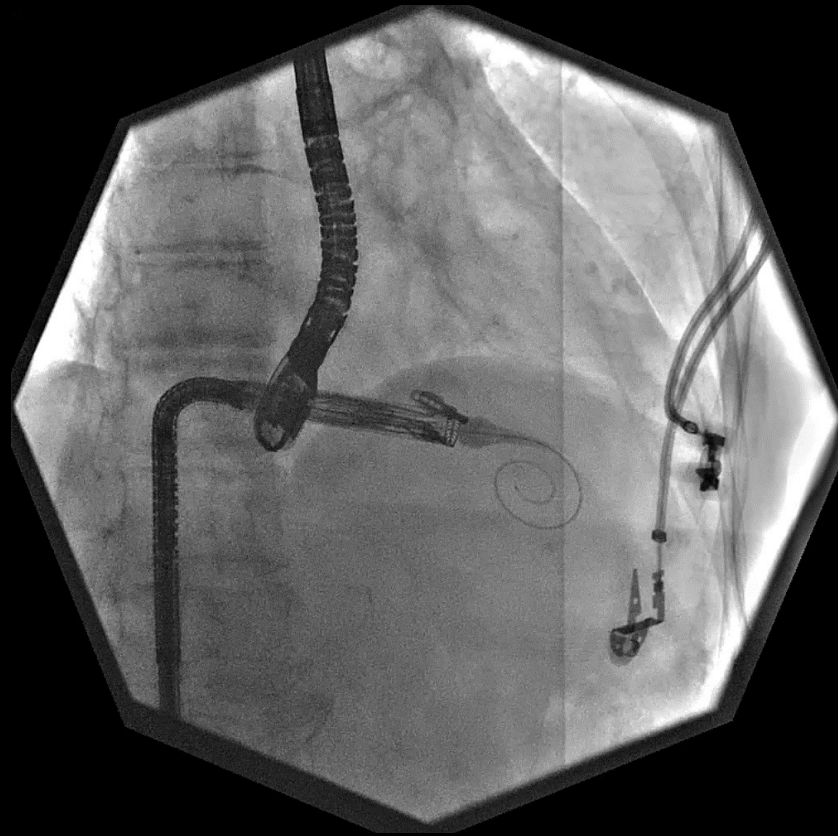
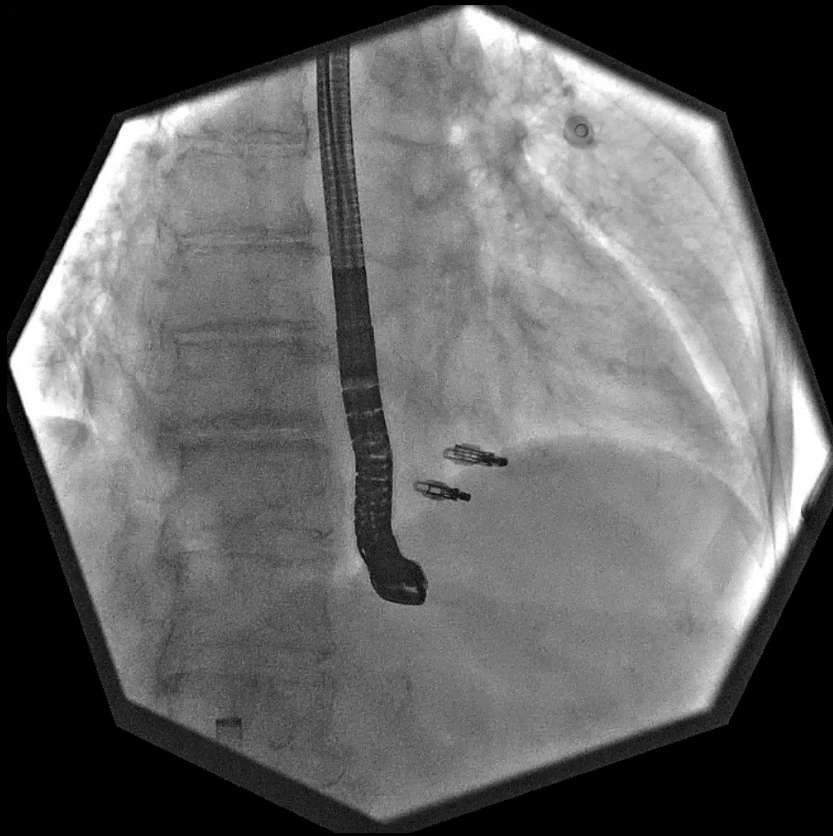
TEE – baseline



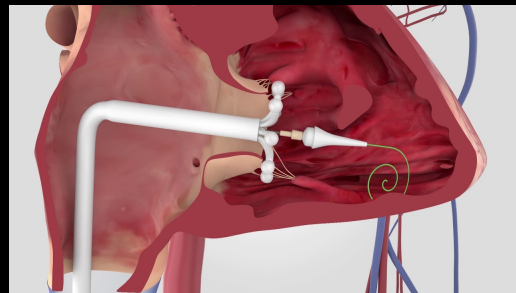
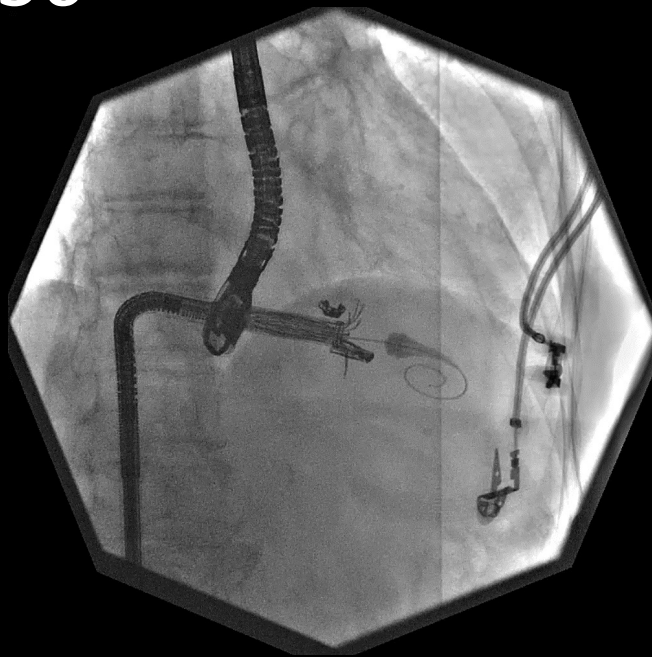
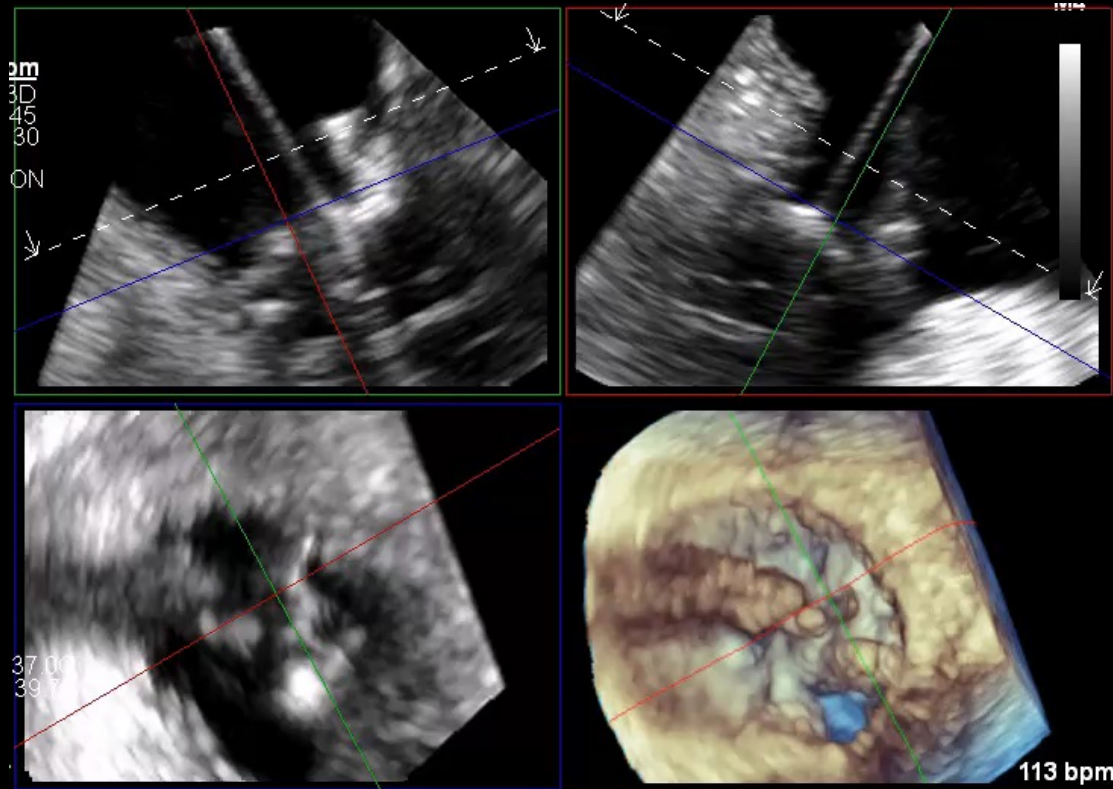
Tricuspid Valve

	Annular dilatation w/ large central coaptation gap
Mechanism	
TVA	16.8 cm²
Mean Grad	1 mmHg (83 bpm)
Hep Veins	S flow reversal

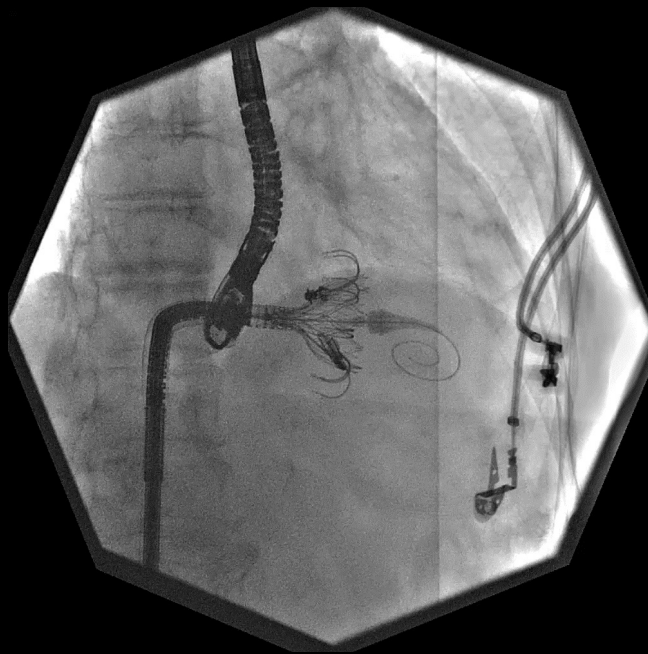
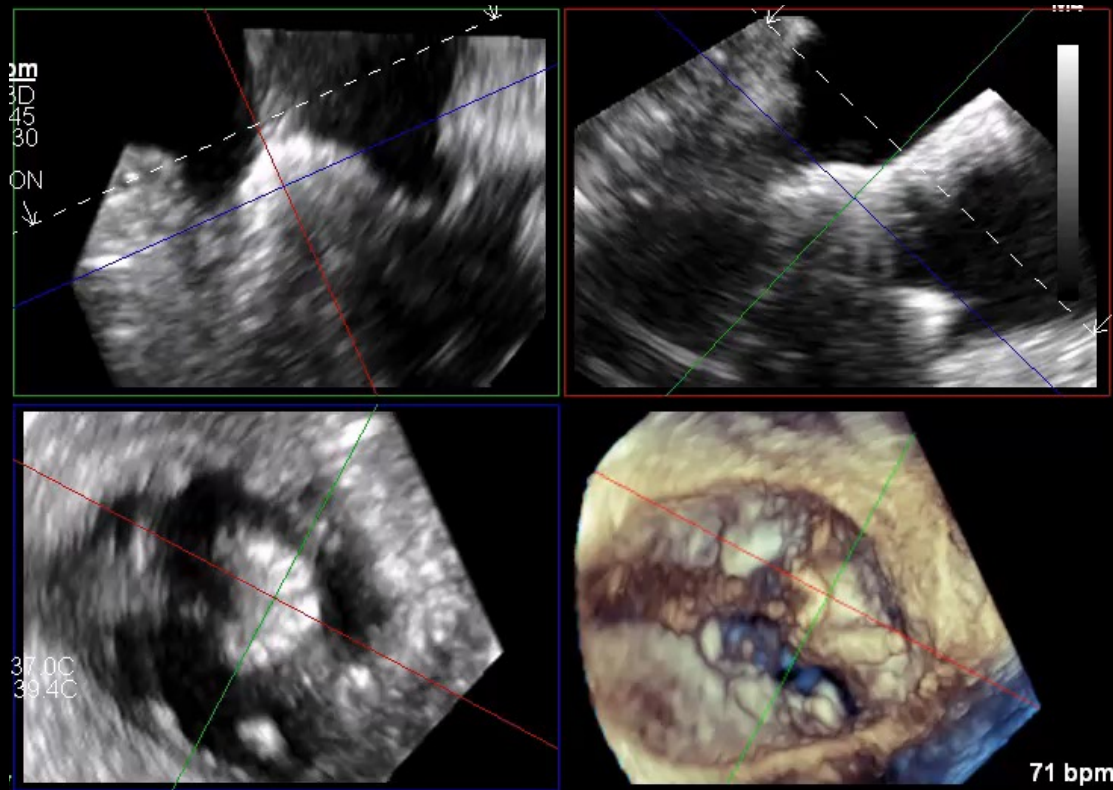
TTVR – EVOQUE #56



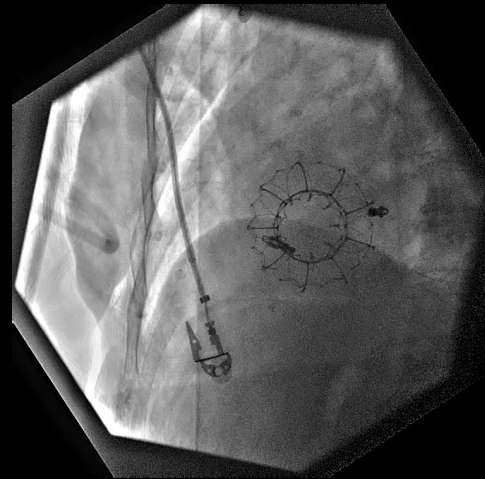
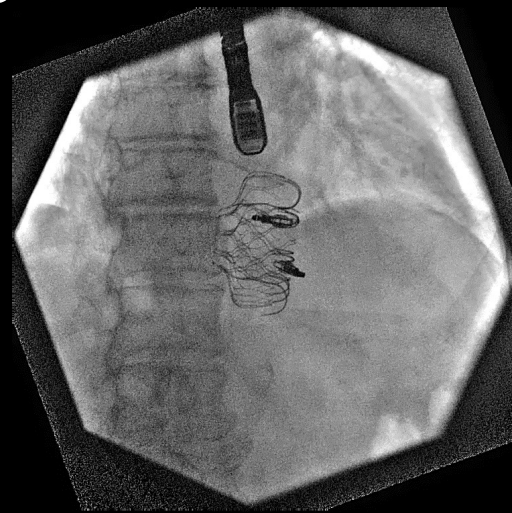
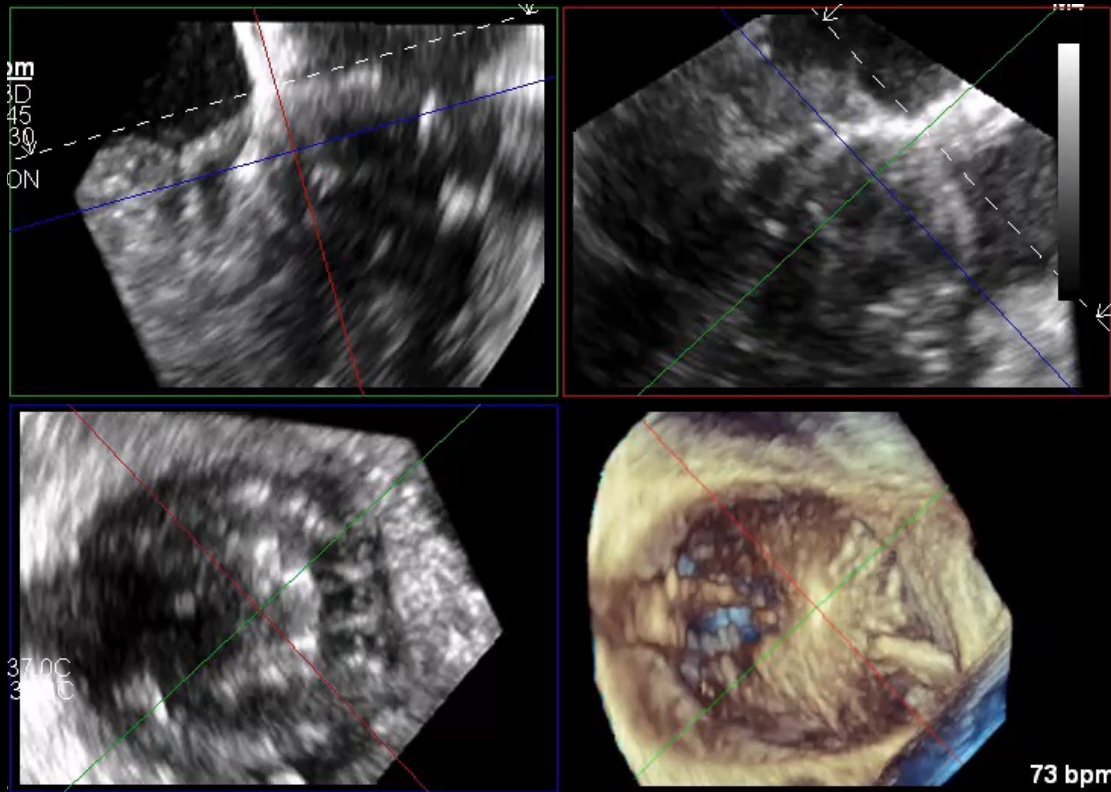
TTVR – EVOQUE #56



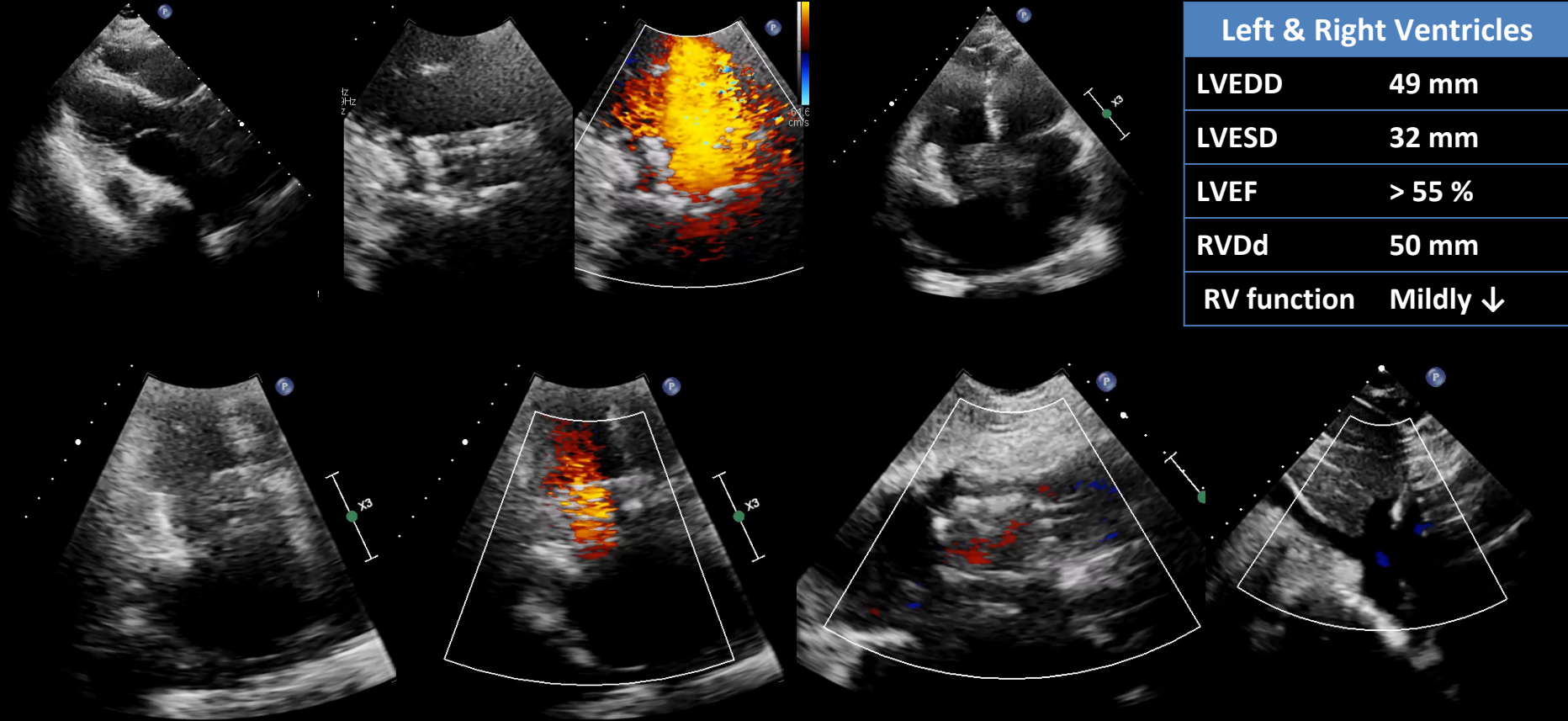
TTVR – EVOQUE #56



TTVR – EVOQUE #56



Follow up TTE



Summary

- Structural heart intervention continues to rapidly evolve to provide innovative catheter-based options for patients
- SMH Program uses Heart Team approach to make best decision for individual patient



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Structural Heart Program Referral Form

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TEL: 416-864-5442 FAX: 416-864-5768 Email: StructuralHC@smh.ca

Jenn Holmes, RN

Structural Heart Coordinator

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Thank You!

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