

Valve-In-Valve Transcatheter Aortic Valve Replacement in a Patient With Severe Left Ventricular Systolic Dysfunction in Previous Bentall Procedure

Dr. Satej Janorkar
Deenanath Mangeshkar Hospital
India

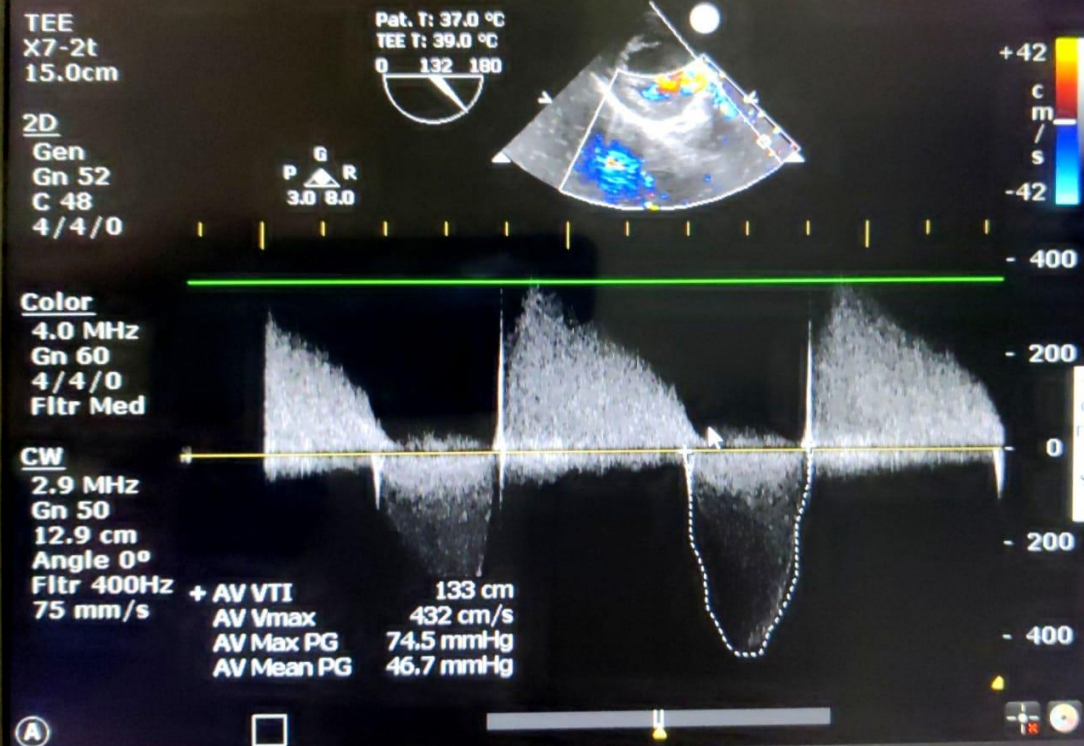
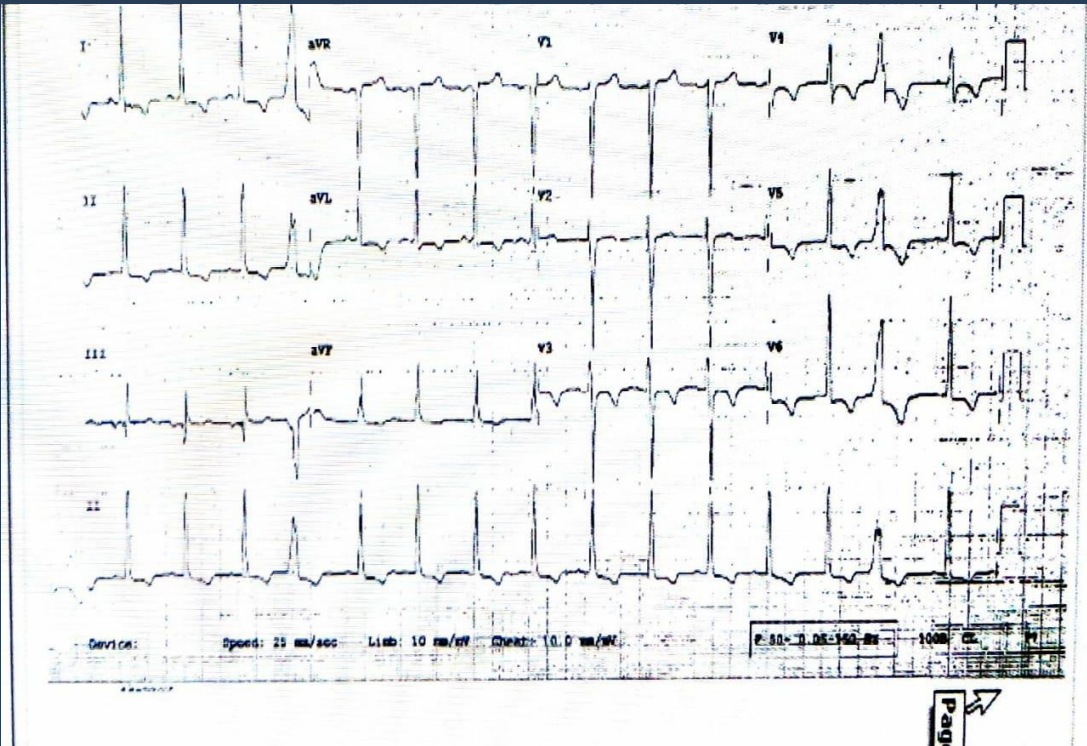
Disclosure

- Speaker's name : Satej Janorkar
- I do not have any potential conflict of interest to declare

Clinical Information

- 62 year old male with known Type 2 Diabetes mellitus and Hypertension and a history of Bentall Procedure (23 mm prosthesis-Perimount valve) in 2008 and a history of IE in 2012.
- NYHA Class III for last 3 months. BP 130/80 mm Hg. ECG showed LVH with strain and 2D echo showed severe increased transaortic gradients with severe LV systolic dysfunction, LVEF 25%.
- Surgeon declined re-do procedure.

Clinical Information

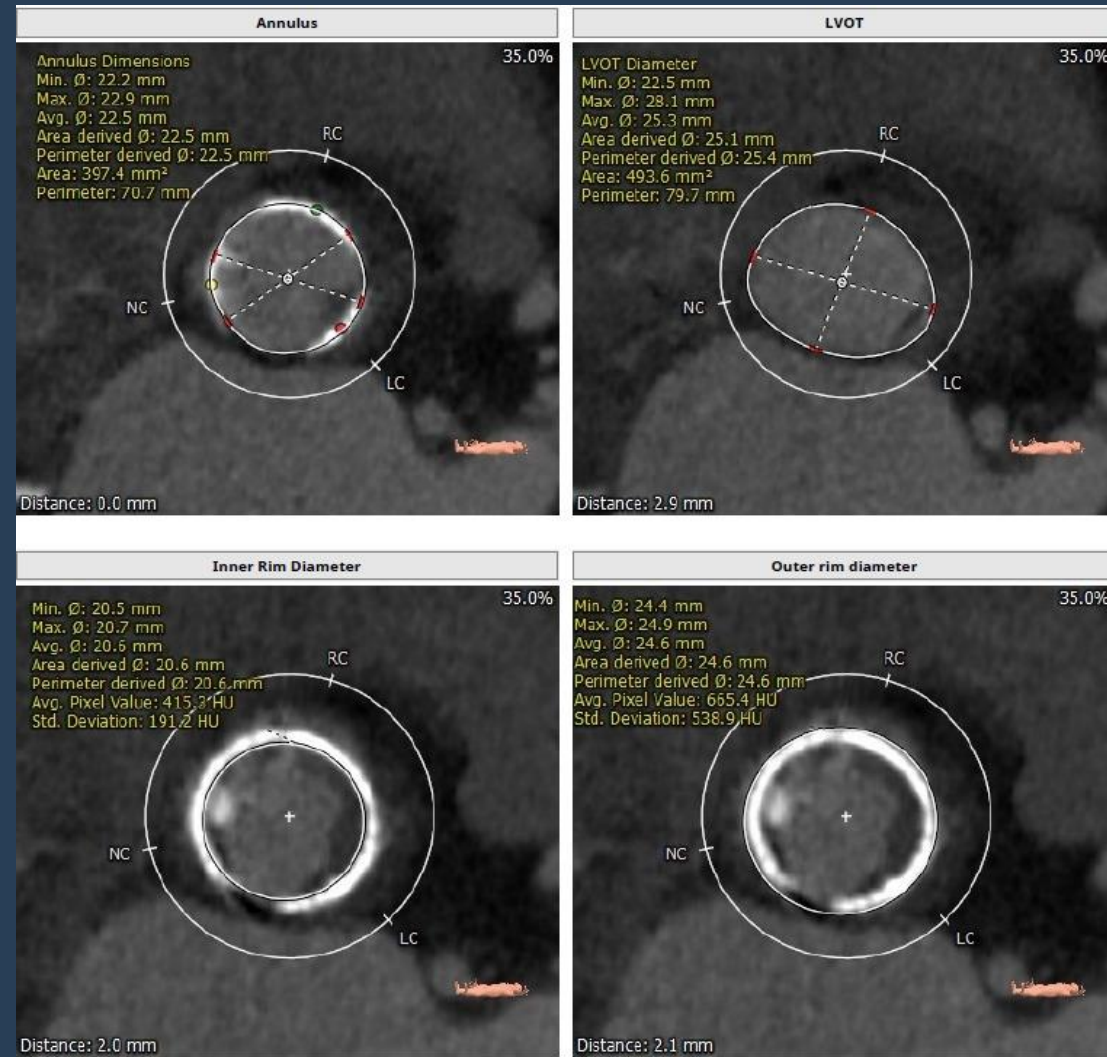


Tests prior to catheterization

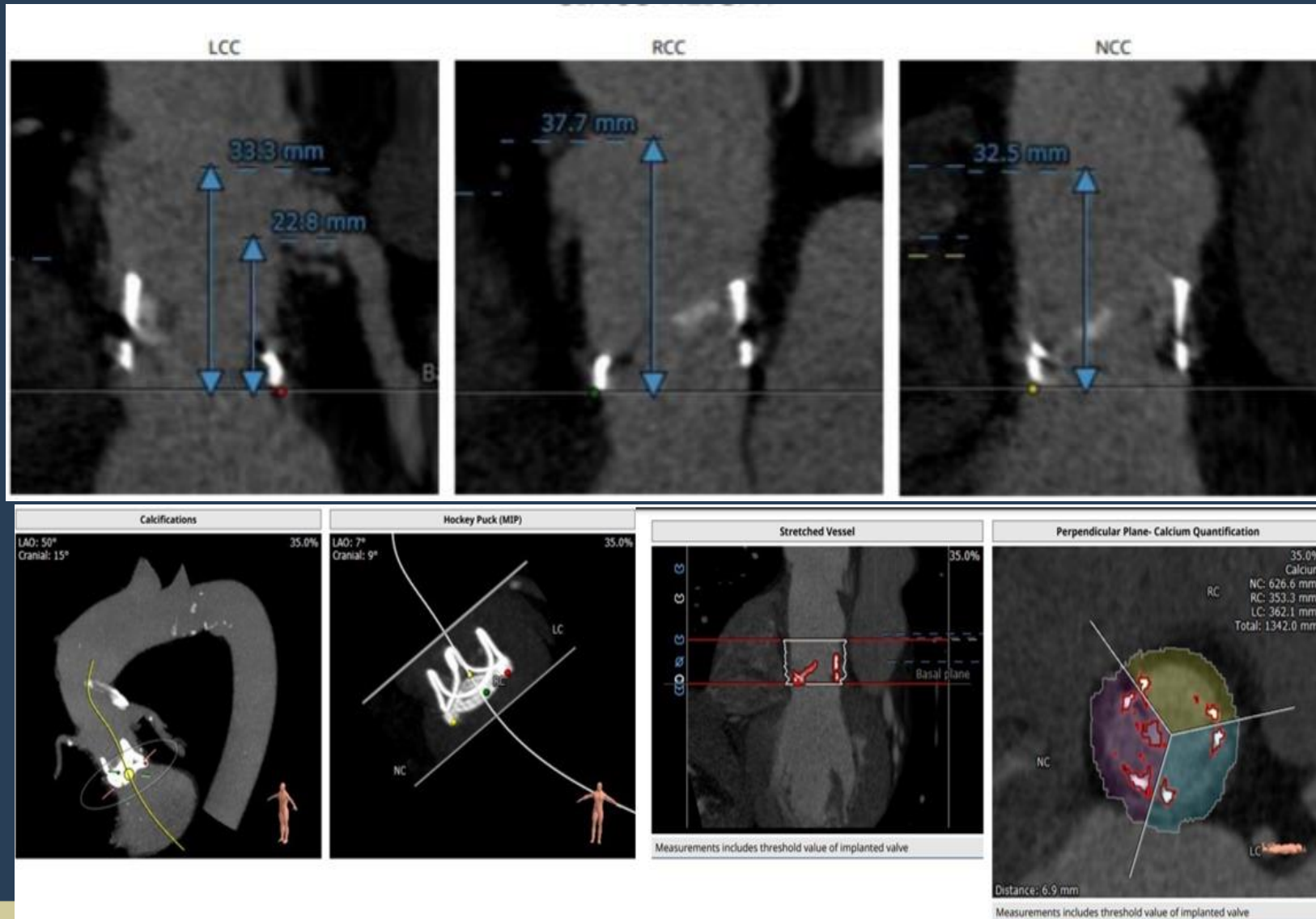
- TEE showed AV prosthesis with conduit in situ with increased systolic gradients across it, 78/39 mm Hg, with moderate AR with a reduced systolic function (LVEF: 30%).
- CAD was excluded by CT Angiography.
- The annulus was 22.2 x 22.9 mm, the Sinus of Valsalva was 25.4 × 25.4 × 26.2 mm, ascending aorta diameter was 28.1 mm.
- Distance between annulus and left coronary artery ostium was 22.8 mm and distance with the right coronary artery ostium was 30 mm.

3 mensio reconstruction - CT Images

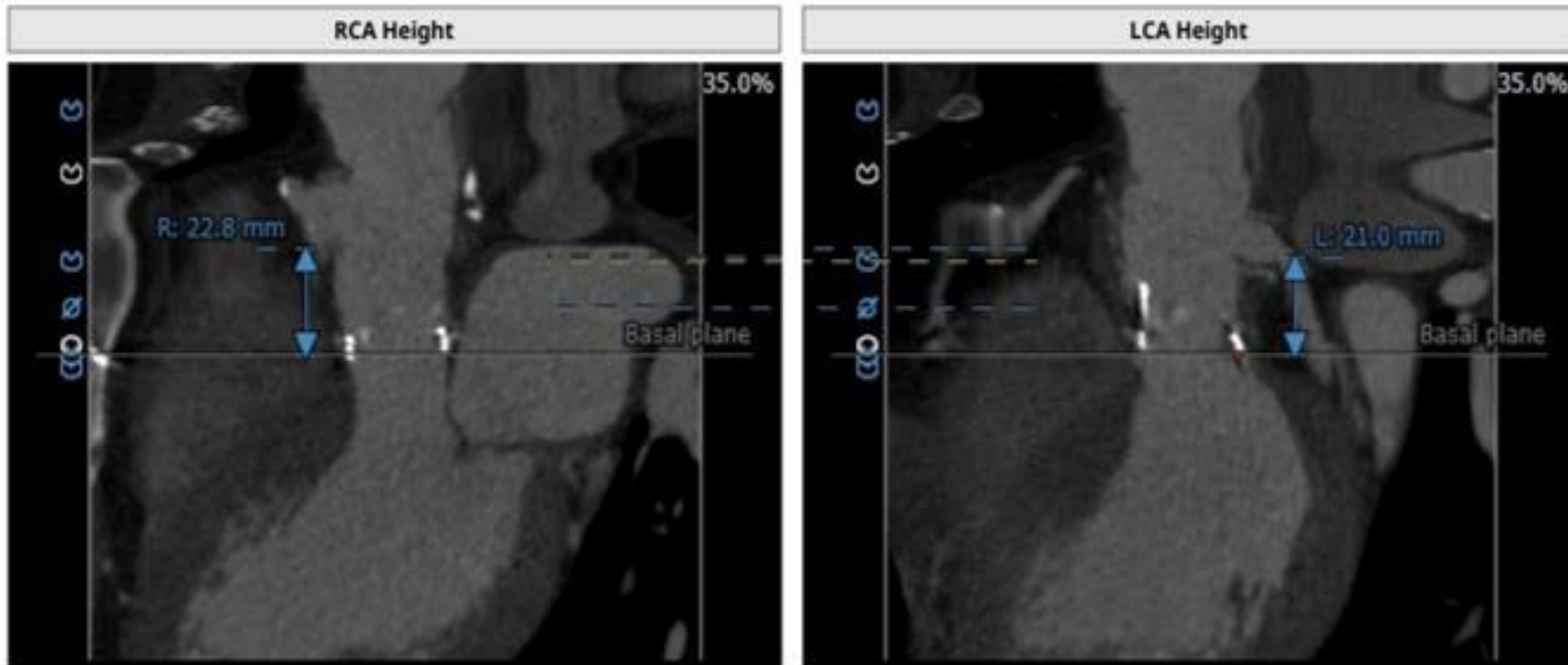
Aortic root assessment



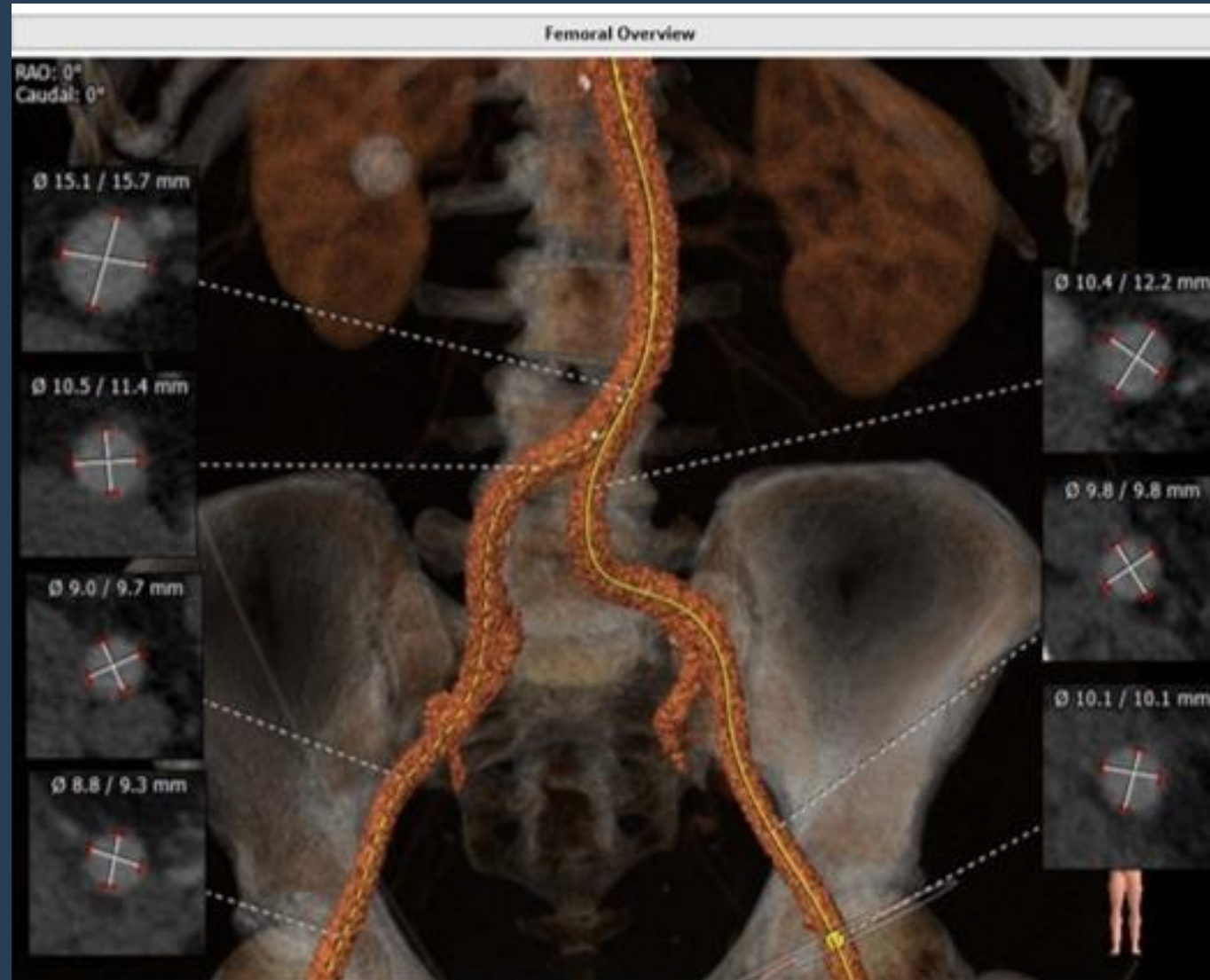
3 mensio reconstruction Sinus height / Surgical prosthesis



3 mensio reconstruction Coronary artery assessment



Ileo Femoral artery assessment



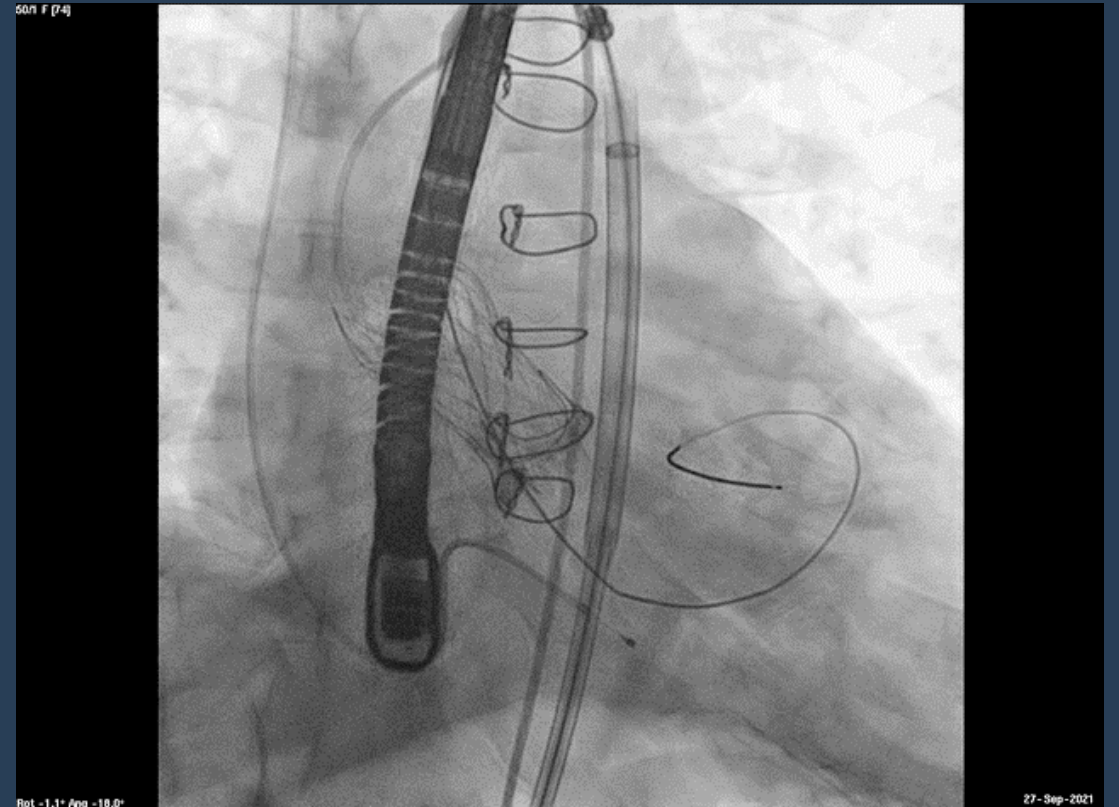
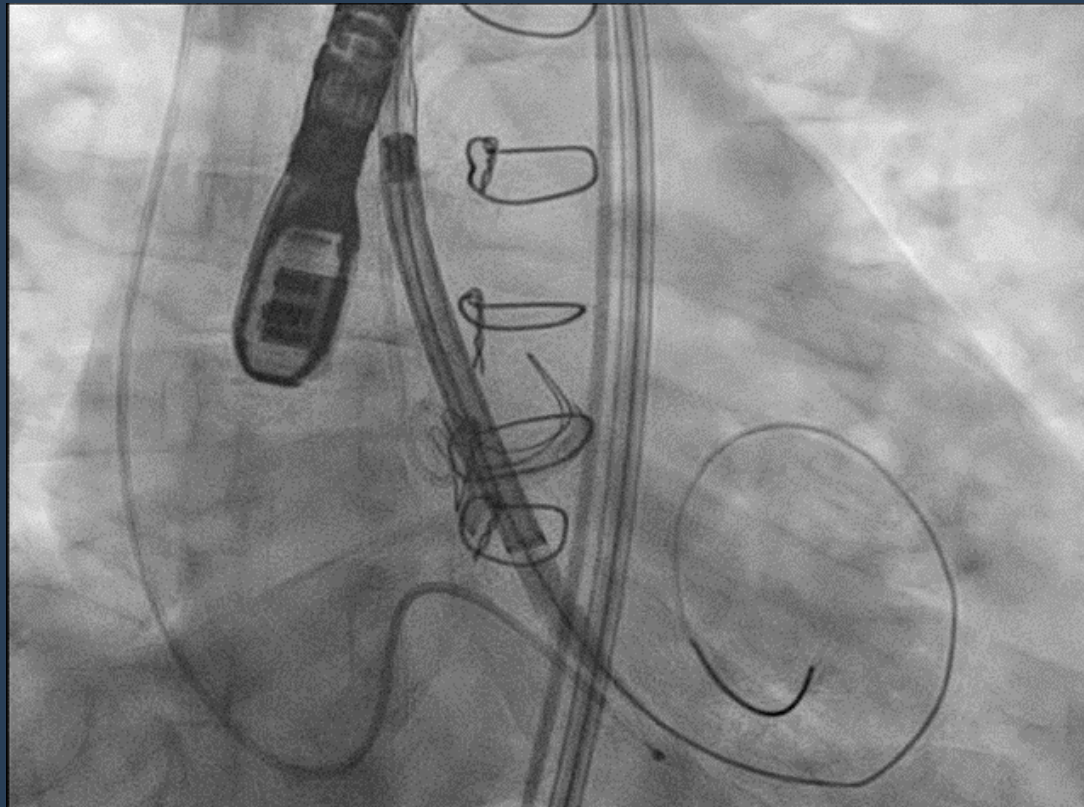
Procedure Step

- The procedure was started with Femoral access with preclosure using 2 suture-mediated closure devices (Perclose ProGlide®, Abbott Laboratories, Abbott Park, IL) under general anaesthesia and TEE guidance.
- 6F AL1 catheter was passed through the valve delivery sheath over 0.035inch J Tipped guidewire and exchanged with straight tip wire to cross the valve which was then exchanged with Confida guidewire.
- The valve delivery system attempted to navigate a turn but failed. So Lunderquist® wire (Cook, USA) also was utilised which acted as a buddy system.

Procedure Step

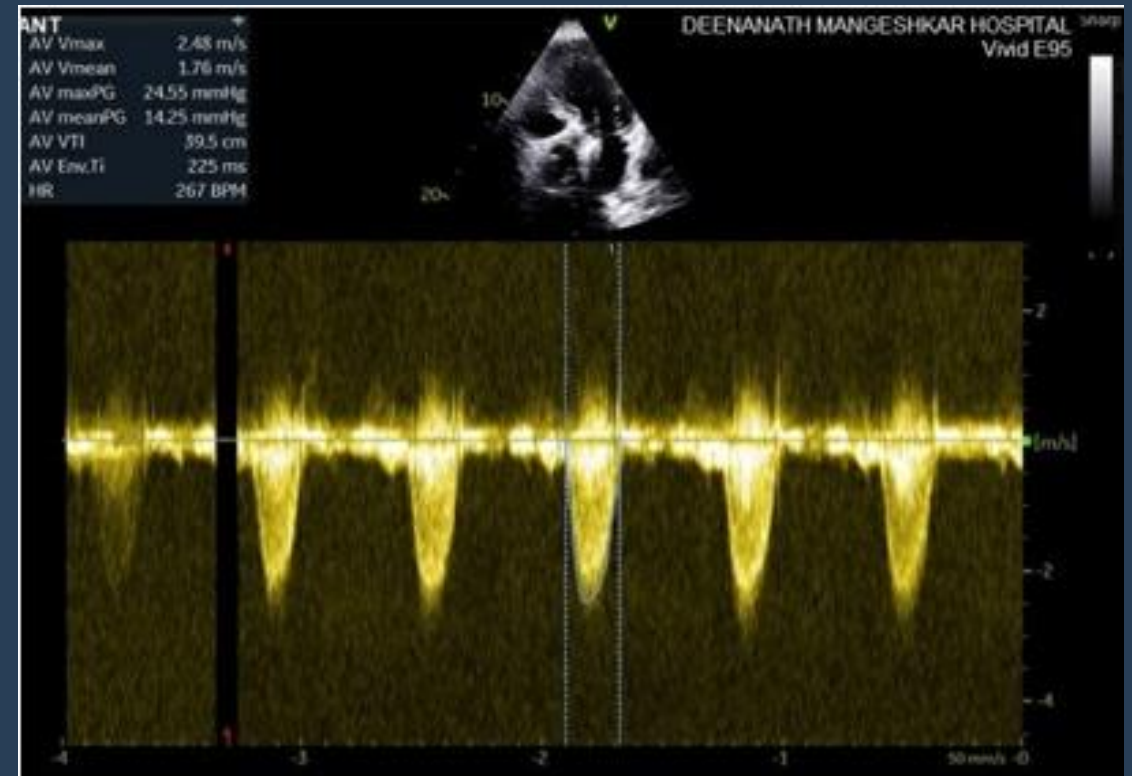
- Self expandable valve Evolut R 26 mm (Medtronic, USA) was implanted under rapid ventricular pacing, using a standard technique via a 14 F femoral sheath followed by post-dilatation using the 23 mm True Dilatation balloon (Medtronic, USA). TEE confirmed accurate positioning of the valve.
- TEE and hemodynamics confirmed the absence of gradient and of relevant AR (max gradient 16 mm Hg, mean gradient 6 mm Hg). No complications observed during or after the procedure.
- Device site closure was done with angioseal. TEE repeated after three days showed good function of valve and absence of paravalvular leak. Patient discharged 4 days later with significant symptomatic improvement documented in two weeks follow up. TTE showed max gradient 14 mm Hg, mean gradient 6 mm Hg.

Positioning and Deployment of Valve



Final Result

Post deployment & Post dilatation



Discussion

- High risk subset ?

Bentall, IE, LV dysfunction

High risk redo - Euroscore 35.7

Adhesions, keloid.

- Choice of valve.
- Challenges: Navigation, Deployment, Coronary ostia, AR.
- Post dilatation strategy.

Conclusion / Take-home Message

- First Asian Valve in Valve procedure performed in previously done Bentall surgery with history of endocarditis and severe LV dysfunction.
- It demonstrated feasibility of TAVR with self expanding valve in setting of degenerated, perforated prosthesis. Challenges were absence of landmarks, calcification, stentless conduit and fully biological valve.
- Confida with Lunderquist wire acted as a buddy system in order to navigate the turn of conduit.
- Accurate planning, CT scan were crucial to choose correct valve and to determine the position of reimplanted coronary ostia, which were high in this case, mitigating the risk of coronary occlusion.
- Post dilatation was essential to achieve optimal result.