

Valve-in-Valve-in-Valve Rescue: Sequential Transcatheter Valve Deployment for Intraprocedural Valve Embolization

Bailout of valve embolization in a native annulus using a three-valve ViViV configuration

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Disclosure of Relevant Financial Relationships

I, [Antigone Kosteia](#) DO NOT have any financial relationships to disclose.

Case History

91-year-old, man

- H: 190cm
- W: 84kg
- BMI: 23.27 kg/m²

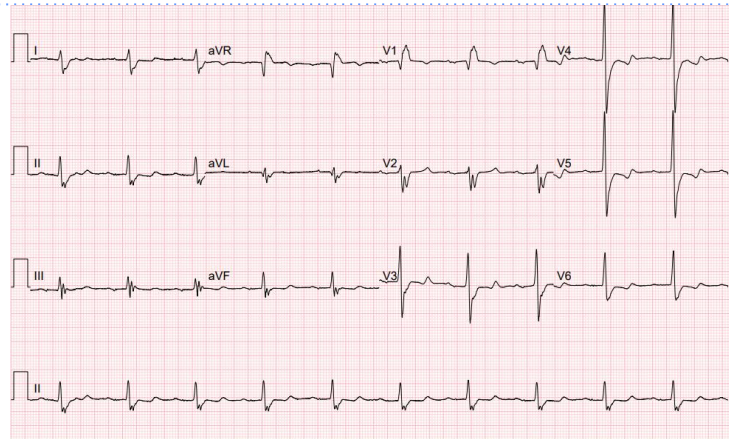
Cardiac Medical History

- Hypertension
- 2006 Stable AP, PCI LAD
- 2014 PCI LAD and RCA
- 2022 PCI mid-LAD, prox-Cx and OM
- 2022 Moderate aortic valve stenosis with reduced EF

Presentation

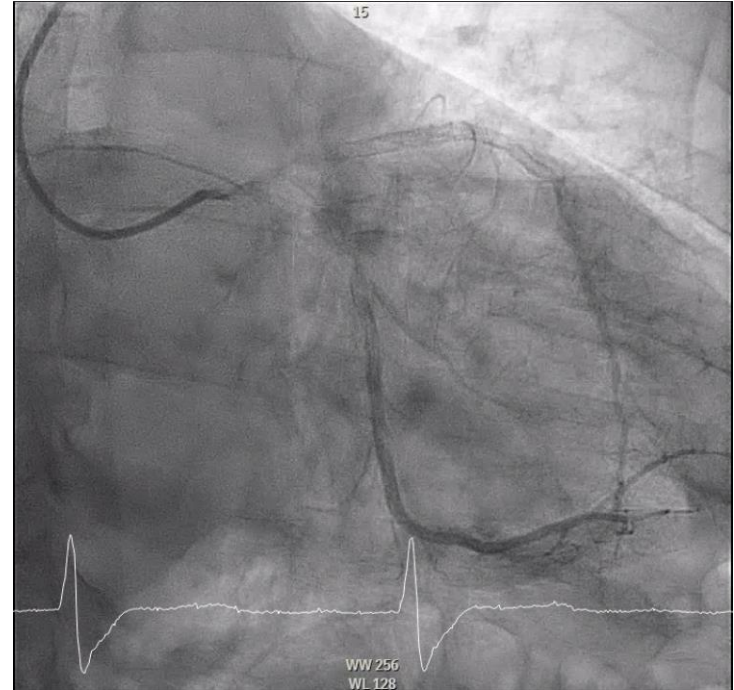
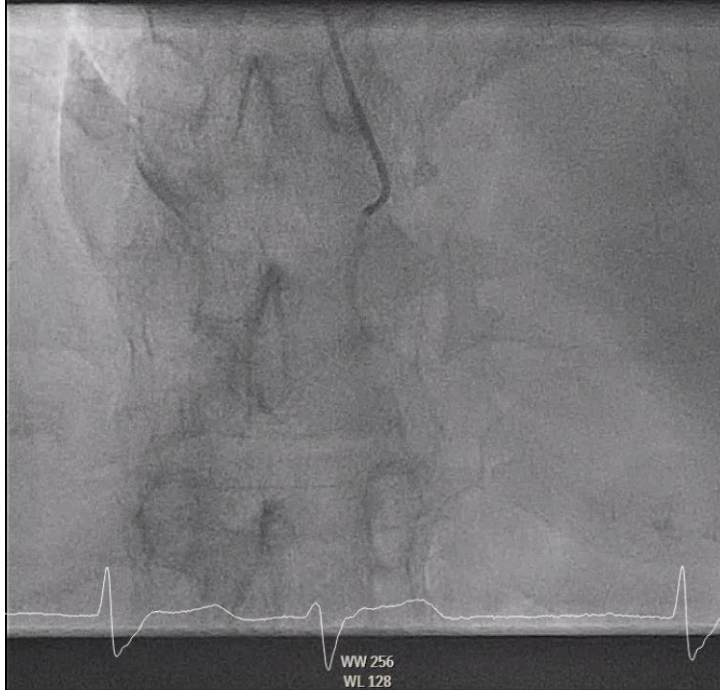
- Decreased functional capacity with exertional dyspnea
- NYHA II, CCS 0

EKG



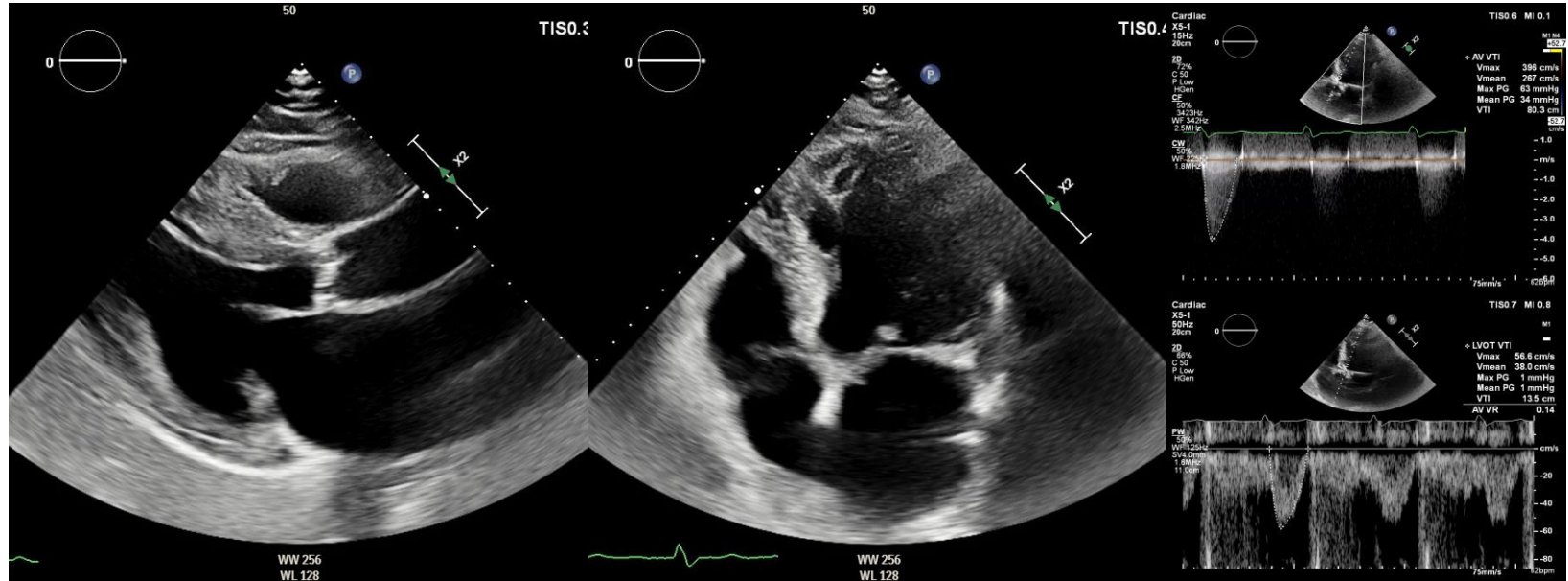
SR 61 bpm, RBBB, 1st degree AV block, PR 274 ms,
QRS 194 ms, QTc 515 ms

Coronary Angiography (CAG)



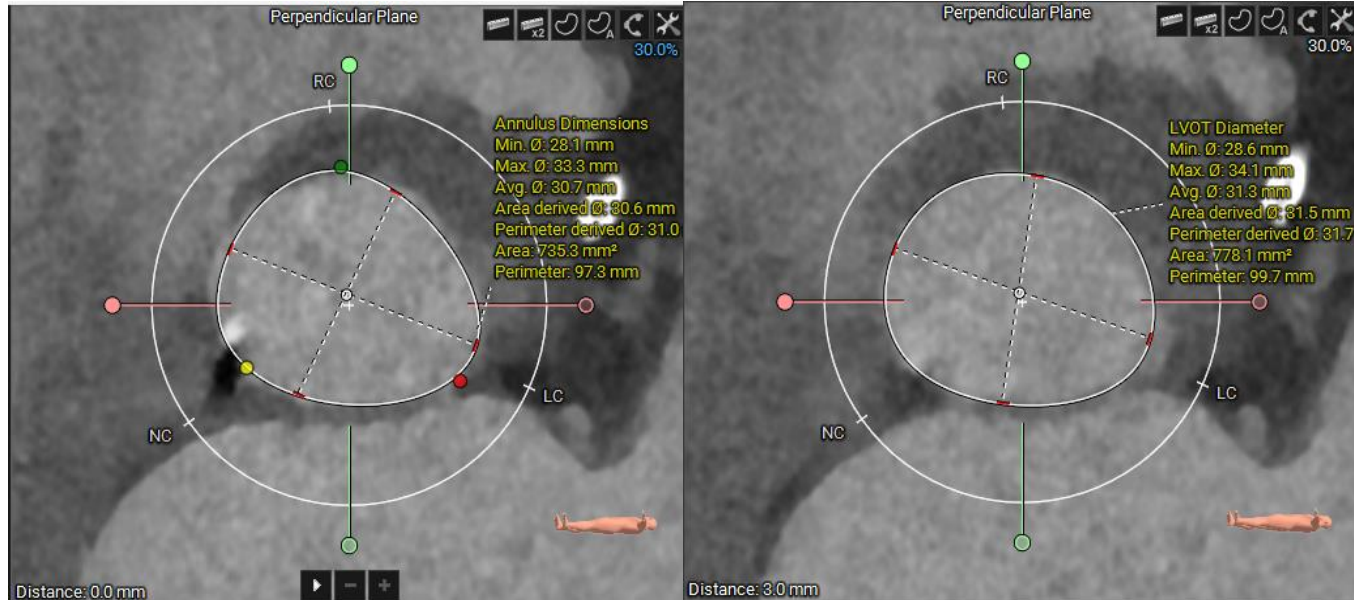
- Right dominant system, patent stent mid-LAD and proximal Cx. Intermediate residual lesions in LAD and Cx, intermediate lesion mid-RCA; managed conservatively

TTE pre-TAVR



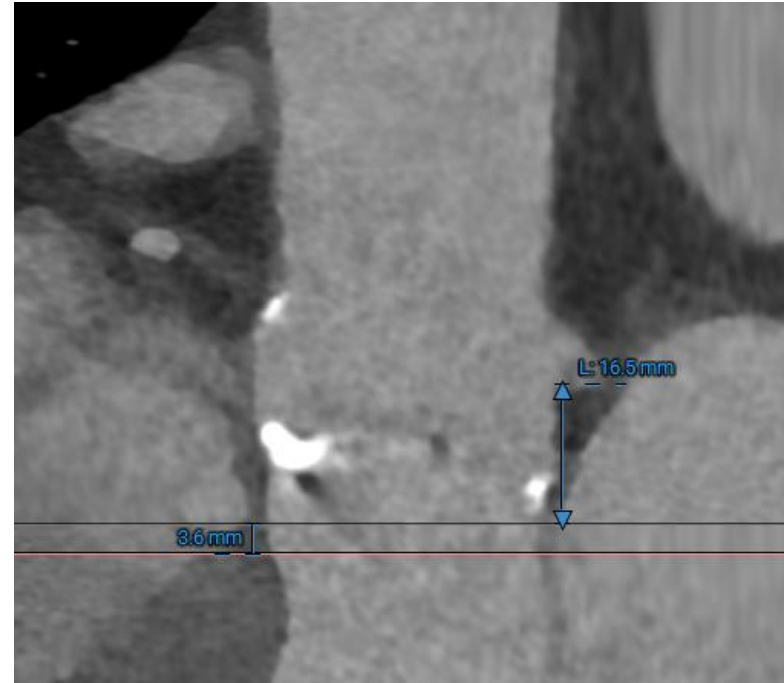
- Reduced LV function, dilated LA (LAVi 48.5 ml/m²)
- Severe cLFLG aortic valve stenosis with moderate AR, MPG 34 mmHg, V_{max} 4.0 m/s, SV_i, 32.2 ml/m² and AVA_i 0.36 cm²/m²

Computed Tomography (CT)



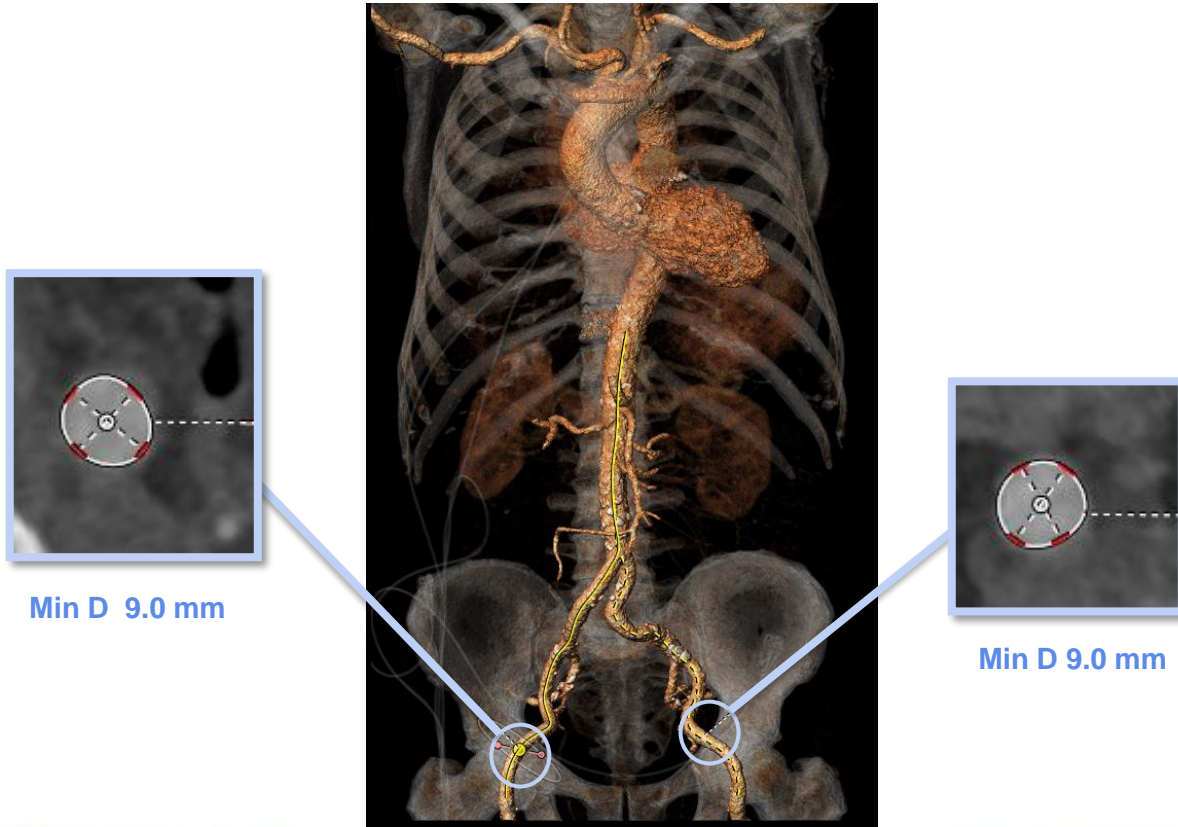
- Tricuspid valve, with severe calcification of the raphe and leaflets
- Agatston score: 3110
- Very large aortic annulus: Annulus area 735.3 mm², Annulus perimeter 97.3 mm

Computed Tomography (CT)



- LCA height 16.6 mm and RCA height 22.5 mm
- MS length 3.6 mm

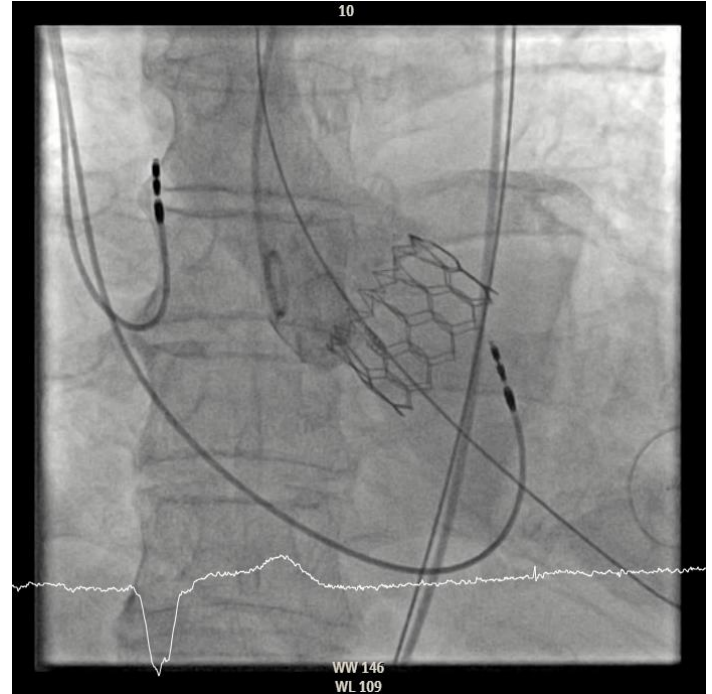
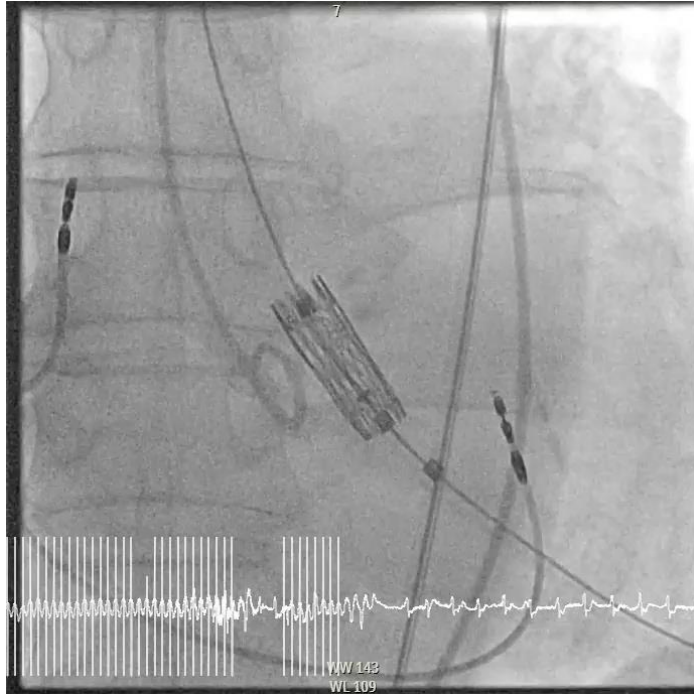
Computed Tomography (CT)



Multidisciplinary Heart Team Decision

- Classified as **high risk** according to
 - Advanced age
 - Geriatric assessment: frailty, reduced functional capacity, and elevated risk of delirium
 - Surgical risk scores: STS 4.96%, EuroSCORE II 4.26%
- Conduction risk: prophylactic pacemaker due to high likelihood of post-procedural high-grade AV block (RBBB + QRS >160 ms + PR > 240 ms)
- Transfemoral TAVR with **32 mm Myval Octapro** valve

TAVR Procedure



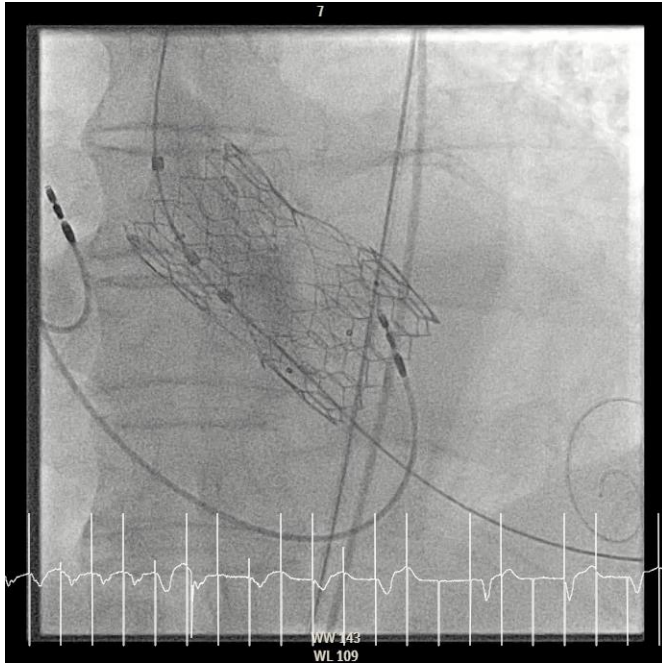
- Misloading of the MyVal Octapros 32 mm with subsequent partial expansion during balloon inflation
- Backward recoil during balloon deflation, after which the valve shifts downward into the LVOT

TAVR Procedure



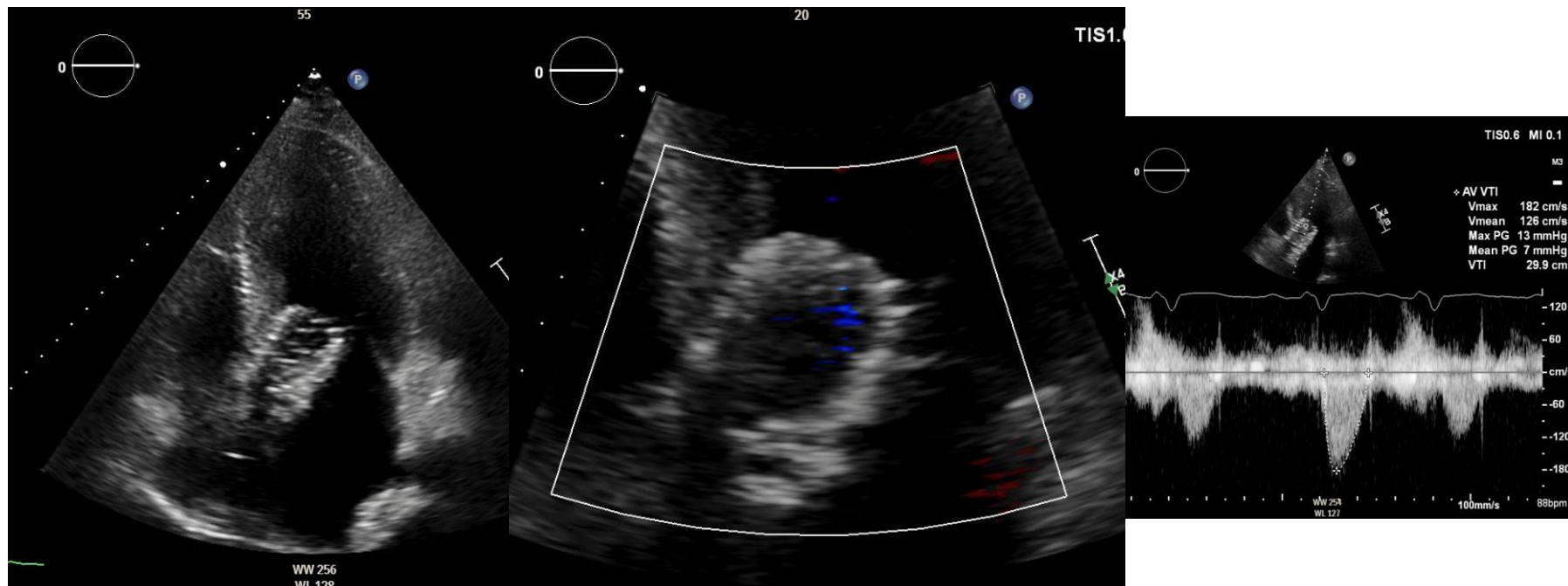
- Deployment of Navitor Vision 35mm for fixation
- Post dilatation to achieve full valve apposition
- Persistent PVL prompted implantation of an additional MyVal Octapro 32 mm valve

TAVR Procedure



- Successful deployment of new MyVal Octapro 32 mm
- No obstruction of the coronary arteries
- Invasive mean gradient: 0 mmHg

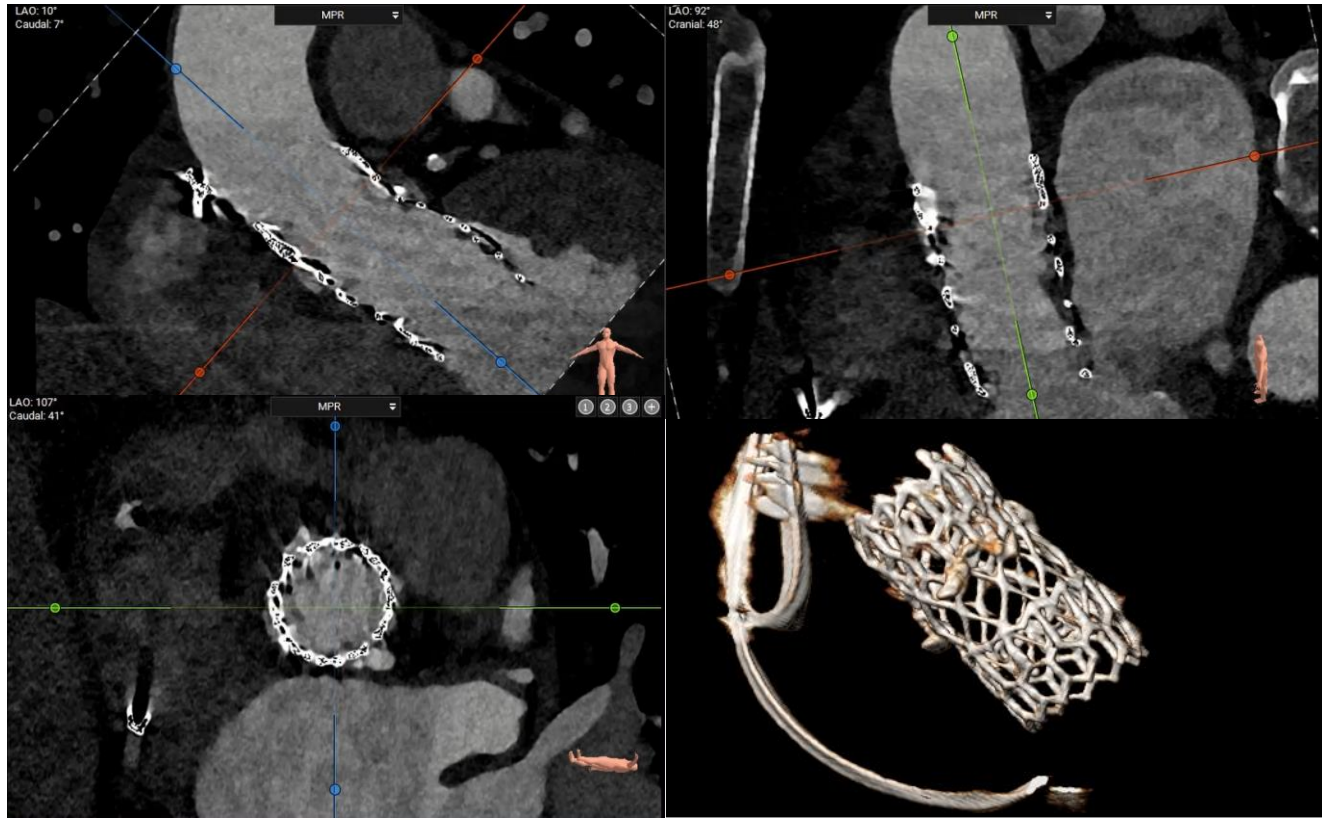
Post-TAVR TTE



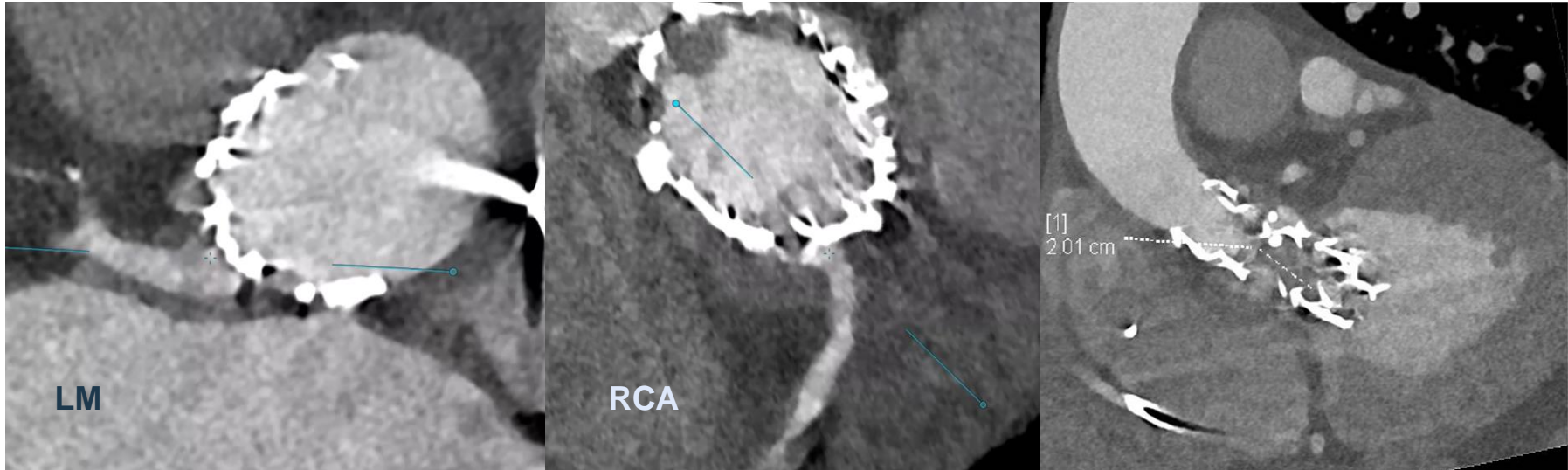
- Good functioning THV (no PVL, MPG 7 mmHg, V_{\max} 1.8 m/s)
- Deeply implanted in the LVOT with visual obstruction of the AMVL, no gradient measured across the mitral valve

CT post-TAVR

- Satisfactory deployment of the transcatheter heart valves
- Deep position of the stent frame extending into the LVOT



CT post-TAVR

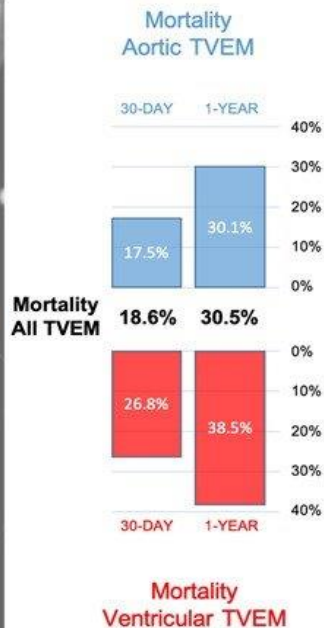
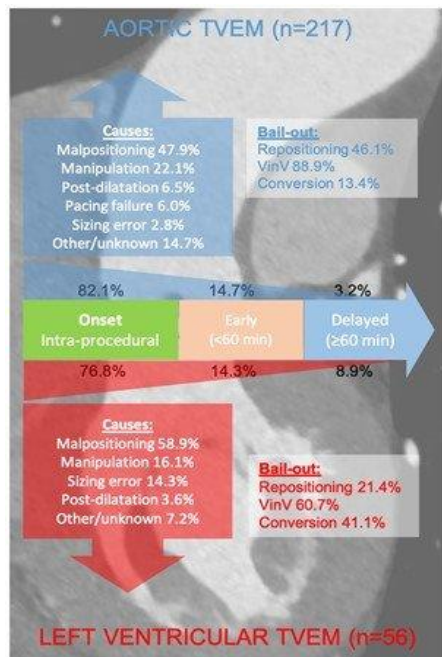


- Upper edge of the ViViV construct extends above the level of the coronary ostia; No evidence of coronary obstruction
- Subvalvular mural hypodensity (2 cm), thrombus or pannus, without causing obstruction

Post-TAVR

- The post-procedural course was clinically uneventful
- Therapeutic anticoagulation (apixaban) was initiated
- The patient was discharged in stable condition on day 4 post-TAVI

Conclusion (1)



- THV embolization into the **LVOT** is a rare but dreadful complication
- This is a case of valve embolization precipitated by misloading of the balloon expandable valve

Conclusion (2)

- Stepwise bailout strategy to ensure structural stability and preserve hemodynamics
 - The 35mm Navitor SEV features the NaviSeal skirt, which contributes to improved sealing and fixation in large anatomies
- Long-term outcomes and durability of triple valve (ViViV) constructs remain unknown