

# Hostile Aortic Valve Calcification: To TAVR or not to TAVR?

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TRANSCATHETER  
CARDIOVASCULAR  
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# Disclosure of Relevant Financial Relationships

I, Konstantinos Stathogiannis, DO NOT have any financial relationships to disclose.

# Case presentation

- 84 yo ♂, BMI 29.7 kg/m<sup>2</sup>
- LOC event 1 year ago and again 1 week ago
- Fatigue
- Traumatic brain hematoma 10y ago
- Coro angio no CAD (outside facility)
- HTN, CKD (GFR 67 mL/min)

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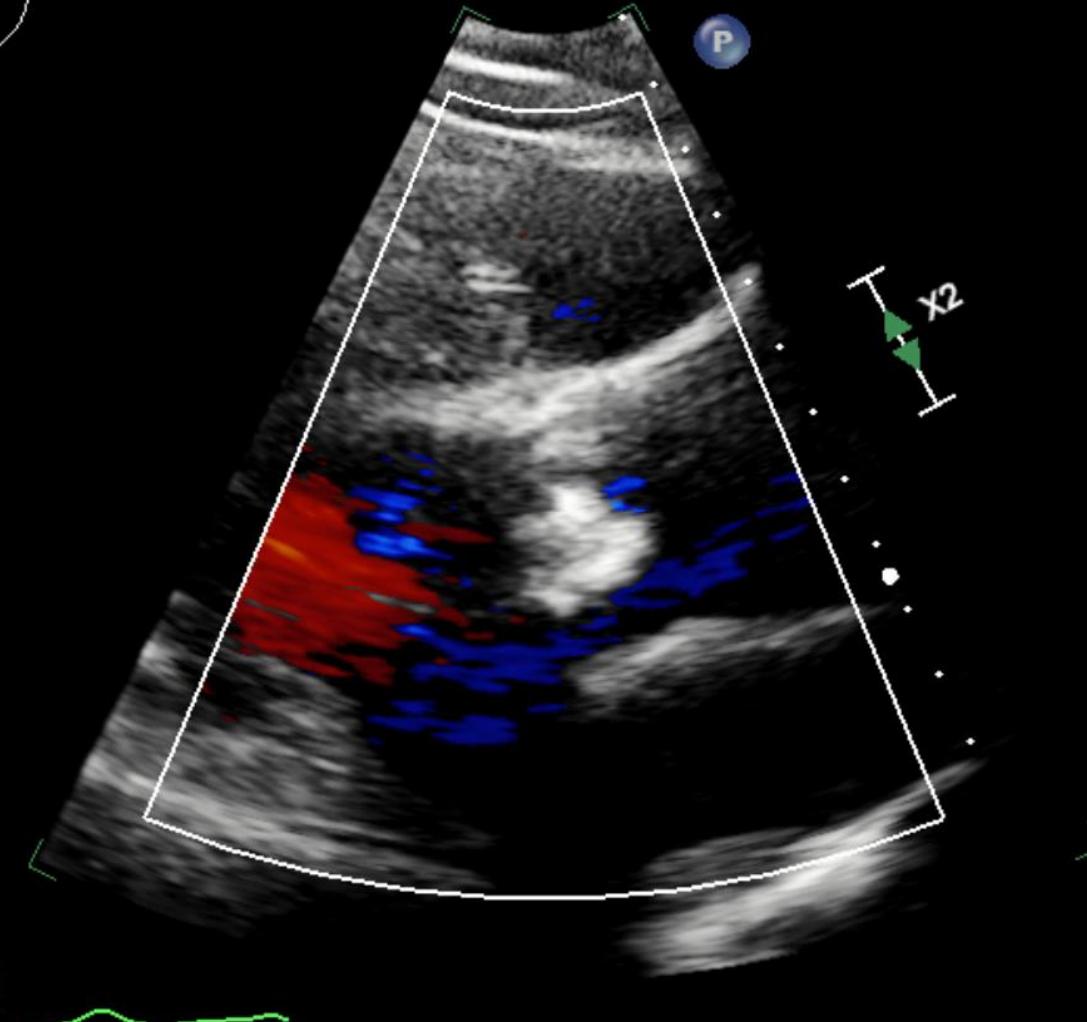
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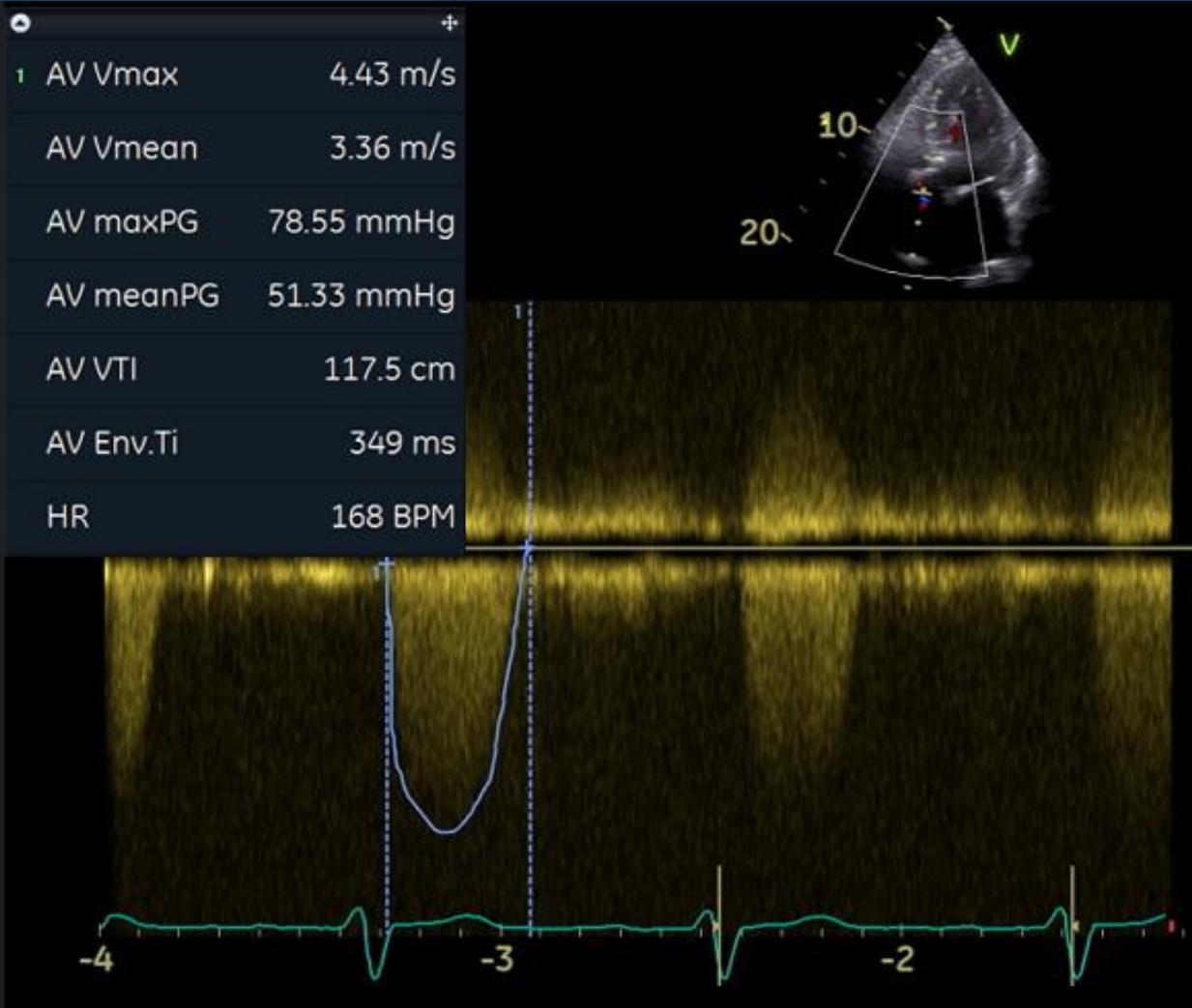
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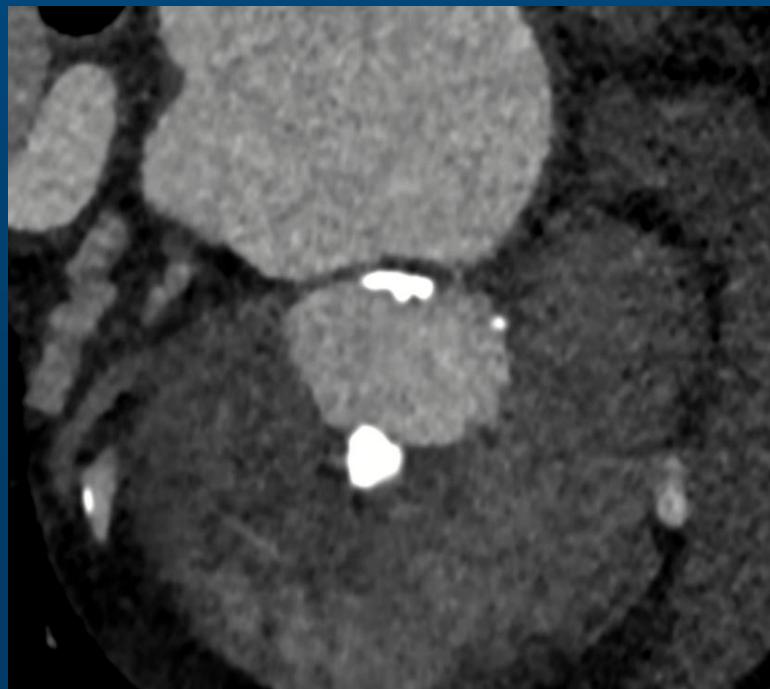


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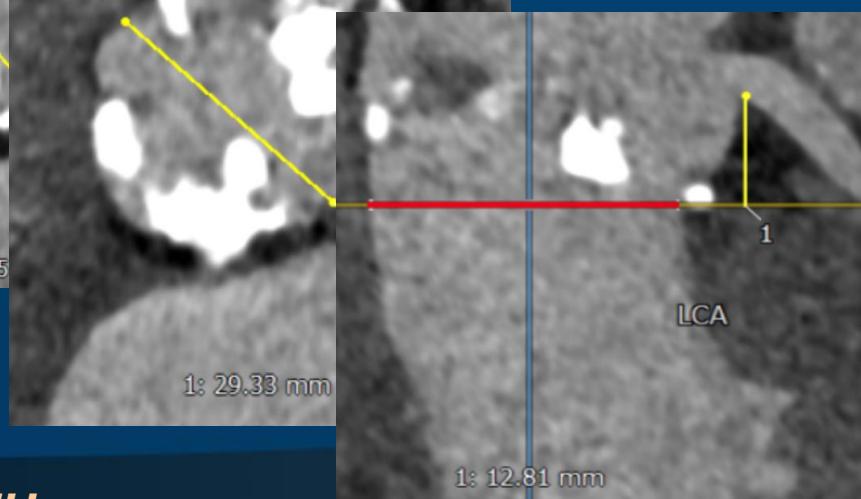
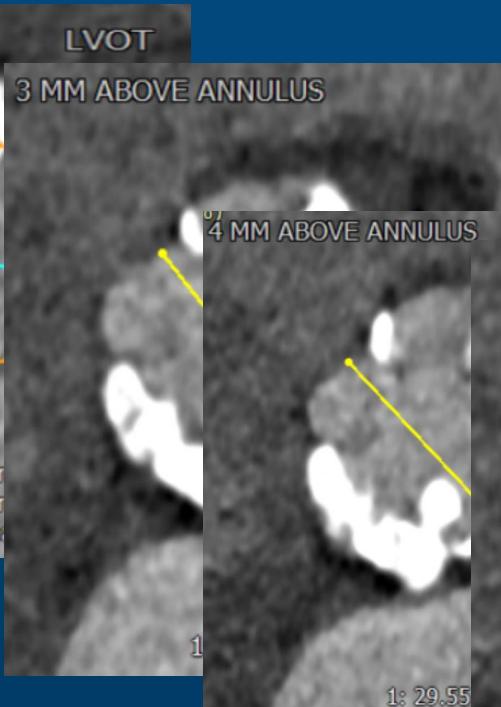
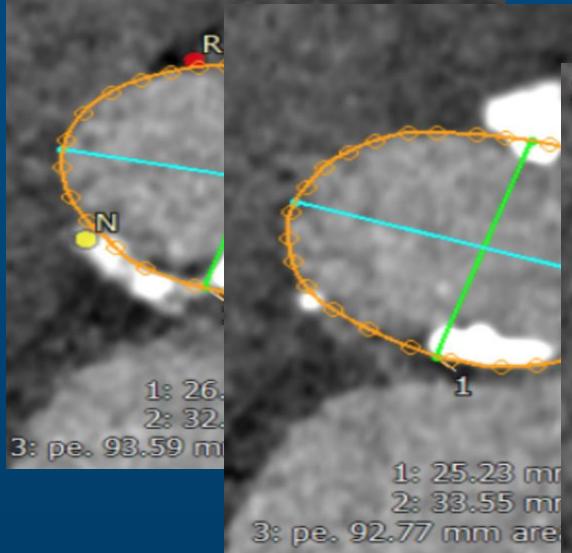












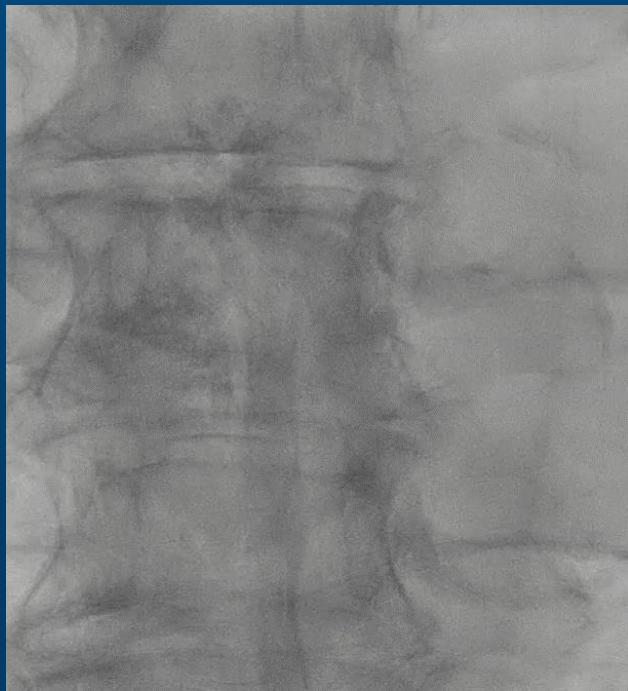
**Agatston score 9850 HU**

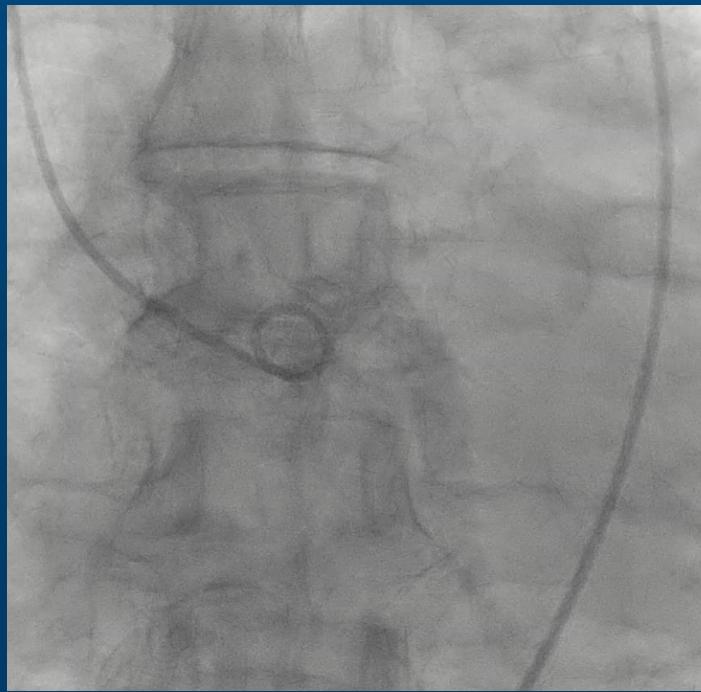
# Heart Team plan?

- 84 yo ♂ with bicuspid AVS (Type I, R-L)
- LOC events the main symptom
- Extreme calcification of AV and raphe, extending to LVOT
- Agatston score 9850 HU
- EuroSCORE II 3.6%, STS 2.4%, STS m/m 7%

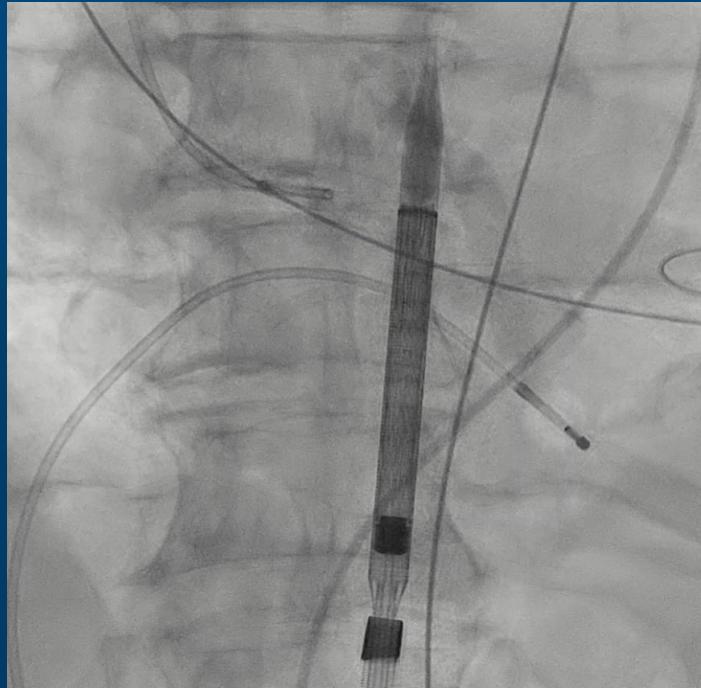
**TAVI**

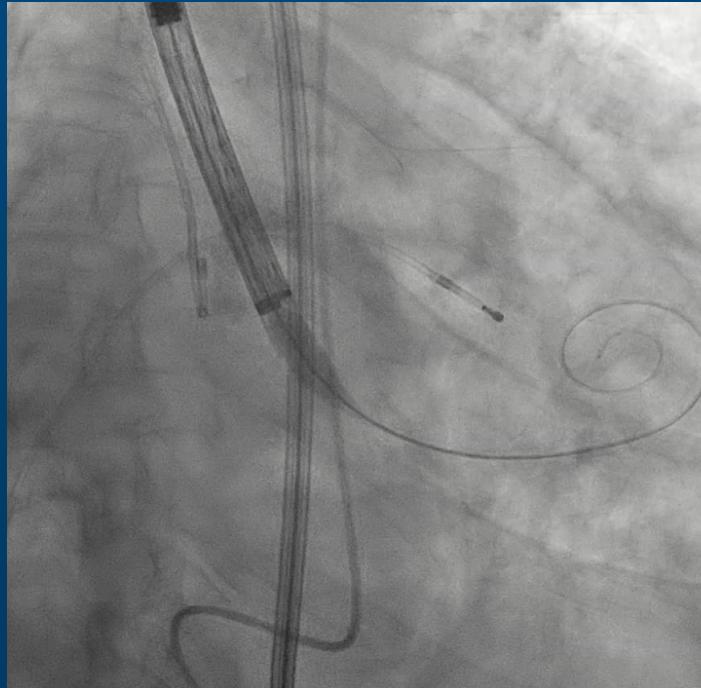
*What valve?*

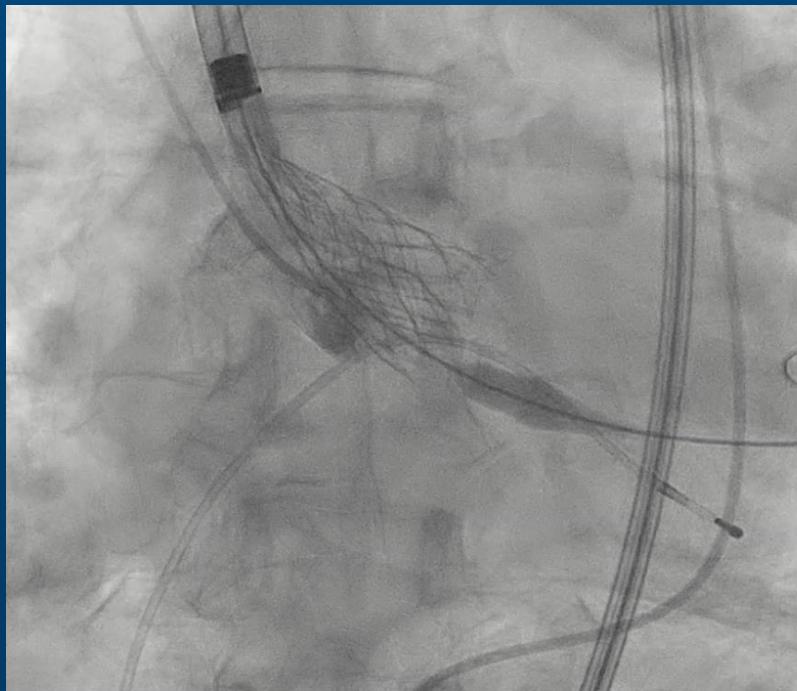


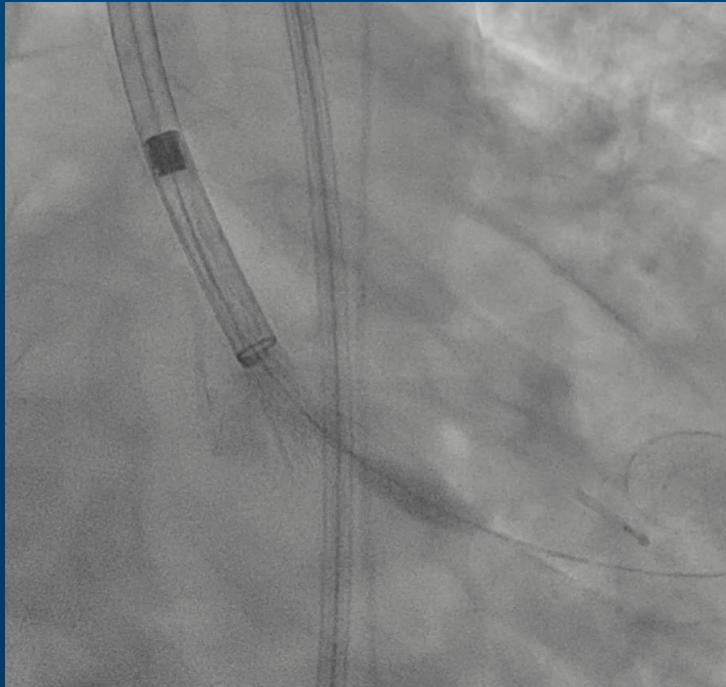


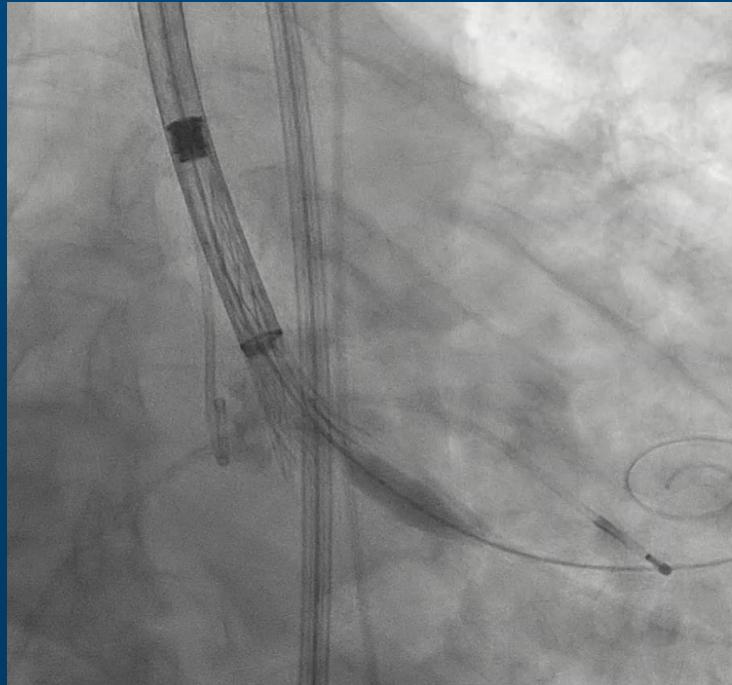


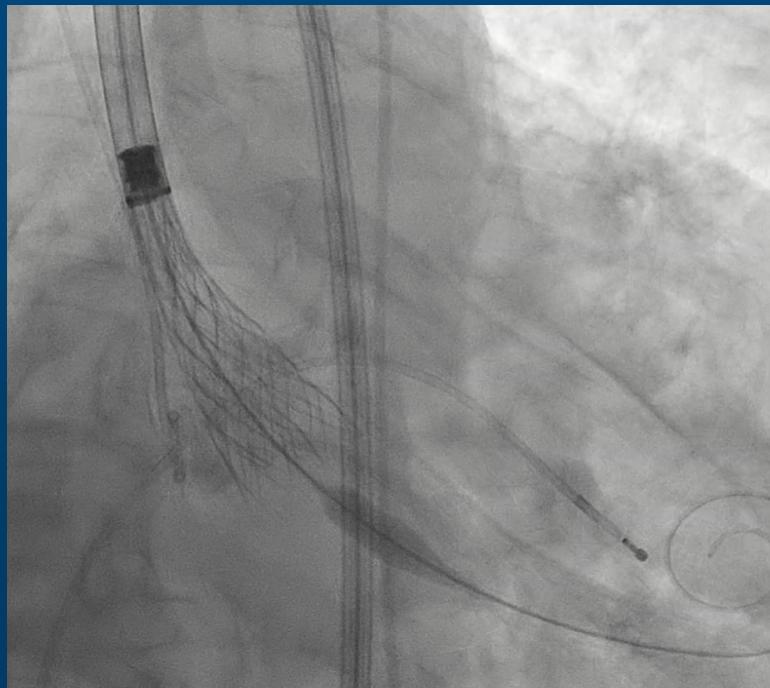


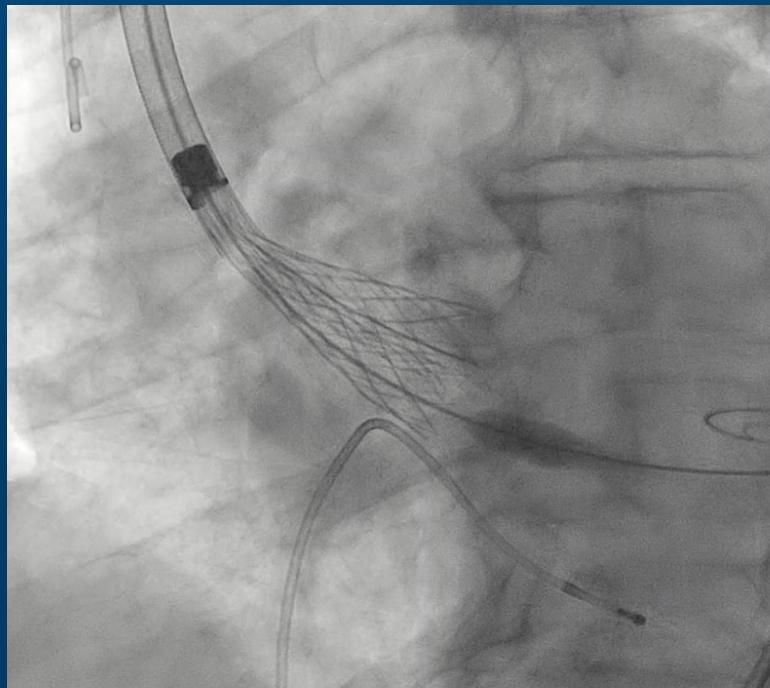


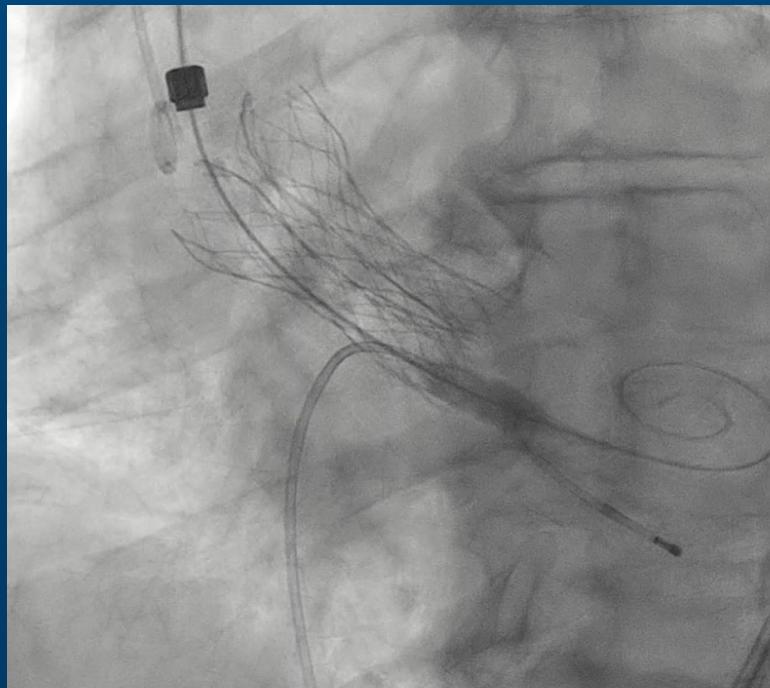


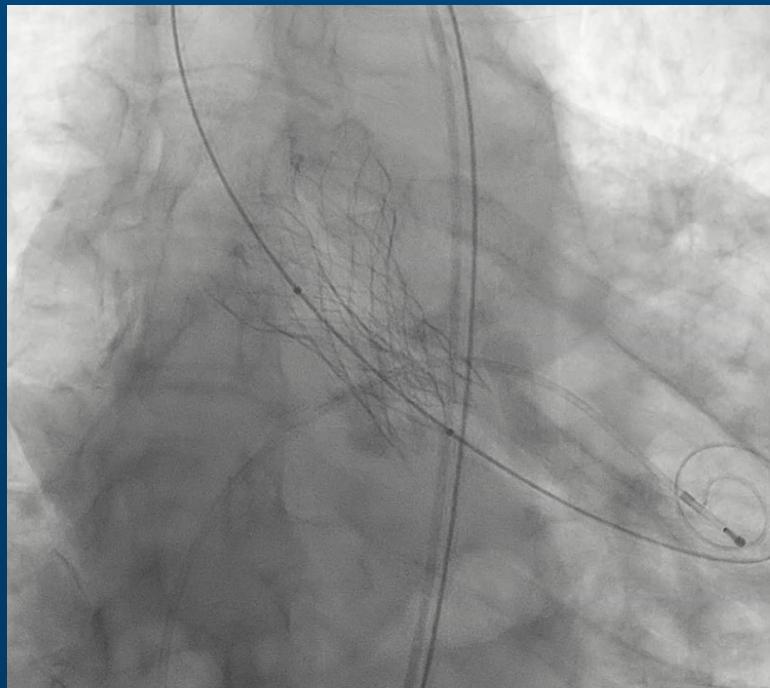


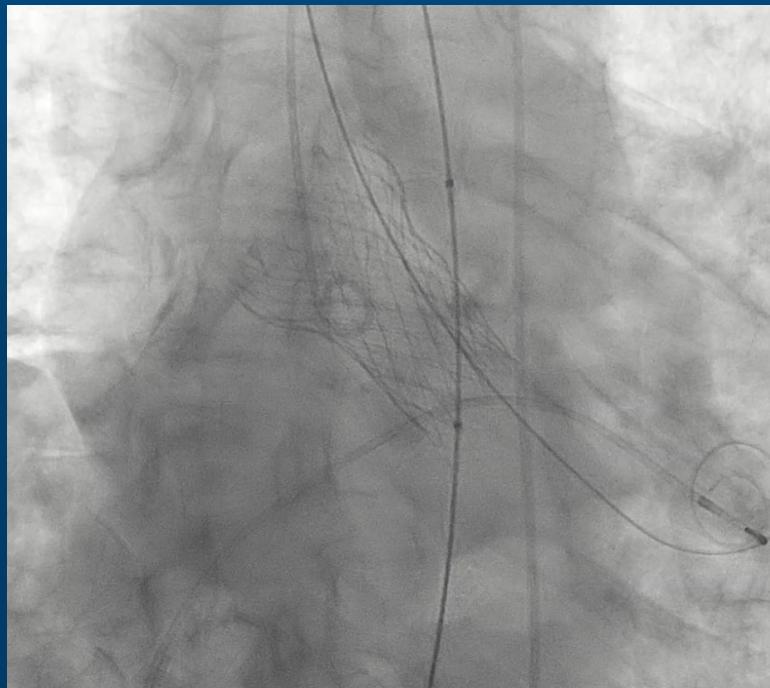


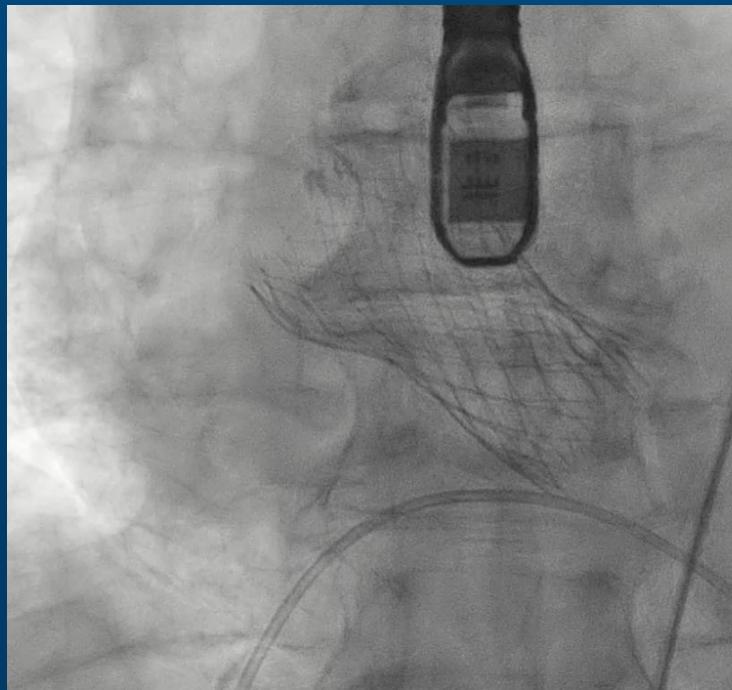


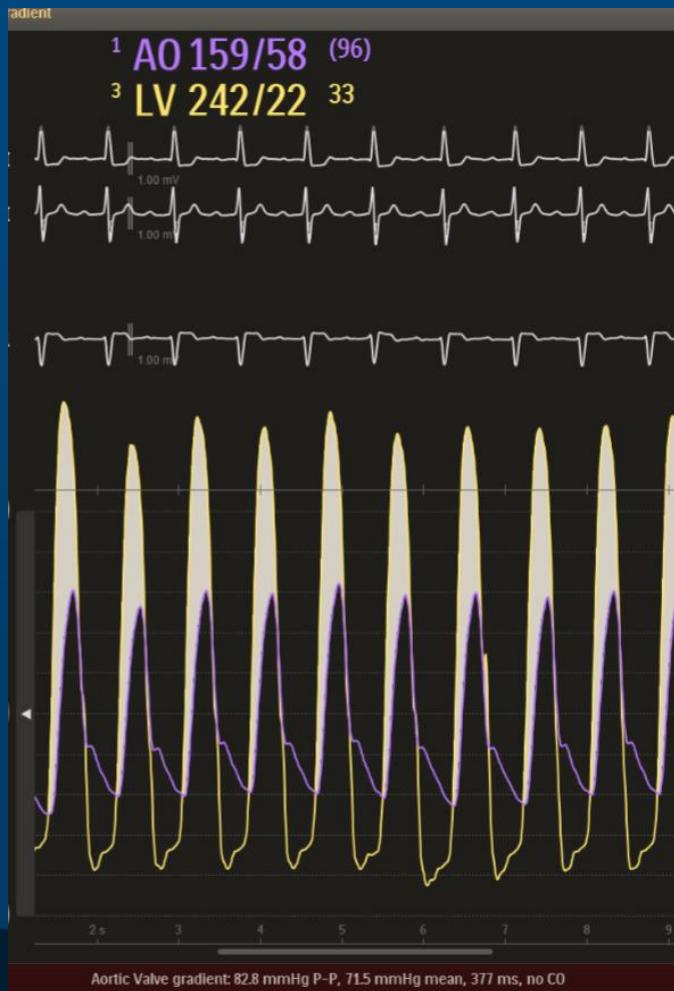


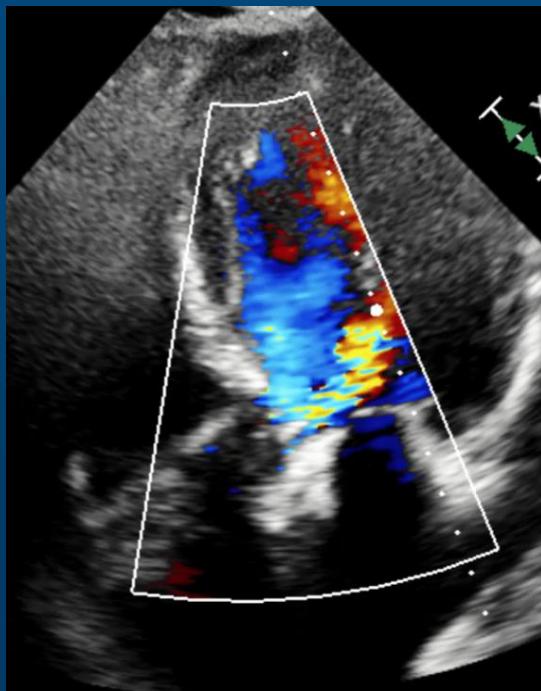


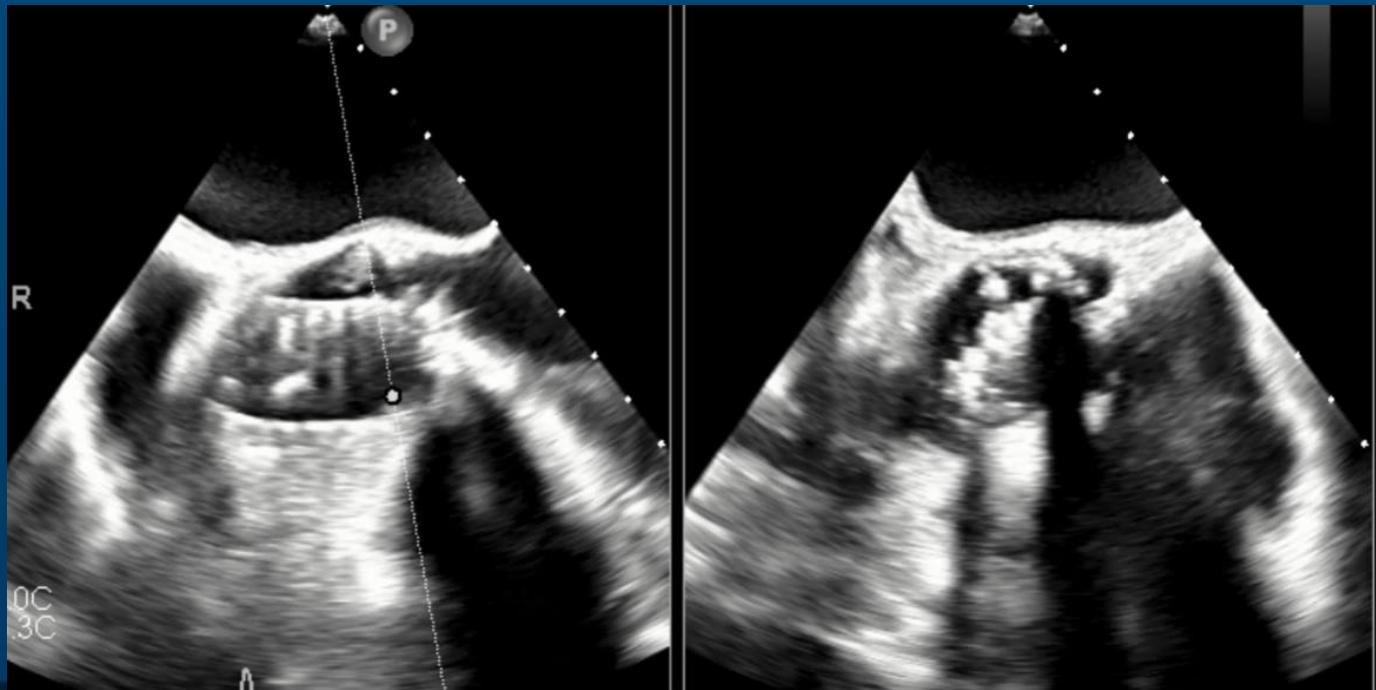


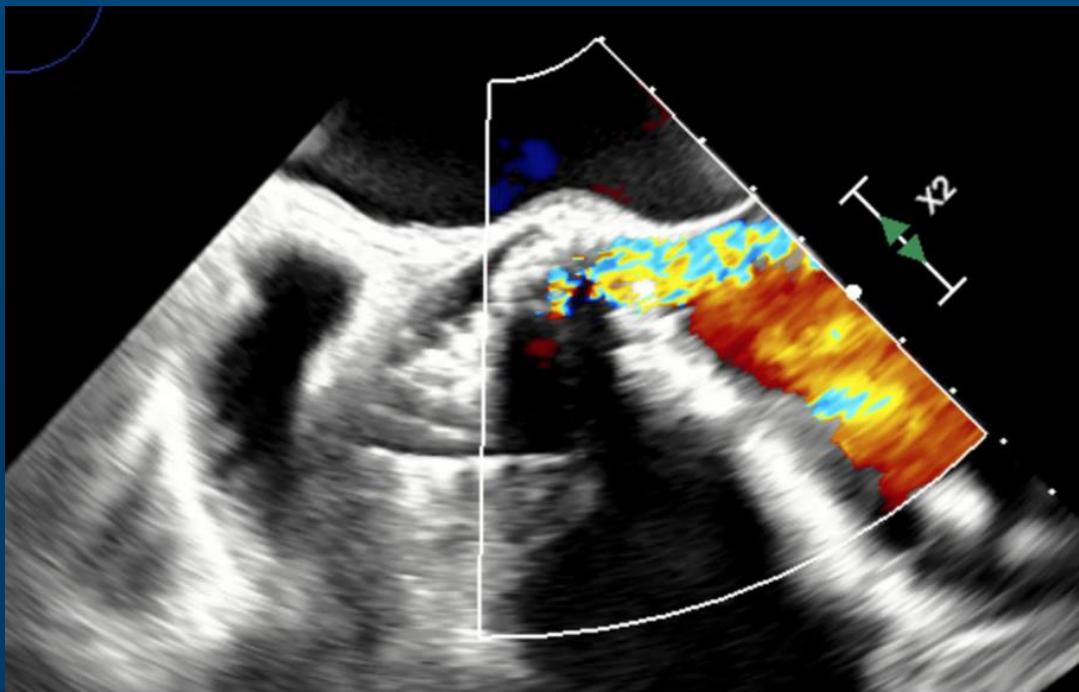


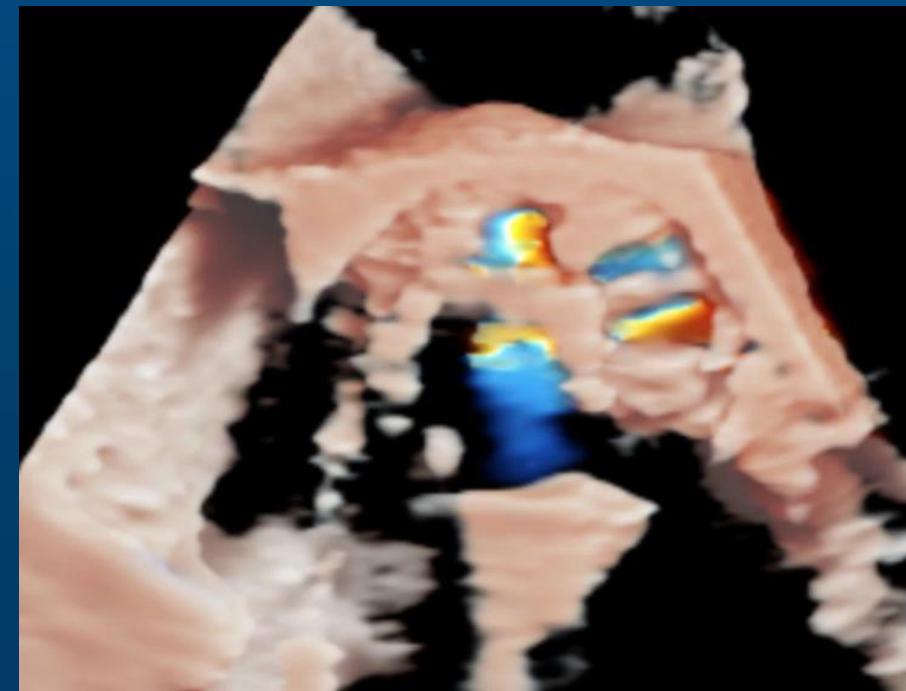
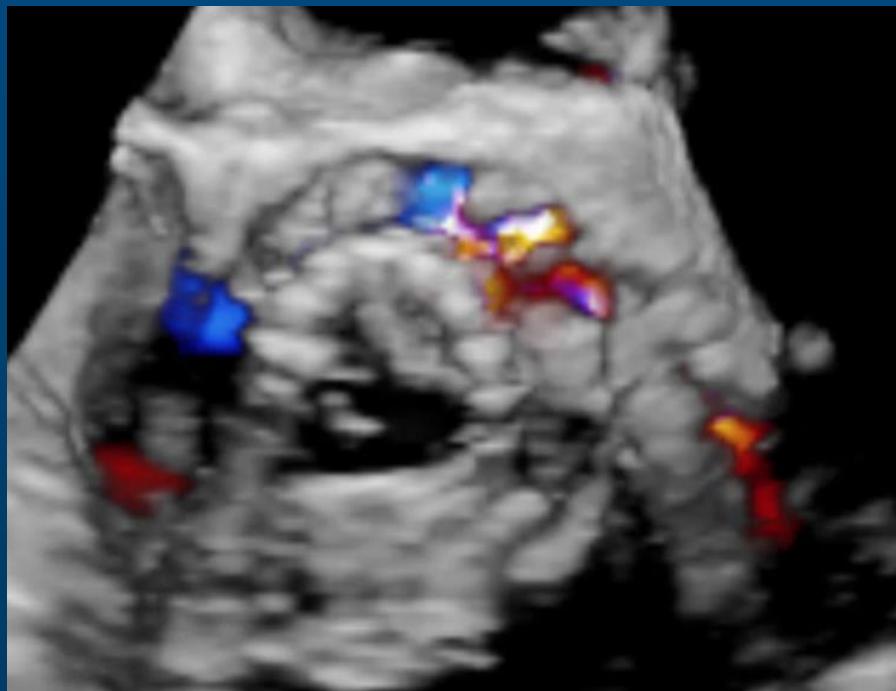


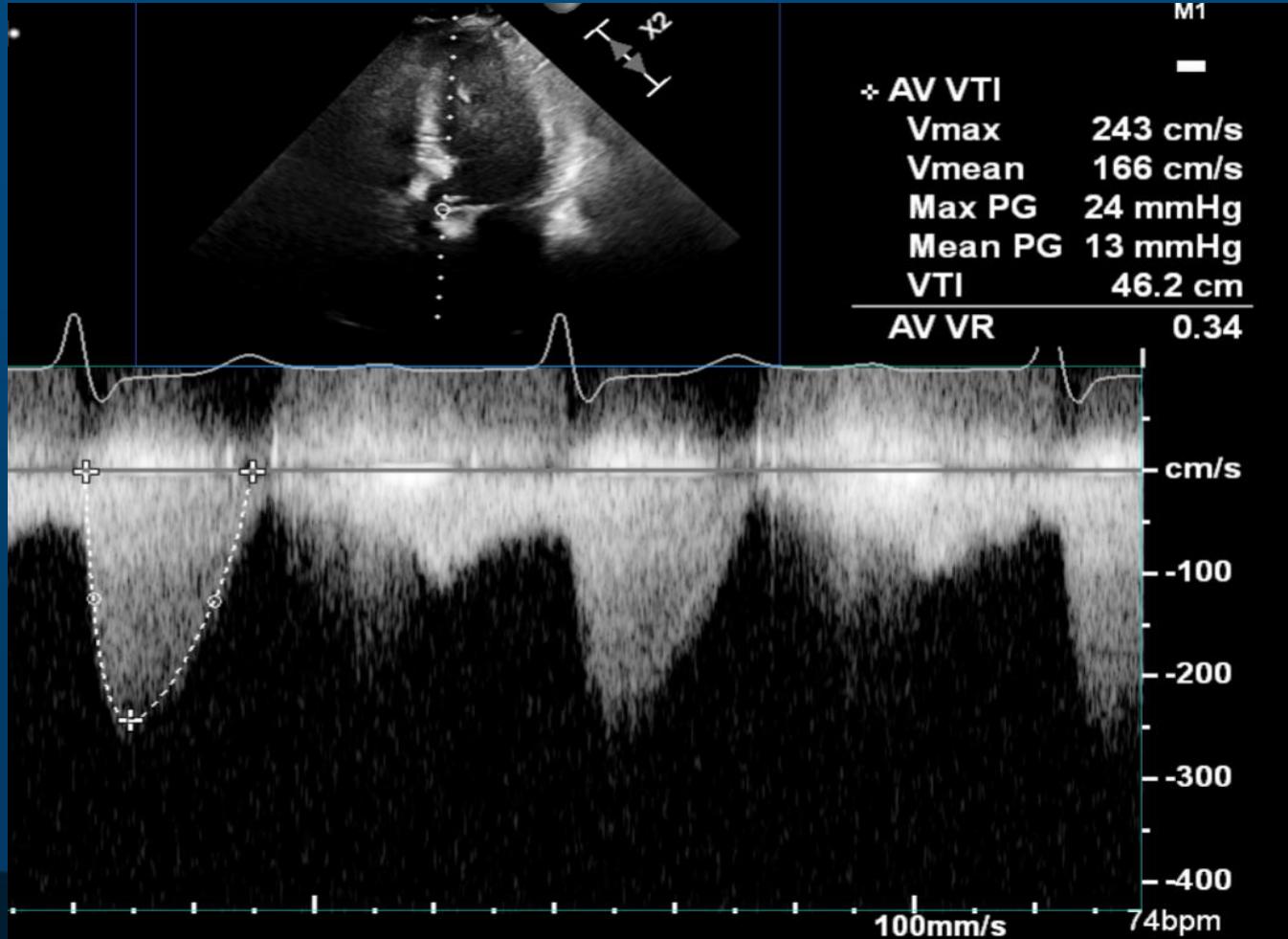






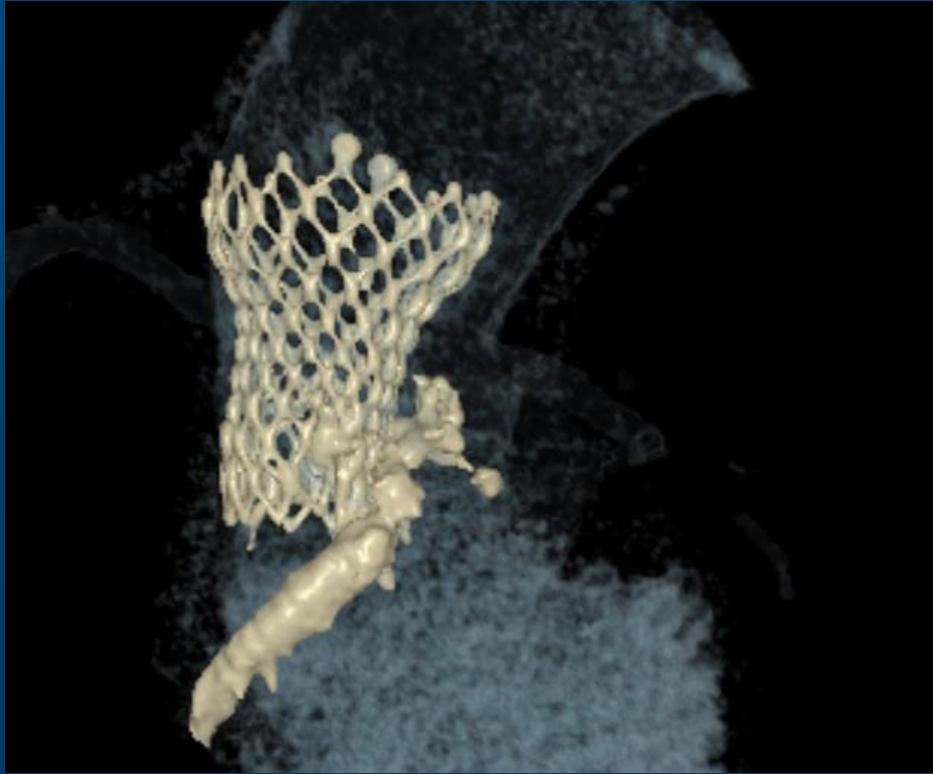


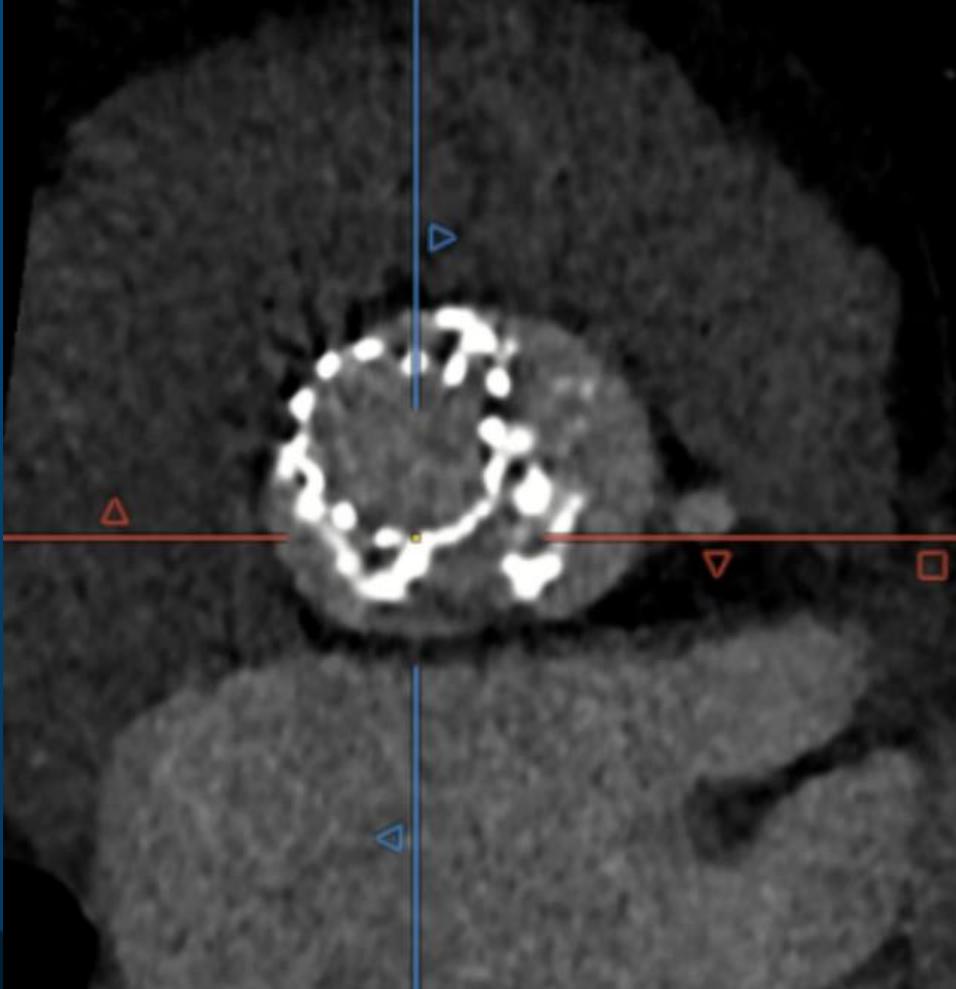


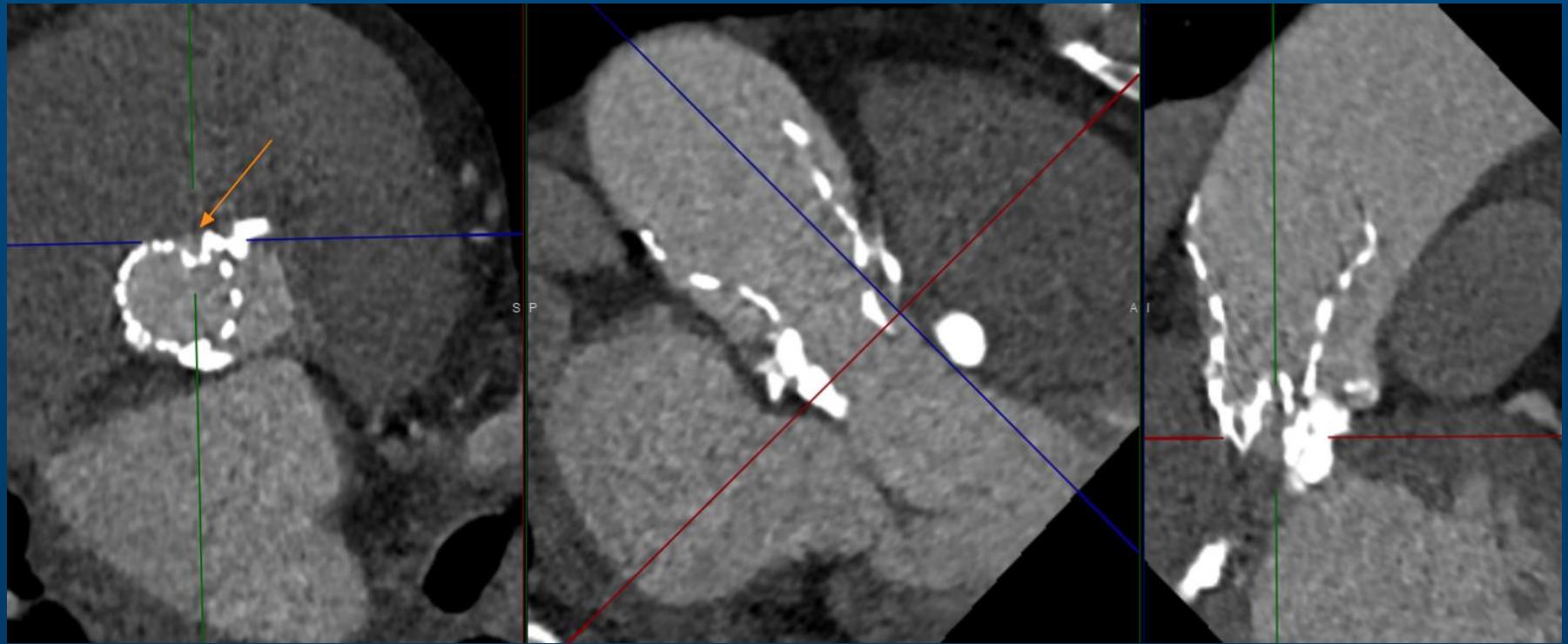


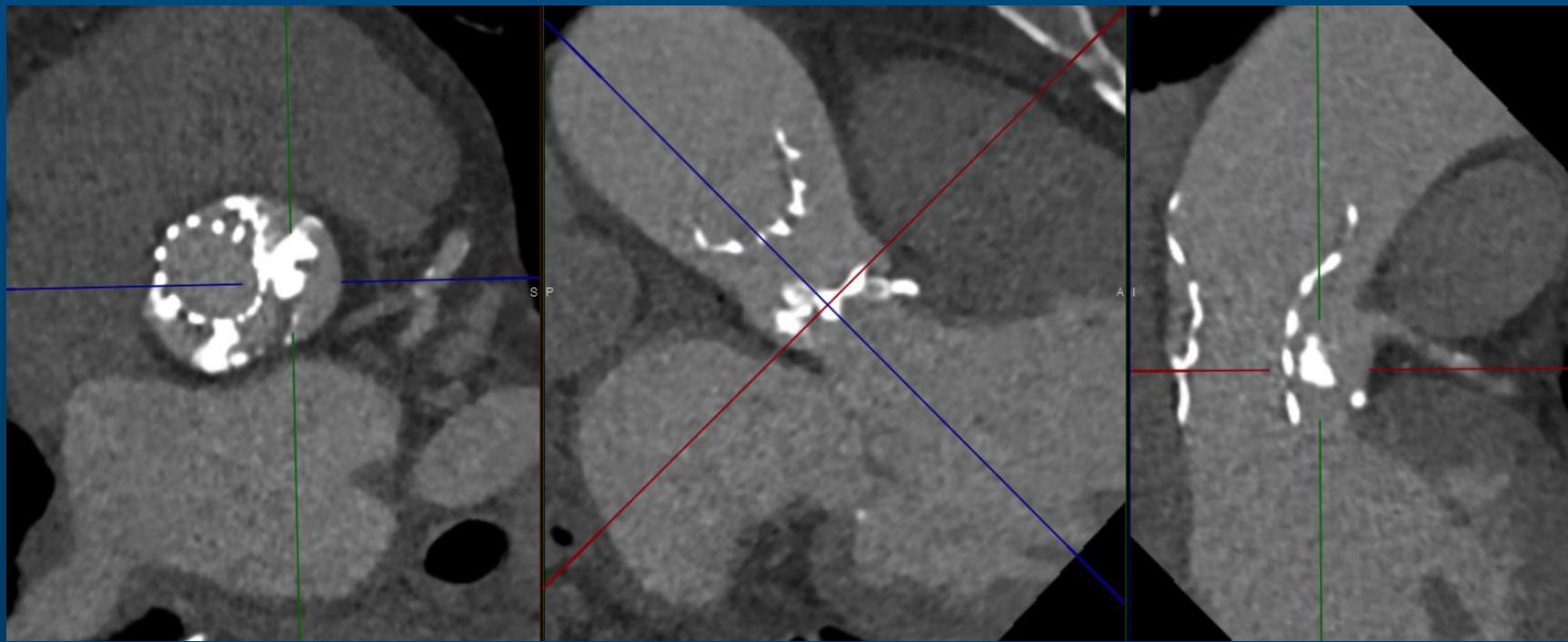
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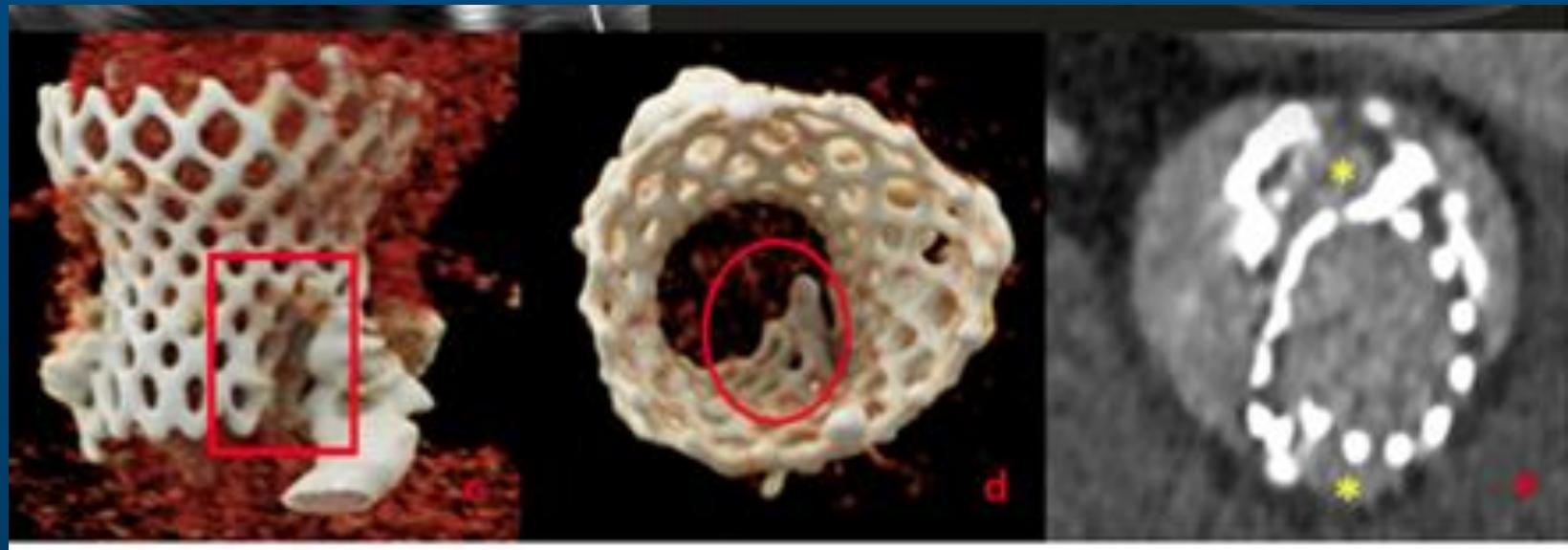
# Post TAVI CT

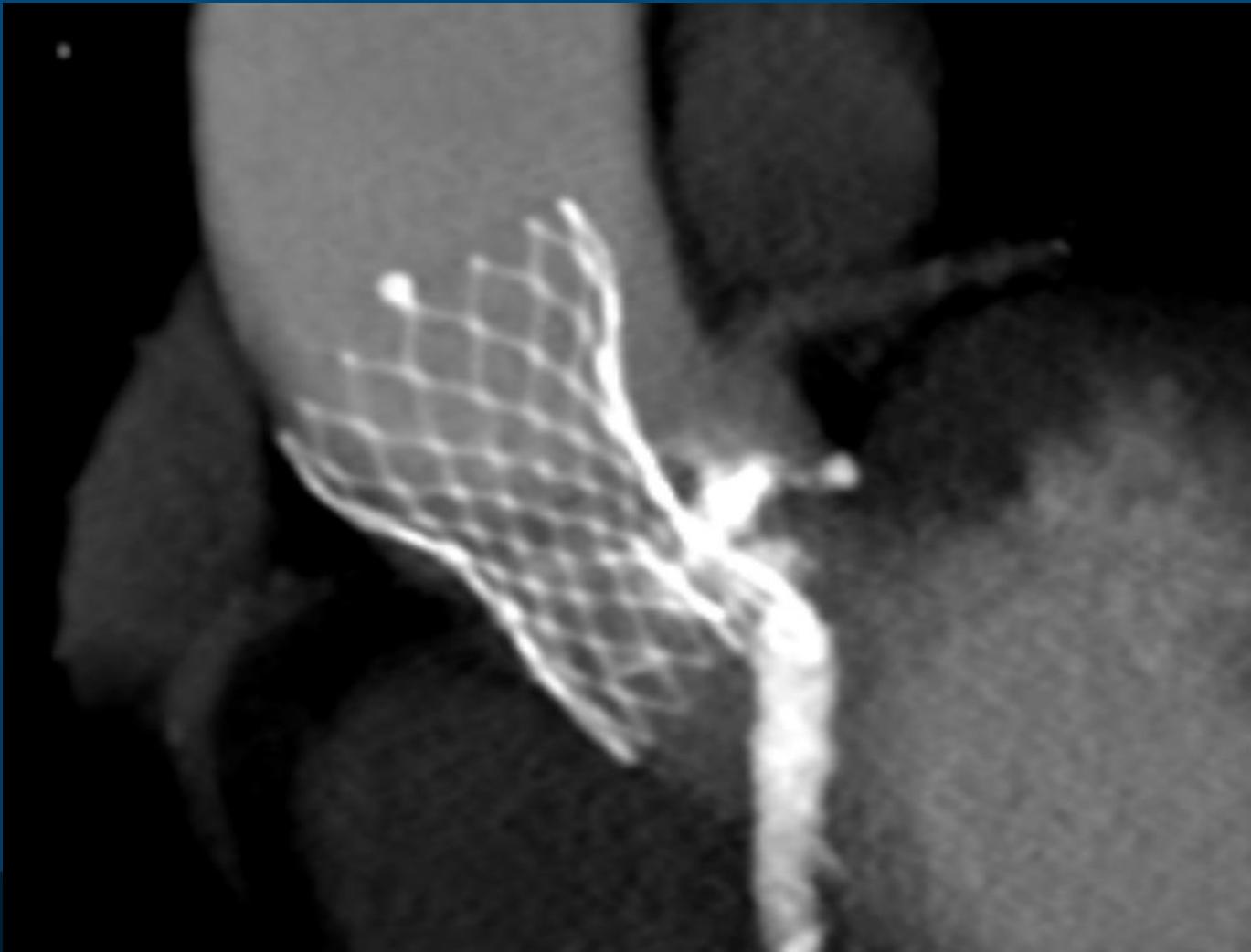






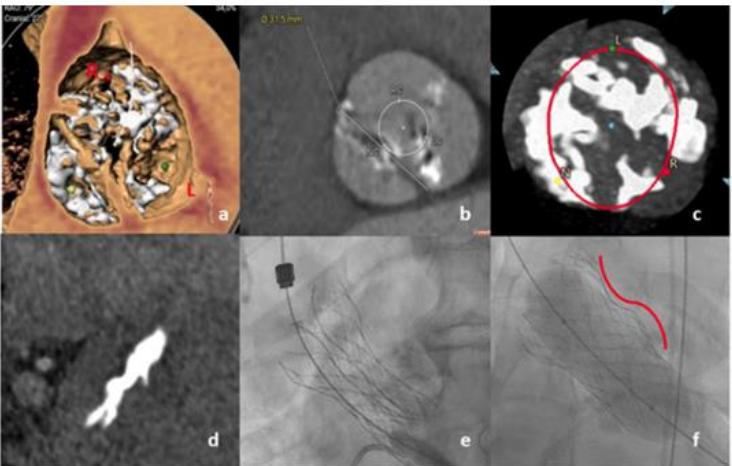




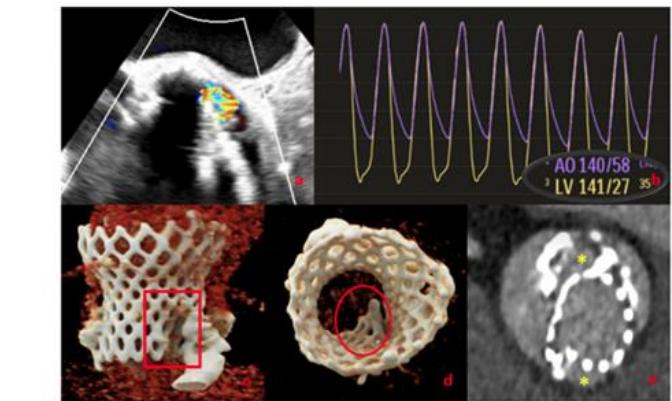


# Conclusion

- Heavy, asymmetric calcium = procedural challenge
- Frequent in **bicuspid and bulky annulus** cases
- **CT morphology** drives valve choice & planning
- **TAVR feasible** with new-generation devices
- **Imaging-guided strategy turns “no-go” anatomy into success**



**Fig. 1.** a: Type I bicuspid aortic valve with calcified raphe between RCC-LCC; R: right coronary cusp; L: left coronary cusp; b: intercommissural distance 4 mm above the annulus; c: heavy annulus calcification; d: calcification in the aorto-mitral junction; e: inflated Evariu PRO+; f: bulging of the prosthetic valve during post-dilation.



**Fig. 2.** a: Mild-moderate paravalvular regurgitation at 2 o'clock as seen by trans-esophageal echocardiogram; b: post TAVR hemodynamics; c-d: CT image showing prosthetic valve infolding; e: CT cross-sectional image depicting partial attachment of the prosthetic valve (asterisks).

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**CRM**

**Case report:**  
When extensive and hostile calcification in the aortic valve may impact a TAVR procedure

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As an 80 year old man, presenting with NYHA Class IV symptoms for the past 6 months, was referred to our hospital due to a severe aortic stenosis, was evaluated for trans-catheter aortic valve replacement (TAVR) procedure.

He had a medical history of CAD requiring reperfusion therapy and coronary artery bypass grafting, hypertension, chronic kidney disease (CKD) stage 3, and low baseline eGFR (60 ml/min), and the baseline transthoracic echo showed a severely calcified aortic valve with a mean gradient of 80 mmHg and a pulmonary artery systolic pressure of 40 mmHg. His EuroSCORE II was 10.5.

The pre-procedural computed tomography (CT) was revealed a severely calcified aortic valve with a thickened valve leaflets and a valve frame higher up between the RCC and LCC, making it a possible challenge for the TAVR procedure. The CT also revealed a severe calcification disease above the annulus [1–3]. In addition, substantial calcification was also observed in the mitral valve [4–6]. Under the valve leaflets (between LCC/RCC) and at the aorto-mitral junction, there were multiple calcifications and atherosclerotic plaques [7–10]. Aortic measurements were diameter 24–30 mm [2, 11]. An Endeavor PRO+ (Boston Scientific Inc., Minneapolis, MN, USA) was chosen for the TAVR procedure. The valve was successfully implanted [12]. Post-dilation was performed with a Dignis VMS II (Boston Scientific Inc., Minneapolis, MN, USA) to dilate the valve to 27 mm. The final CT scan showed a good position of the valve [13–15].

The patient was discharged home without any complications. His clinical course was uneventful and he was asymptomatic. He was followed up at the outpatient clinic every 3 months.

**Definition of competing interests:**

Konstantinos Stathogiannis: Writing - review & editing, Writing - original draft, Investigation, Methodology, Conceptualization, Michaela Christou: Conceptualization, Kyriacos Efstathiou: Conceptualization, Danyane Arzoumanian, Greta Koenigsmann: Validation, Elias Kapetanakis: Methodology, Investigation, Konstantinos Sparos: Writing - review & editing.

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The authors declare that they have no known competing financial interests or personal relationships that could be perceived as influencing the results reported in this paper.

**Data availability:**

The data that support the findings of this study are available from the corresponding author upon reasonable request.