

Structural Heart Live Case #1 : AM, 82 YO F



Presentation: Progressive fatigue and recurrent syncope with fall, which found to have complete heart block and elevated trans AVG

PMH: Severe AS s/p TF-TAVR with 23mmS3-1 cc in 3/2019, Hypothyroidism, HLD, non-obstructive CAD, complete heart block s/p PPM 9/2023, ICH secondary to fall 9/2023

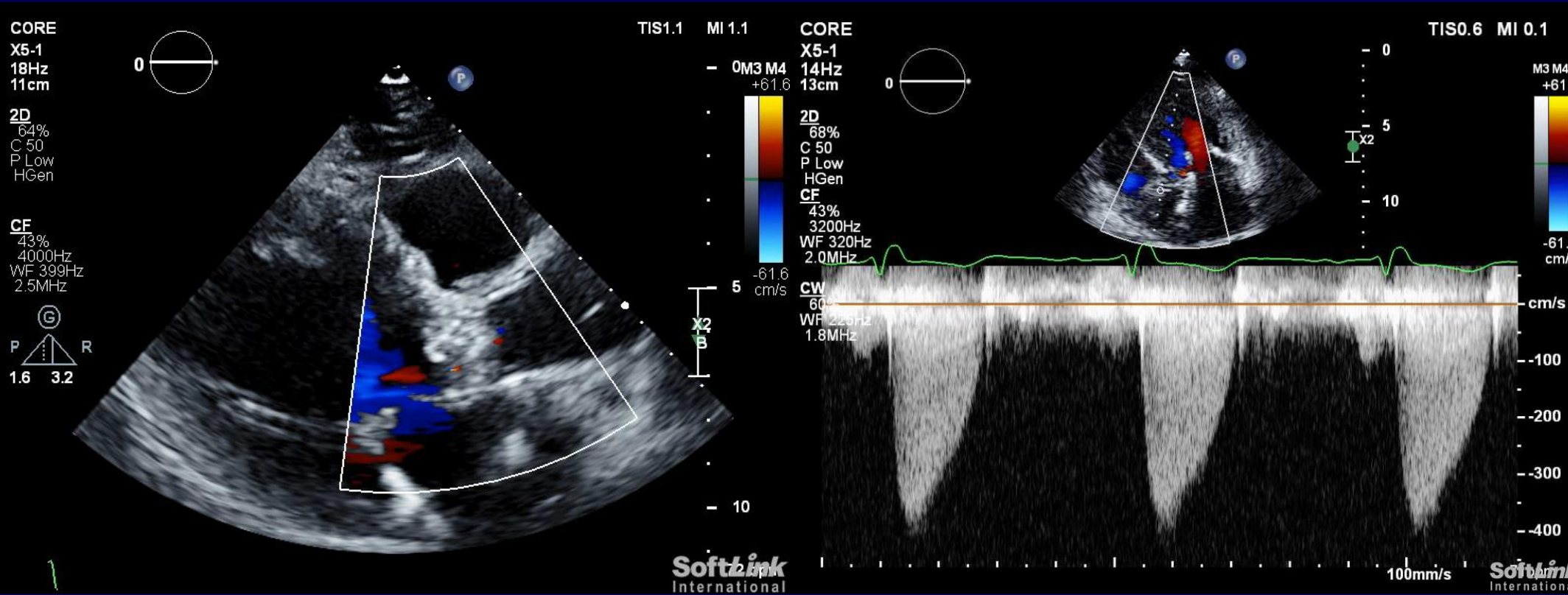
Medications: Lisinopril, amlodipine, levothyroxine, simvastatin

Labs: Hgb 10.3, PLT 281K, K 4.4, Cr 1.04, INR 1.4

EKG: Atrial-sensed, ventricular paced rhythm

TTE: Severe aortic prosthetic stenosis (PG/MG/EOA/PV = 61/36/0.67/3.91) with minimal PVL, LVEF 70%, mild MR

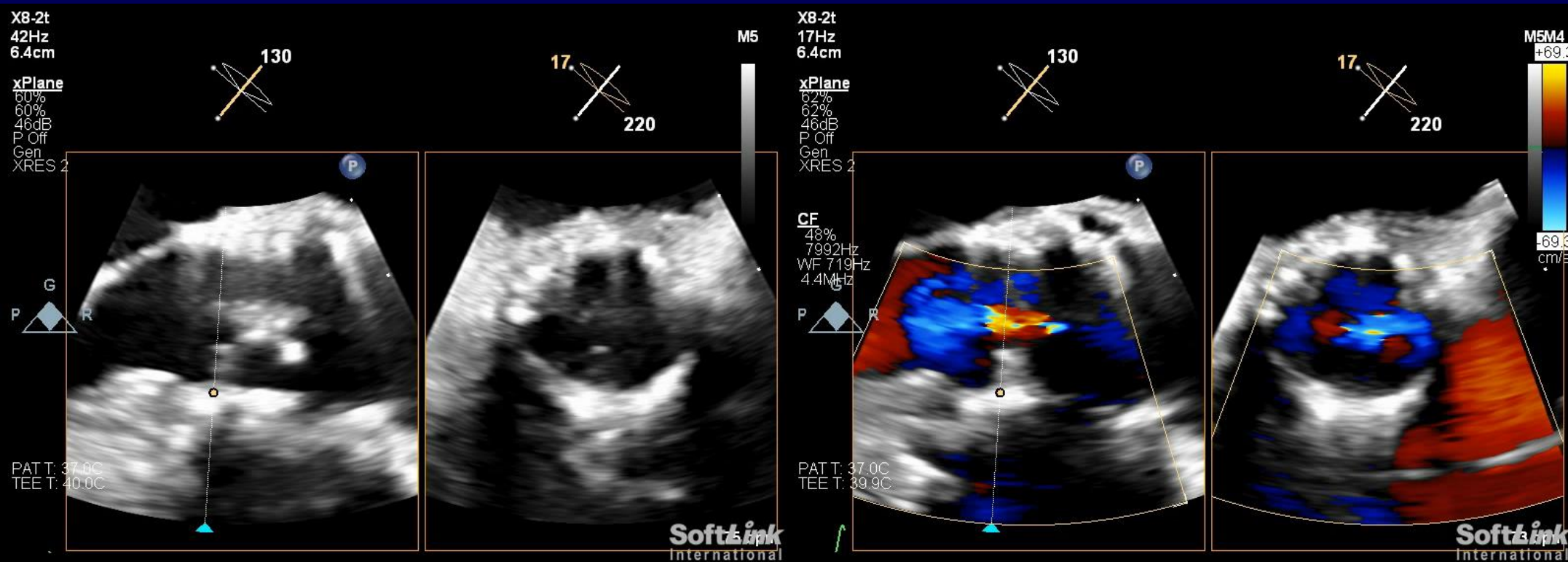
Transthoracic Echocardiogram



LVEF 70%, Severely aortic prosthetic stenosis with minimal PVL

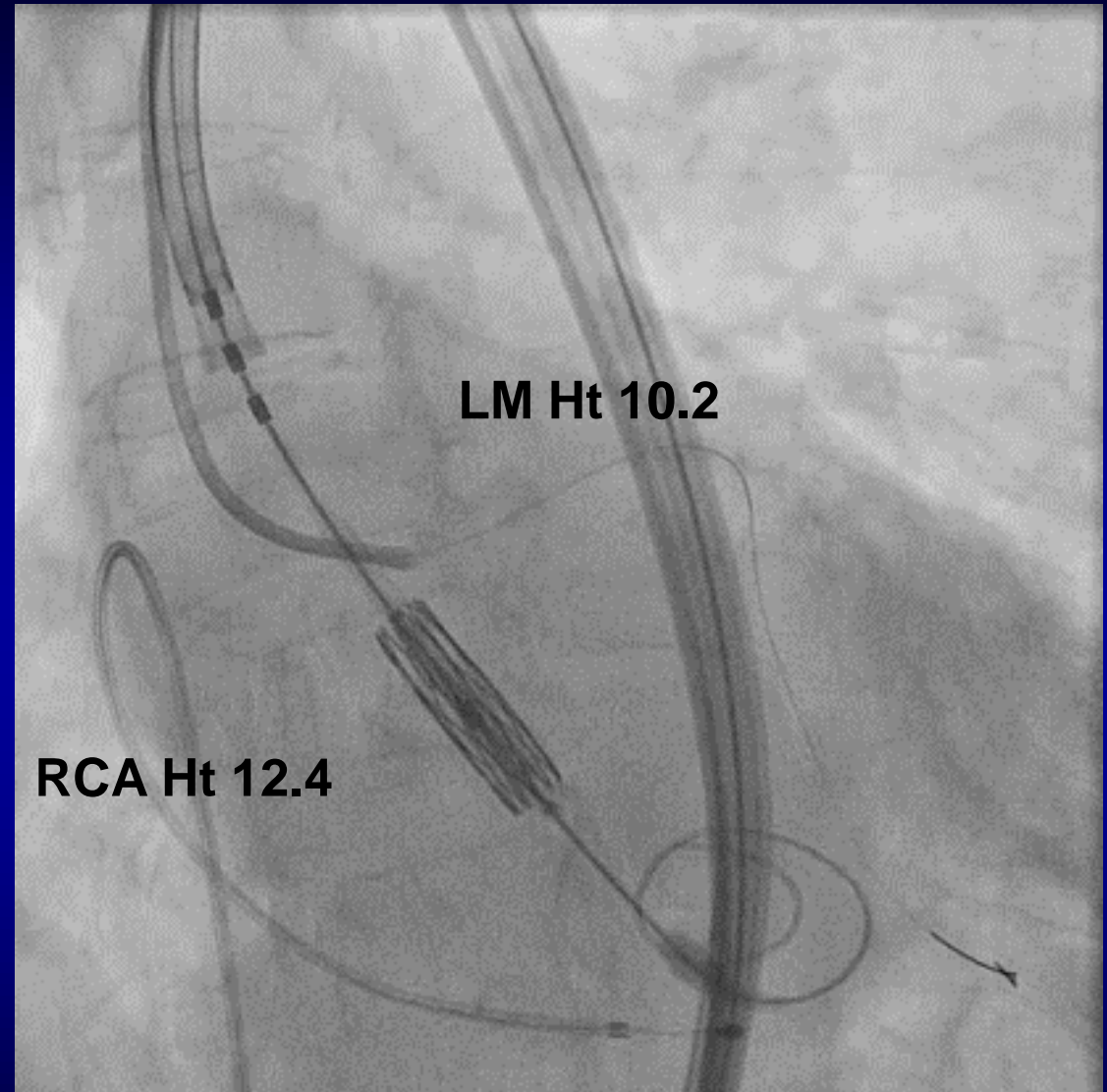
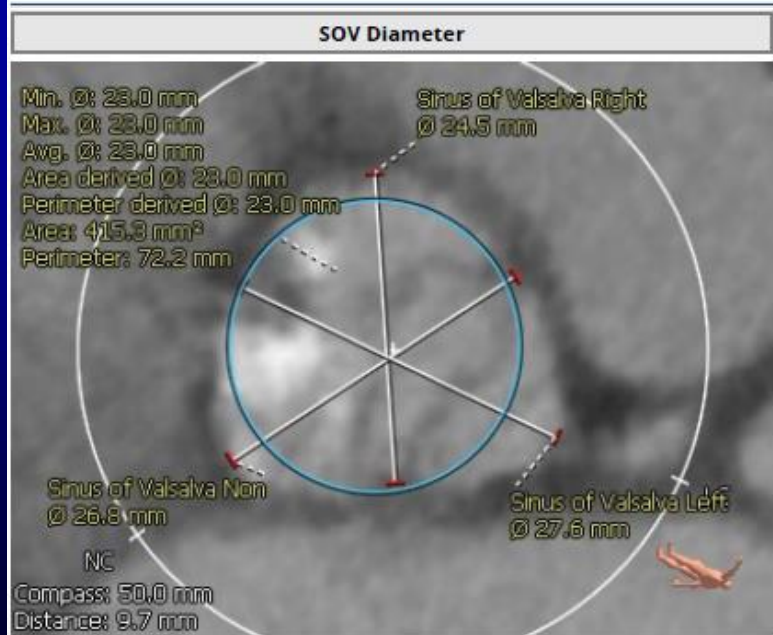
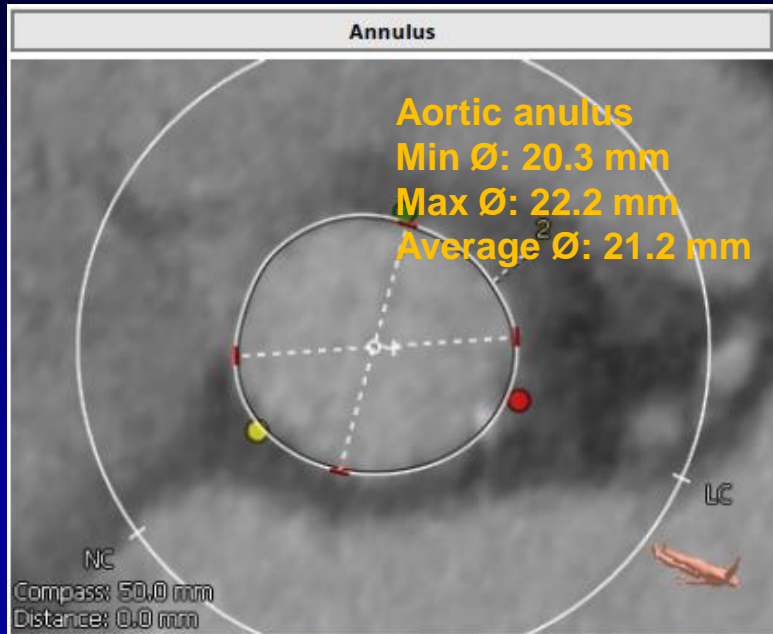
PG/MG/EOA/PV = 61/36/0.67/3.91

Transesophageal Echocardiogram



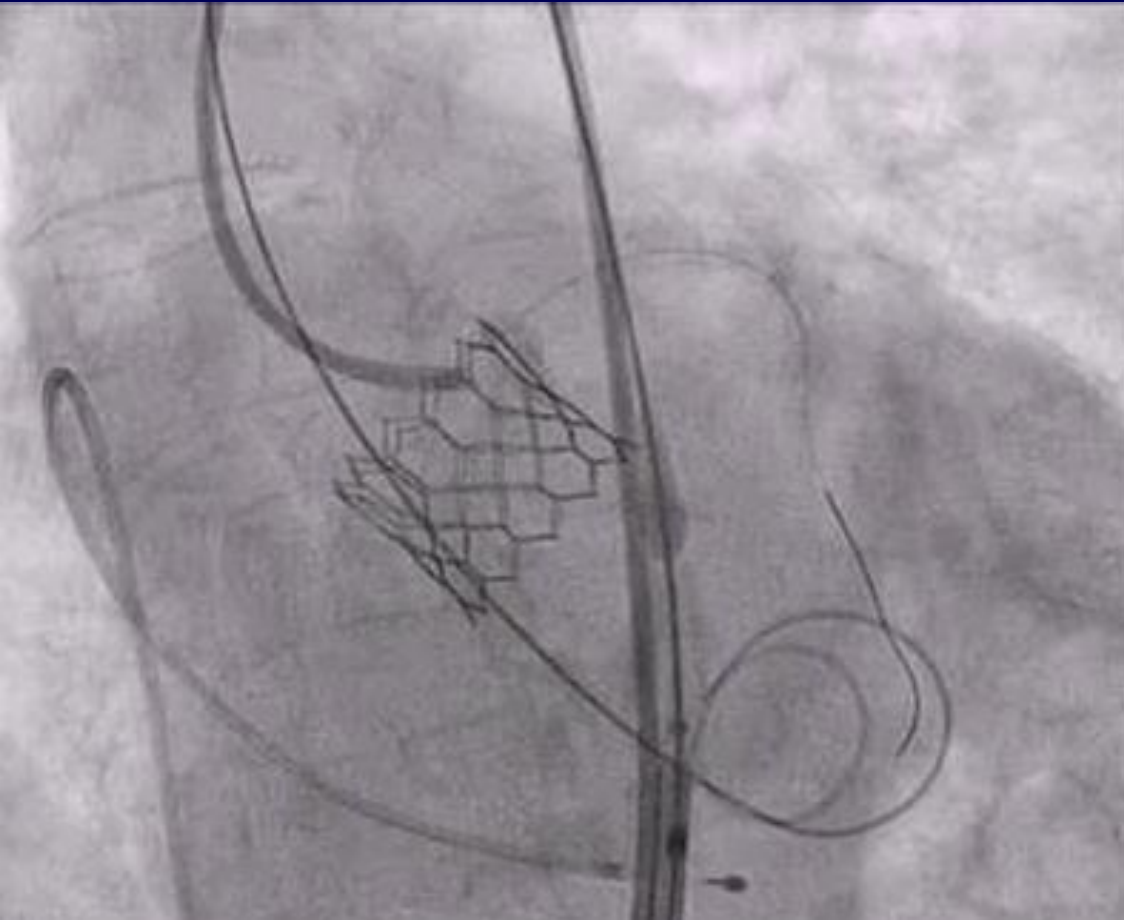
Restricted and thickened functional noncoronary & right coronary cusps of TAVR due to valve degeneration

Previous TAVR in 2019

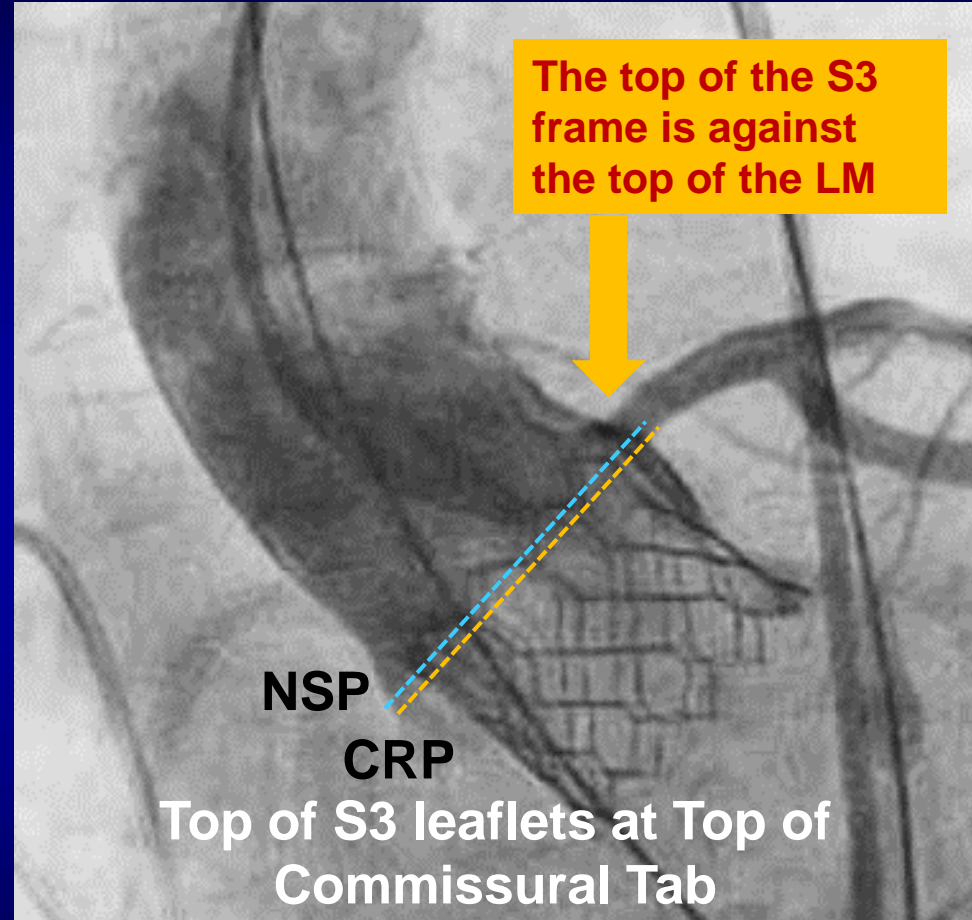


23 mm Sapien3 valve – 1cc with LM protection with coronary wire

Previous TAVR in 2019

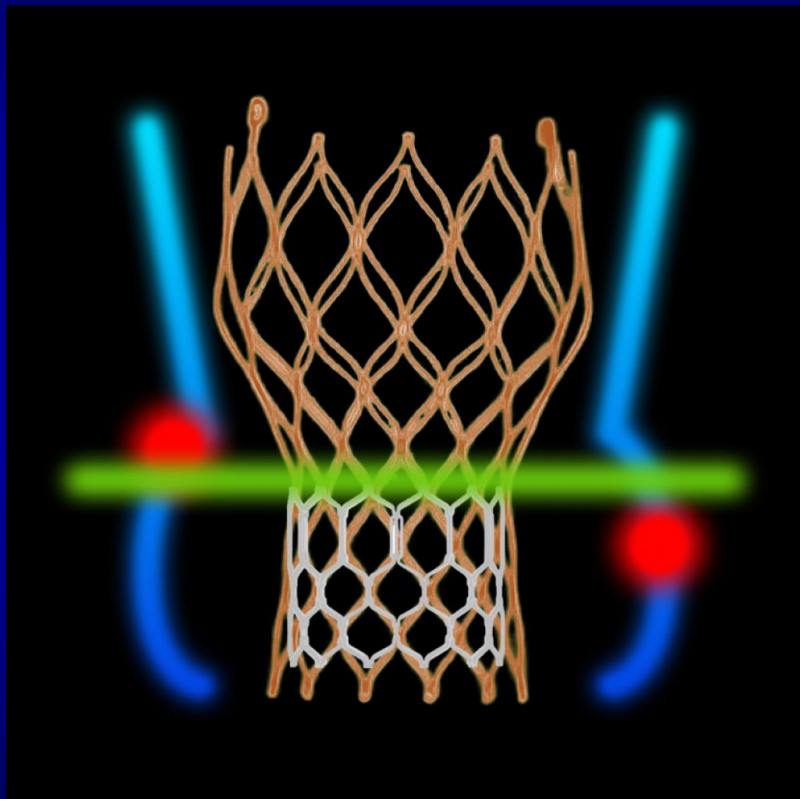


23 mm Sapien3 valve – 1cc with LM protection with coronary wire




NSP = Neo skirt plane
CRP = Coronary risk plane

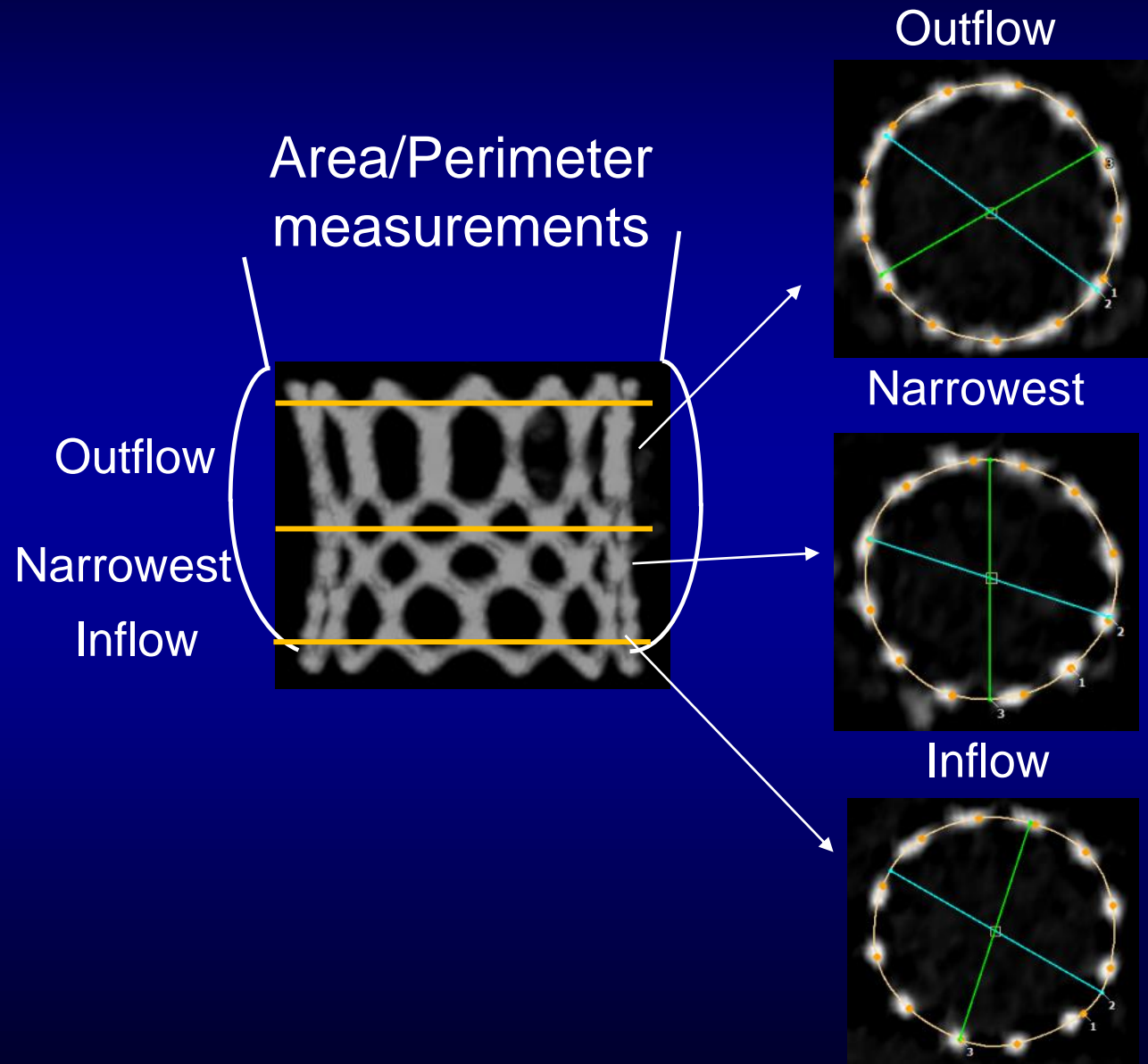
Redo TAV App



Steps

- 1 Index TAV & Measurements 
- 2 Identify Coronary Risk Plane
- 3 Select Second TAV
- 4 Choose NSP & Assess NSP/CRP
- 5 Second TAV Sizing
- 6 Coronary Risk Assessment
- 7 Summary Report
- 8 Pre-Index TAV CT Data (Optional)

Step 1. Index TAV : S3 #23



	Area (mm ²) Diameter	Perimeter (mm)
Outflow	353 (22*21)	67
Waist	304 (20*19)	62
Inflow	348 (22*20)	66

Cardiac CT Analysis

Previous TAVR Inflow & Outflow: Underexpanded valve



Inflow of 23mm S3

Max: 22.0 mm
 Min: 20.8 mm
 Mean: **21.4** mm
 Perimeter = 67.2 mm
 Area = 359 mm²

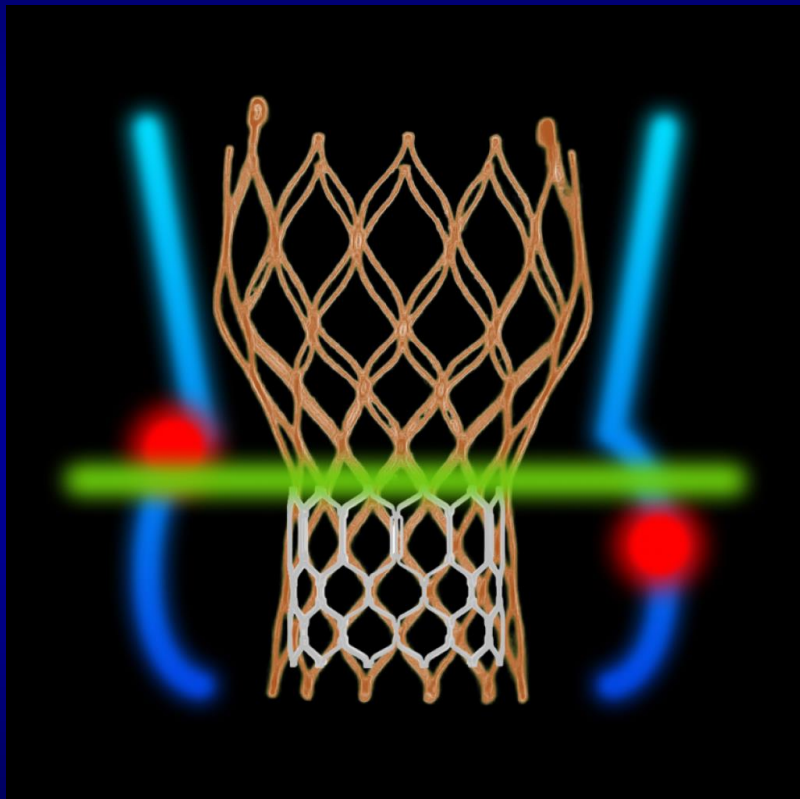
Mid Frame of 23mm S3

Max: 20.7 mm
 Min: 19.2 mm
 Mean: **19.9** mm
 Perimeter = 62.4 mm
 Area = 309.3 mm²


Outflow of 23mm S3

Max: 21.8 mm
 Min: 20.9 mm
 Mean: **21.3** mm
 Perimeter = 67.2 mm
 Area = 359 mm²

Redo TAV App

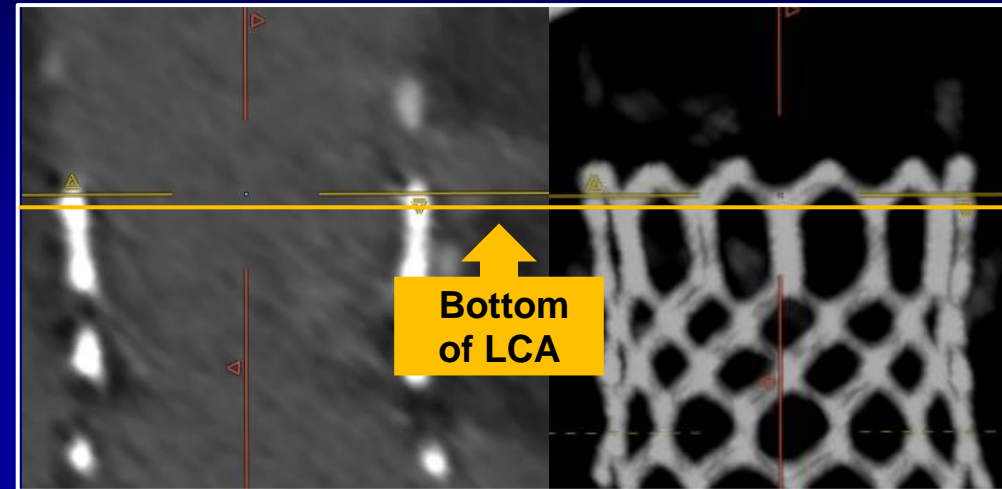
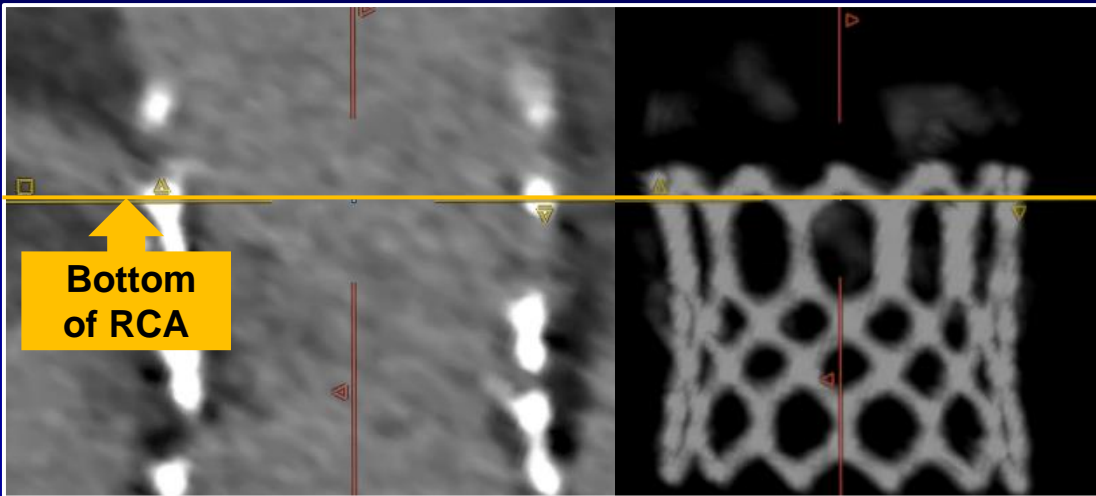


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Step 2. CRP and its relation to index TAV :

CRP defined as below the LOWEST coronary ostia



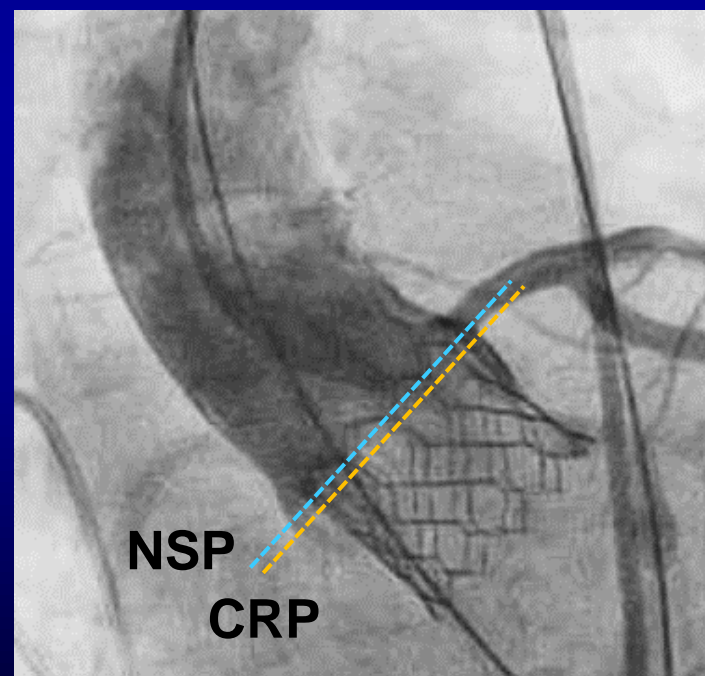
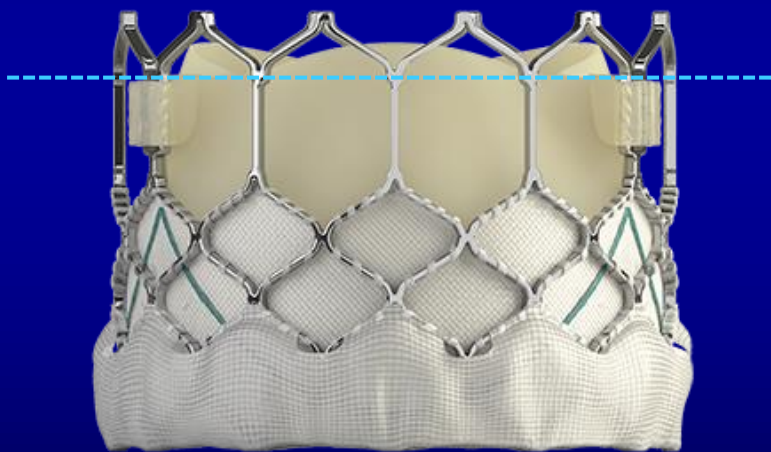
Bottom of RCA
at Top of commissure tab

Bottom of LCA
~ Top of commissure tab

This case's CRP ~ at Top of commissure tab

Index TAV: 23 mm Sapien 3

Important landmark: Top of Commissure Tab



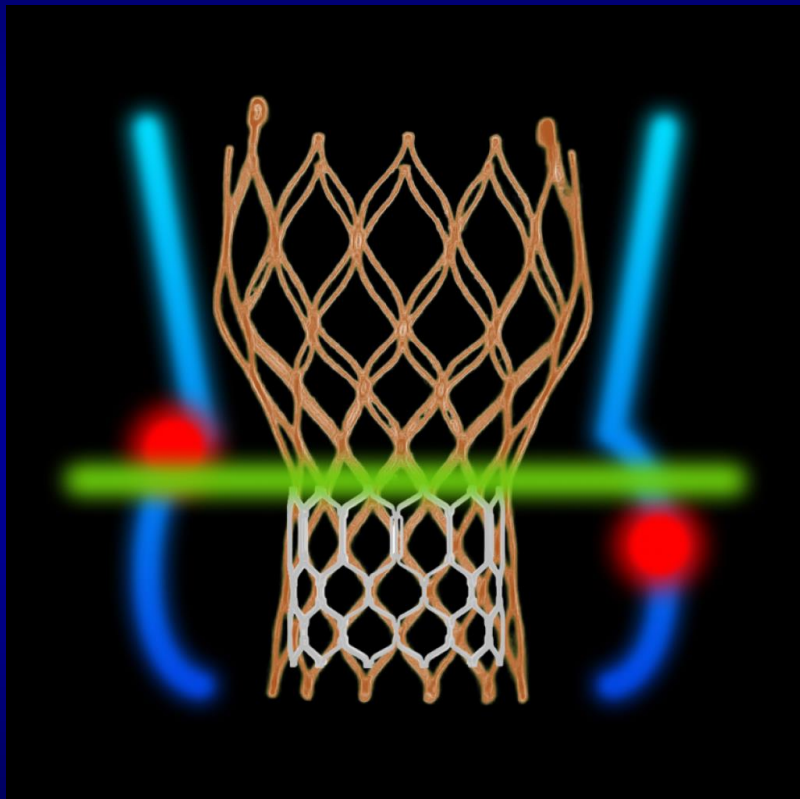
Top of commissure tab is where the leaflets end = Neo skirt

Cardiac CT Analysis



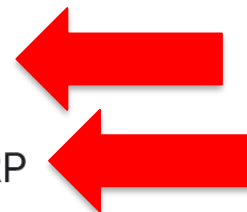
**Narrow VTC to LCA
CRP just below NSP**

Redo TAV App



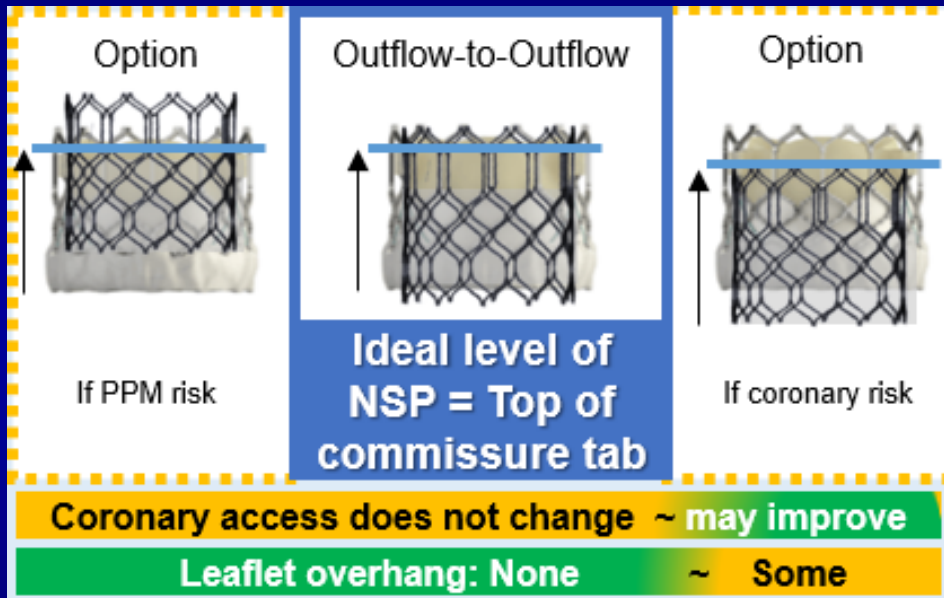
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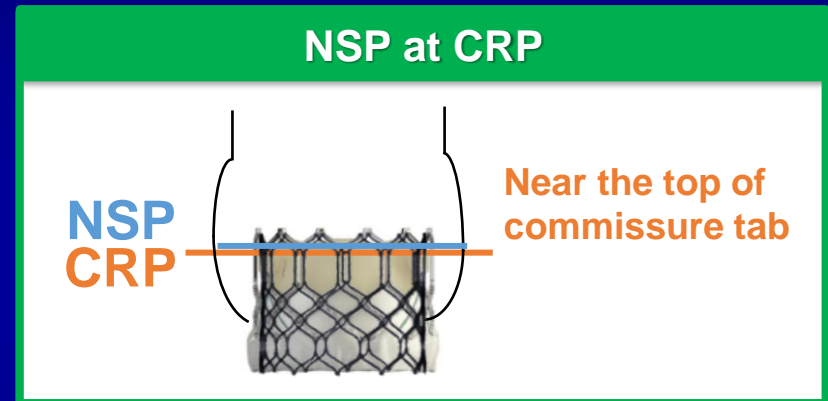
Step 3. Select Second TAV

Step 4. Choose NSP and Assess relation between NSP/CRP



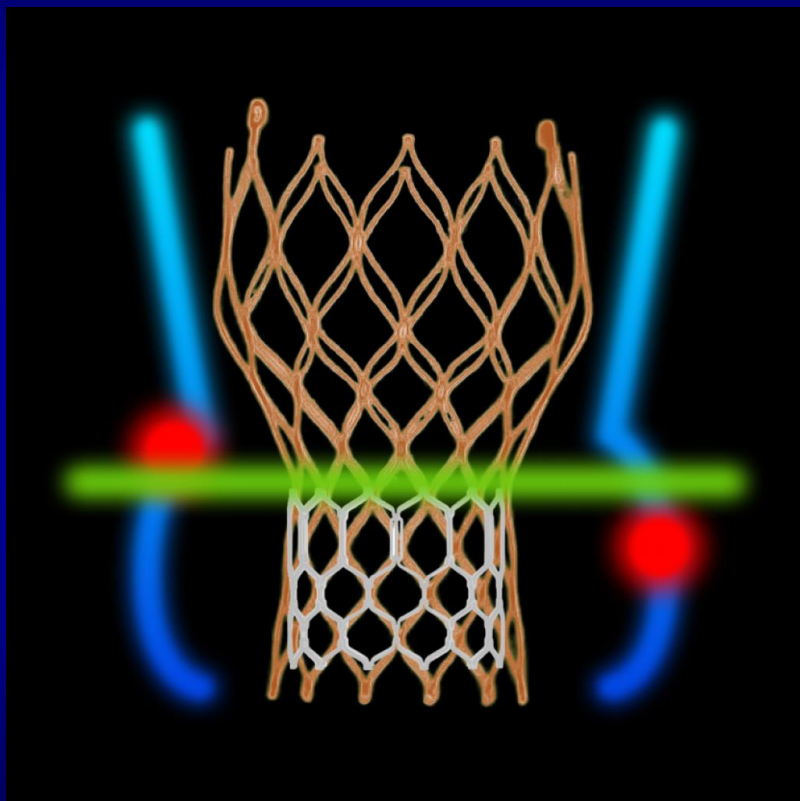
This case:

NSP and CRP nearly same level



Low risk of acute coronary obstruction

Redo TAV App



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Step 5. Second TAV Sizing

	Area (mm ²)	Perimeter (mm)
Outflow	353	67
Waist	304	62
Inflow	348	66

→ **Average area: 335 mm²**

Average perimeter: 65 mm

BSA = 1.51 m²

S3 #20: 0.81 cm²/m² (mod PPM)

S3 #23: 0.96 cm²/m² (no PPM)

IFU for S3

Valve size	Area (mm ²)	Area derived diameter (mm)
20	273-345	18.6-21
23	338-430	20.7-23.4
26	430-546	23.4-26.4
29	540-683	26.2-29.5

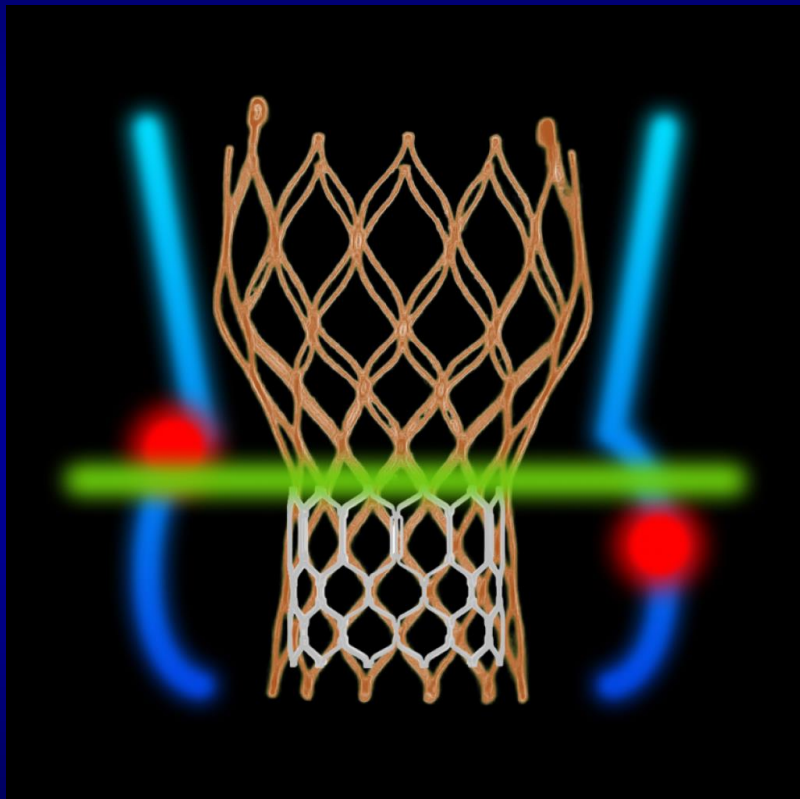
→ **Second TAV**

S3 #20 +1cc vs

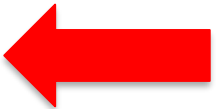
S3 #23 -1cc?

Evolut #26

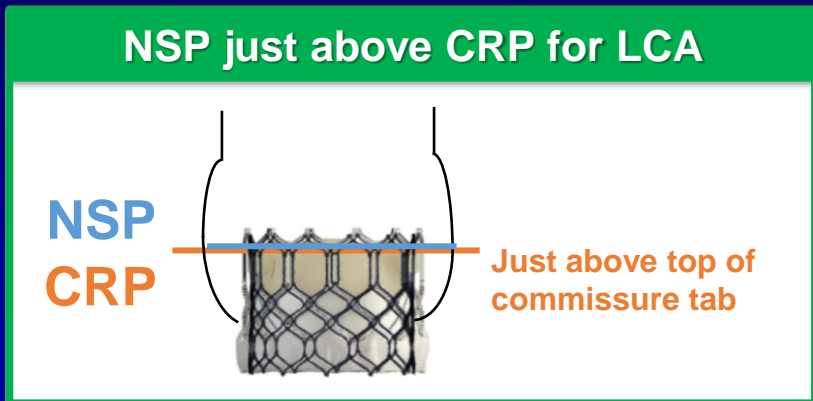
Redo TAV App



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Step 6. Coronary risk assessment



Low risk of acute coronary obstruction

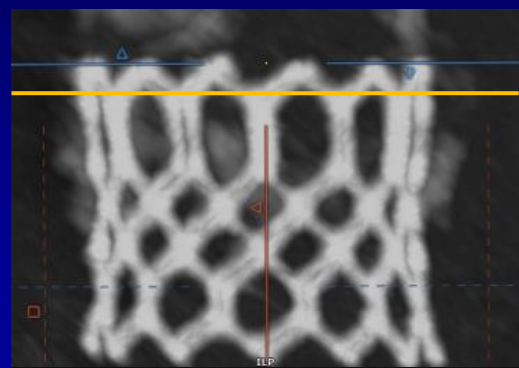
Delayed coronary obstruction?

Difficult coronary access post Redo TAV?

Just in case...

The level of LCA VTC = Top of stent frame

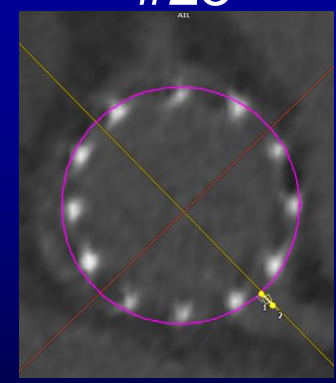
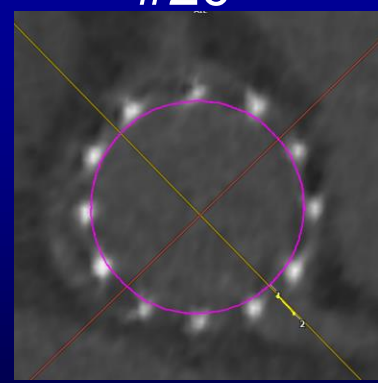
LCA VTC



Virtual circle of

#20

#23

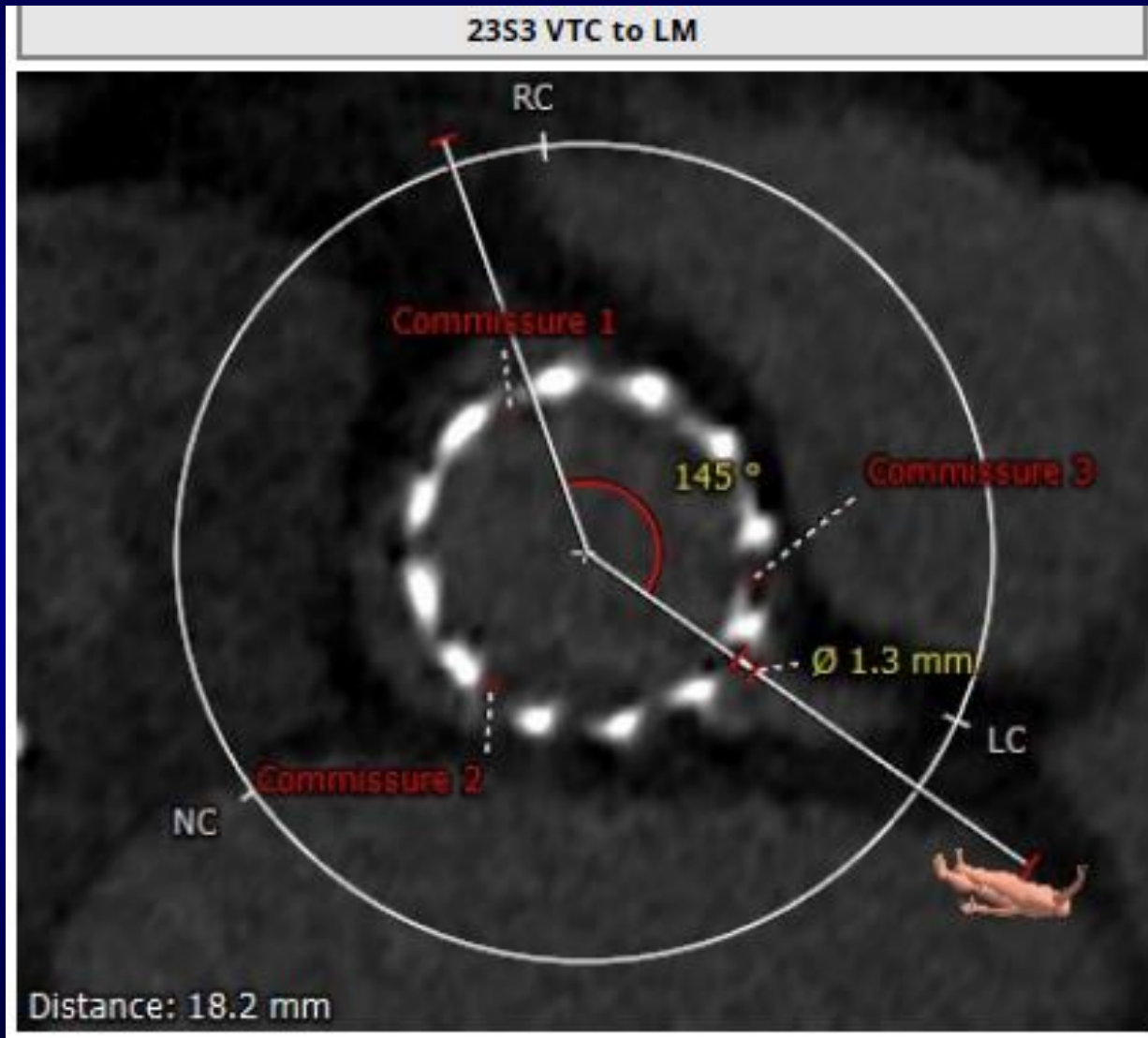


VTC = 2.3 mm

1.5 mm

Index 23 S3 further expansion by redo TAV?

Cardiac CT Analysis



Moderate commissural misalignment

Aorto-Iliac Bifurcation

RAO: 0°
Caudal: 0°



Aortic Arch

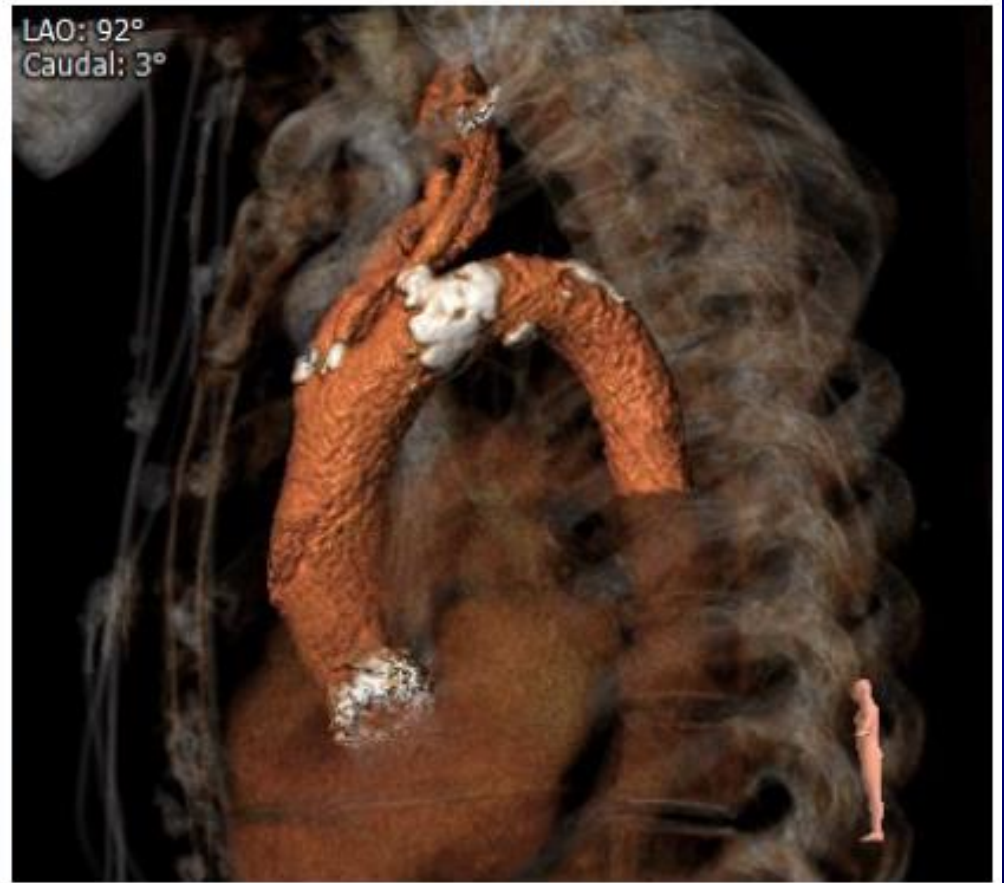
ALo

LAO: 45°
Cranial: 3°

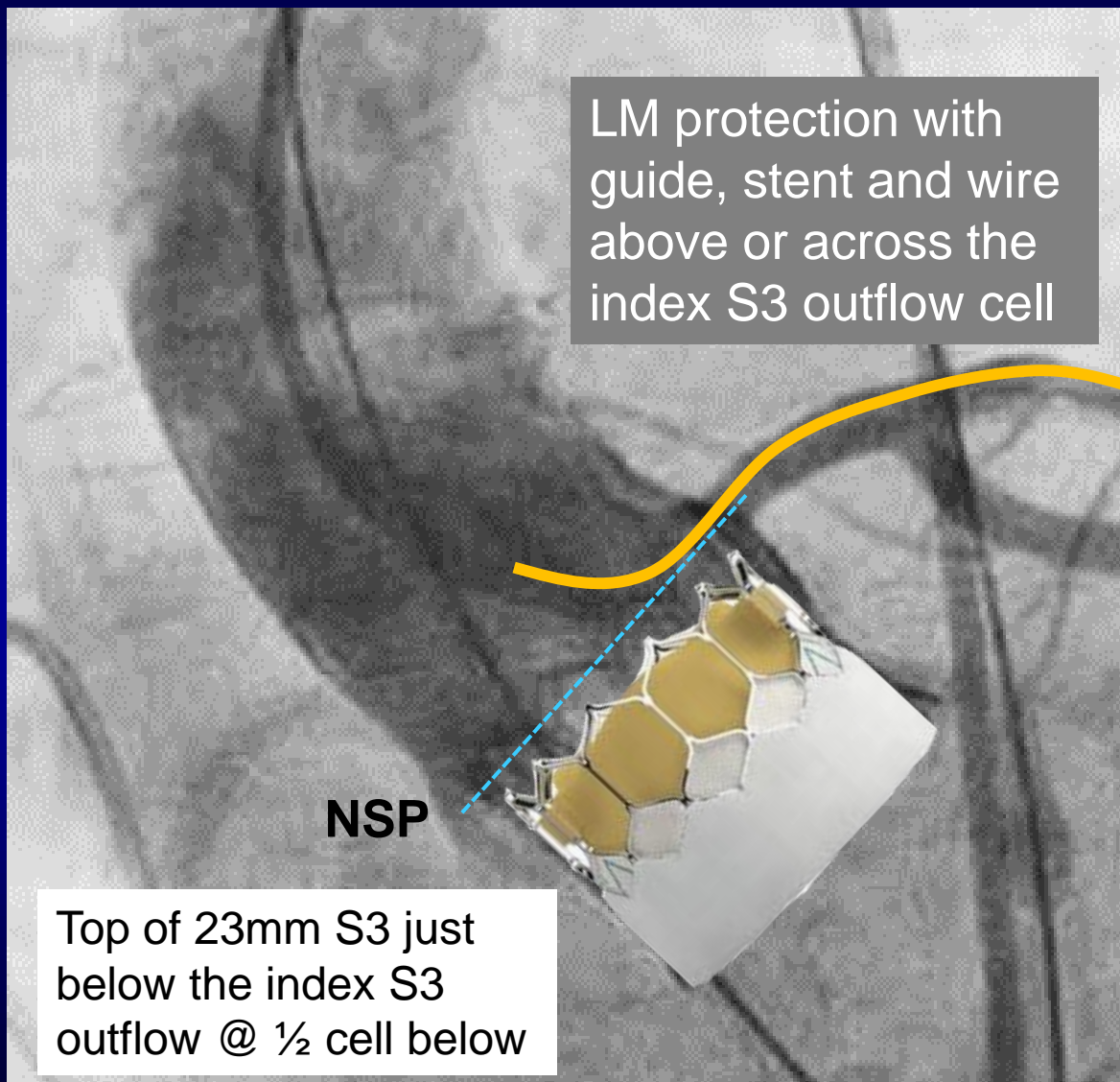


Arch

LAO: 92°
Caudal: 3°



Planned Redo S3 Position



Summary of Case

Presentation: 82 yo F, with recent intracranial hemorrhage, severe aortic prosthetic stenosis, and potential risk of LM occlusion

TTE: severely aortic prosthetic stenosis (PG/MG/EOA/PV = 61/36/0.67/3.91) with minimal PVL, LVEF 70%, mild MR

Risk mortality : high risk for SAVR with previous TAVR for explant

Course: Patient was evaluated by heart team and recommended TF TAV-in-TAV with LM protection

Plan: TF TAV-in-TAV with a 20mm (+1 cc) Sapien3 Ultra Resilia valve after BAV (with 20mm True Balloon) via right percutaneous femoral arterial access with planned LM snorkel stent for coronary access