



**3D echocardiography:
meet the experts!**
INTERVENTIONS TRACK



Challenging cases in mitral valve

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Disclosures

- Speaker fees from Edwards Lifesciences, GE Healthcare, Philips, Novartis and Medtronic.
- Consulting fees from Edwards Lifesciences, MSD and Novo Nordisk

Current status of TMVT

Annuplasty

Cardioband



Edge-to-edge
plasty

MitraClip



Chordal plasty

NeoChord



Transcatheter
heart valve

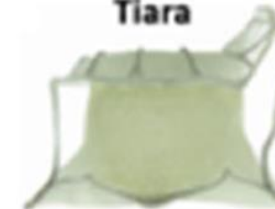
Tendyne



SAPIEN M3



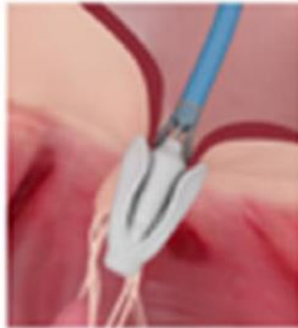
Tiara



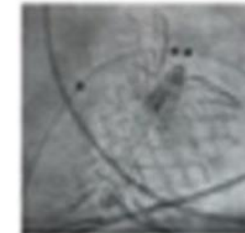
Intrepid



PASCAL



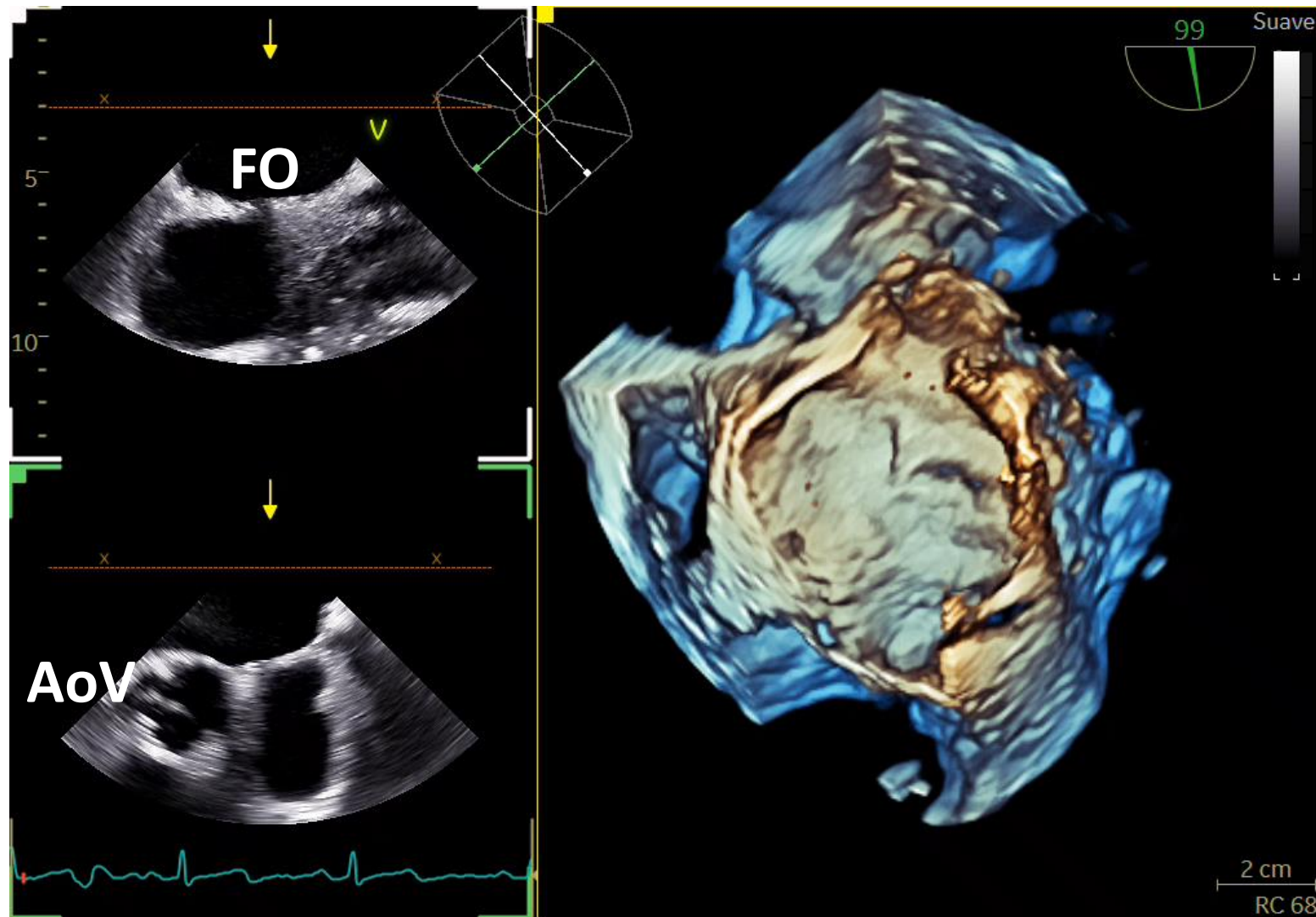
HighLife



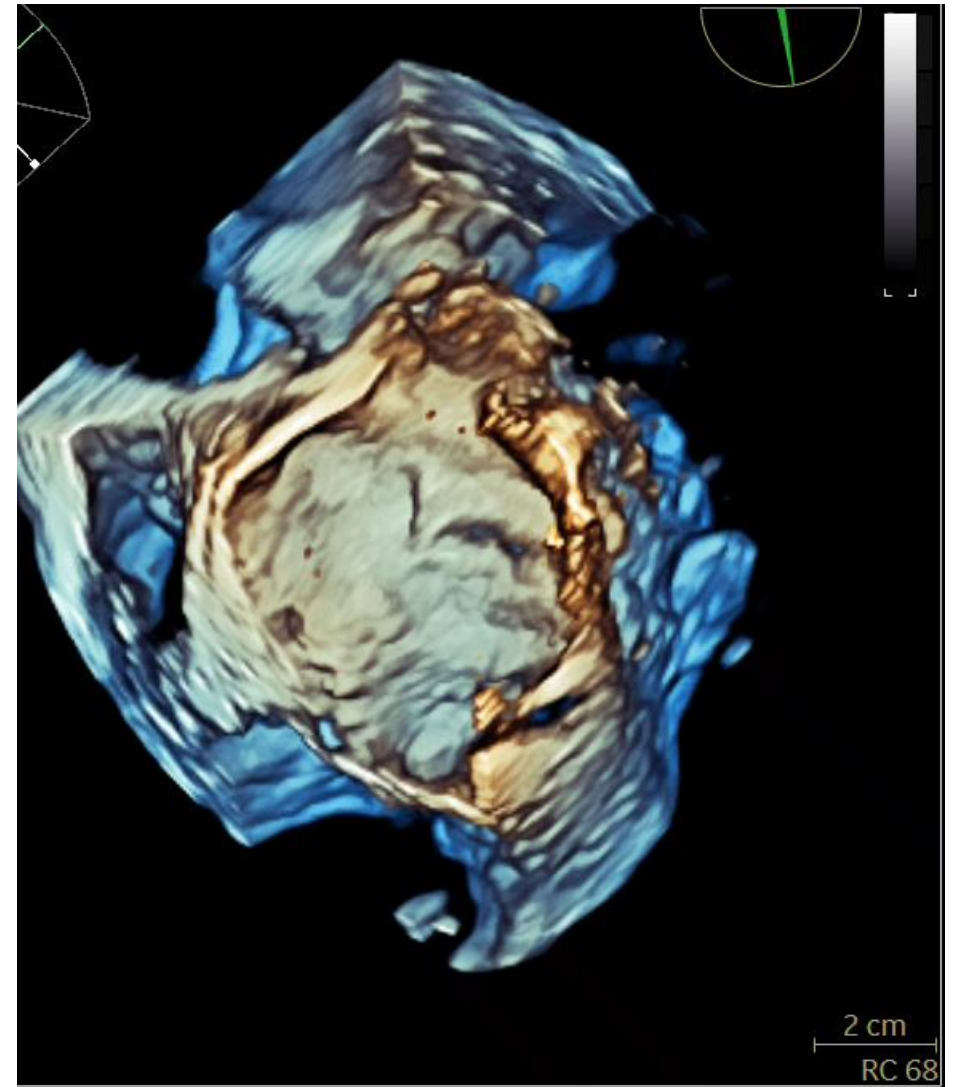
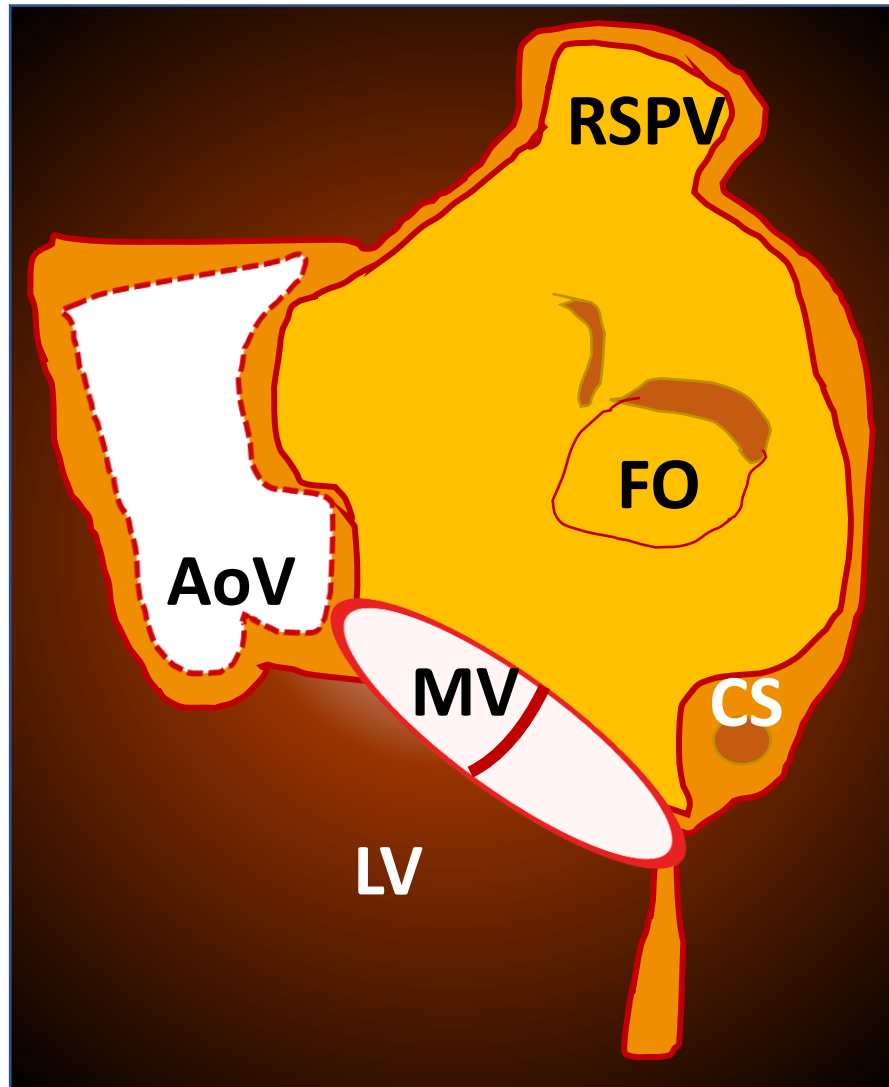
Imaging to guide edge-to-edge MV repair

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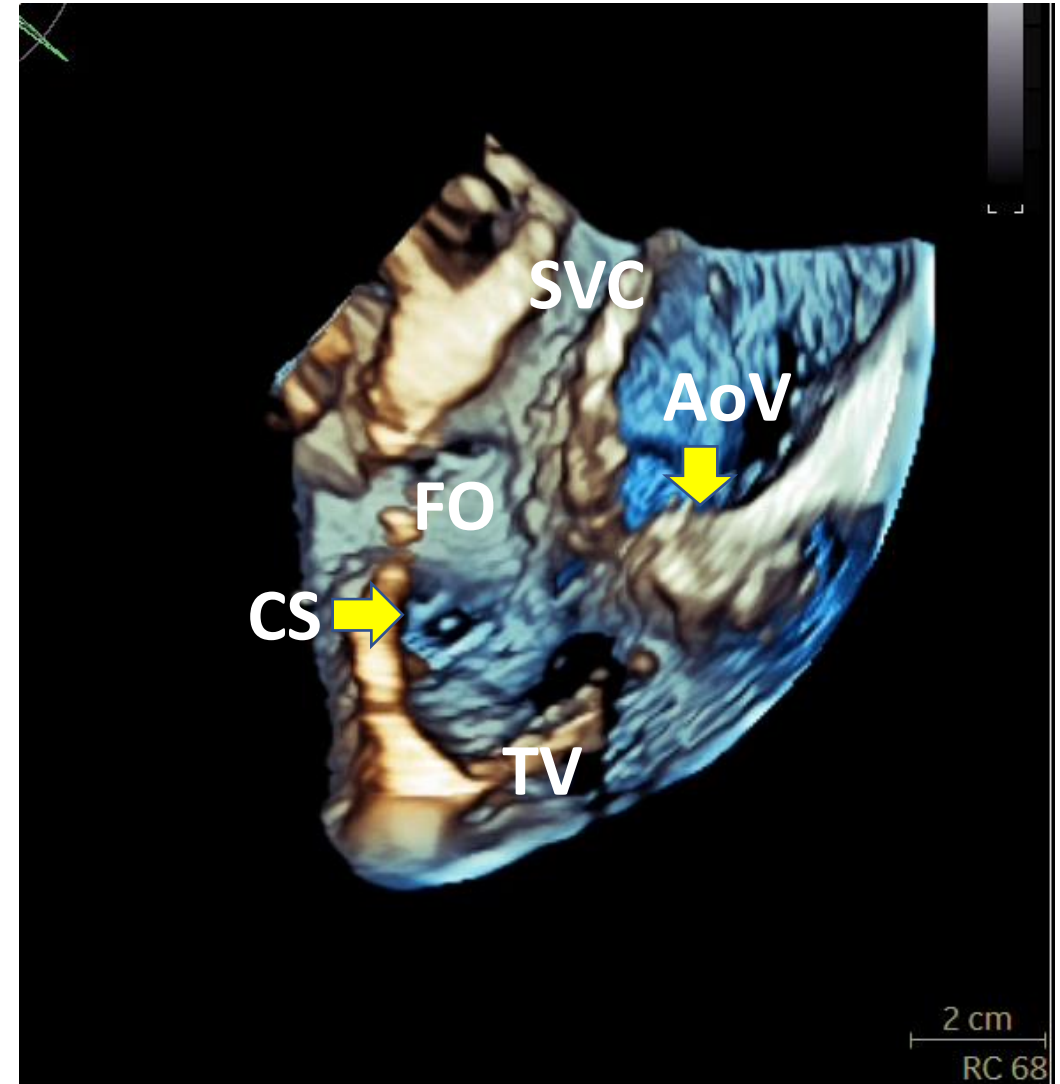
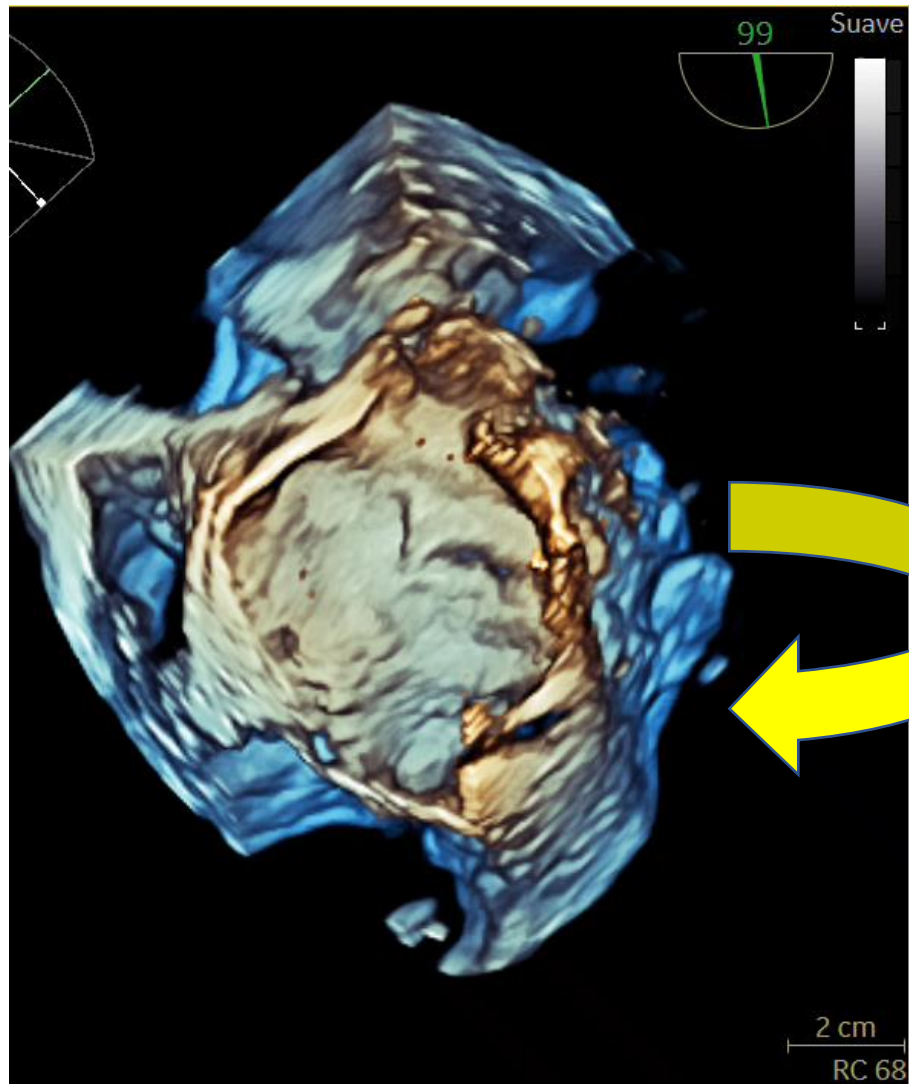
Transseptal puncture – septal anatomy



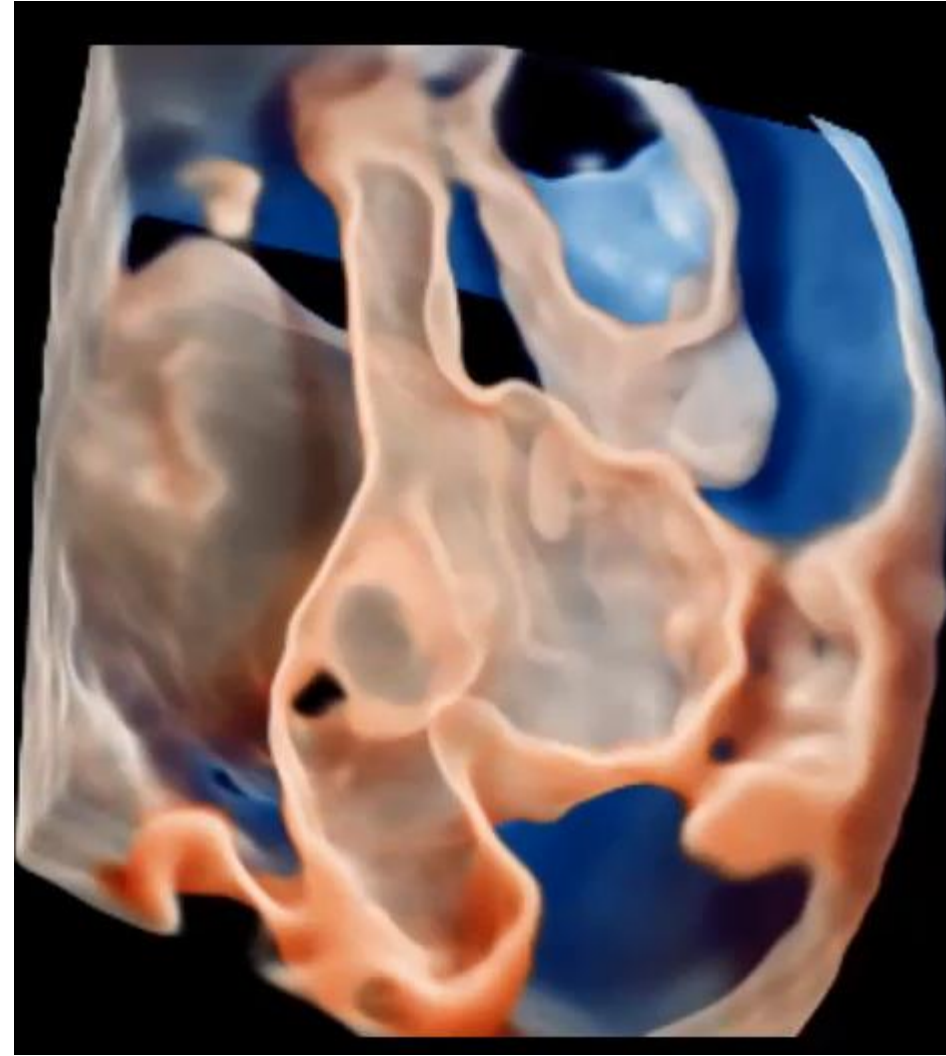
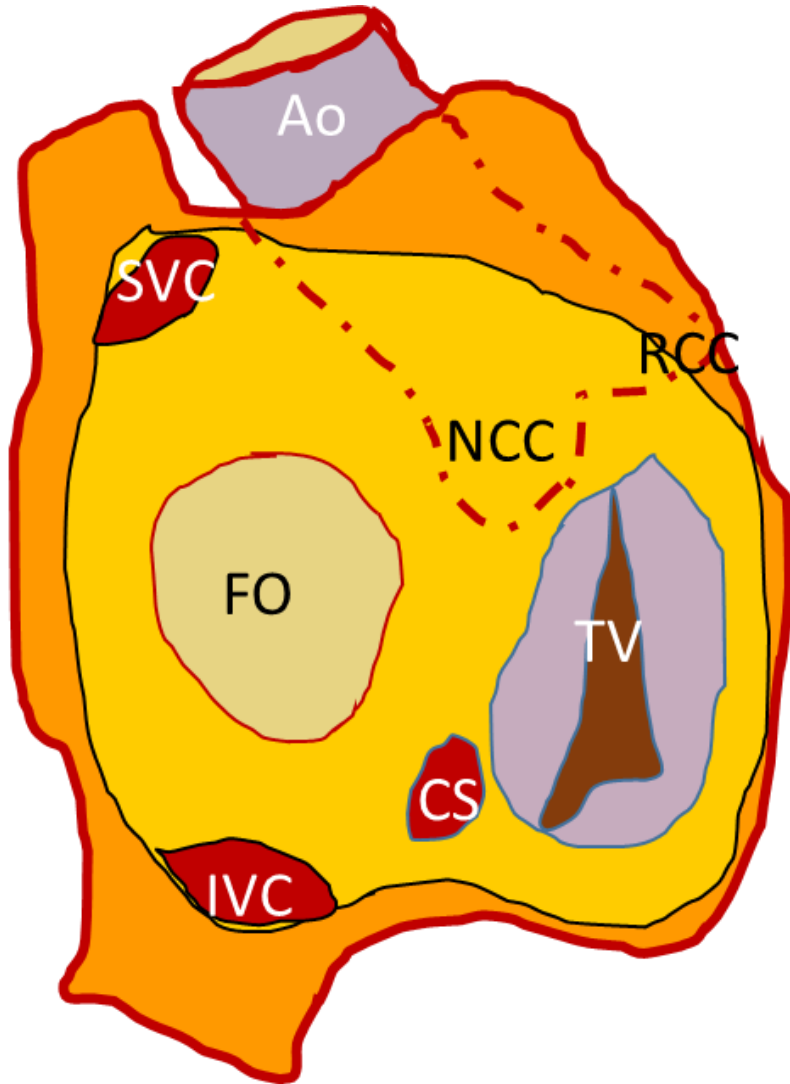
Transseptal puncture – septal anatomy



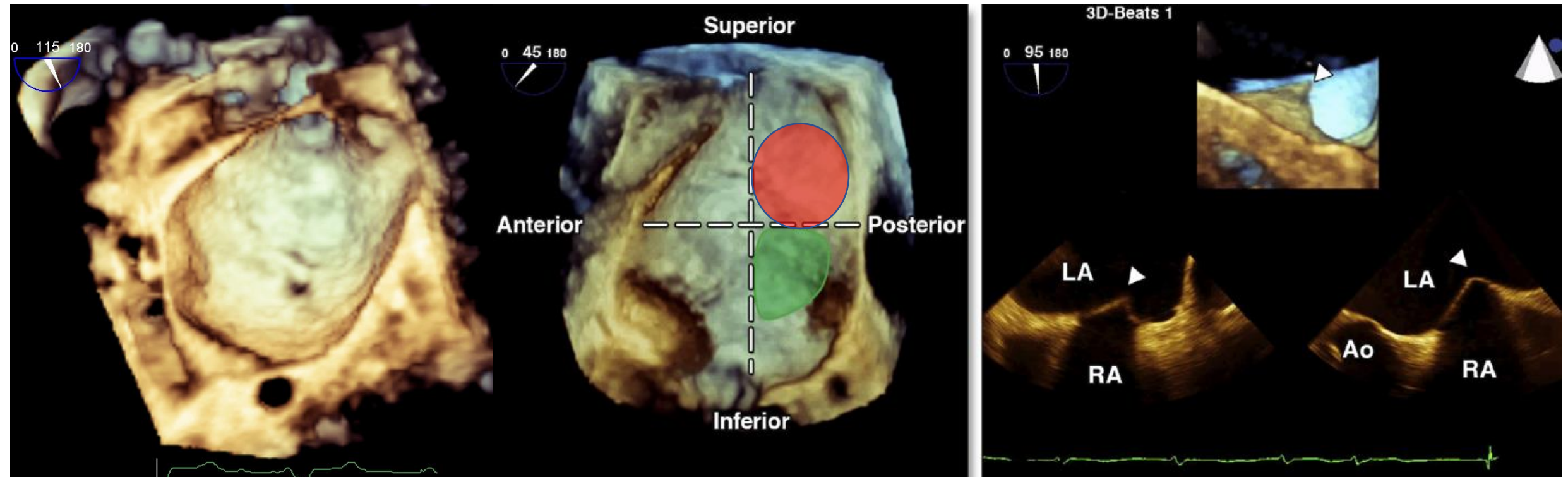
Transseptal puncture – septal anatomy



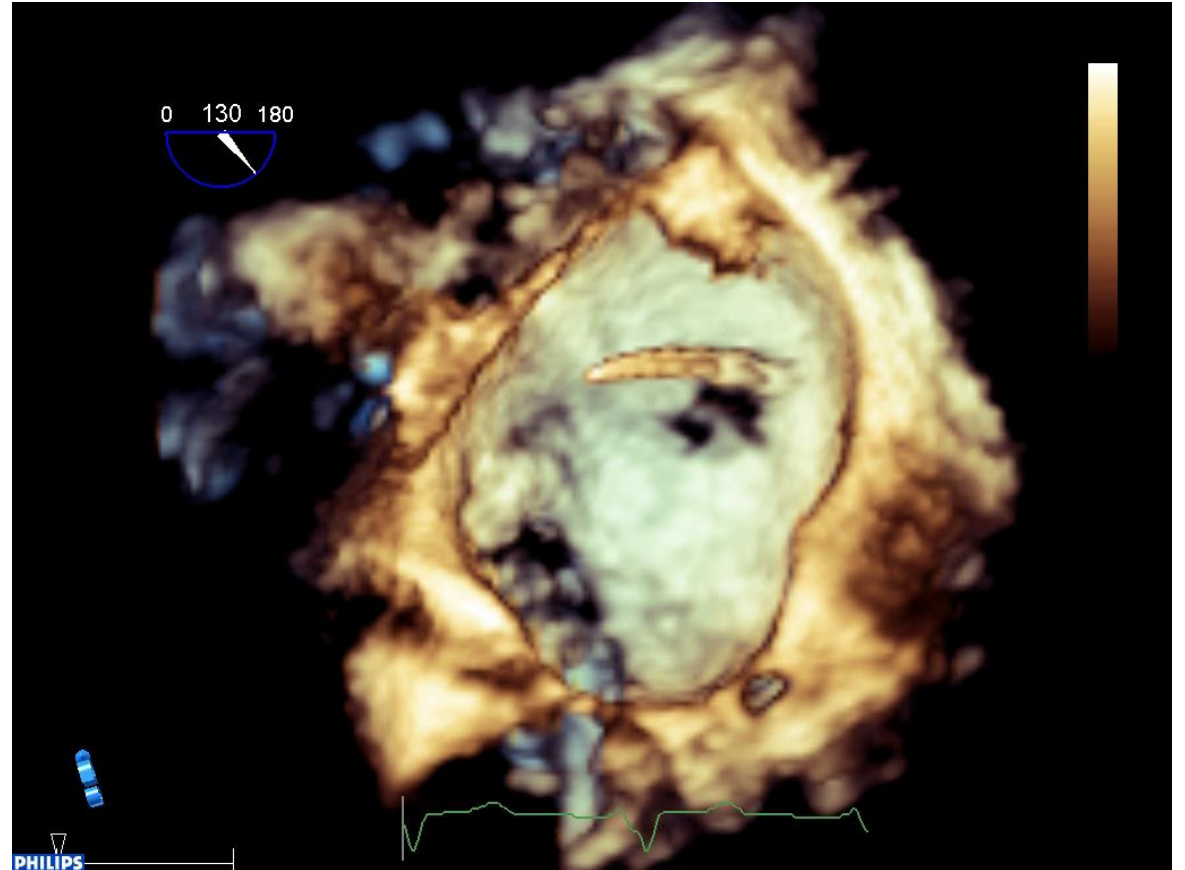
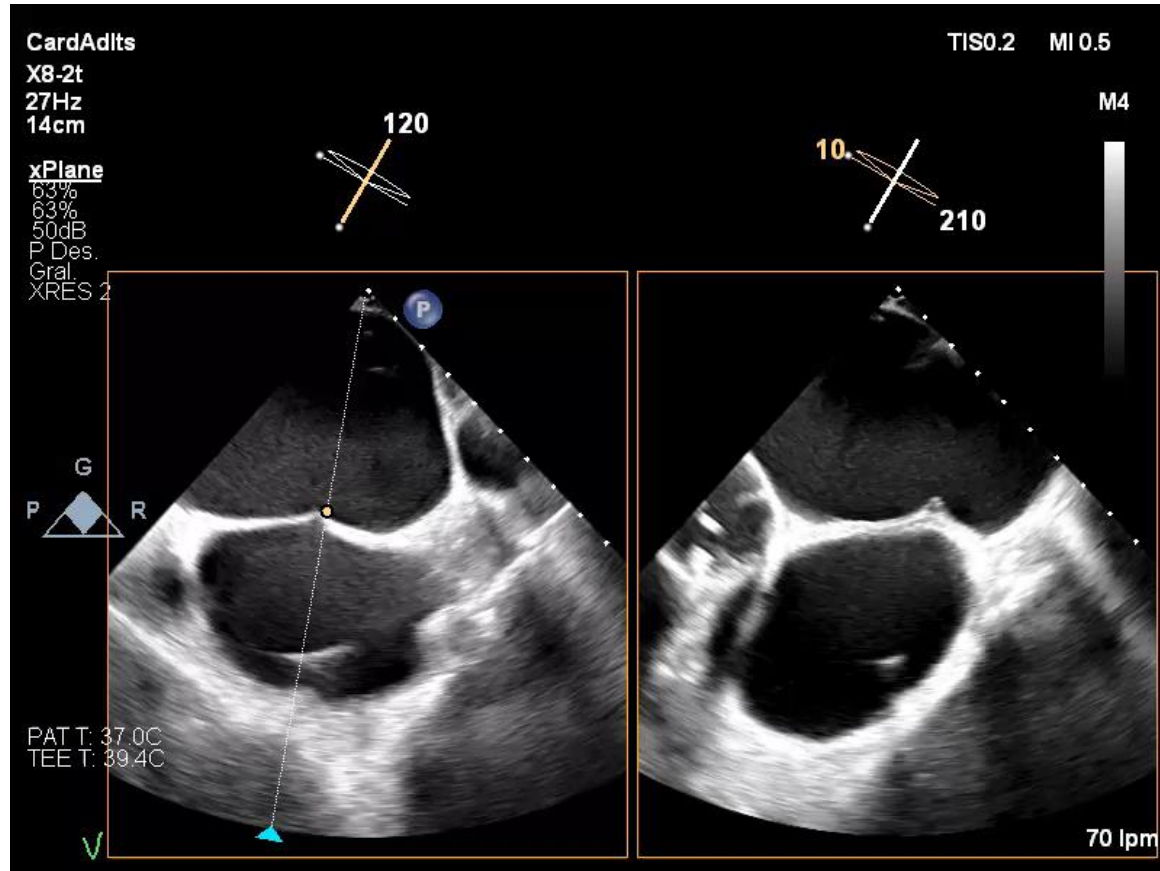
Transseptal puncture – septal anatomy



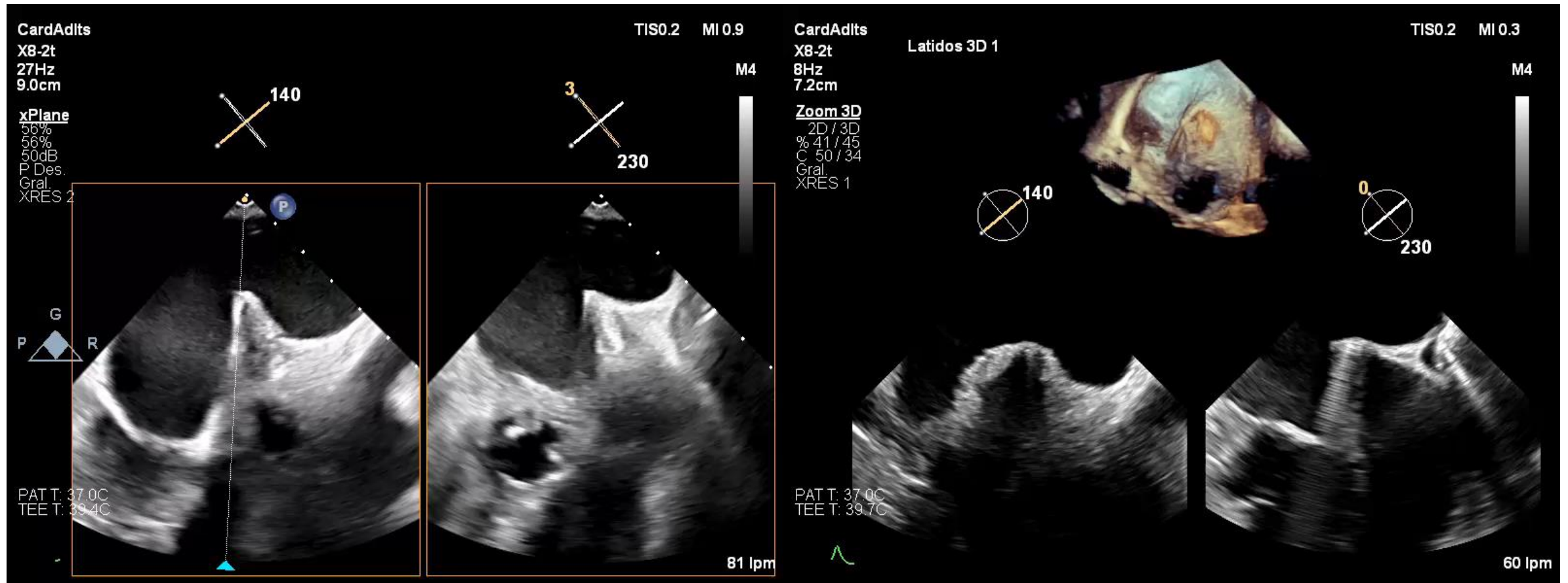
Transseptal puncture – site selection



Transseptal puncture – site selection



Transseptal puncture – site selection

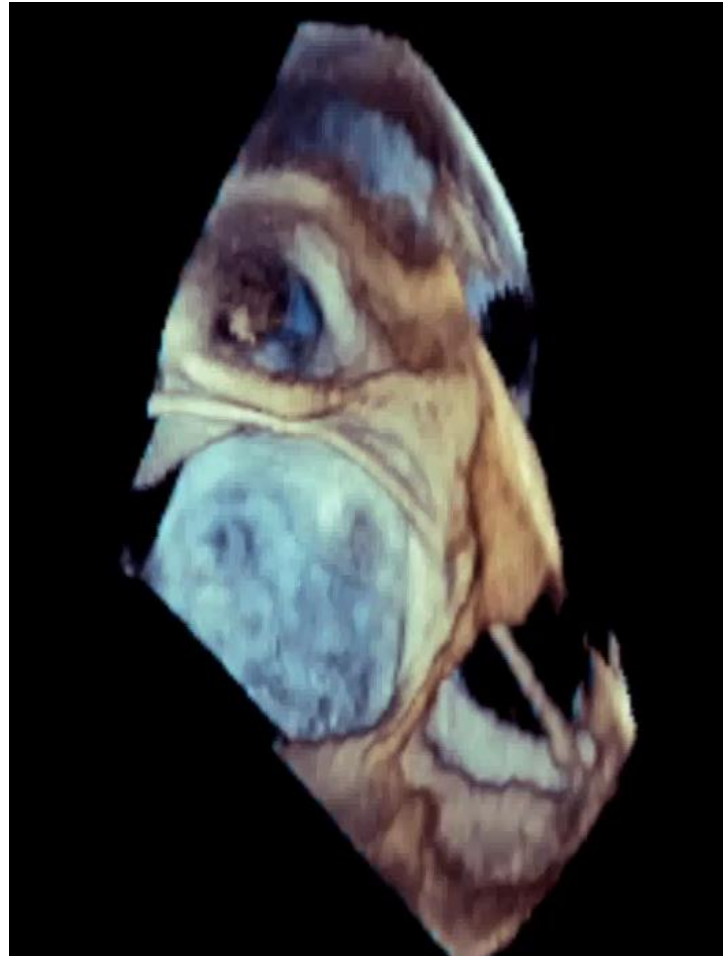


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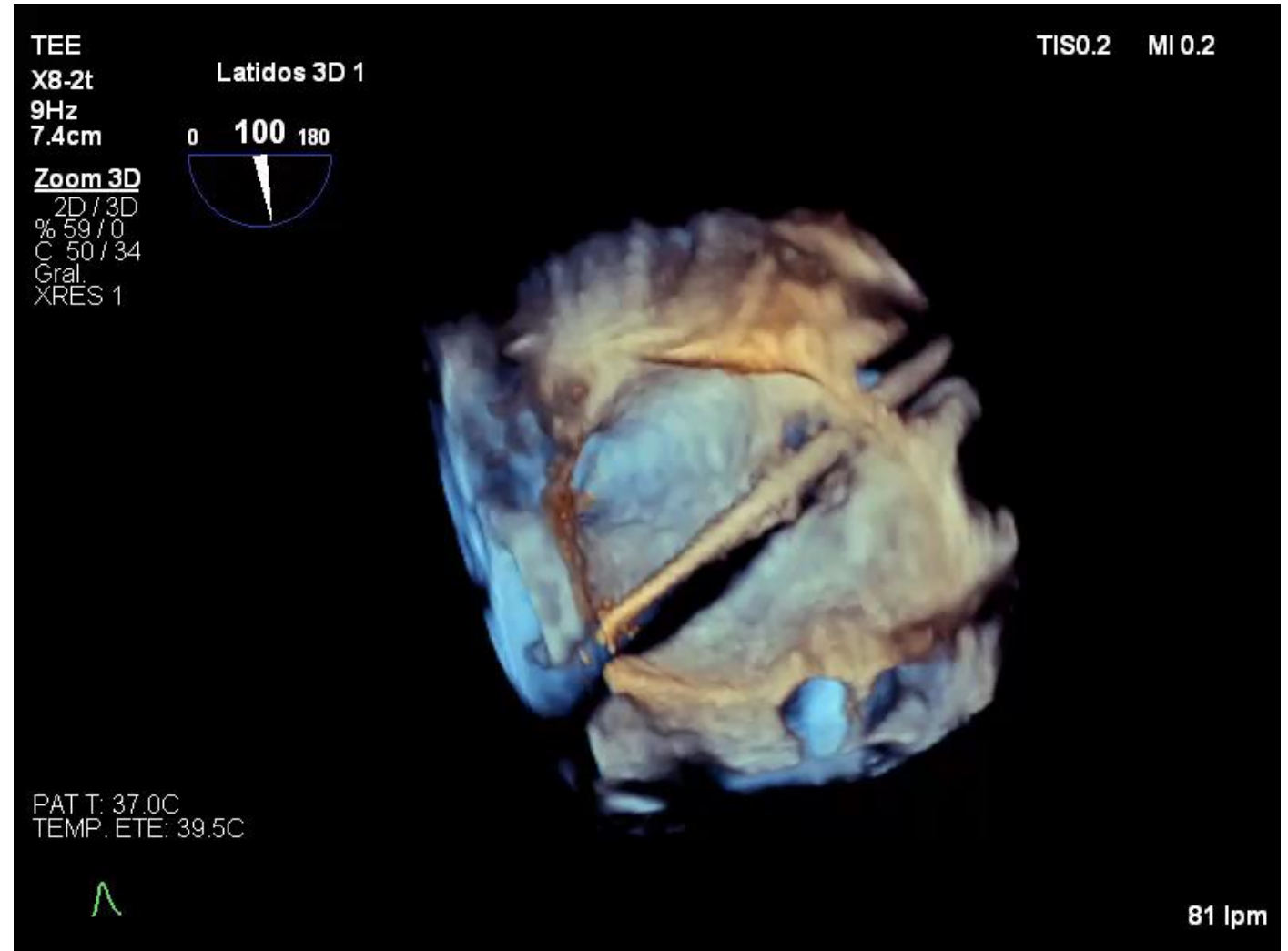
Navigation in the left atrium

Wire into the left upper
pulmonary vein (LUPV)



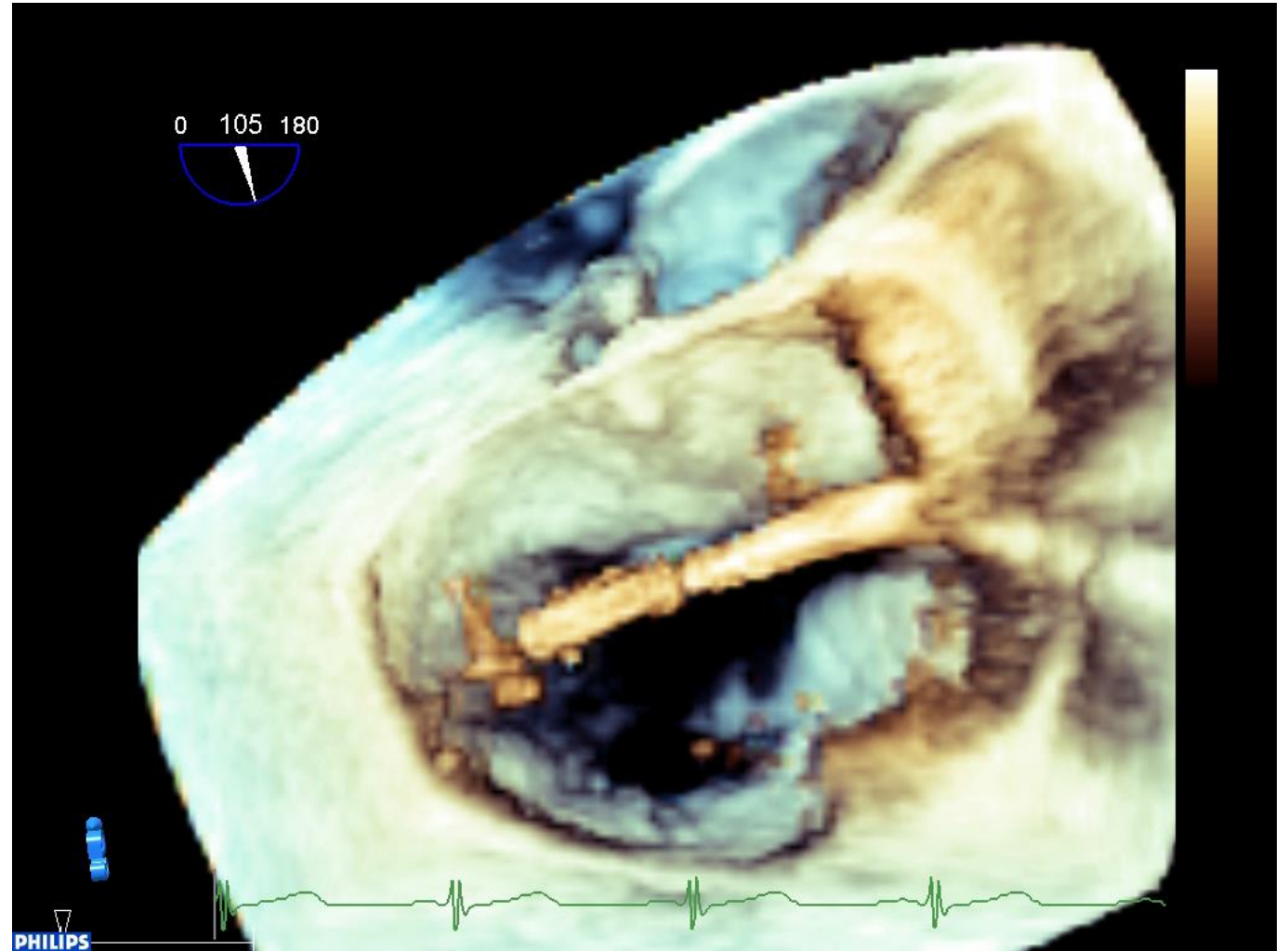
Navigation in the left atrium

Passing the Coumarin Rigde to
head towards the MV

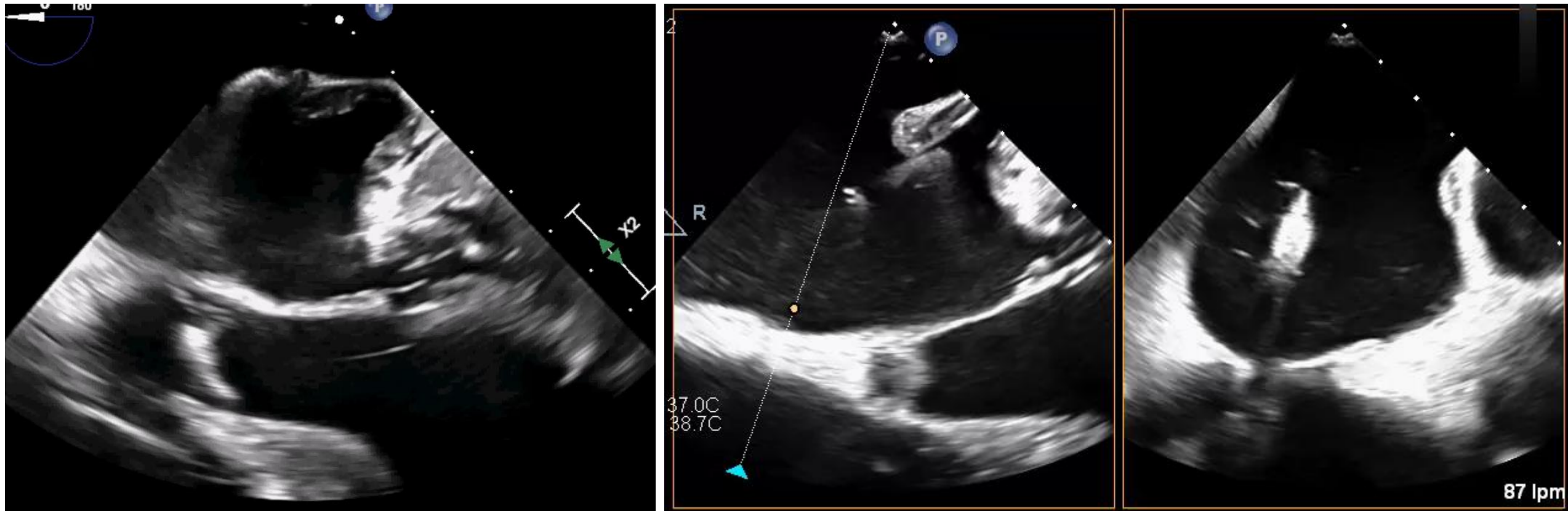


Navigation in the left atrium

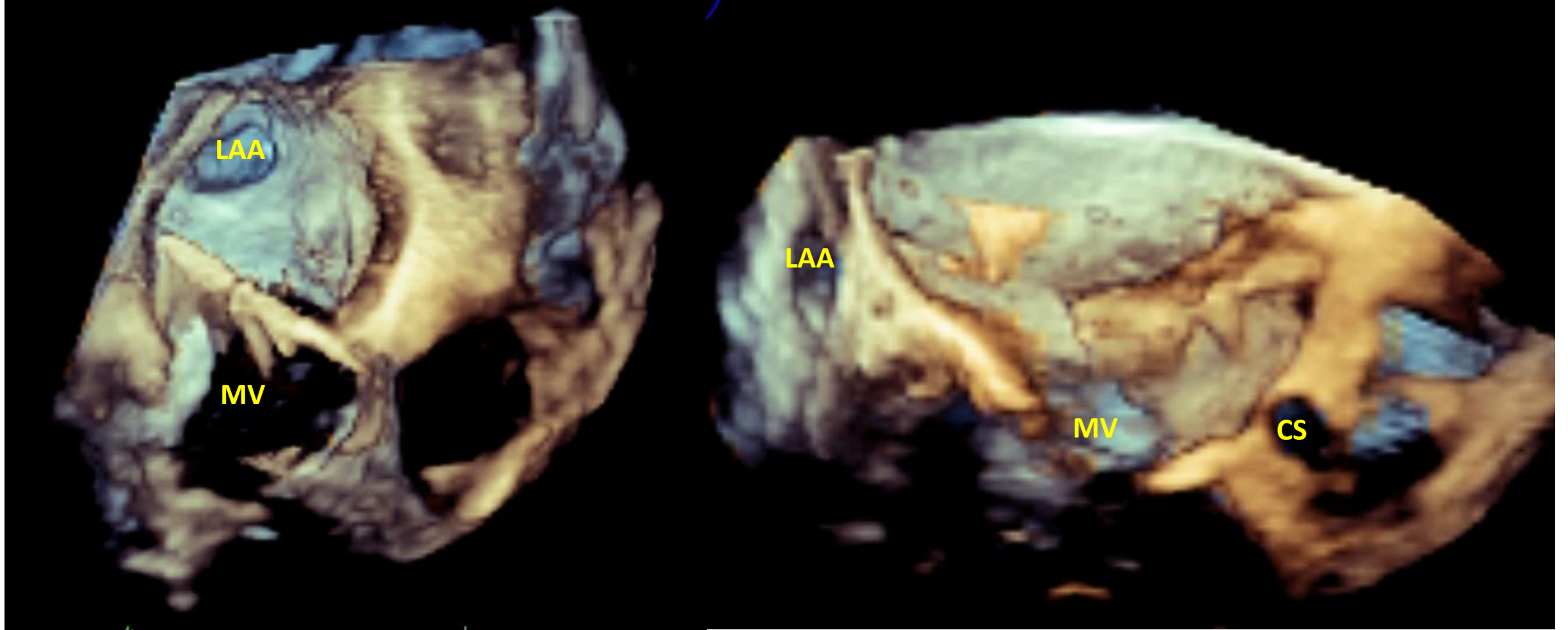
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Navigation in the left atrium



Navigation in the left atrium



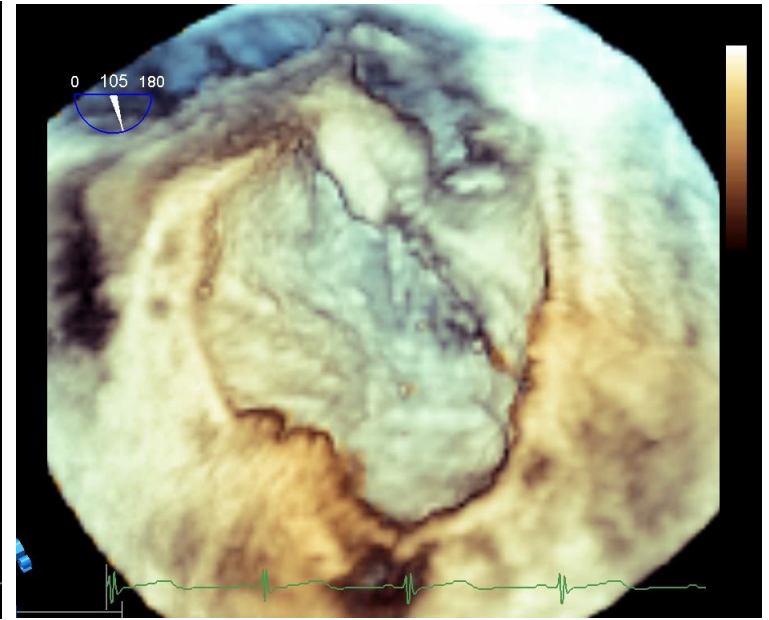
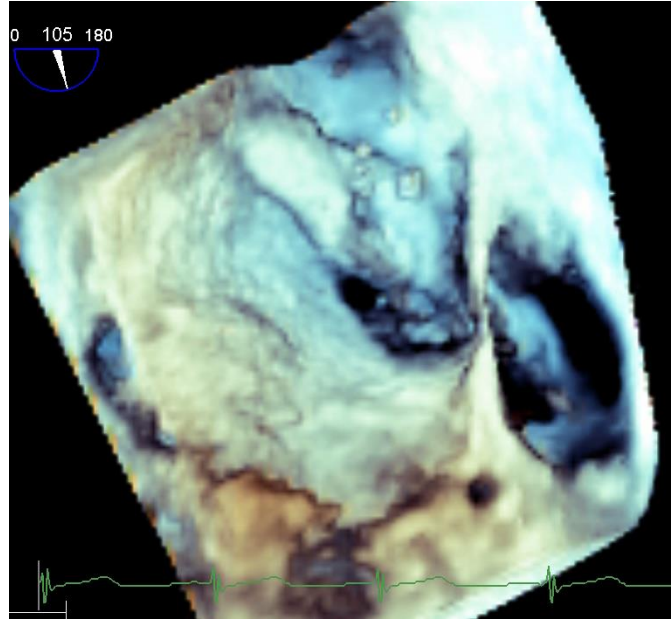
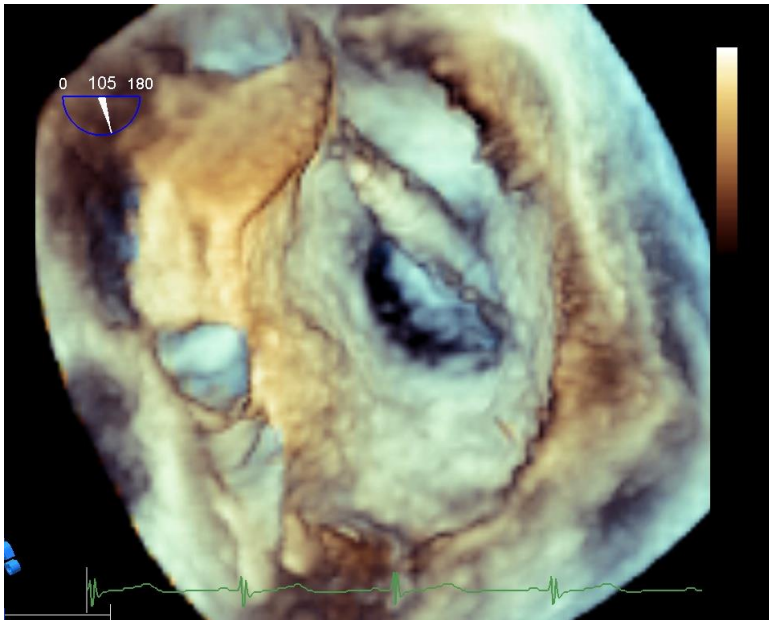
Transseptal puncture – floppy septum



Elongated



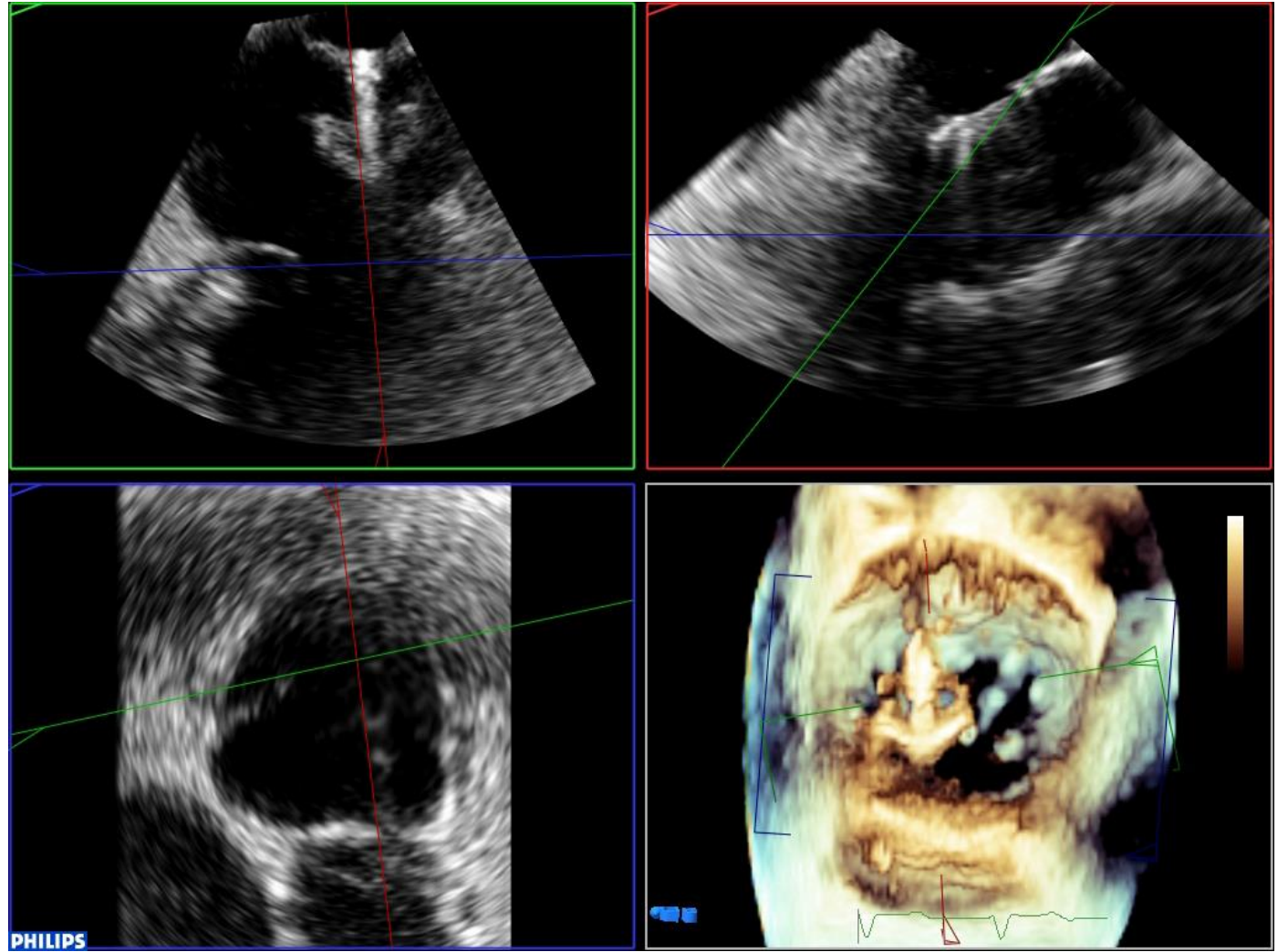
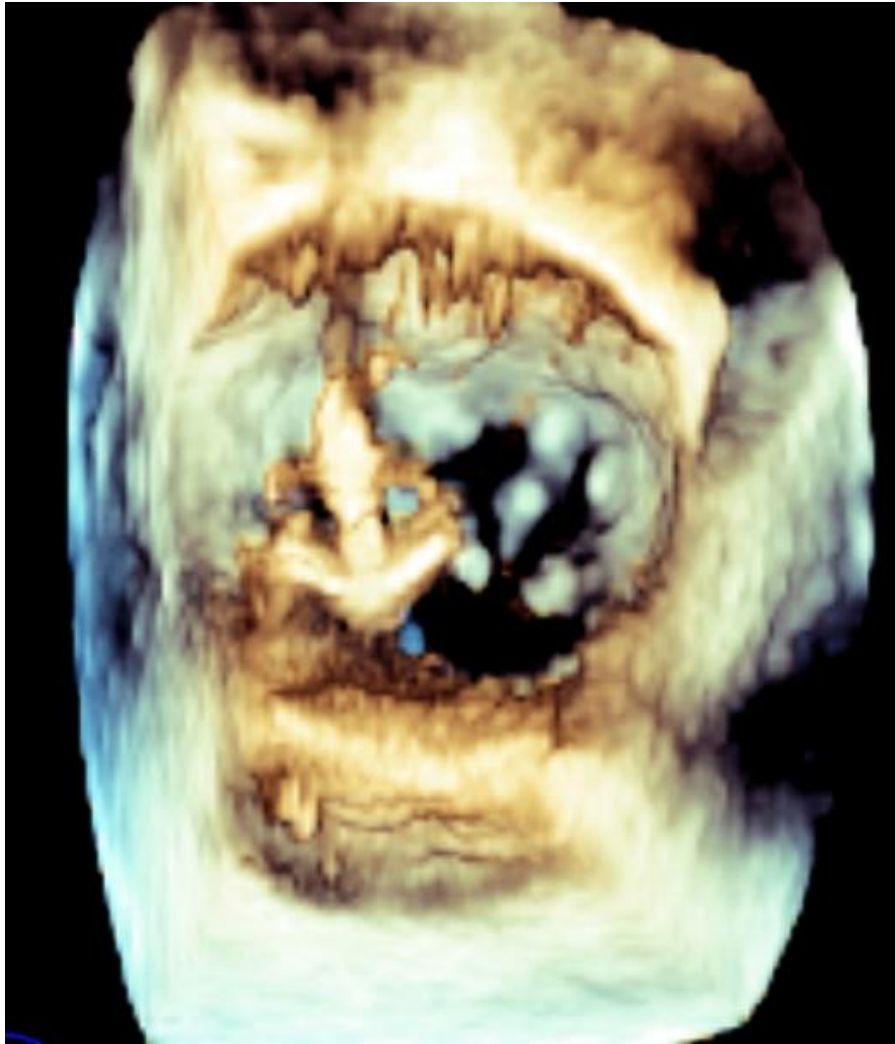
Closed



Imaging to guide edge-to-edge MV repair

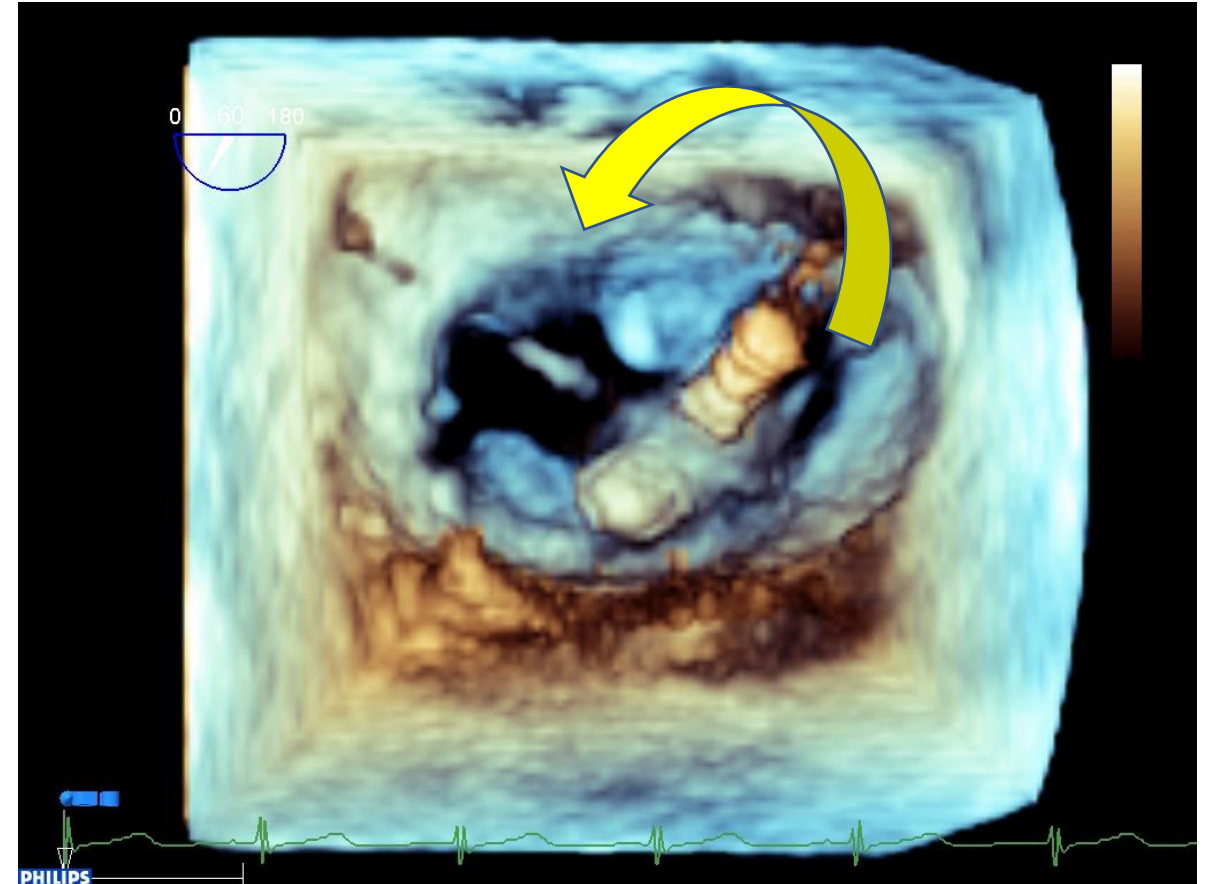
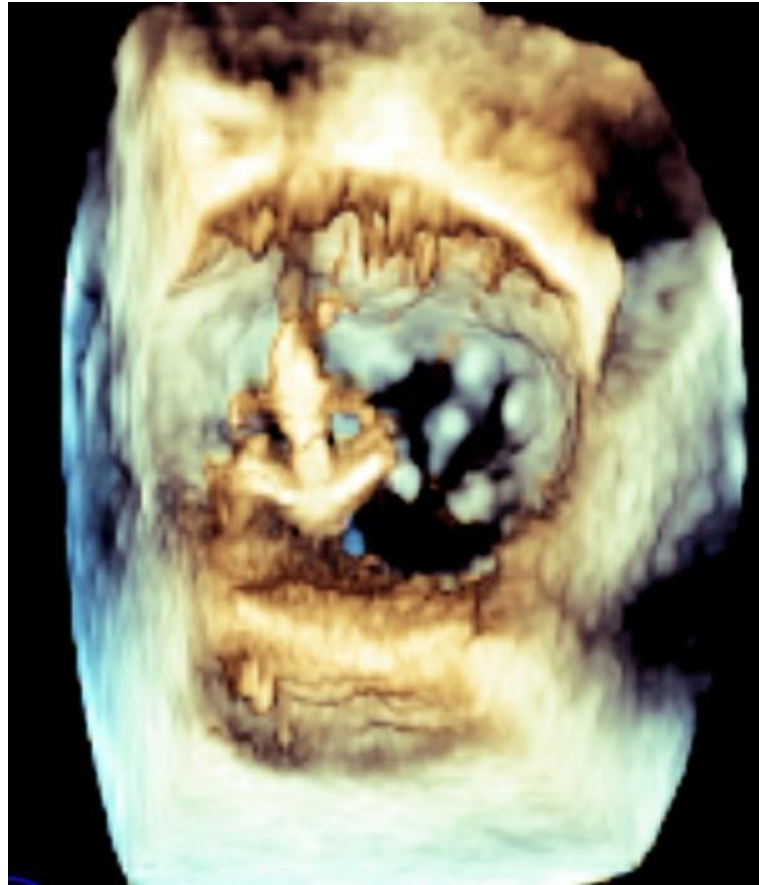
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"Clocking"



"Clocking"

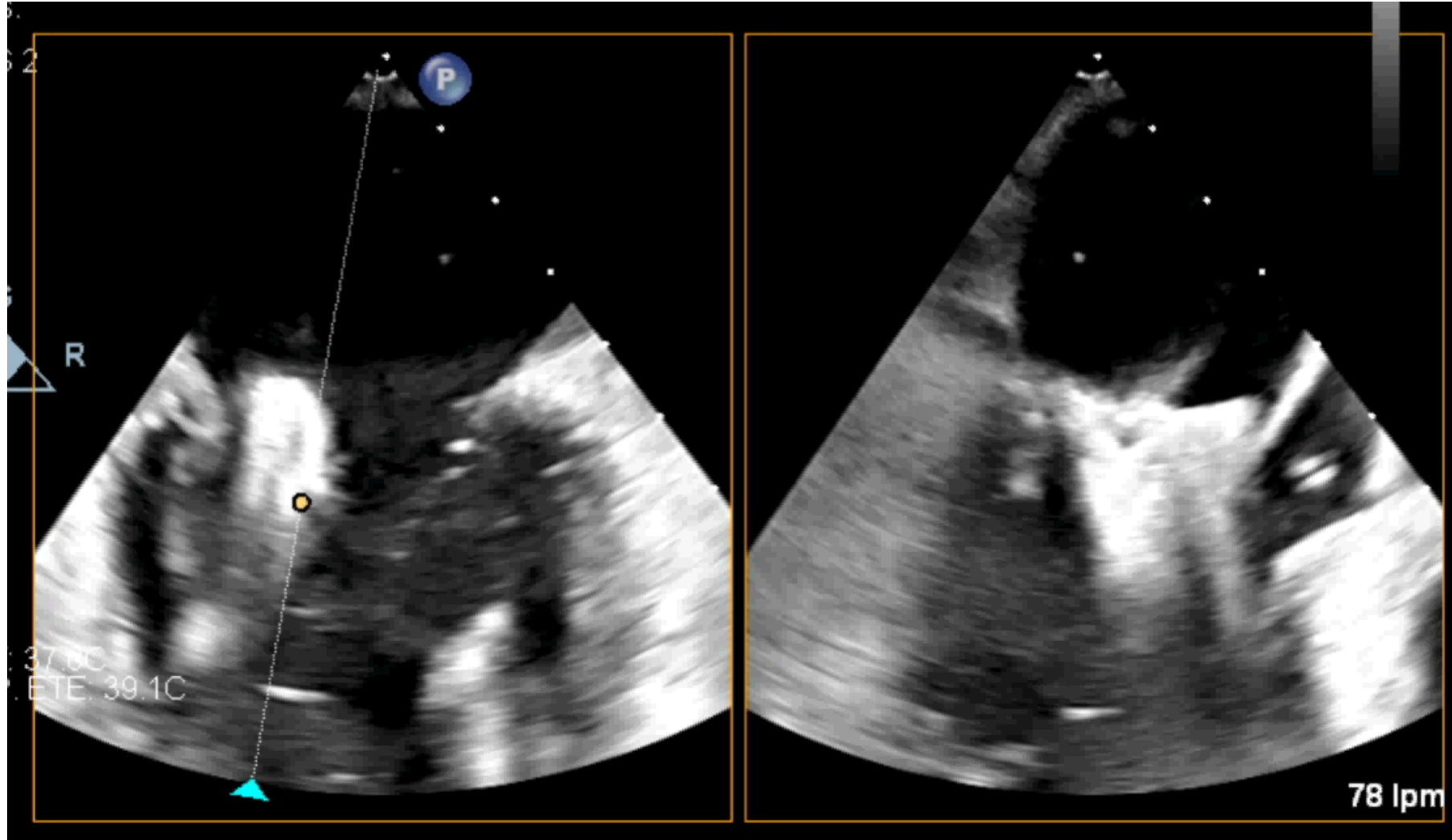
From the LA



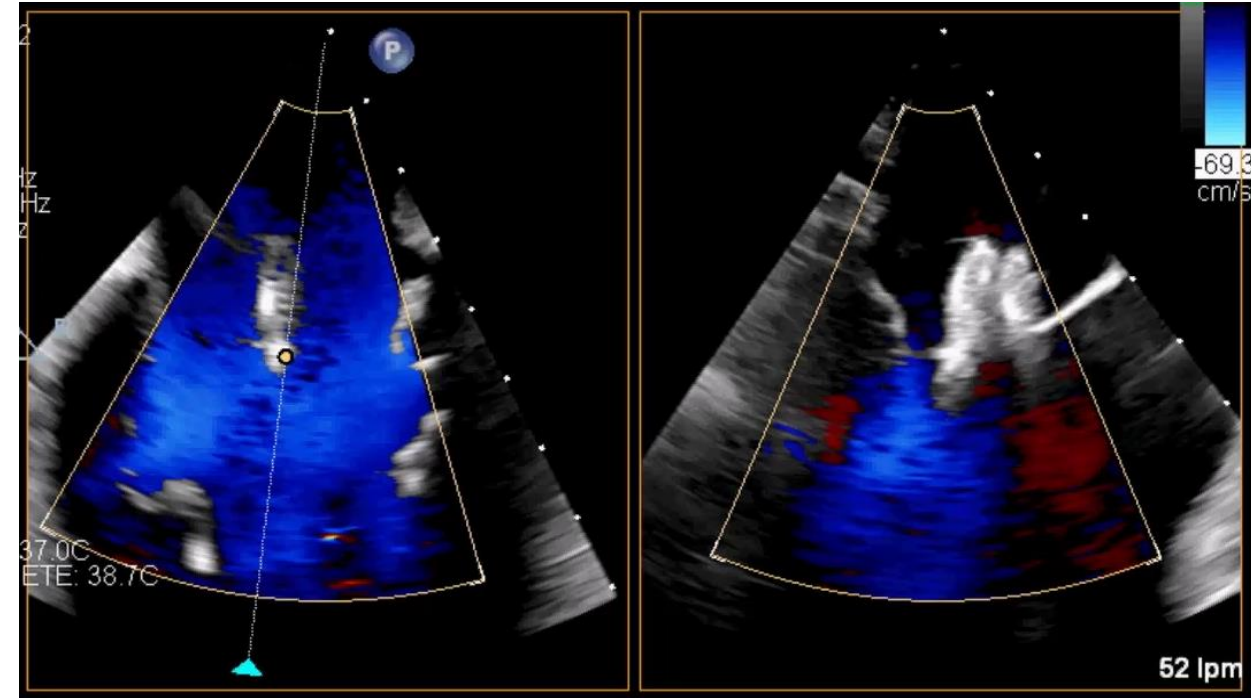
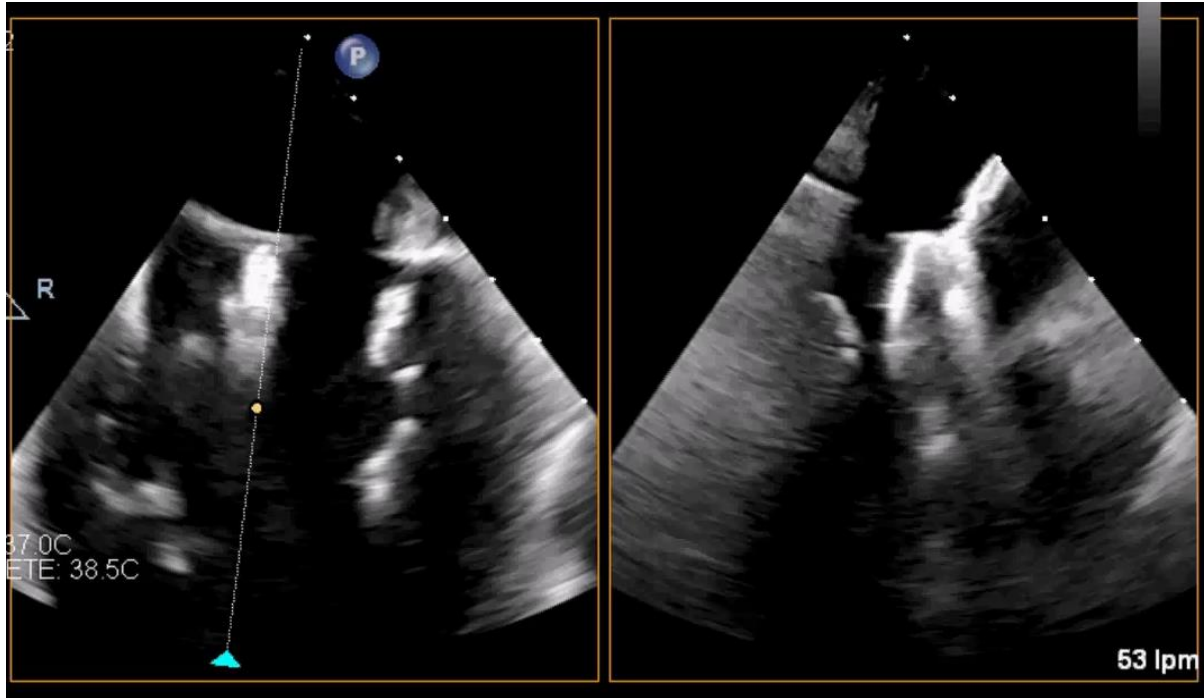
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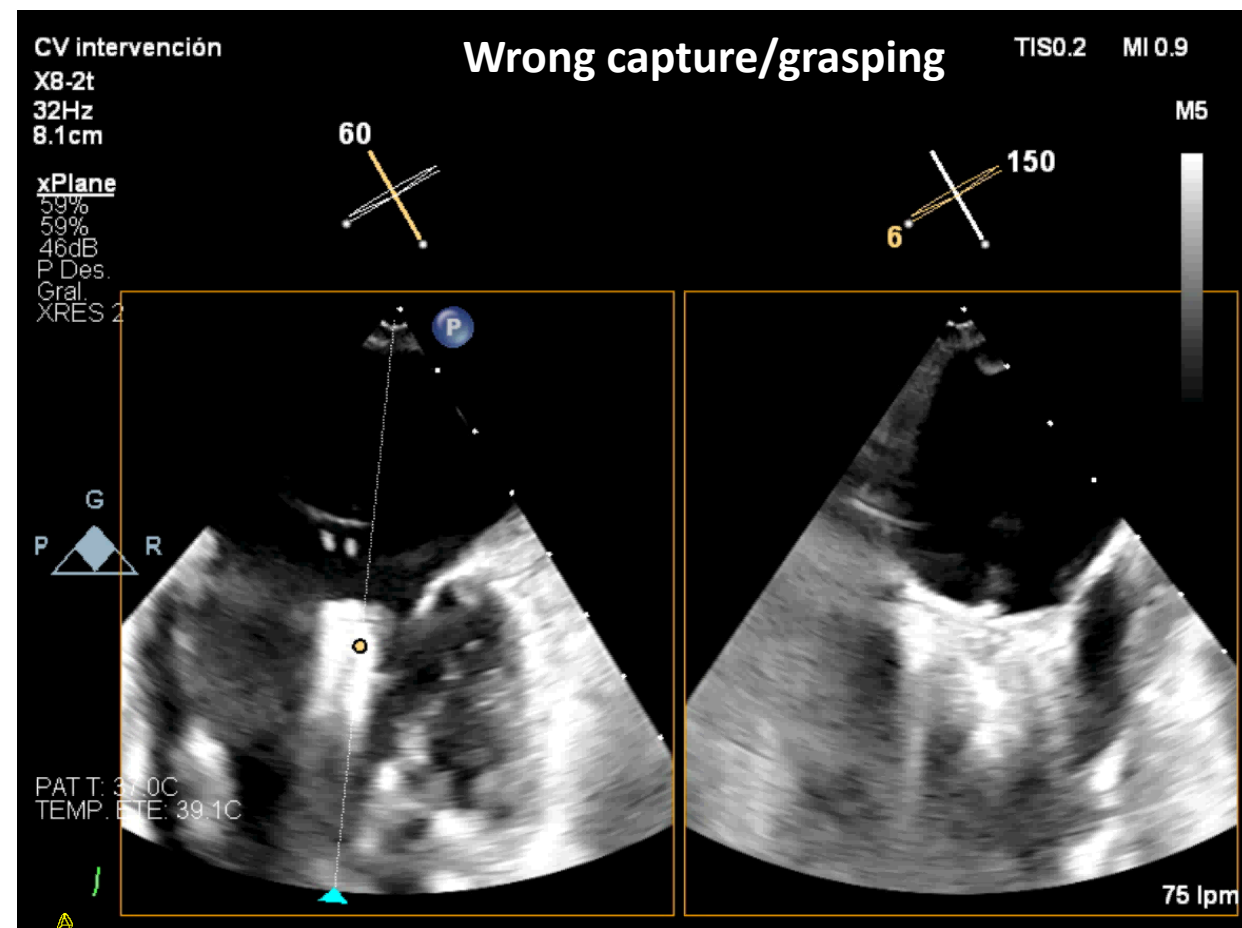
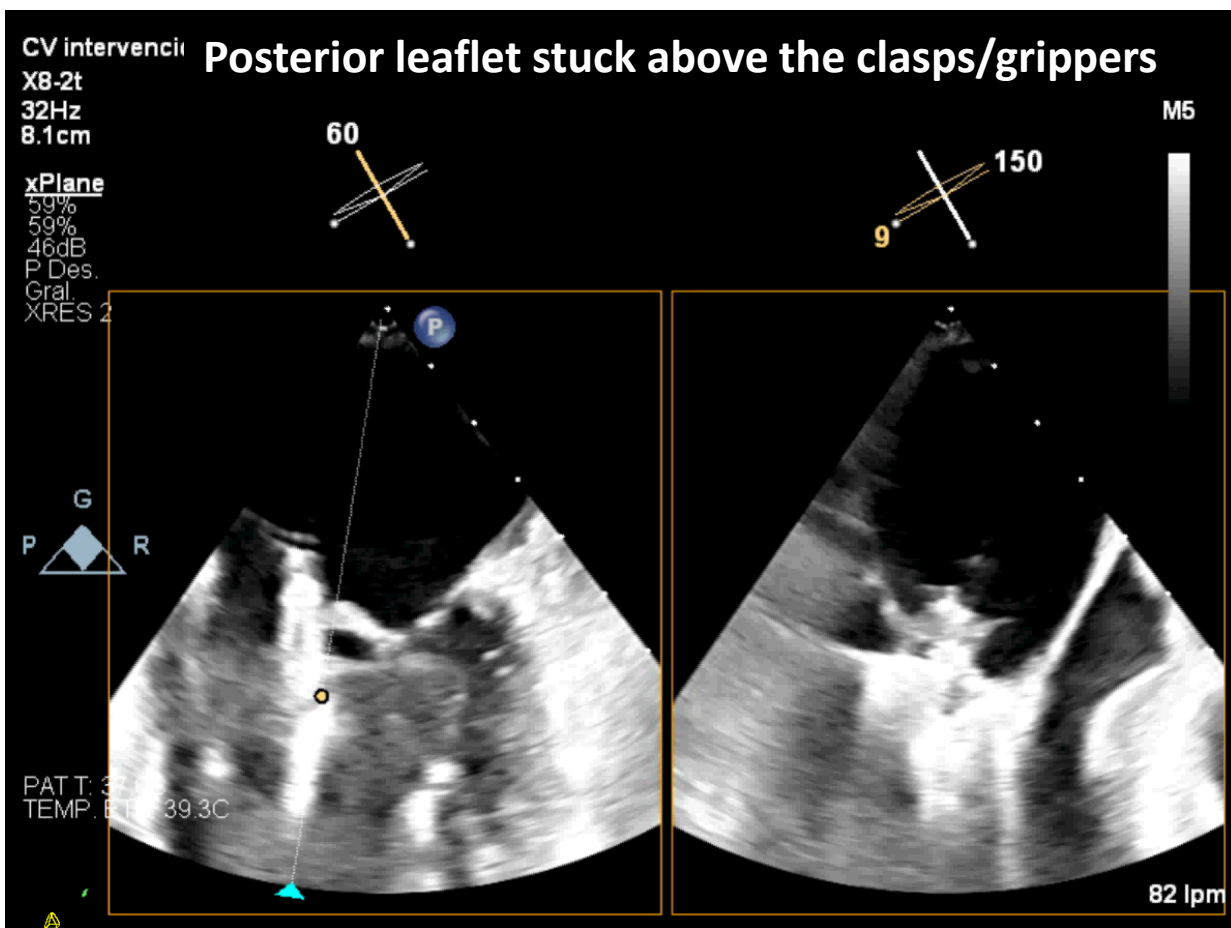
Crossing the valve – checking grippers/clasps



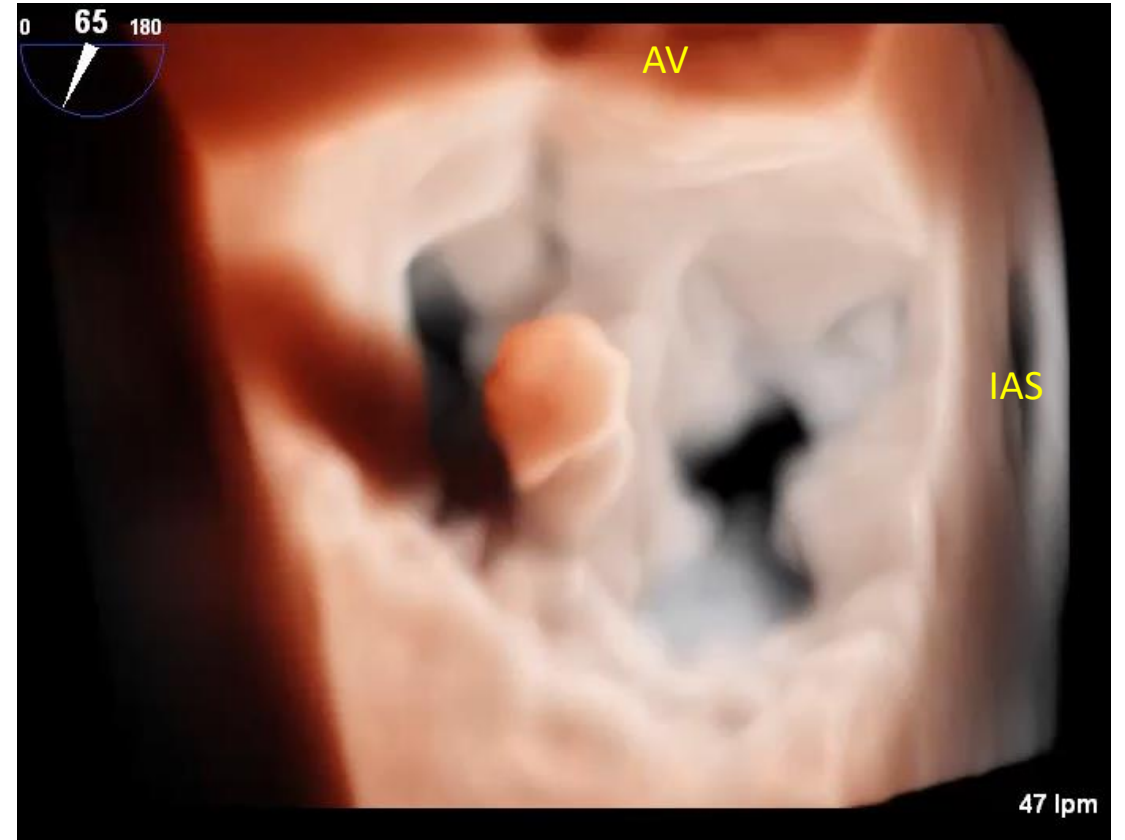
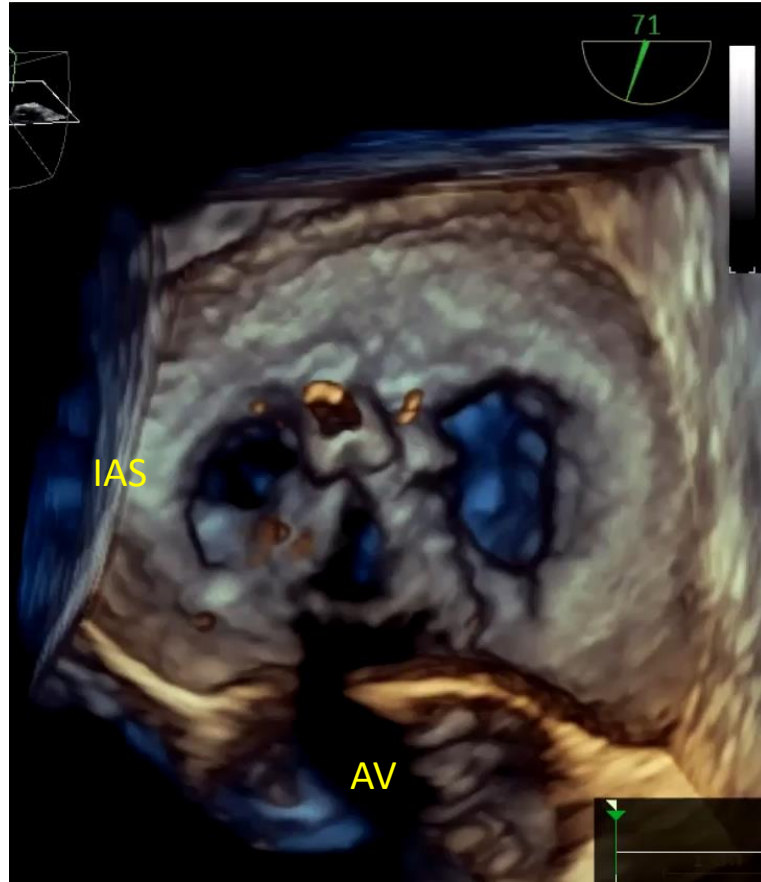
Crossing the valve



Grasping and quality of the grasping



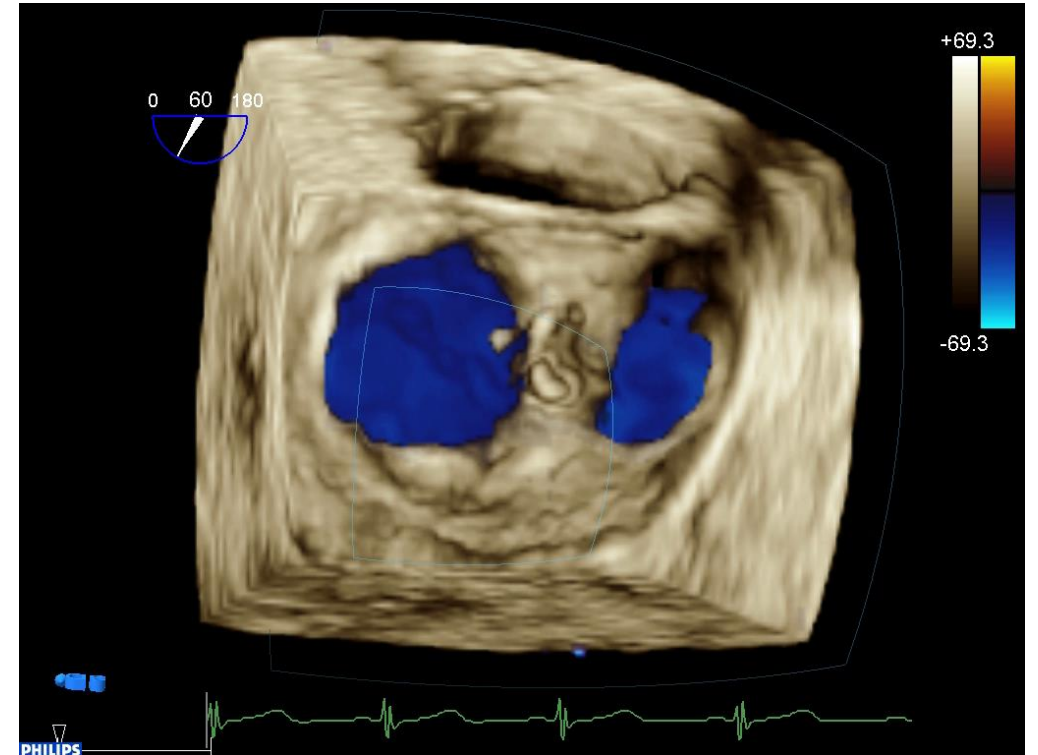
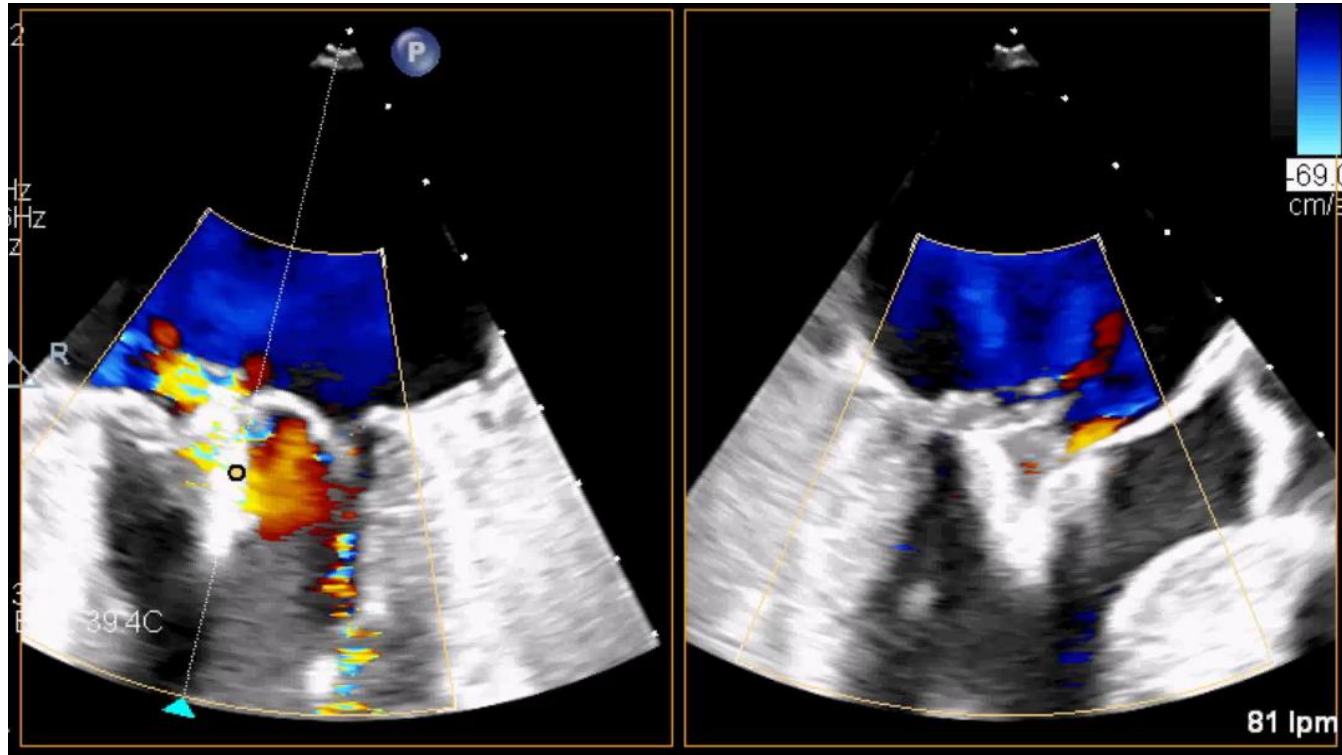
Grasping and quality of the grasping



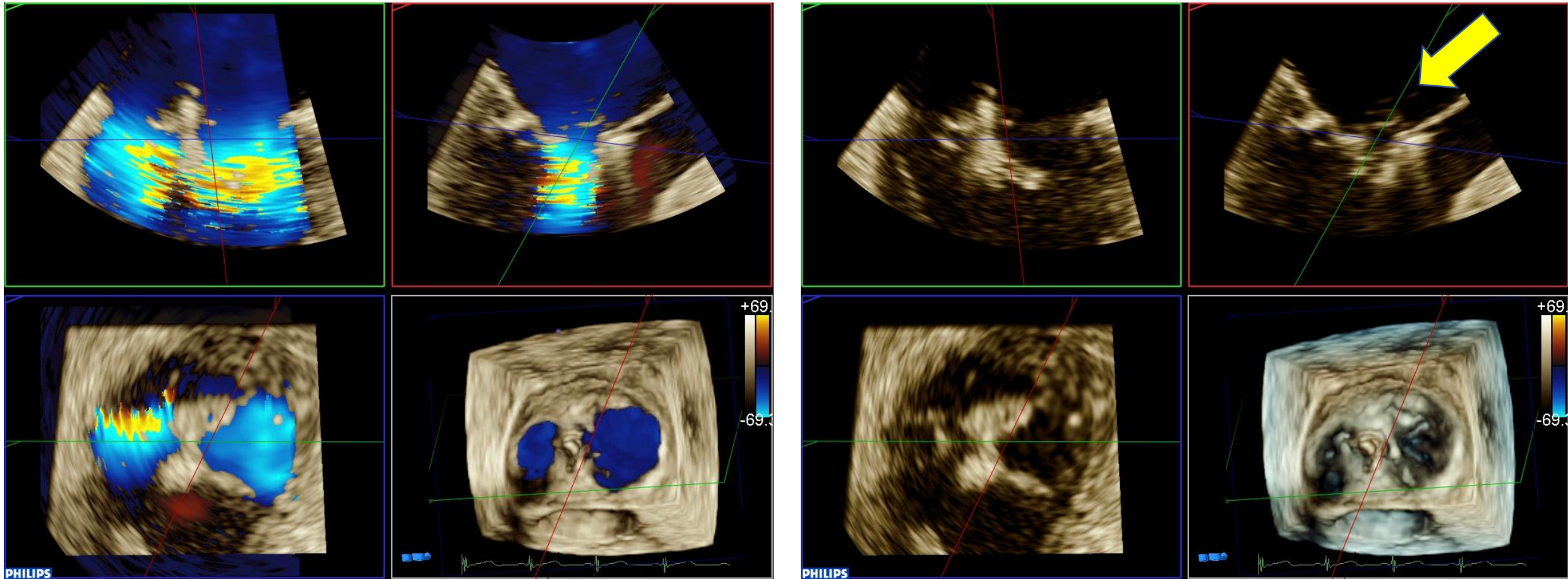
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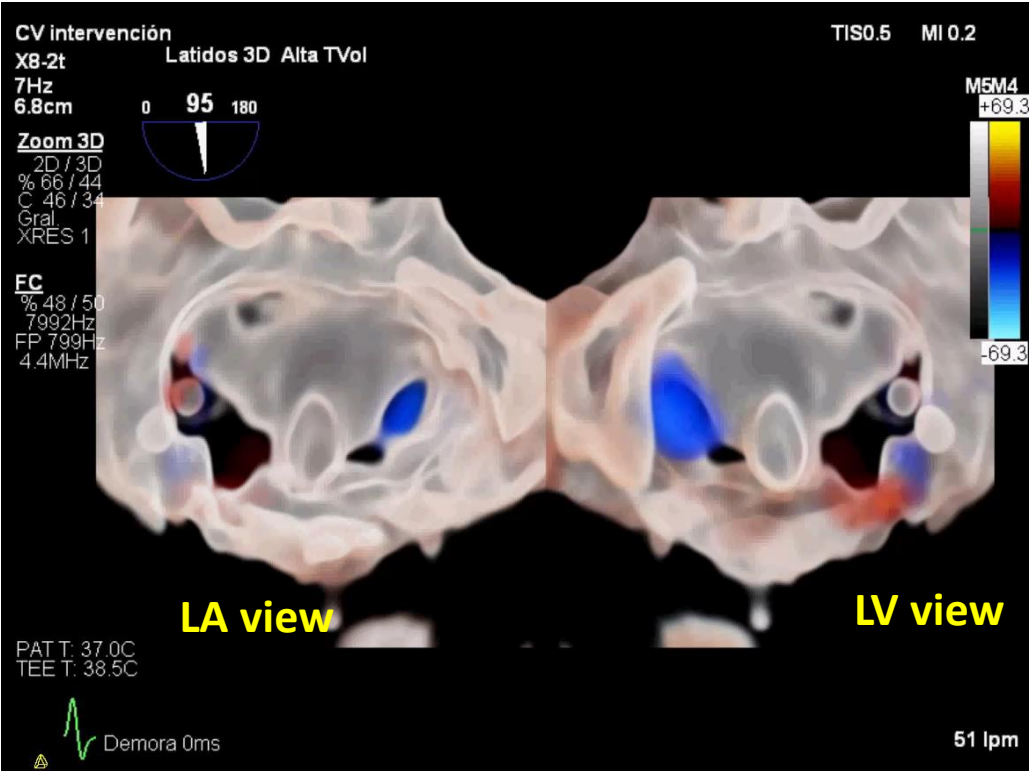
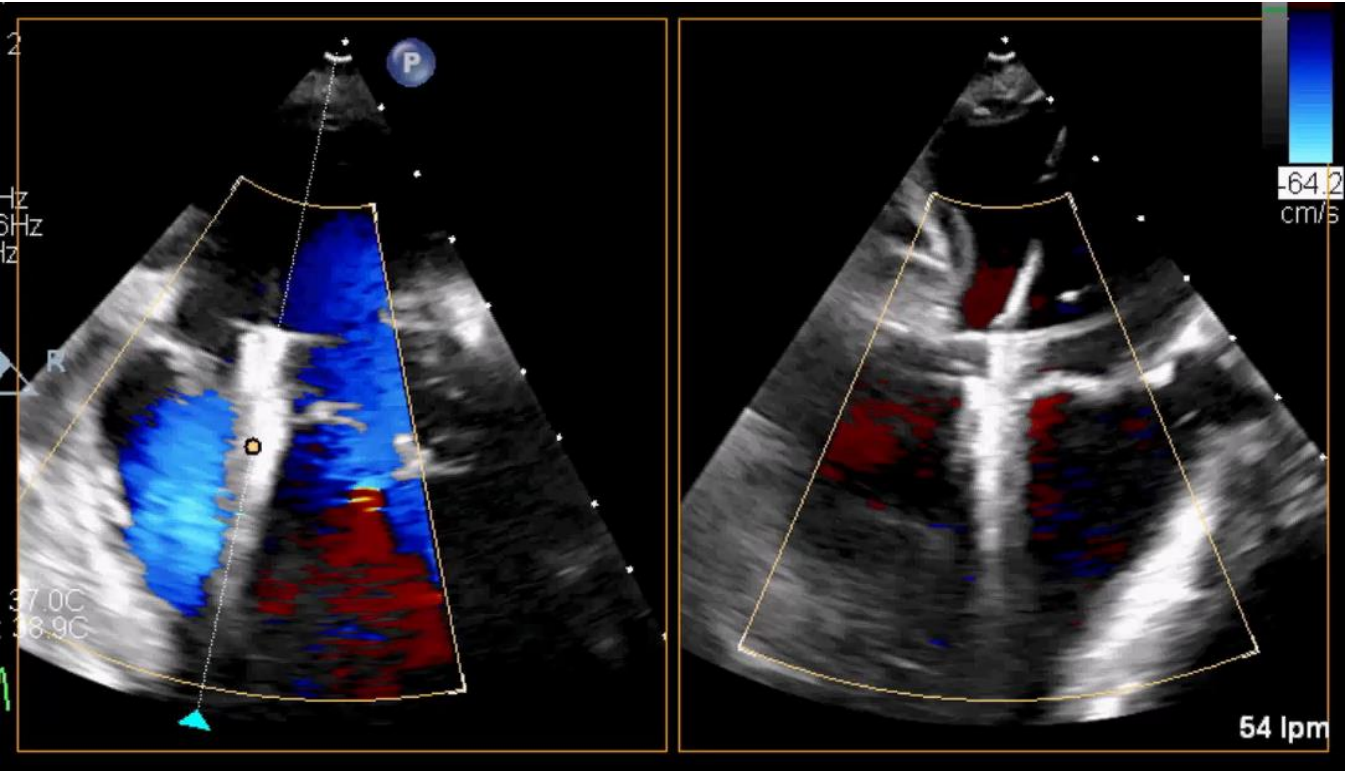
Final mitral regurgitation assessment



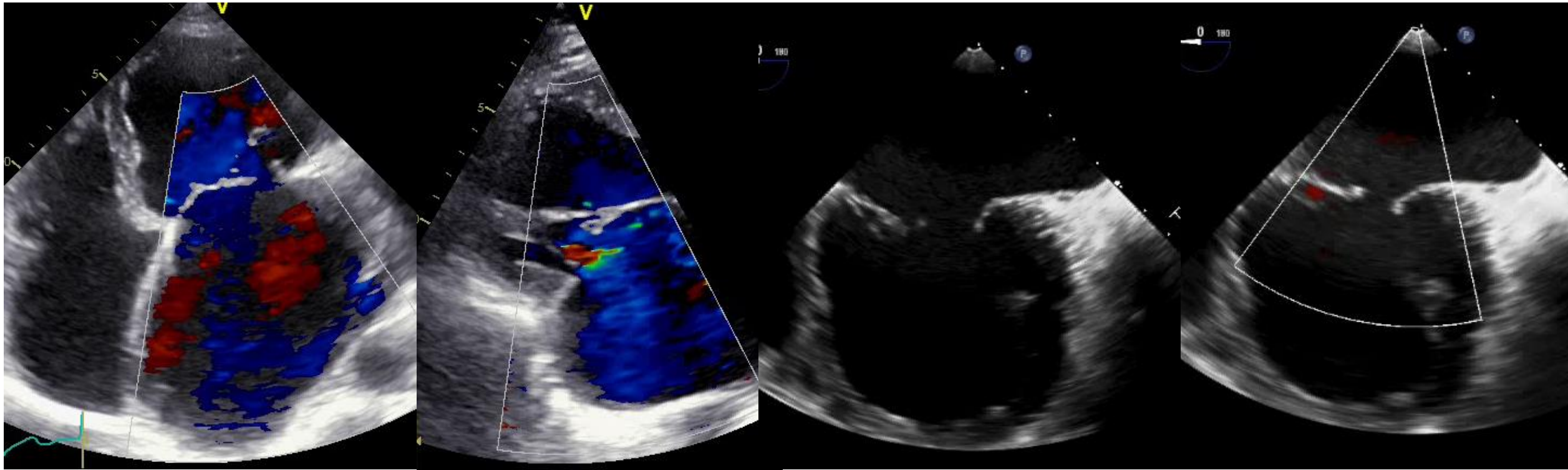
Final mitral regurgitation assessment

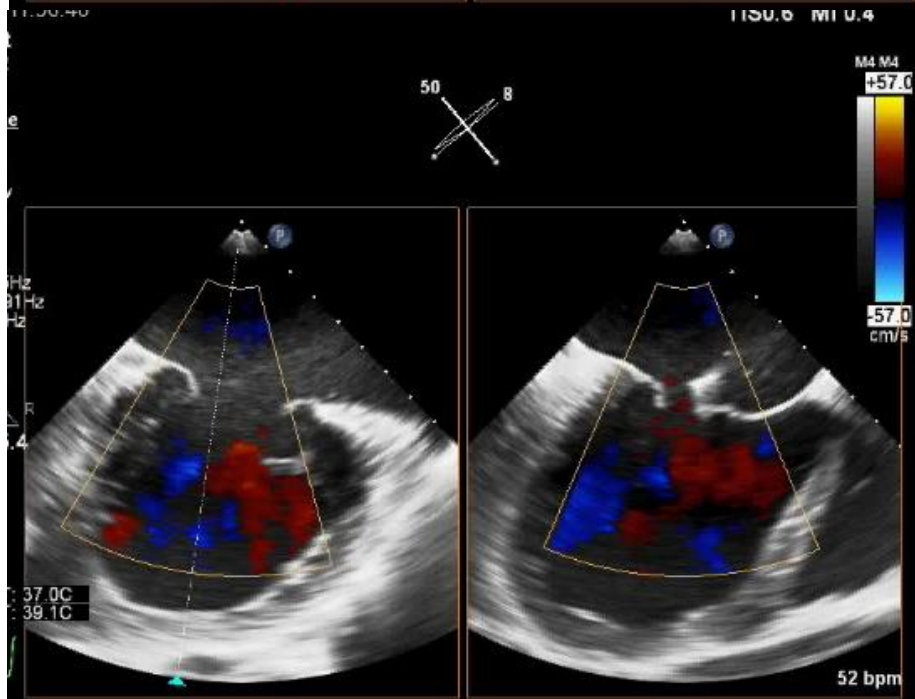
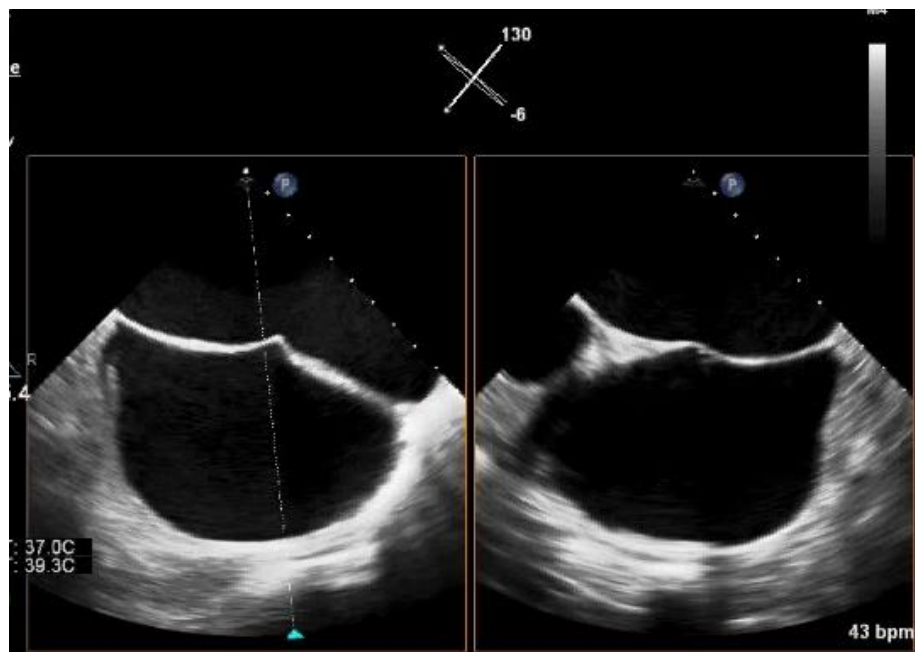


Final mitral regurgitation assessment



Atrial functional mitral regurgitation





51Hz
11cm

3D Zoom
2D / 3D
% 68 / 44
C 50 / 30
HGen

0 115 180

PAT T: 37.0C
TEE T: 39.3C

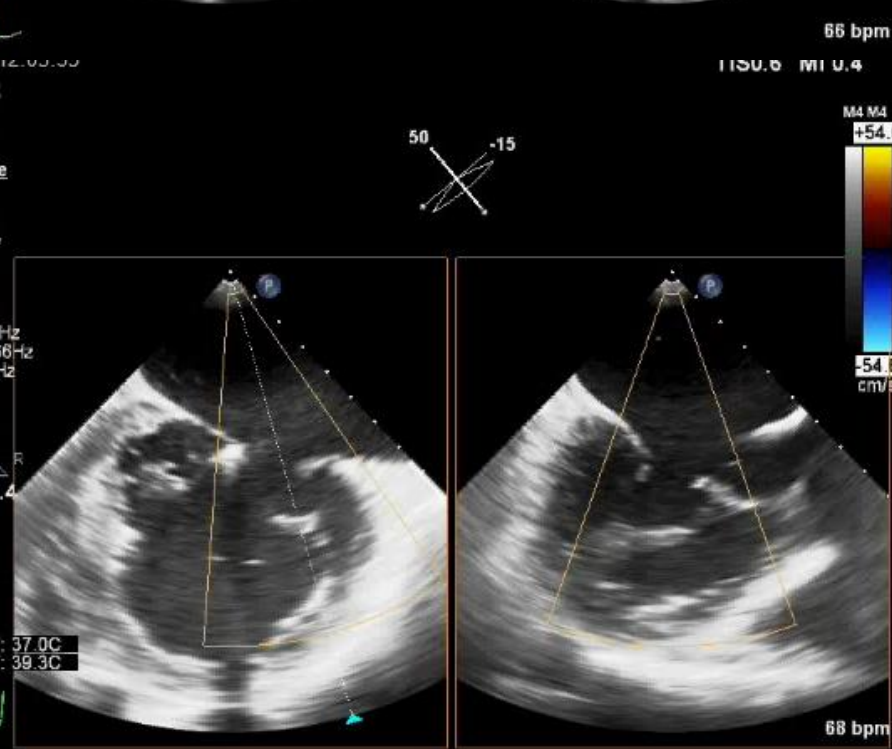
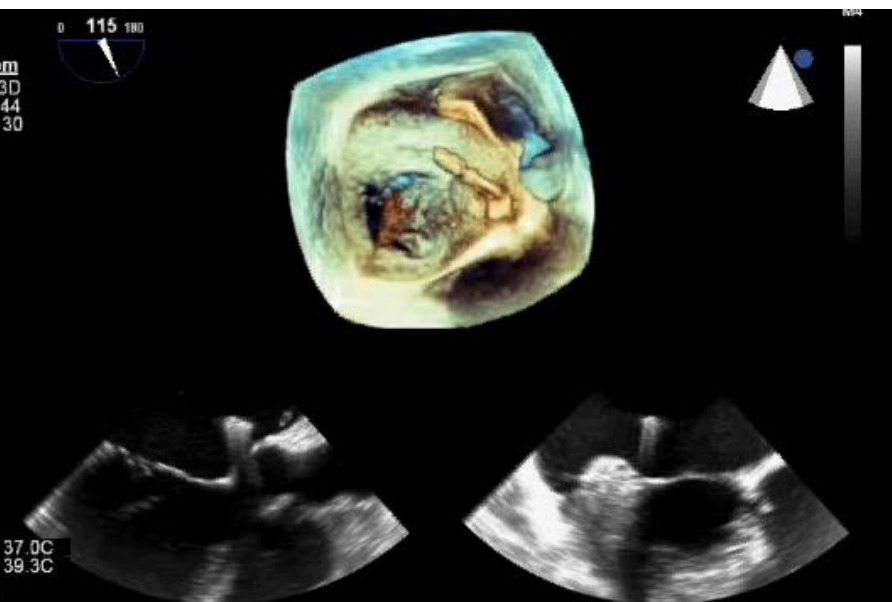
67-2t
14Hz
13cm

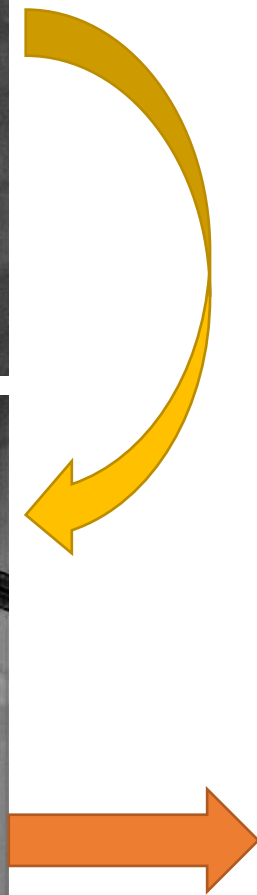
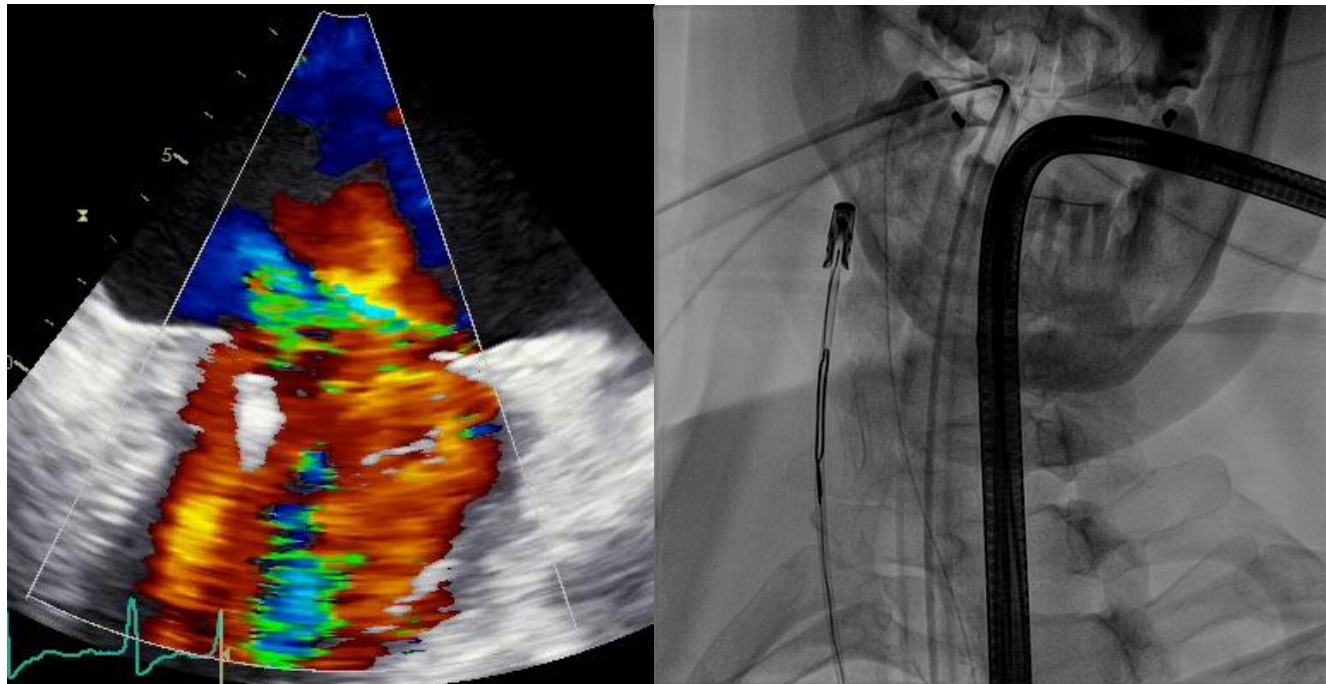
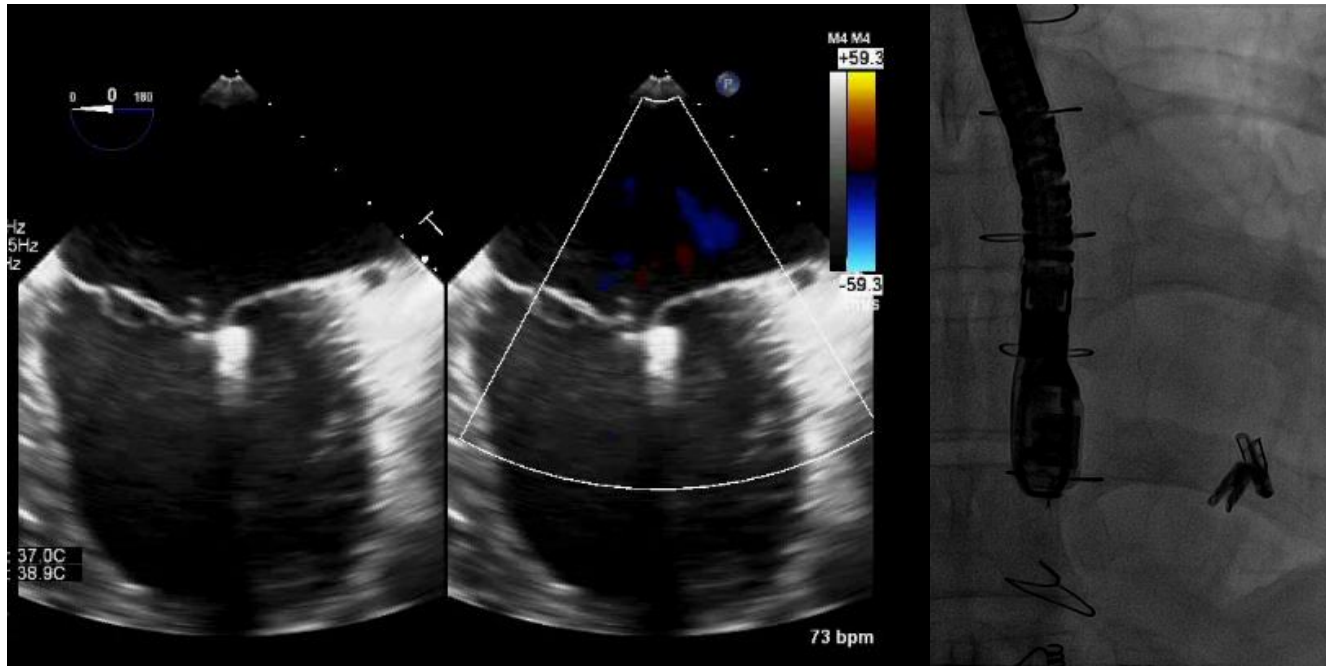
xPlane
78%
78%
50dB
P Low
HGen

CF
48%
6292Hz
WF 566Hz
4.4MHz

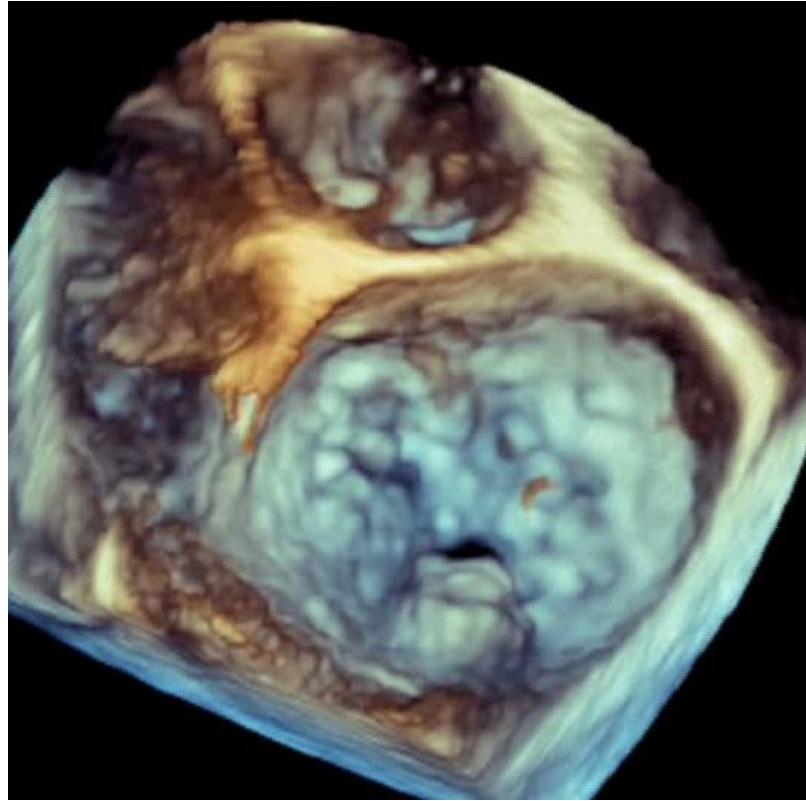
2.7 5.4

PAT T: 37.0C
TEE T: 39.3C

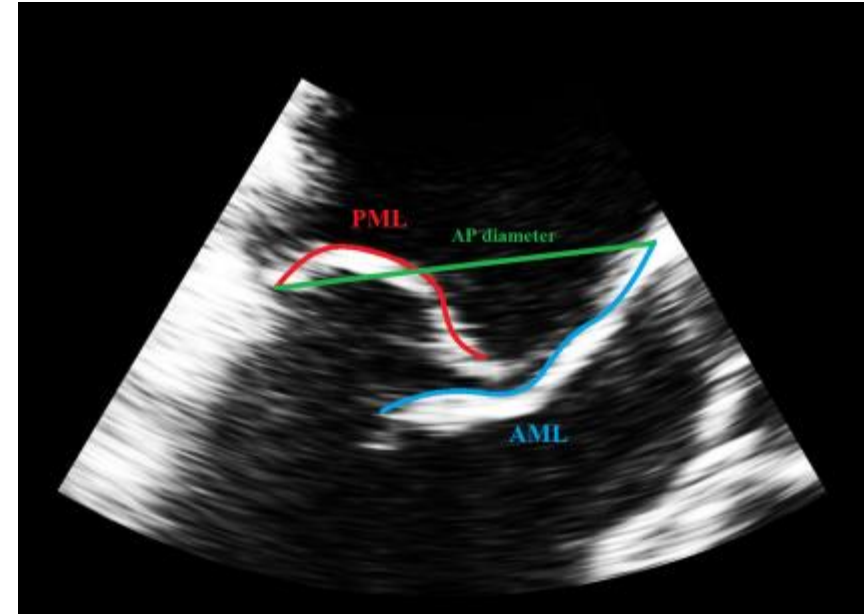
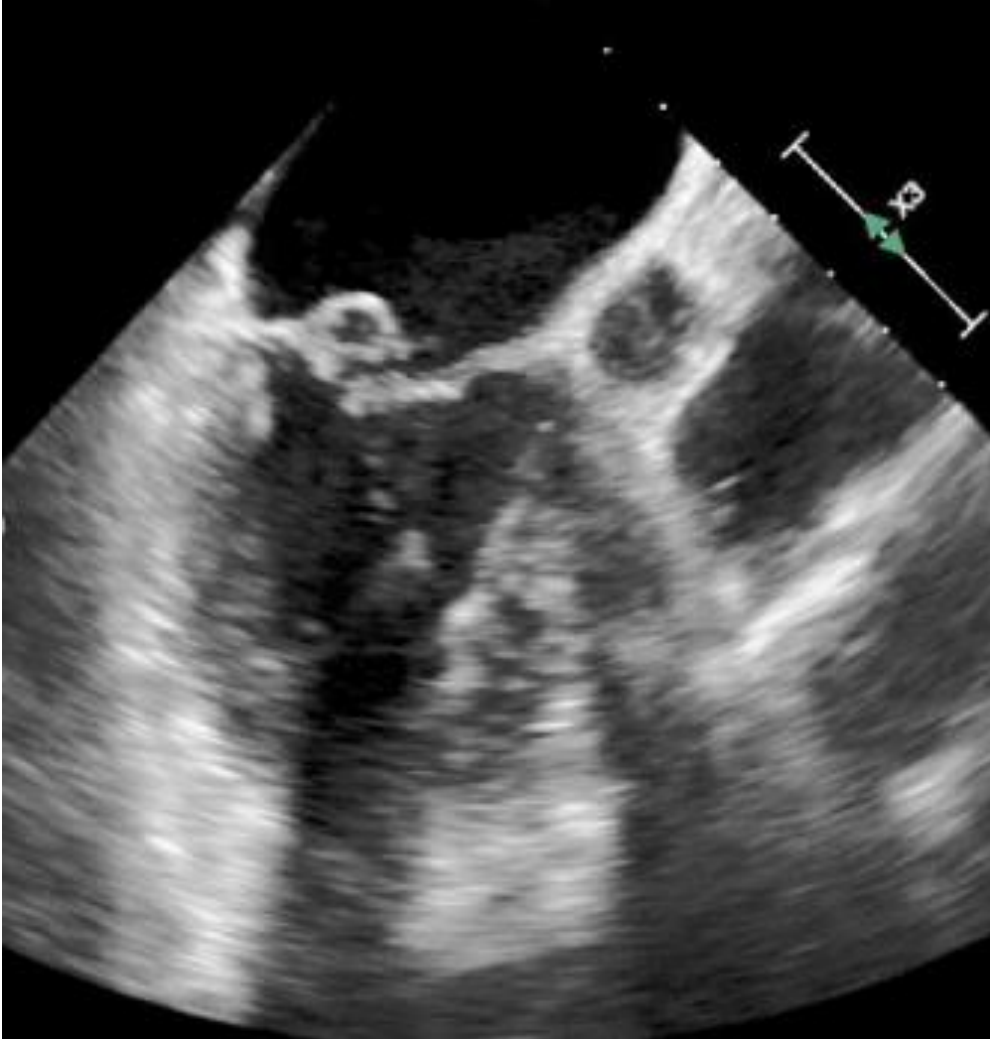




Transcatheter neochord implantation



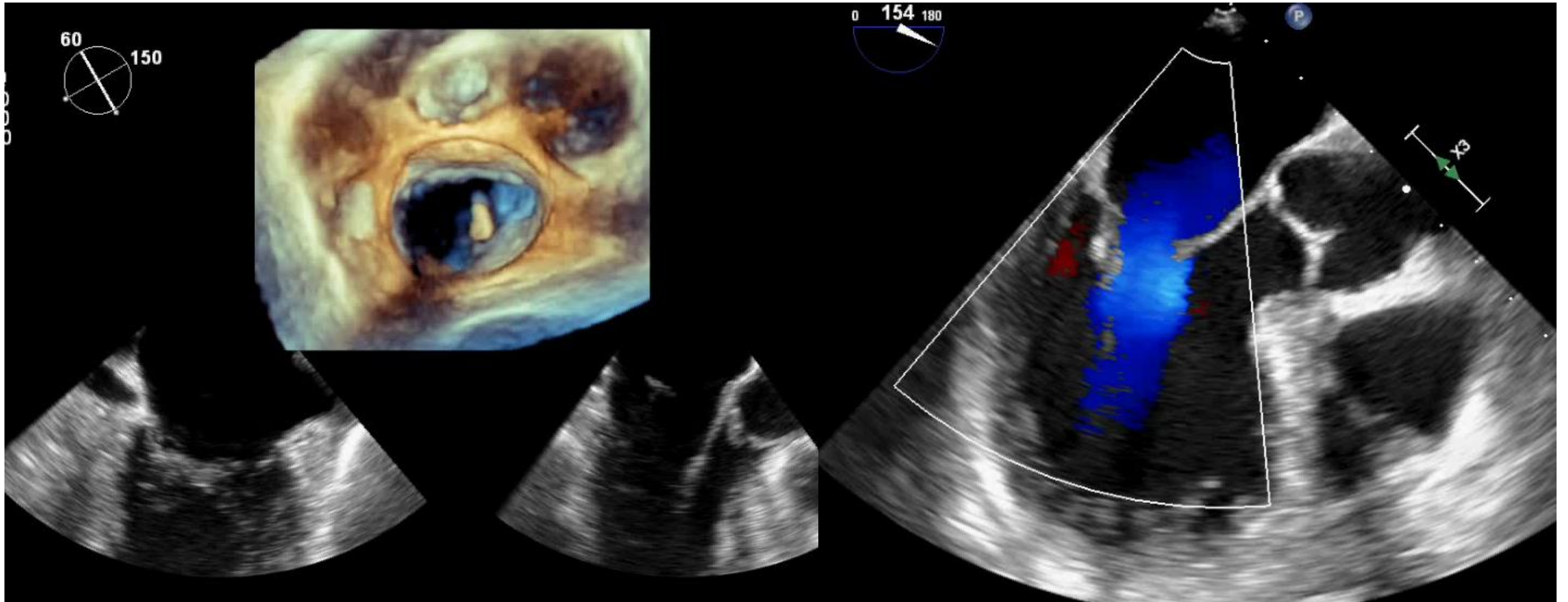
P2 prolapse



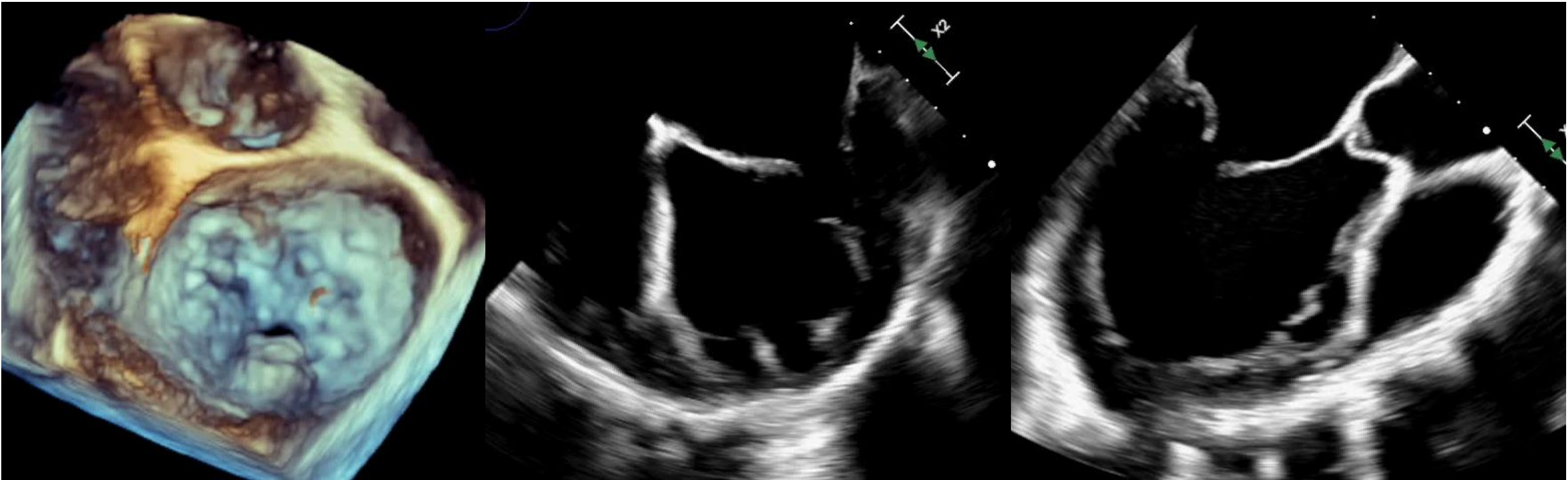
Leaflet to annulus index ≥ 1.25

Colli et al. Int J Cardiol 2018

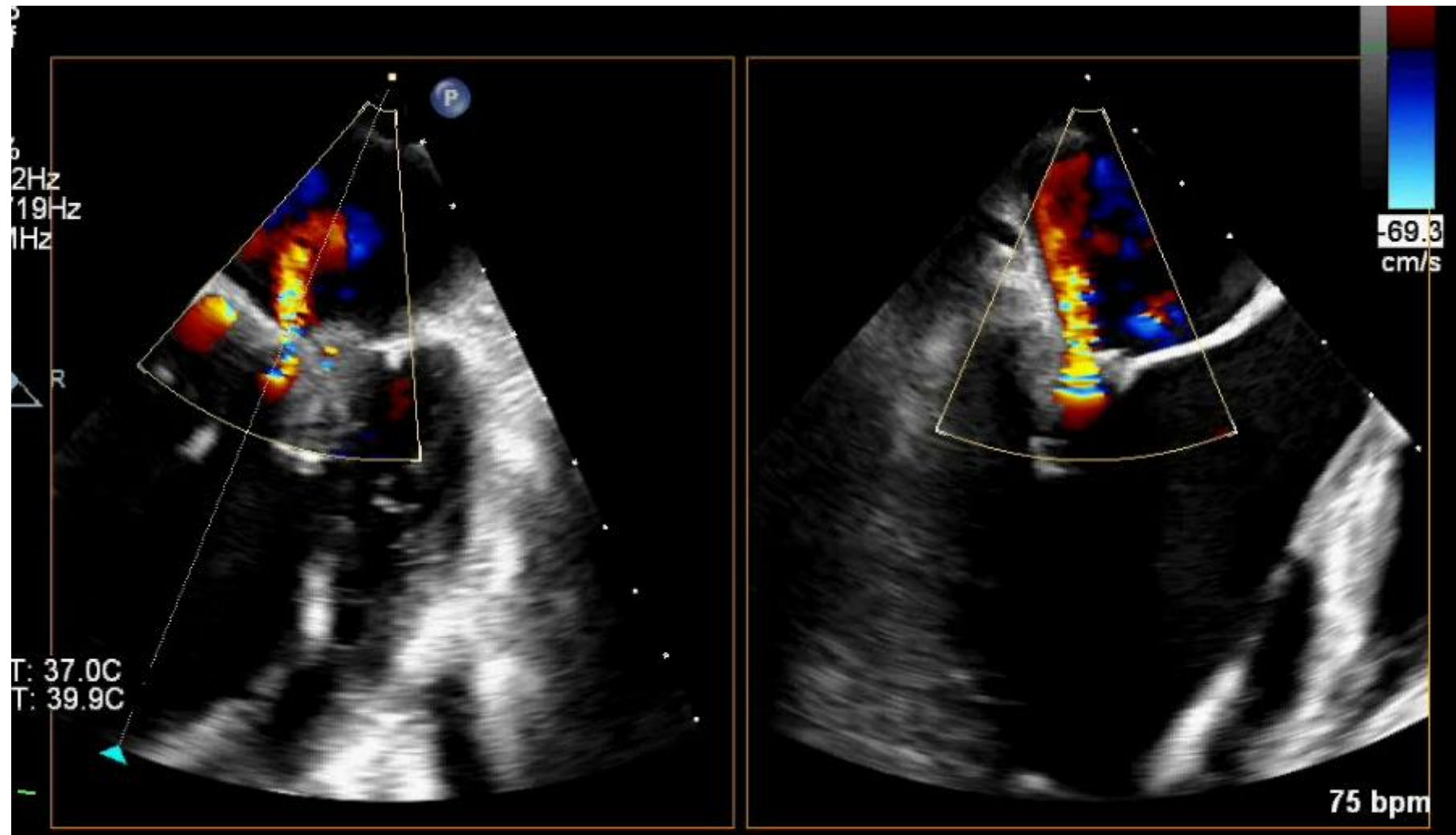
P2 prolapse



P2 prolapse

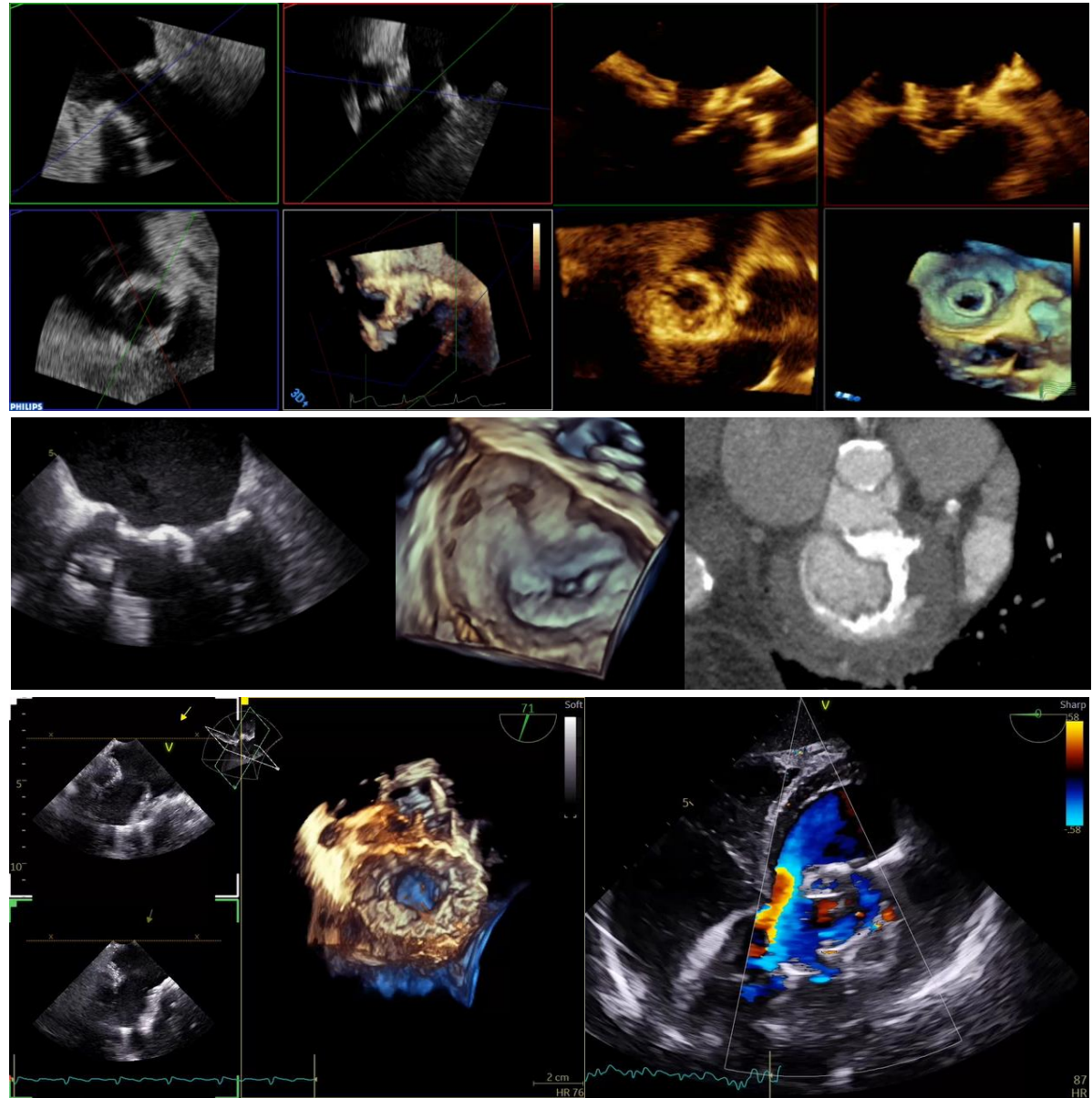


P2 prolapse



Transcatheter mitral valve implantation

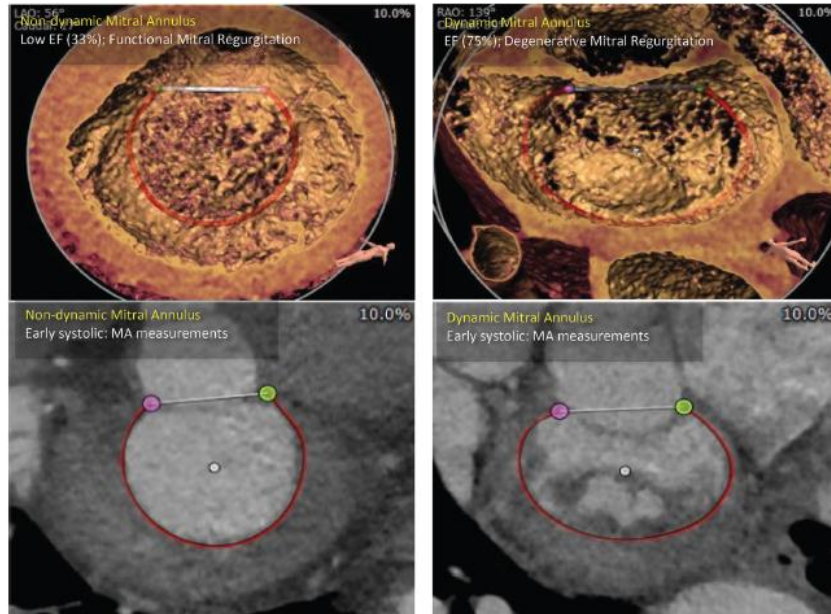
- Valve-in-valve
- Valve-in-ring
- Valve-in-MAC
- Mitral valve replacement



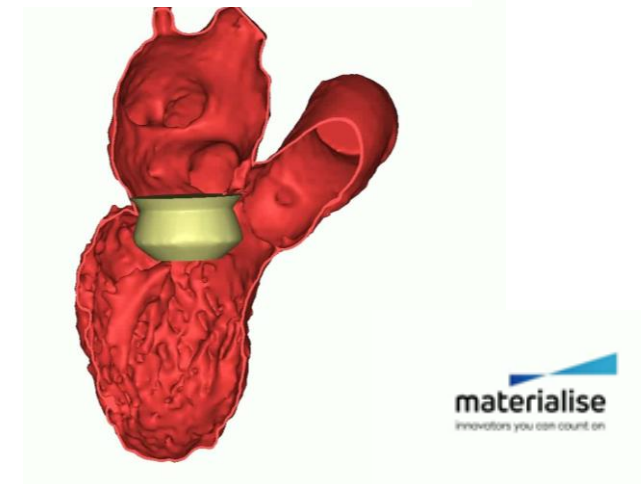
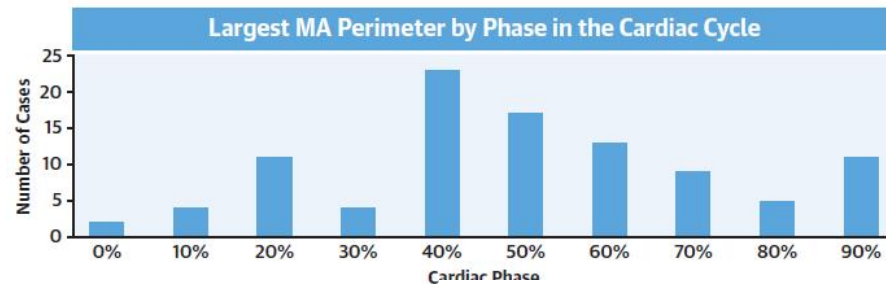
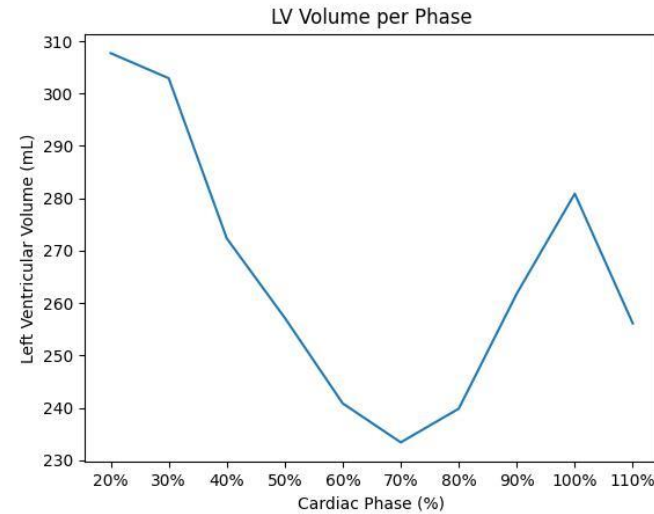
CT prior to TMVR - what to analyze and measure

Mitral annulus	<ul style="list-style-type: none">• Anteroposterior diameter• Intercommissural diameter• Area• Perimeter• Annular calcification
Mitral leaflets	<ul style="list-style-type: none">• Length• Thickness• Calcification
LVOT	<ul style="list-style-type: none">• Neo-LVOT• Aorto-mitral angle
Left ventricle	<ul style="list-style-type: none">• Dimensions and function• Distance between apex and mitral valvular plane• Papillary muscles:<ul style="list-style-type: none">• Distance to mitral valvular plane• Distance between heads
Interatrial septum	<ul style="list-style-type: none">• Anatomy• Thickness• Puncture size
Left atrium	<ul style="list-style-type: none">• Dimensions• Thrombus

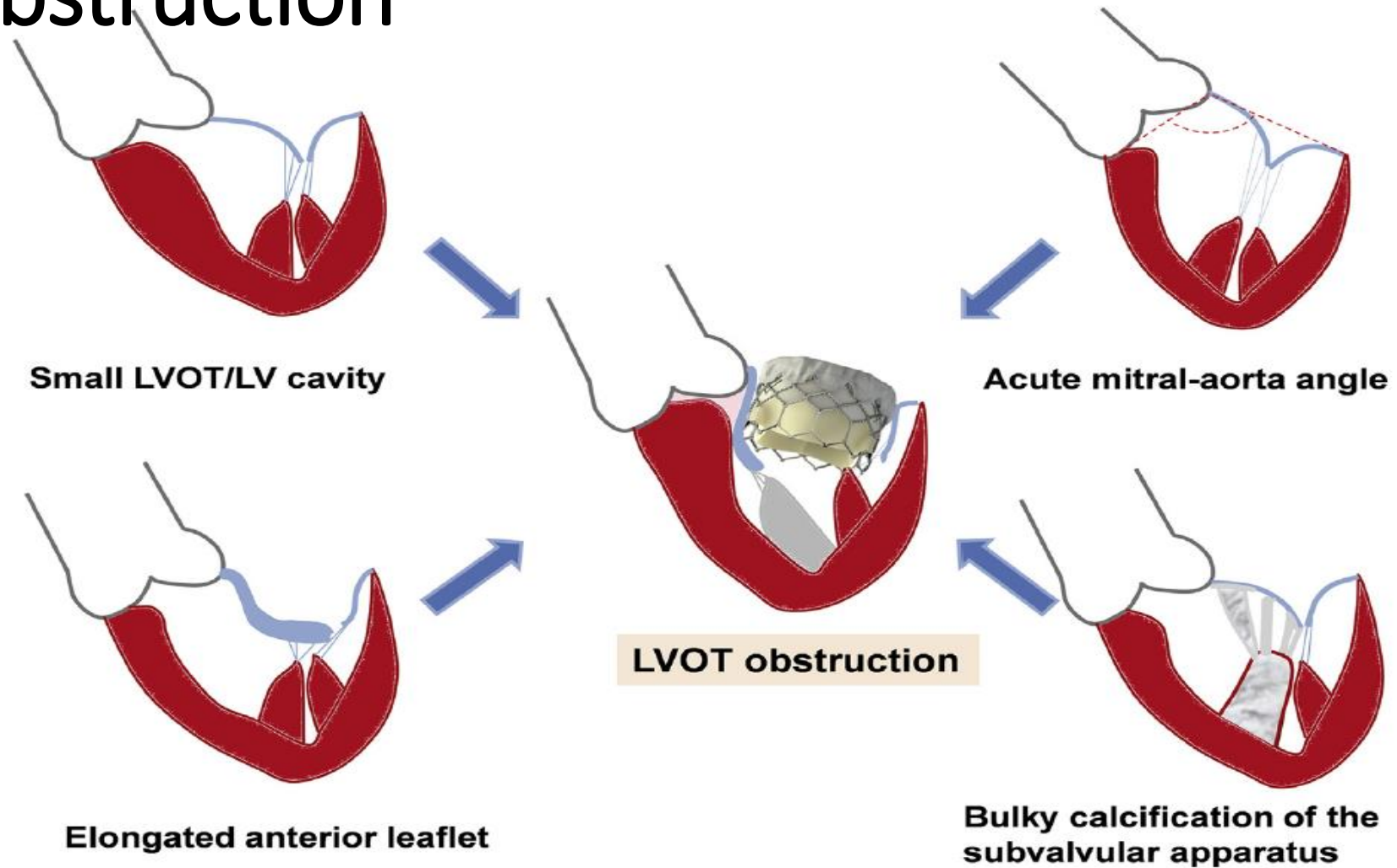
Mitral annulus dimensions – dynamic structure



Non-dynamic MA			Dynamic MA		
MA measurements	Early systolic	Mid-late systolic	MA measurements	Early systolic	Mid-late systolic
Area	11.9 cm ²	12.1 cm ²	Area	12.5 cm ²	20.4 cm ²
Perimeter	126.3 mm	126.0 mm	Perimeter	131.7 mm	165.3 mm
AP distance	36.1 mm	35.8 mm	AP distance	32.1 mm	44.1 mm
CC distance	40.2 mm	40.6 mm	CC distance	46.9 mm	57.2 mm

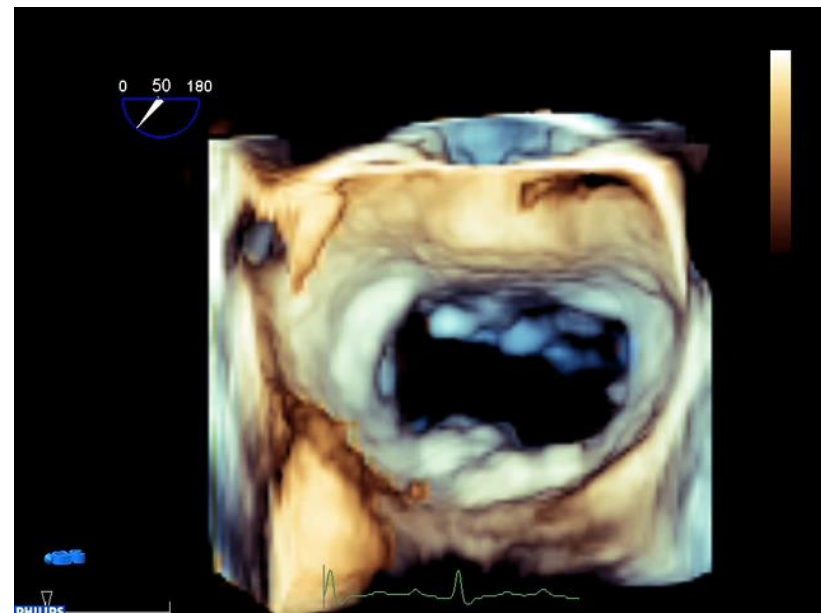
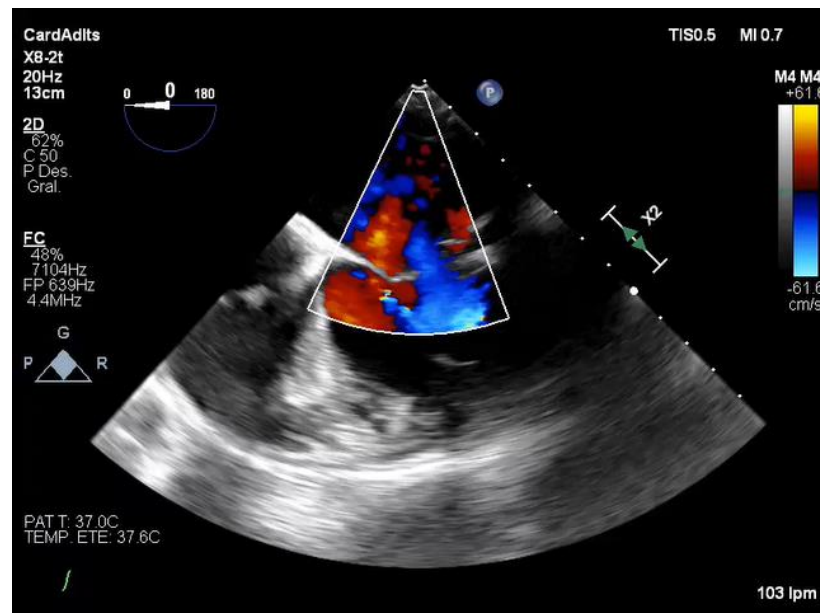
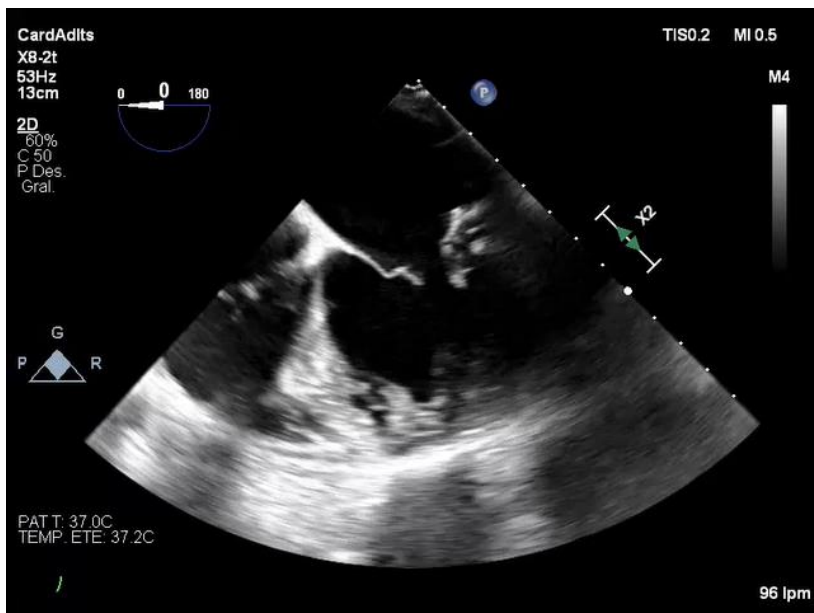


LVOT obstruction



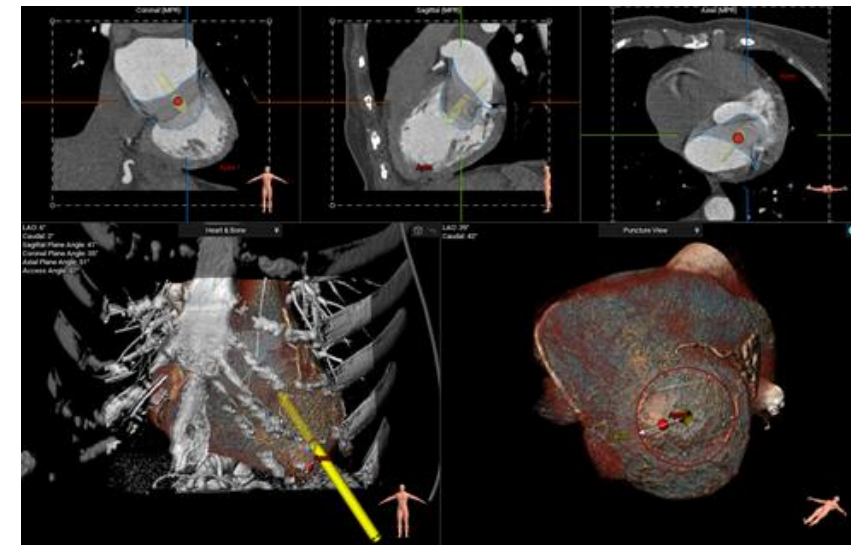
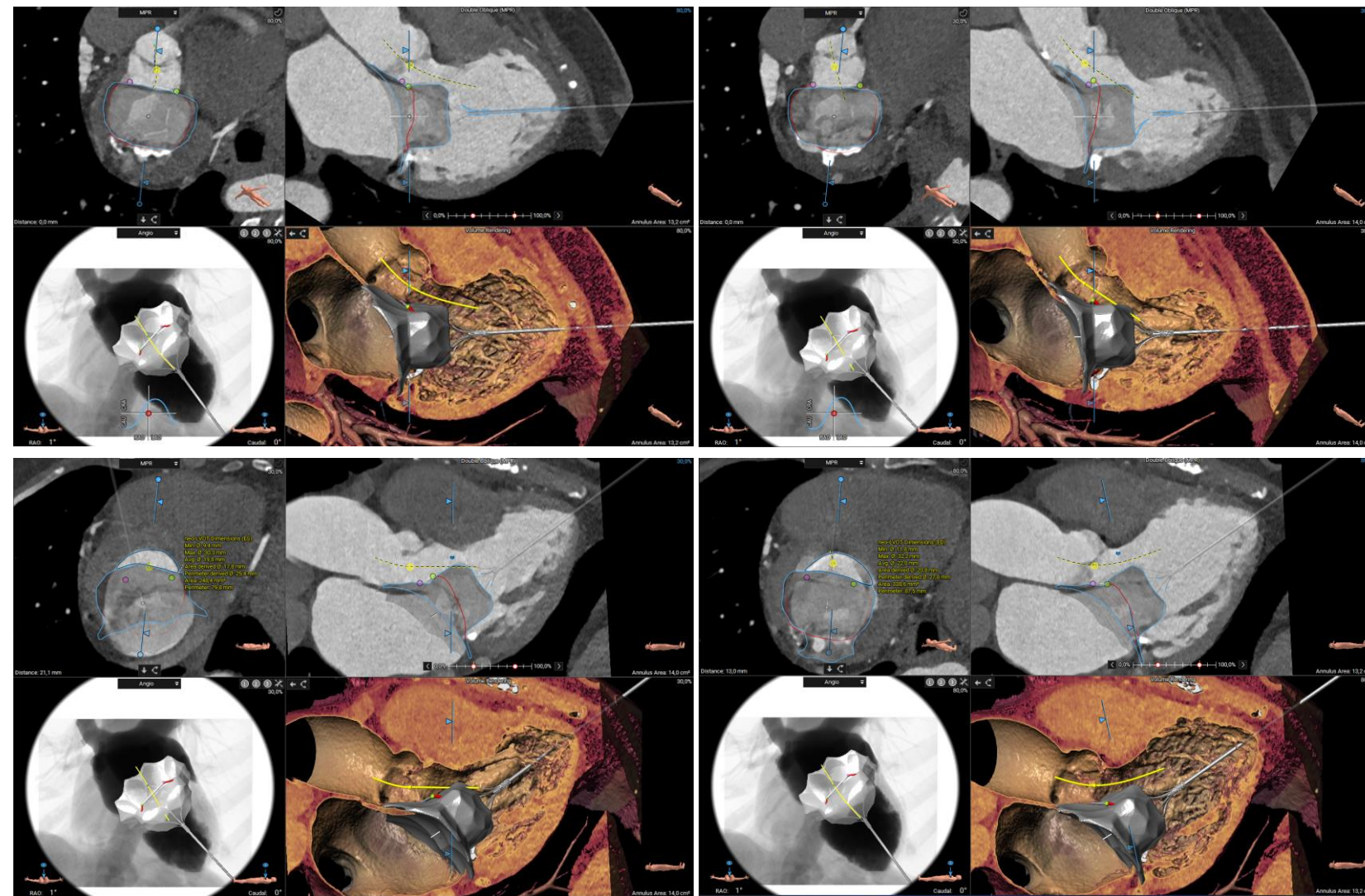
Urena et al JACC Intervent 2018

Transcatheter mitral valve implantation

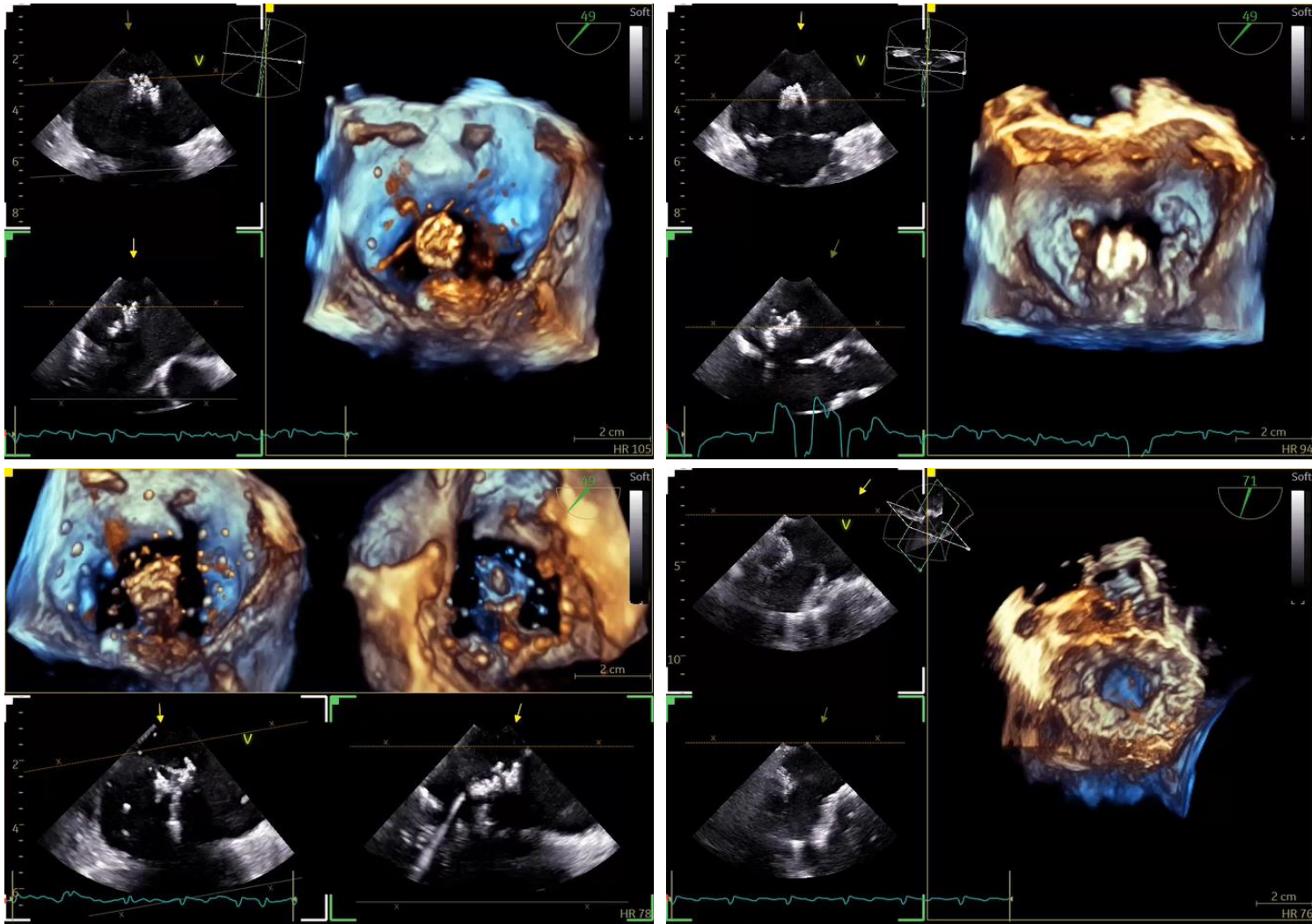


Baseline Transesophageal echocardiography

CT Procedure Planning: Deliverability & neo-LVOT



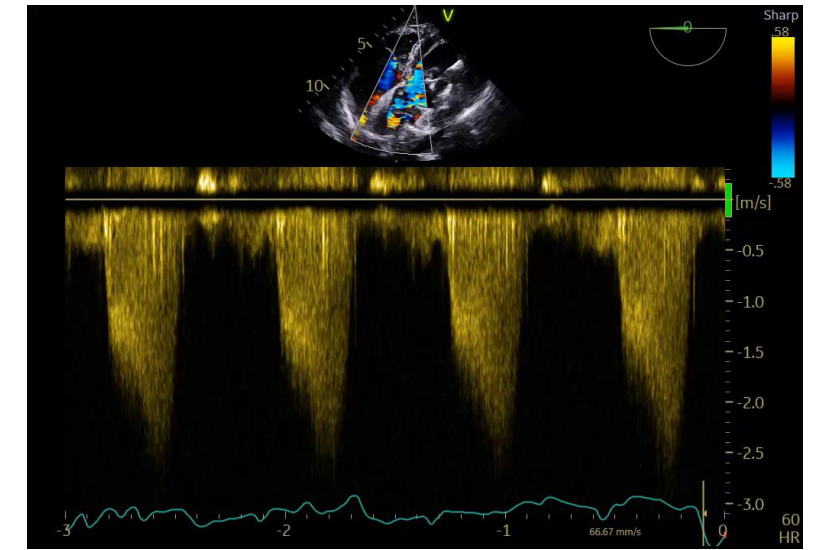
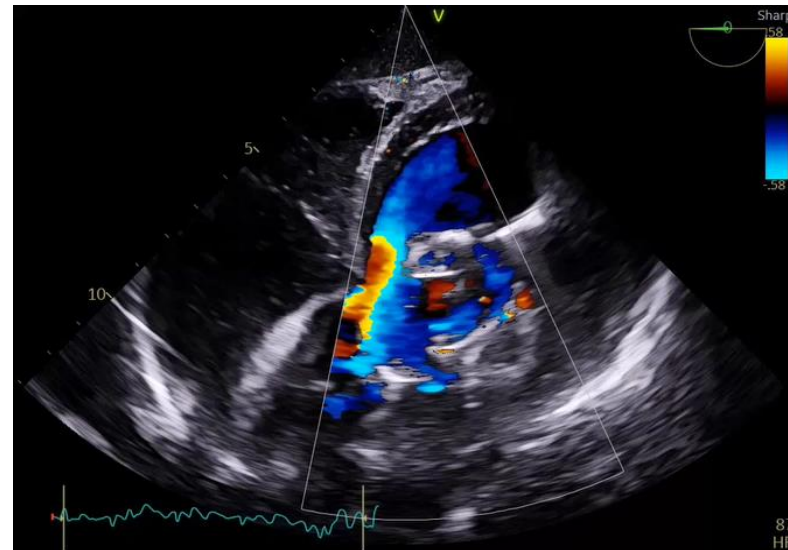
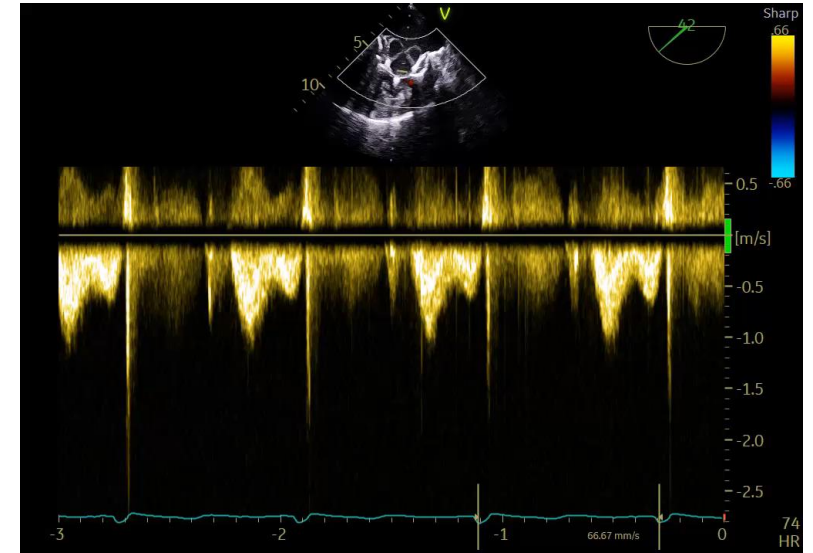
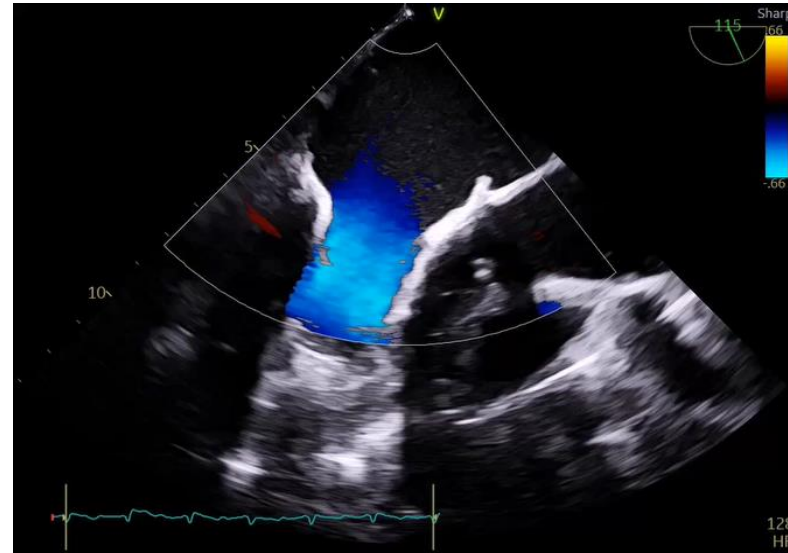
What we did: Tendyne Valve



Procedural Steps

Final Result

- No residual MR
- Favorable hemodynamic profile
- No LVOT obstruction



Thank you very much!



EACVI
European Association of
Cardiovascular Imaging

EACVI 2023



Cardiovascular Magnetic Resonance

Echocardiography

Cardiac Computed Tomography

Nuclear Cardiology

10-12 May
Barcelona

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of Cardiology

