

Mitral Interventions

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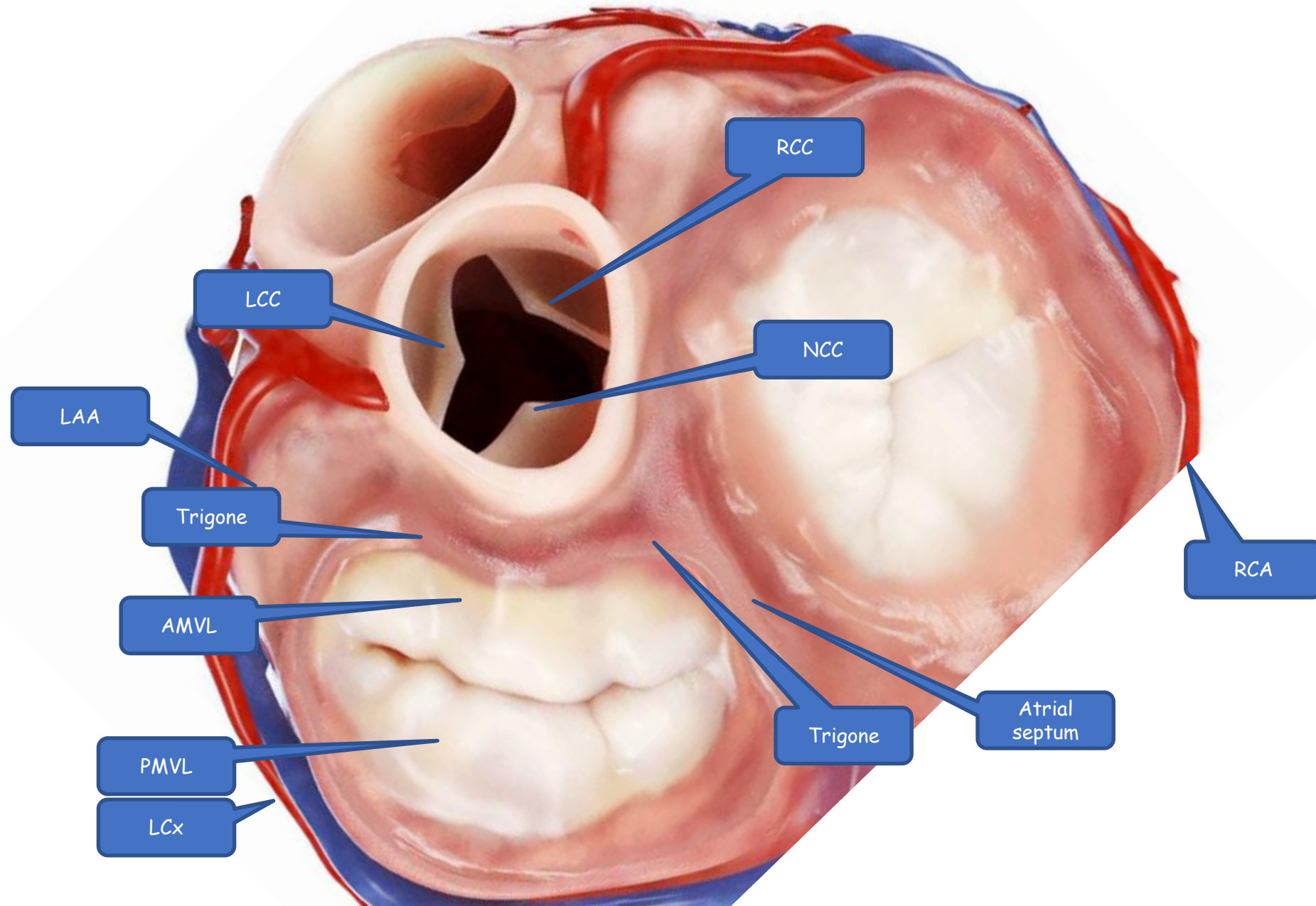


**ECHO
AUSTRALIA**

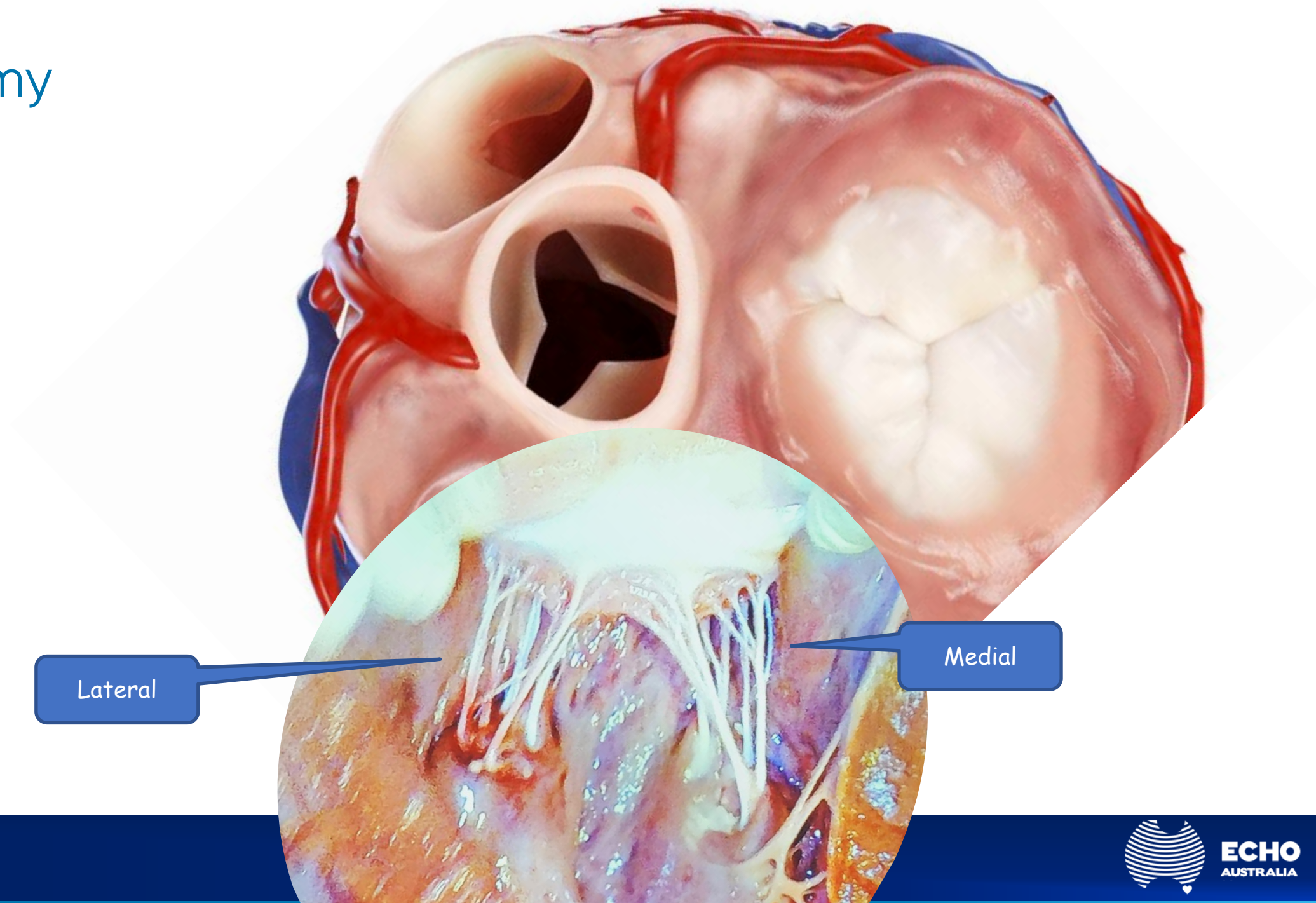
17-19 March 2025



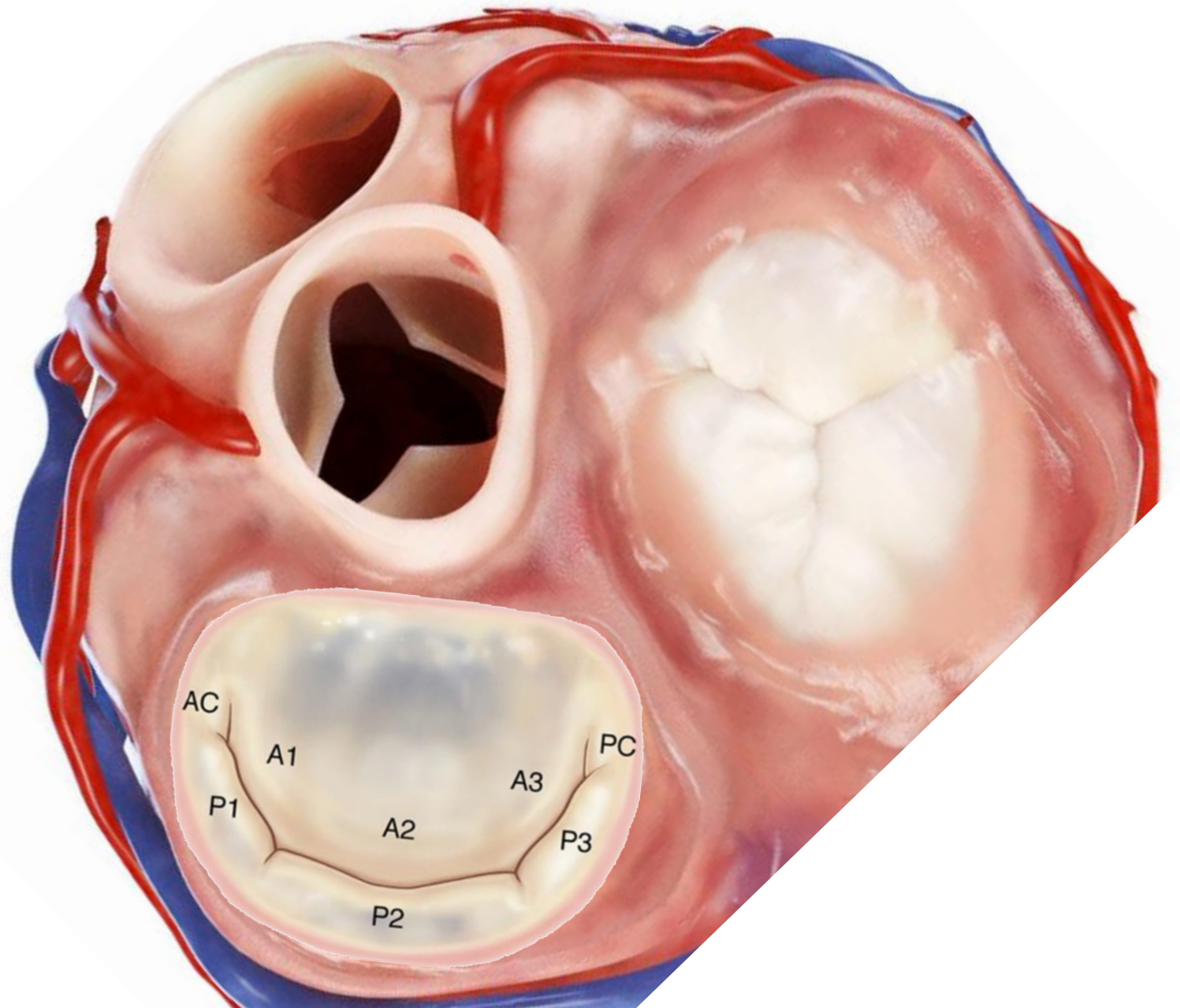
Anatomy



Anatomy



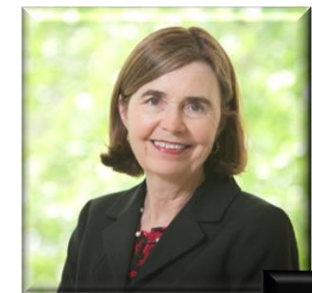
Anatomy



Recommended Standards for the Performance of Transesophageal Echocardiographic Screening for Structural Heart Intervention: From the American Society of Echocardiography

*Rebecca T. Hahn, MD, FASE (Chair), Muhamed Saric, MD, PhD, FASE (Co-Chair),
Francesco Fulvio Faletra, MD, Ruchira Garg, MD, FASE, Linda D. Gillam, MD, MPH, FASE,
Kenneth Horton, ACS, RCS, FASE, Omar K. Khalique, MD, FASE, Stephen H. Little, MD,
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JACC: ASIA

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STATE-OF-THE-ART REVIEW

Echocardiographic Imaging in Transcatheter Structural Intervention

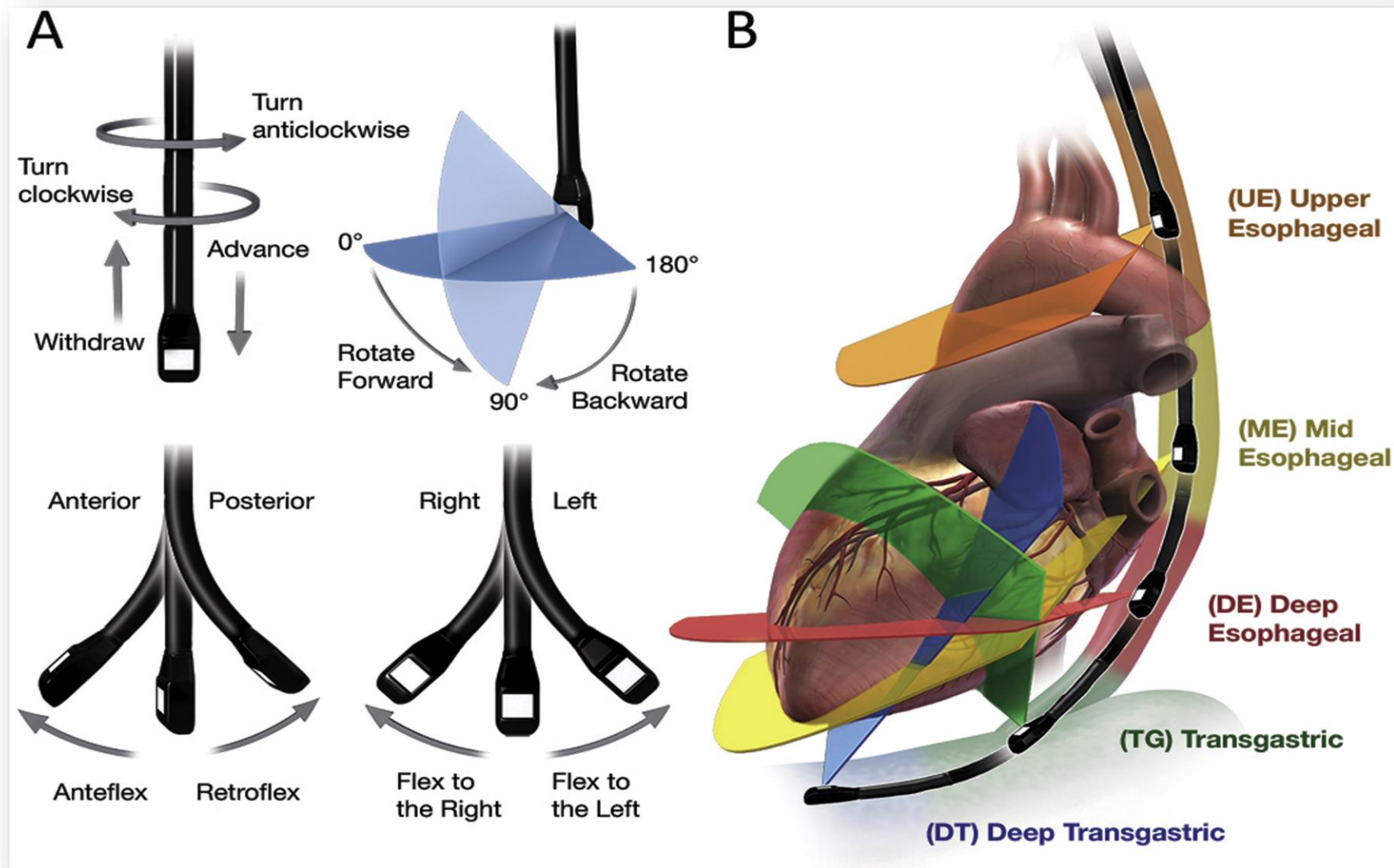
An AAE Review Paper

Raja Ezman Raja Shariff, MBChB,^a Amiliana M. Soesanto, MD, PhD,^b Gregory M. Scalia, MBBS, MMEDSc,^c See-Hooi Ewe, MBBS, PhD,^d Masaki Izumo, MD, PhD,^e Liwen Liu, MD, PhD,^f Williams Ching-Wei Li, MD,^g Kevin Ka-Ho Kam, MBChB,^h Yiting Fan, PhD,^{h,i} Geu-Ru Hong, MD,^j Abdulhalim Jamal Kinsara, MD,^k Edwin S. Tucay, MD,^l Jae K. Oh, MD,^m Alex Pui-Wai Lee, MBChB, MD^h



ECHO
AUSTRALIA

Nomenclature and standards



Nomenclature and standards

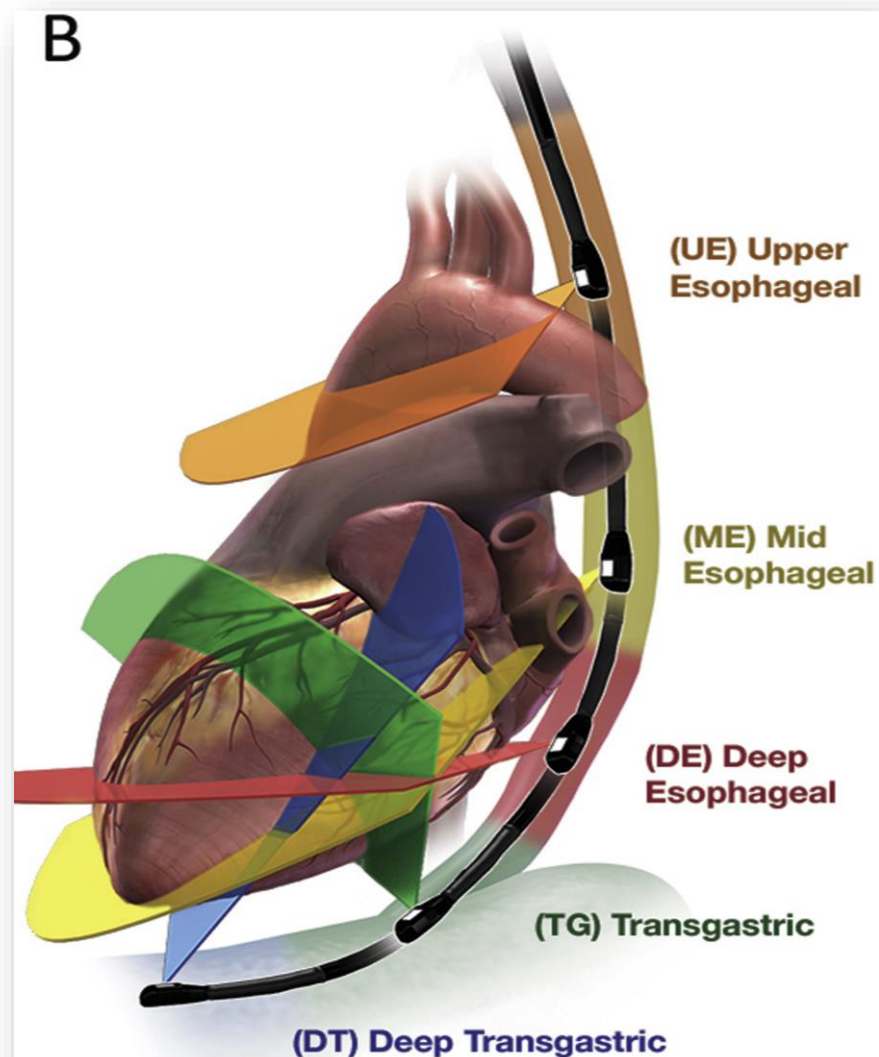


Table 1 Comprehensive TEE examination views

30 views of the comprehensive TEE examination*

1. ME five-chamber view
2. ME four-chamber view
3. ME mitral commissural view
4. ME two-chamber view
5. ME long-axis view
6. ME AV view
7. ME ascending aorta long-axis view
8. ME ascending aorta SAX view
9. ME right pulmonary vein view
10. ME AV SAX view
11. ME right ventricular inflow-outflow view
12. ME modified bicaval TV view
13. ME bicaval view
14. ME right and left pulmonary veins view
15. ME LAA view
16. TG basal SAX view
17. TG LV midpapillary SAX view
18. TG ventricular apical SAX view
19. TG right ventricular basal view
20. TG right ventricular inflow-outflow view
21. DT five-chamber view
22. TG two-chamber view
23. TG RV inflow view
24. TG long-axis view
25. TG to ME descending aorta (SAX)
26. TG to ME descending aorta (long axis)
27. UE aortic arch SAX to long axis
28. UE aortic arch SAX view

Additional imaging level and views

29. DE right ventricular two-chamber view
30. DE right ventricular inflow-outflow view

Mid-Esophageal - 0° - 4ch and 5Ch

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Journal of the American S

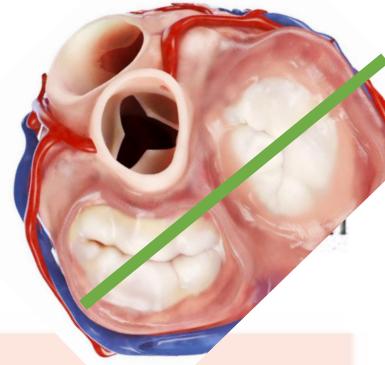
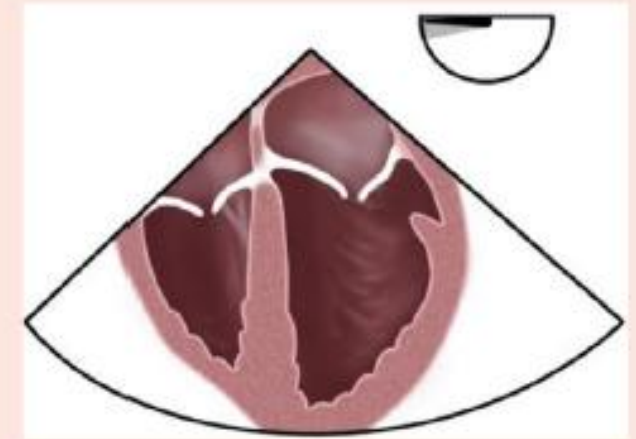


Table 4 MV imaging protocol

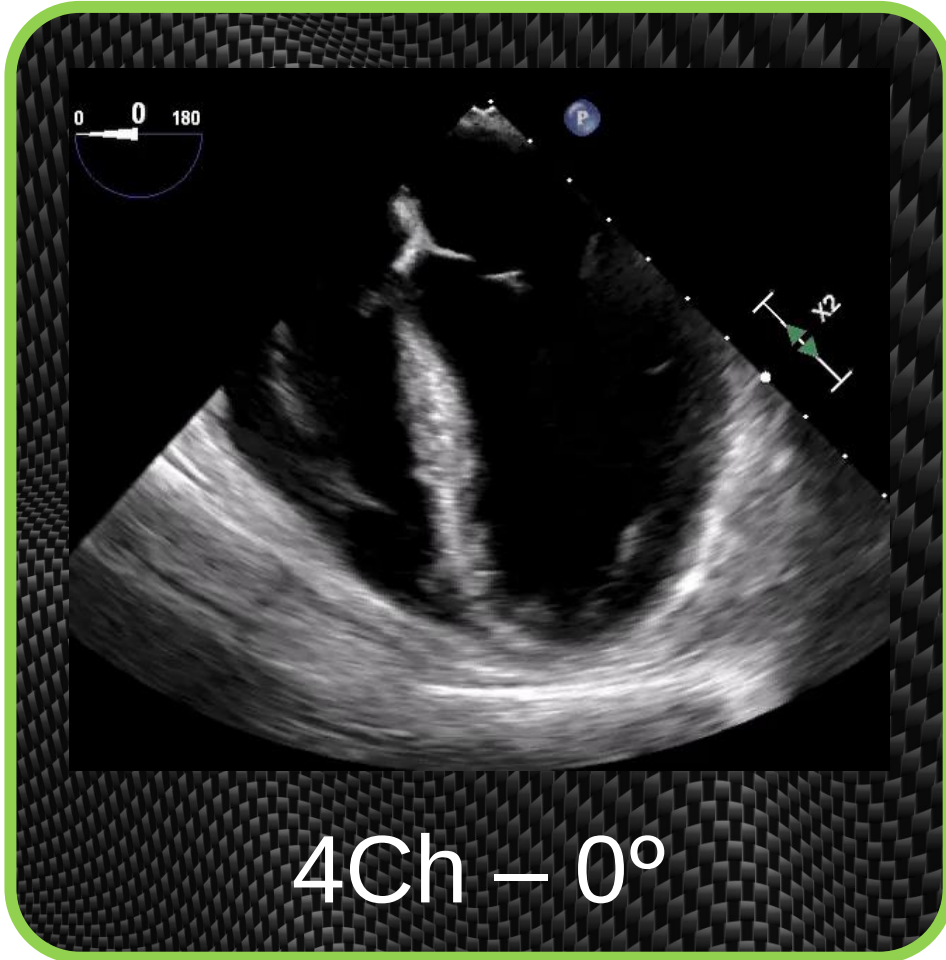
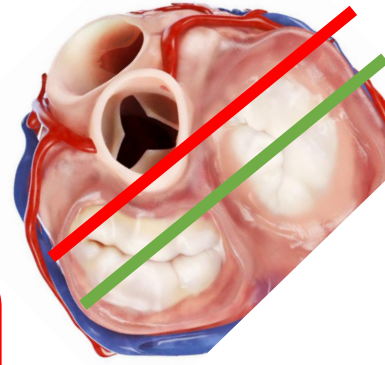
Imaging level: ME view 0°-20°

Acquisition protocol:

- From the ME 4Ch view focused on the MV (0°-20° multiplane angle may be necessary to eliminate the AV and the LVOT).
- To better align the MV, slight probe retroflexion may be necessary. Use tilt plane to illustrate simultaneous biplane image.



Mid-Esophageal - 0° - 4ch and 5Ch

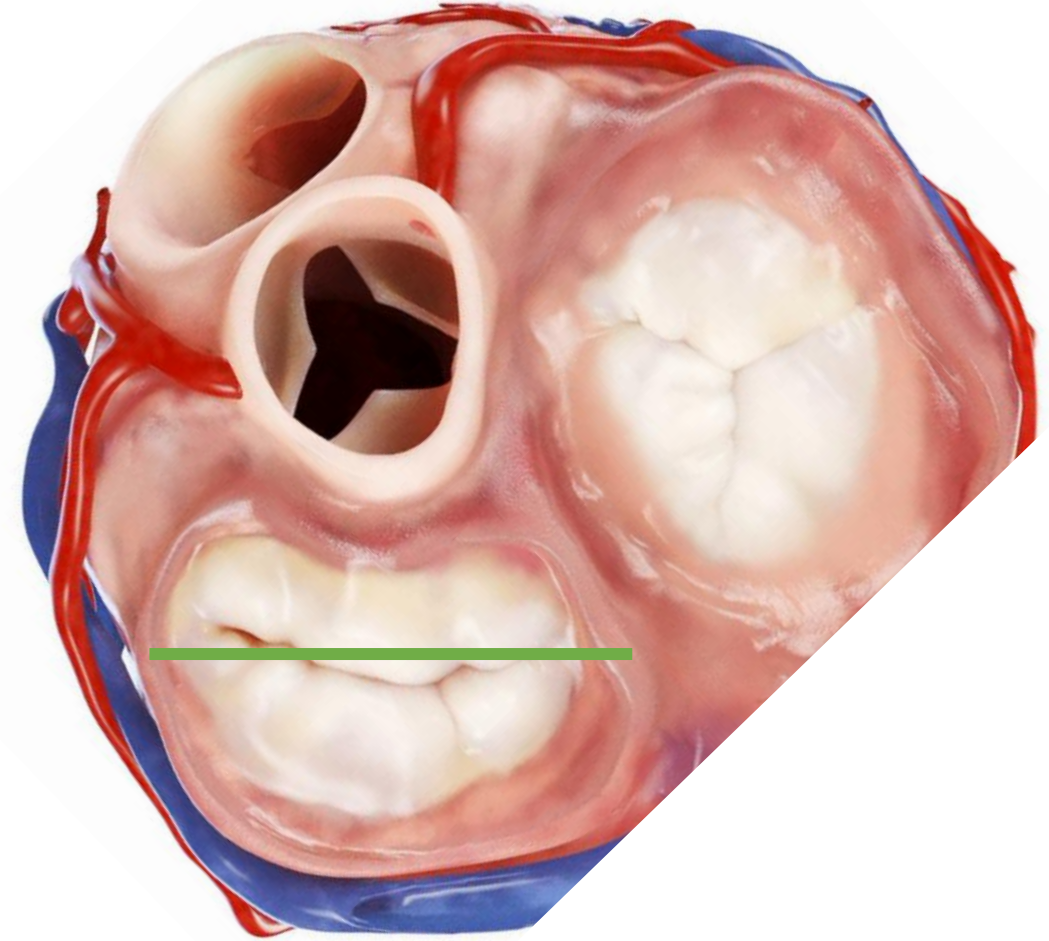
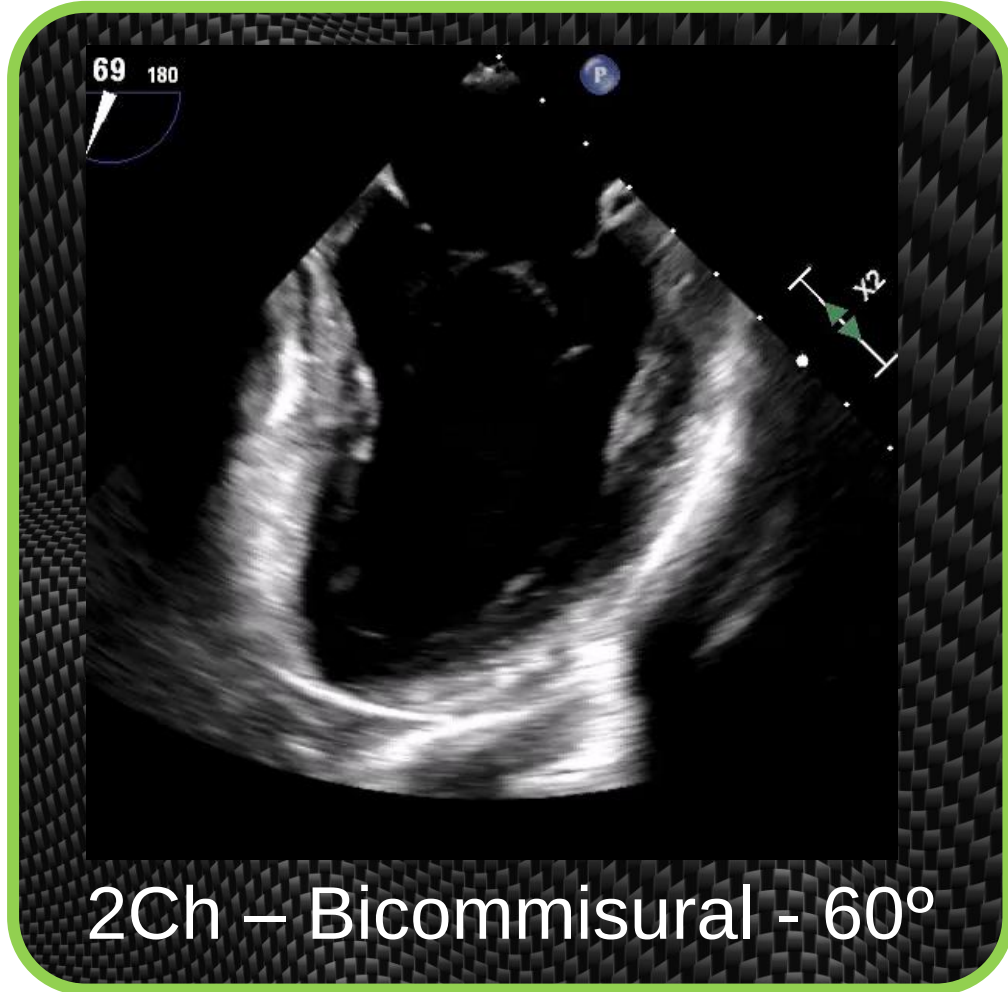


4Ch - 0°



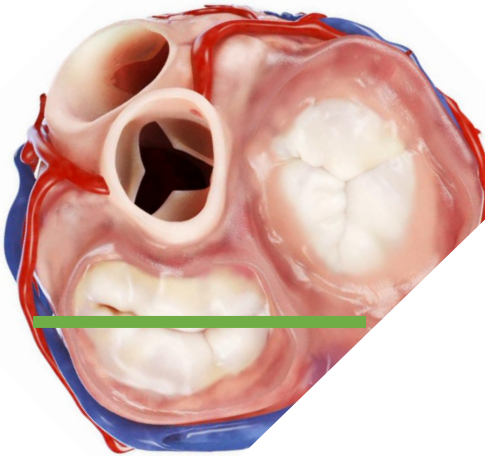
5Ch - 0° - Flex

Mid-Esophageal - 60° - Bicommisural



Index views - Bi-commisural - Tips and tricks

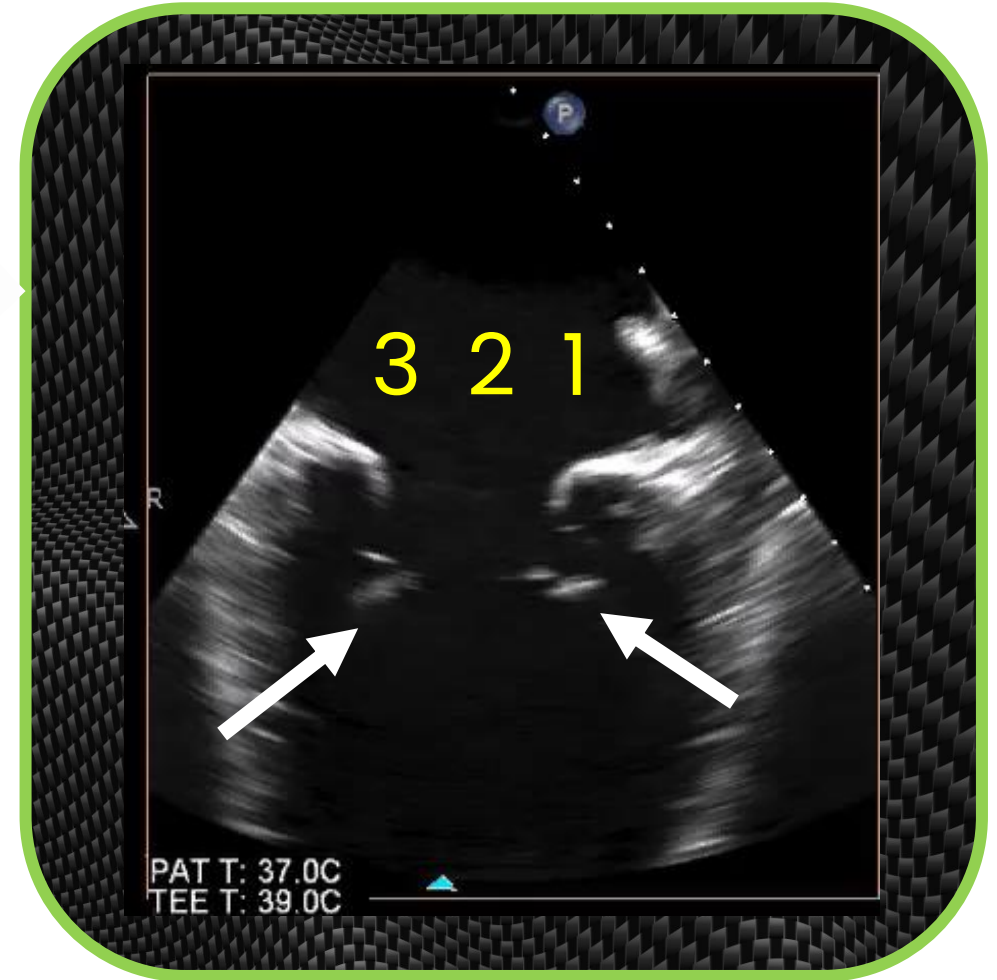
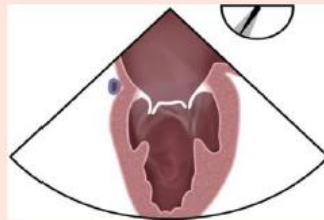
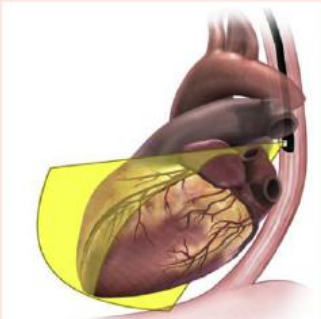
- Usually 55-70° mid-esophagus
- Aim for symmetric display of papillary muscle heads and chords
- Refer to 1's, 2's and 3's
- Have some LAA on view



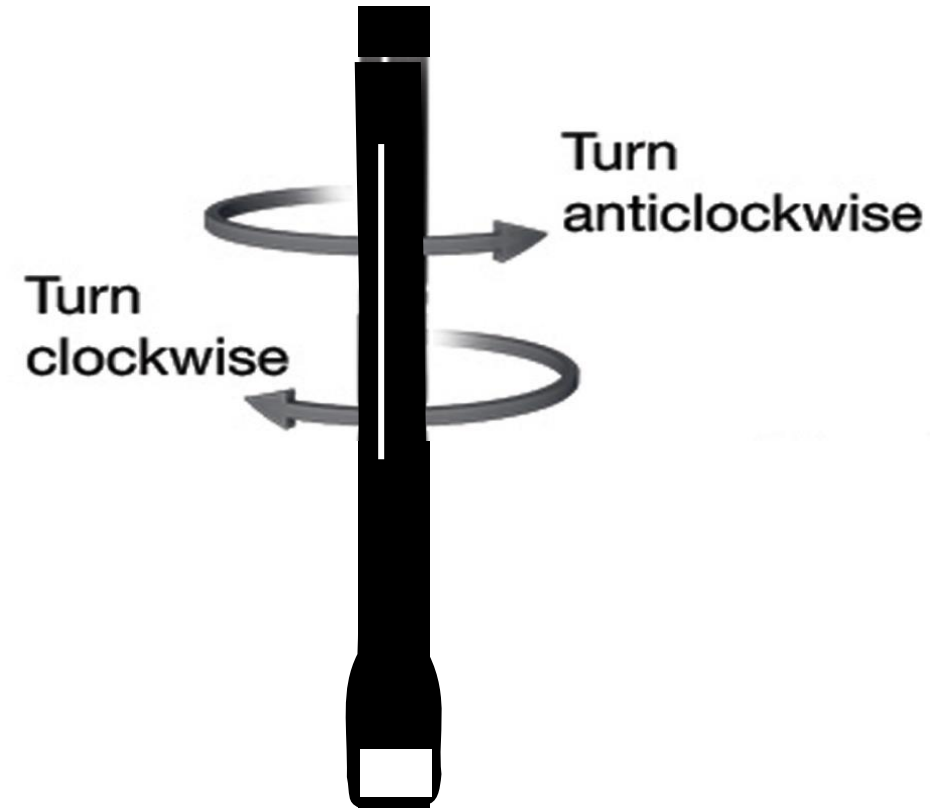
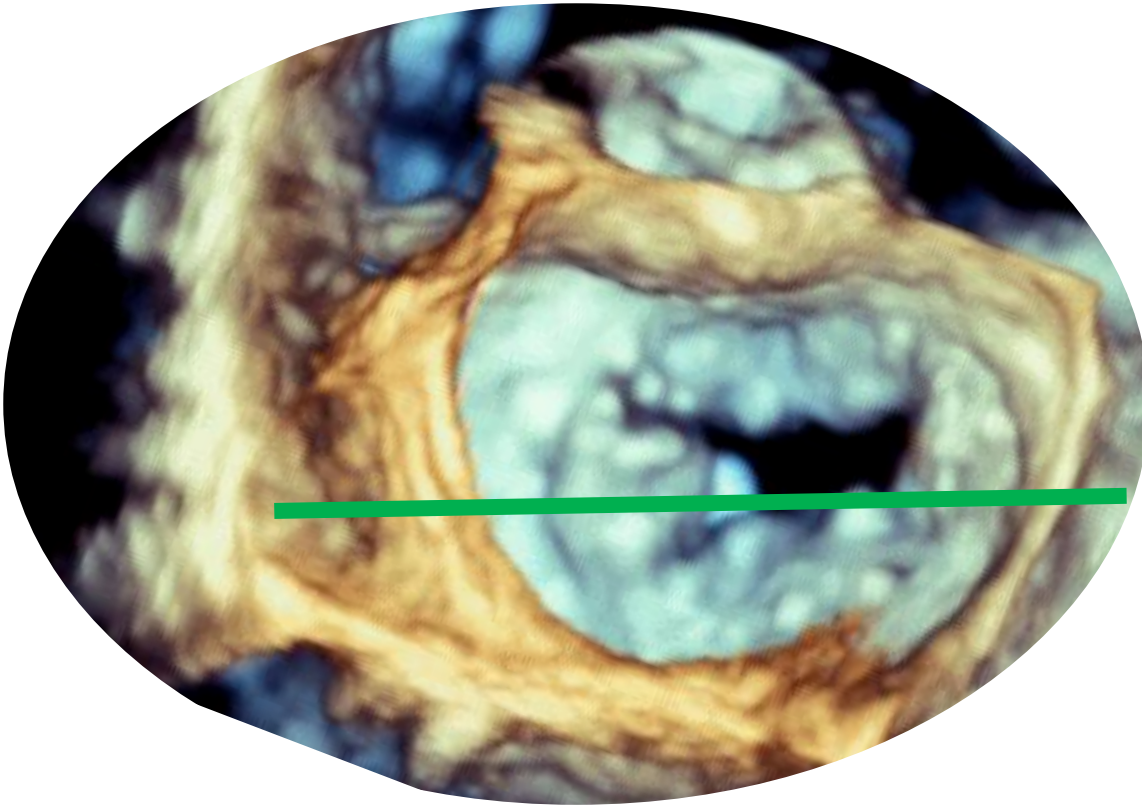
Imaging level: ME mitral commissural view 50°-70°

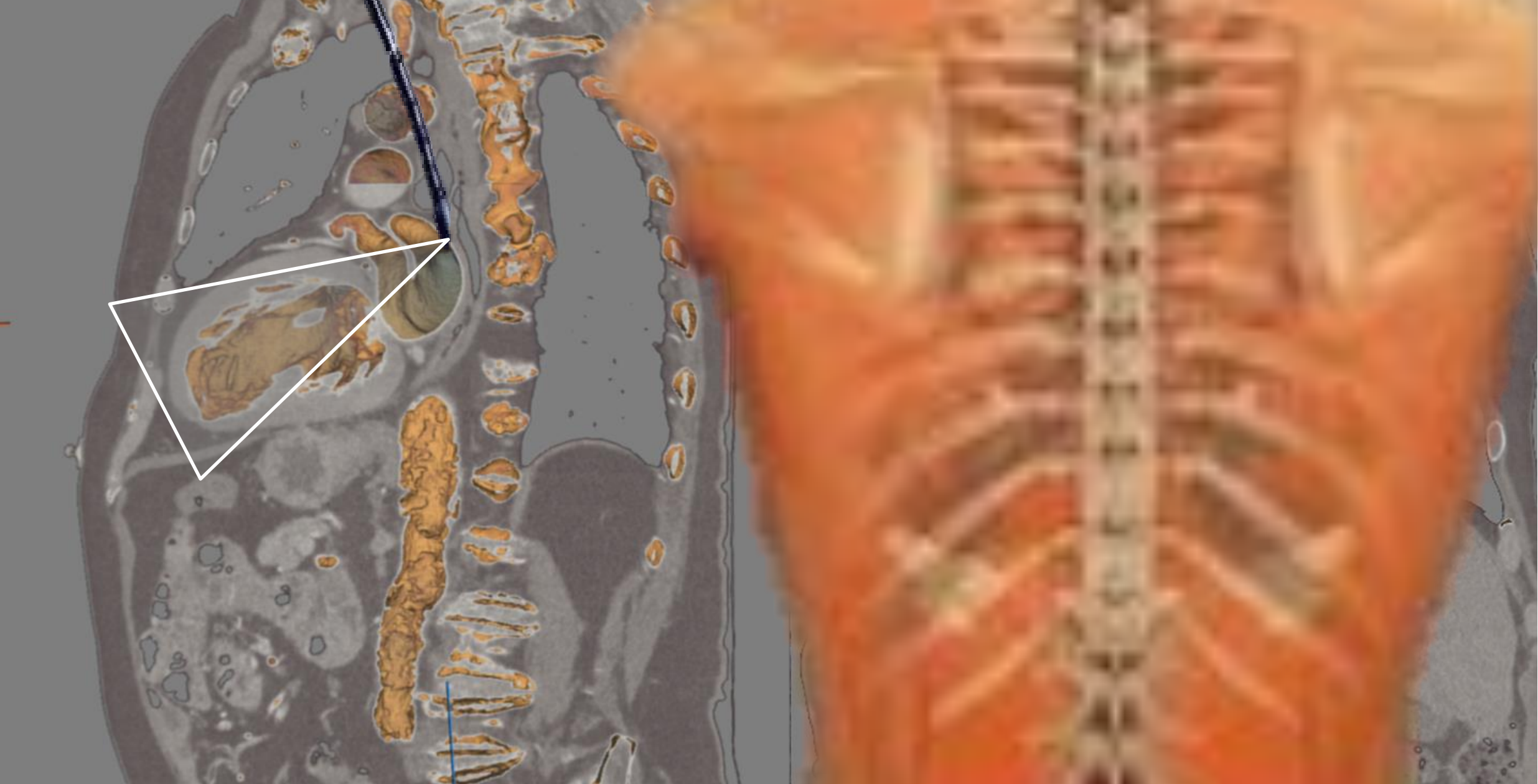
Acquisition protocol:

- Identify the mitral commissural view anatomically optimized to the MV plane (~50°-70°).
- Systematic biplane through MV leaflets permits sweeping interrogation of MV coaptation (central, lateral, and medial tilts) with 2D color Doppler by maintaining the biplane tilt angle.

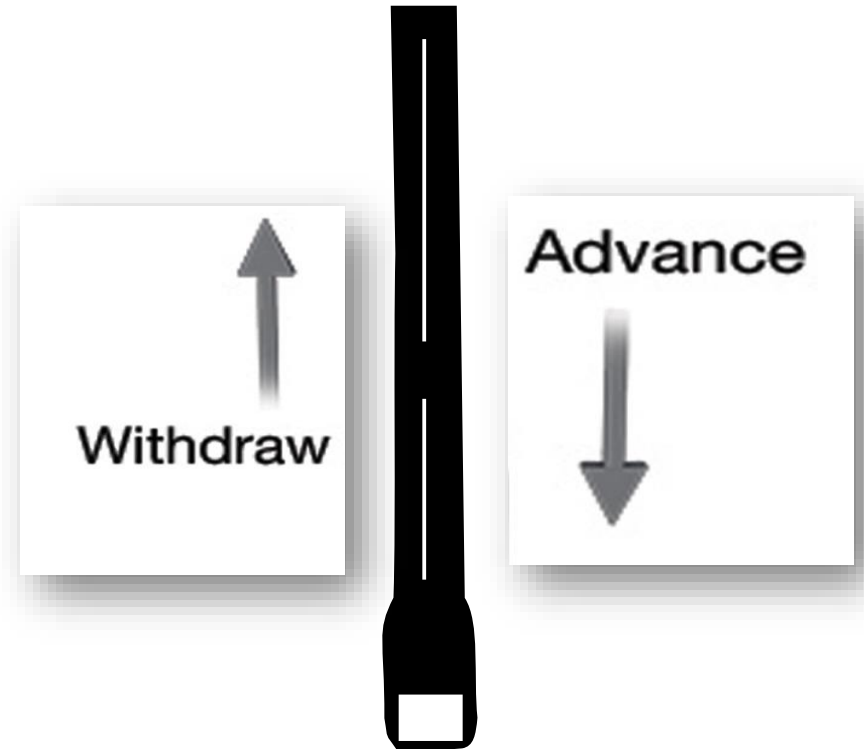
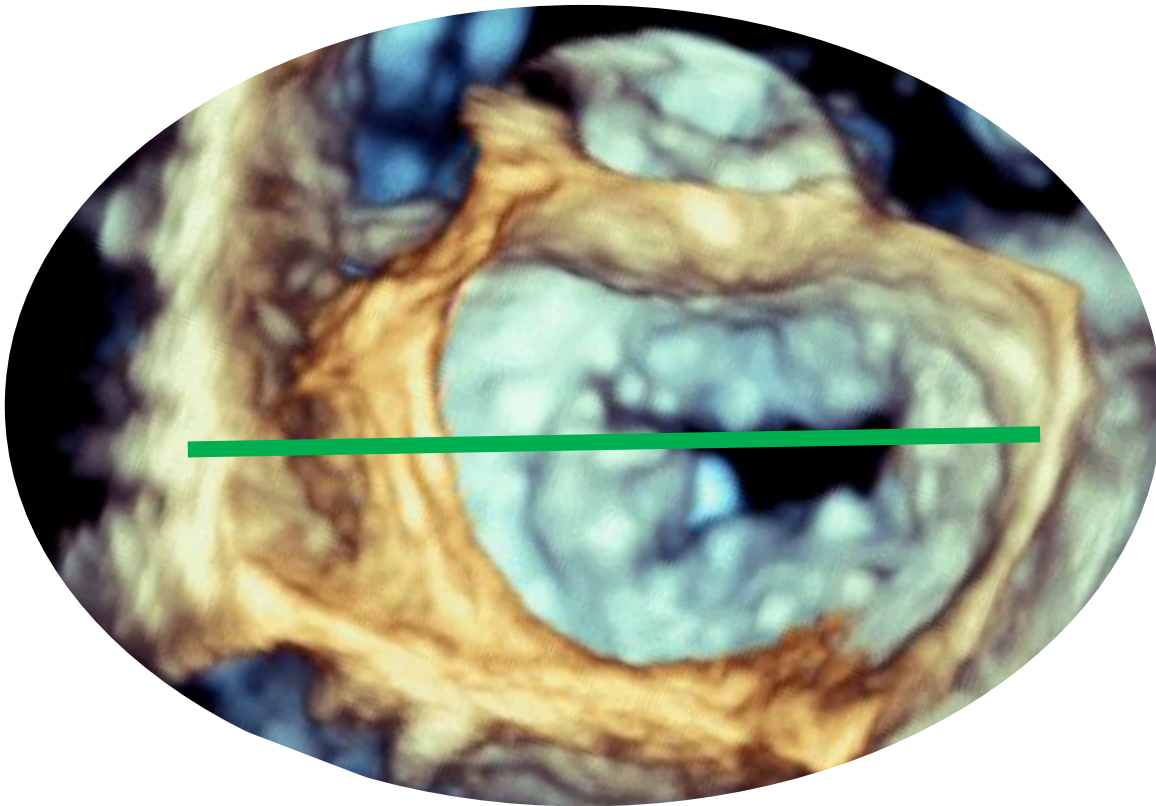


Index views - Bicommisural - Tips and tricks

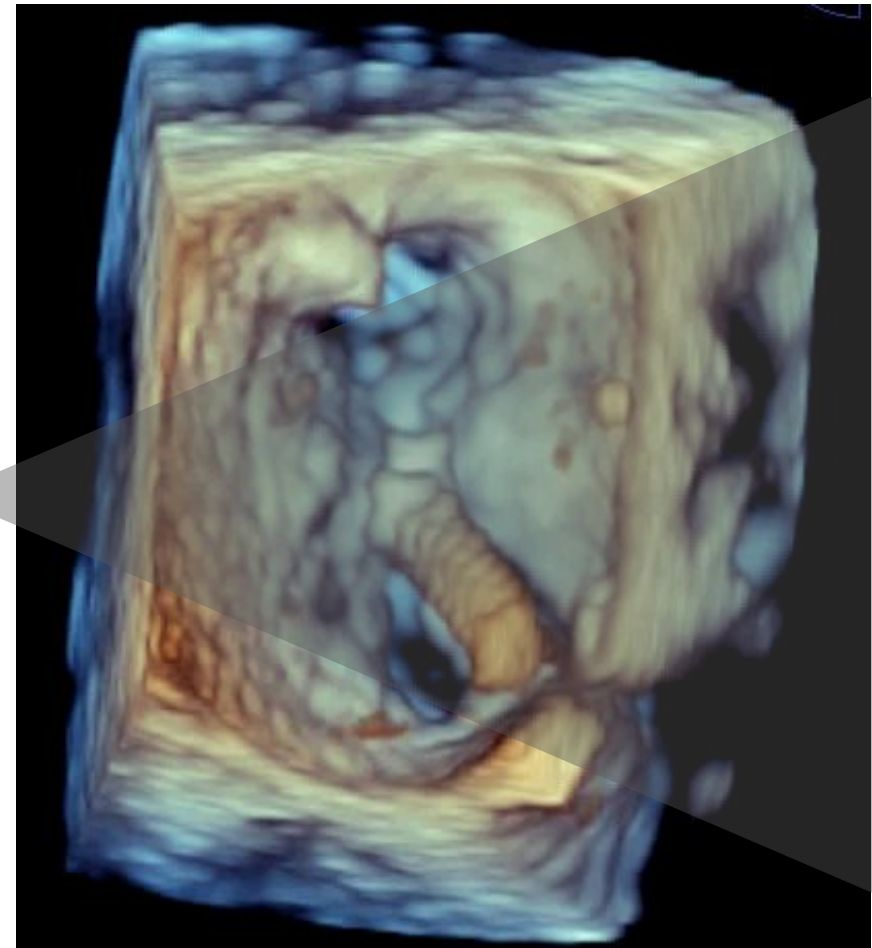
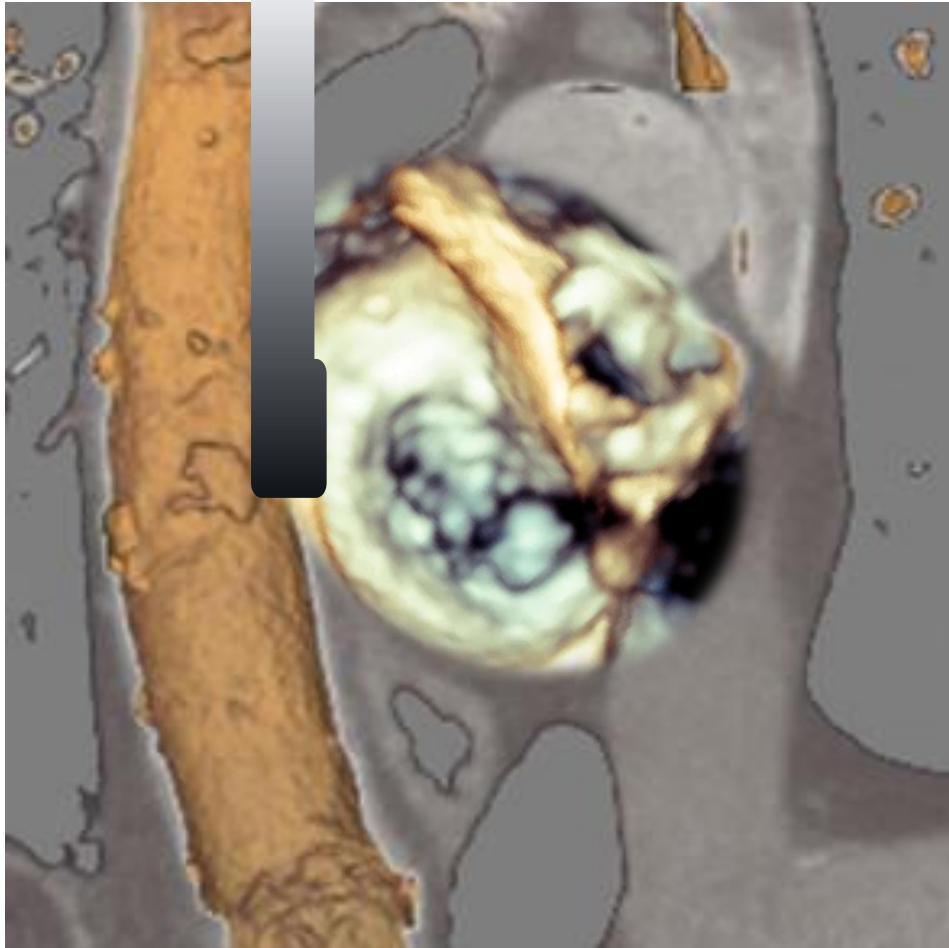




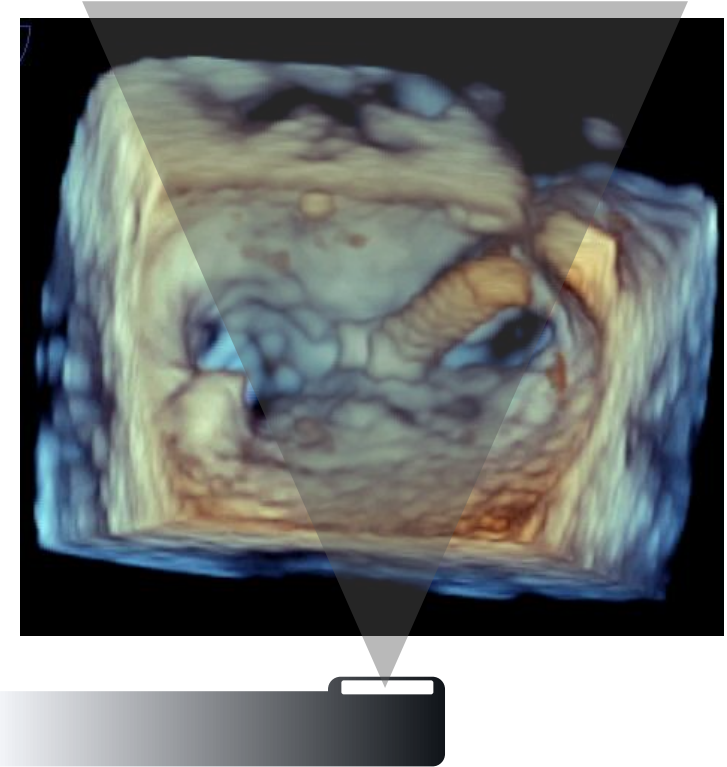
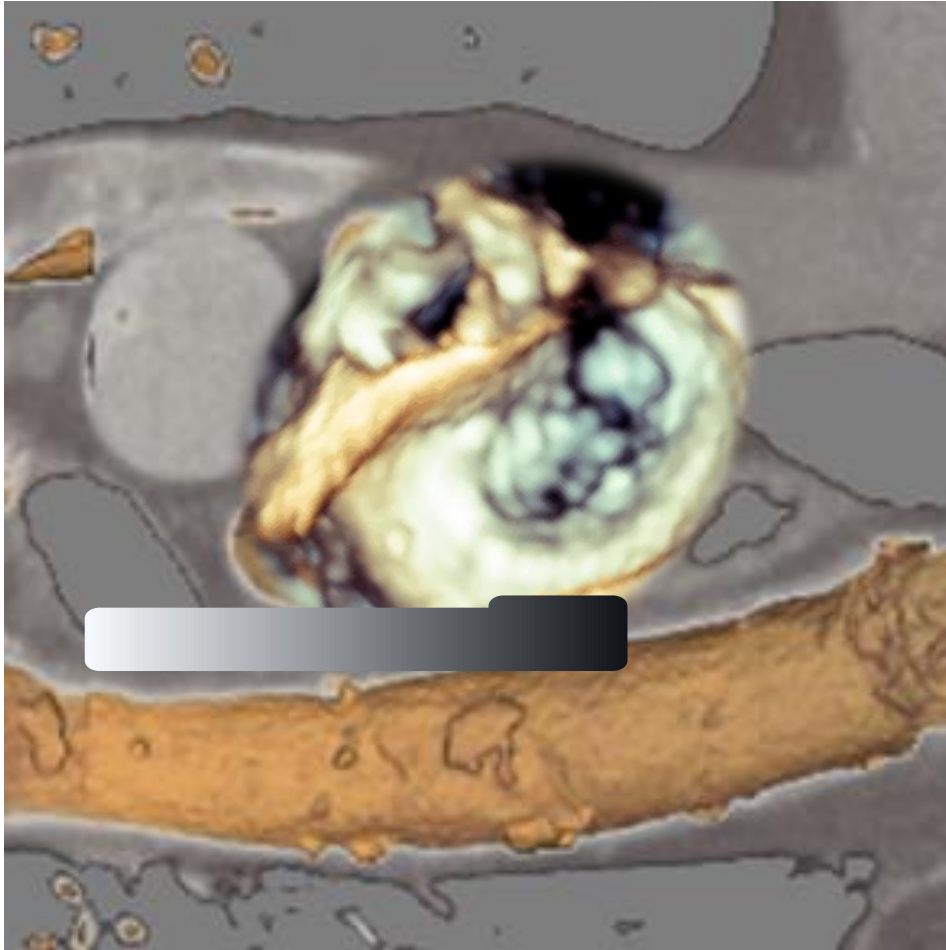
Index views - Bicommisural - Tips and tricks



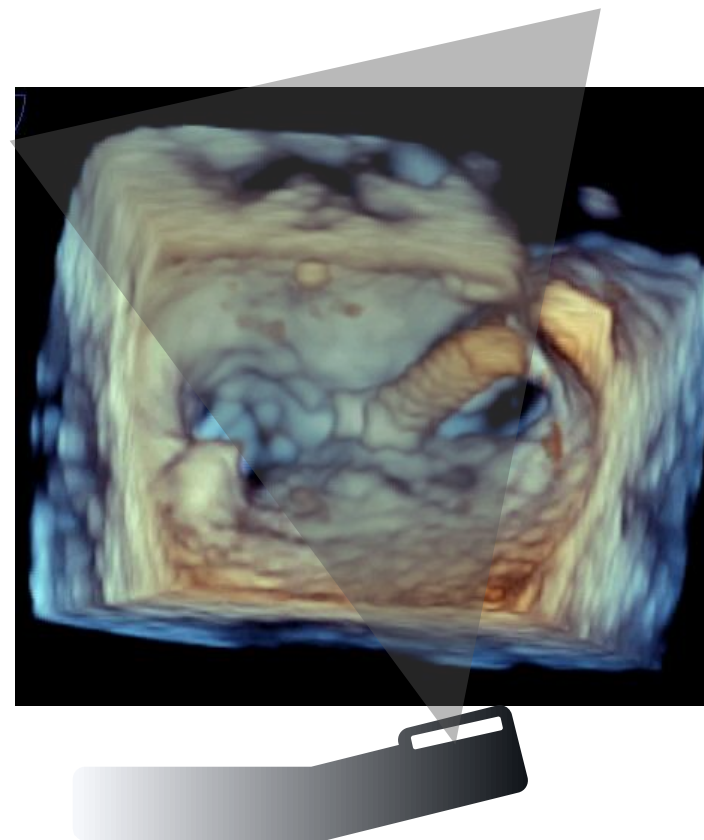
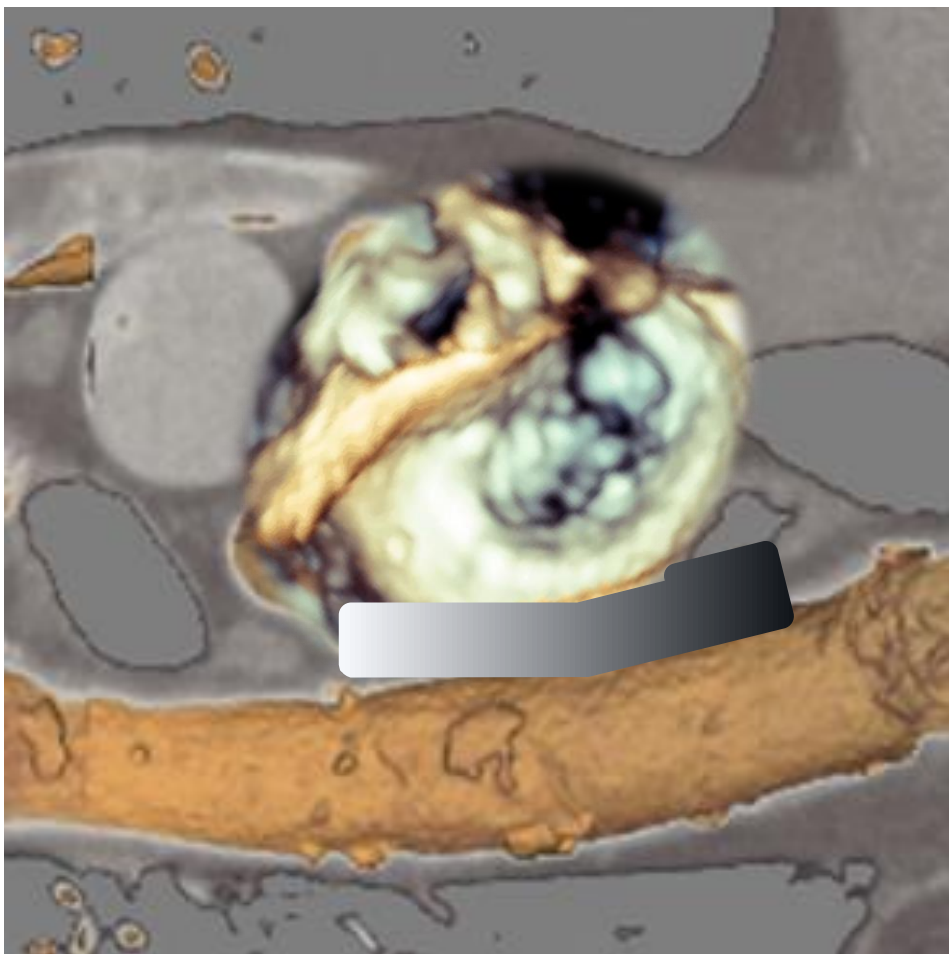
Bicommissural view – in the person



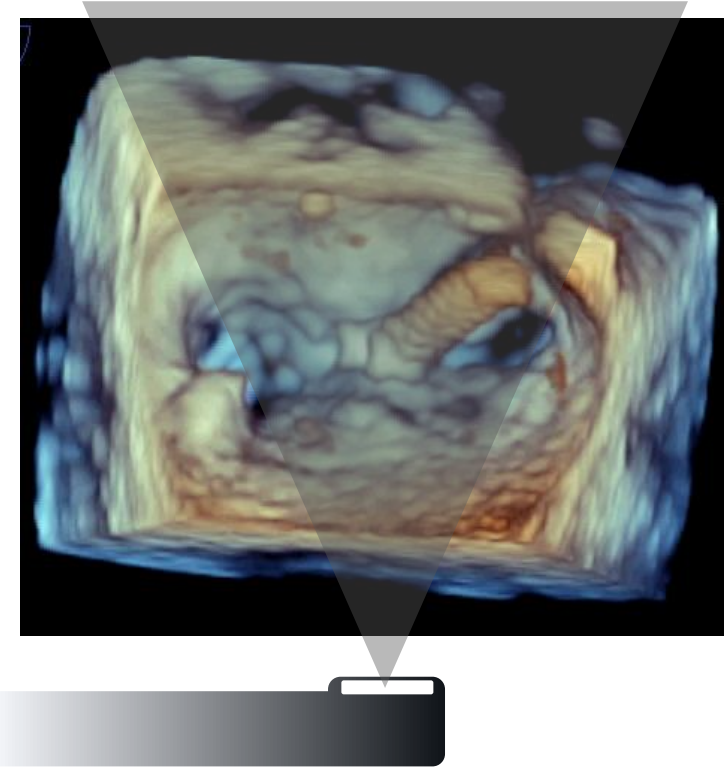
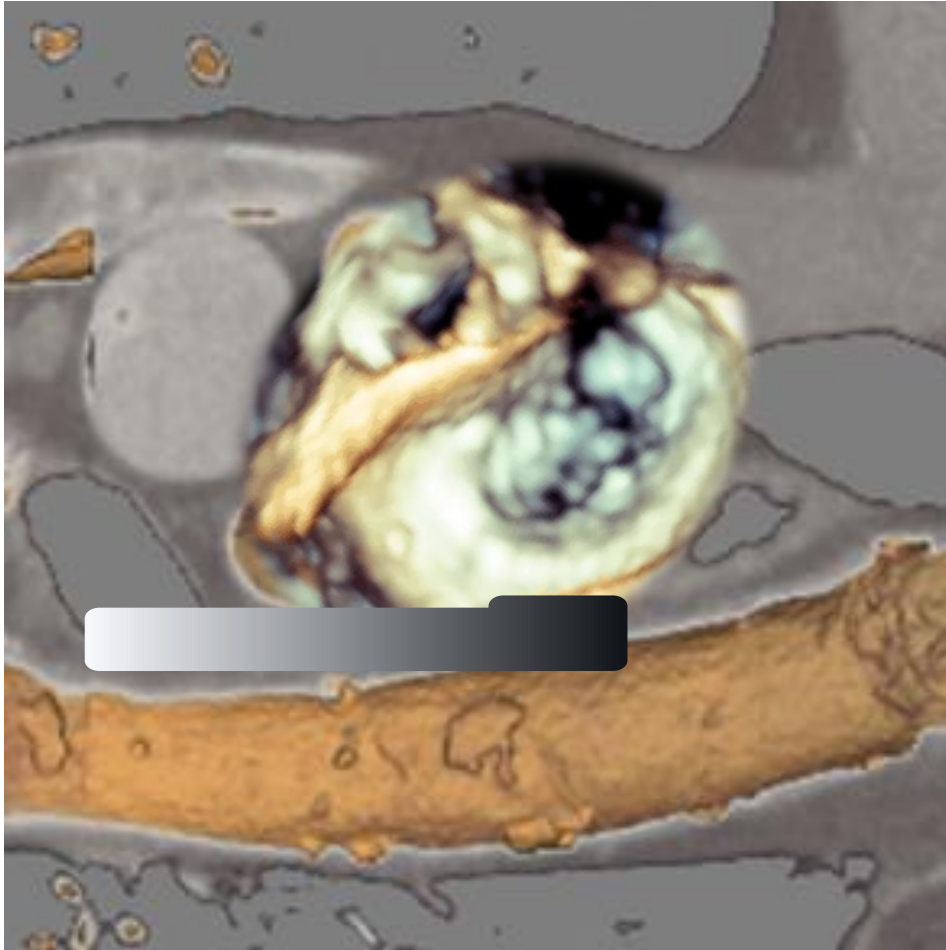
Bicommissural view – on our screen



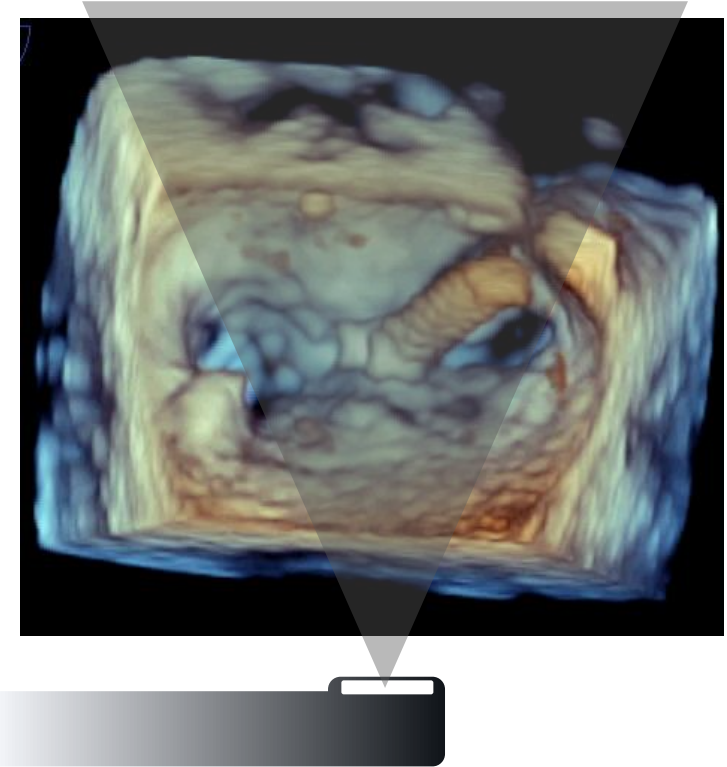
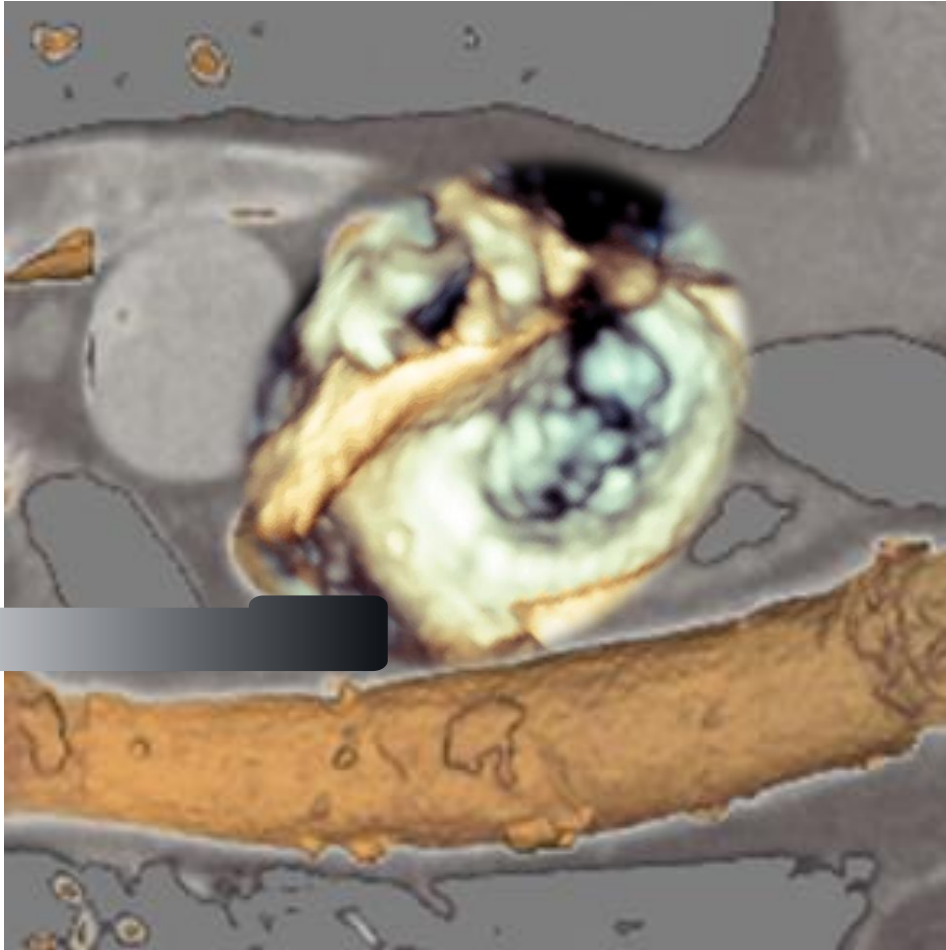
Bicommissural view – push probe in



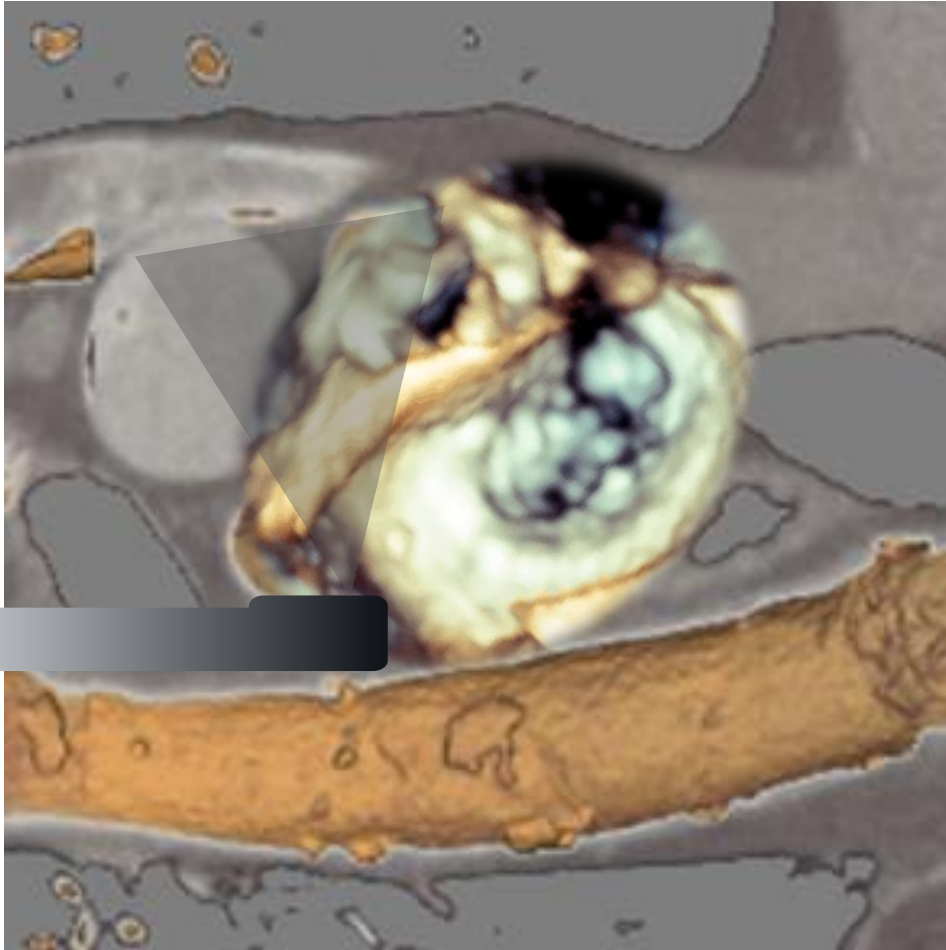
Bicommissural view – on our screen



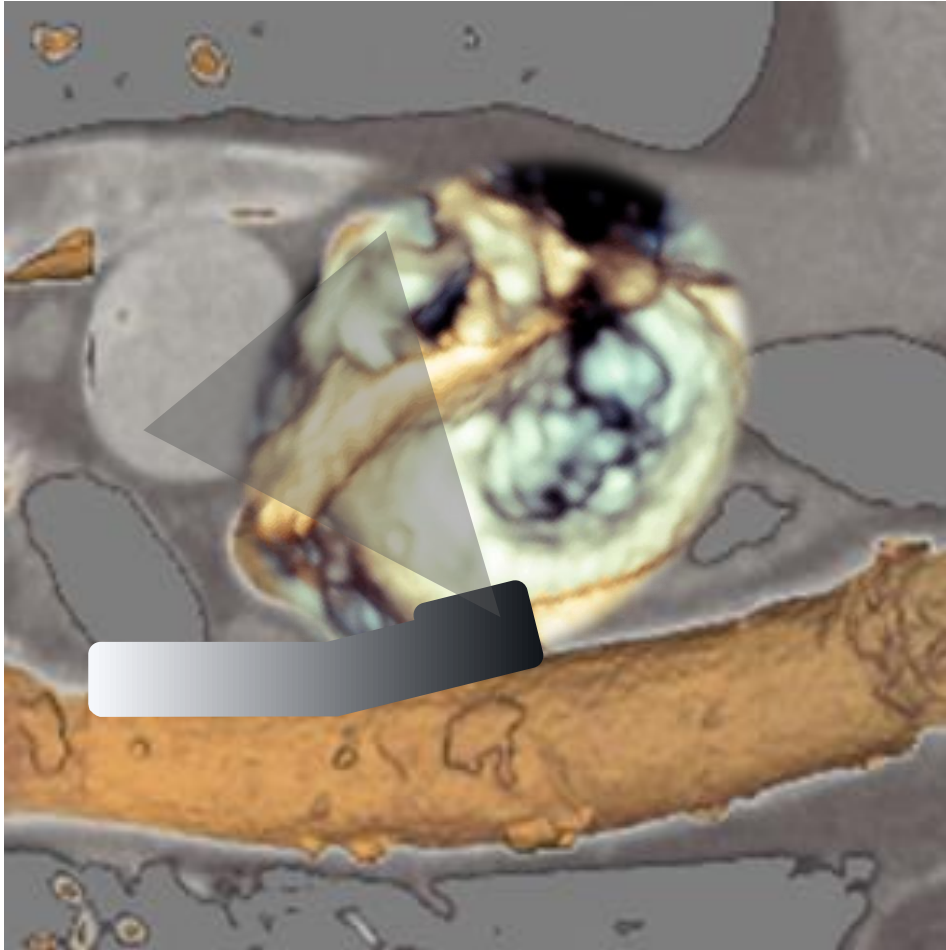
Bicommissural view – on our screen



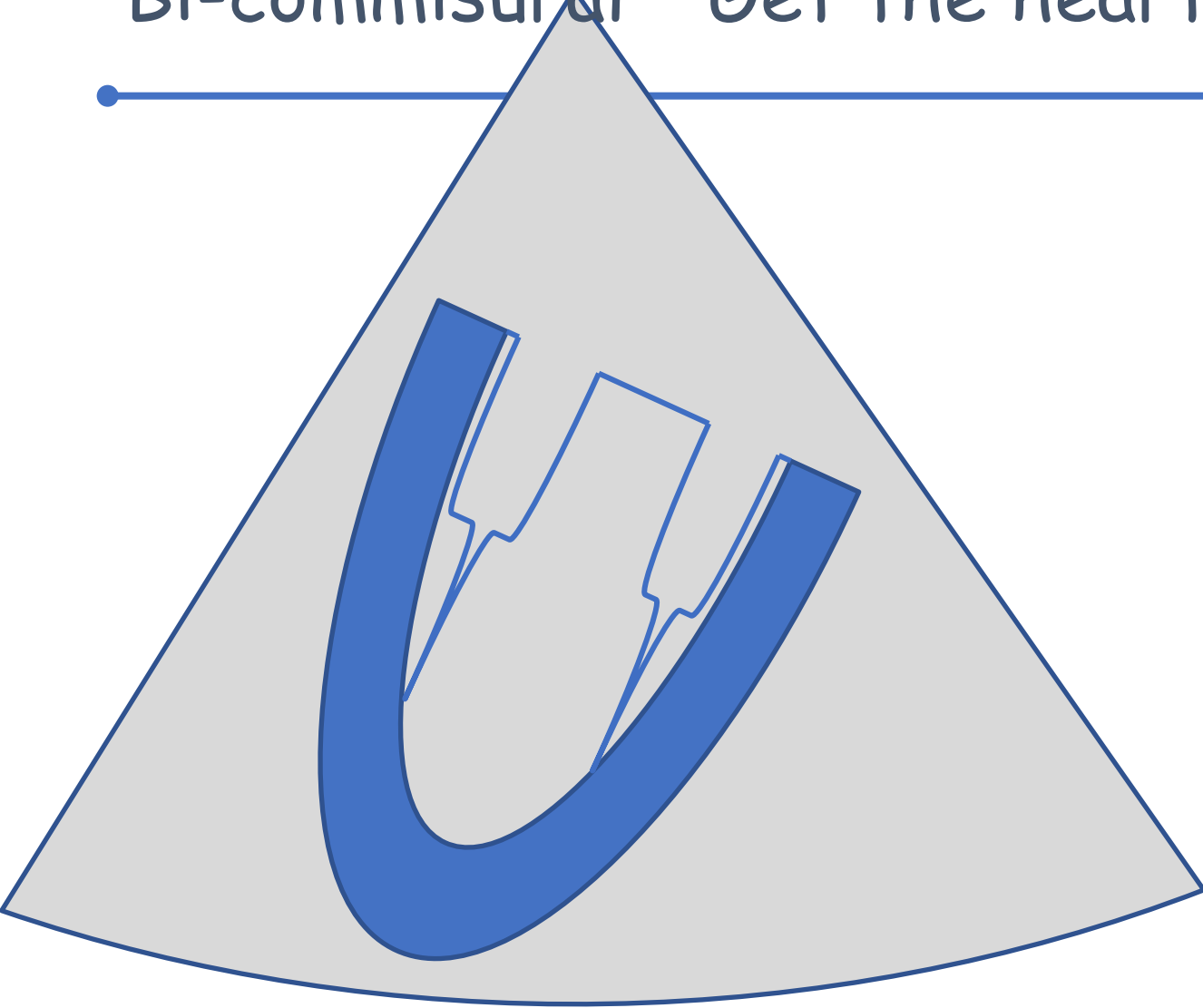
LAA



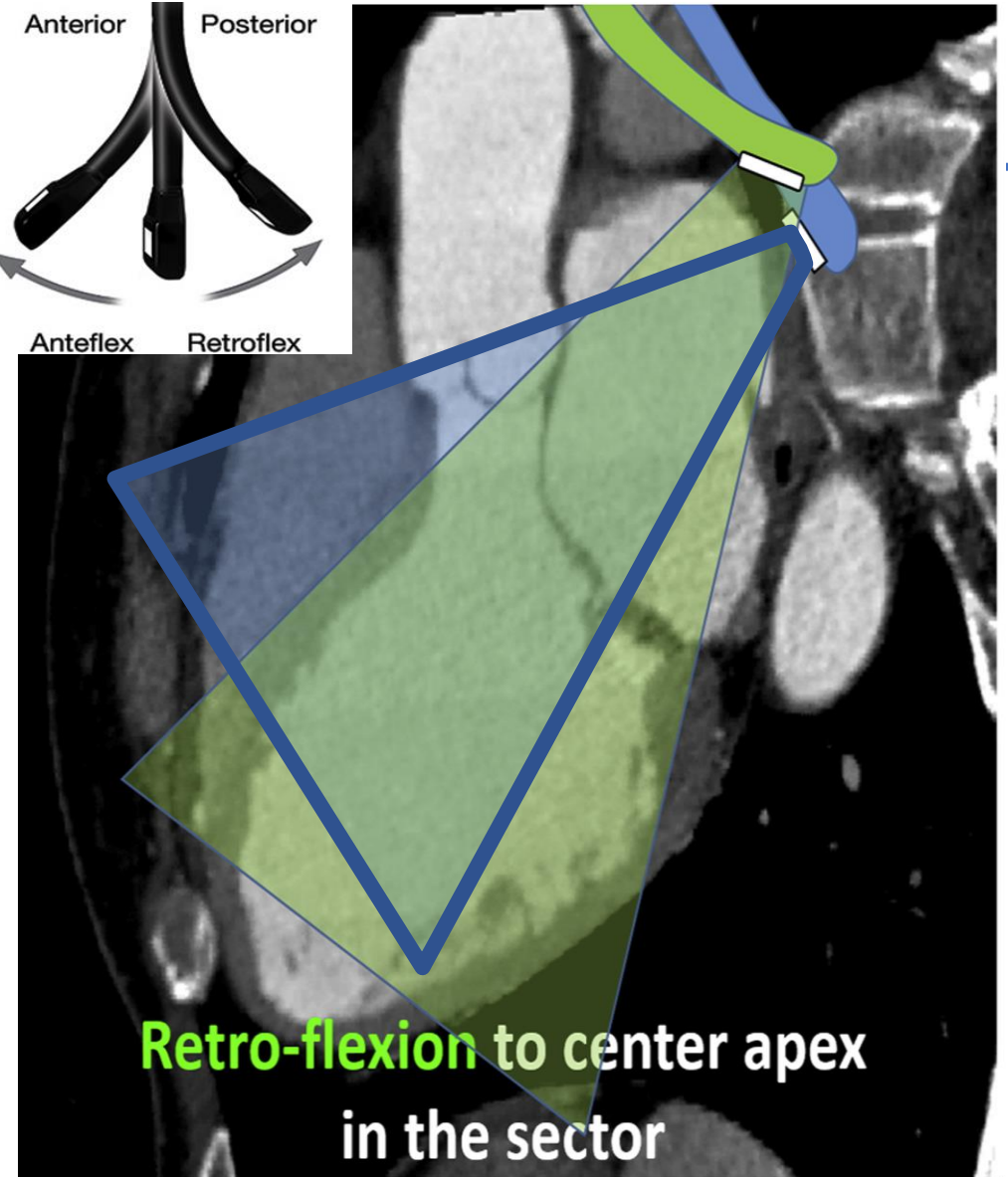
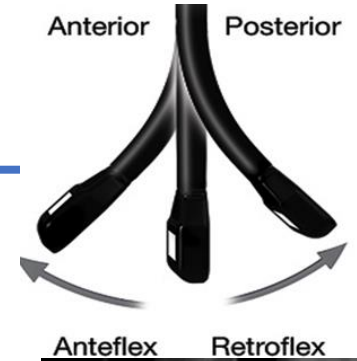
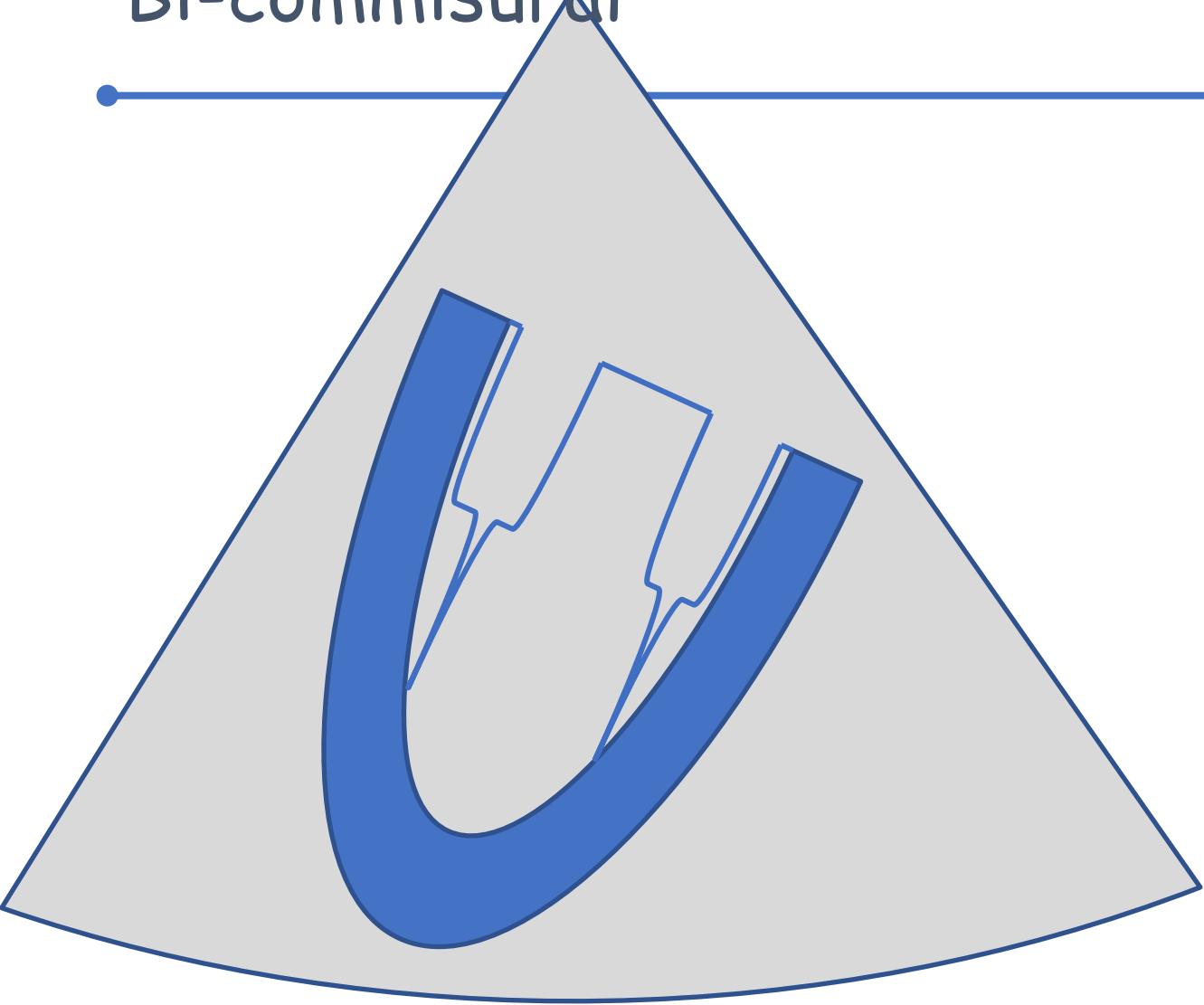
LAA



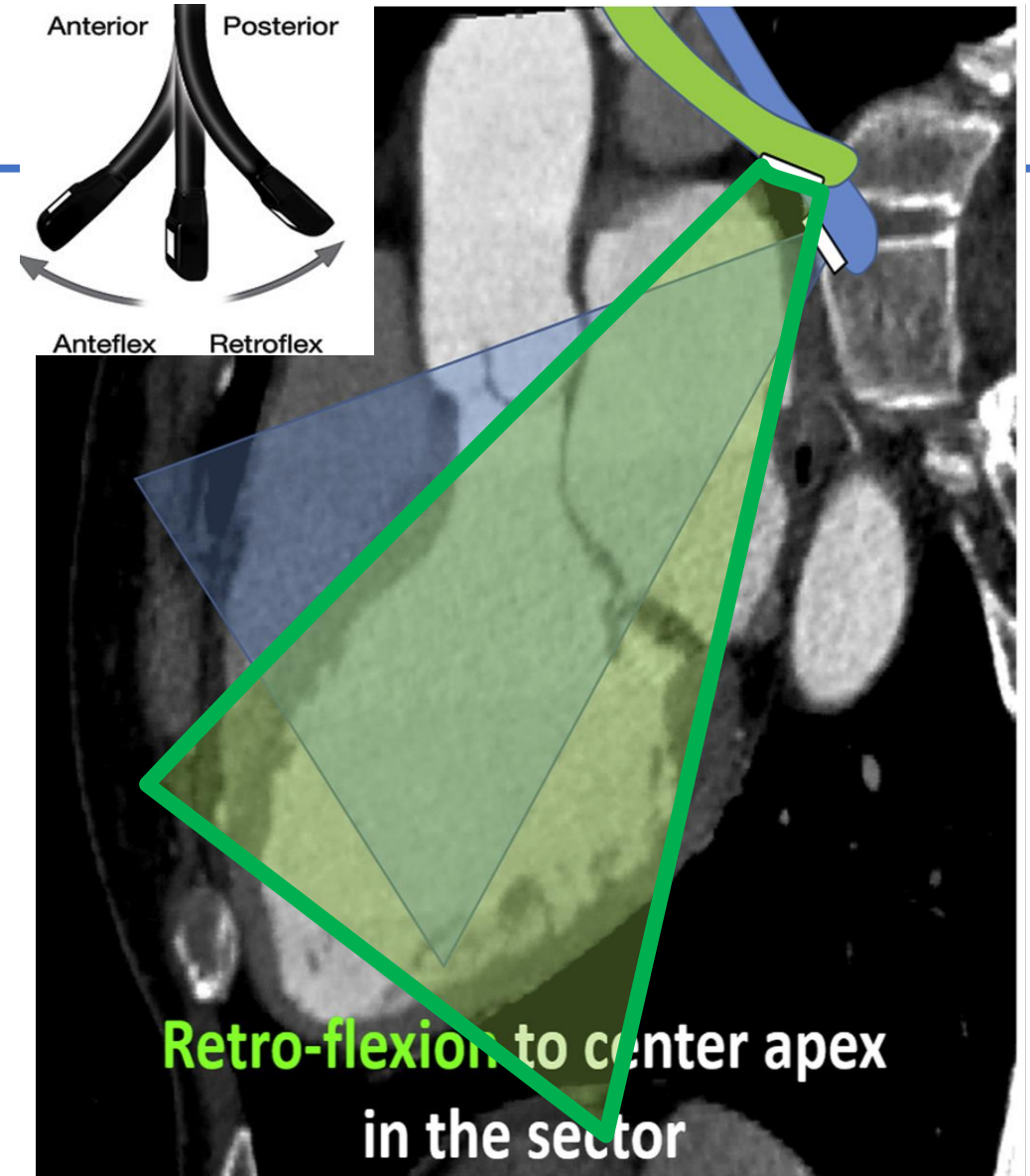
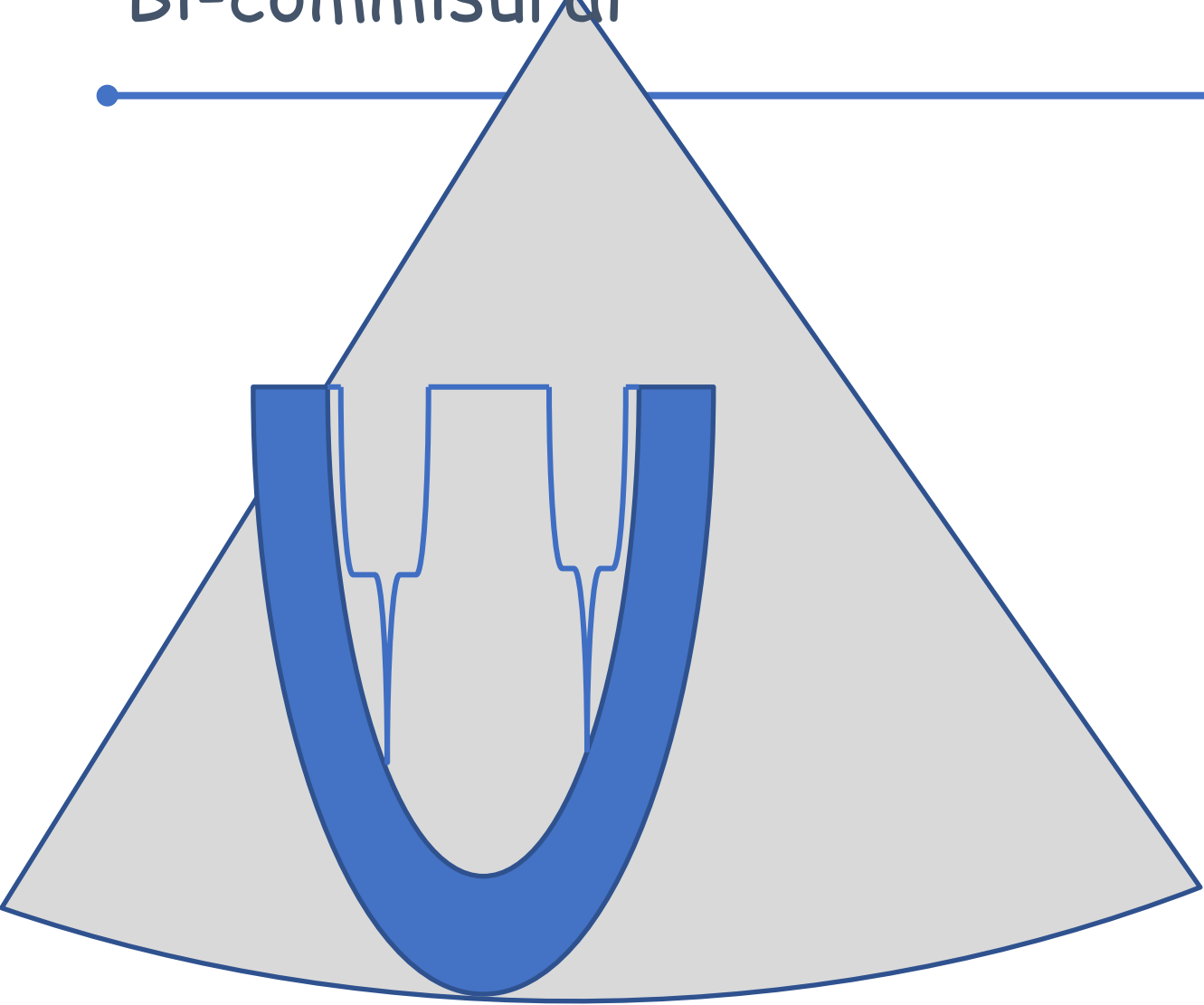
Bi-commisural - Get the heart vertical on screen



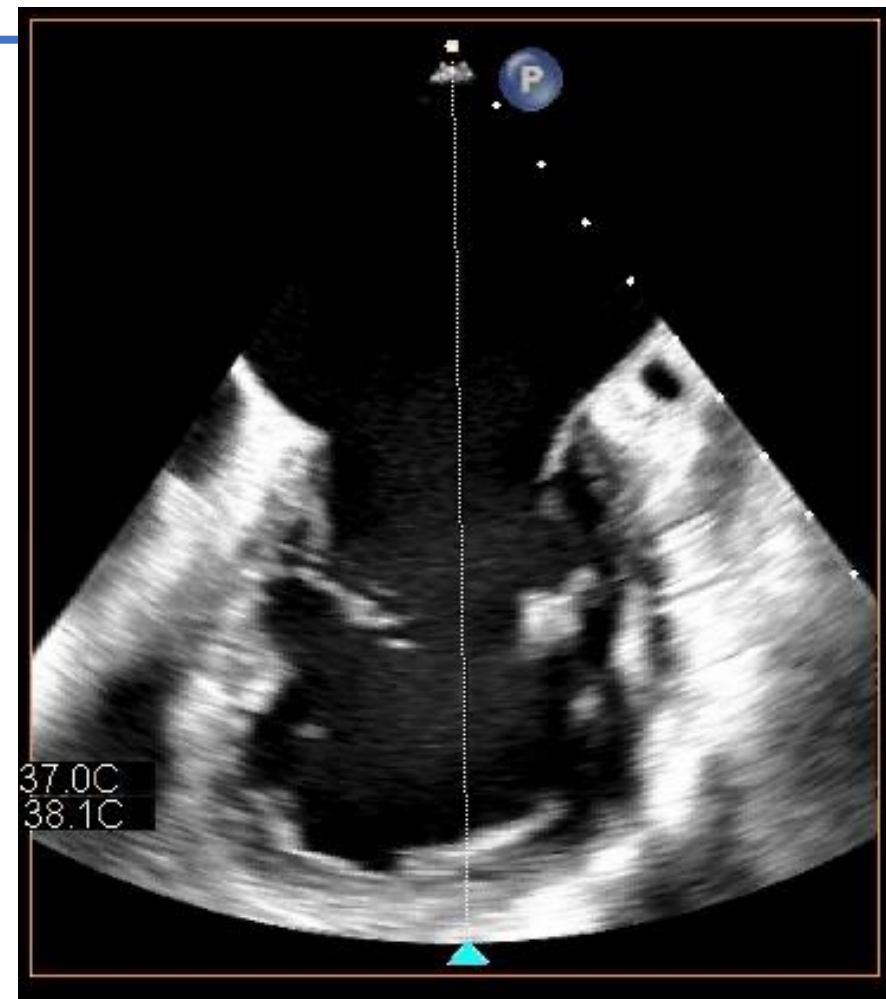
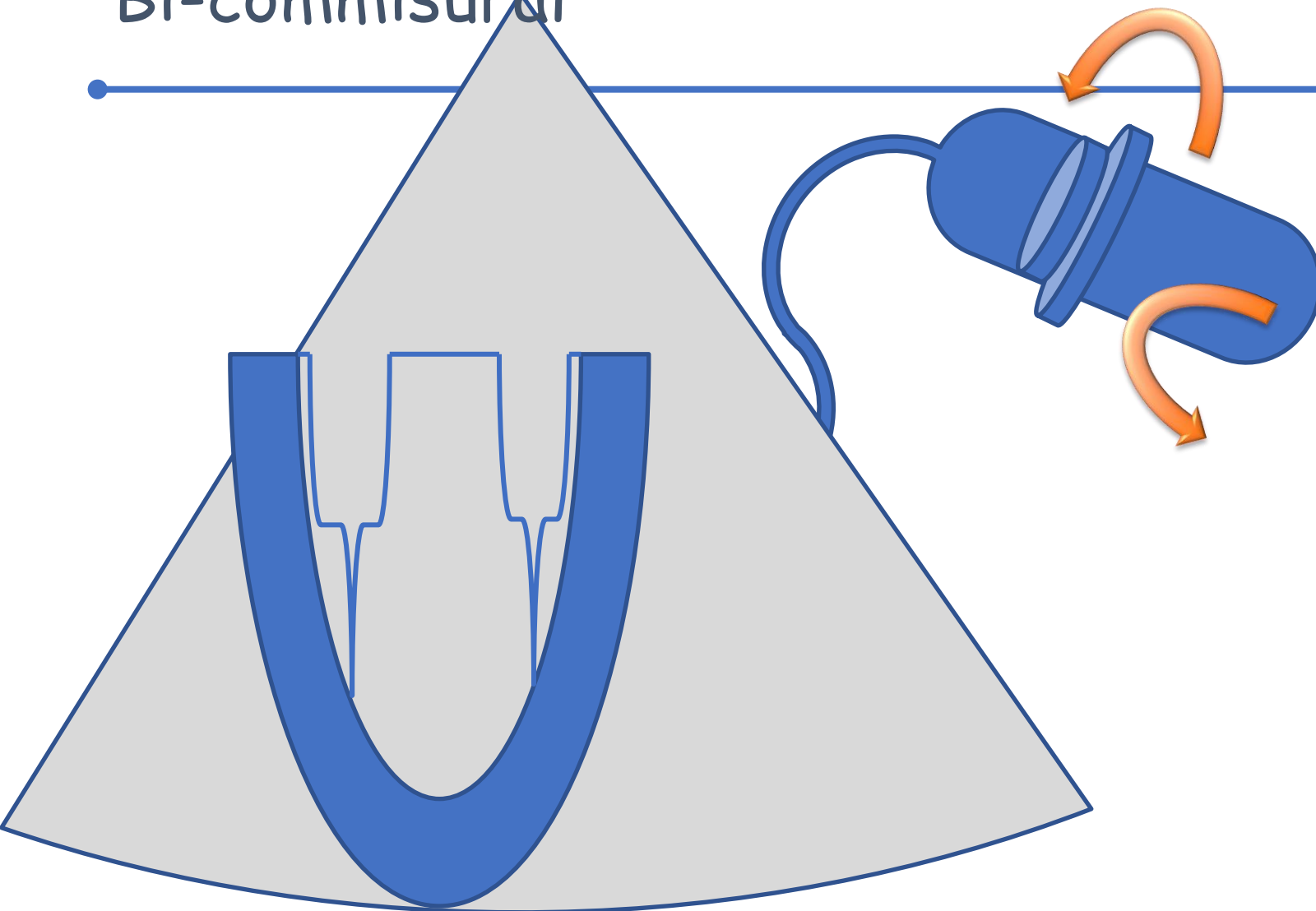
Bi-commisural

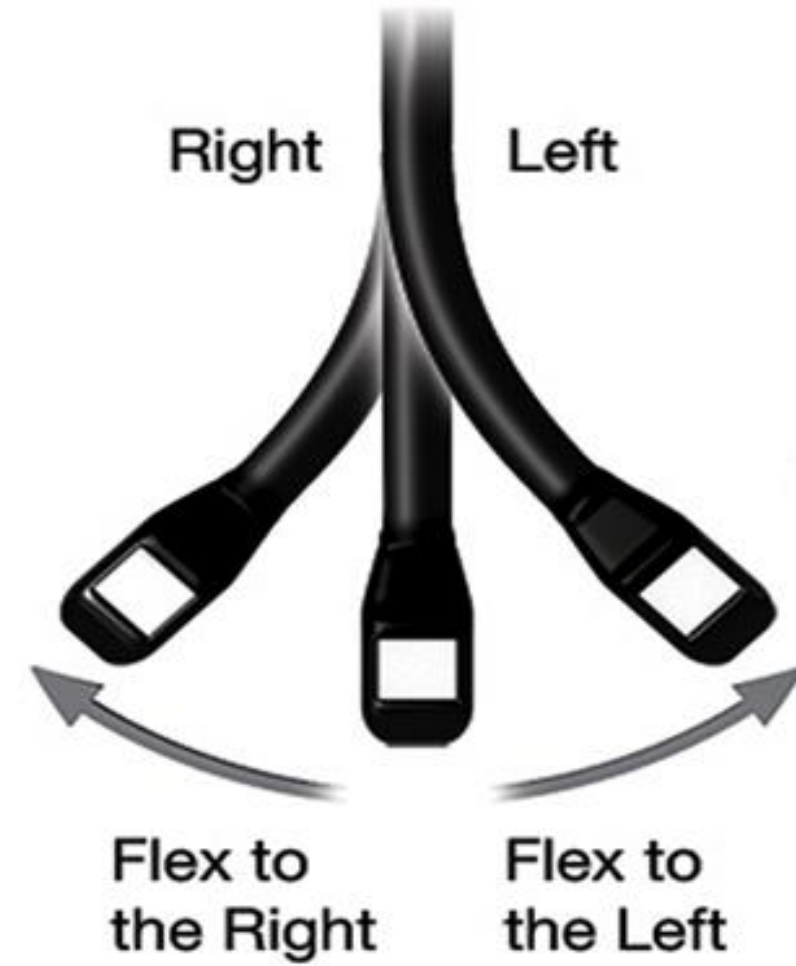
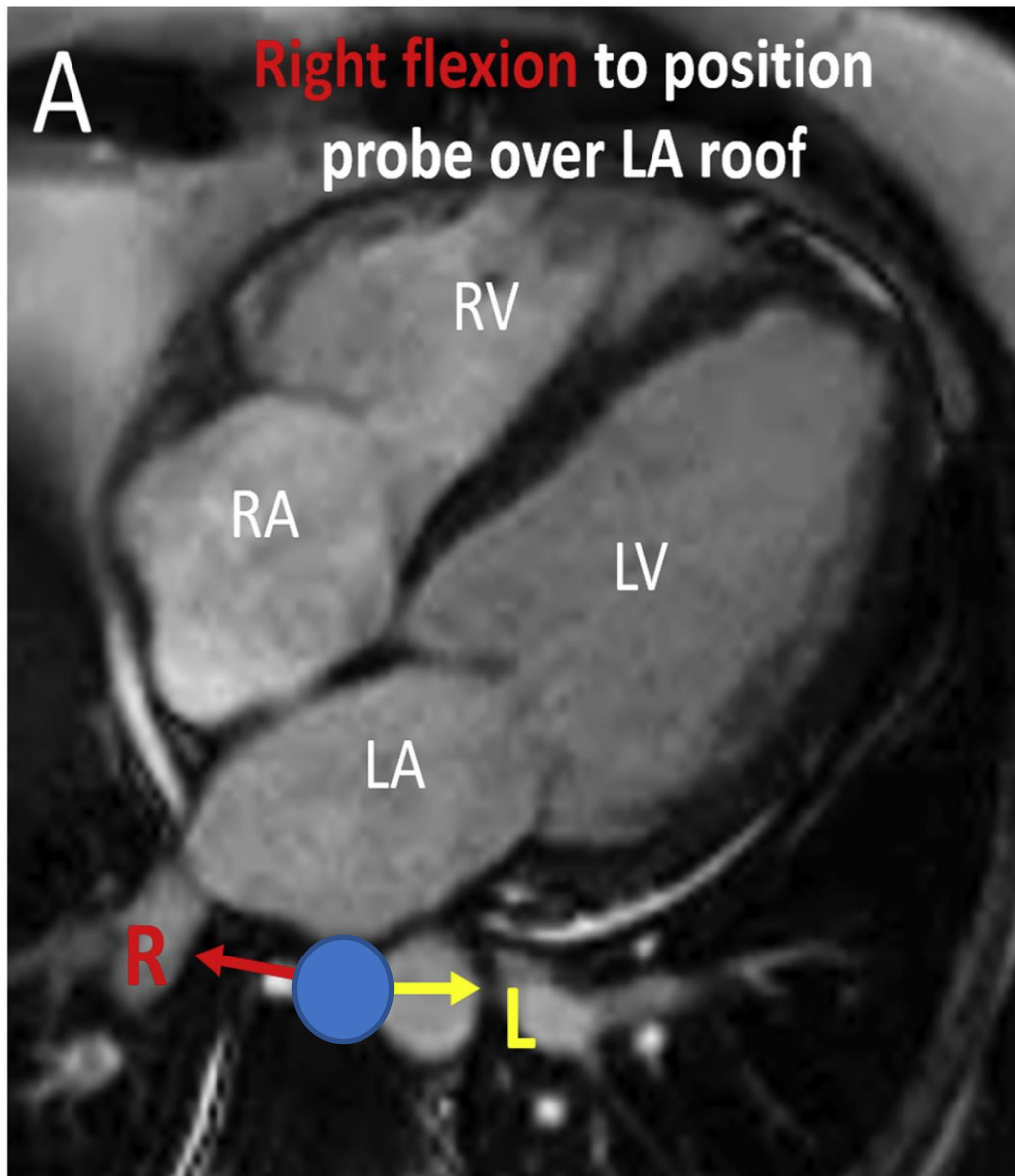


Bi-commisural



Bi-commisural



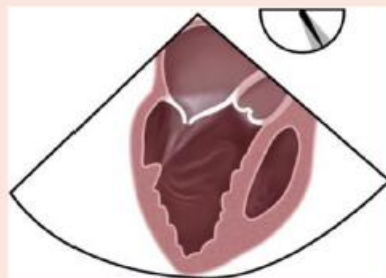
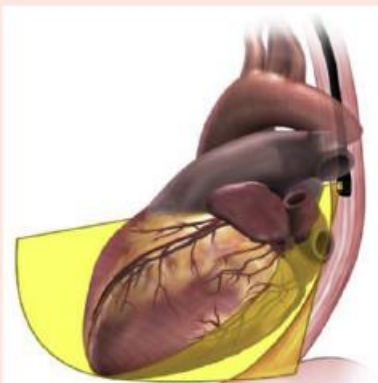
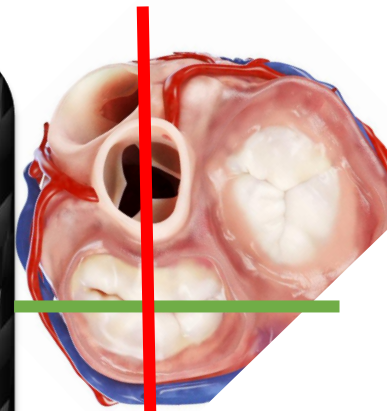


Mid-Esophageal LAX

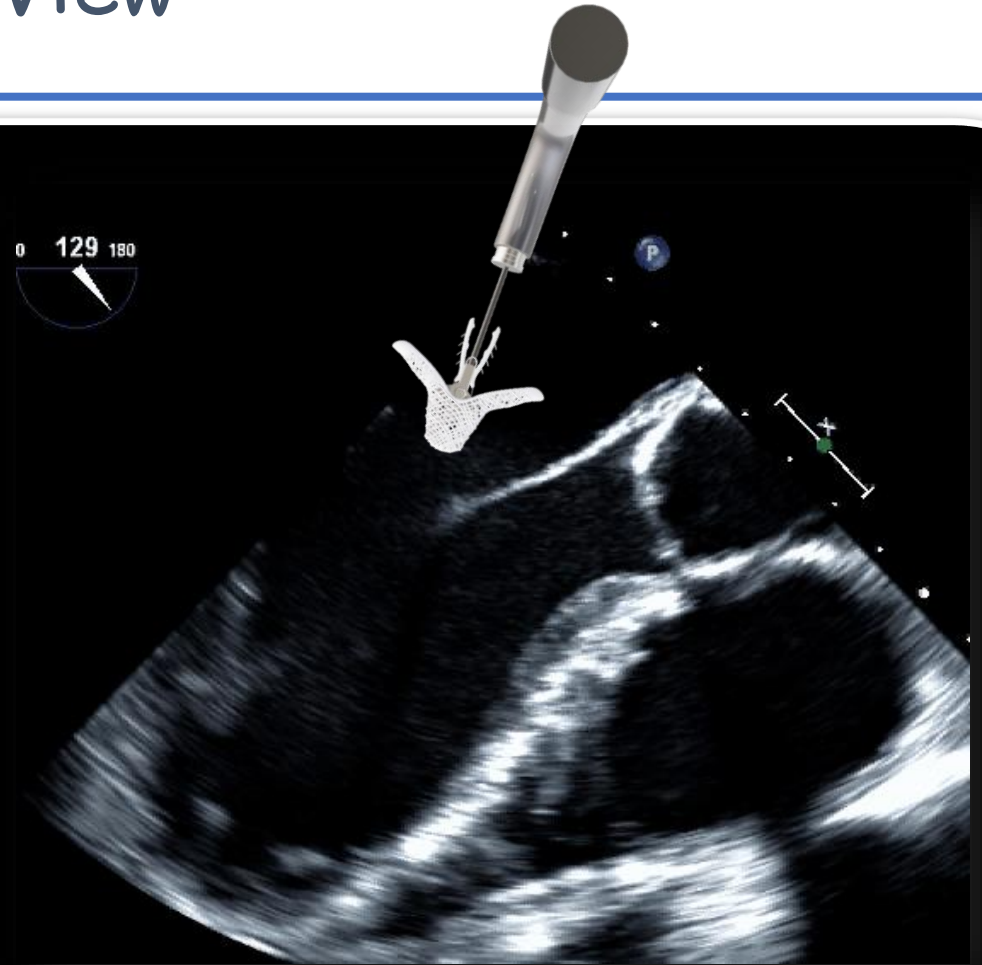
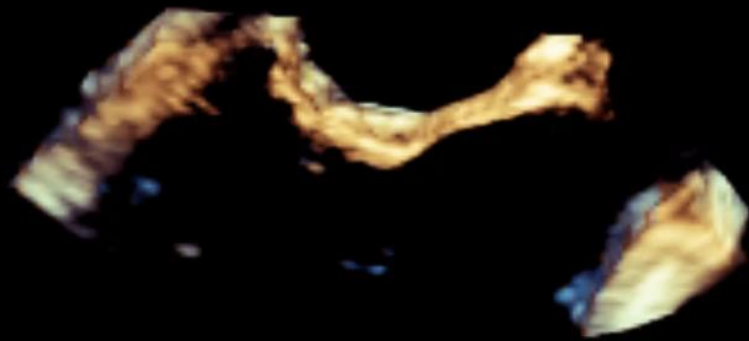
Imaging level: ME mitral view 120°–140°

Acquisition protocol:

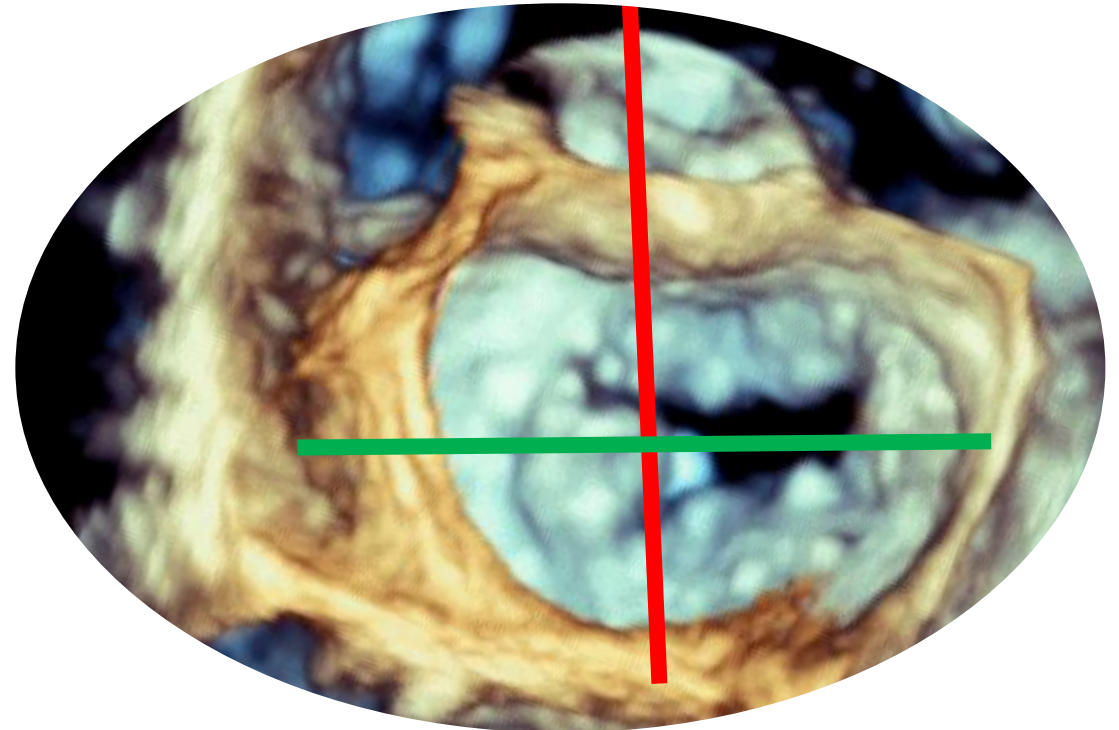
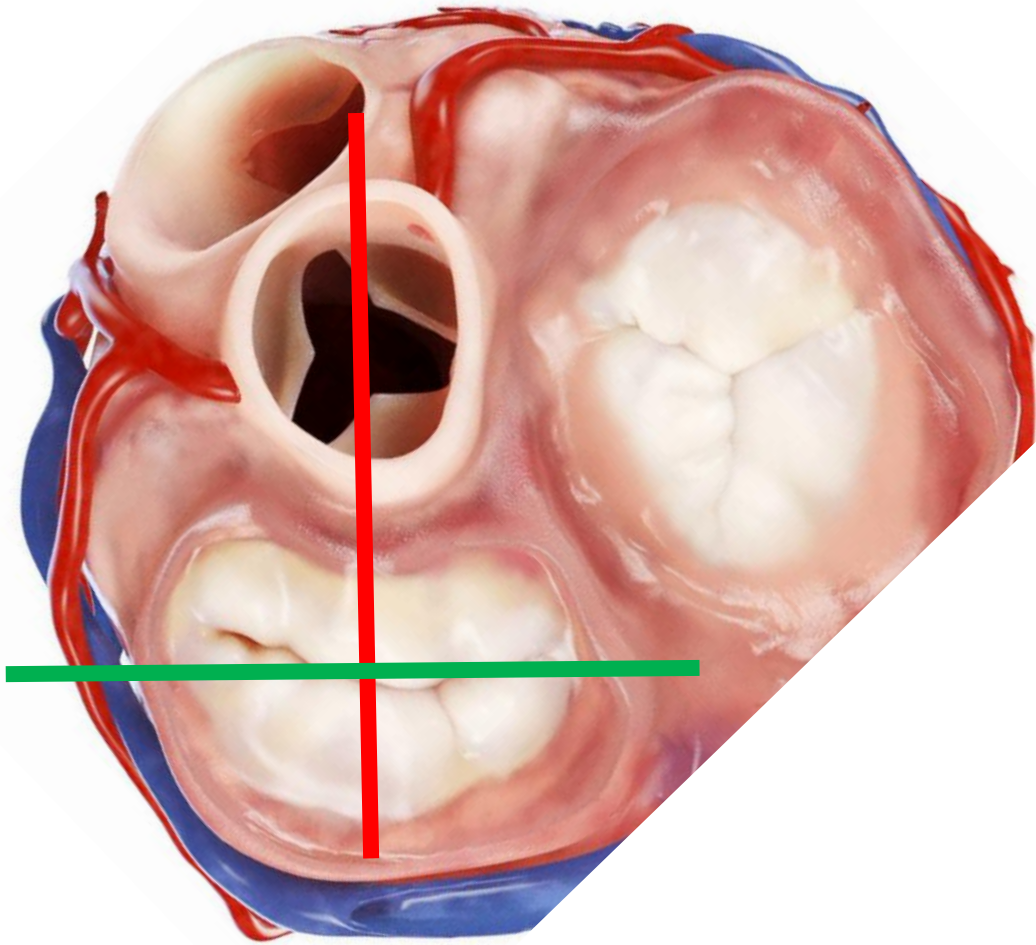
- From the ME long-axis view focused on the MV. To better align the MV, slight probe rotation, clockwise or counterclockwise, may be necessary. Use tilt plane to illustrate simultaneous biplane image.



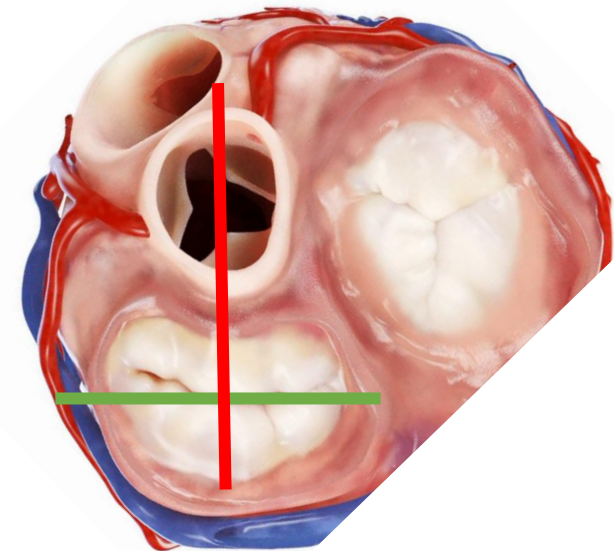
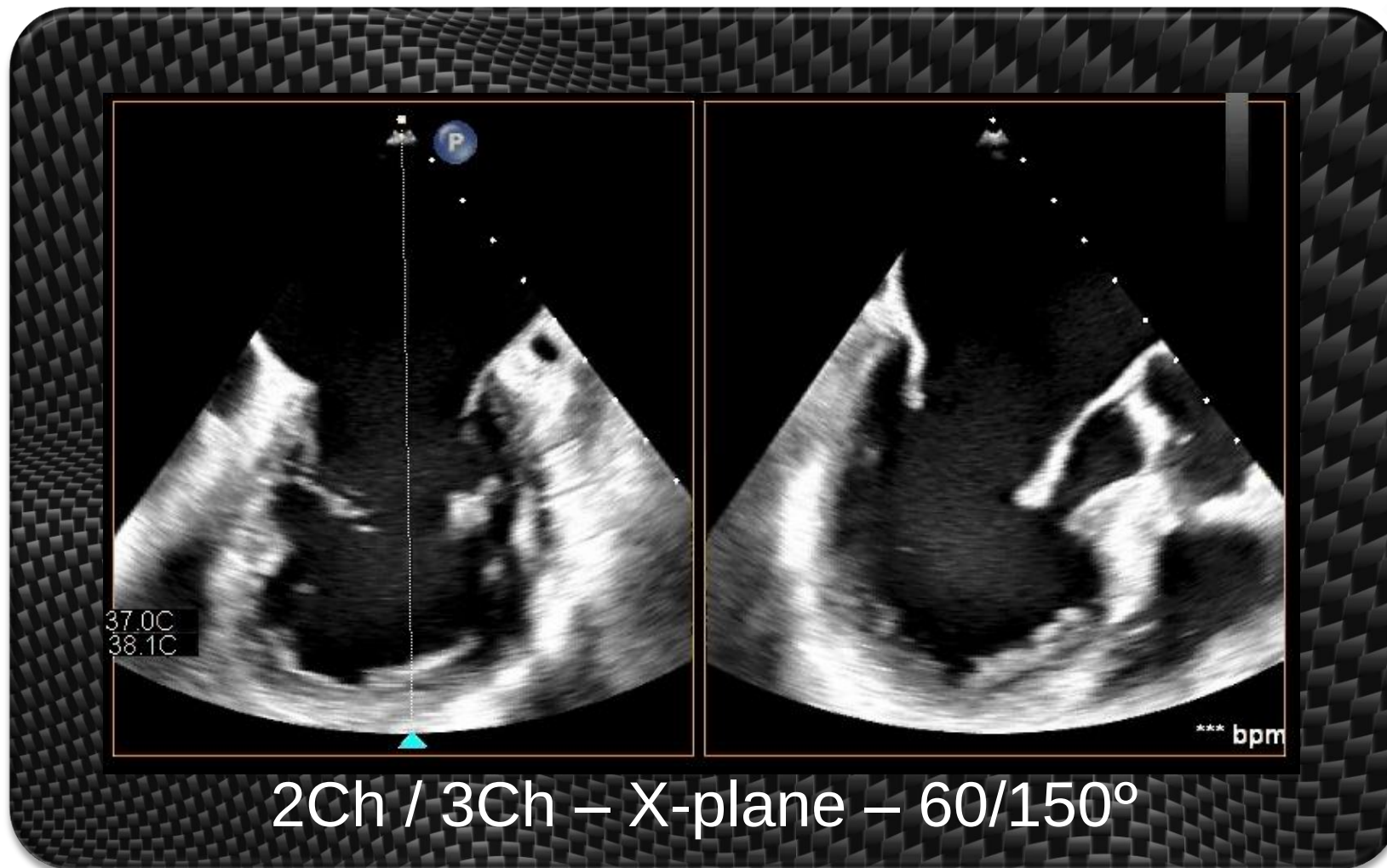
Index views Long Axis = LVOT View



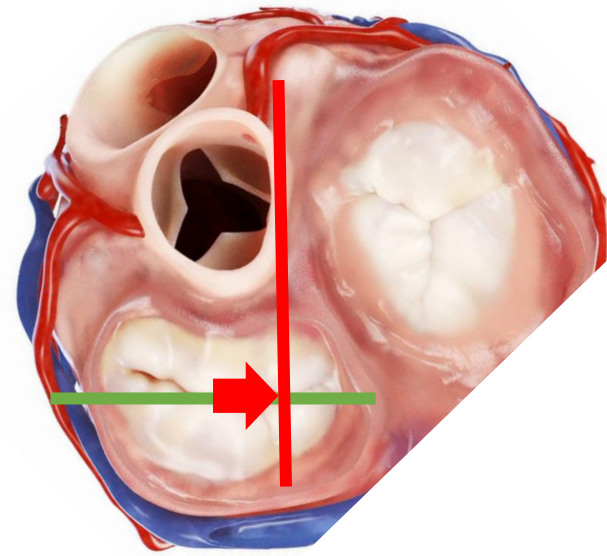
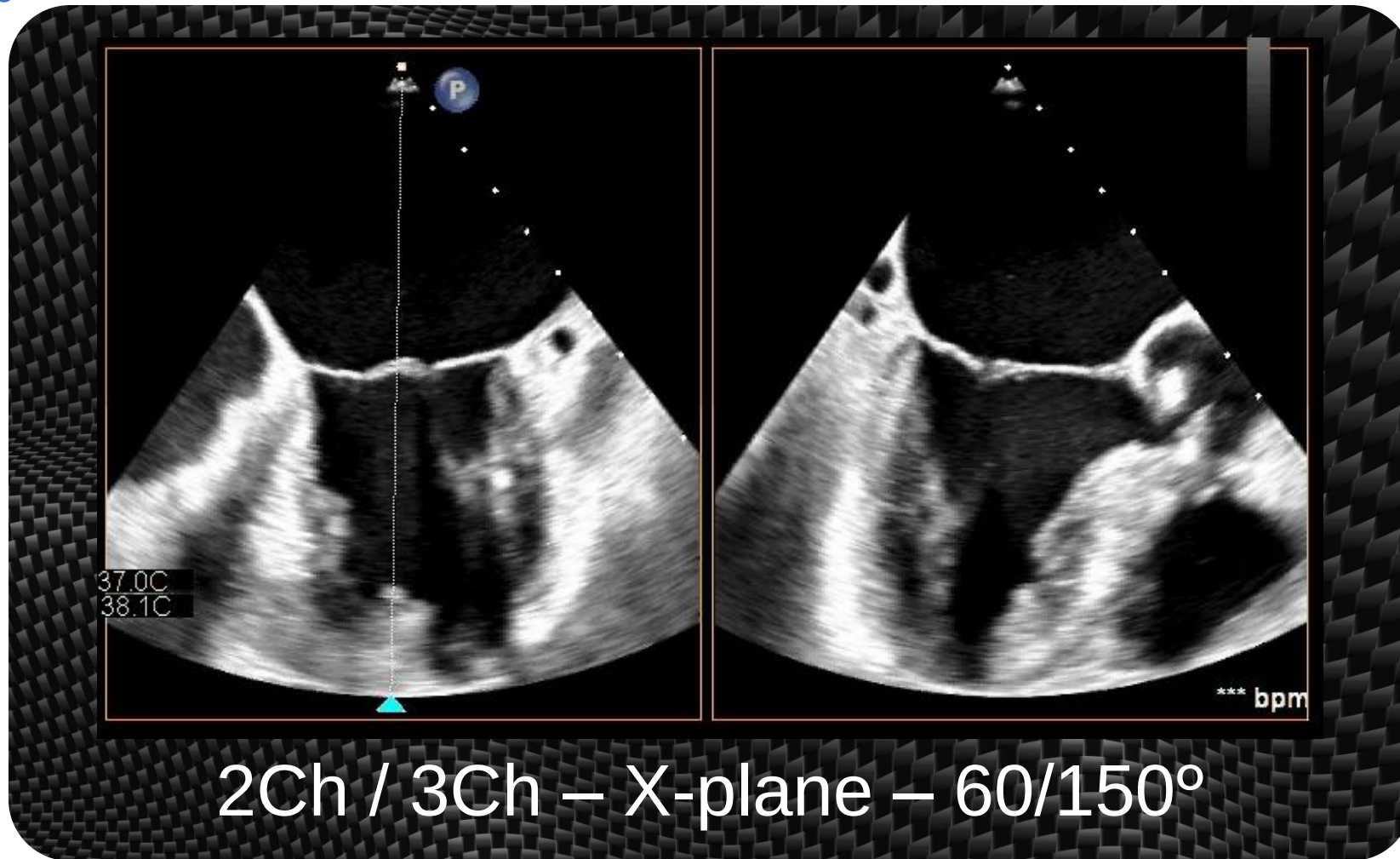
X-Plane is the key to mitral interventions



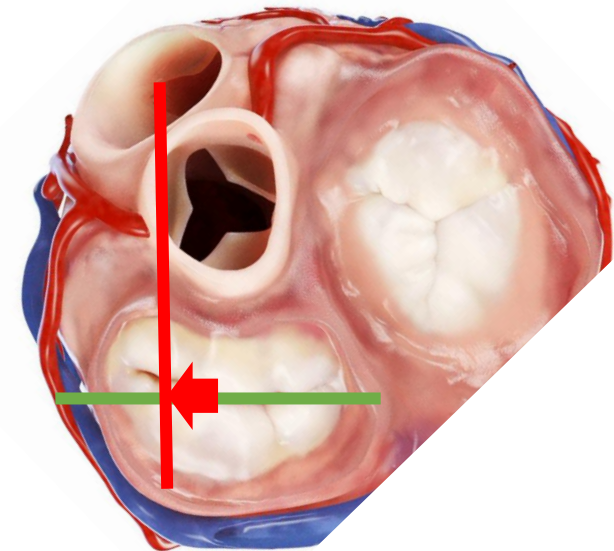
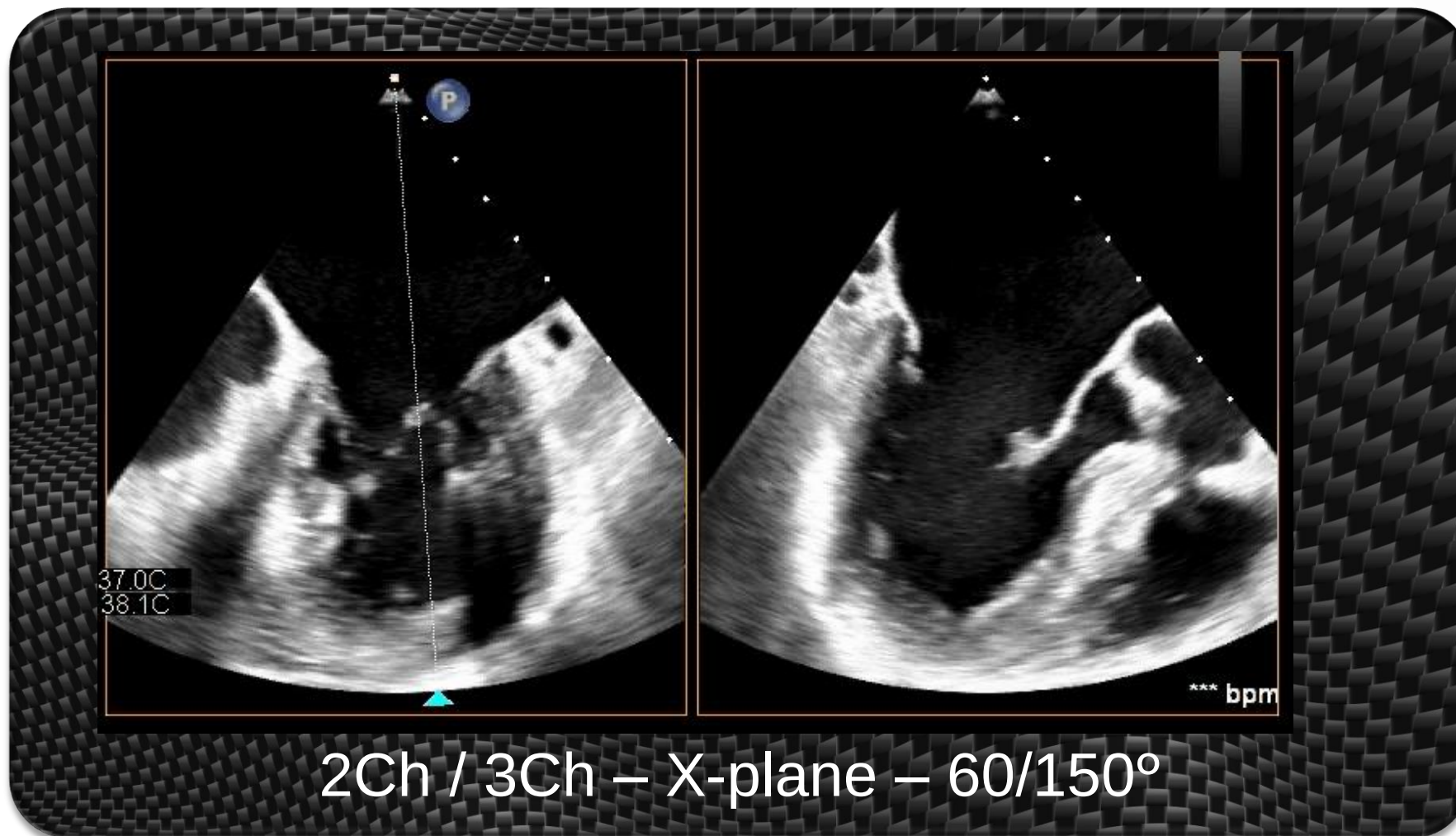
Mid-Esophageal A2P2



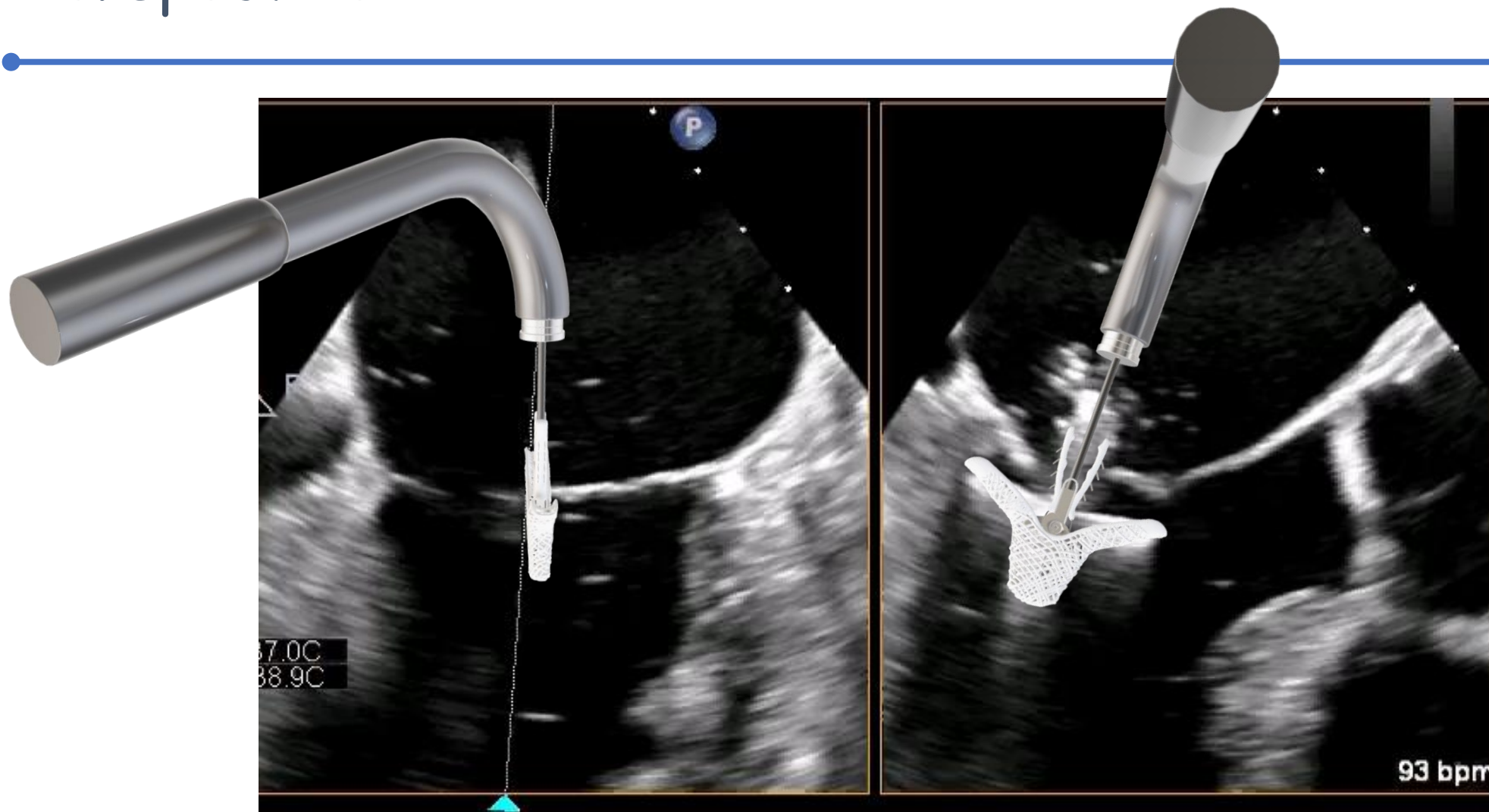
Mid-Esophageal - sweep medial - A3P3



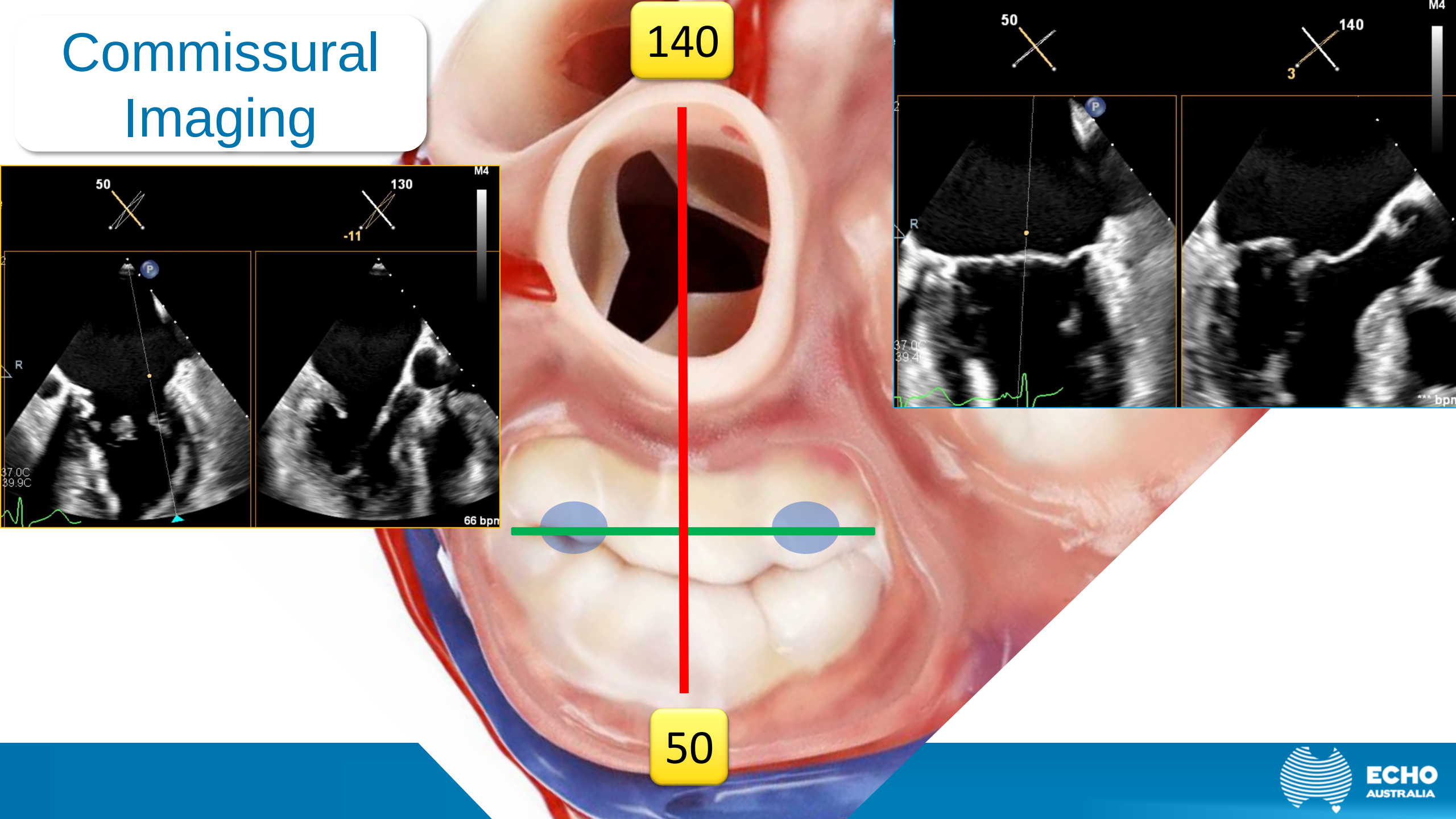
Mid-Esophageal - sweep lateral - A1P1



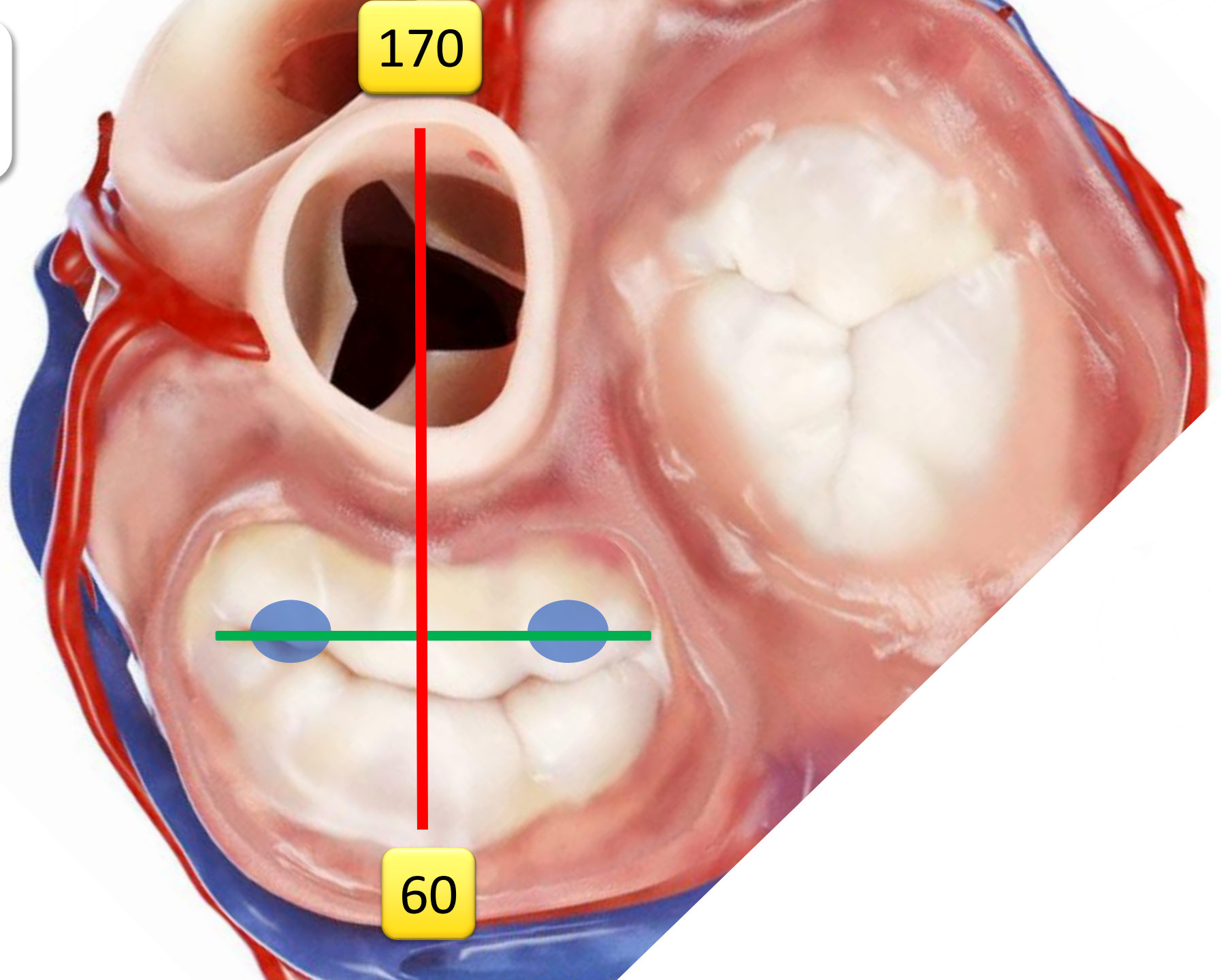
Perspective



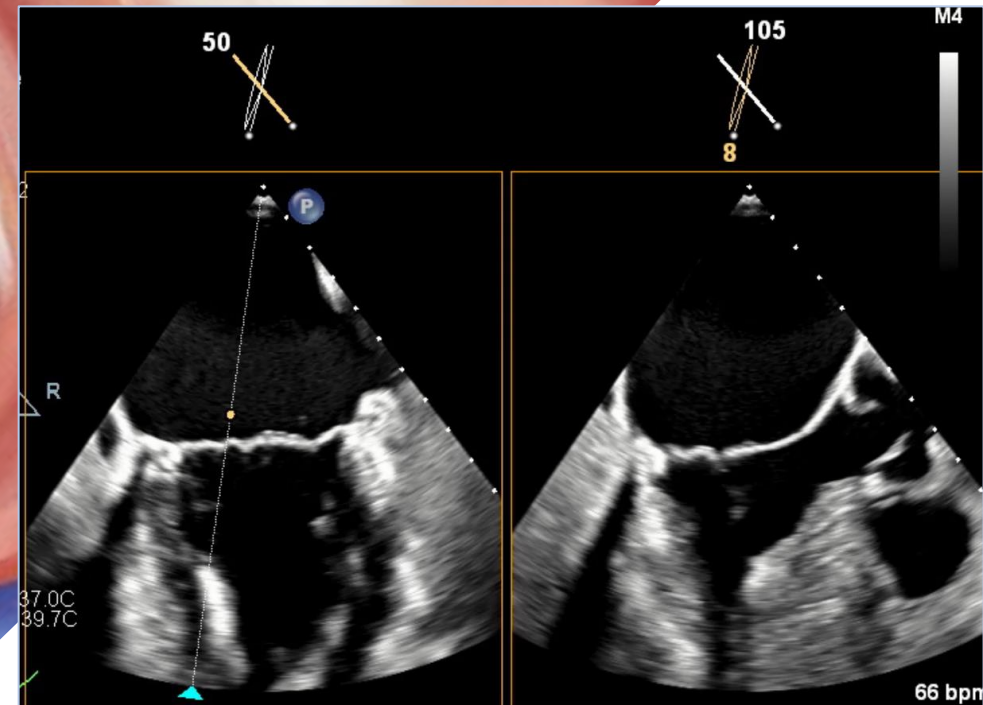
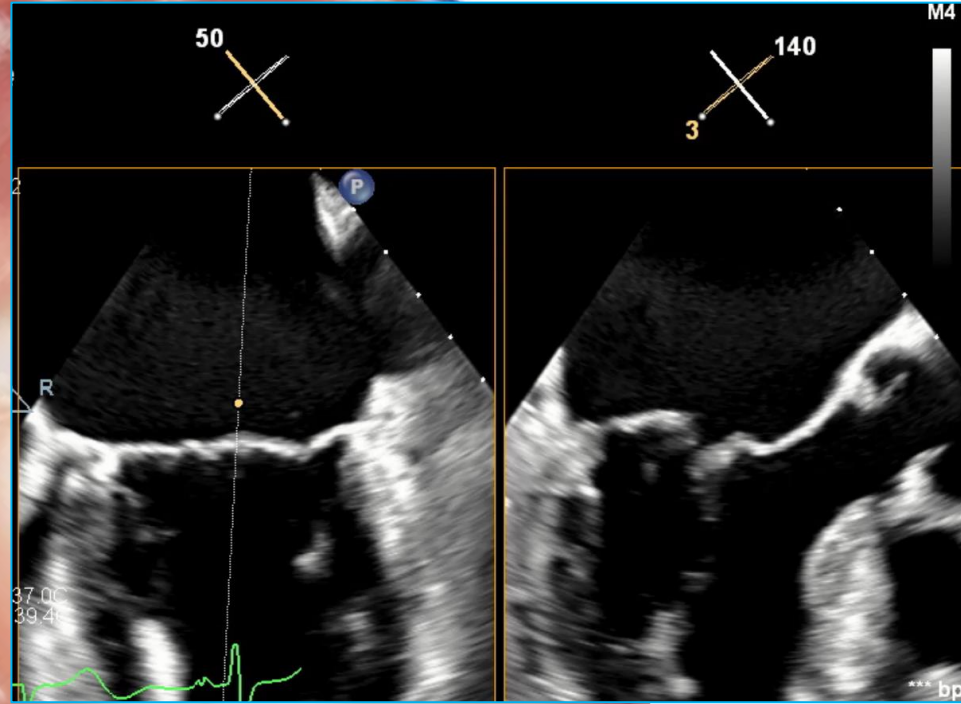
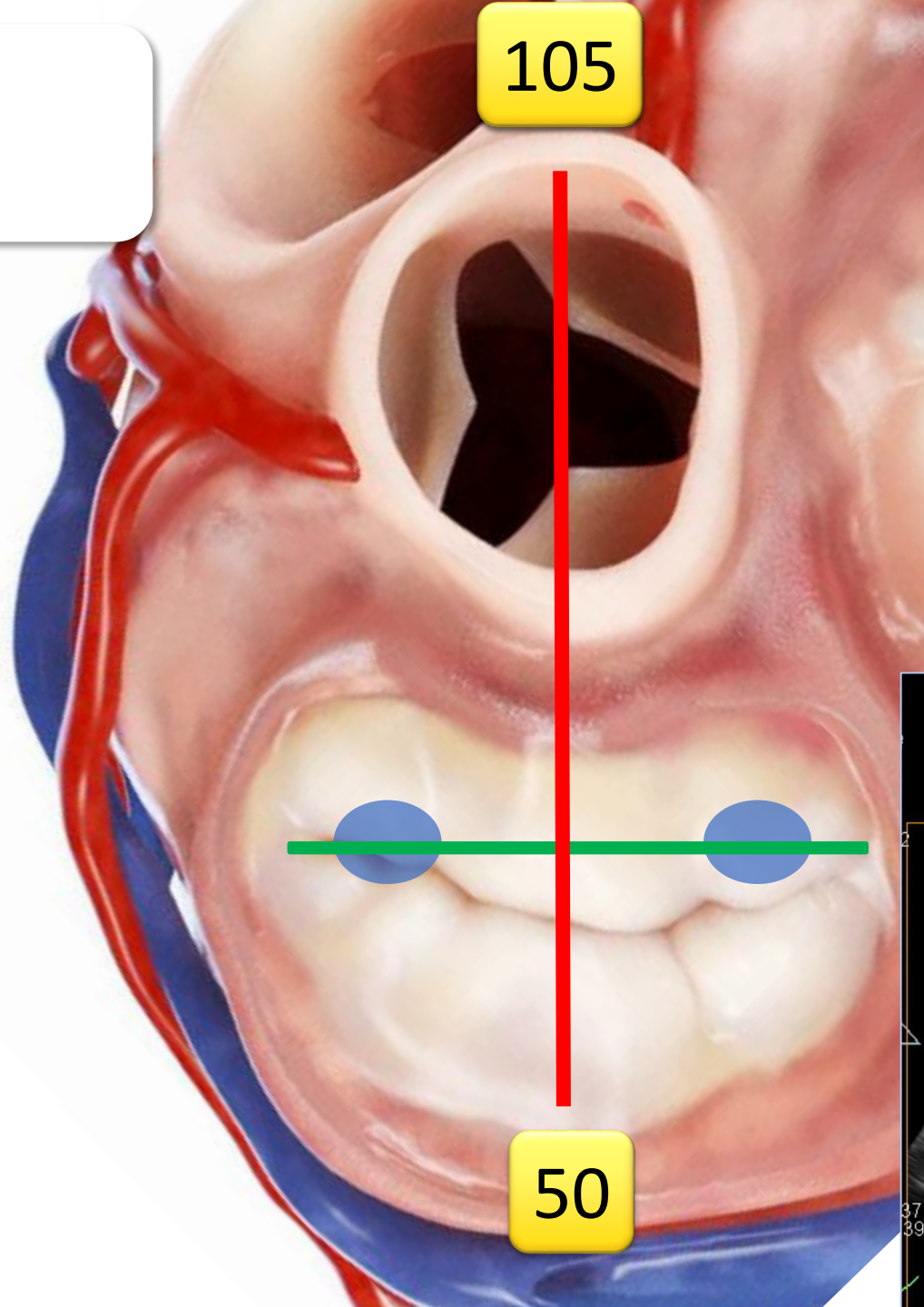
Commissural Imaging



Commissural Imaging



Commissural Imaging



Assessment forms

Assessment of Edge-To-Edge Investigations

PATIENT STICKER

DMR FMR Post-op

TTE Date: __/__/__

EF	RWMA	
MVG (mmHg)	MR Grade	MR Direction
TR Grade	AoV	
RVSP	Comments:	

TOE
Date: __/__/__

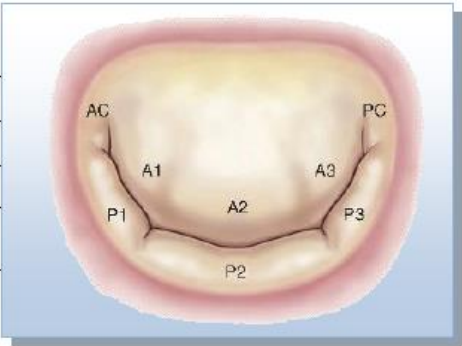
Flail Gap	MR Grade	MR Direction
Flail Width	MVA (cm ²)	
Coapt Depth	MAC	Leaflet Calc/Thick:
Coapt Length	Comments:	

COMMENTS:

STATUS:

Prof GREGORY SCALIA

Date: __/__/__



Assessment of Edge-To-Edge Investigations

Name

Age

Height Weight

Medical/cardiac history

PATIENT STICKER

DMR

FMR

Post-op

TTE Date: XX / XX / XX	
EF 65%	RWMA Nil
MVG (mmHg) 2	MR Grade 4 MR Direction Ant
TR Grade 0-1	AoV No As, Mild AR
RVSP N/A	Comments: “Flail P₃”

TOE

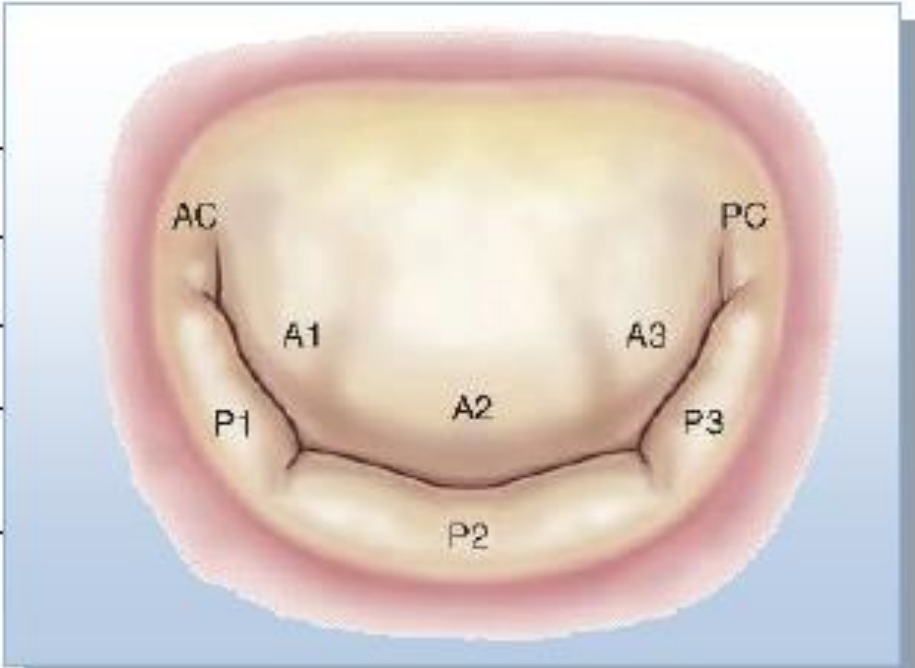
MDT Assessment Sheet

TOE
Date: XX / XX / XX

Flail Gap	MR Grade	MR Direction
Flail Width	MVA (cm ²)	
Coapt Depth	MAC	Leaflet Calc/Thick:
Coapt Length	Comments:	

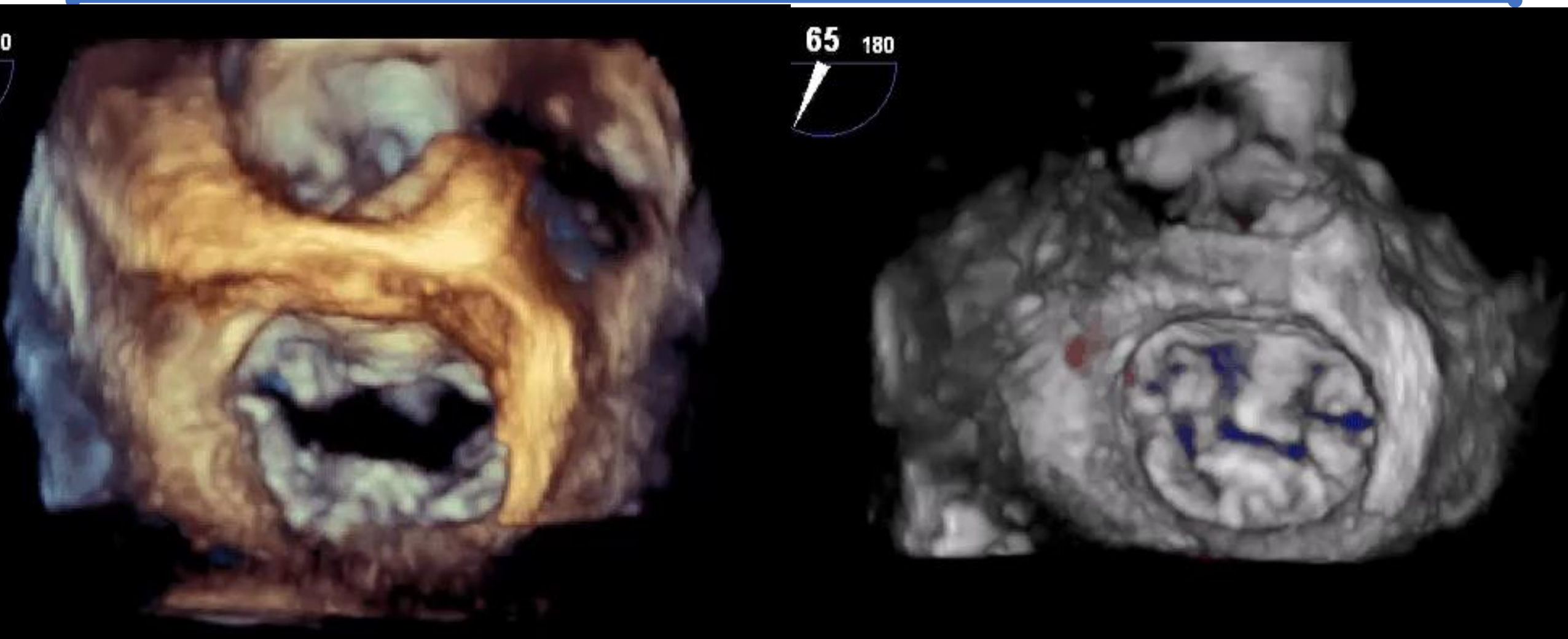
COMMENTS:

STATUS:

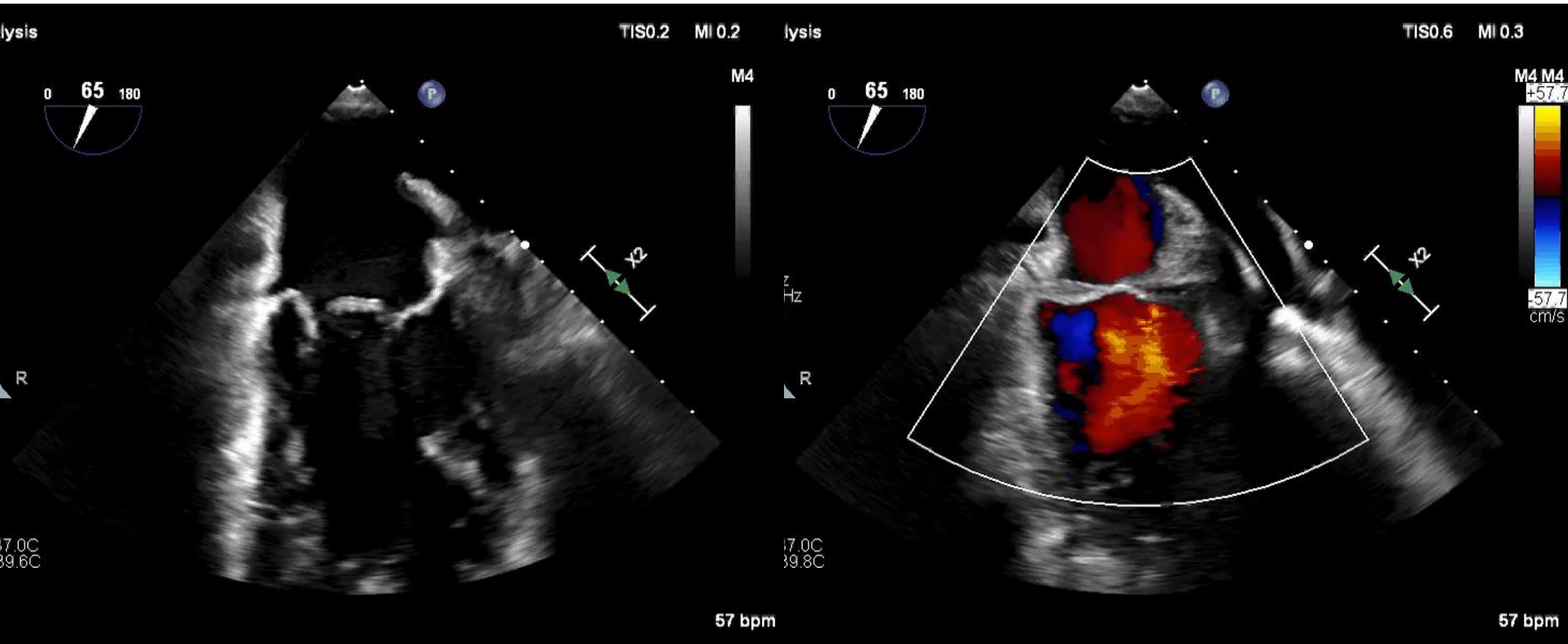




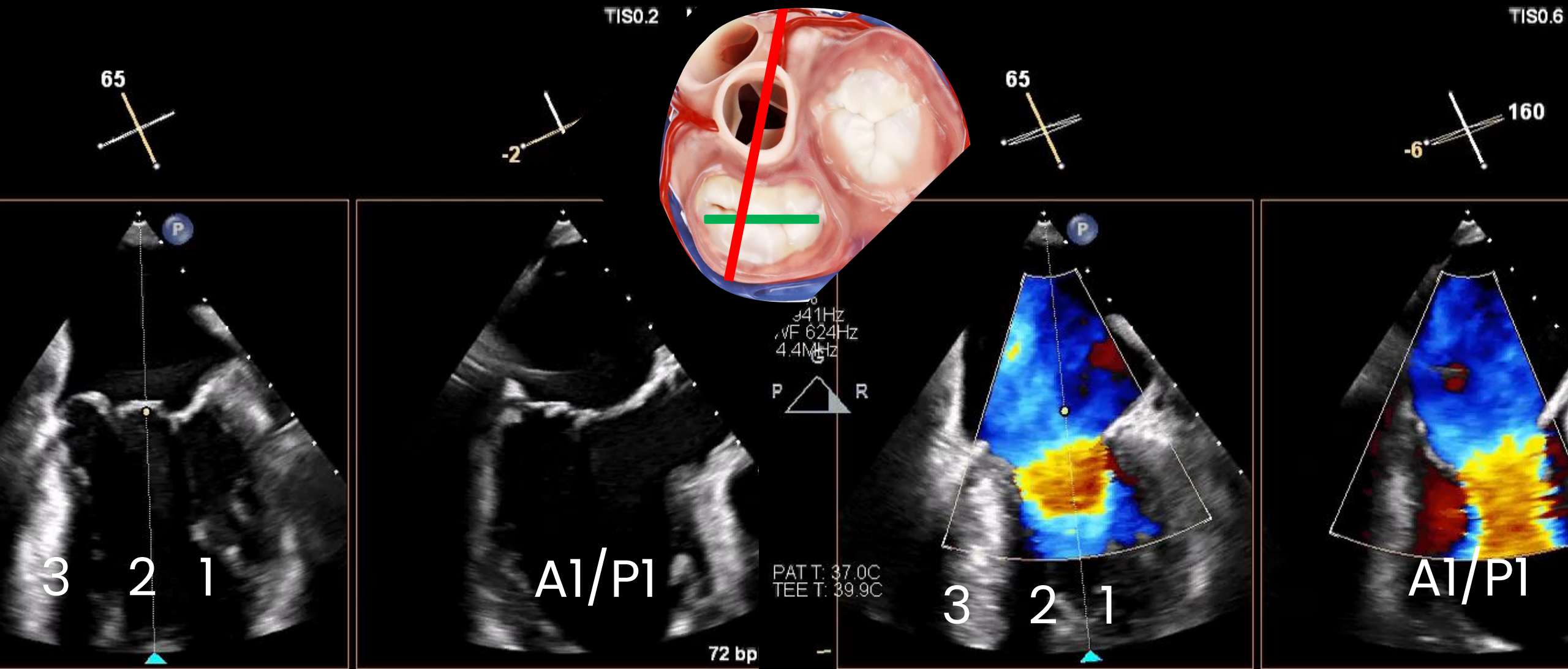
3D en face with and without colour



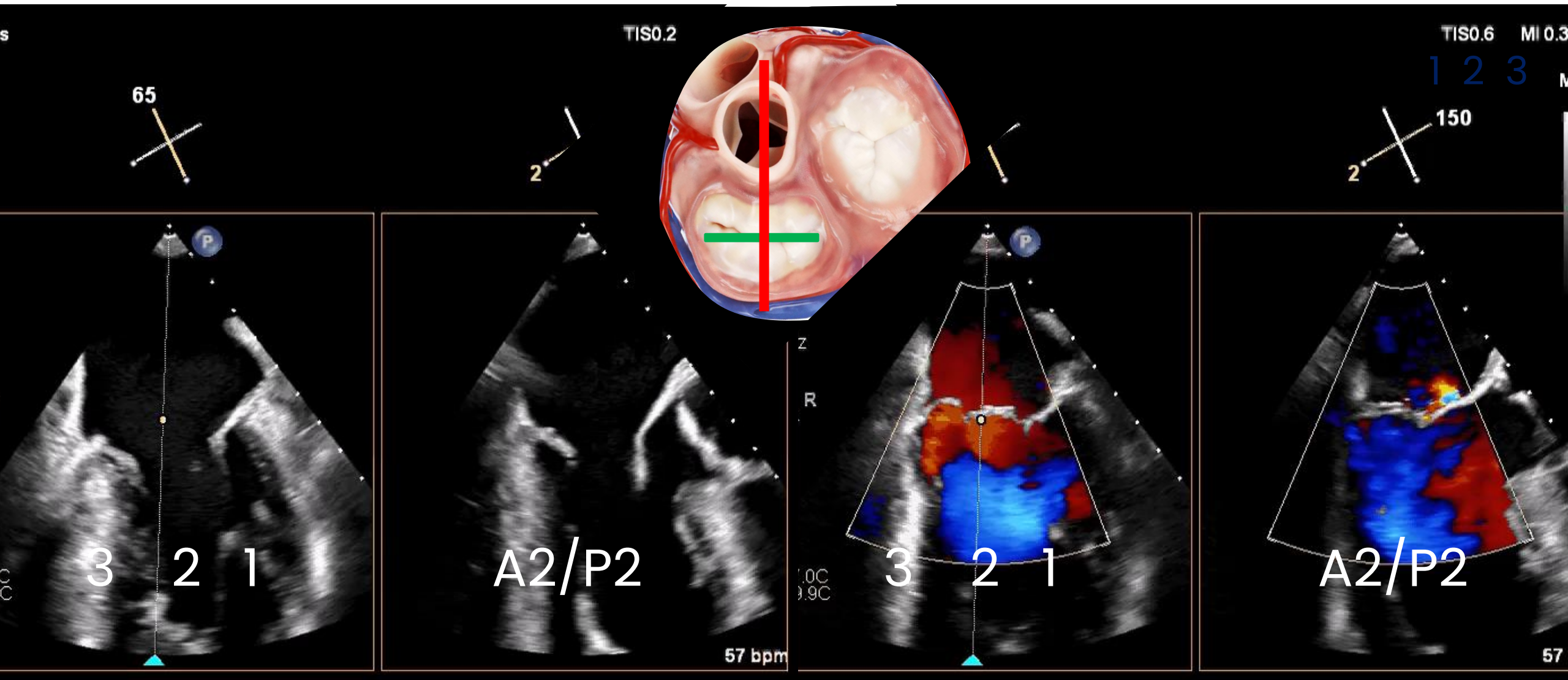
Bicommissural index view – in this case 65°



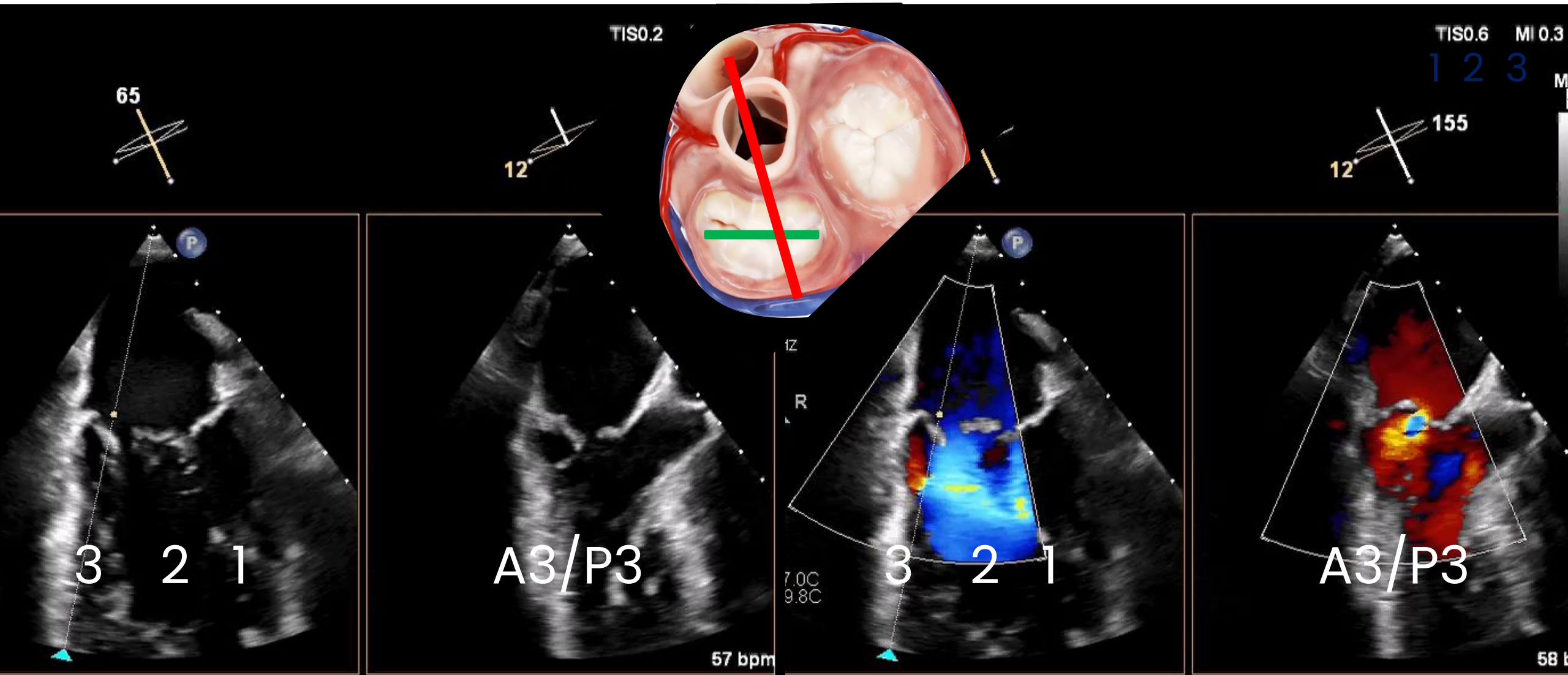
Bicommissural 65° - trackball to “The 1’s”



Bicommissural 65° - trackball to “The 2’s”



Bicommissural 65° - trackball to “The 3’s”



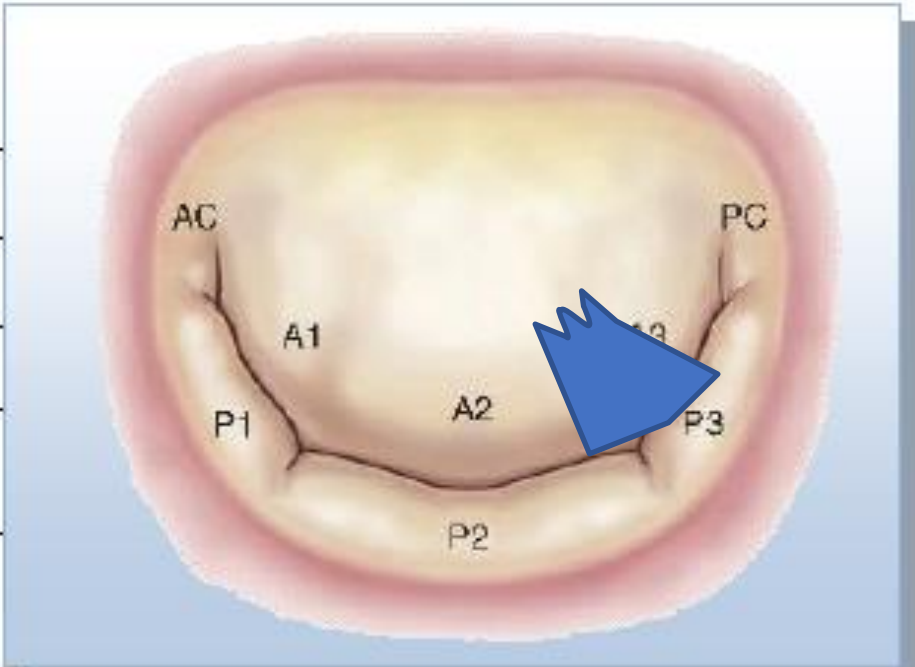
MDT Assessment Sheet

TOE
Date: XX / XX / XX

Flail Gap	6	MR Grade	MR Direction
Flail Width	8	MVA (cm ²)	7.3
Coapt Depth		MAC	Leaflet Calc/Thick:
Coapt Length		Comments:	

COMMENTS:

STATUS:

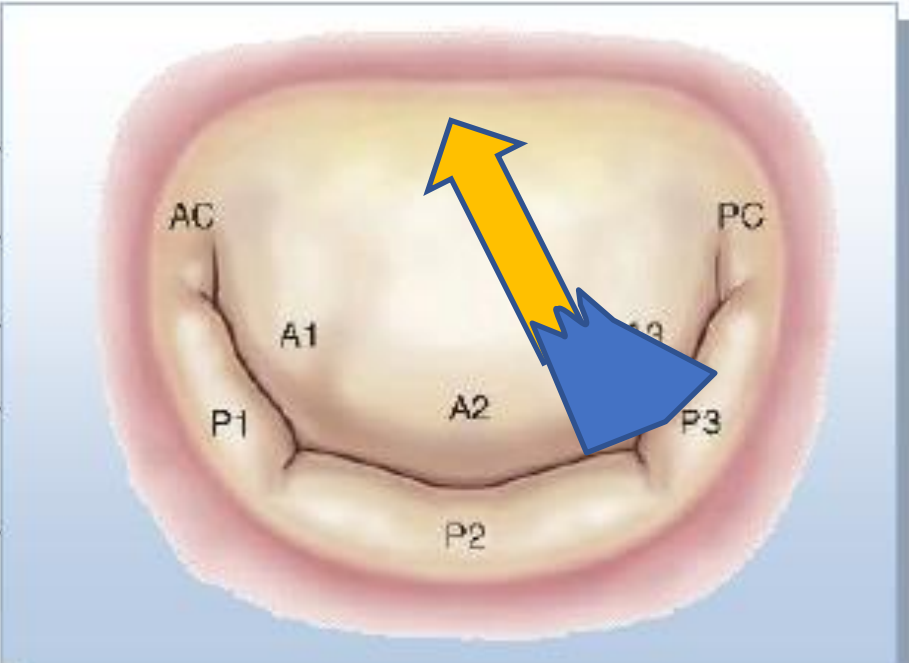


MDT Assessment Sheet

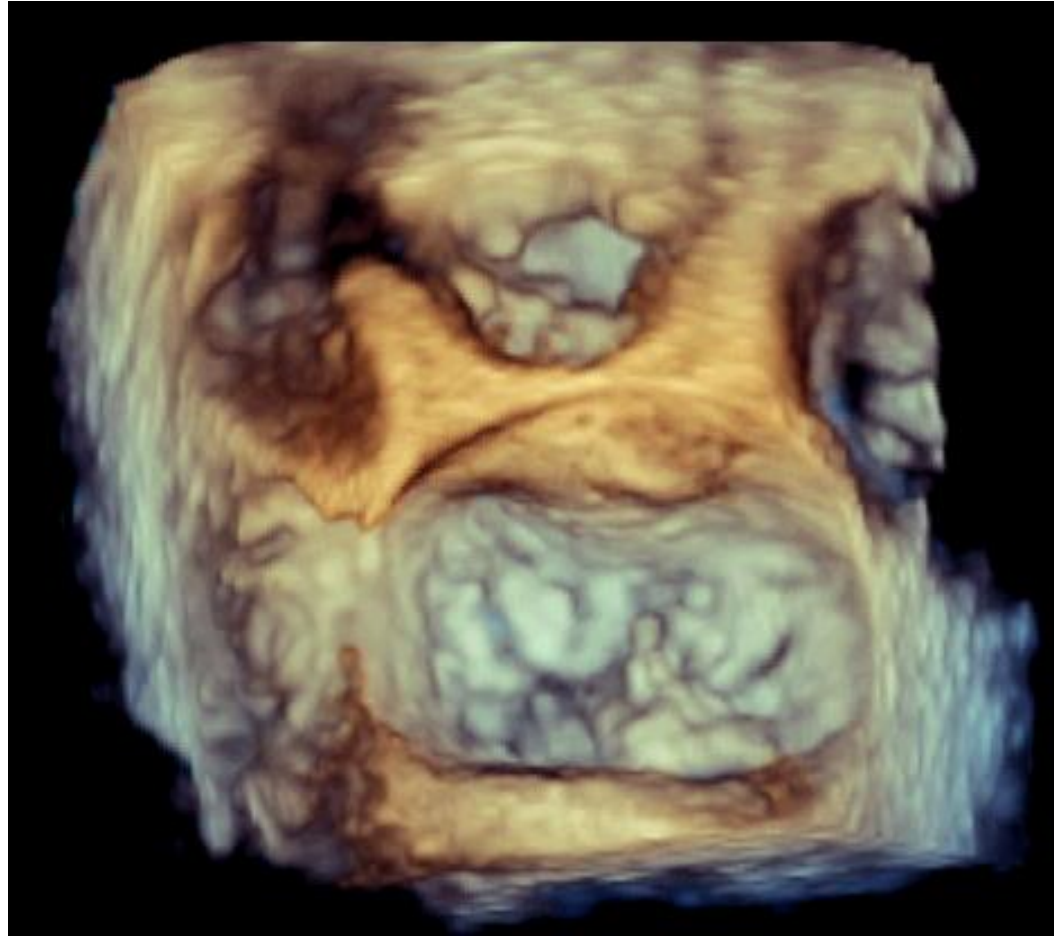
TOE	
Date: <u>XX</u> / <u>XX</u> / <u>XX</u>	
Flail Gap <u>6</u>	MR Grade <u>4</u> MR Direction <u>Ant</u>
Flail Width <u>8</u>	MVA (cm ²) <u>6.1 – 3D plan</u>
Coapt Depth	MAC <u>Mild MAC</u> Leaflet Calc/Thick: <u>Mild</u>
Coapt Length	Comments: <u>ERO 48 3DVC 0.85 No clefts</u>

COMMENTS:

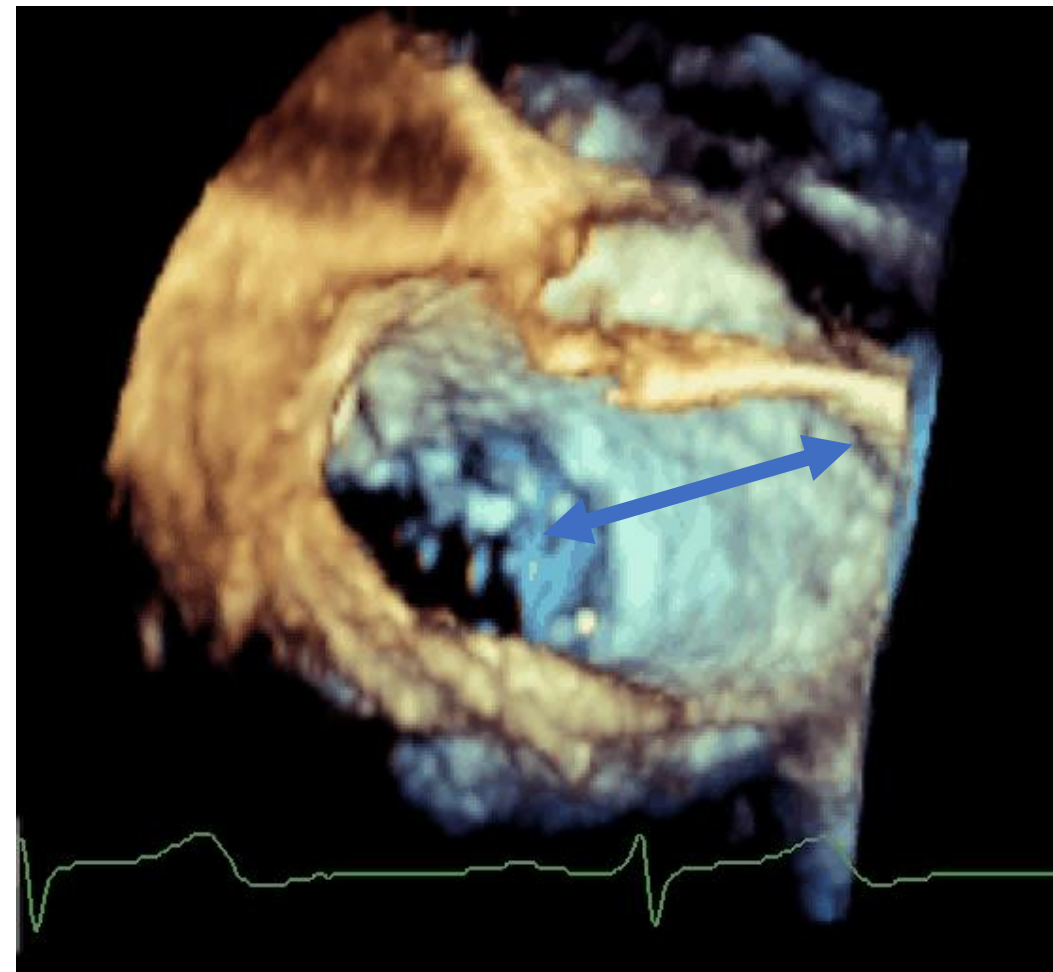
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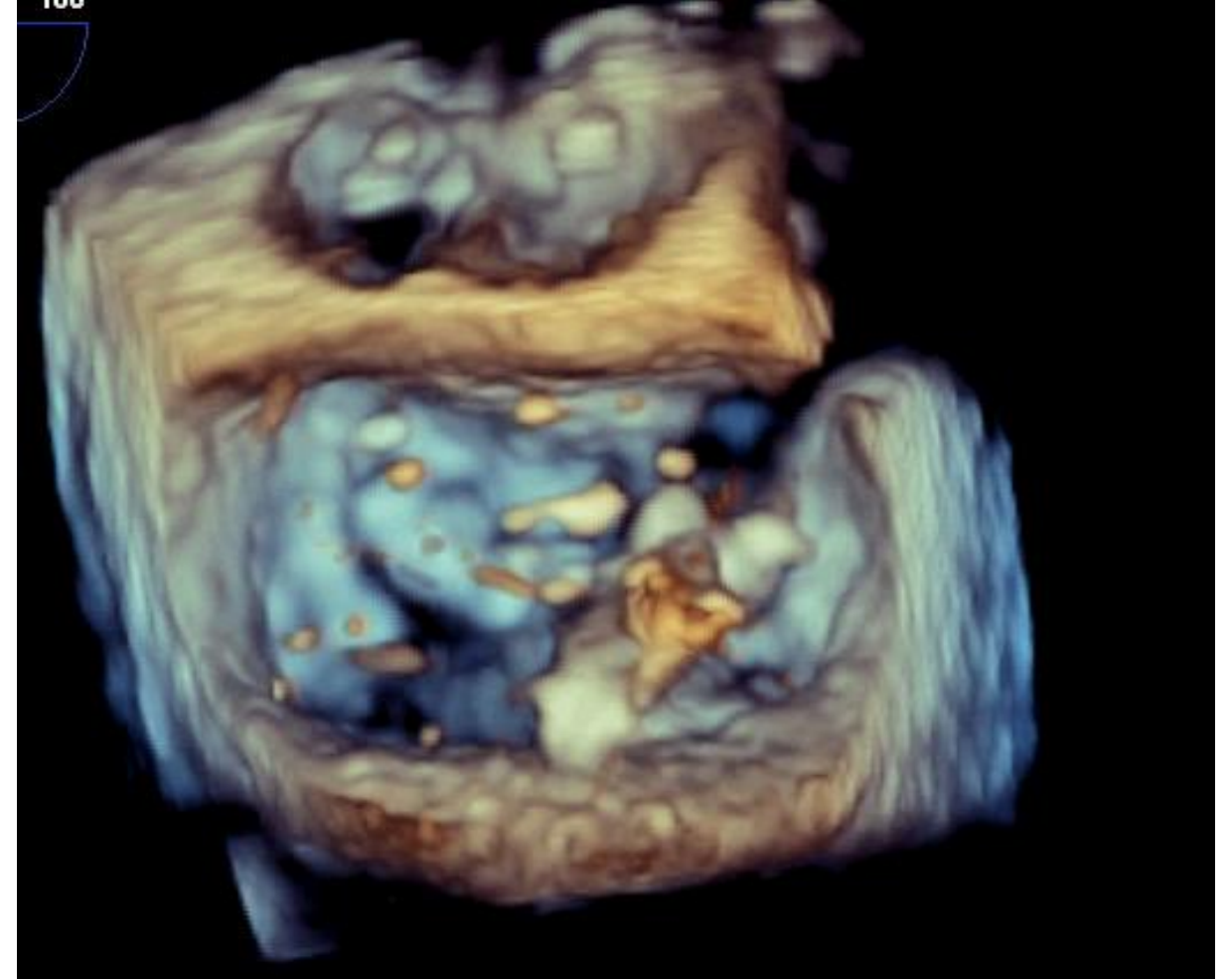
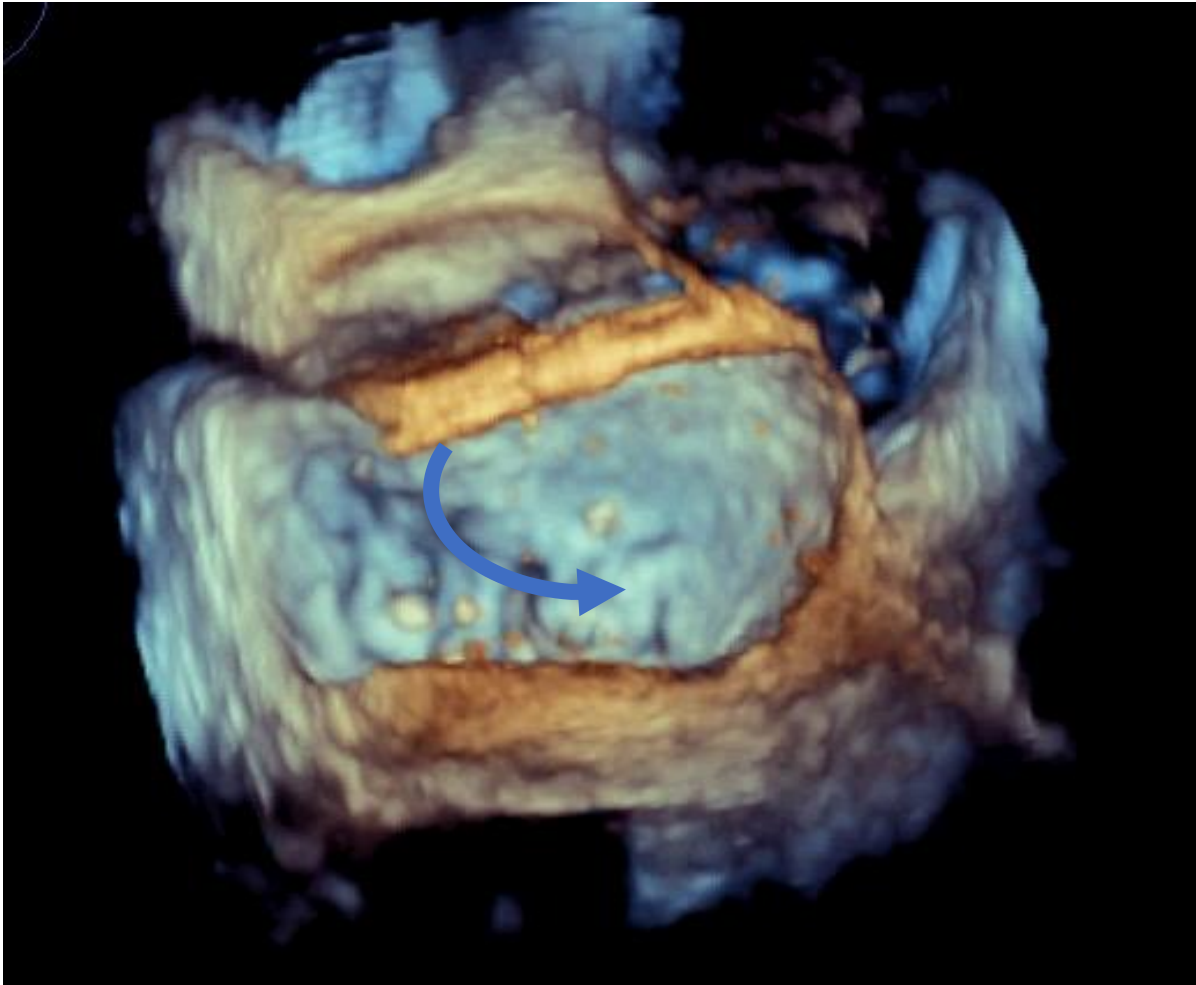
Case P2.5



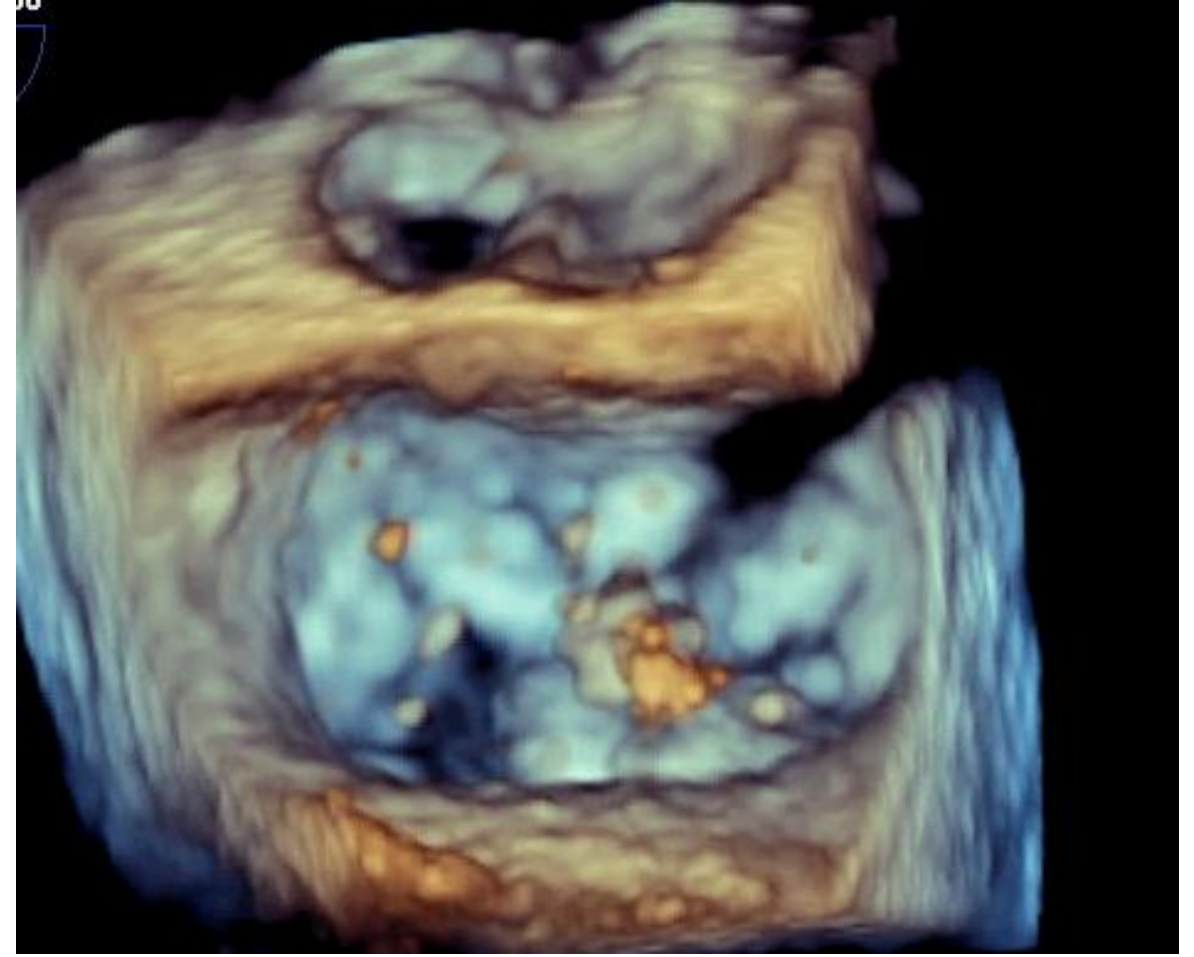
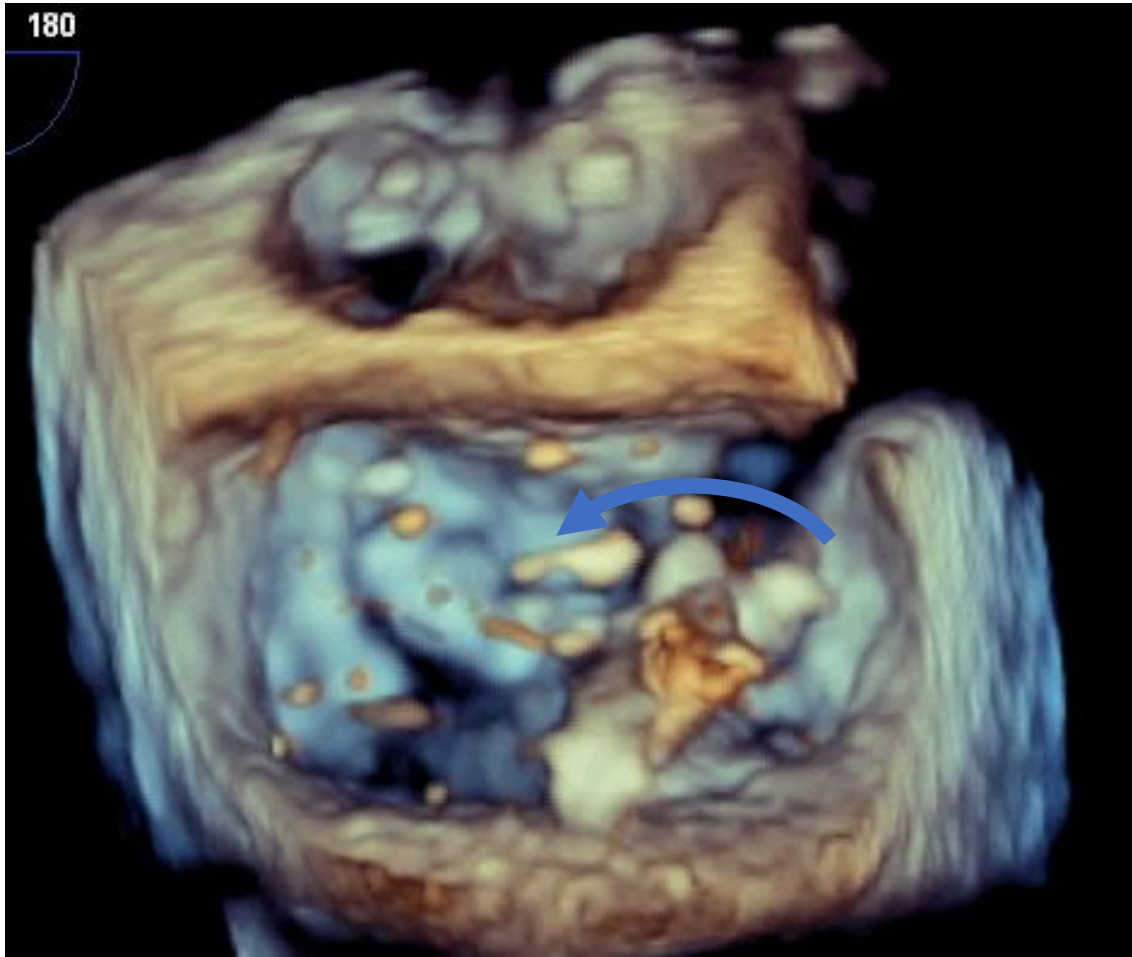
Case P2.5 – trans-septal



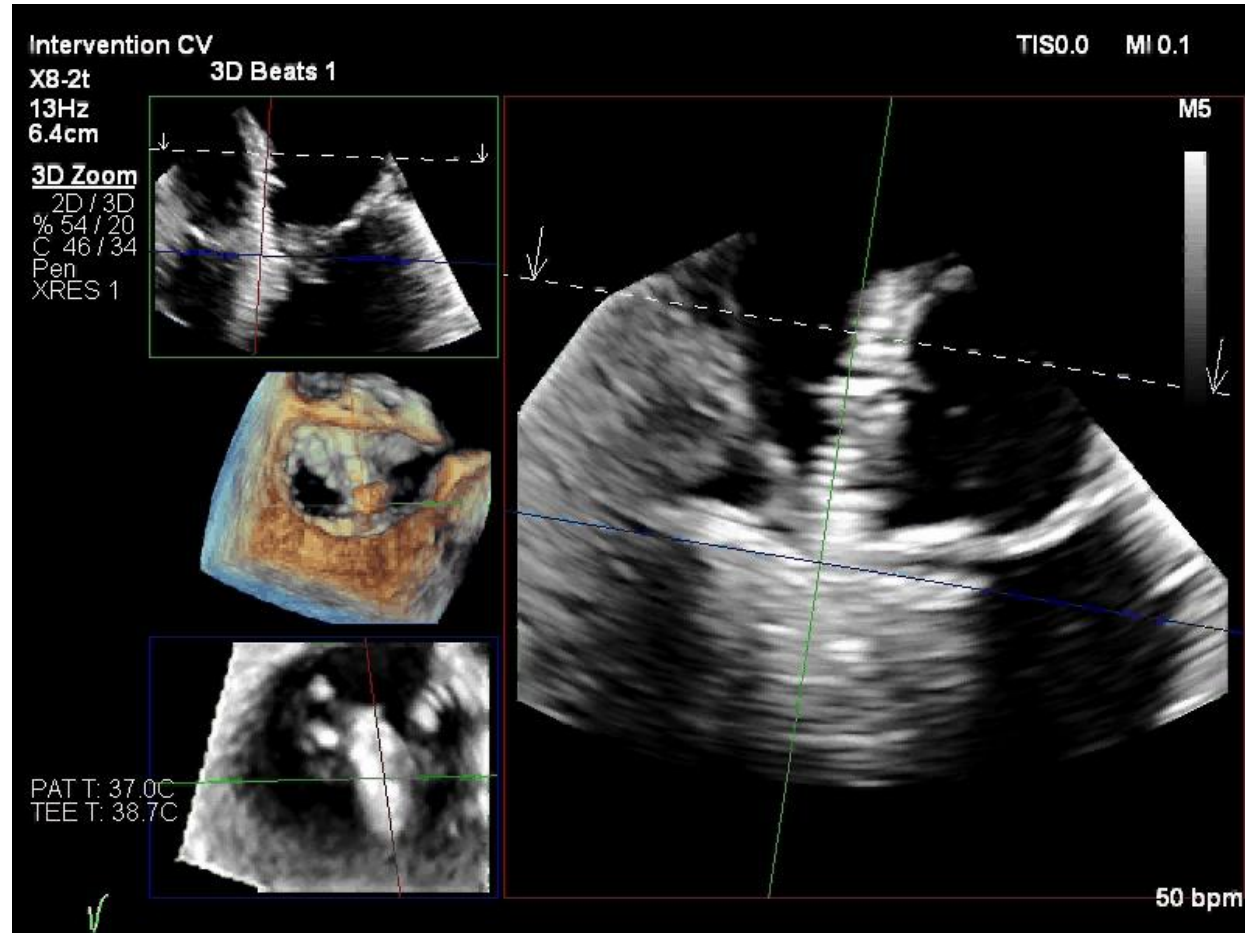
Case P2.5 – steer down



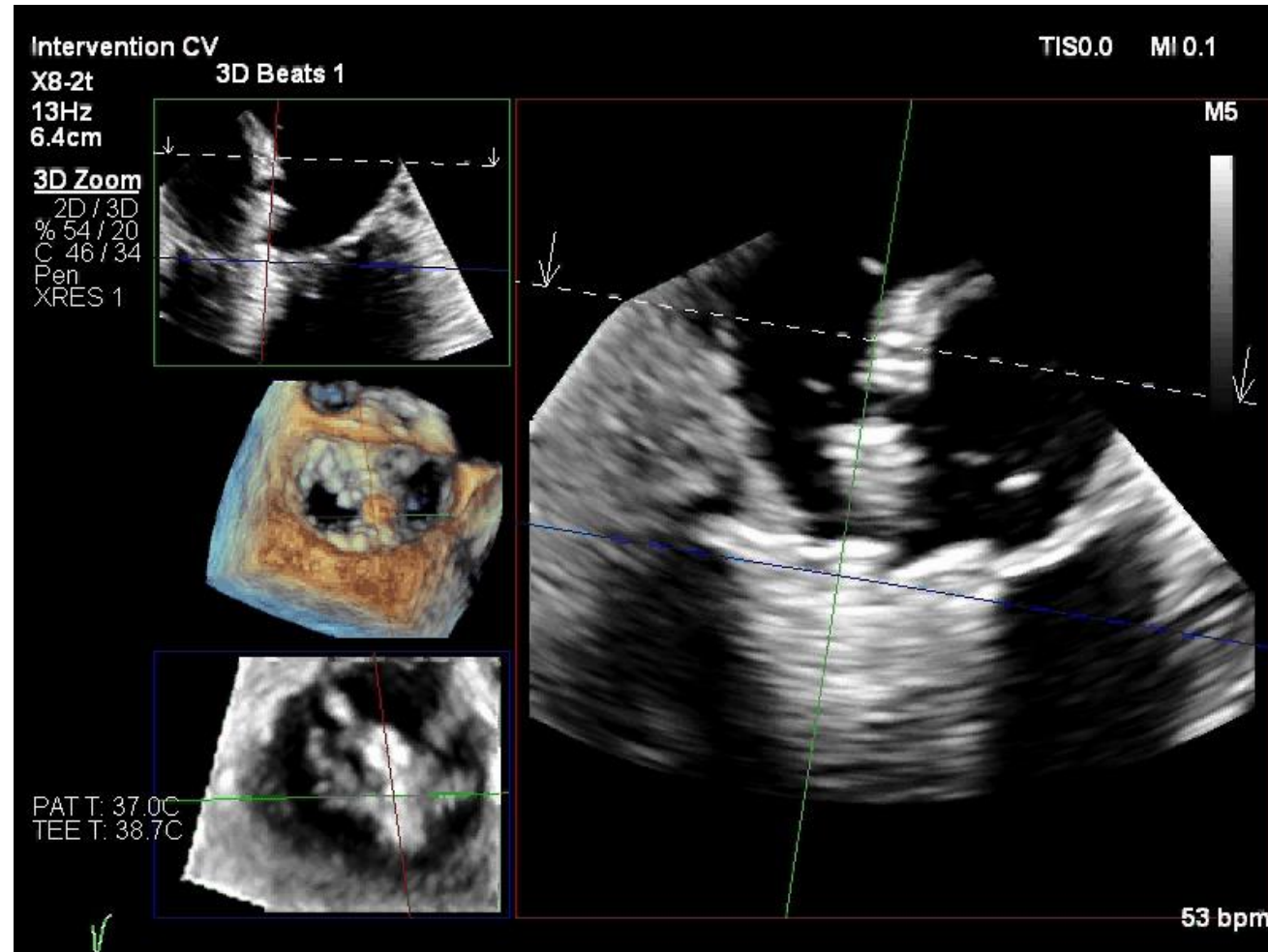
Case P2.5 – Axiality



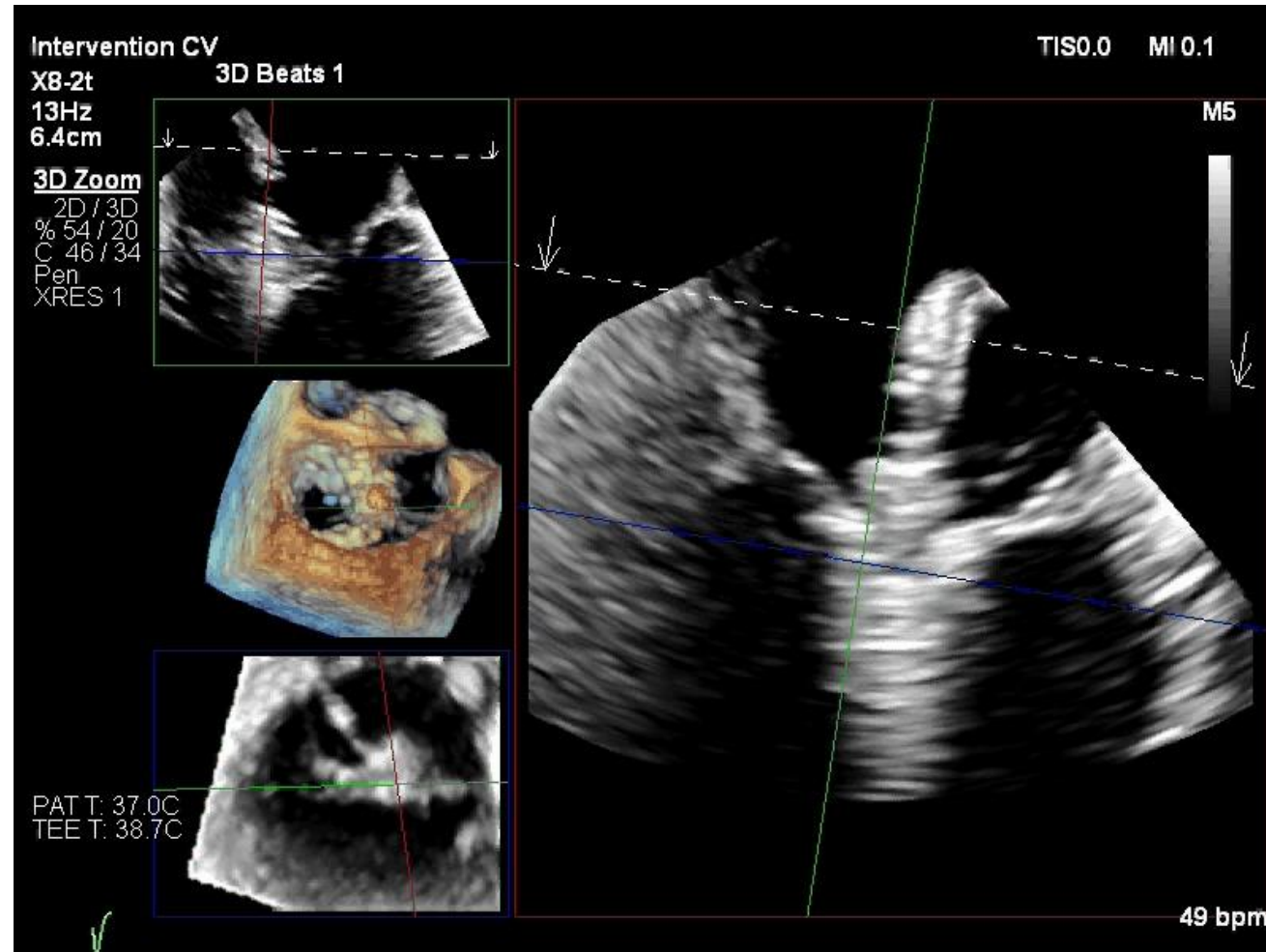
Case P2.5 – Multiplane grasping



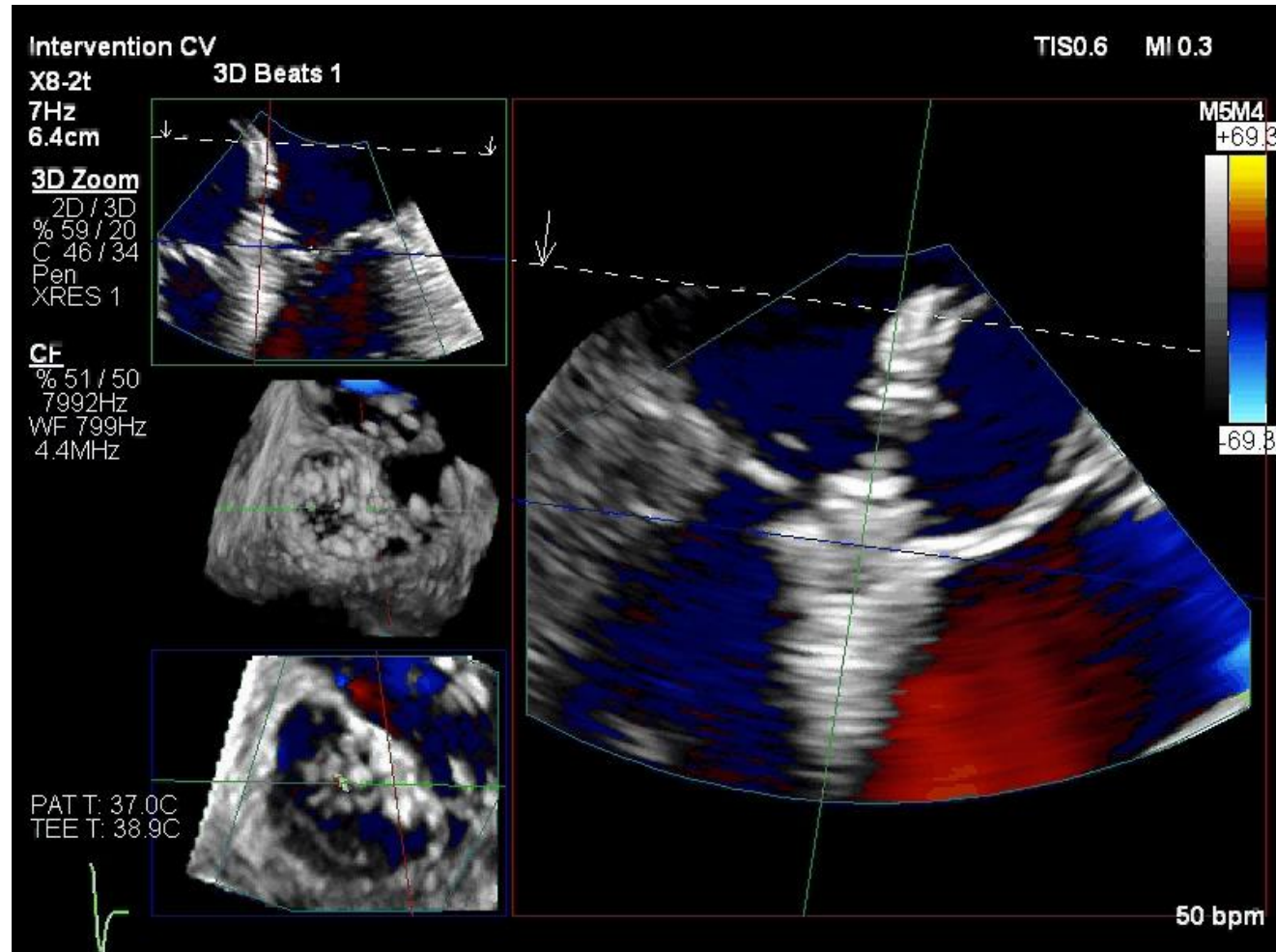
Case P2.5 – Multiplane grasping



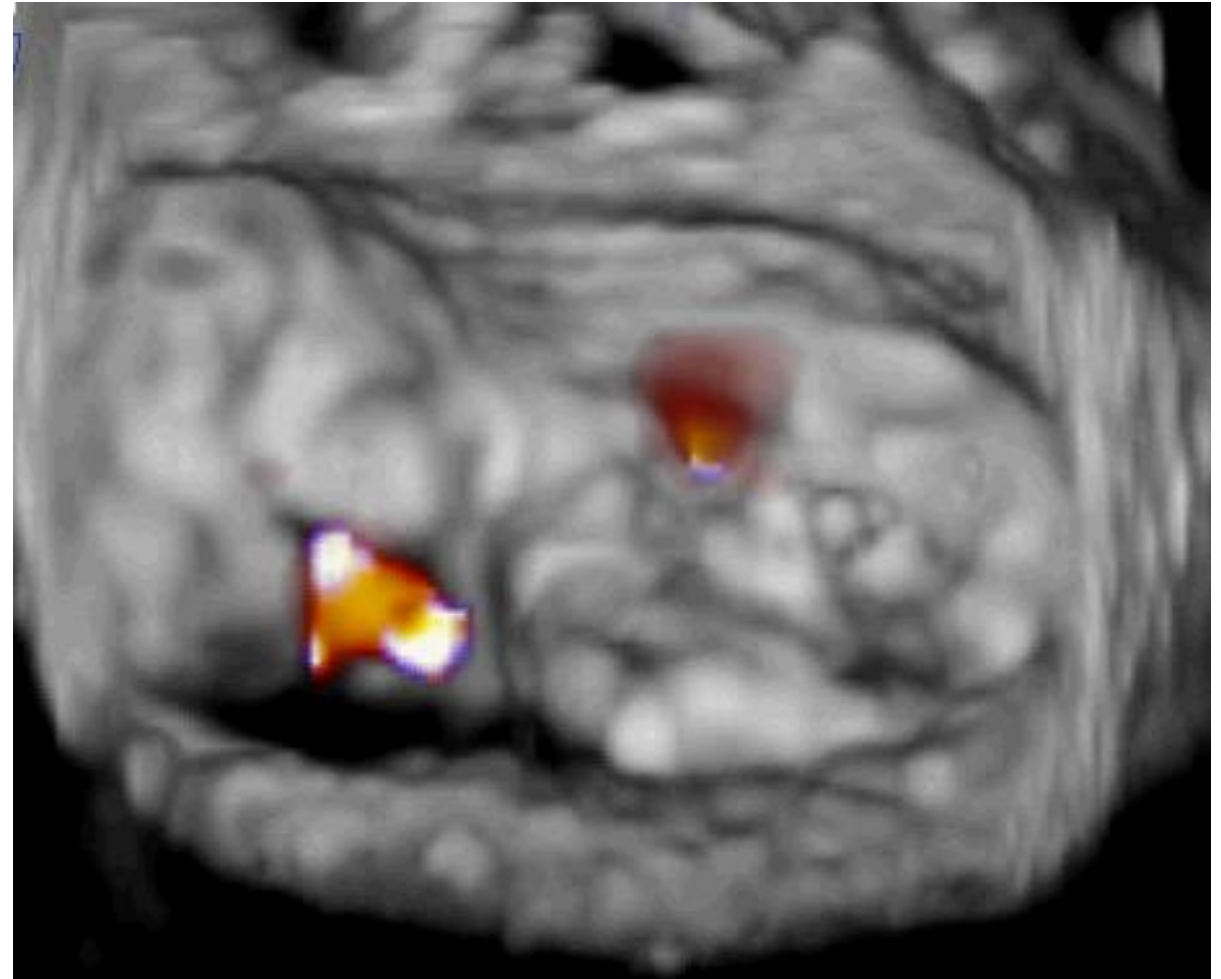
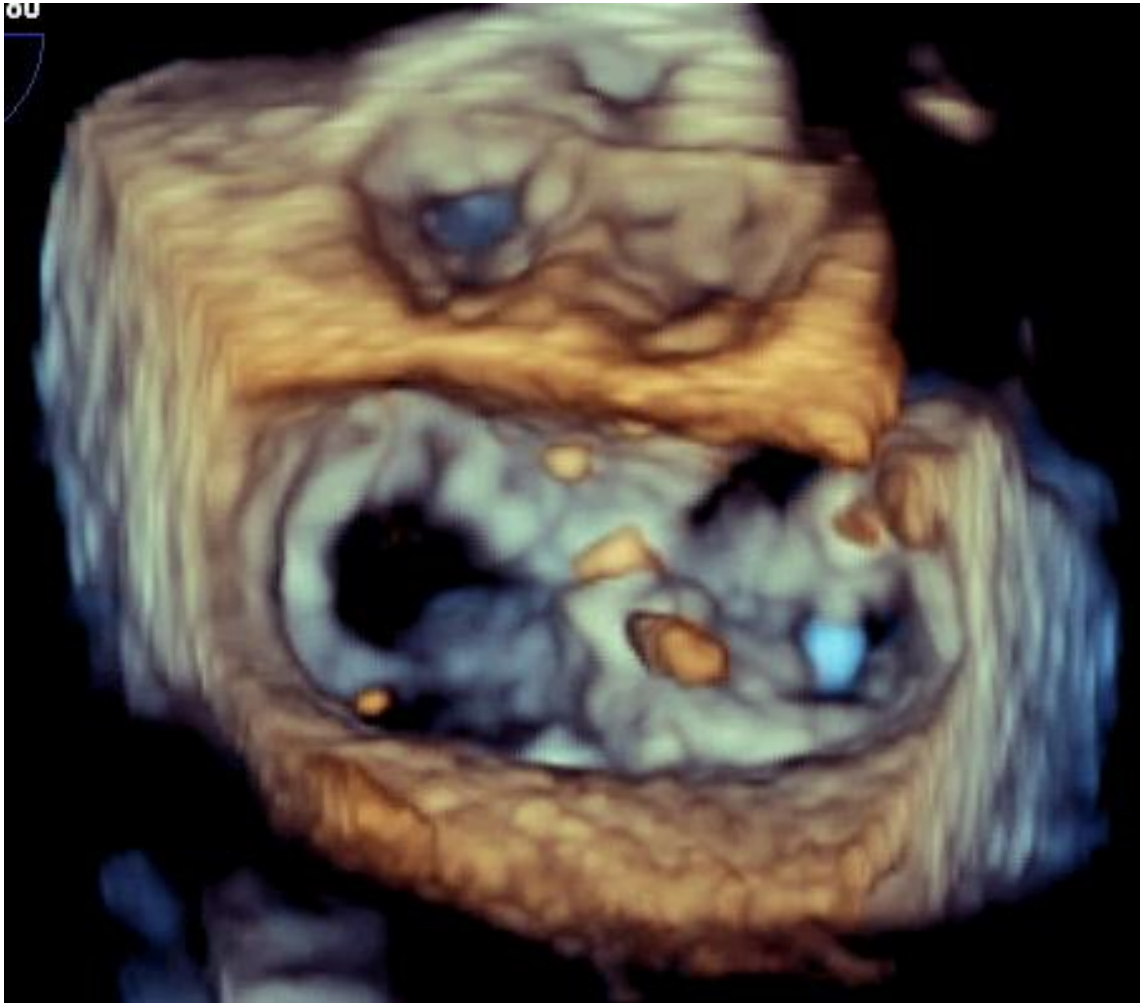
Case P2.5 – Multiplane grasping



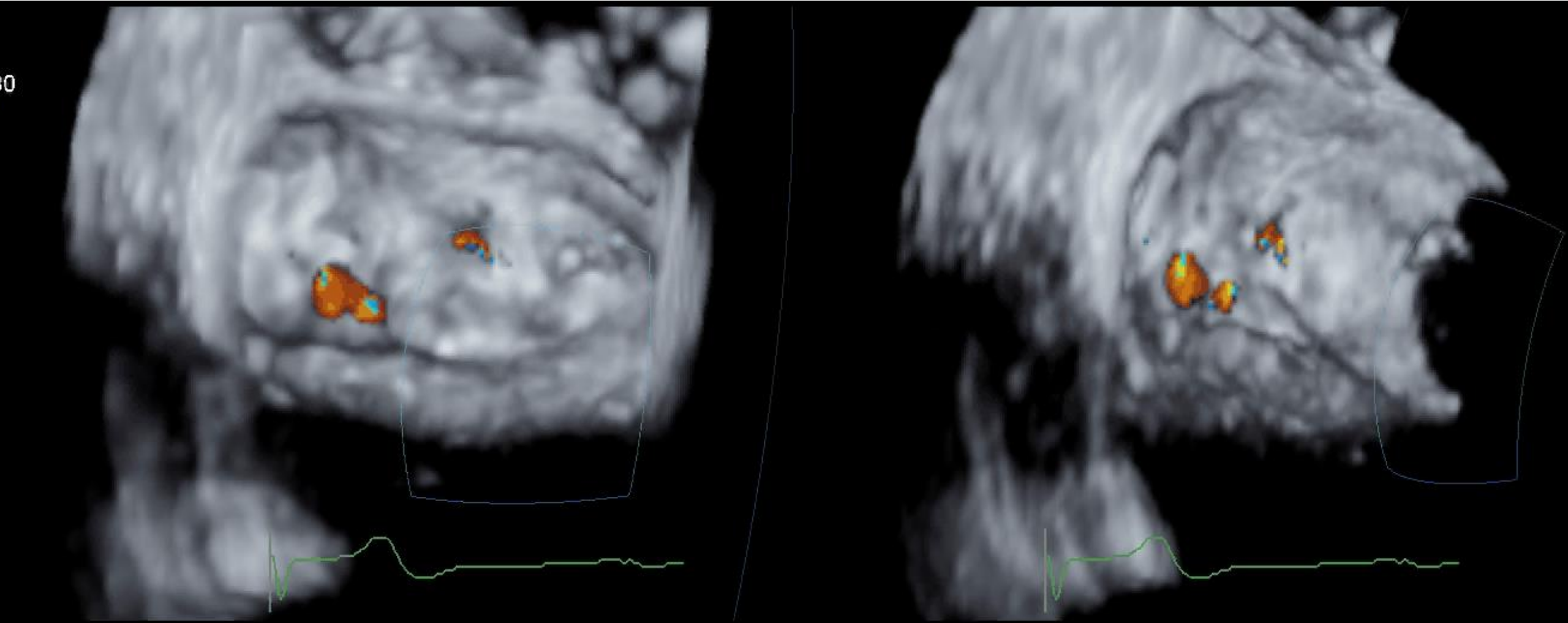
Case P2.5 – Multiplane grasping

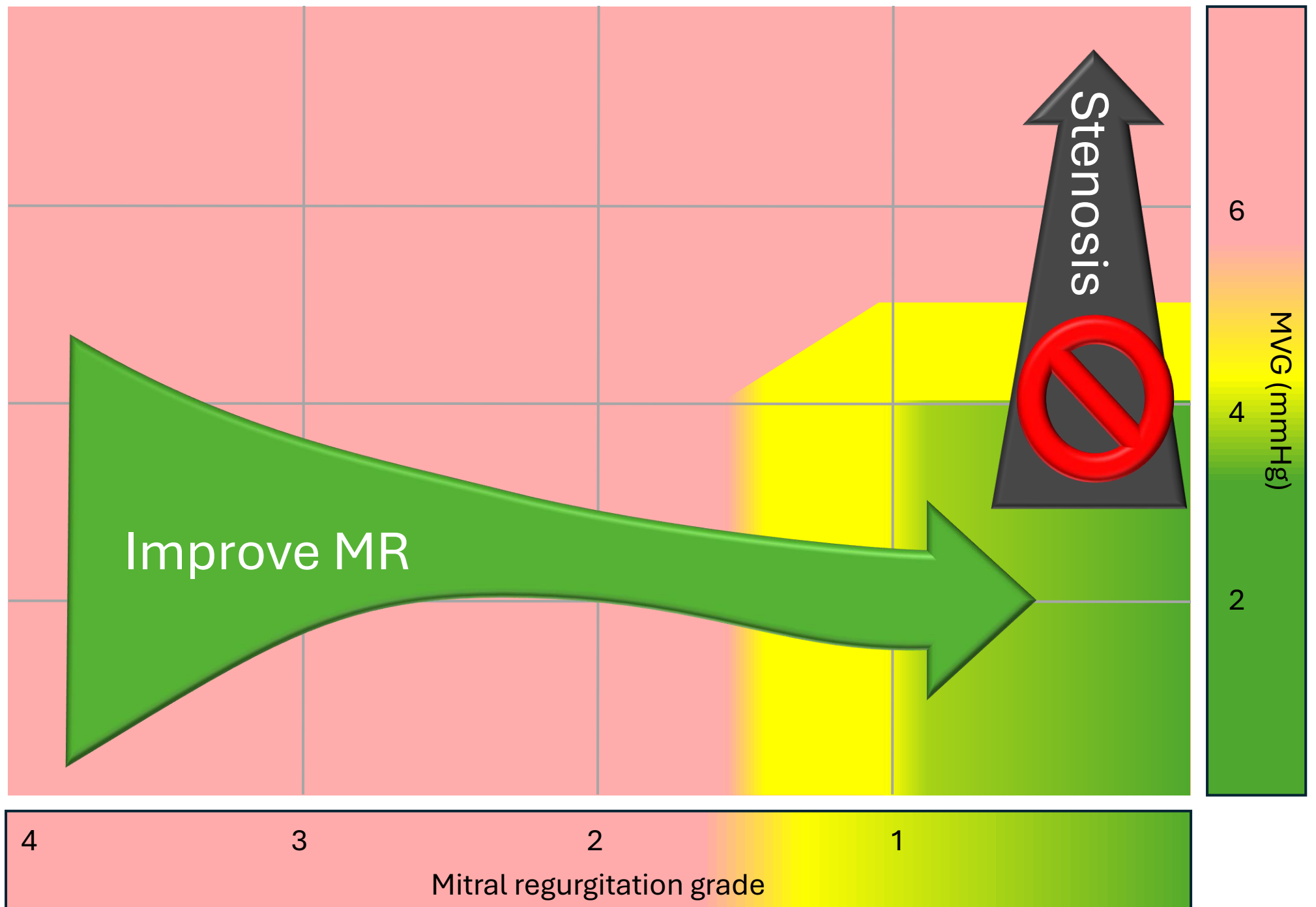


Case P2.5 – Grasped

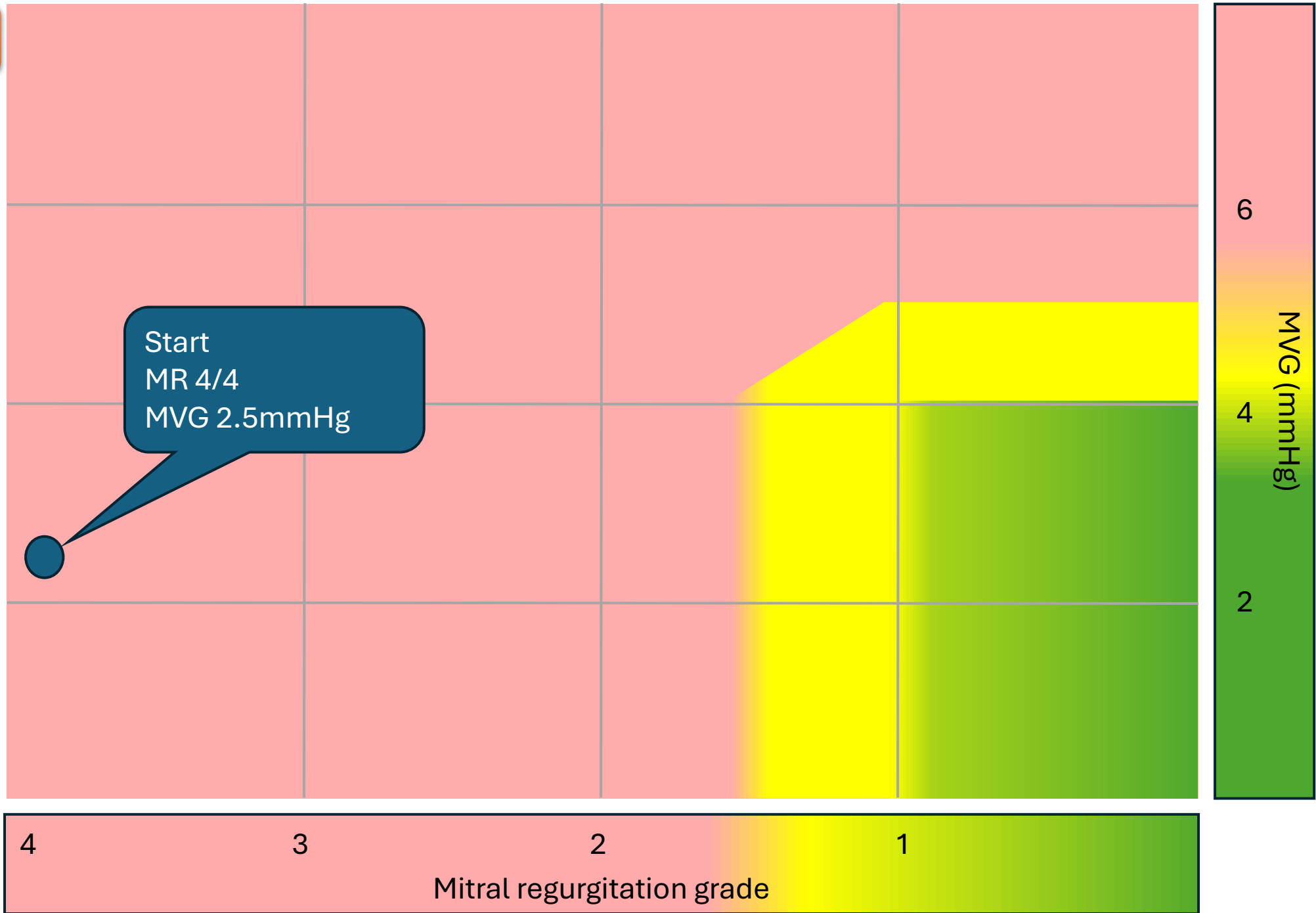


Case P2.5 – Grasped



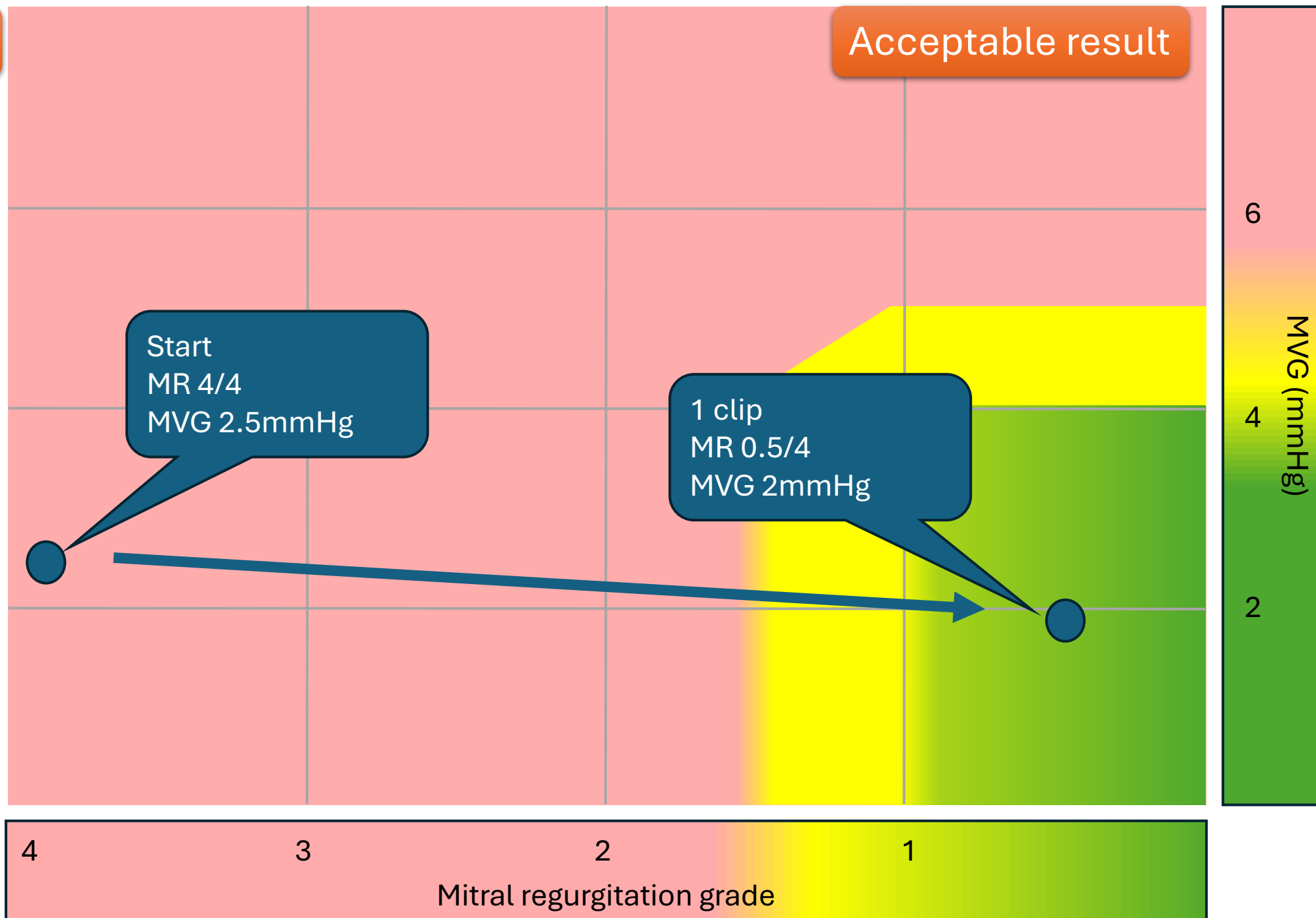


Scenario 1

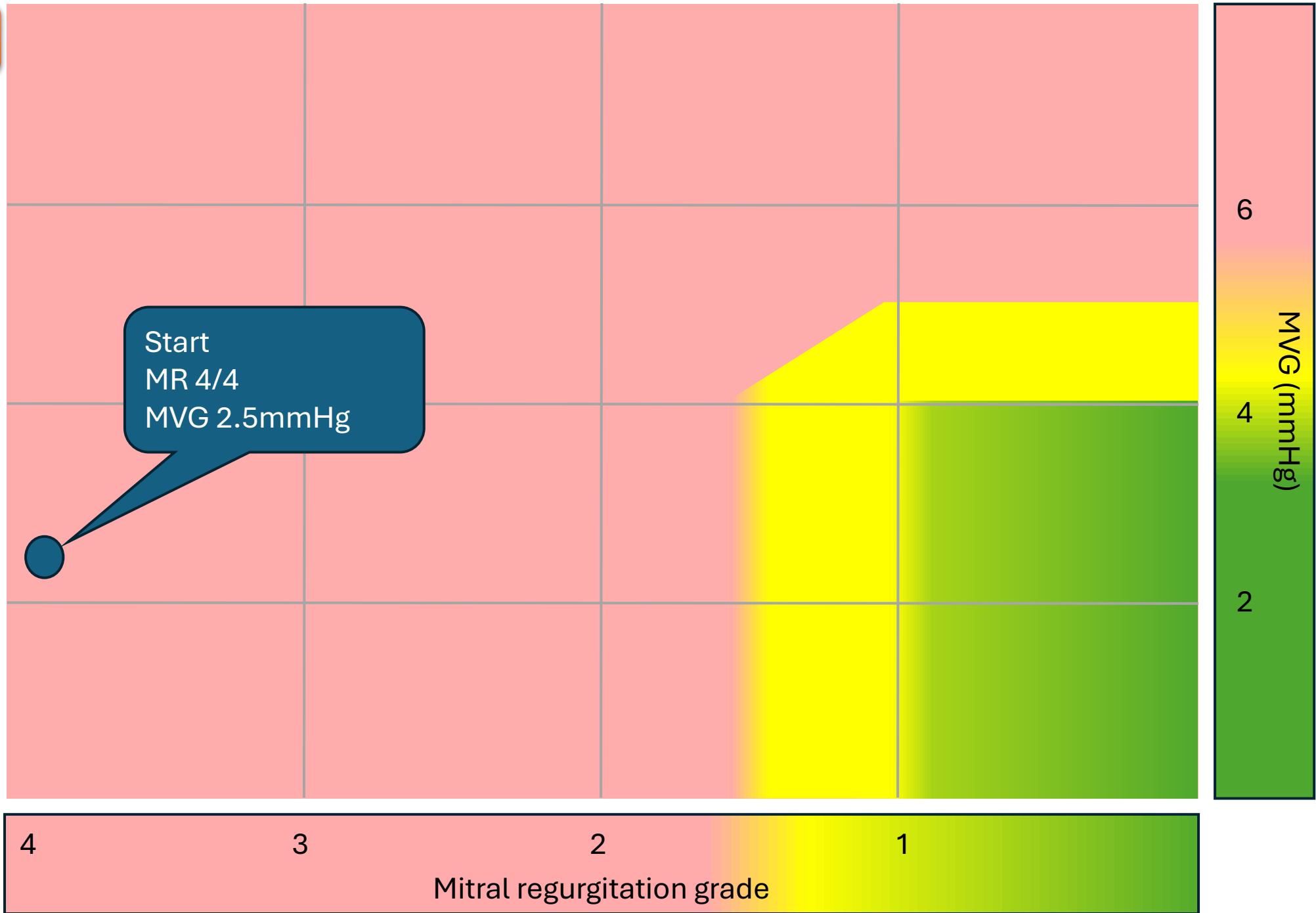


Scenario 1

Acceptable result

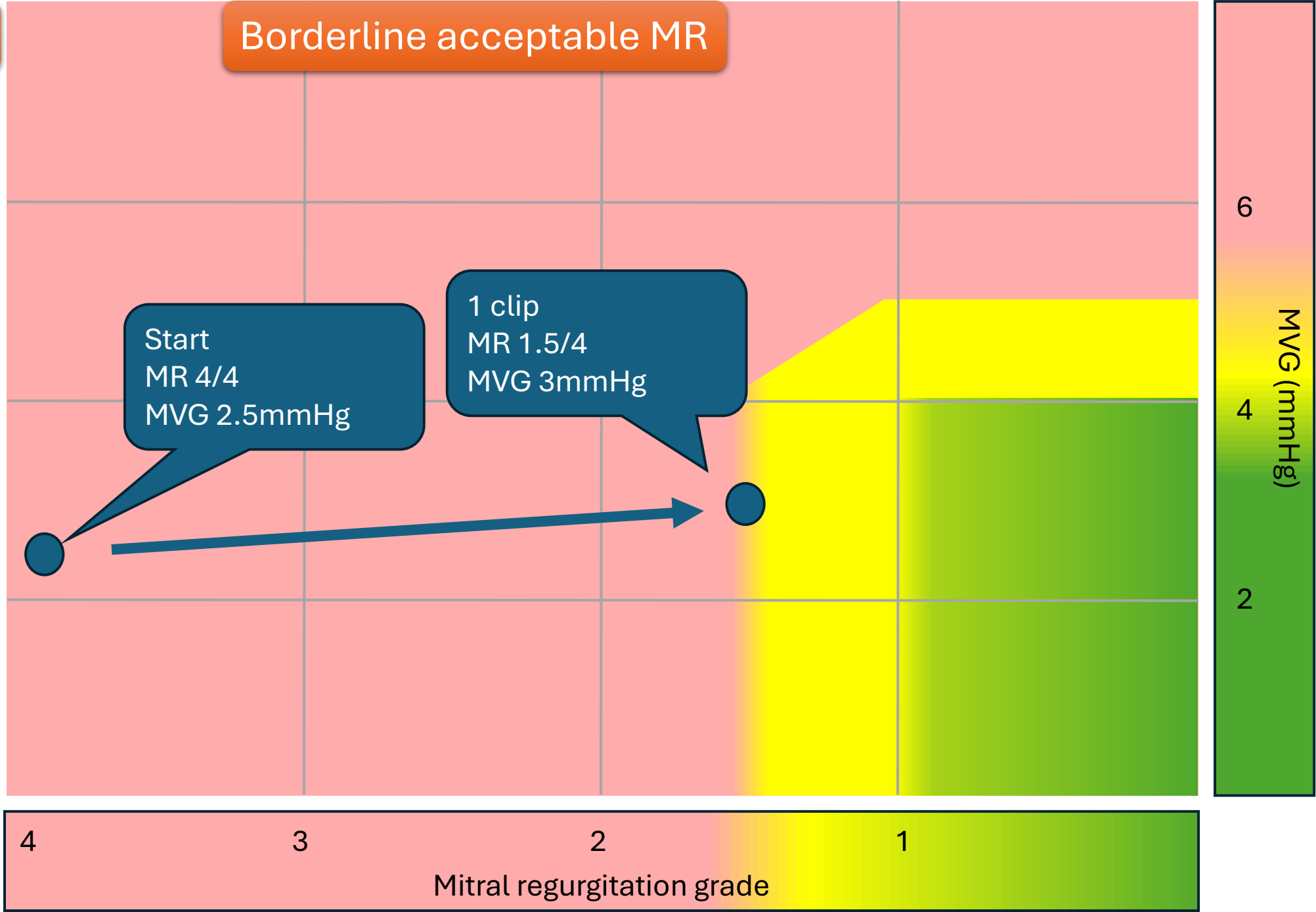


Scenario 2

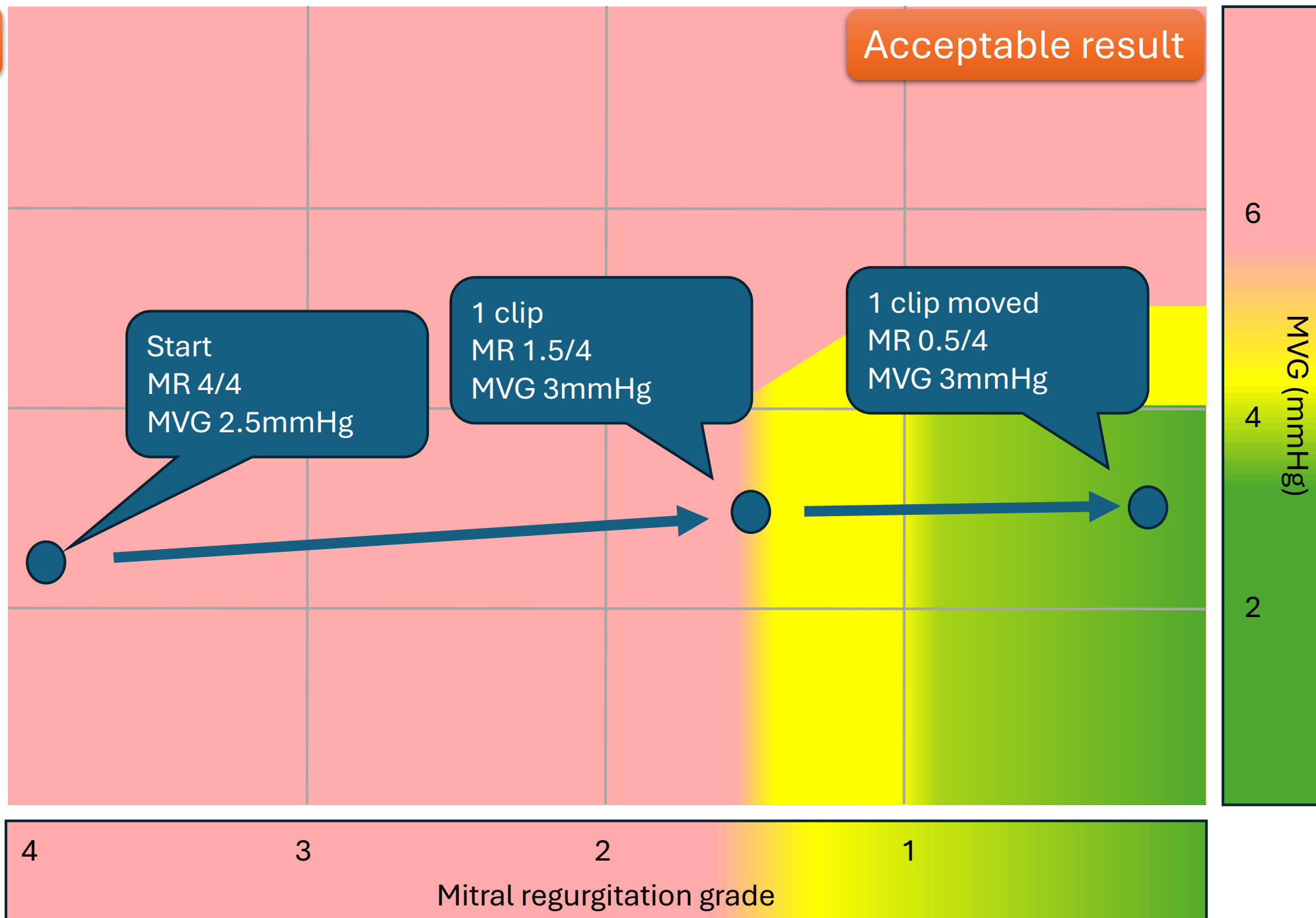


Scenario 2

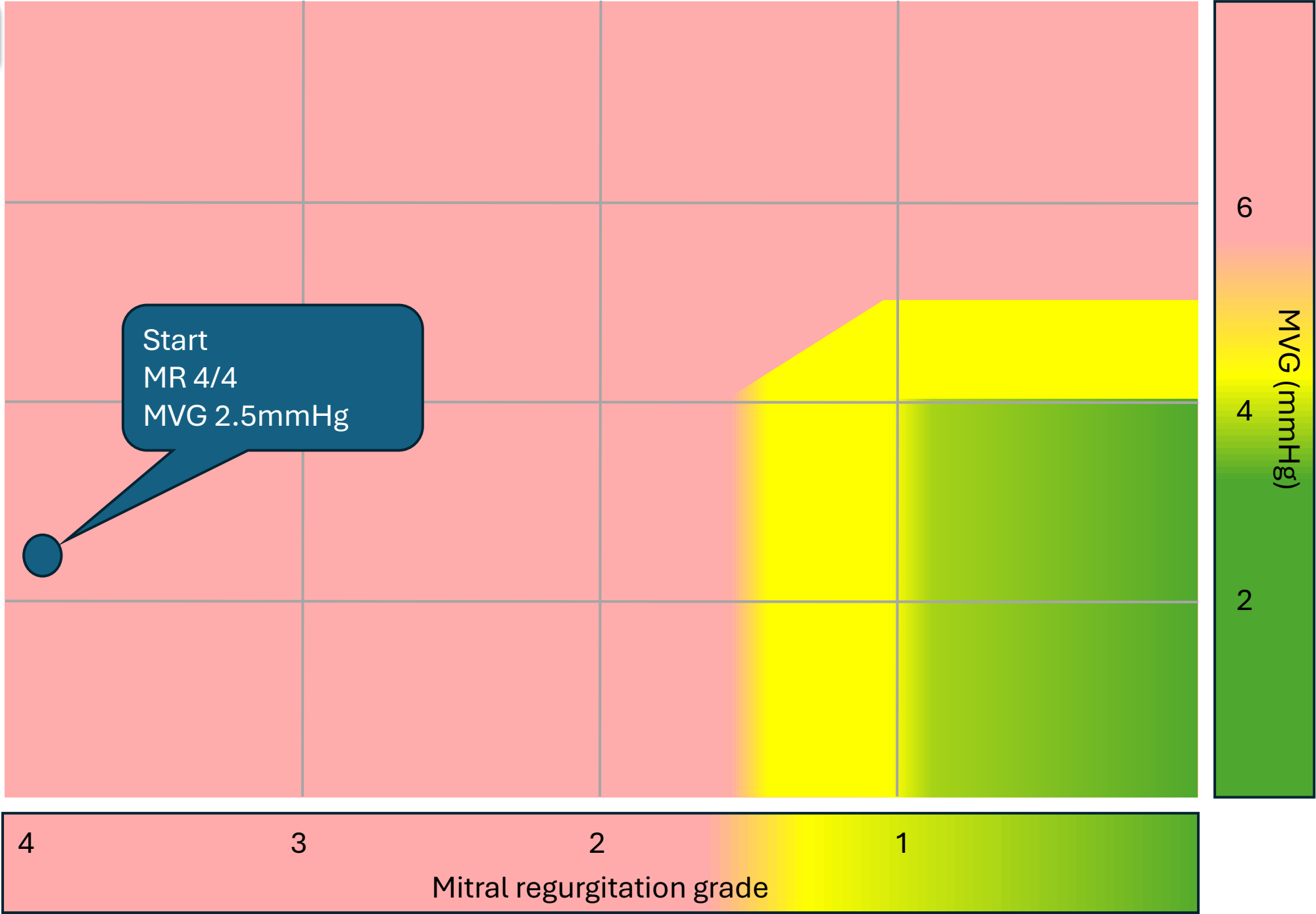
Borderline acceptable MR



Scenario 2

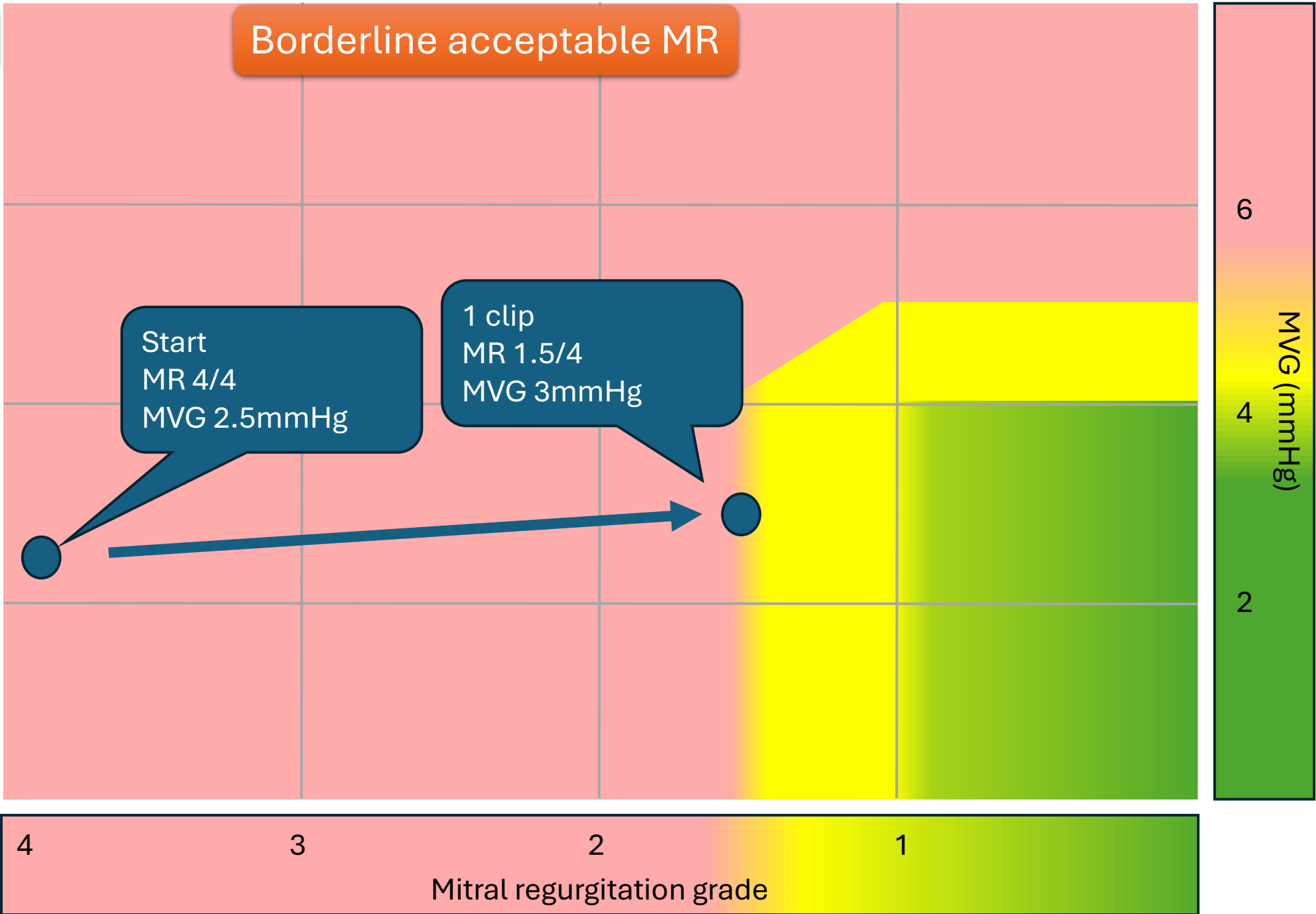


Scenario 3



Scenario 3

Borderline acceptable MR



Start
MR 4/4
MVG 2.5mmHg

1 clip
MR 1.5/4
MVG 3mmHg

MVG (mmHg)

6

4

2

4

3

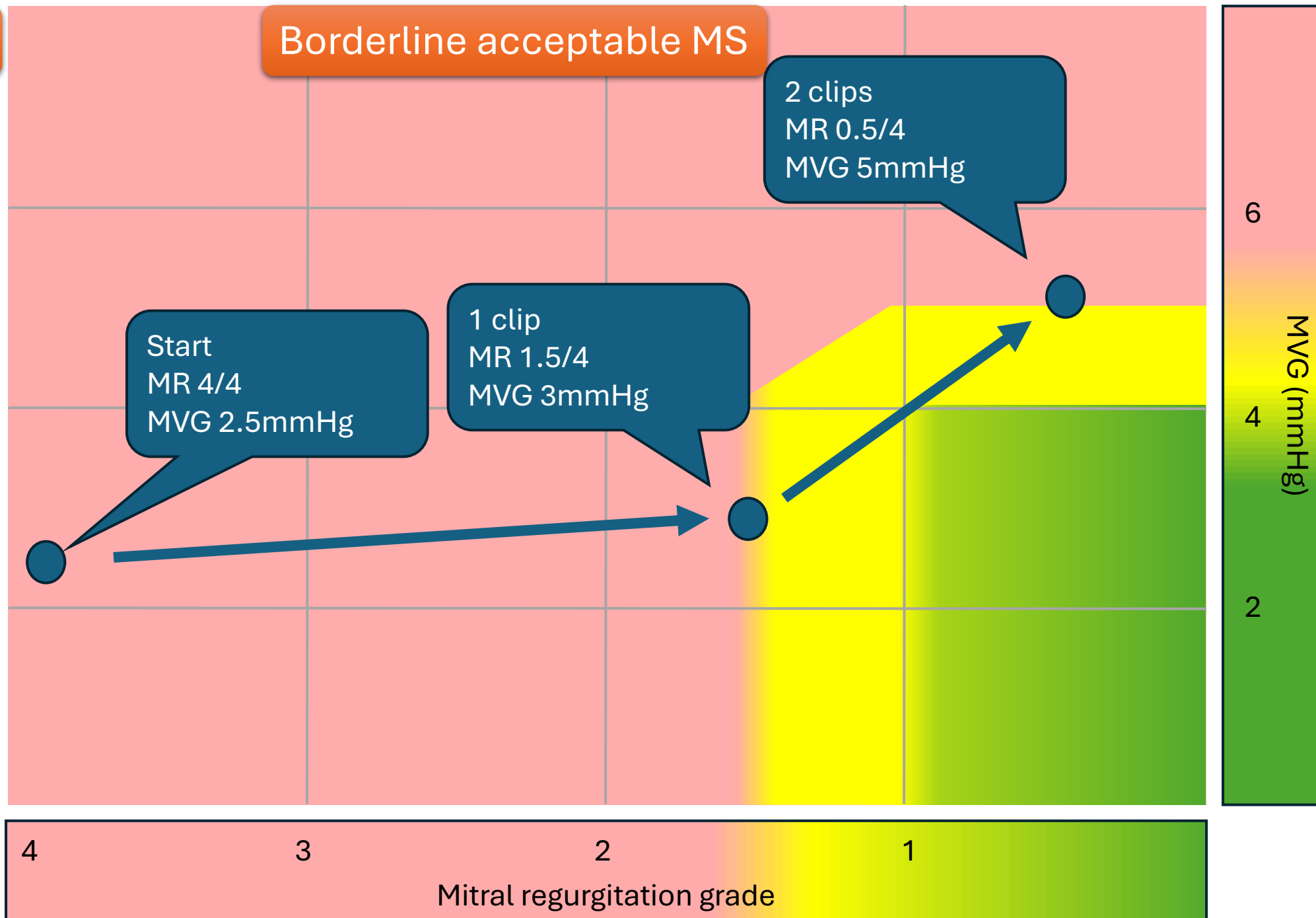
2

1

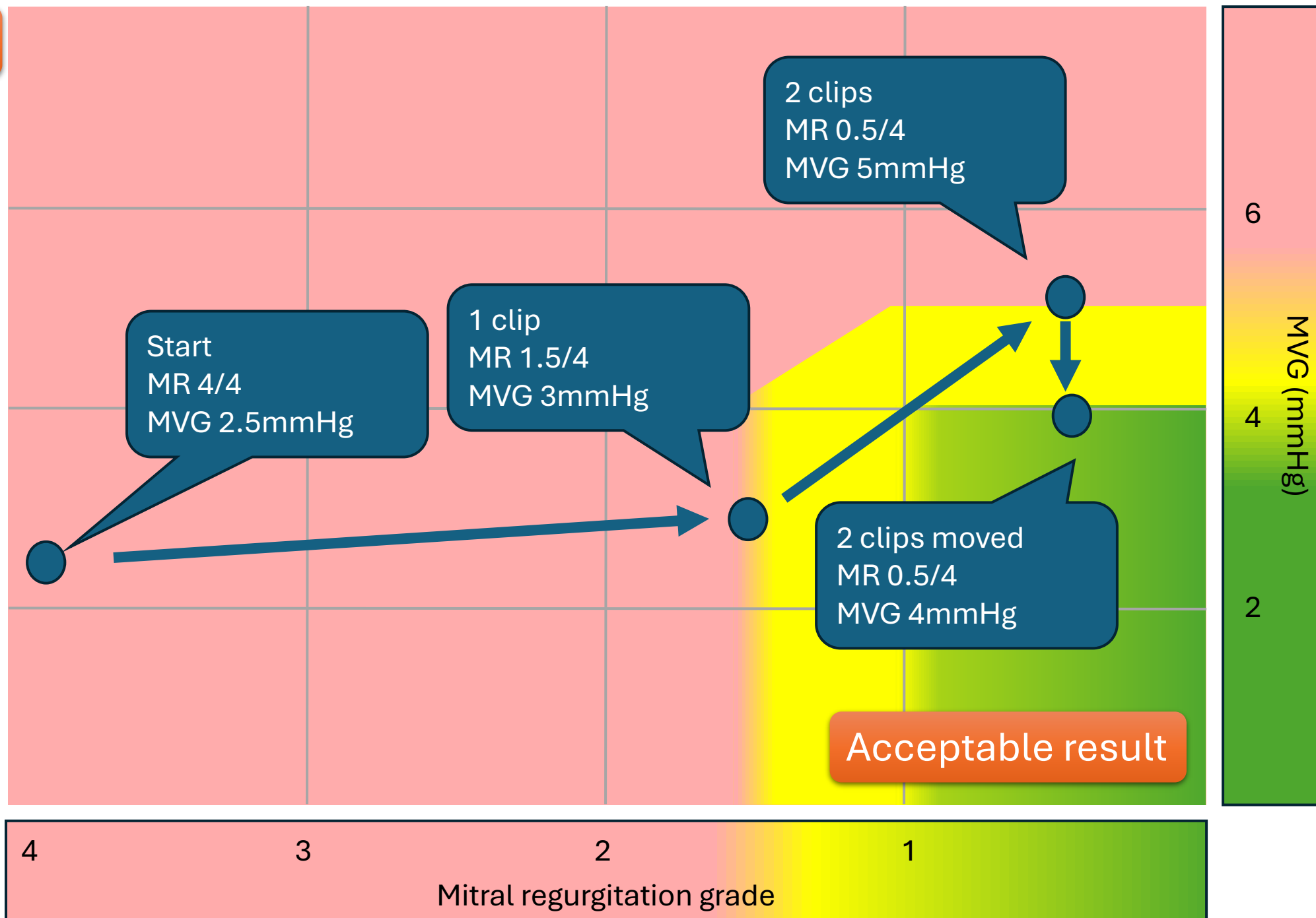
Mitral regurgitation grade

Scenario 3

Borderline acceptable MS



Scenario 3



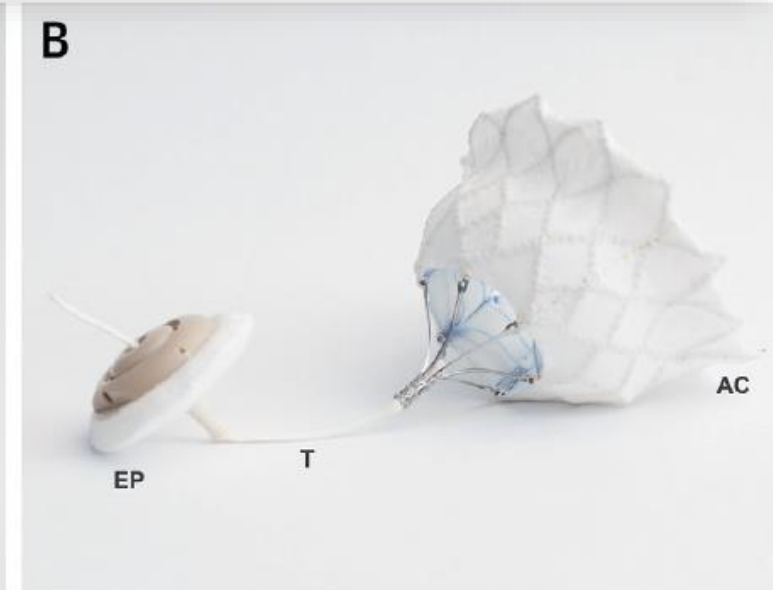
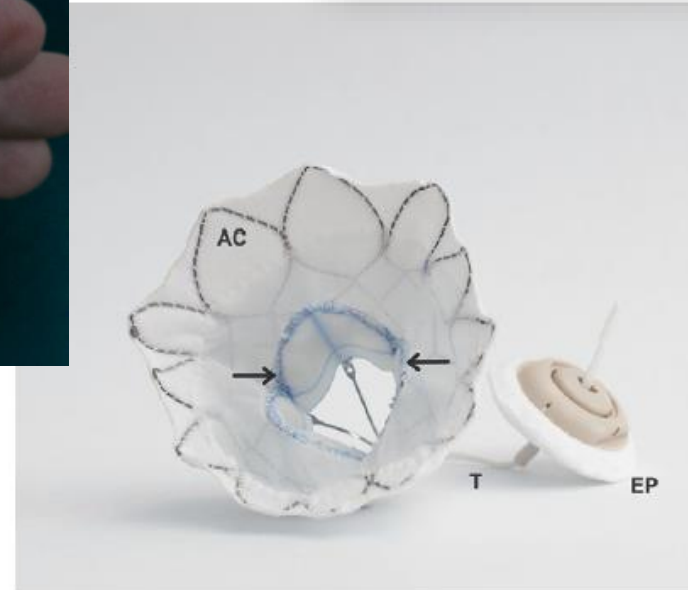
Case P2.5 – Clip 2



Not for TEER



Tendyne

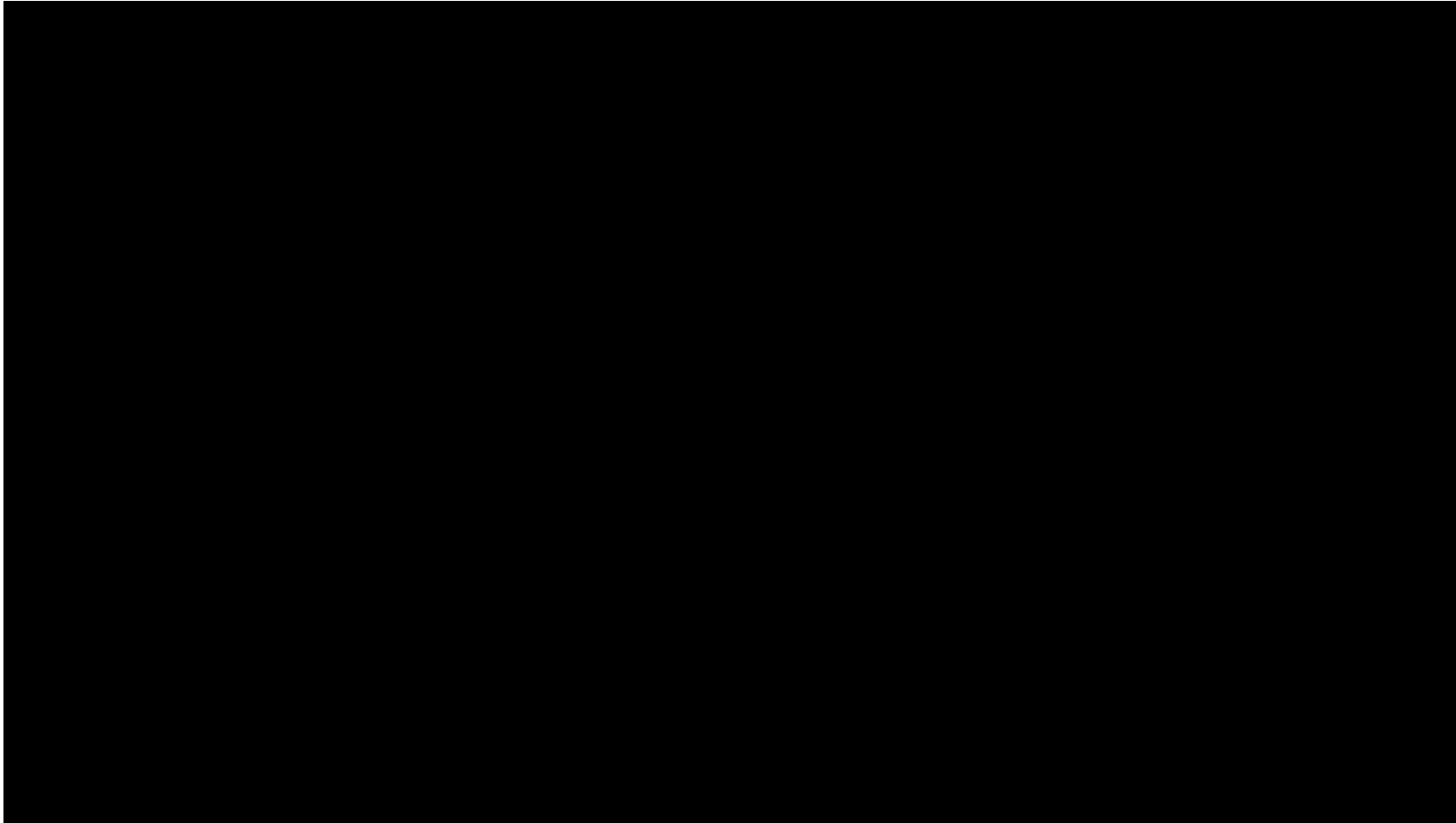


Transcatheter Mitral Valve Replacement for Patients With Symptomatic Mitral Regurgitation

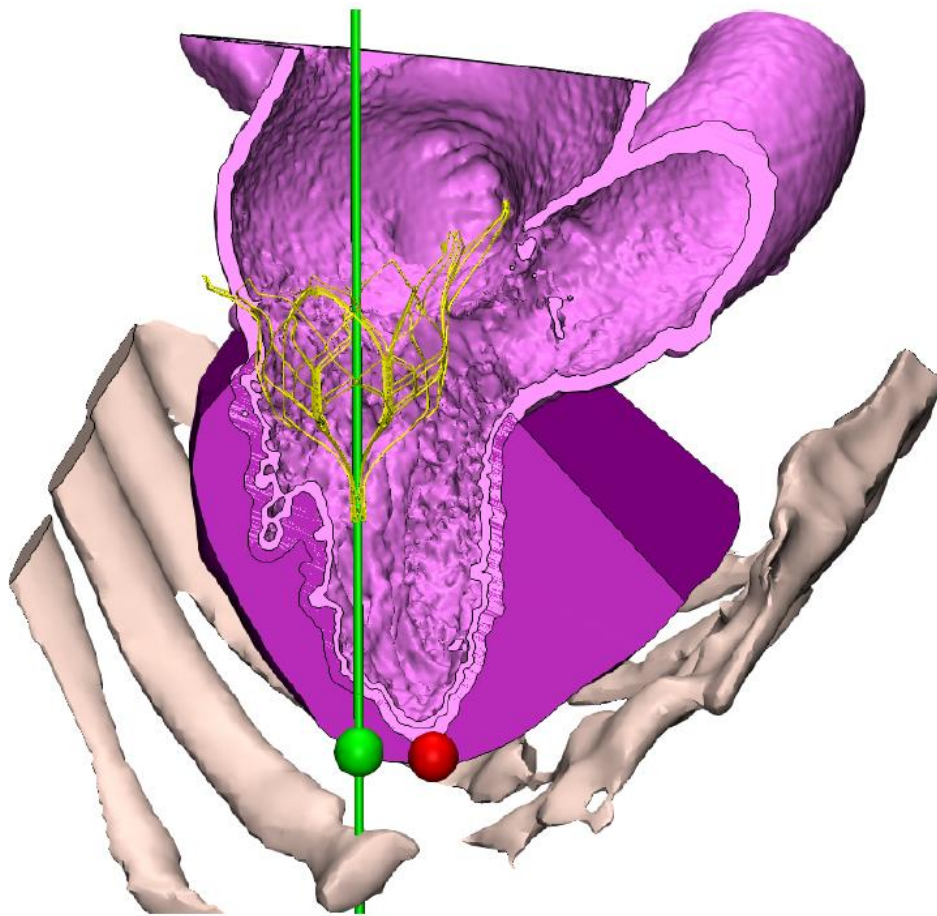
A Global Feasibility Trial

David W.M. Muller, MBBS, MD,^a Robert Saeid Farivar, MD,^b Paul Jansz, MBBS, PhD,^a Richard Bae, MD,^b Darren Walters, MBBS, MPhil,^c Andrew Clarke, MBBS,^c Paul A. Grayburn, MD,^d Robert C. Stoler, MD,^d Gry Dahle, MD,^e Kjell A. Rein, MD,^e Marty Shaw, MBBS,^a Gregory M. Scalia, MBBS,^c Mayra Guerrero, MD,^f Paul Pearson, MD,^f Samir Kapadia, MD,^g Marc Gillinov, MD,^g Augusto Pichard, MD,^h Paul Corso, MD,^h Jeffrey Popma, MD,ⁱ Michael Chuang, MD,ⁱ Philipp Blanke, MD,^j Jonathon Leipsic, MD,^j Paul Sorajja, MD,^b
on behalf of the Tendyne Global Feasibility Trial Investigators

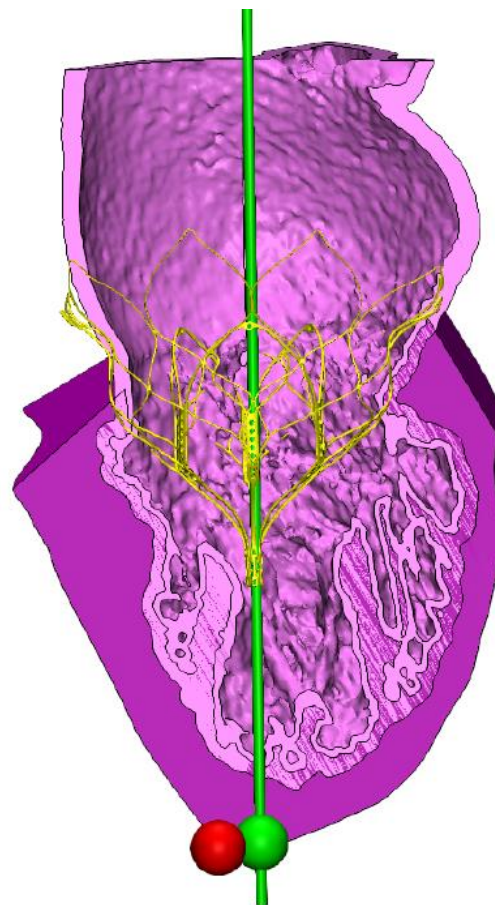
Tendyne



Tendyne



Septal-Lateral Plane

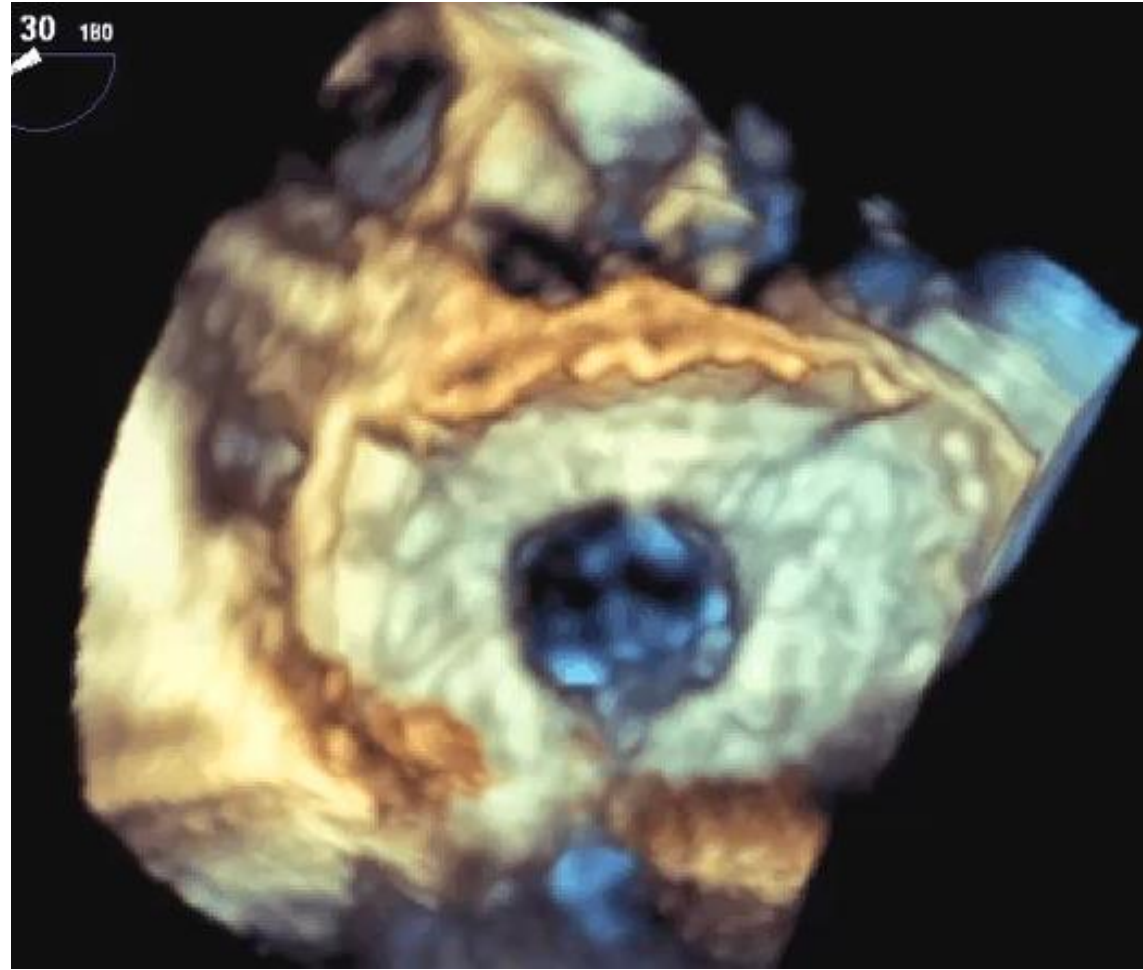


Dependent 90 degree View

Tendyne



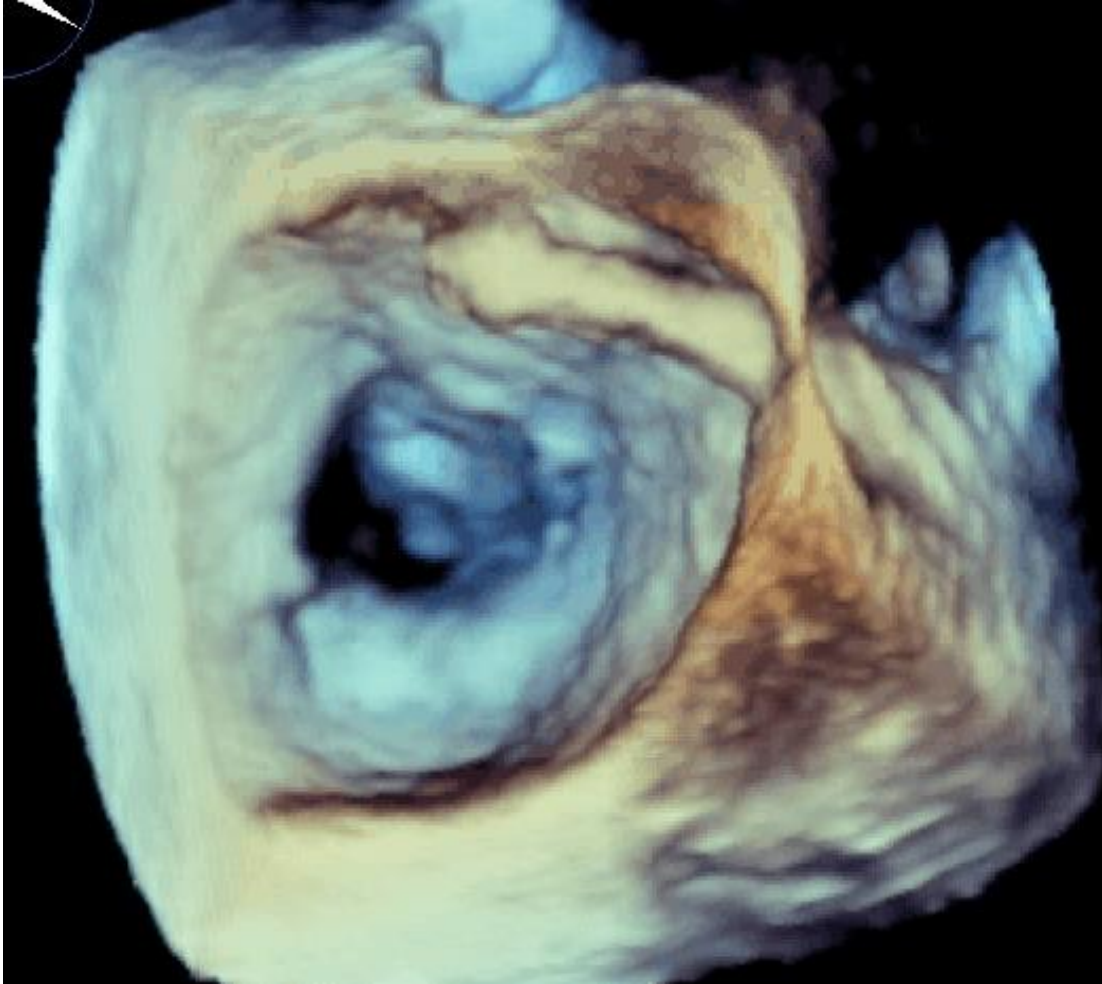
Tendyne





Edwards

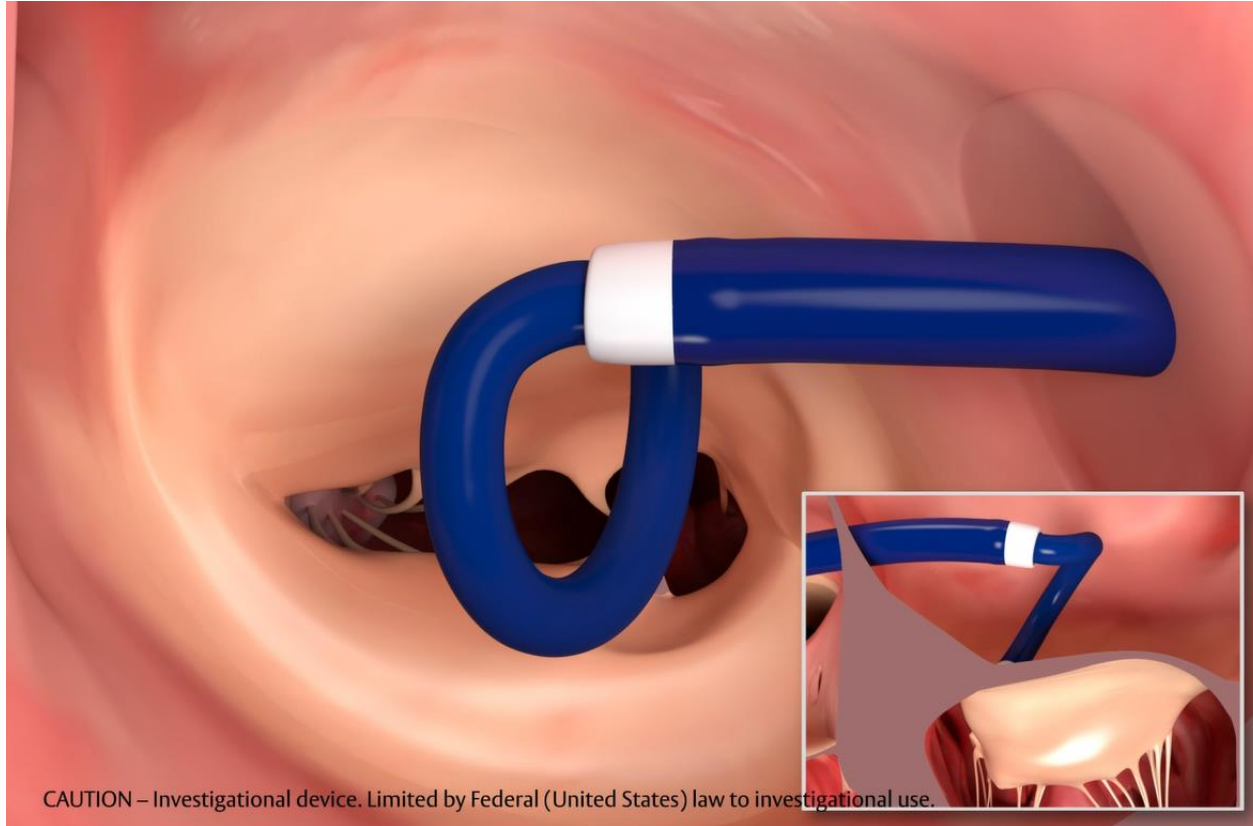
ENCIRCLE M3 Case



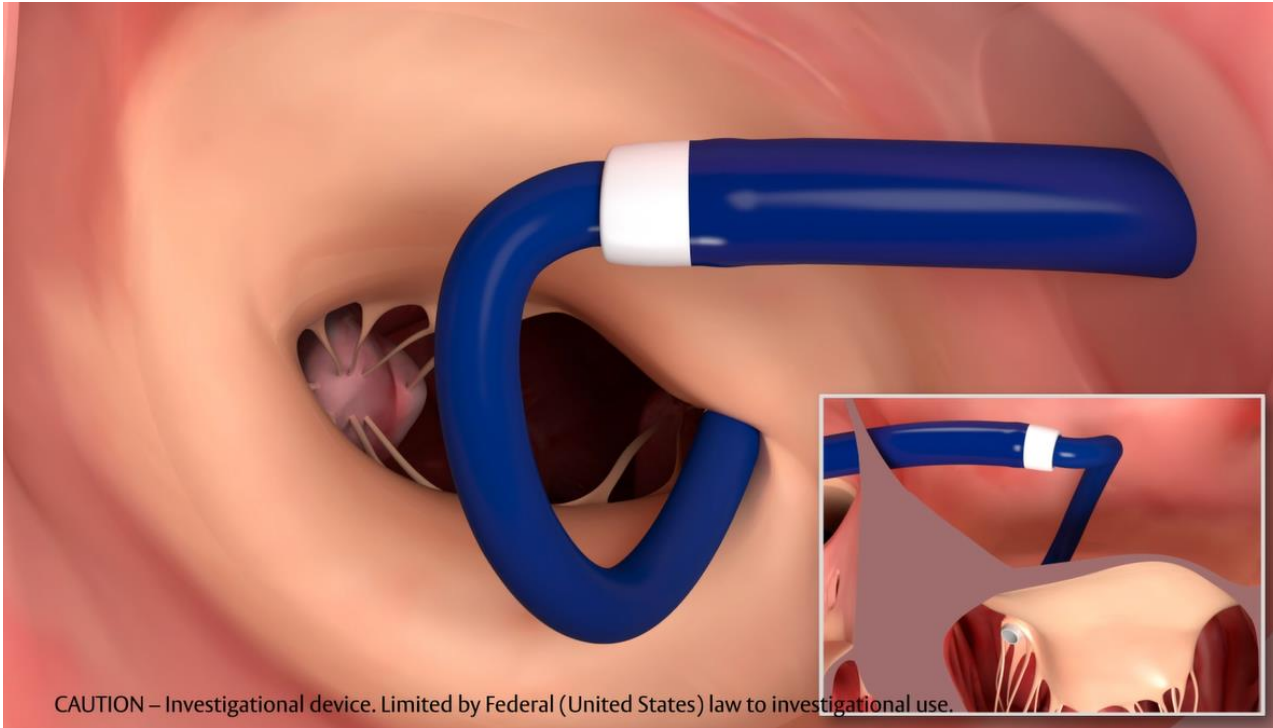
ENCIRCLE M3 Case



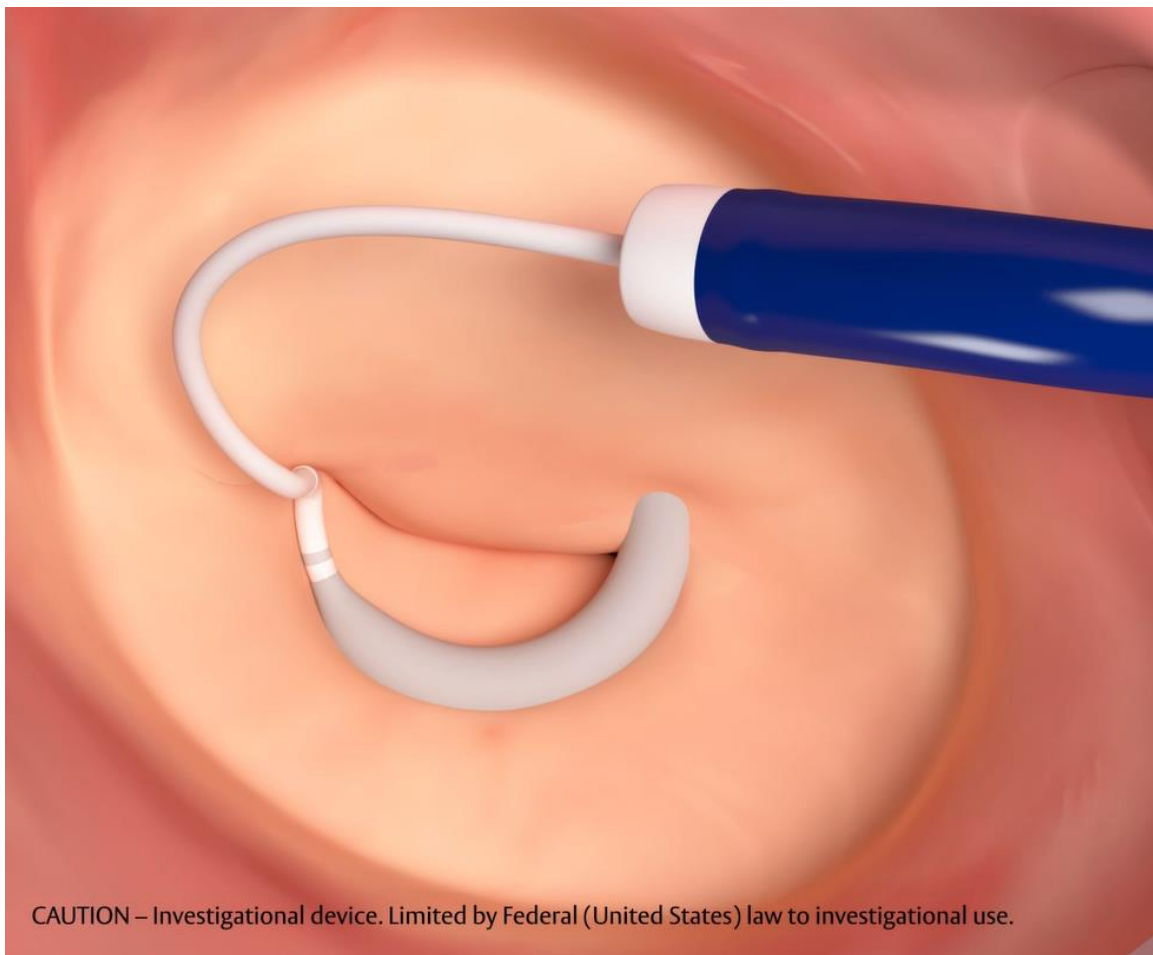
ENCIRCLE M3 Case



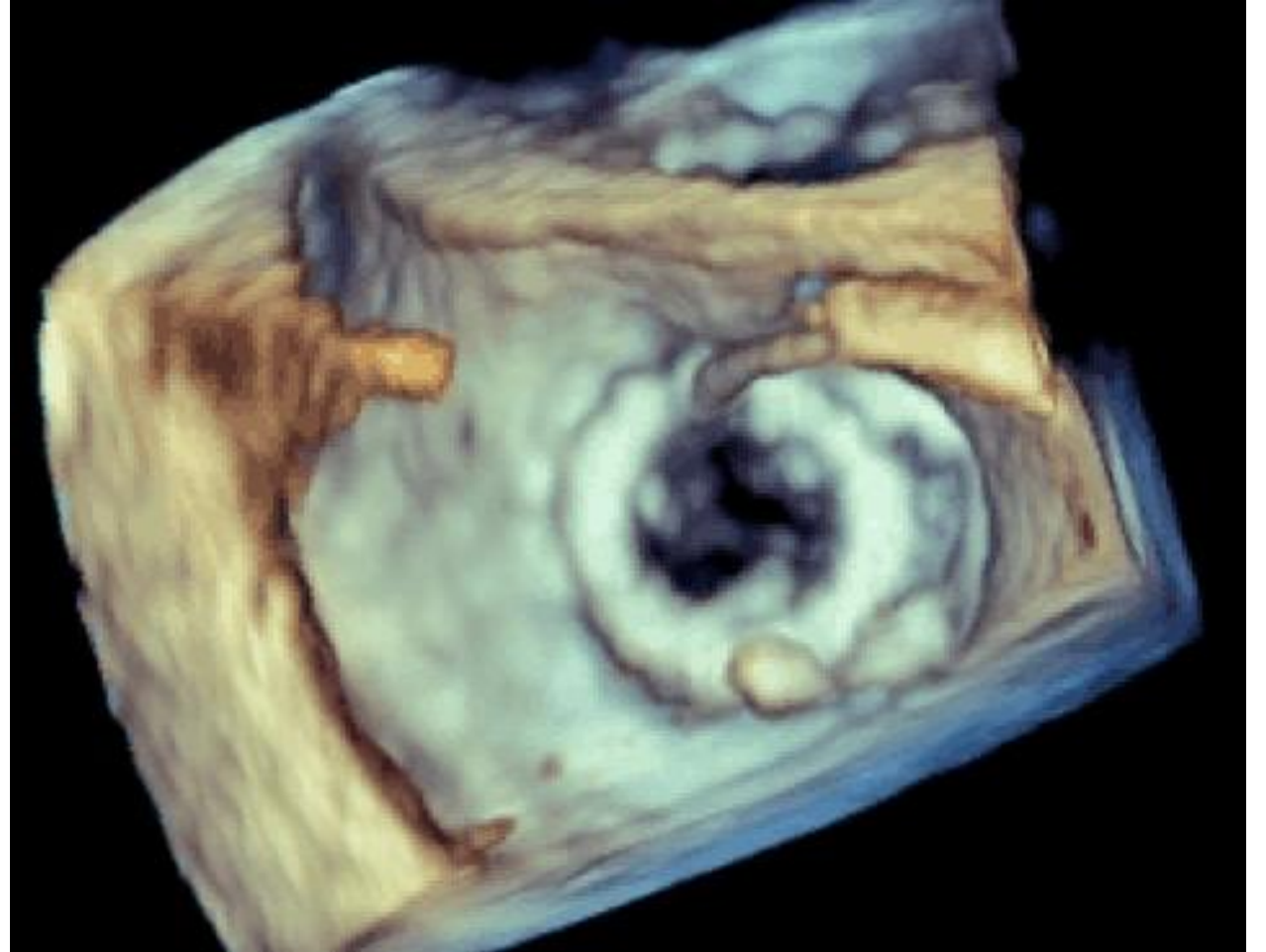
ENCIRCLE M3 Case

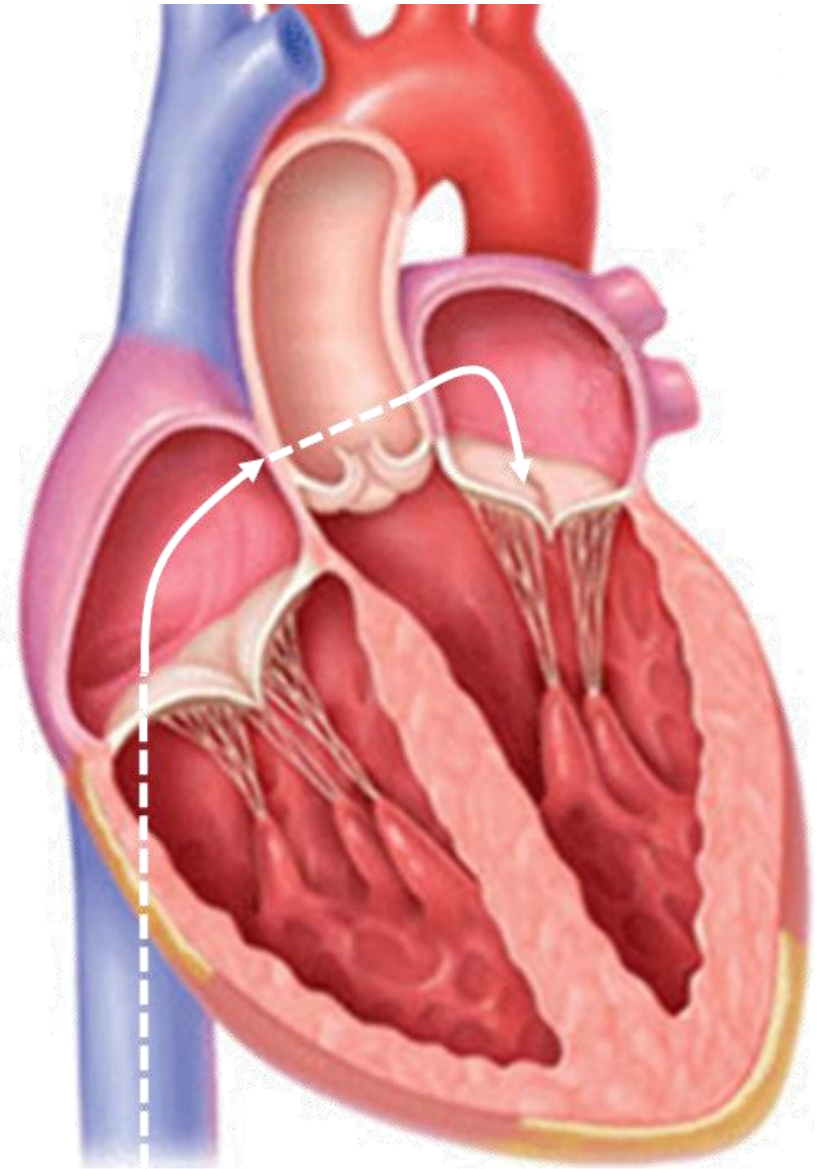


ENCIRCLE M3 Case



ENCIRCLE M3 Case

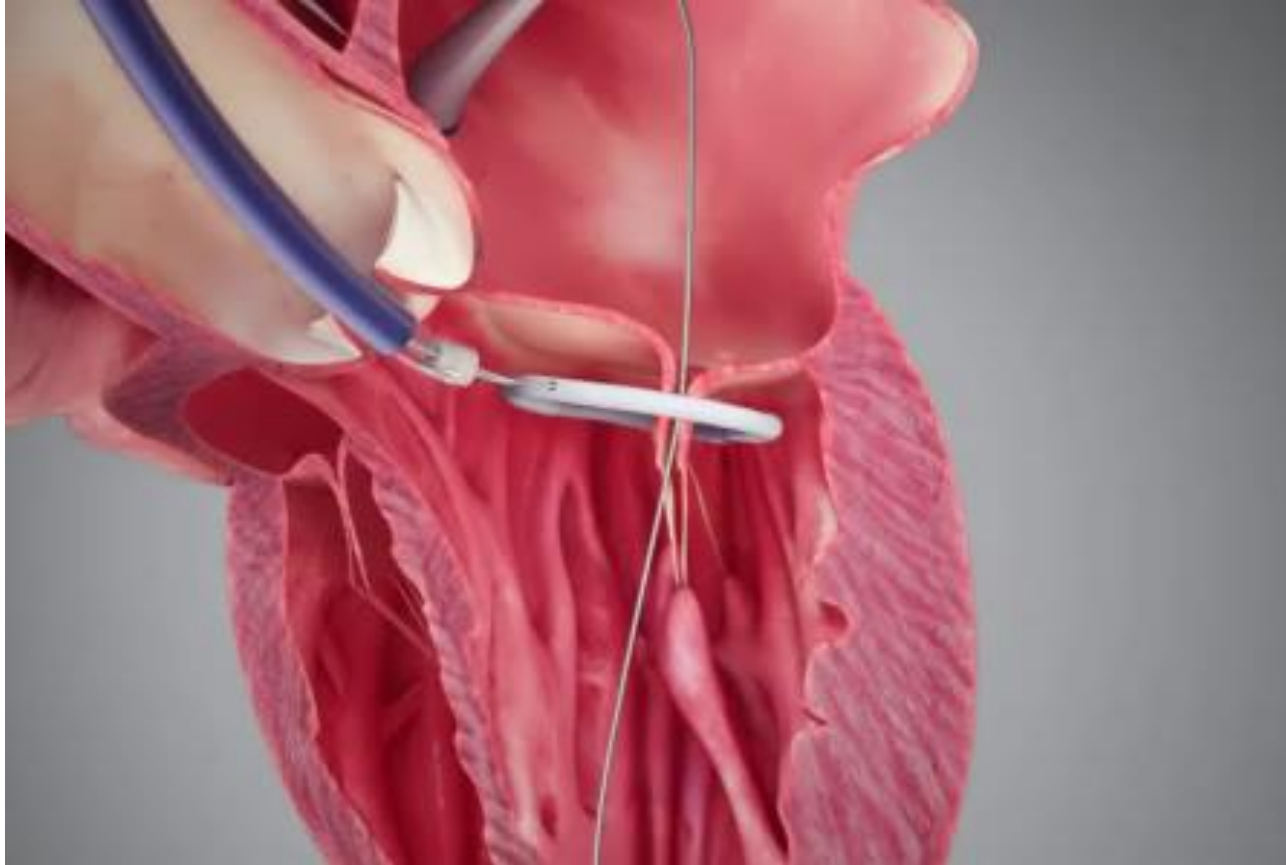




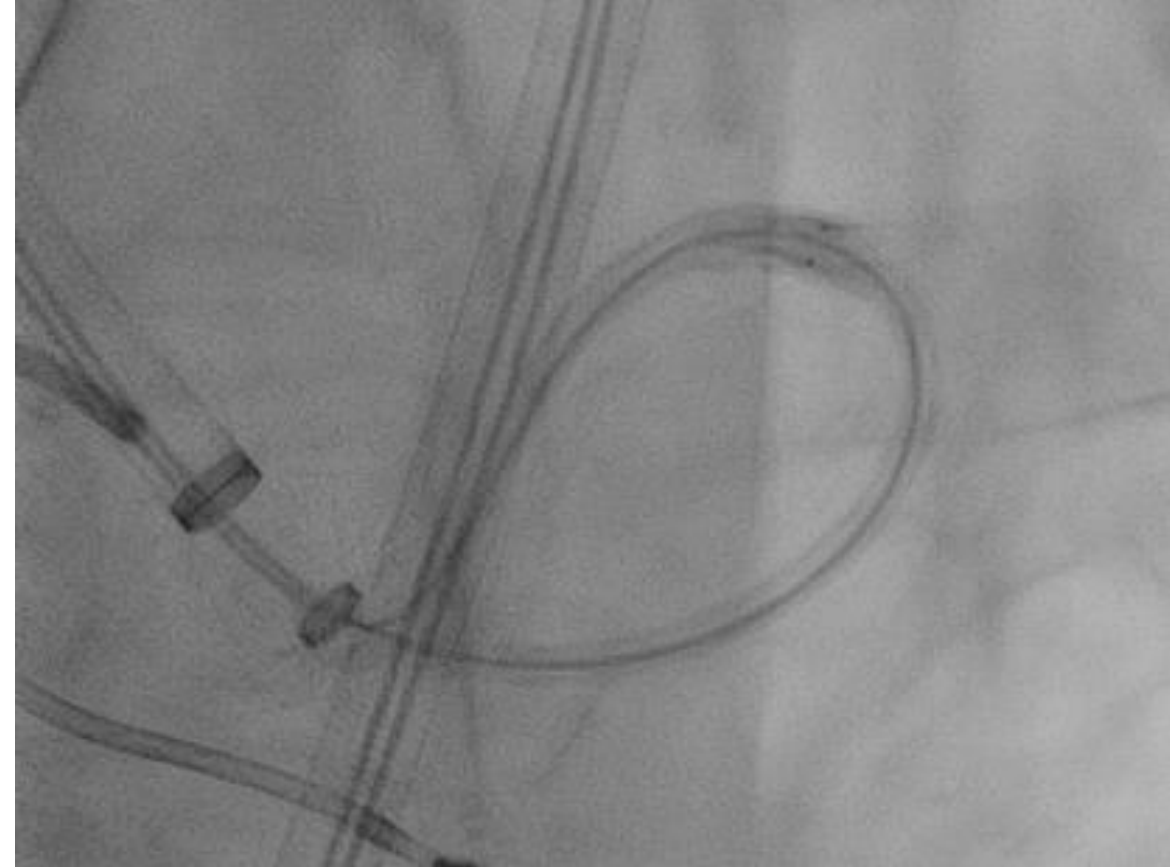
1

2

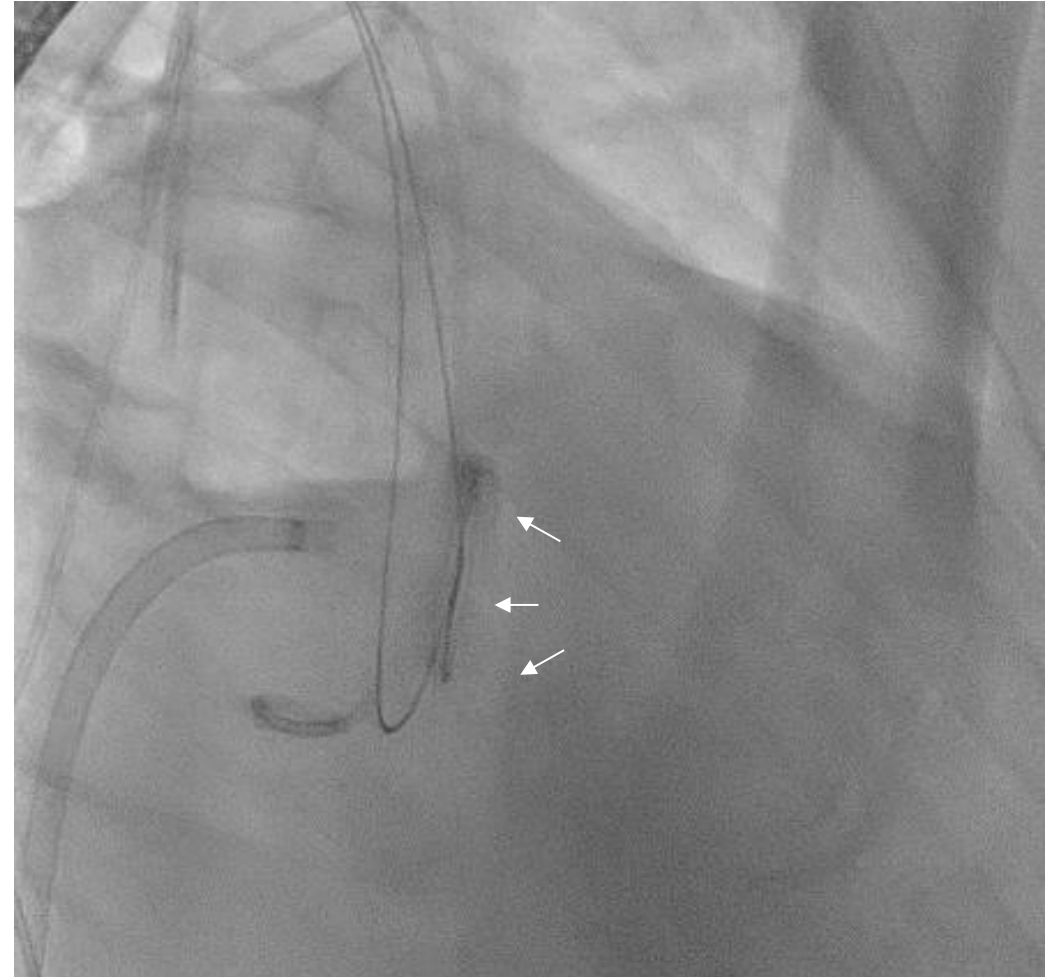
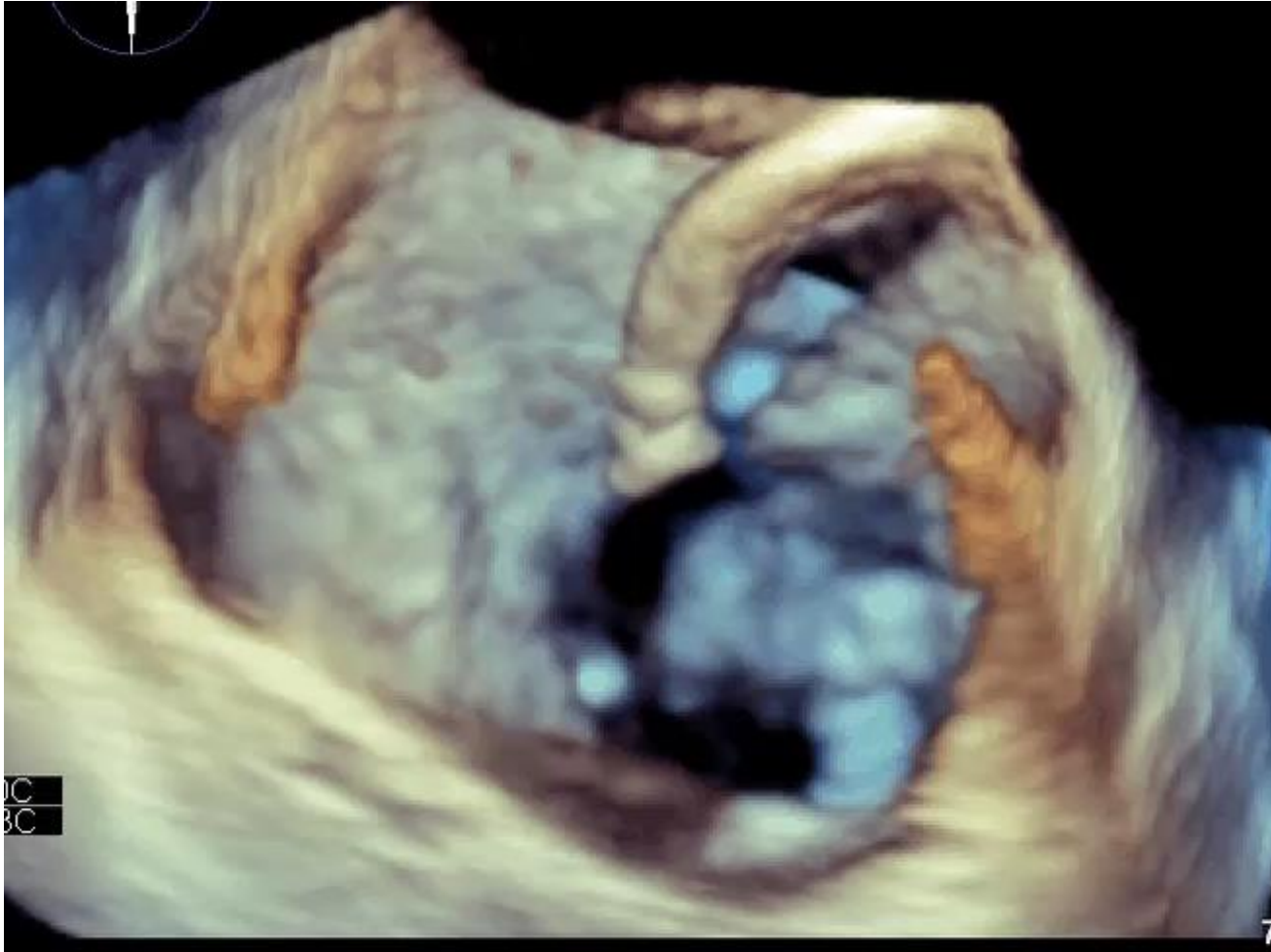
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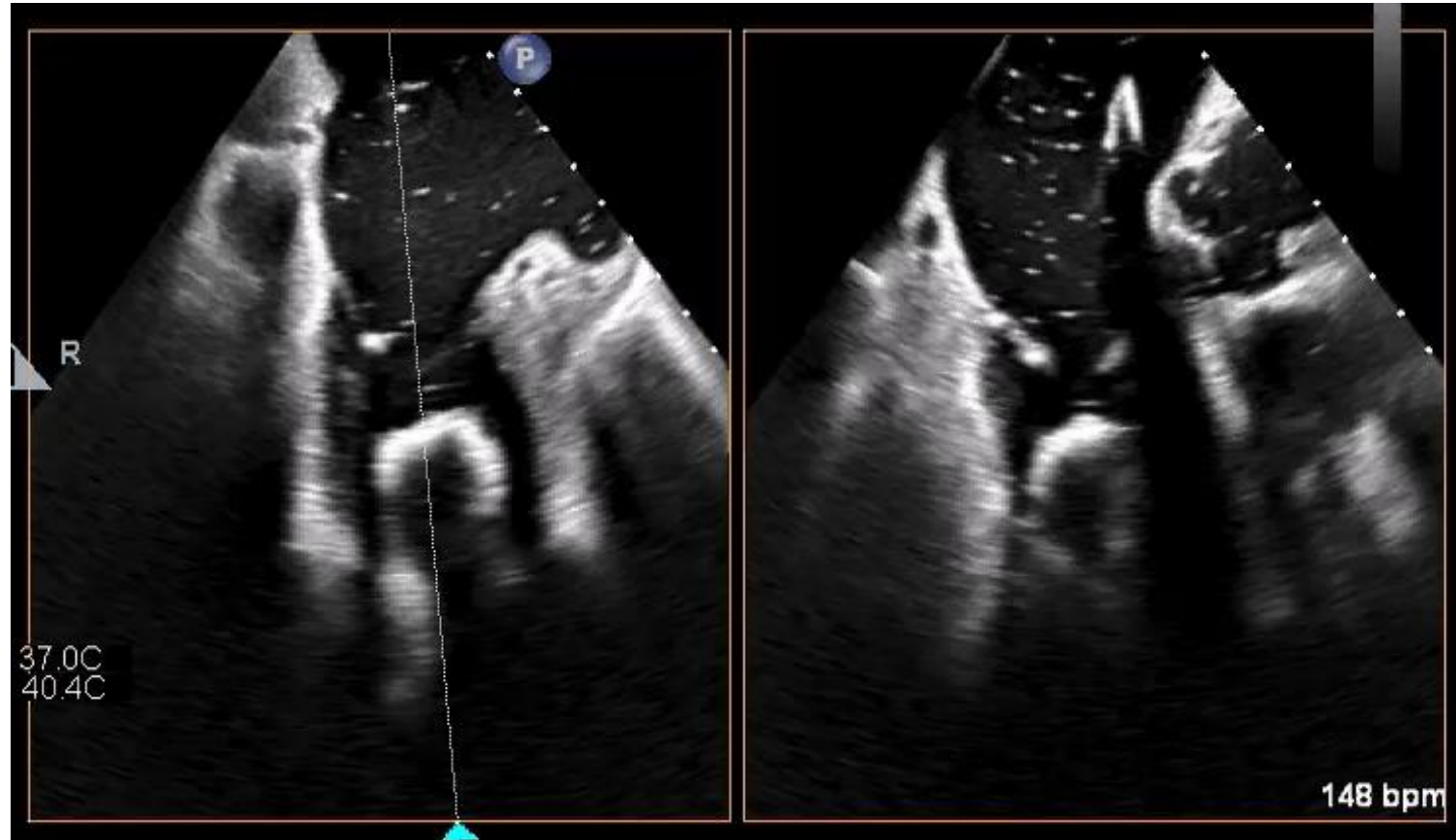
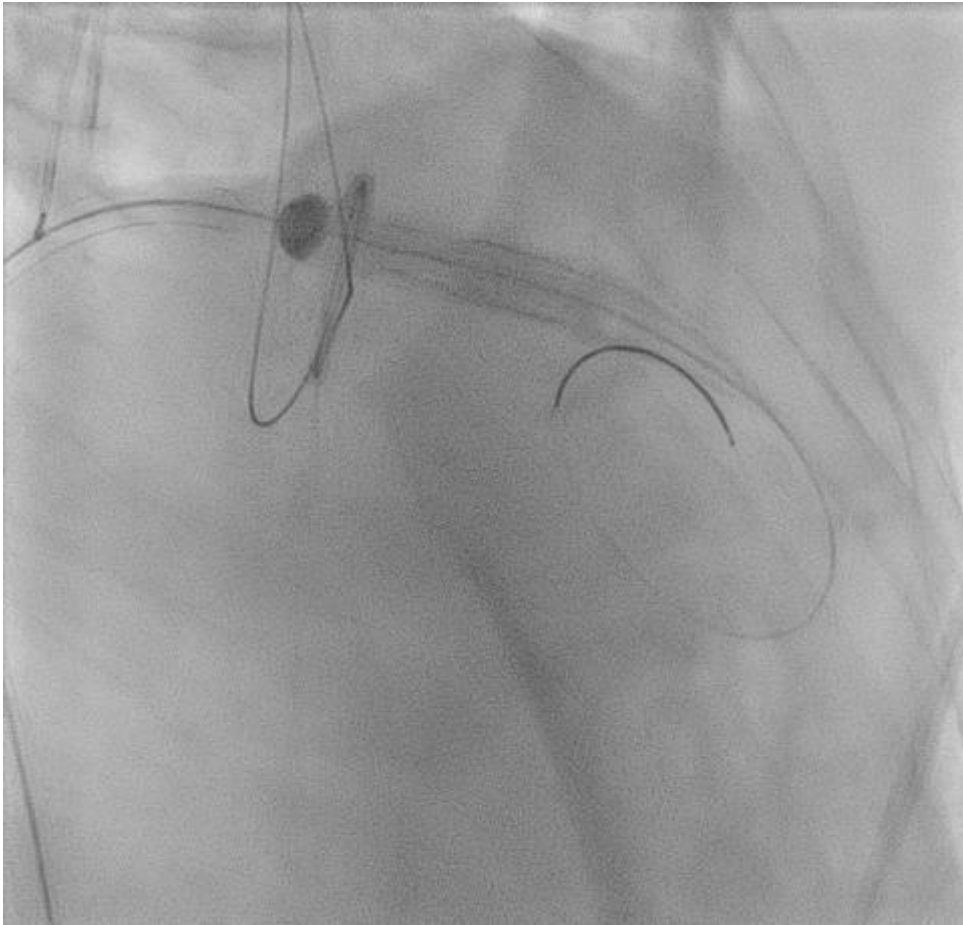
Case 1 – Sub-annular implant



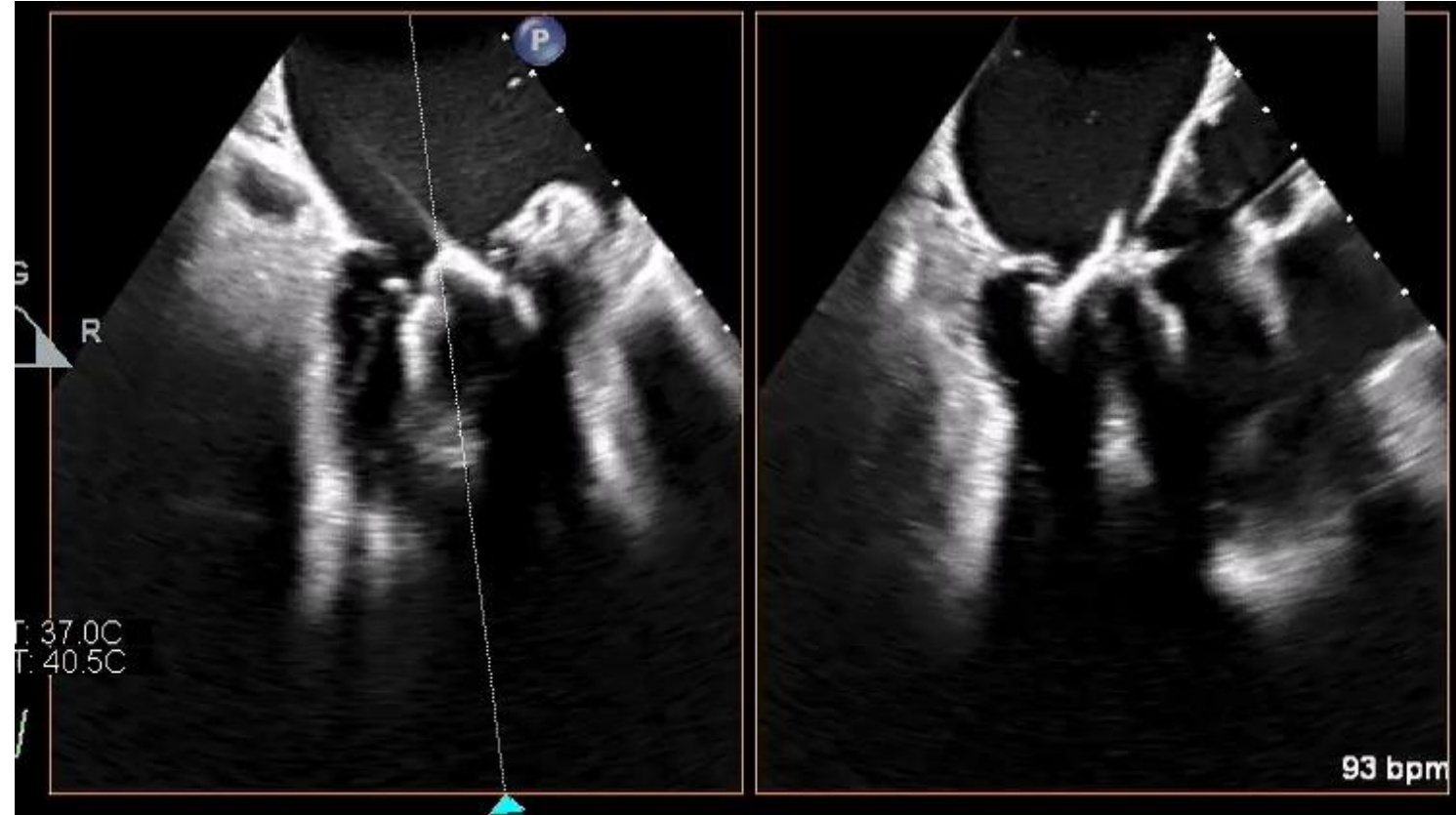
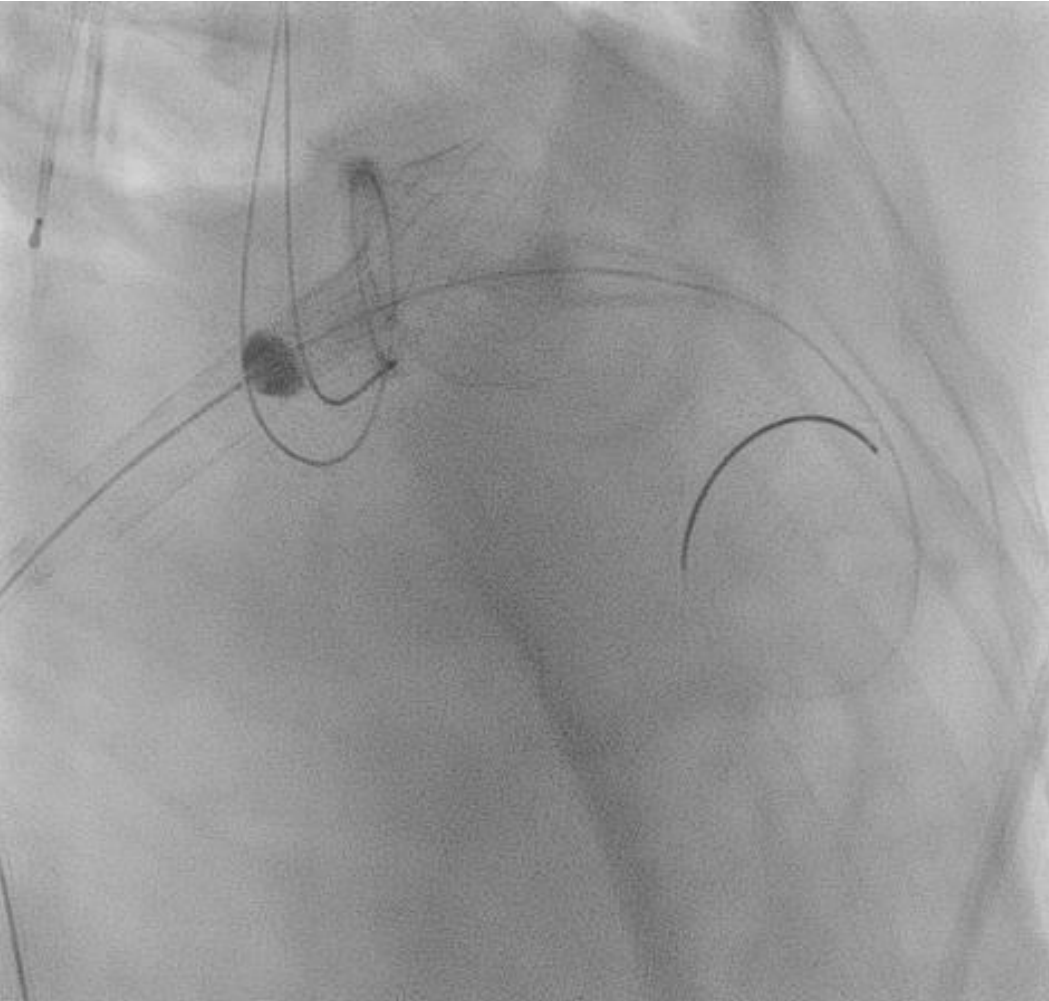
Case 1 – Valve approach



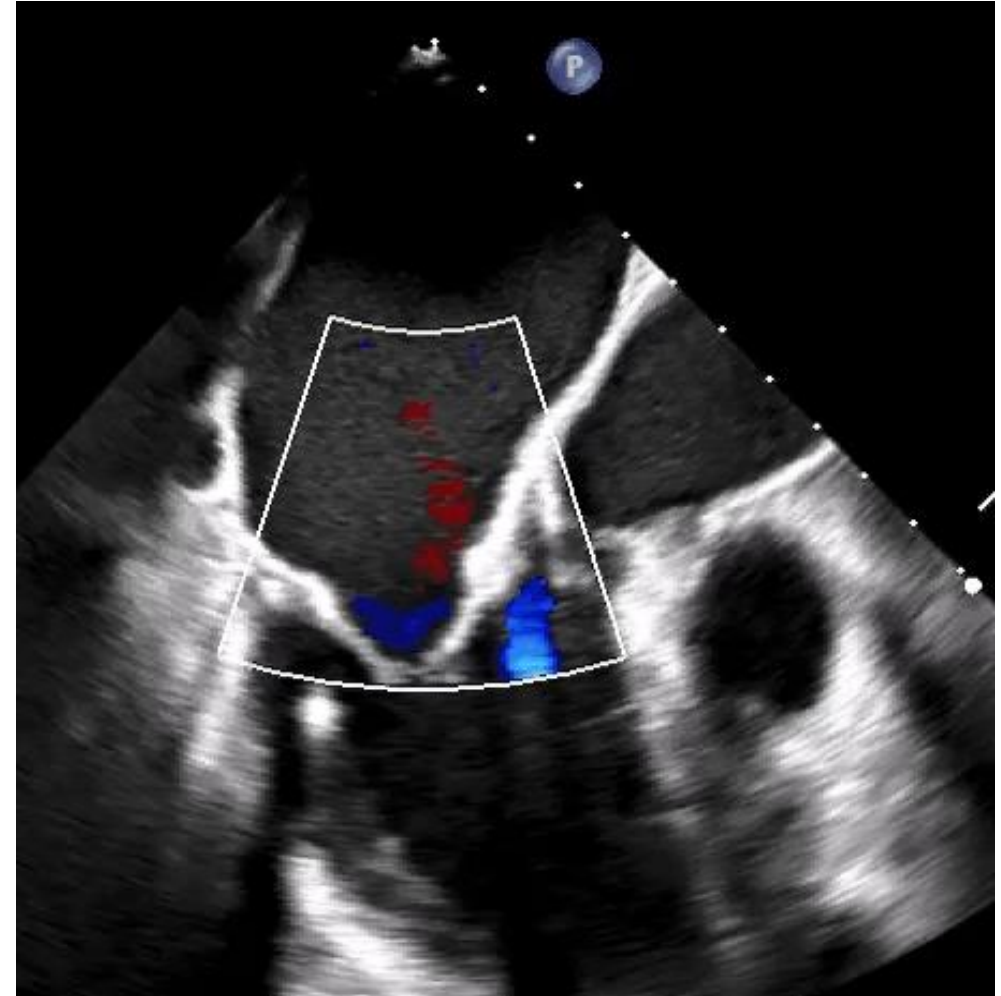
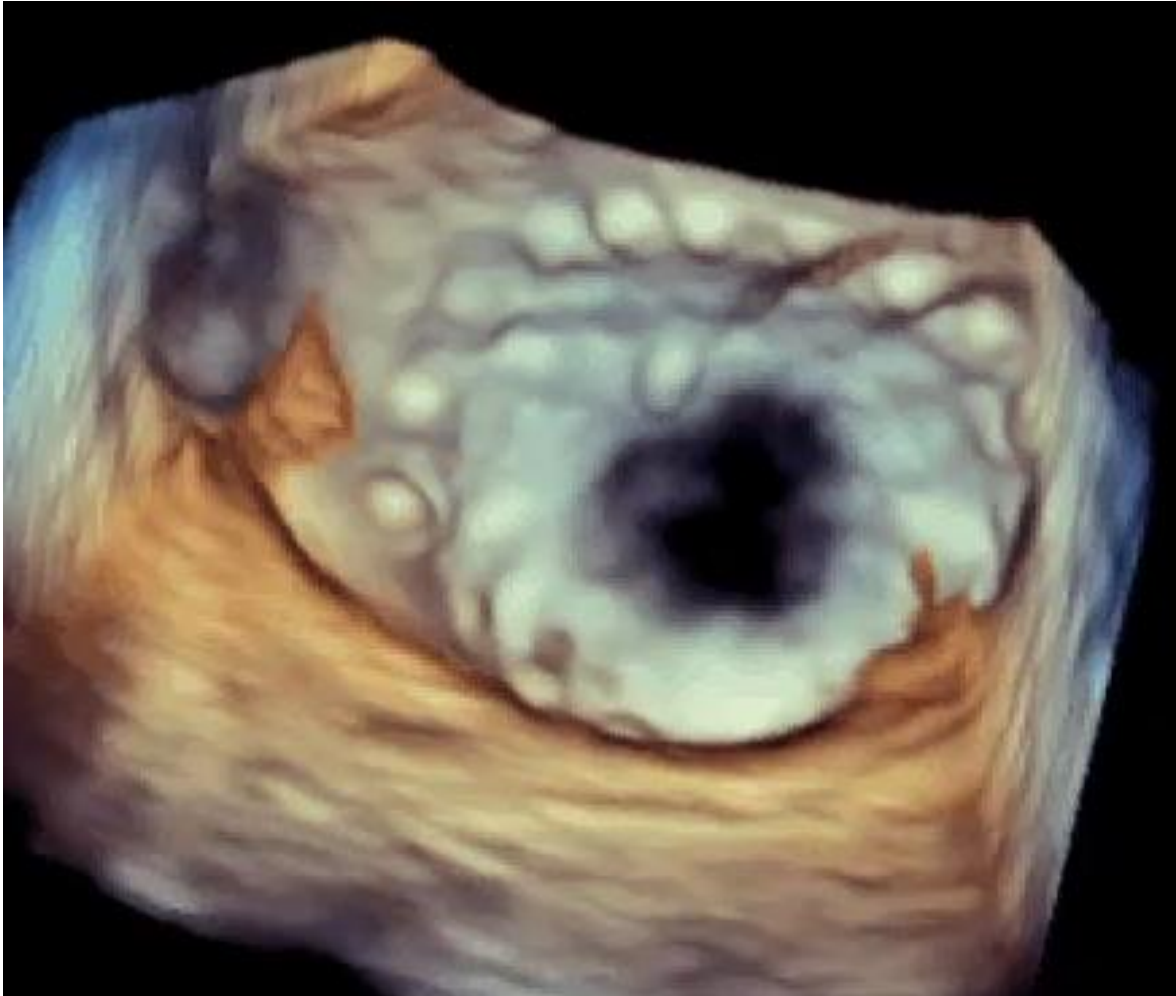
Case 1 – Valve deployment



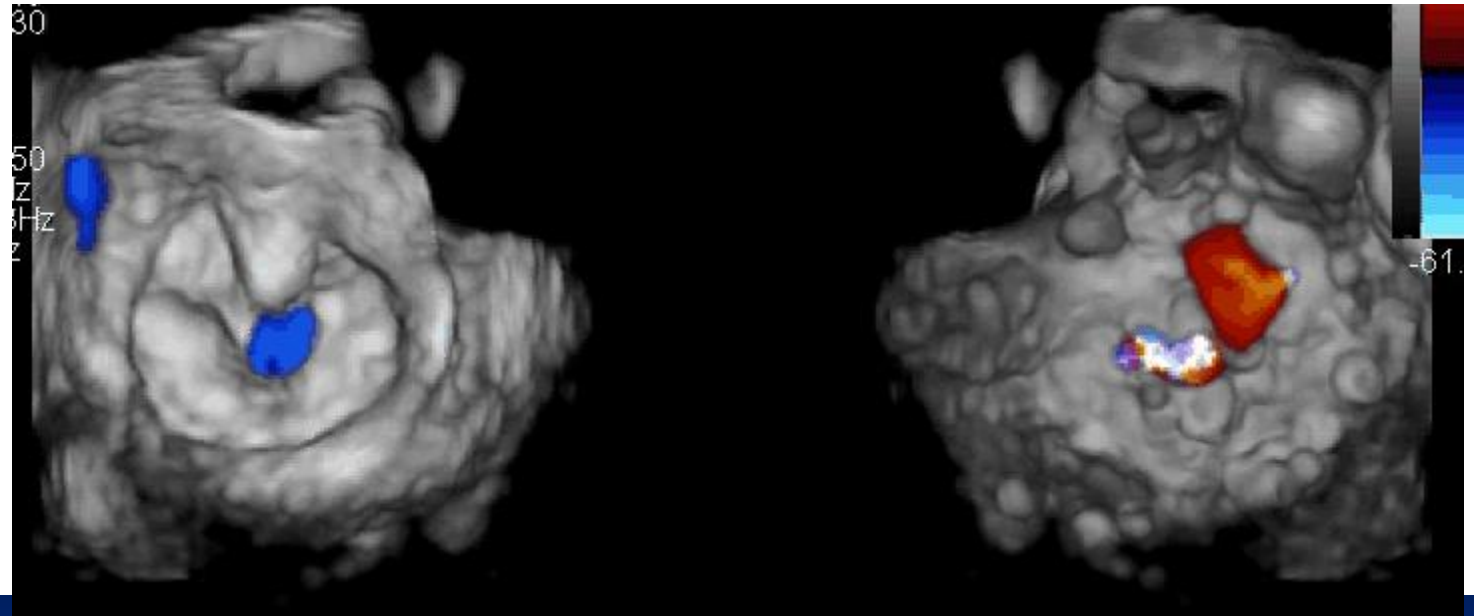
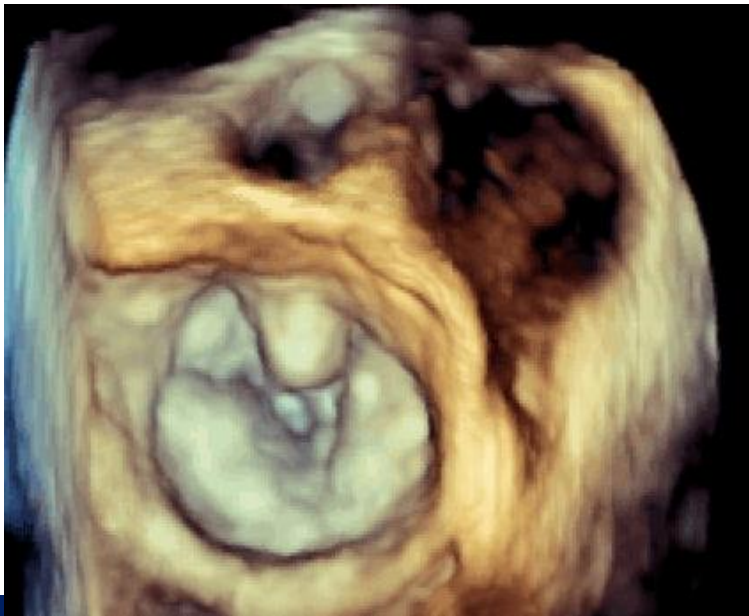
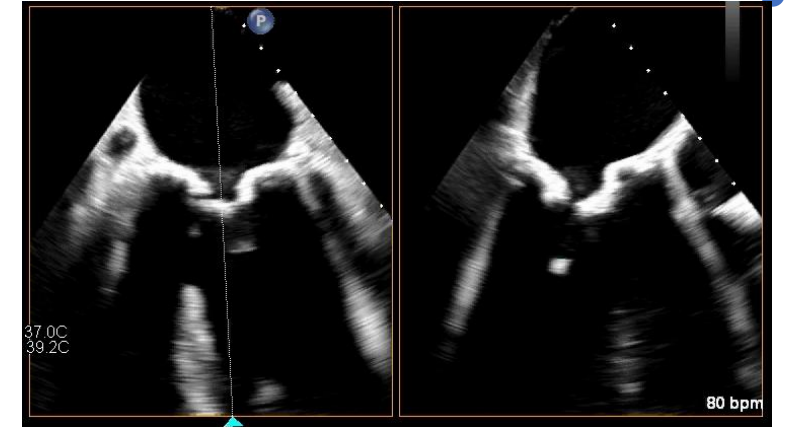
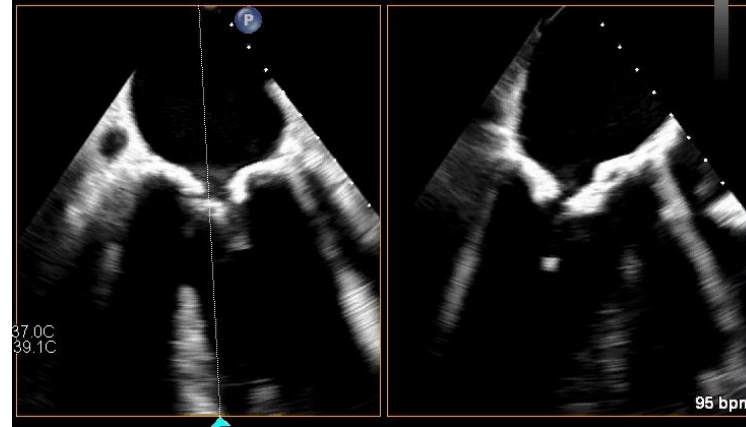
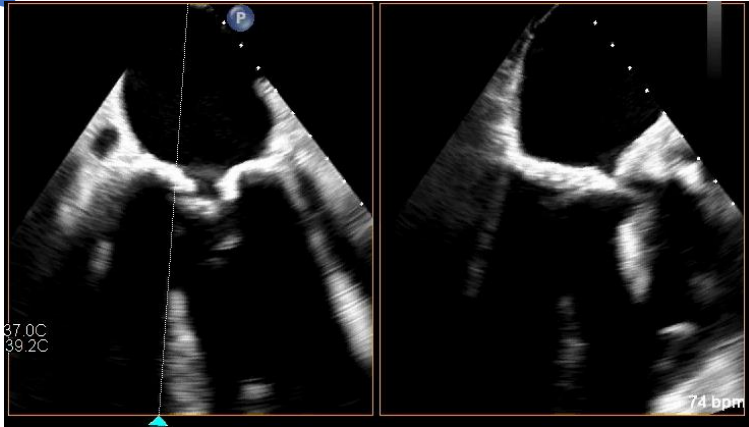
Case 1 – Valve deployment



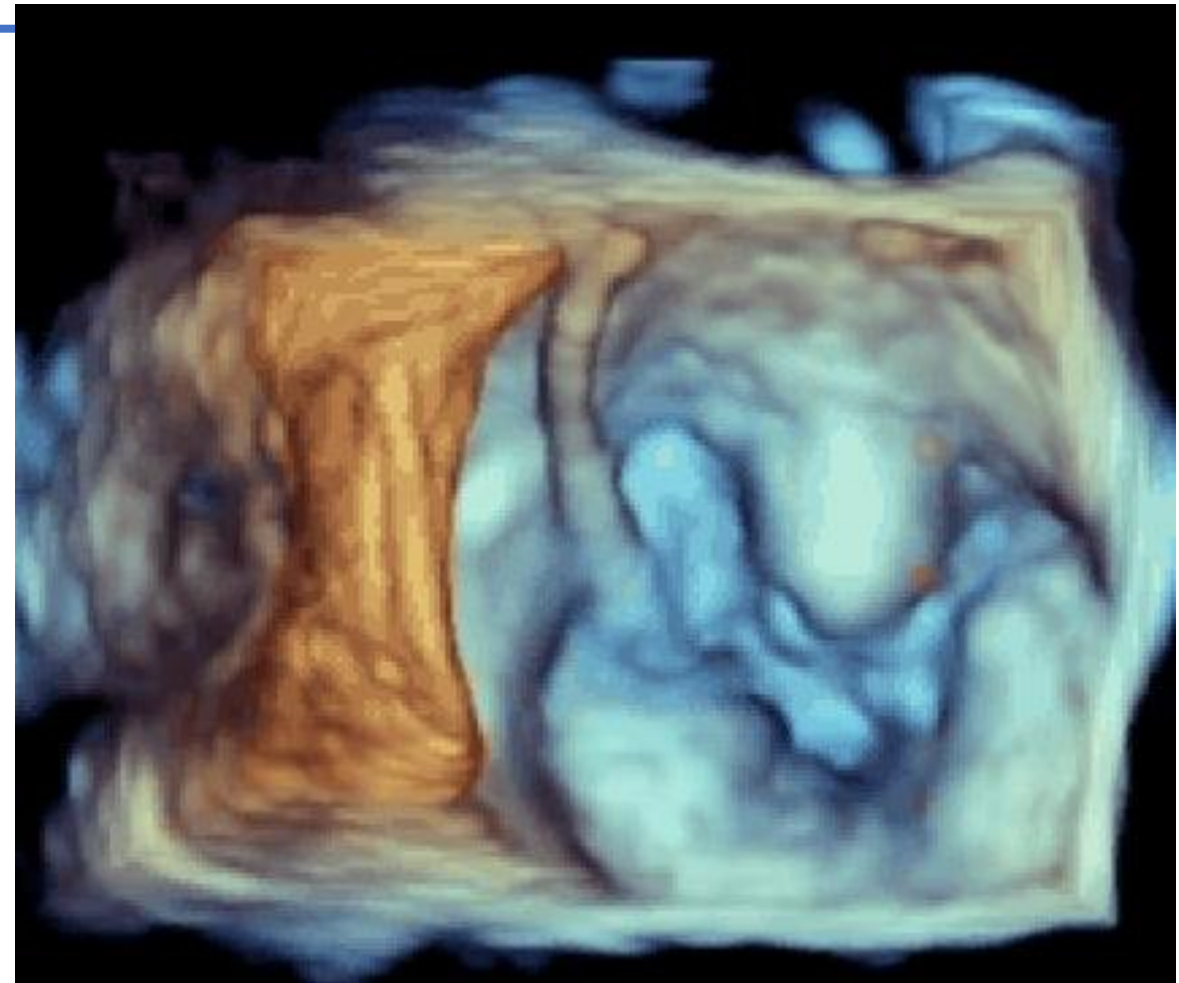
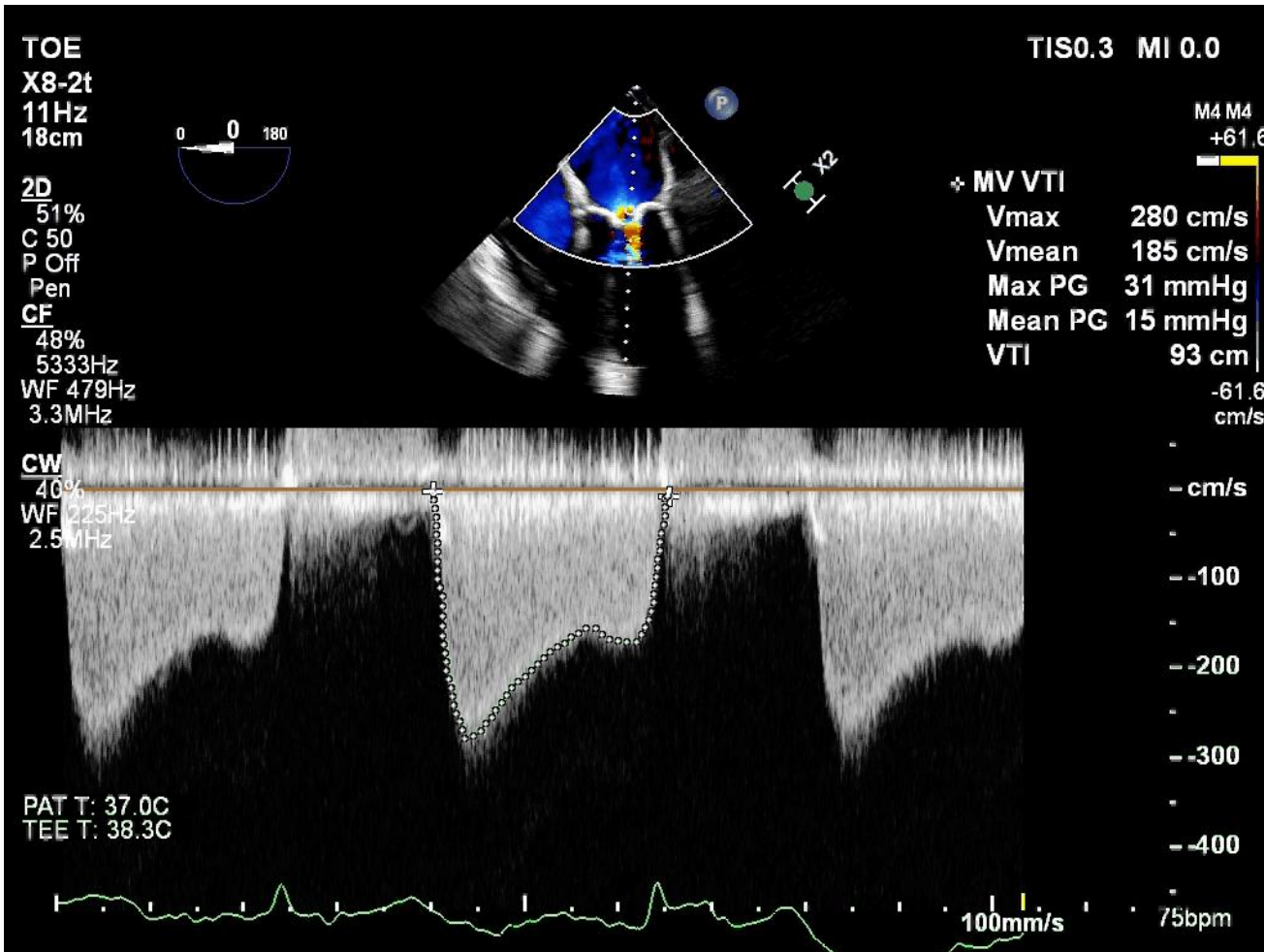
Case 1 – Valve deployed



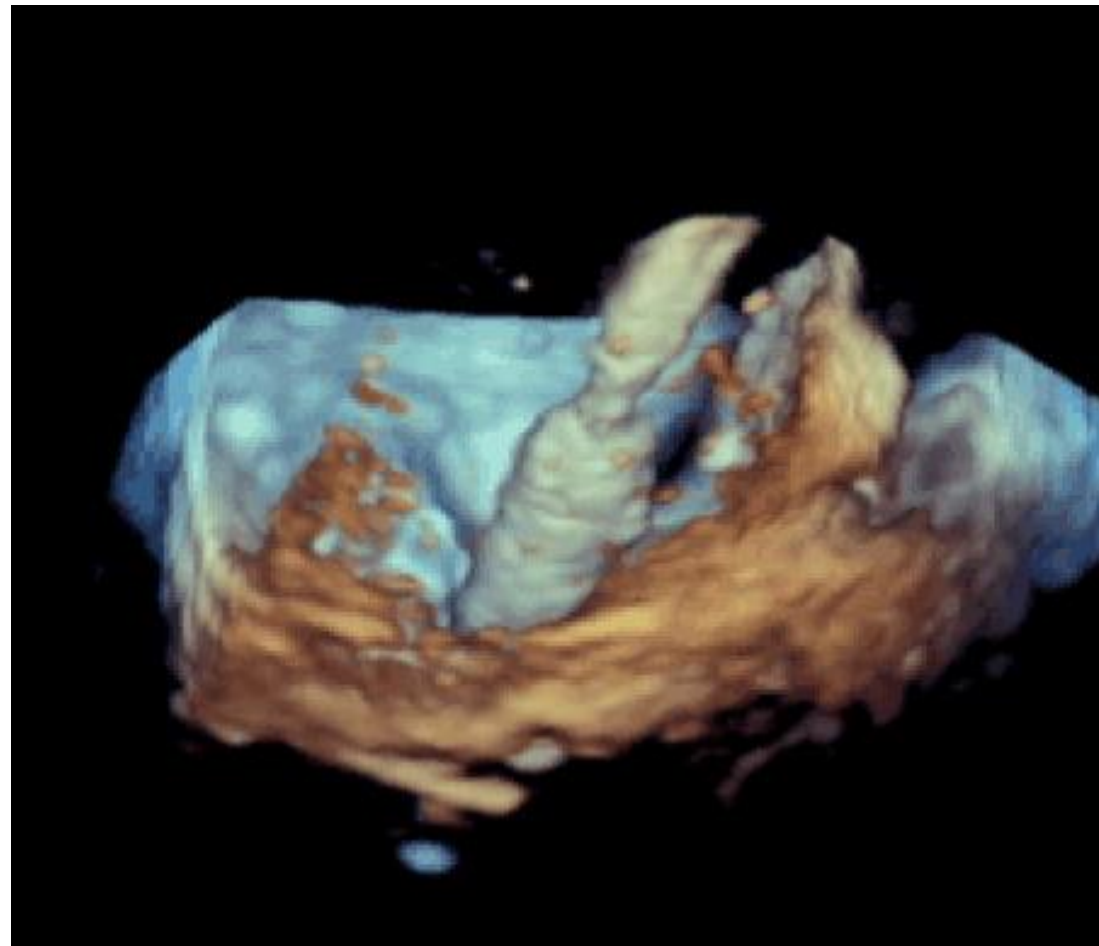
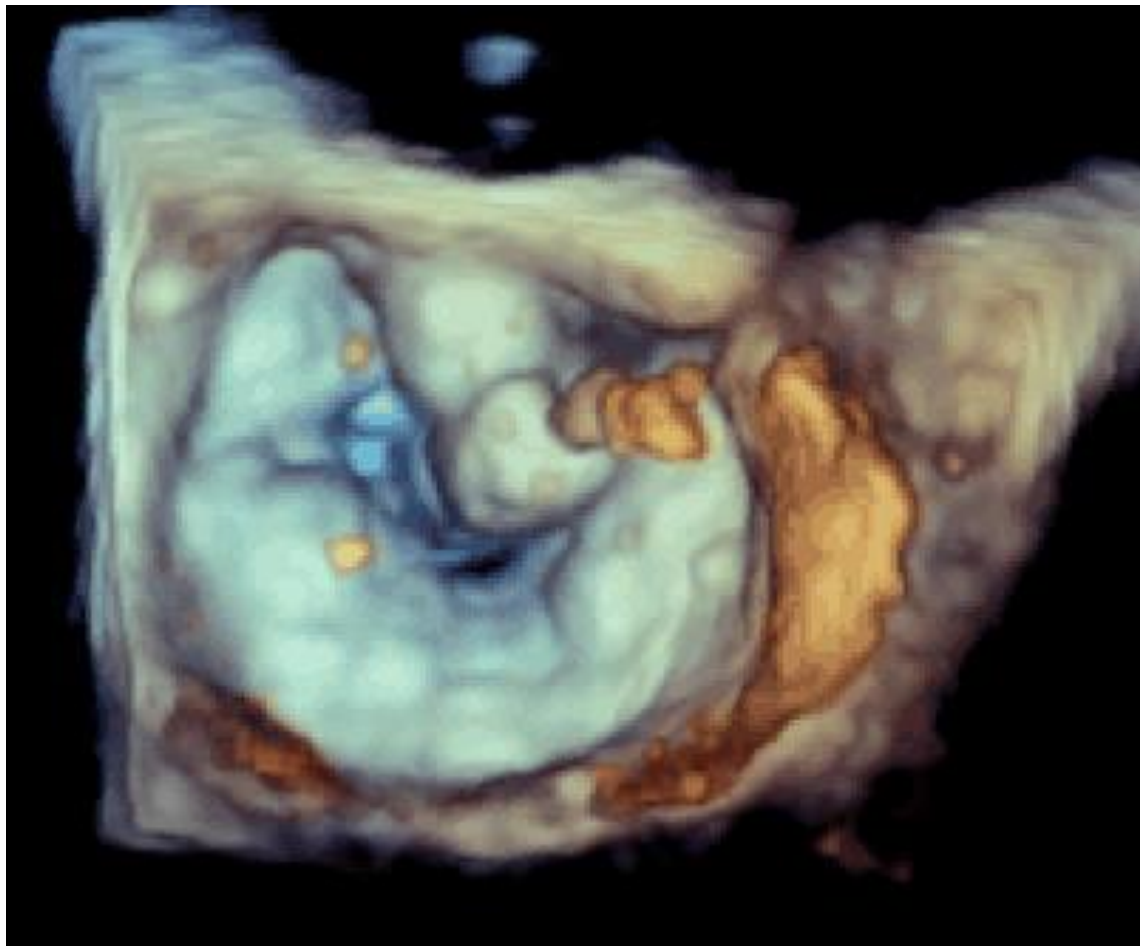
Mitral Valve in MAC (ViMAC)



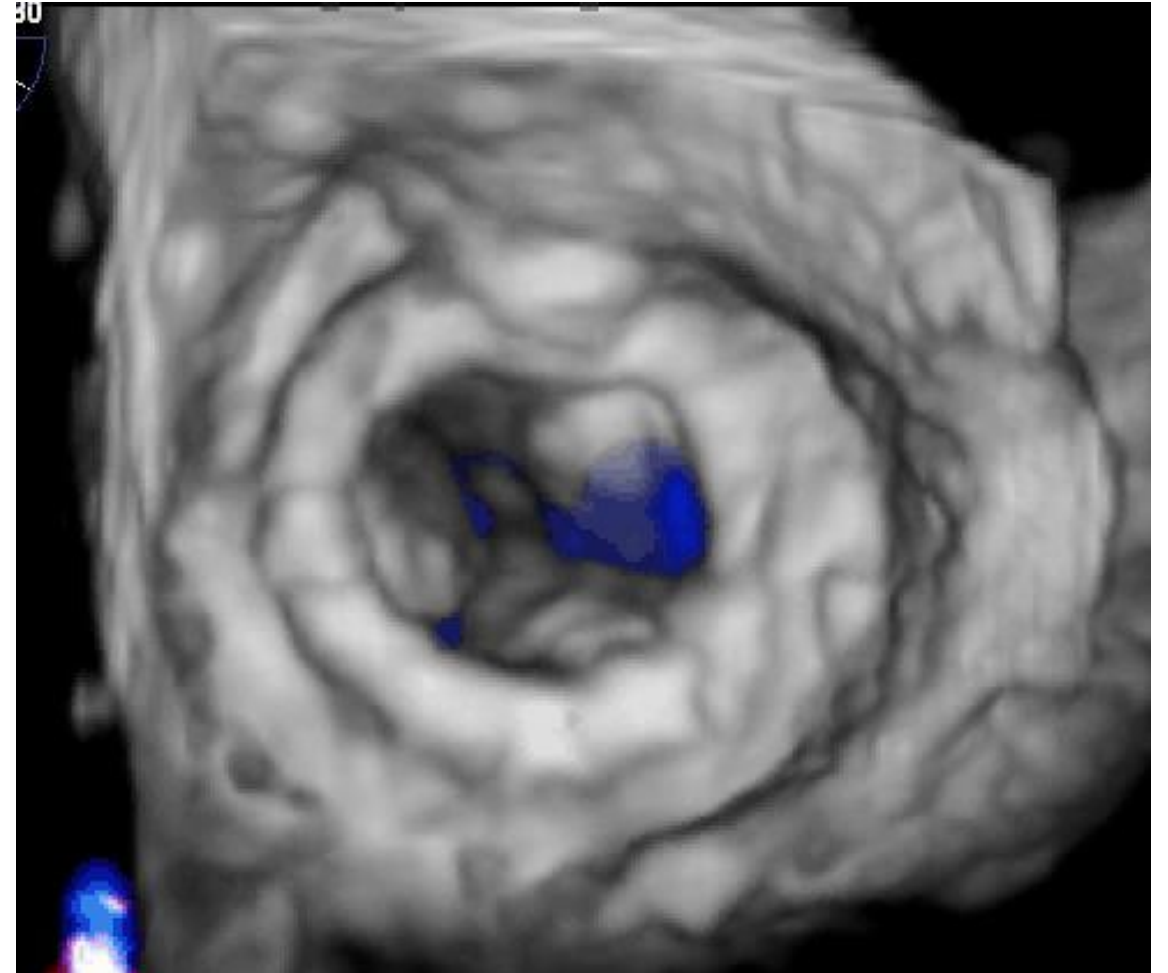
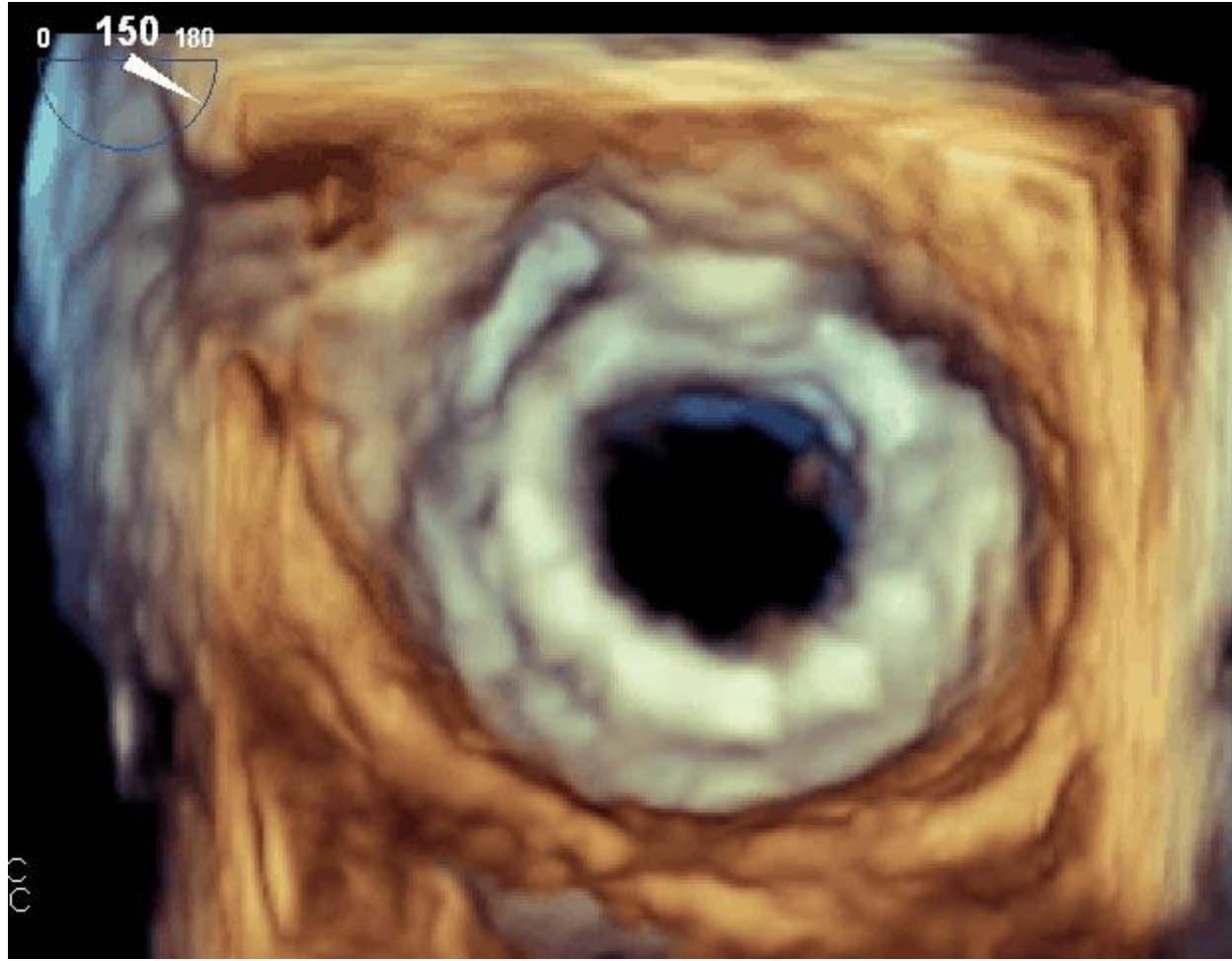
Mitral Valve in MAC (ViMAC)



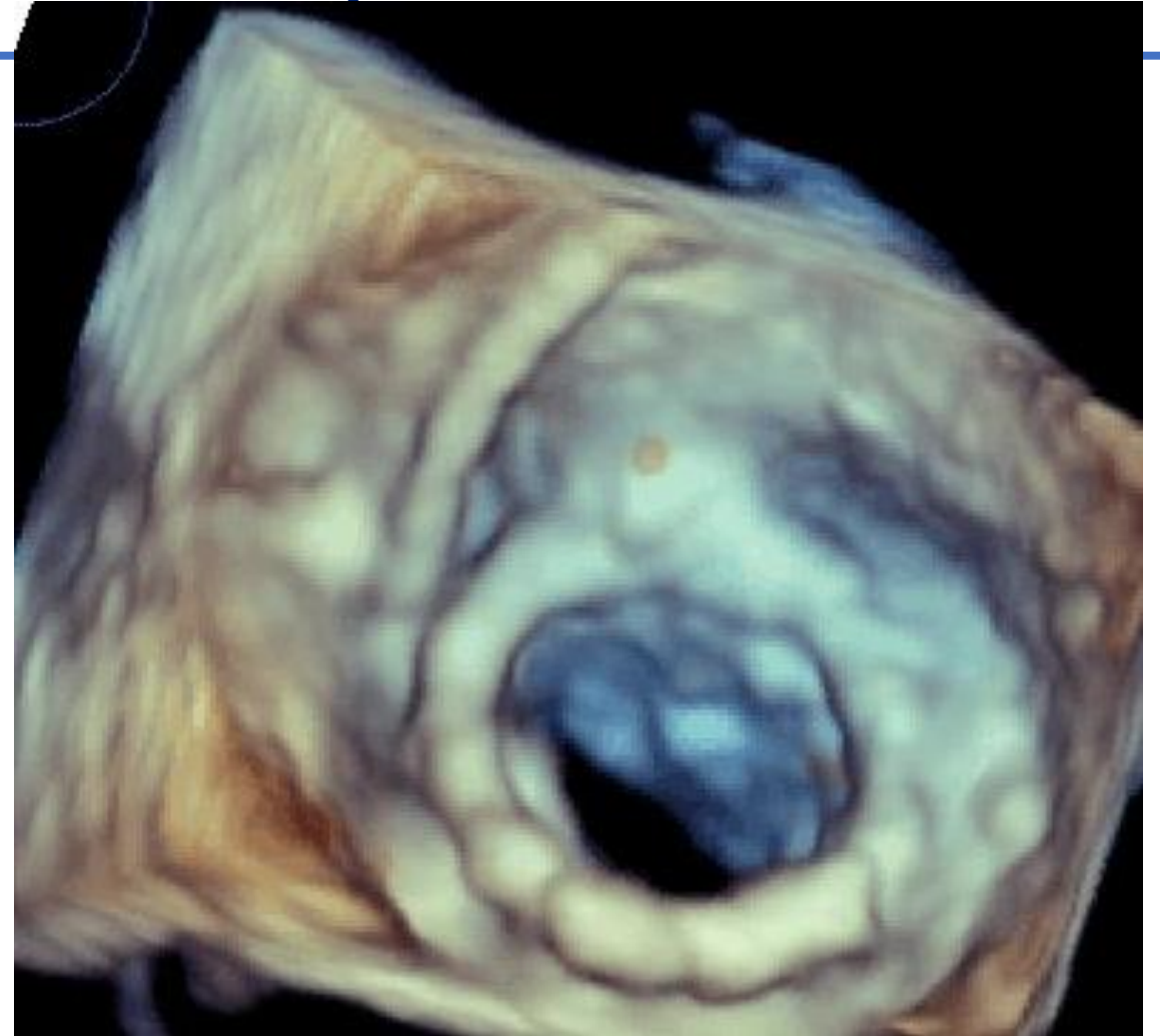
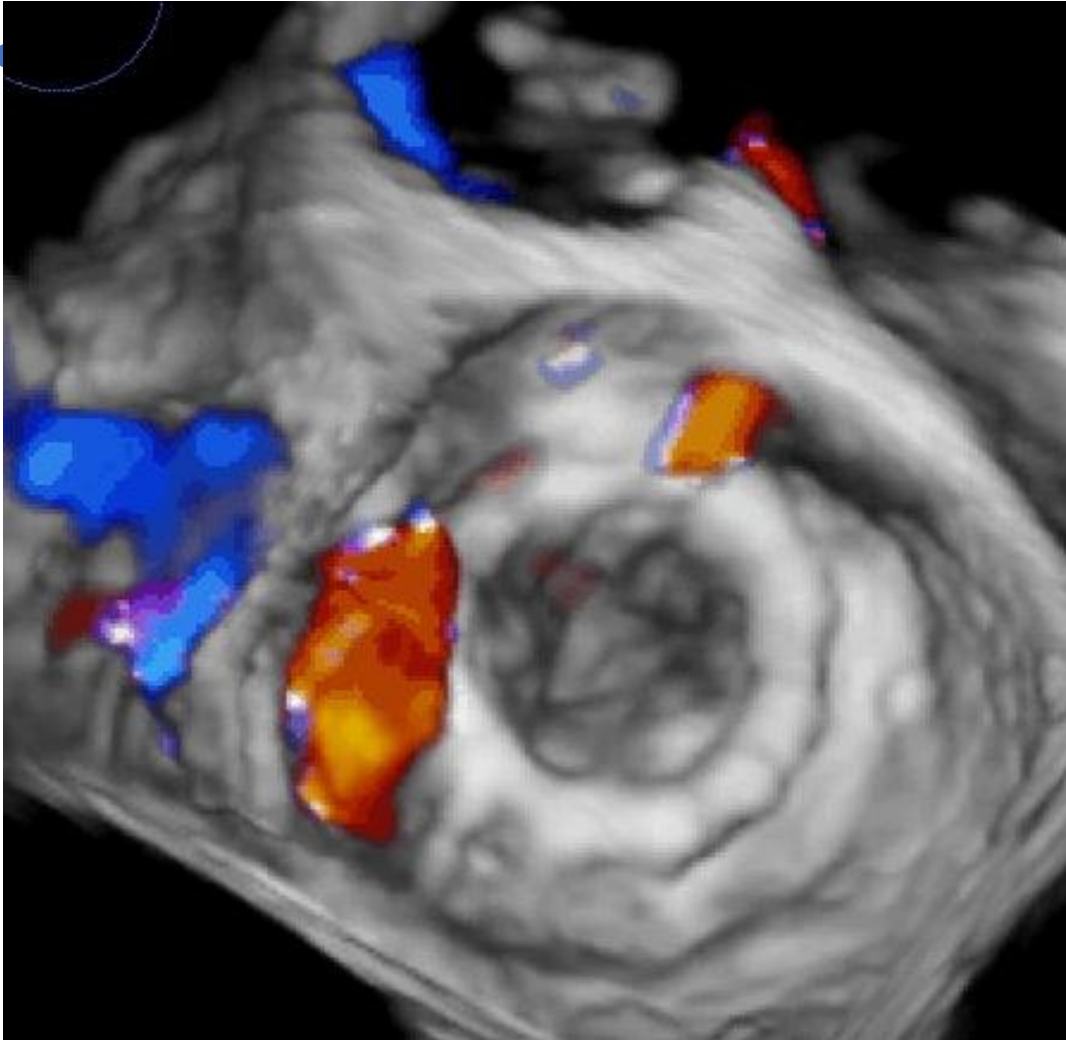
Mitral Valve in MAC (ViMAC)



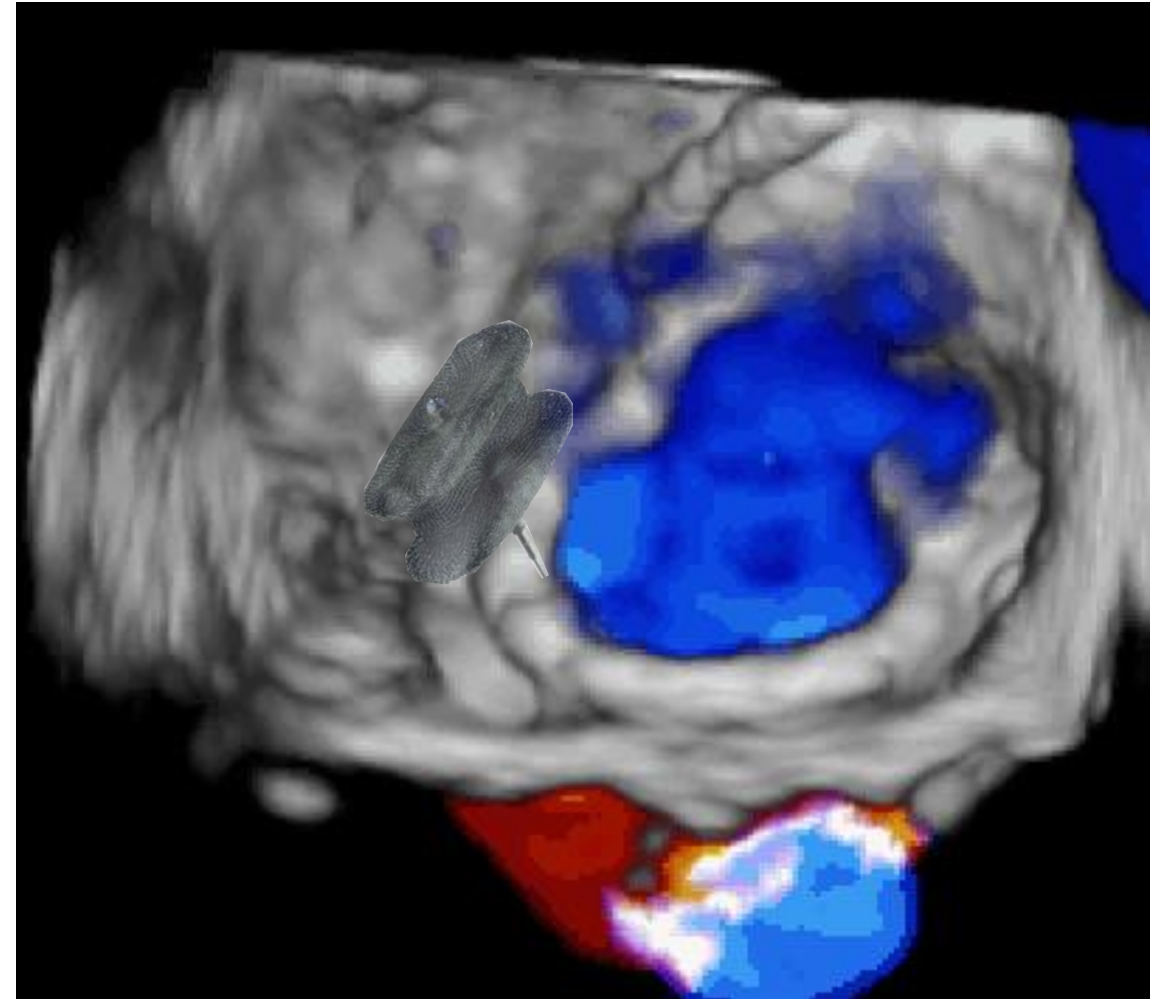
Mitral Valve in MAC (ViMAC)



Mitral Valve in MAC (ViMAC)



Mitral Valve in MAC (ViMAC)



Mitral Interventions

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F.E.S.C., F.C.S.A.N.Z., F.A.S.E., J.P.



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17-19 March 2025

