31st Annual ECHO Hawaii

January 19, 2022 | 4:00 – 4:12 PM | 12 min

Tricks and Tips for 3D Visualization: Left Atrial Appendage

Muhamed Sarić MD, PhD, MPA
Director of Noninvasive Cardiology | Echo Lab
Professor of Medicine
New York University

NYU Langone Health

Disclosures

Speakers Bureau (Abbott, Boston Scientific, Medtronic, Philips)
Advisory Board (Siemens)

GUIDELINES AND STANDARDS

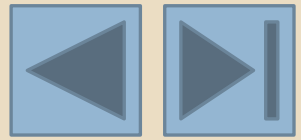
Recommended Standards for the Performance of Transesophageal Echocardiographic Screening for Structural Heart Intervention: From the American Society of Echocardiography

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, FASE, G. Burkhard Mackensen, MD, PhD, FASE, Jae Oh, MD, FASE, Nishath Quader, MD, FASE, Lucy Safi, DO, FASE, Gregory M. Scalia, MBBS, FASE, and Roberto M. Lang, MD, FASE, *New York, New York; Lugano, Switzerland; Los Angeles, California; Morristown, New Jersey; Murray, Utah; Houston, Texas; Seattle Washington; Rochester, Minnesota; St. Louis, Missouri; Hackensack, New Jersey; Brisbane, Australia; and Chicago, Illinois*

3D TEE Tricks

1. LA Appendage (LAA)
2. Atrial Septal Defect (ASD)
3. Mitral Valve

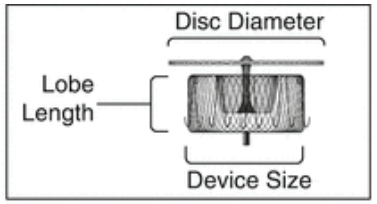
3D TEE Tricks: LA Appendage



Percutaneous LAA Closure

- **Percutaneous device closure of LAA** is an accepted means of thromboembolism prevention in patients with **nonvalvular** atrial fibrillation
- LAA closure devices come in **different sizes**
- Device sizing is primarily based on **LAA landing zone diameter**

Watchman FLX



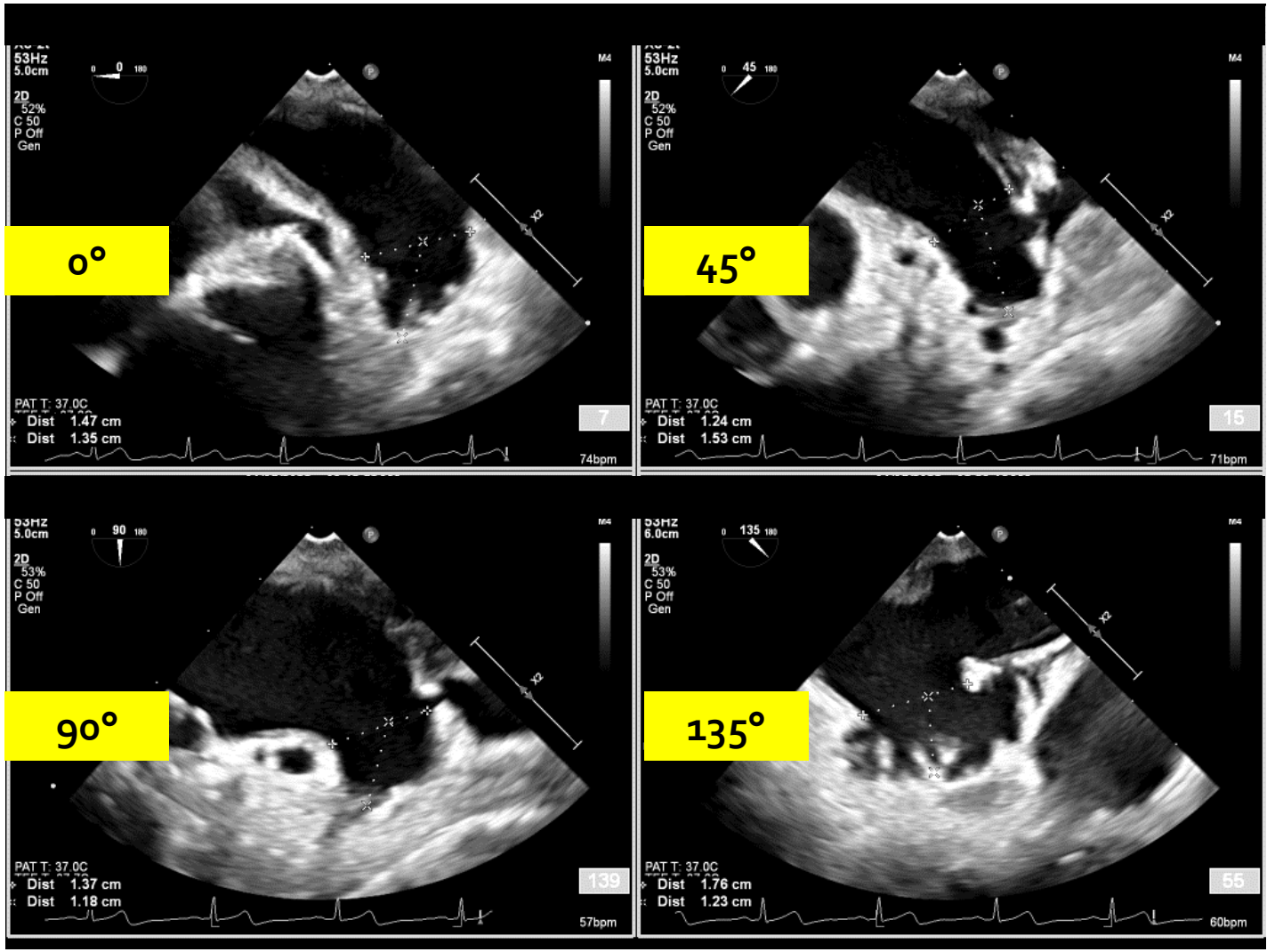
AMPLATZER AMULET SIZING CHART

Amulet

Maximum Landing Zone Width (mm)	Amulet™ Device Size	Lobe Length (mm)	Minimum LAA Depth (mm)	Disc Diameter (mm)	Sheath Diameter
11.0 – 13.0	**16**	7.5	≥10	22	
13.0 – 15.0	**18**	7.5	≥10	24	
15.0 – 17.0	**20**	7.5	≥10	26	
17.0 – 19.0	**22**	7.5	≥10	28	
19.0 – 22.0	**25**	10	≥12	32	
22.0 – 25.0	**28**	10	≥12	35	
25.0 – 28.0	**31**	10	≥12	38	
28.0 – 31.0	**34**	10	≥12	41	

Percutaneous LAA Closure

4 Angles – 45° Apart



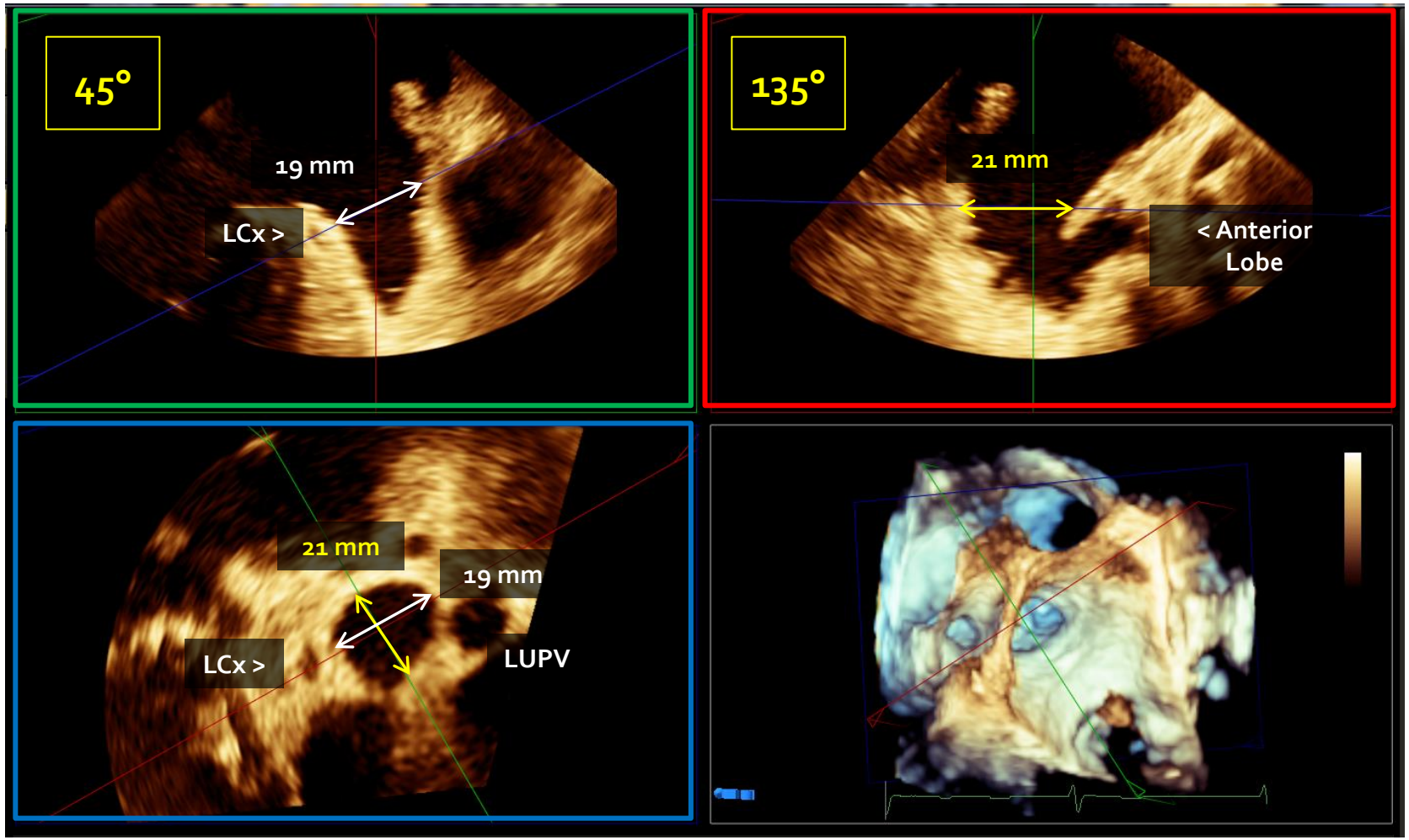
Challenges

- Cannot guarantee that the LAA diameter is measured at the same plane in all 4 images
- Does not provide 3D shape of LAA

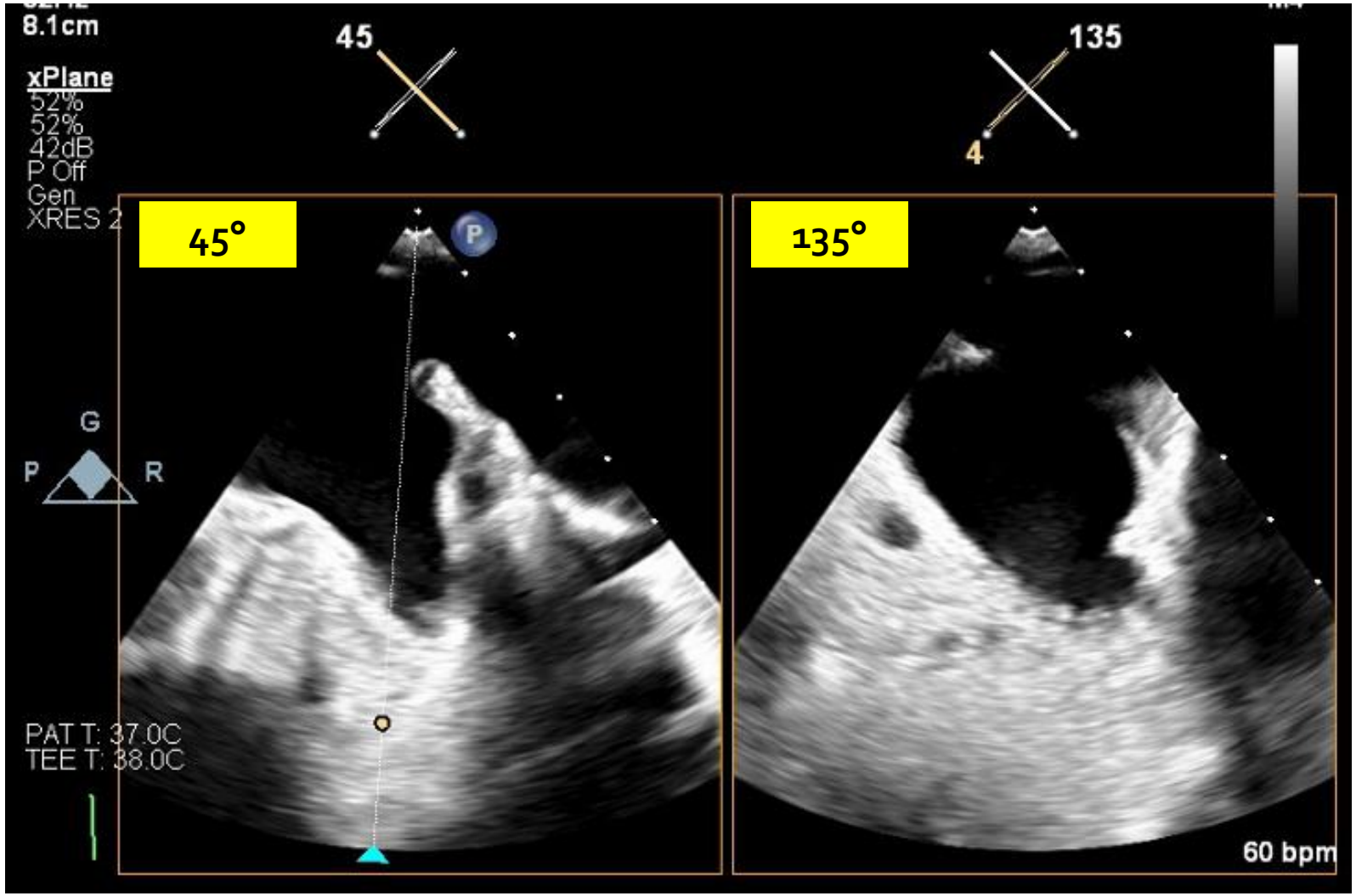
Tip #1: Multiplane Reconstruction

Tip #1: Multiplane Reconstruction

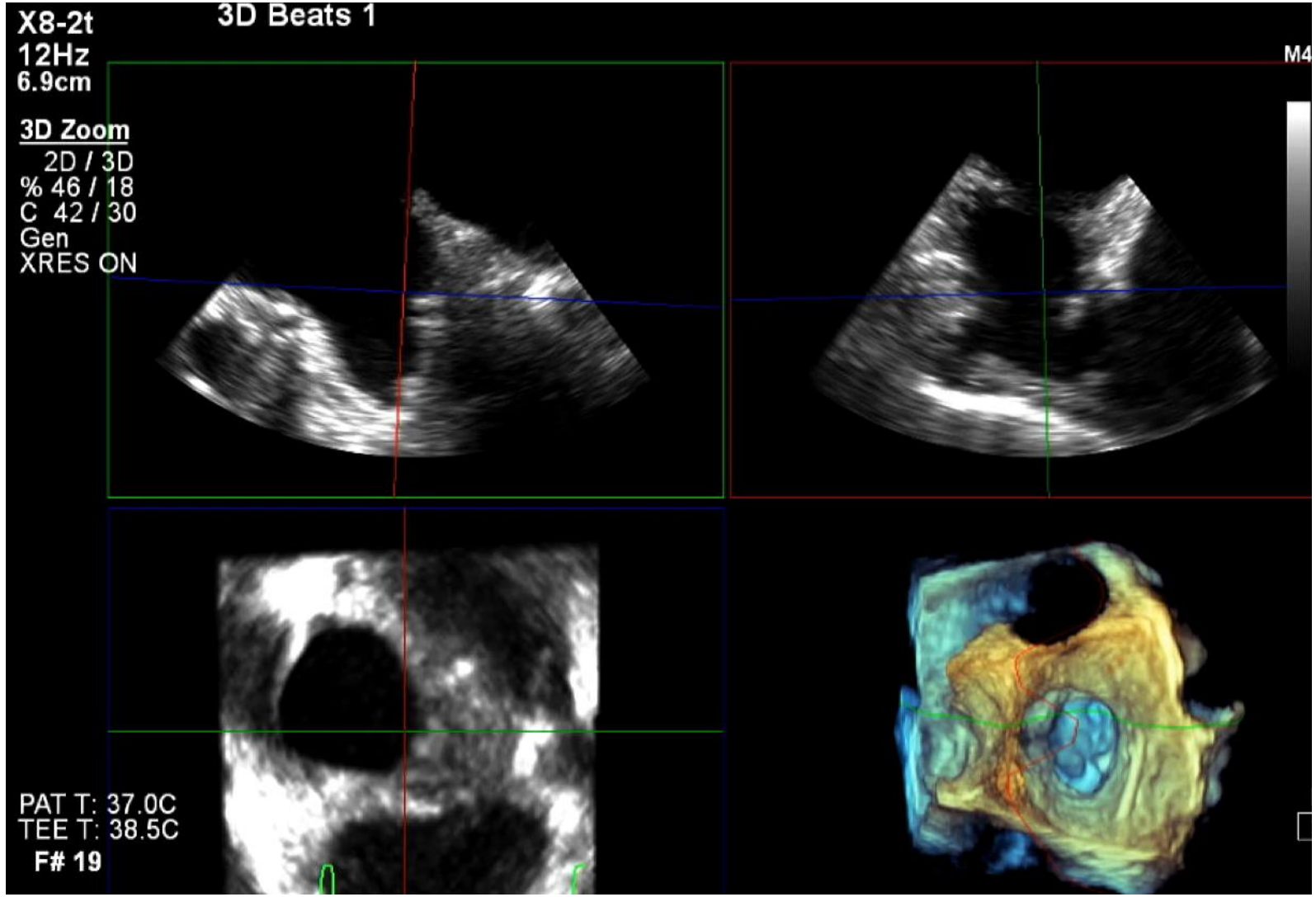
Use multiplane reconstruction (MPR) to assure the LAA diameter is measured in the same plane



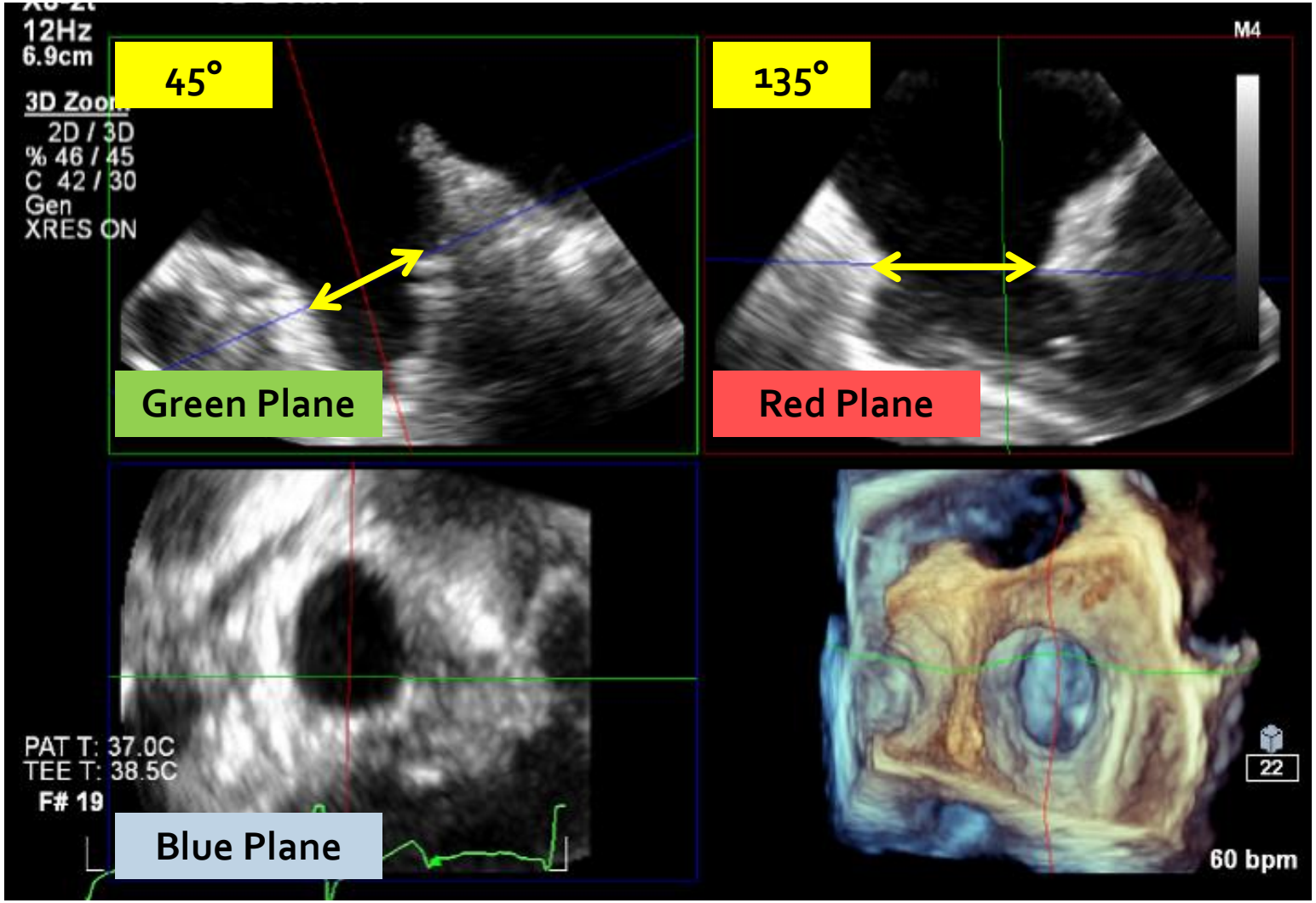
Tip #1: Multiplane Reconstruction



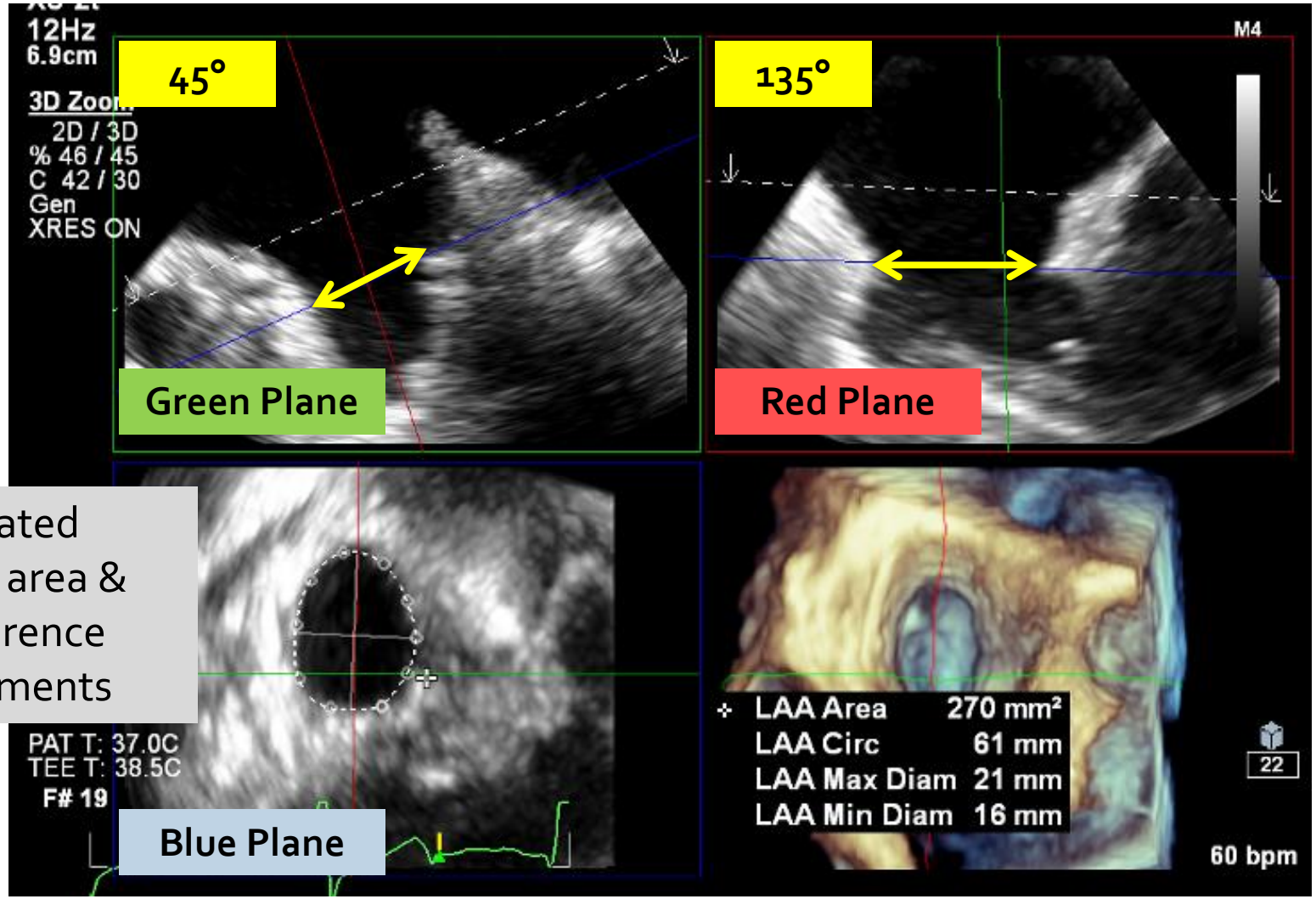
Tip #1: Multiplane Reconstruction



Tip #1: Multiplane Reconstruction

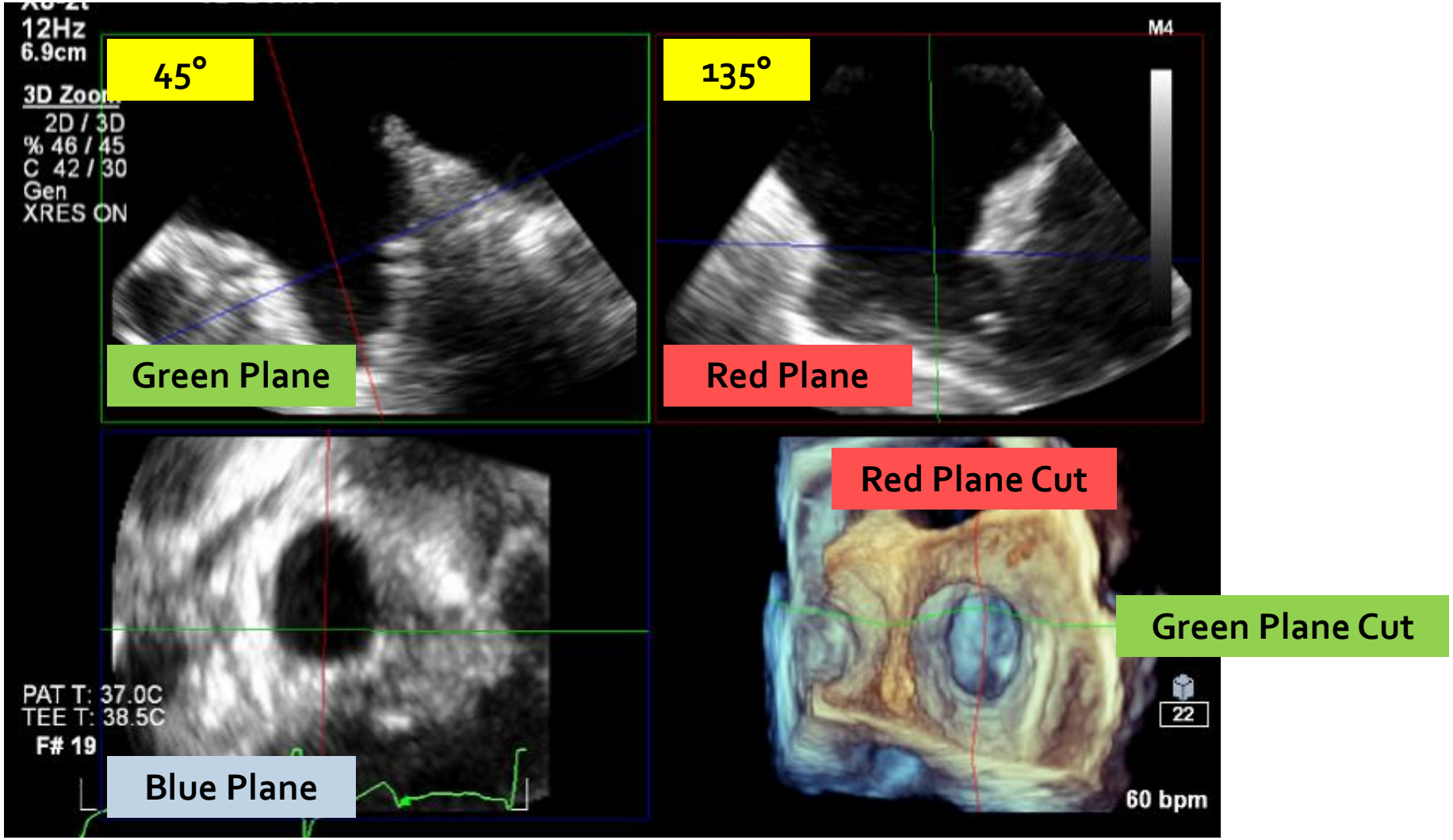


Tip #1: Multiplane Reconstruction

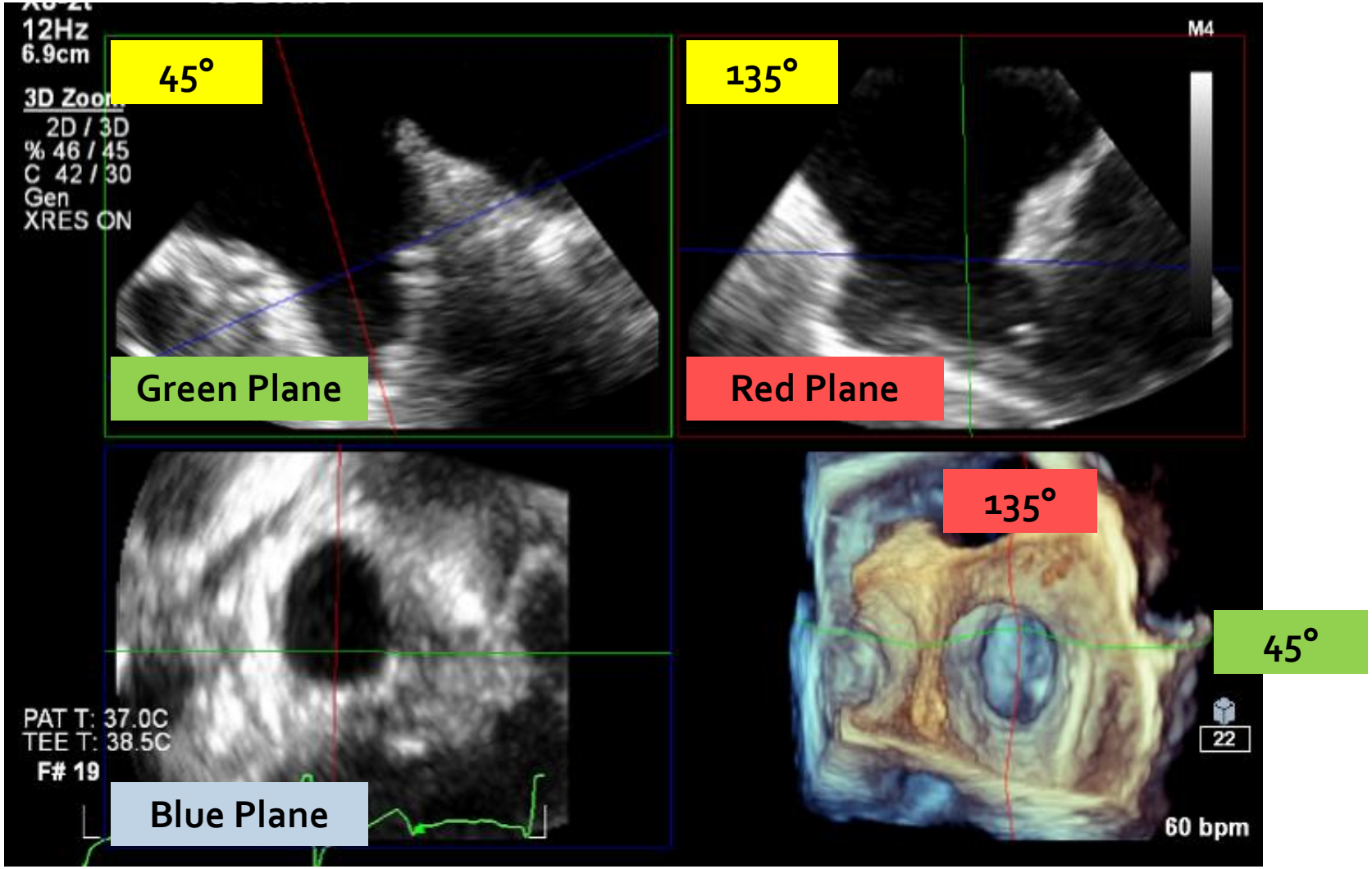


Automated diameter, area & circumference measurements

Tip #1: Multiplane Reconstruction

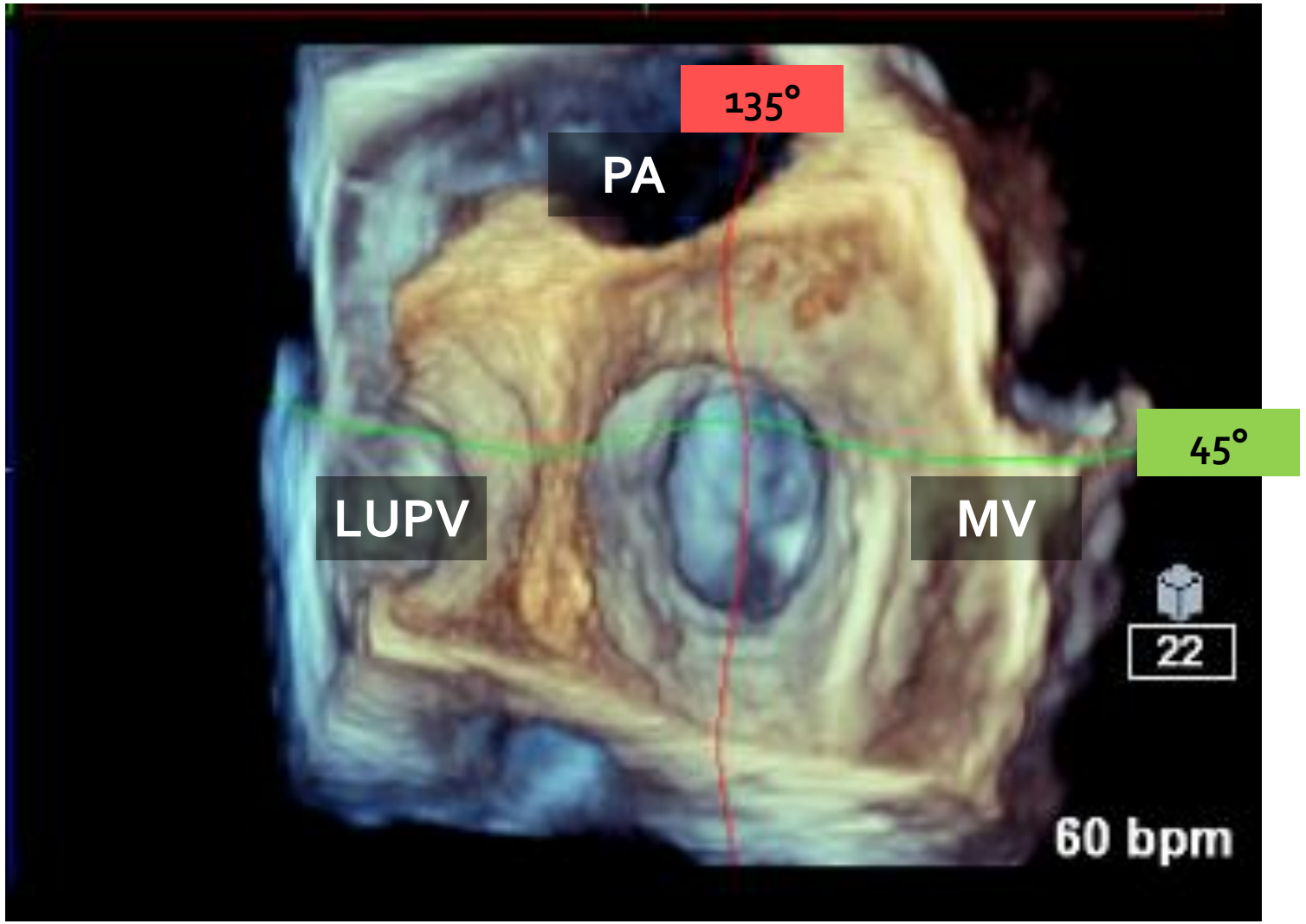


Tip #1: Multiplane Reconstruction

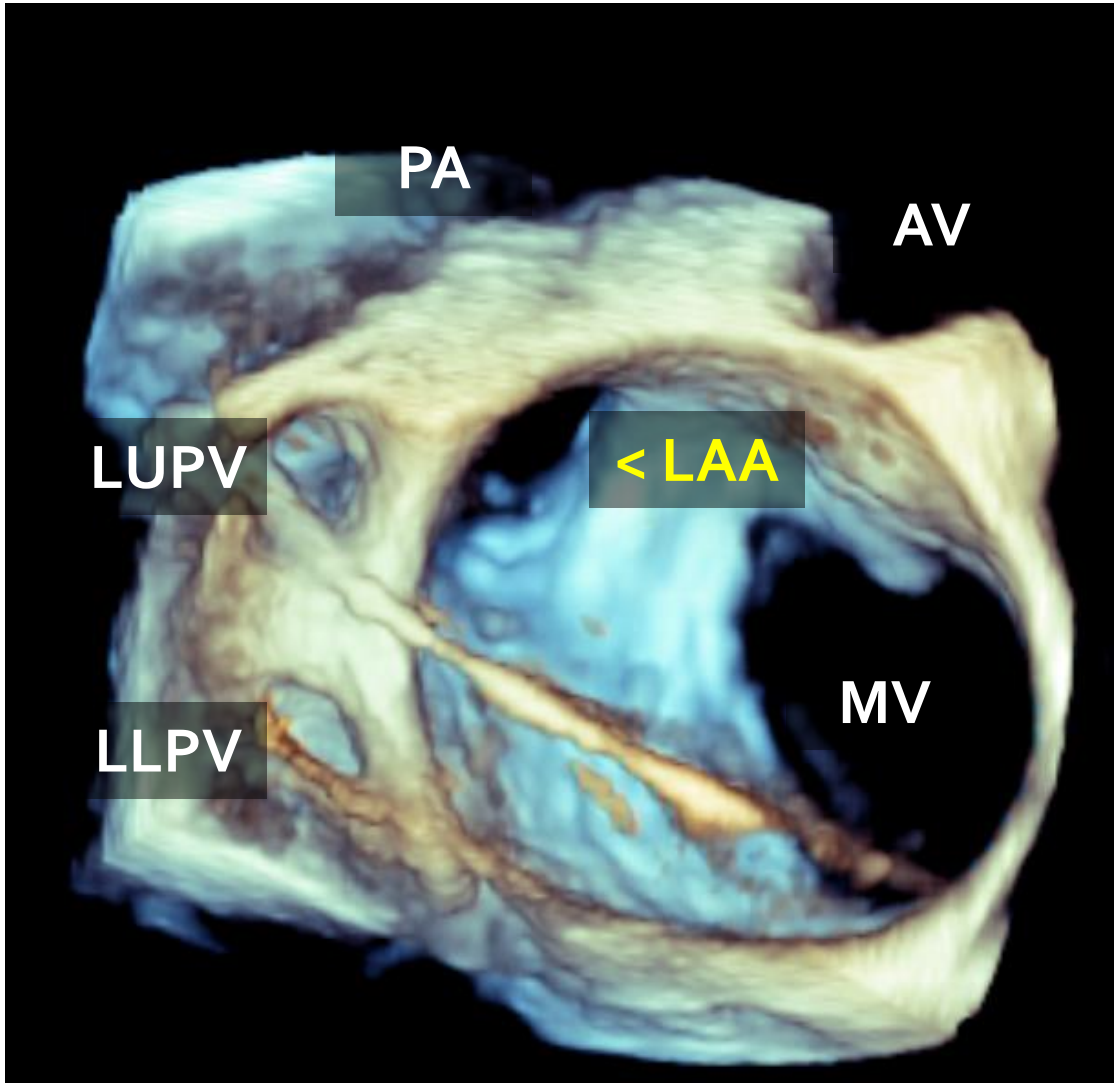


Tip #2: En Face View of LAA Orifice

Tip #2: En Face LAA Orientation



Tip #2: En Face LAA Orientation



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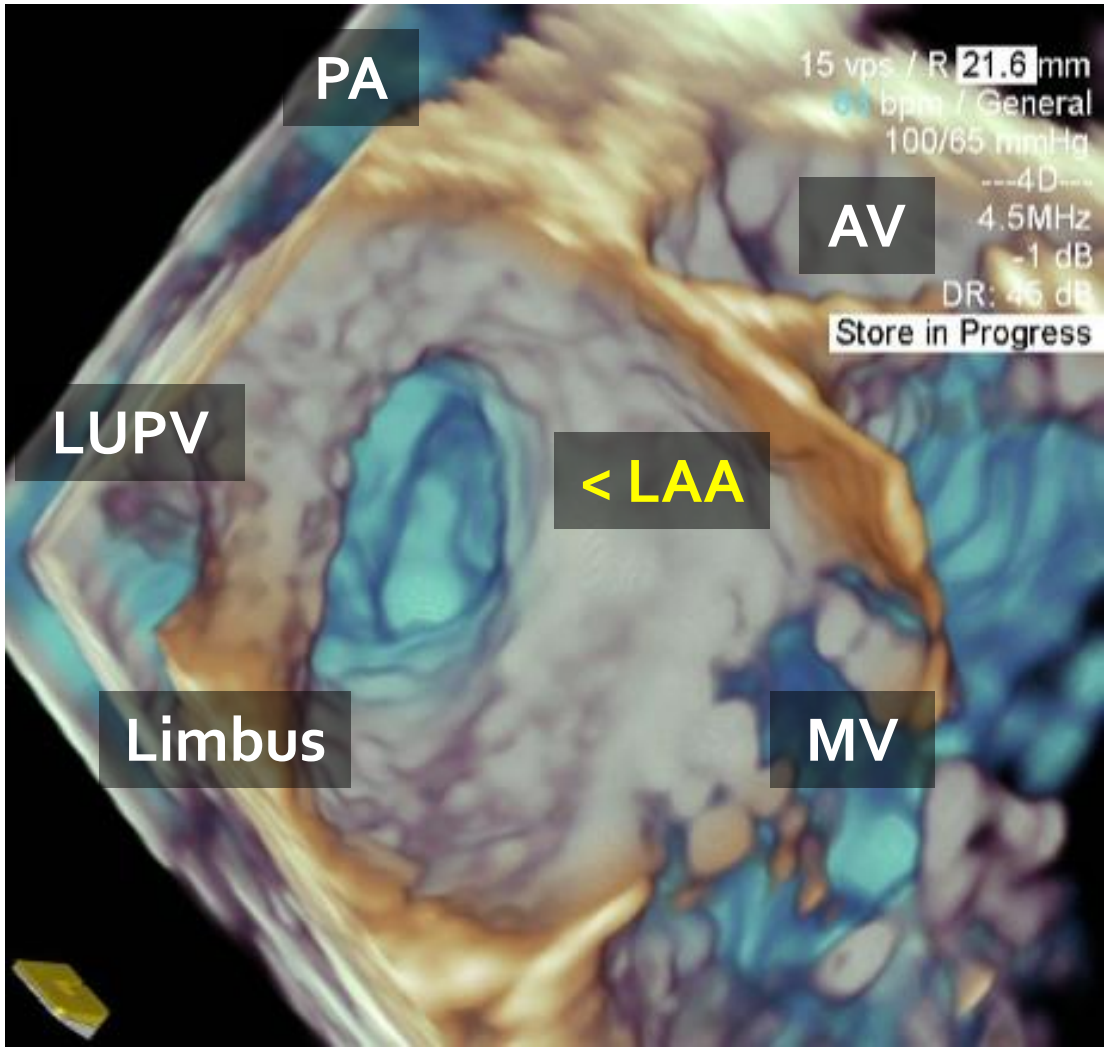

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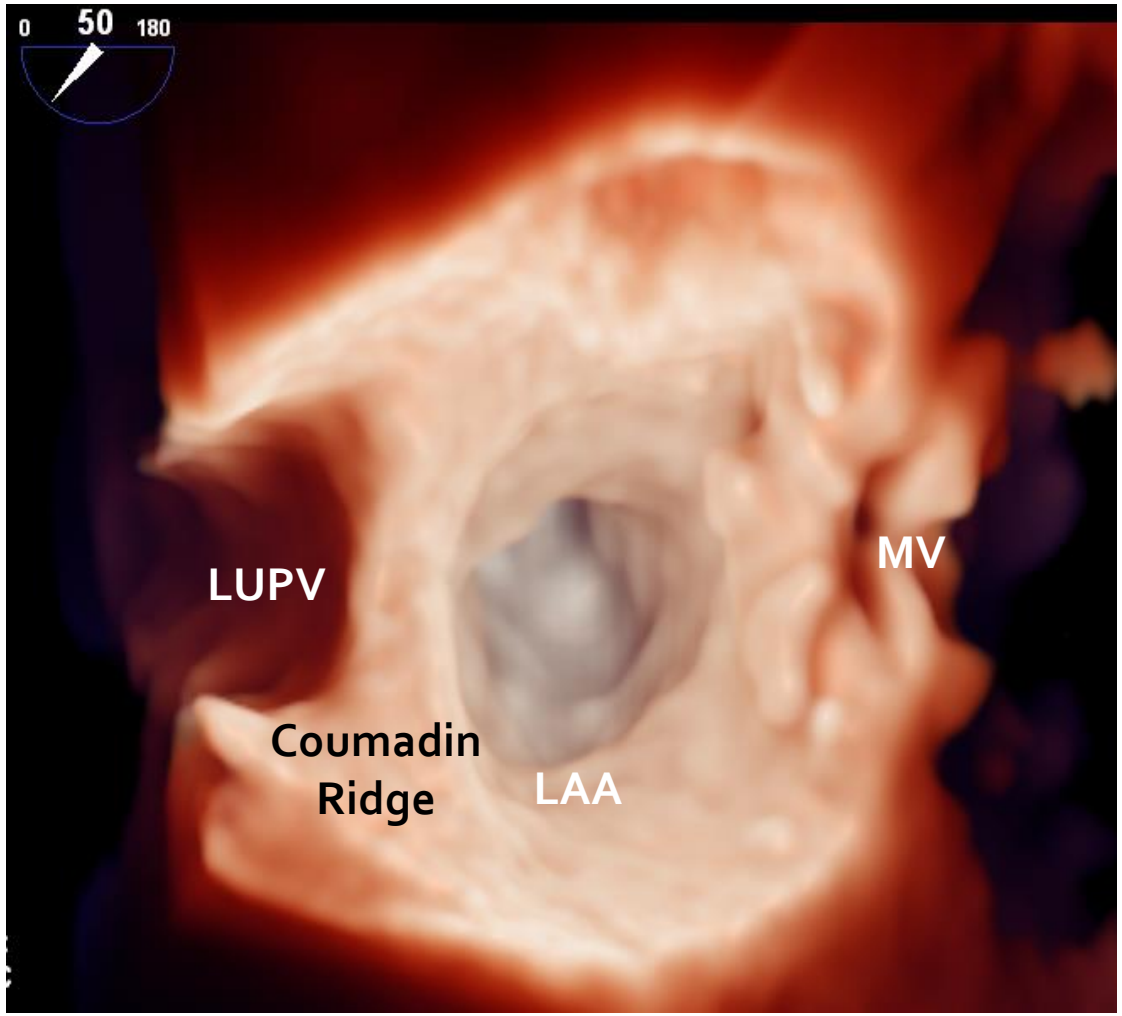
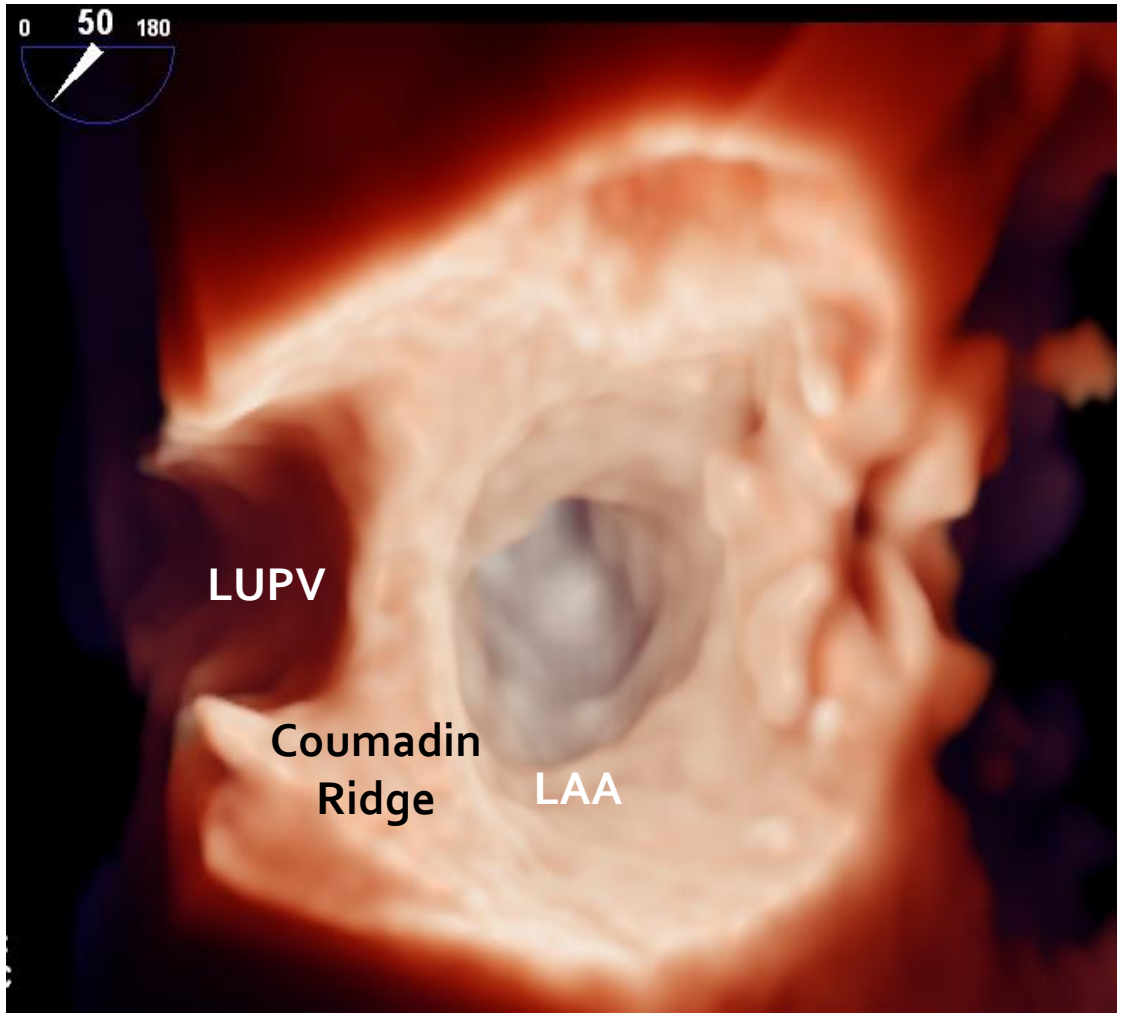
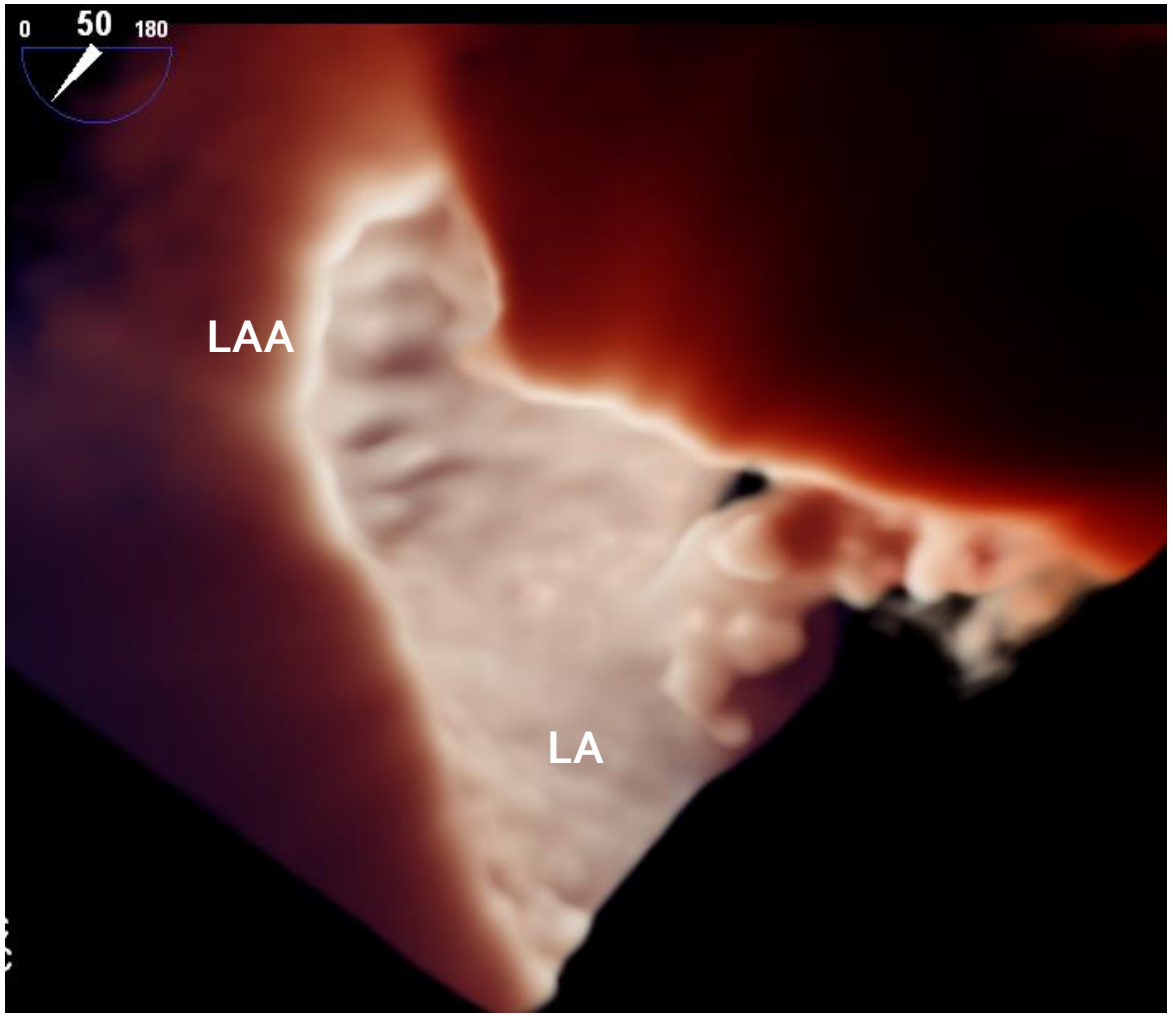


3D Vision	TrueVue Depth
Smoothing	Increased
Light Deapth	In front of LAA
Light Beam	On LAA

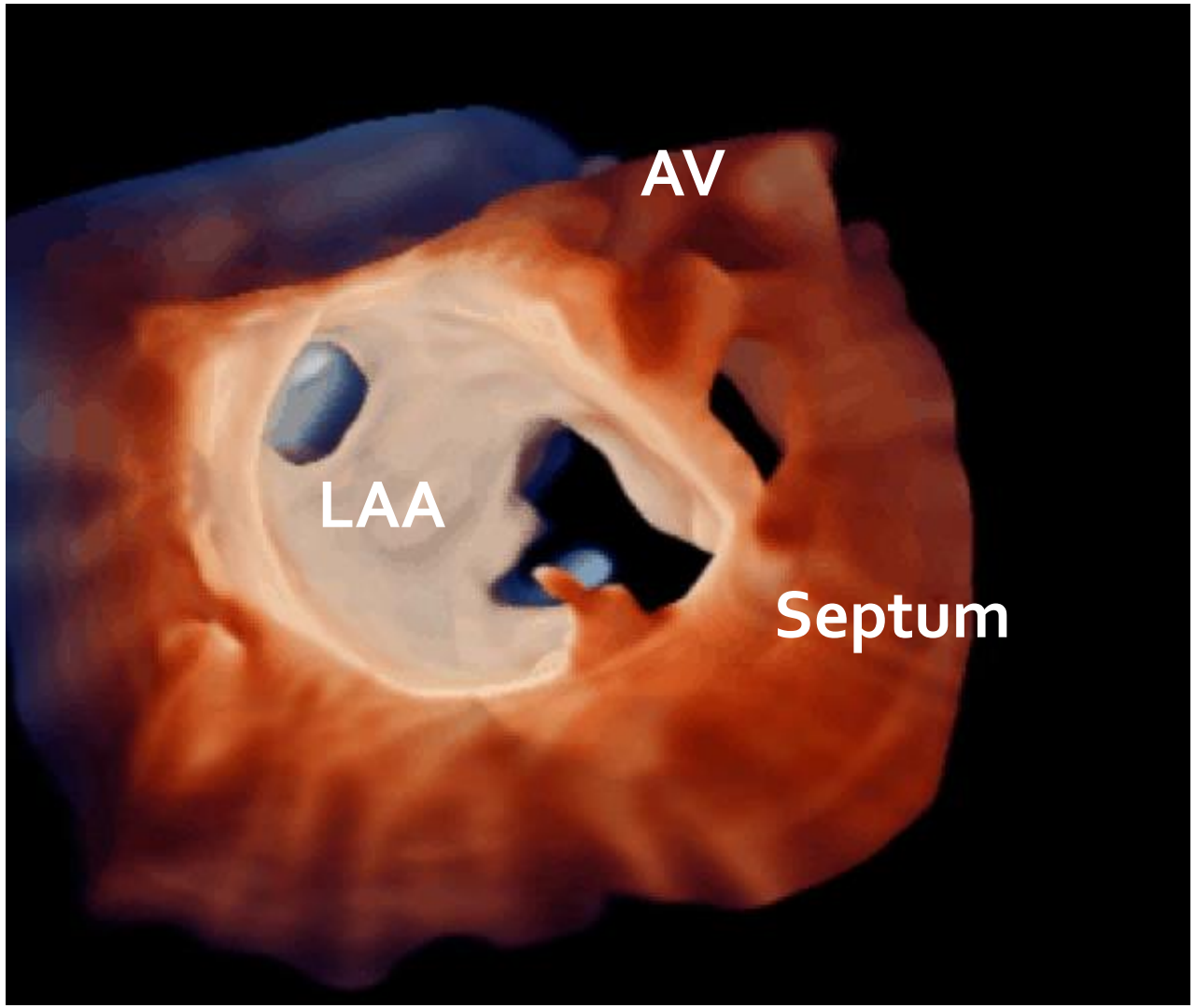
Tip #2: En Face LAA Orientation



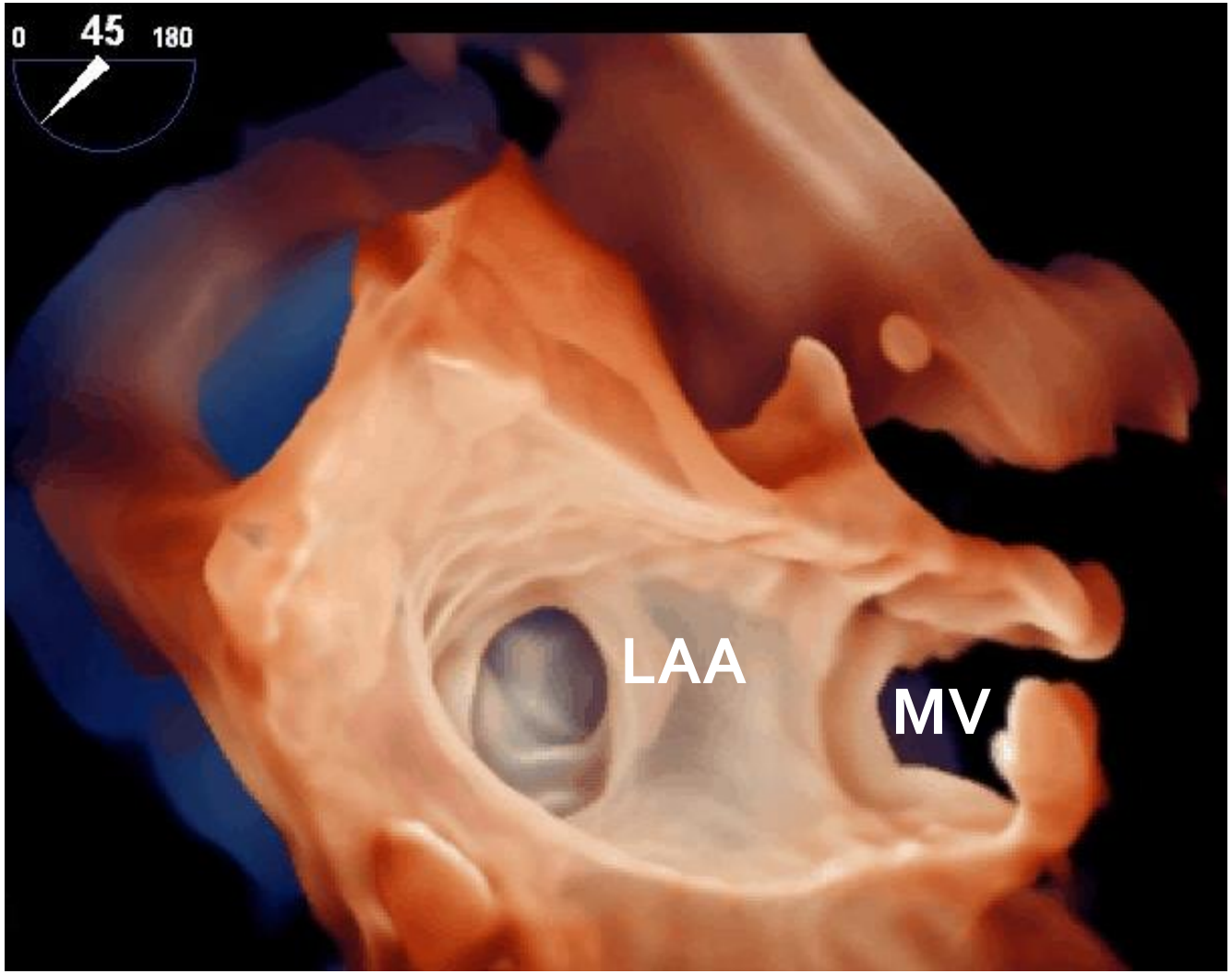


Tip #2: En Face LAA Orientation

Tilt Surgical View of
Mitral Valve
to the Left



Tip #2: En Face LAA Orientation



Tip #3: Cut Plane vs. Vantage Point

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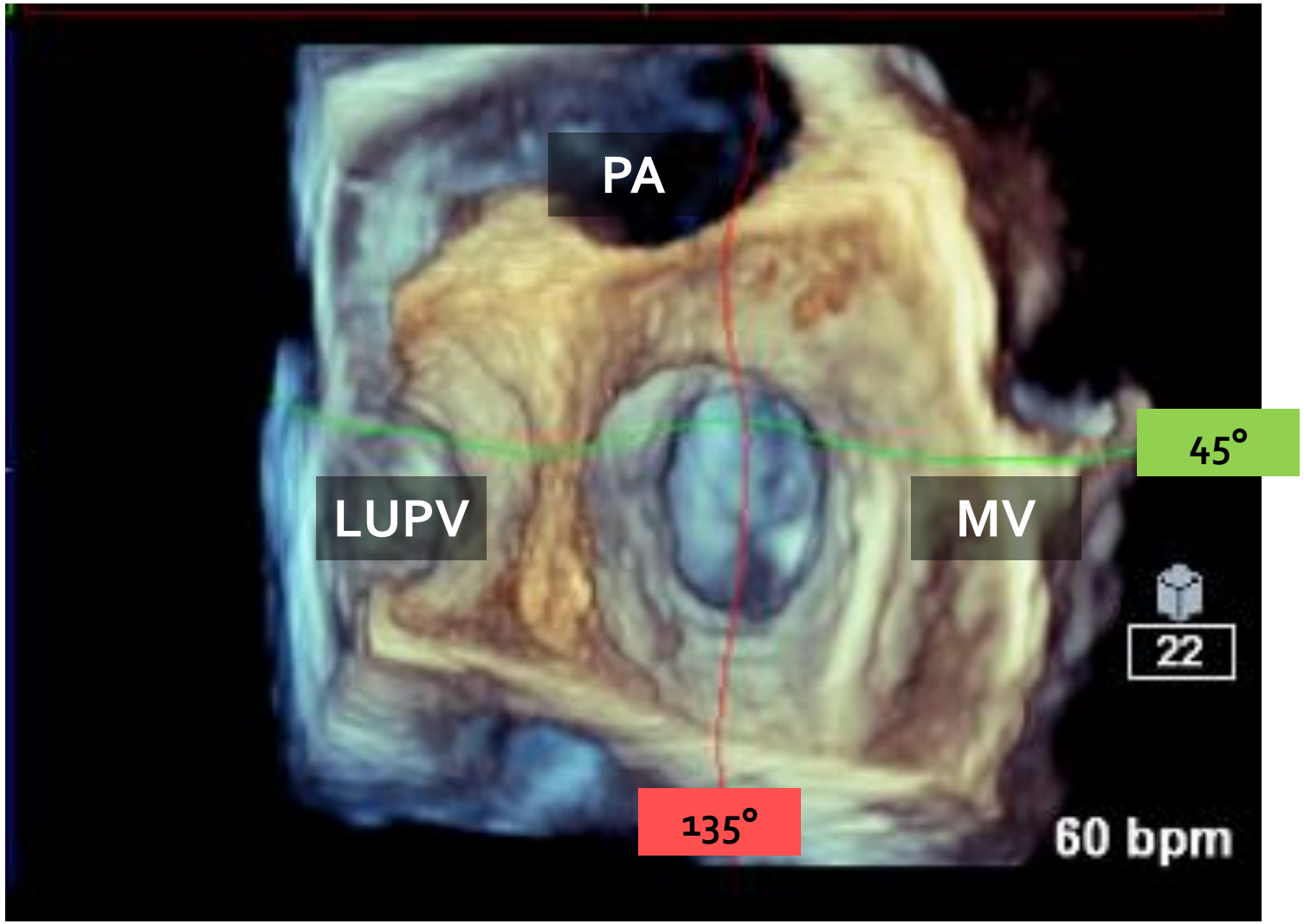
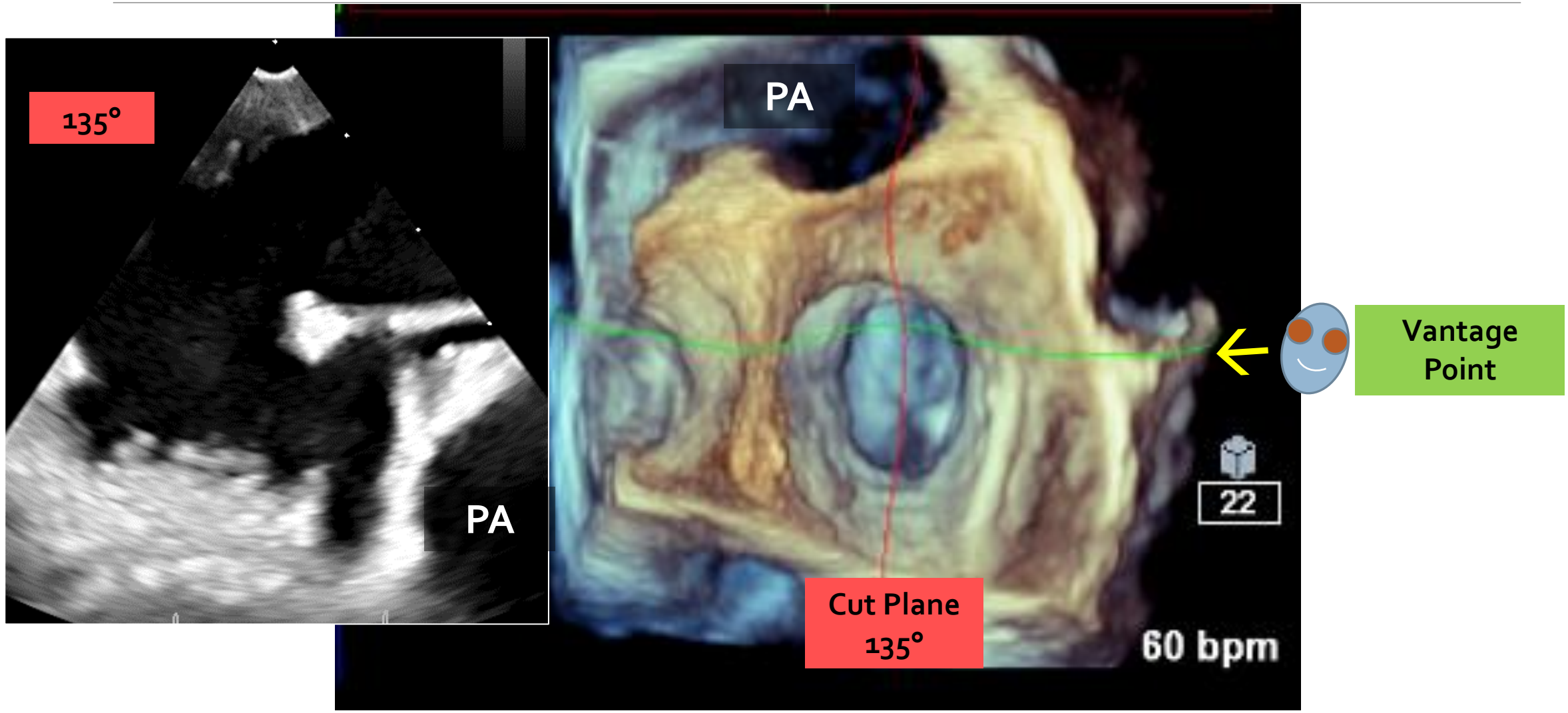
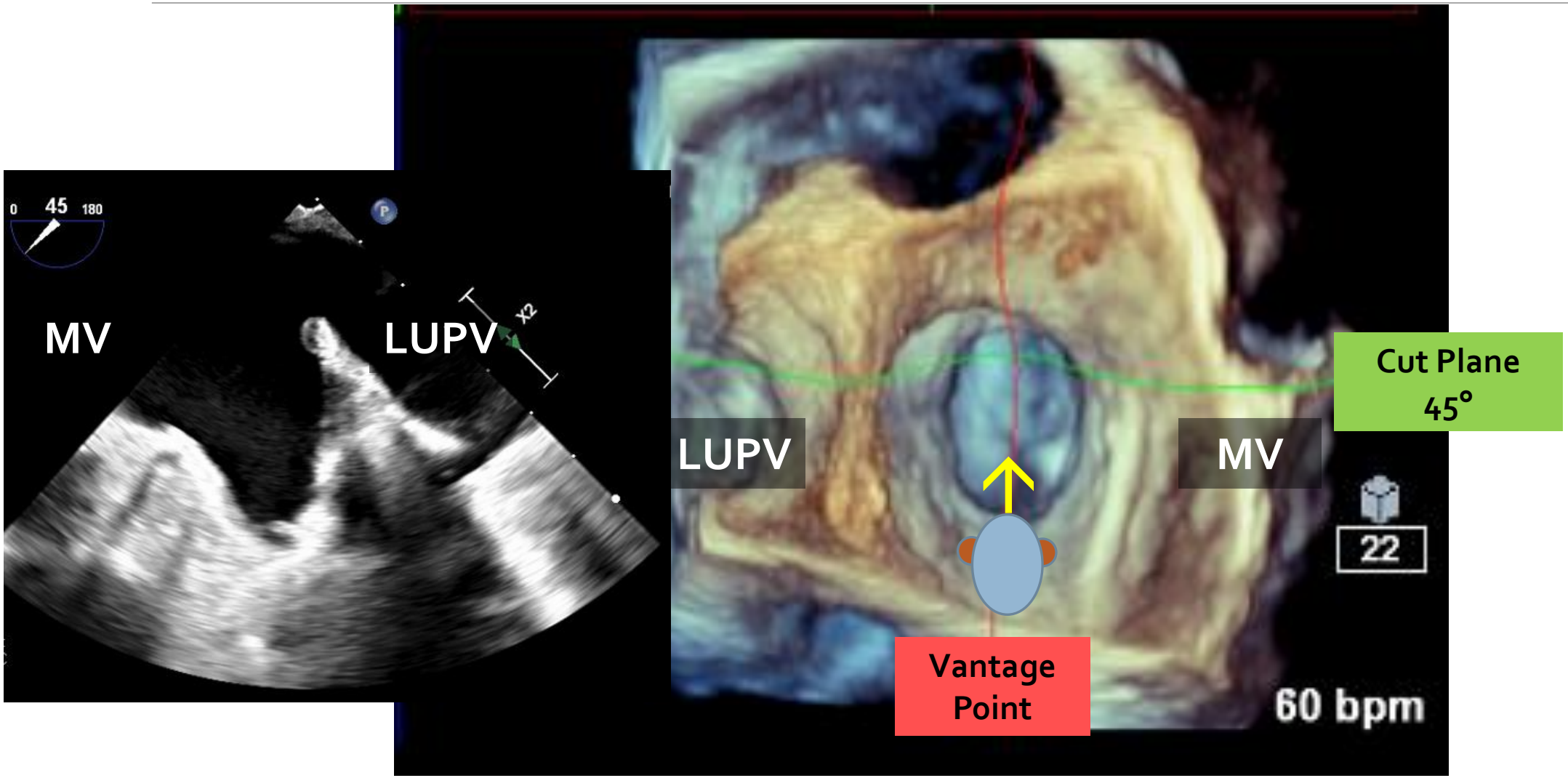


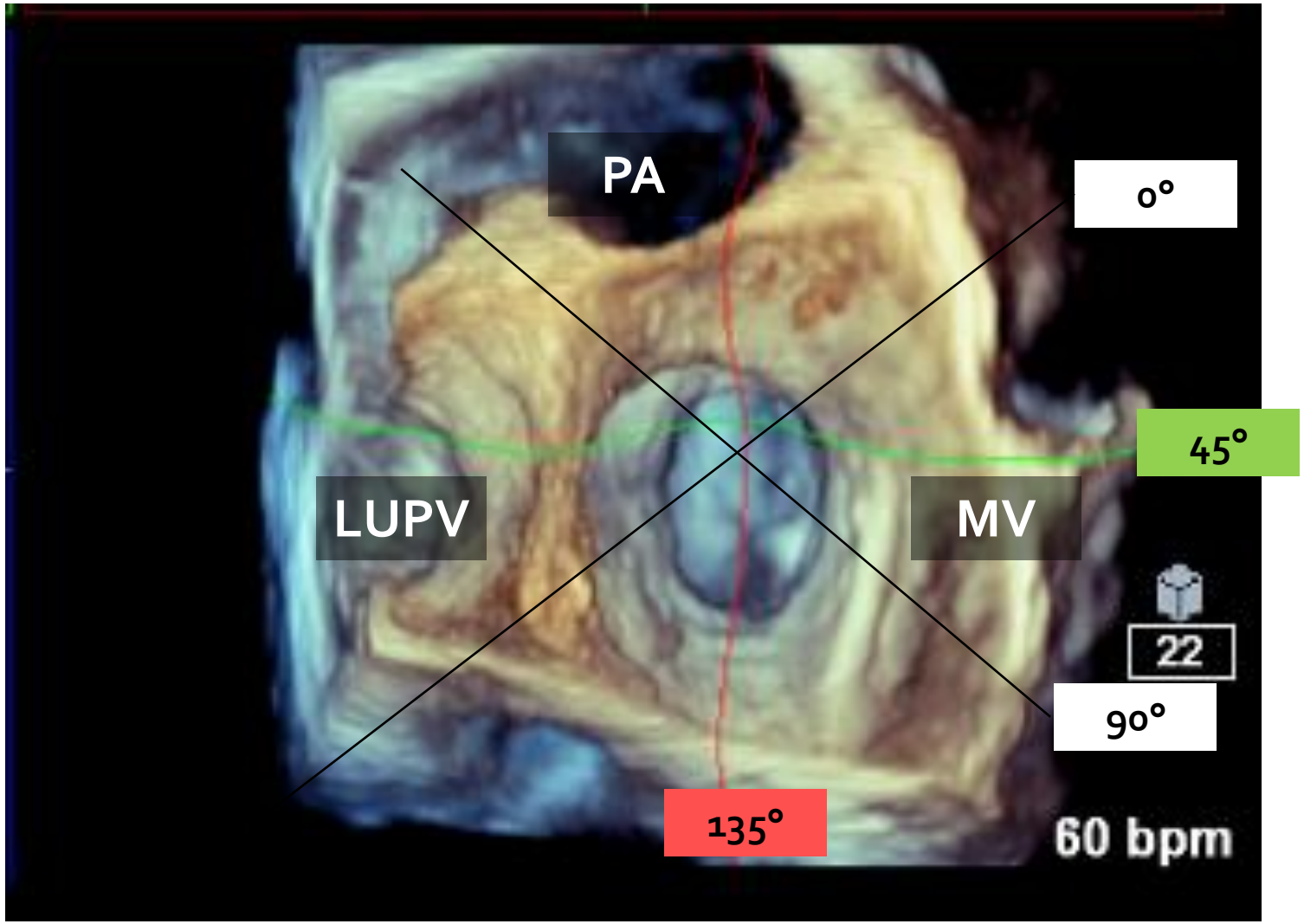
Tip #3: Cut Plane vs. Vantage Point



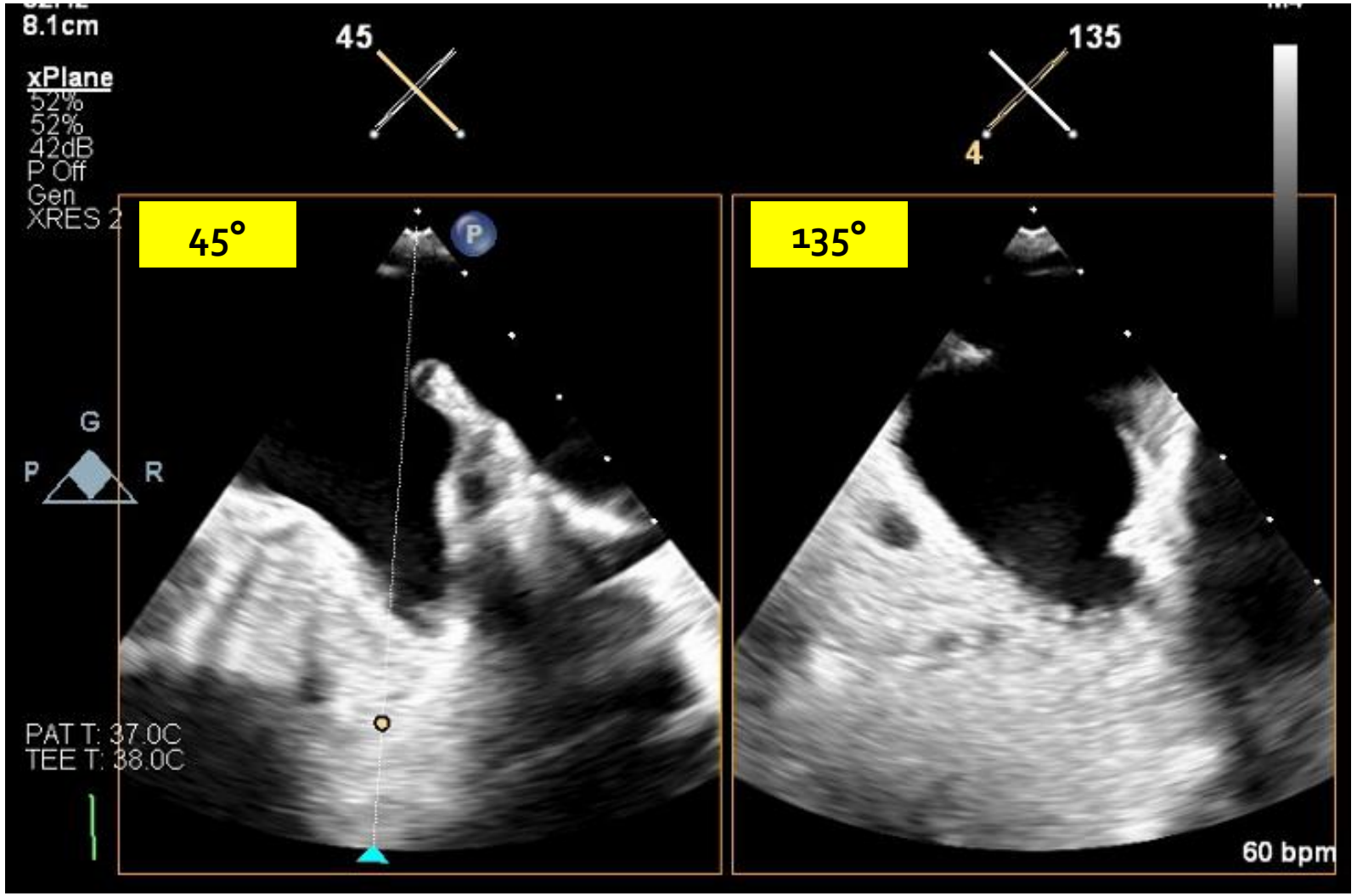
Tip #3: Cut Plane vs. Vantage Point



Tip #3: Correlating 3D to 2D Views

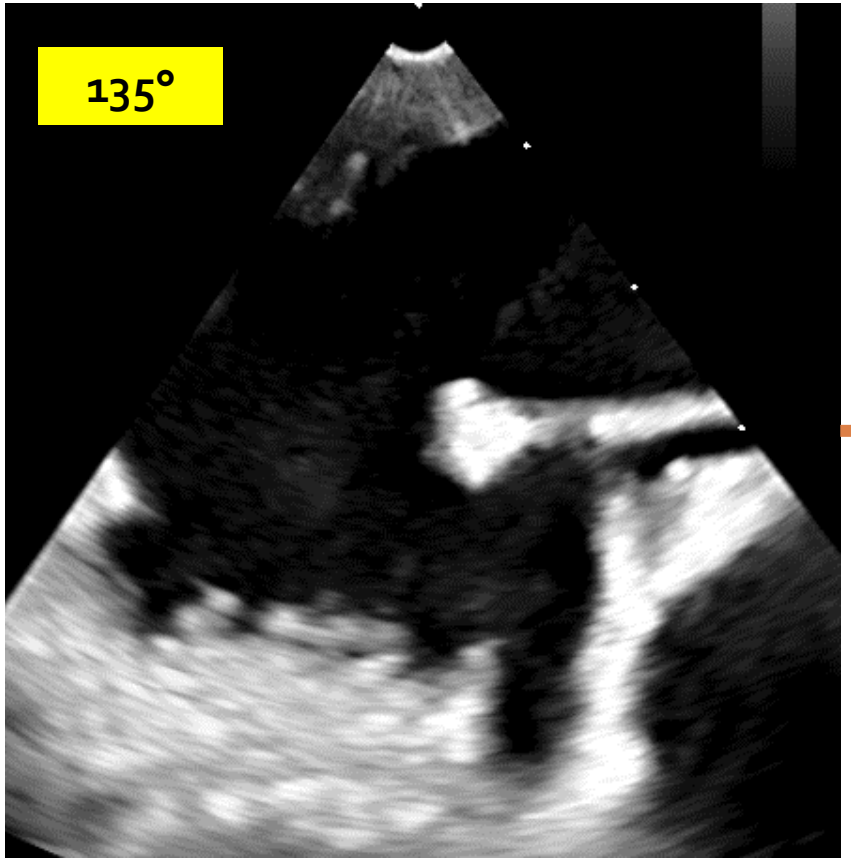


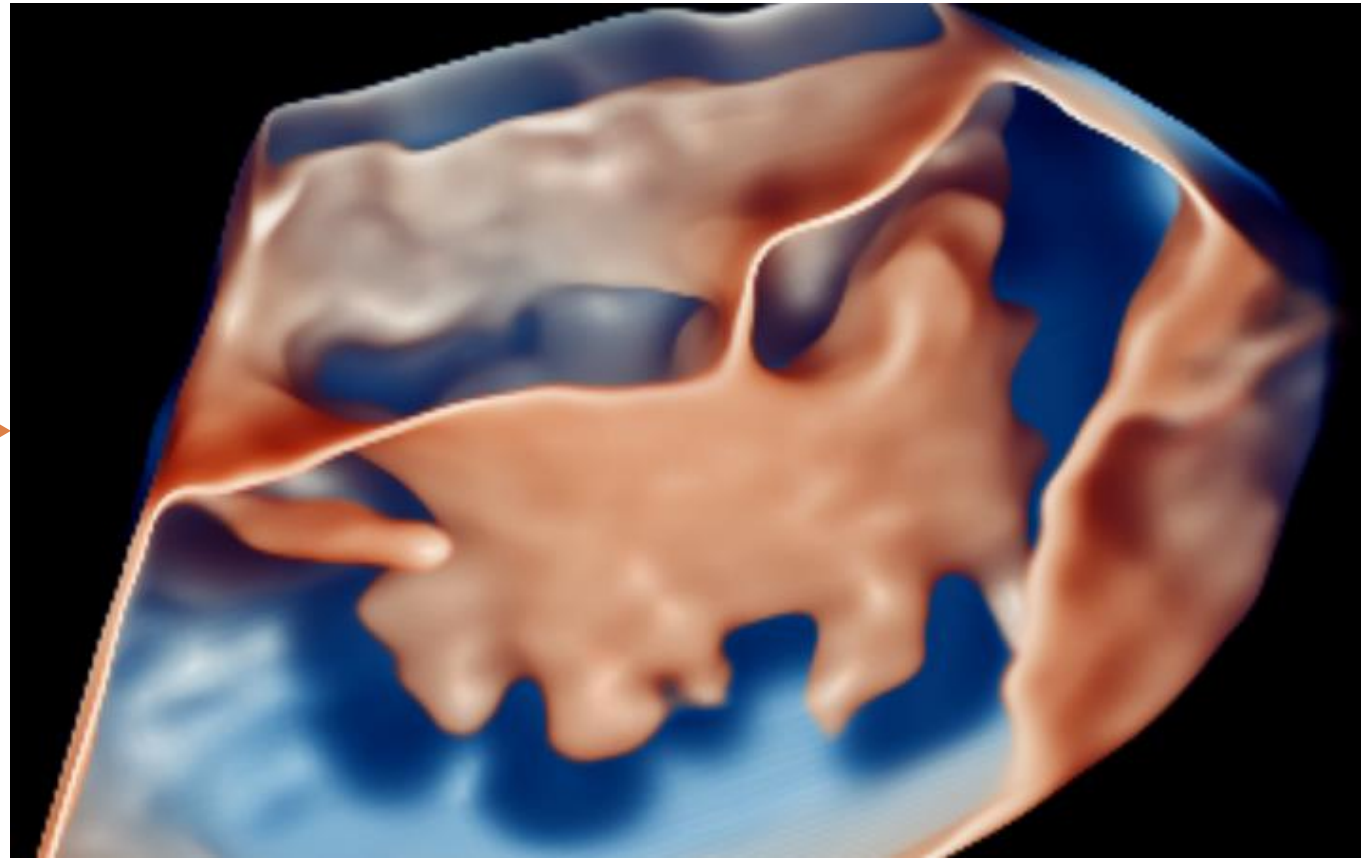
Key Biplane View of LAA



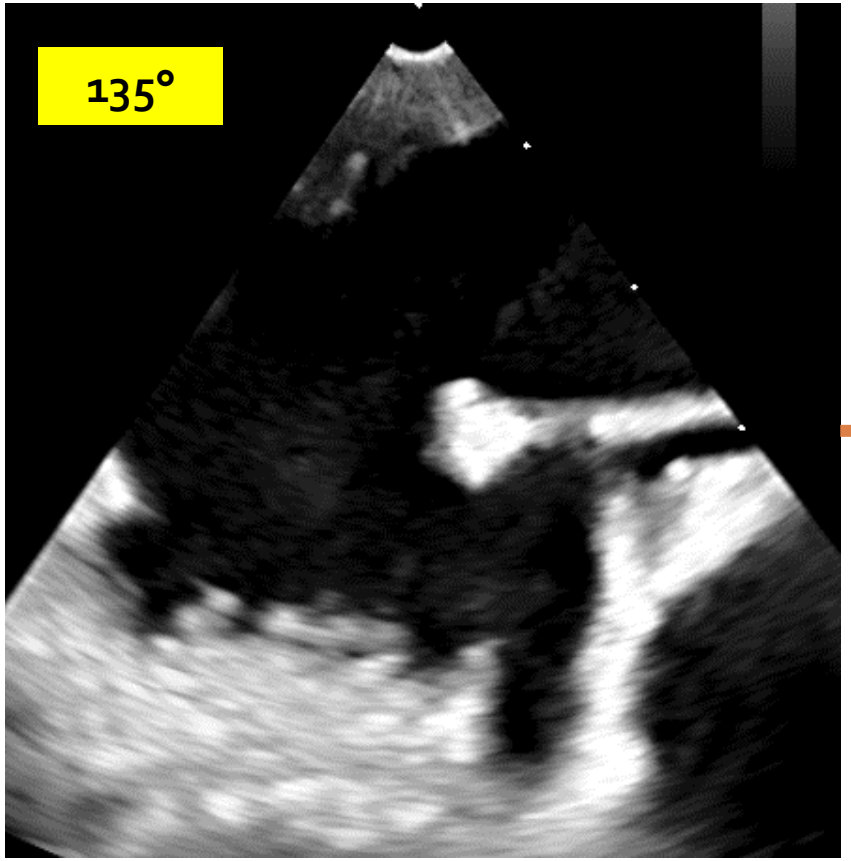
Tip #4: LAA Shape

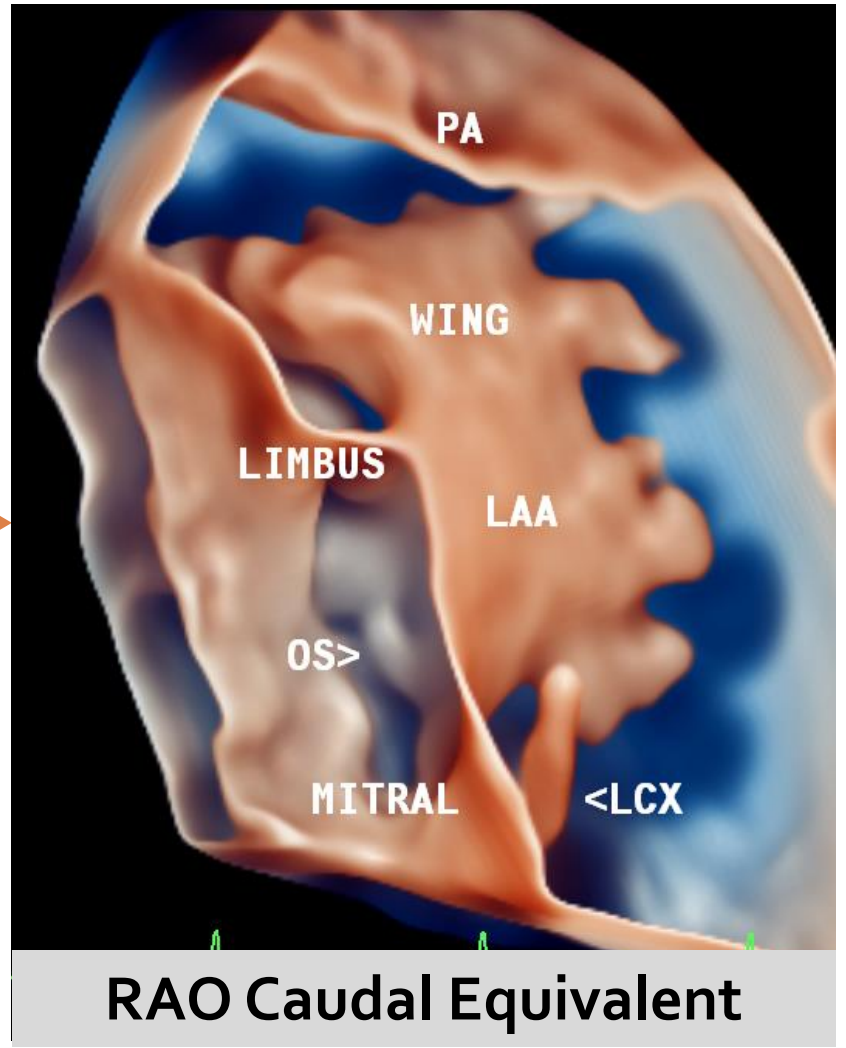
3D TEE: LAA Shape





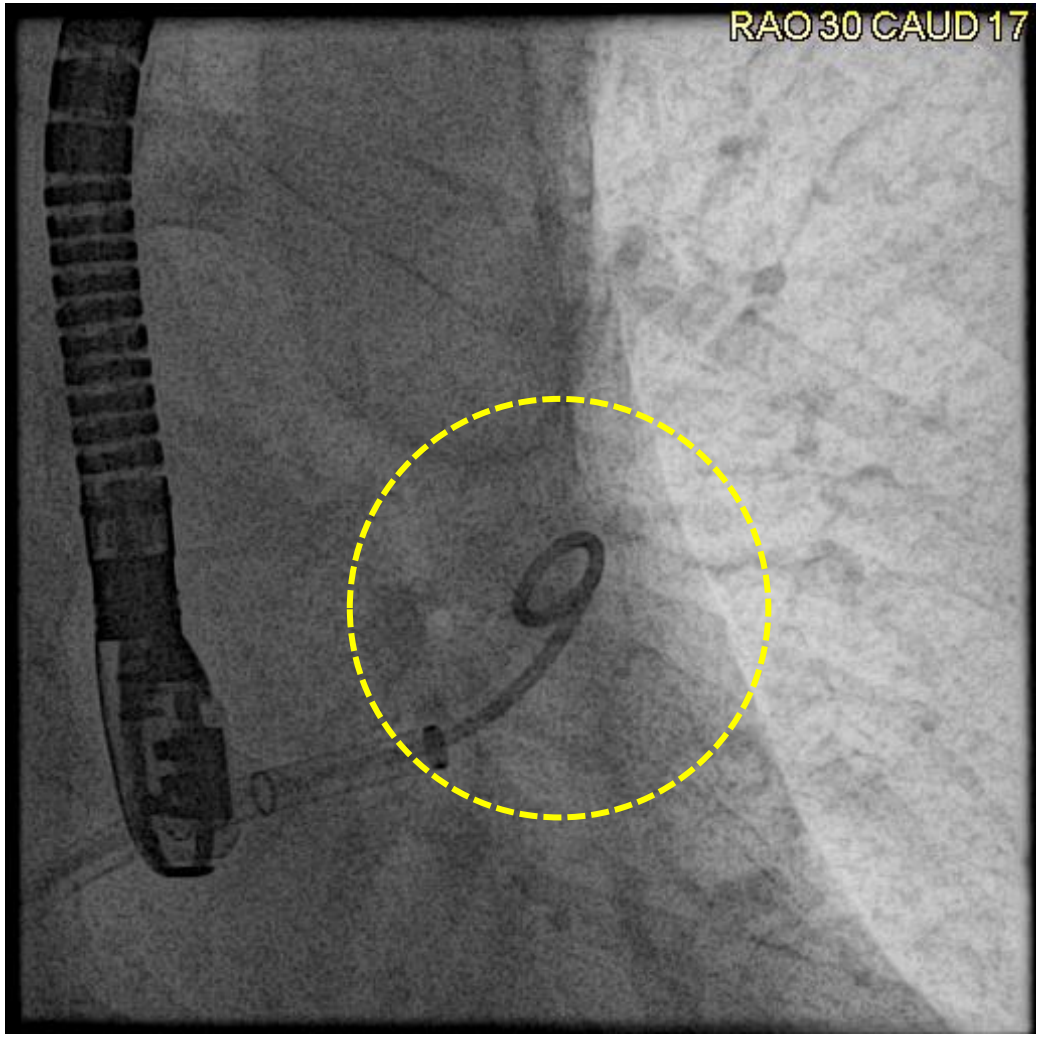
3D TEE: LAA Shape

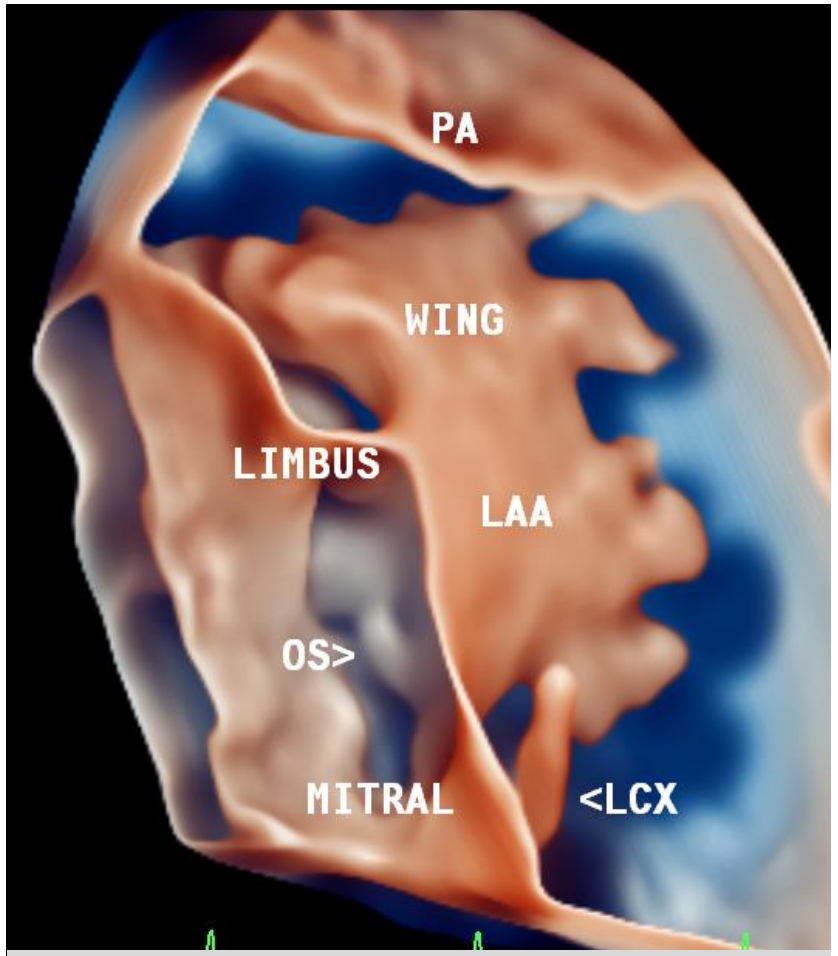




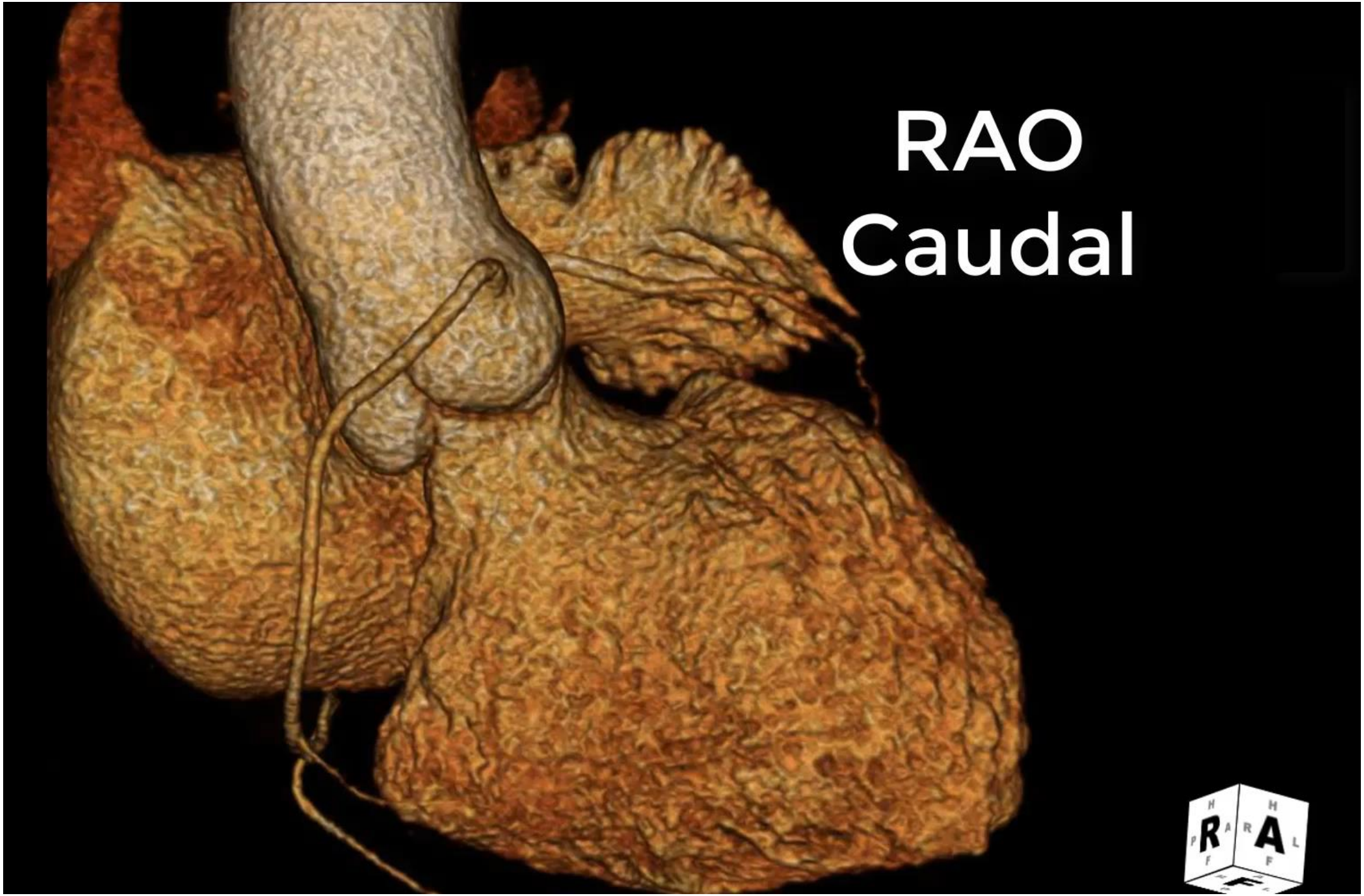
RAO Caudal Equivalent

3D TEE: LAA Shape

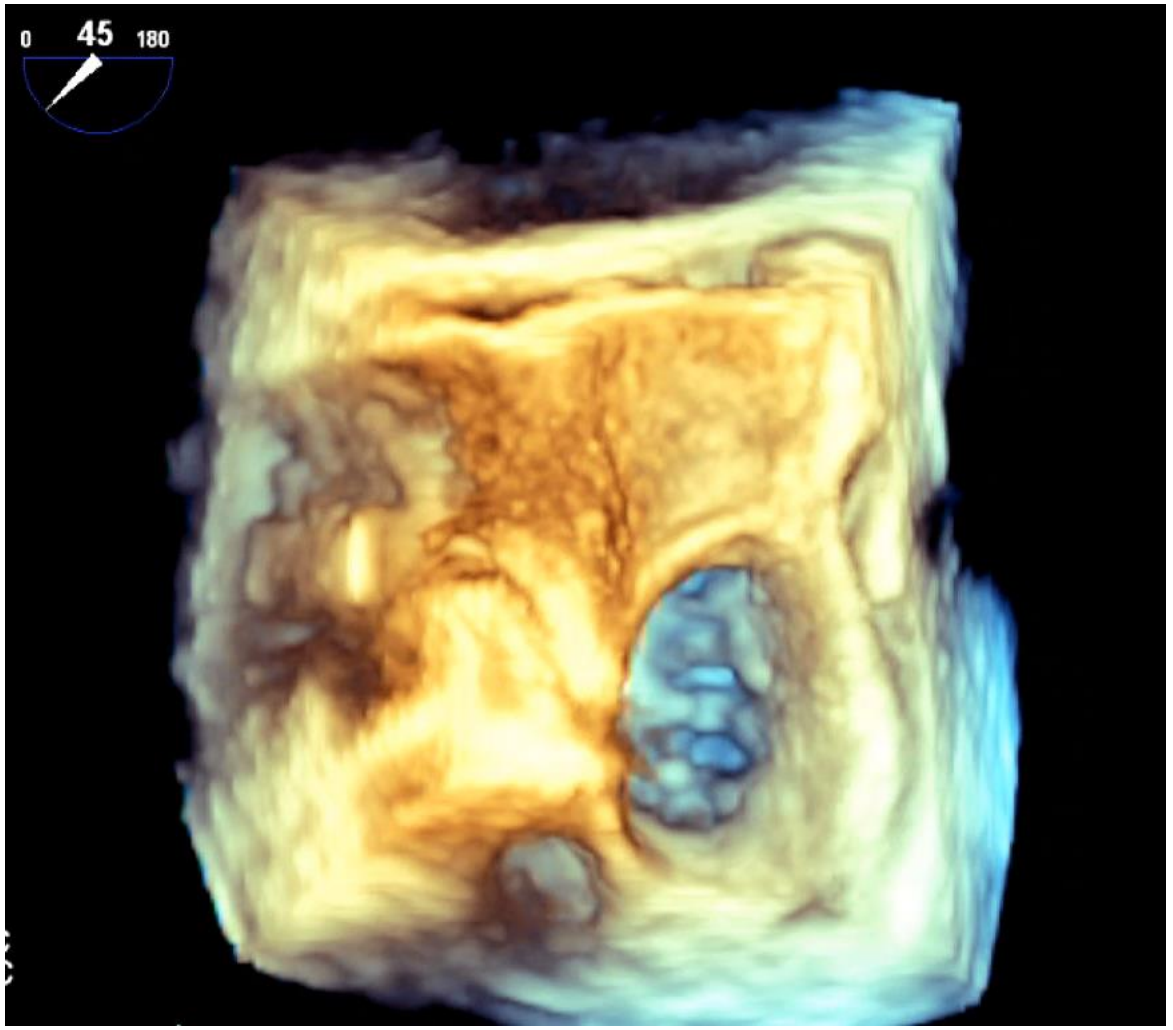




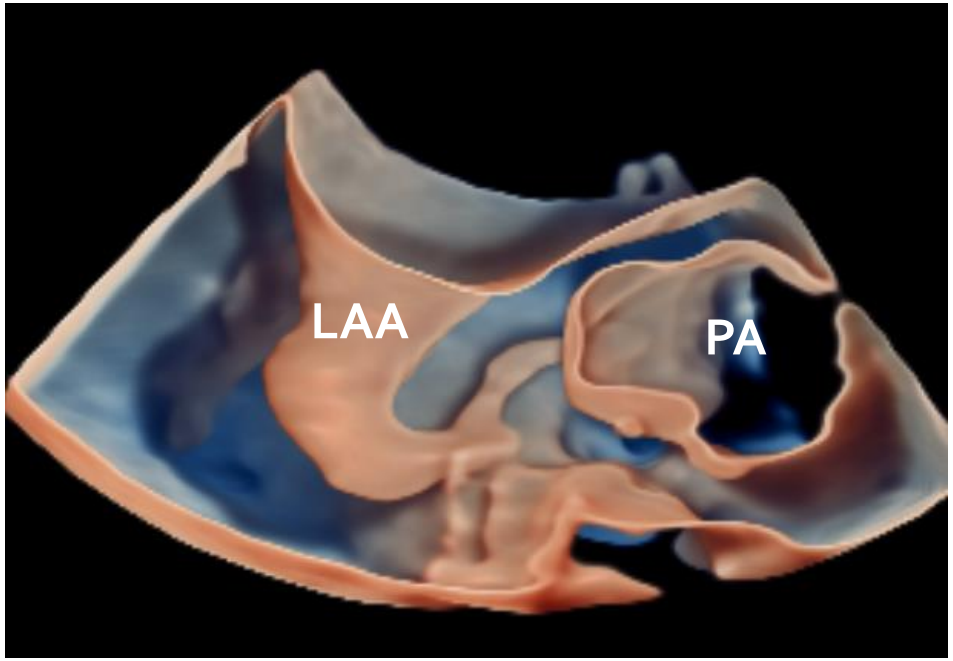
RAO Caudal Equivalent


RAO
Caudal

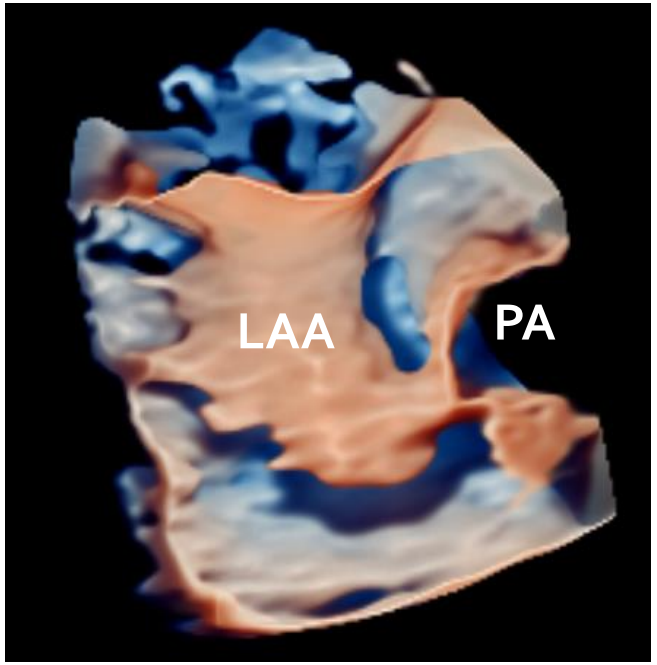
3D TEE: LAA Shape



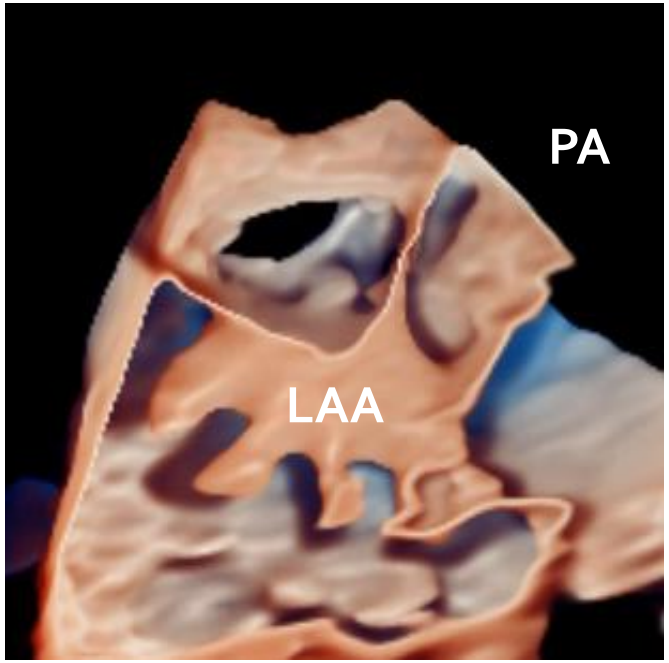
LAA Shapes



Chicken Wing

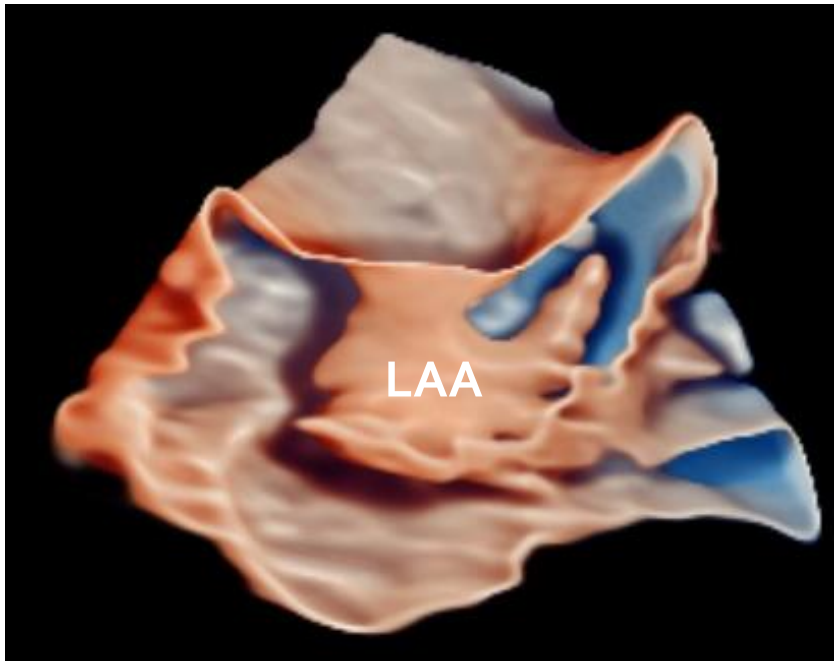


Windsock

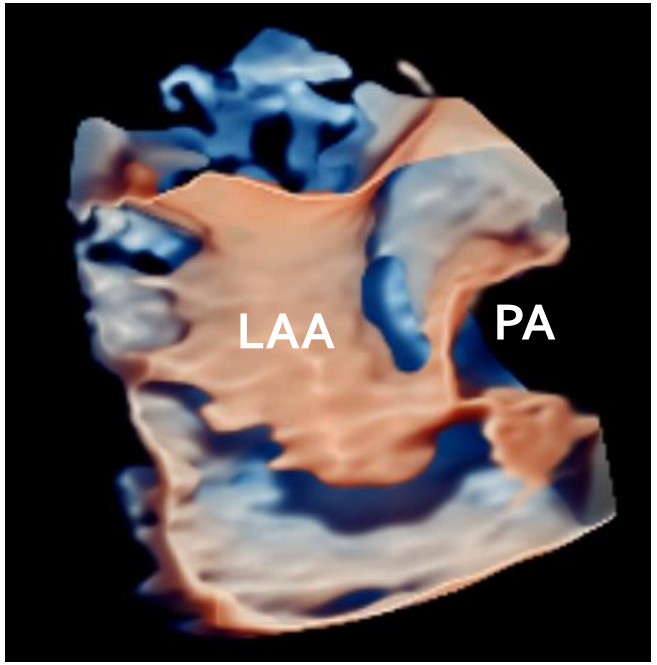


Cactus

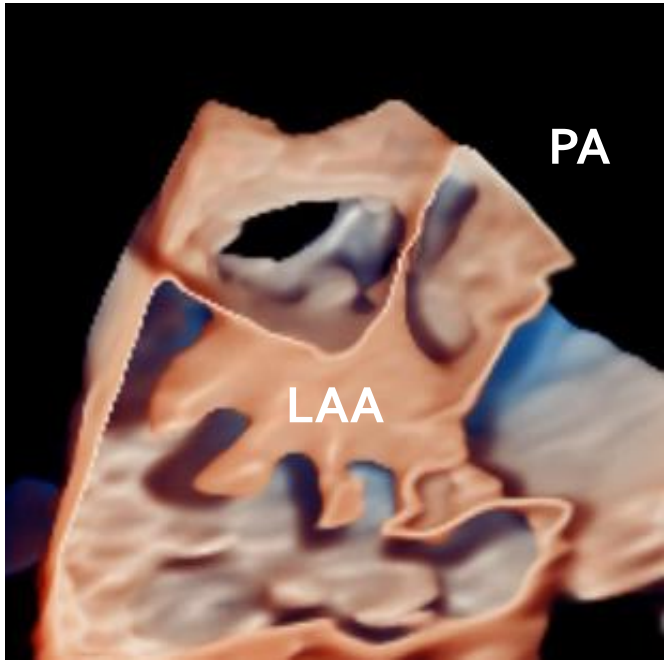
LAA Shapes



Wing + Narrow Orifice

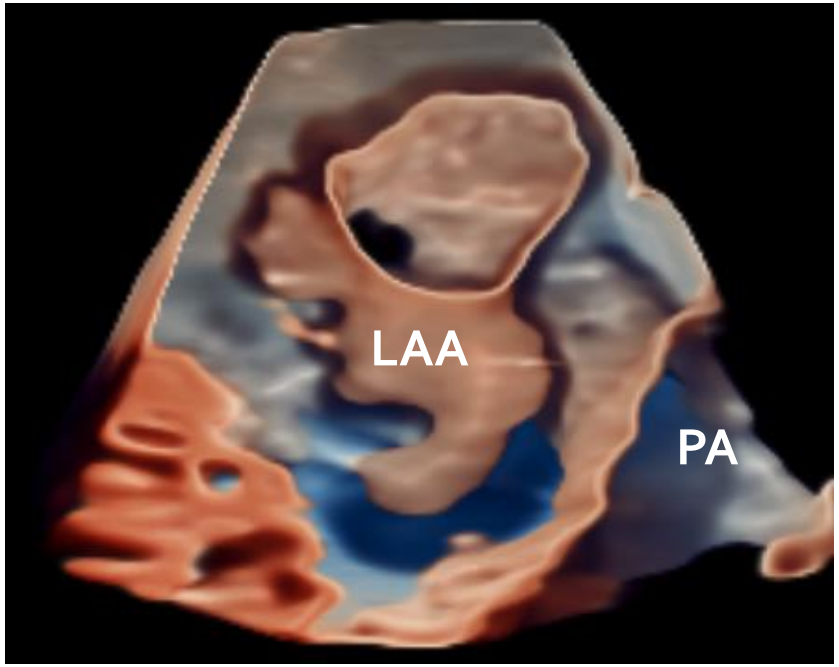


Windsock

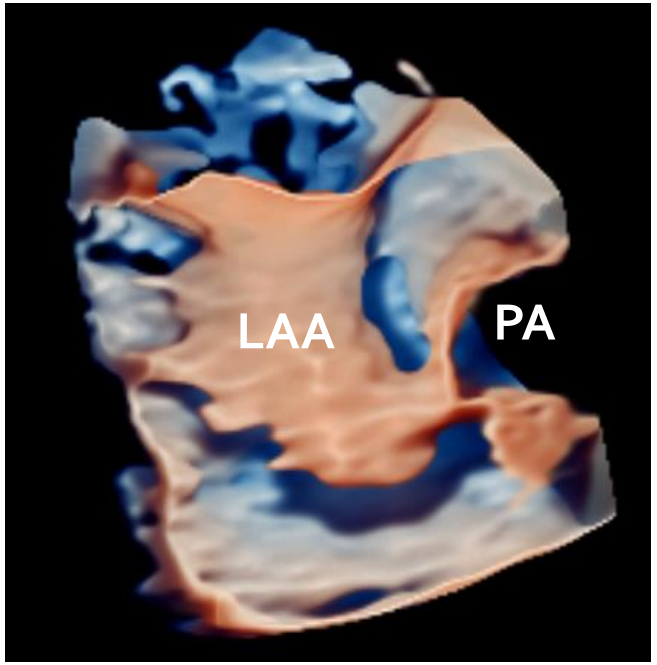


Cactus

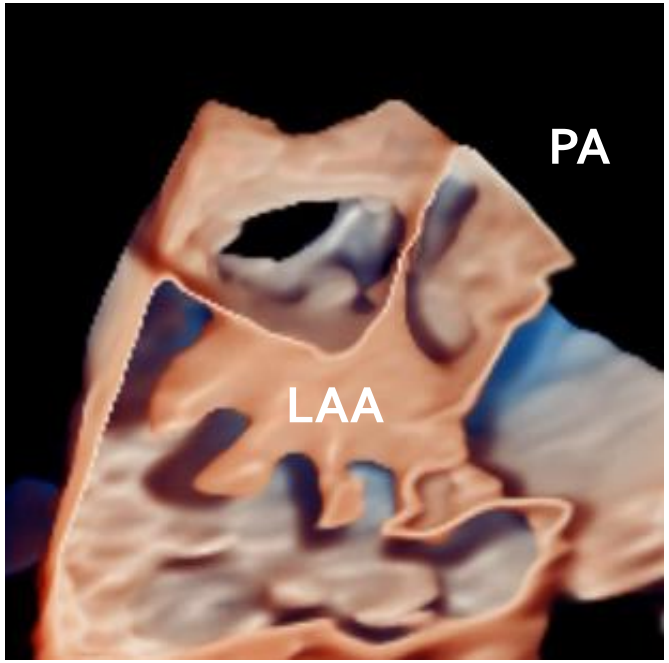
LAA Shapes



Name the Shape

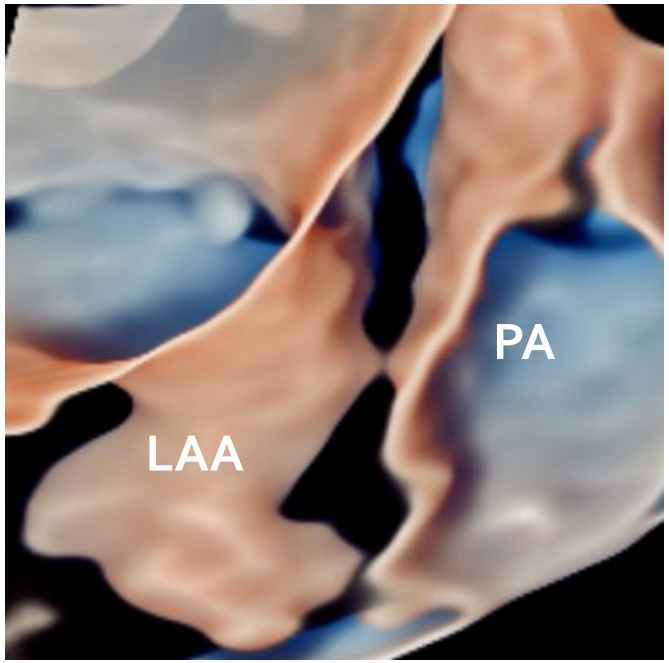


Windsock

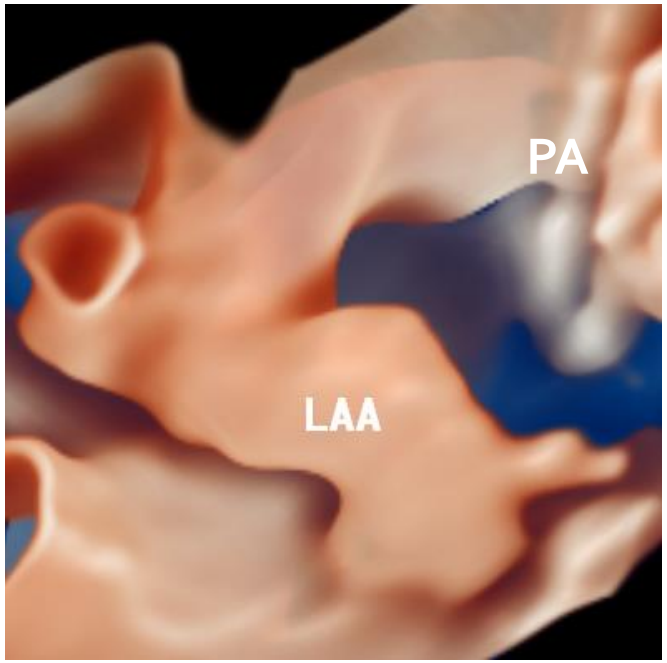


Cactus

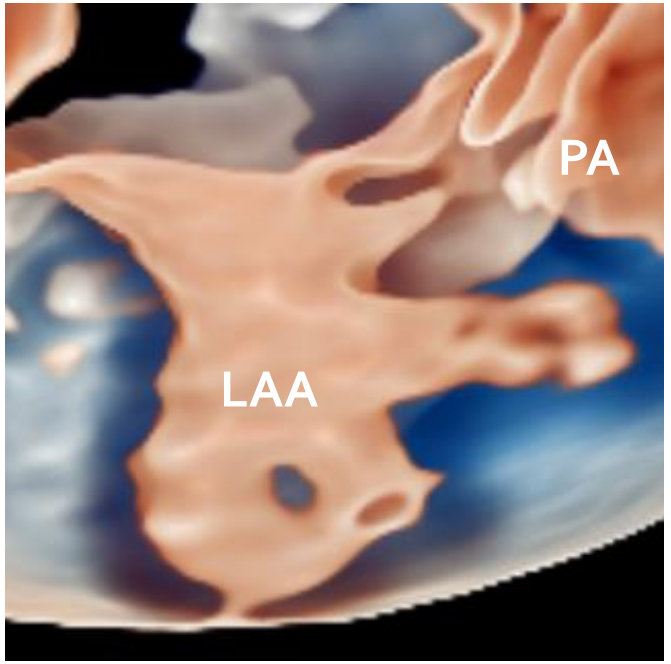
More LAA Shapes



Boot



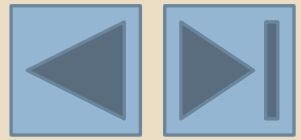
Double Bend



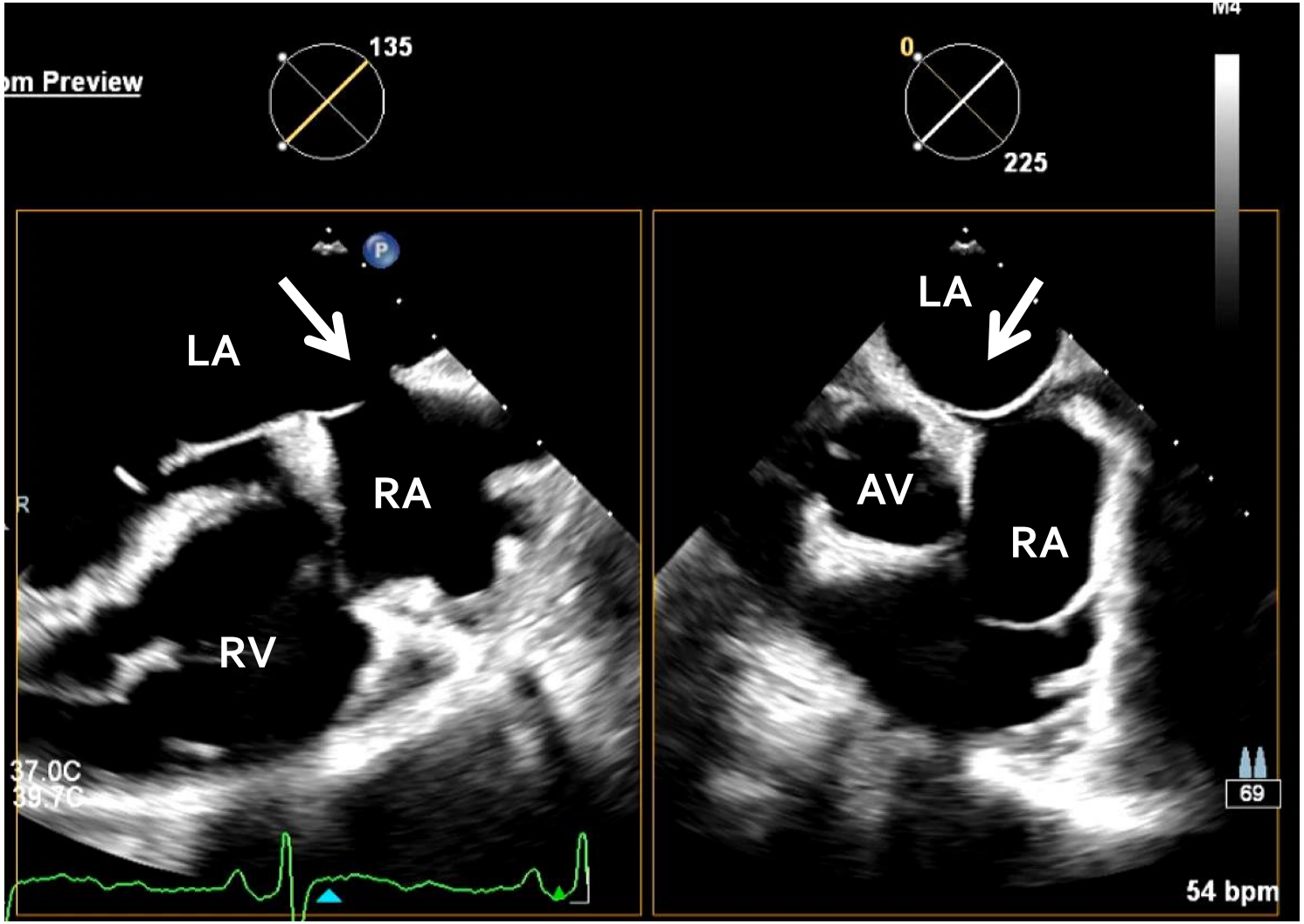
Whistle

More LAA Shapes

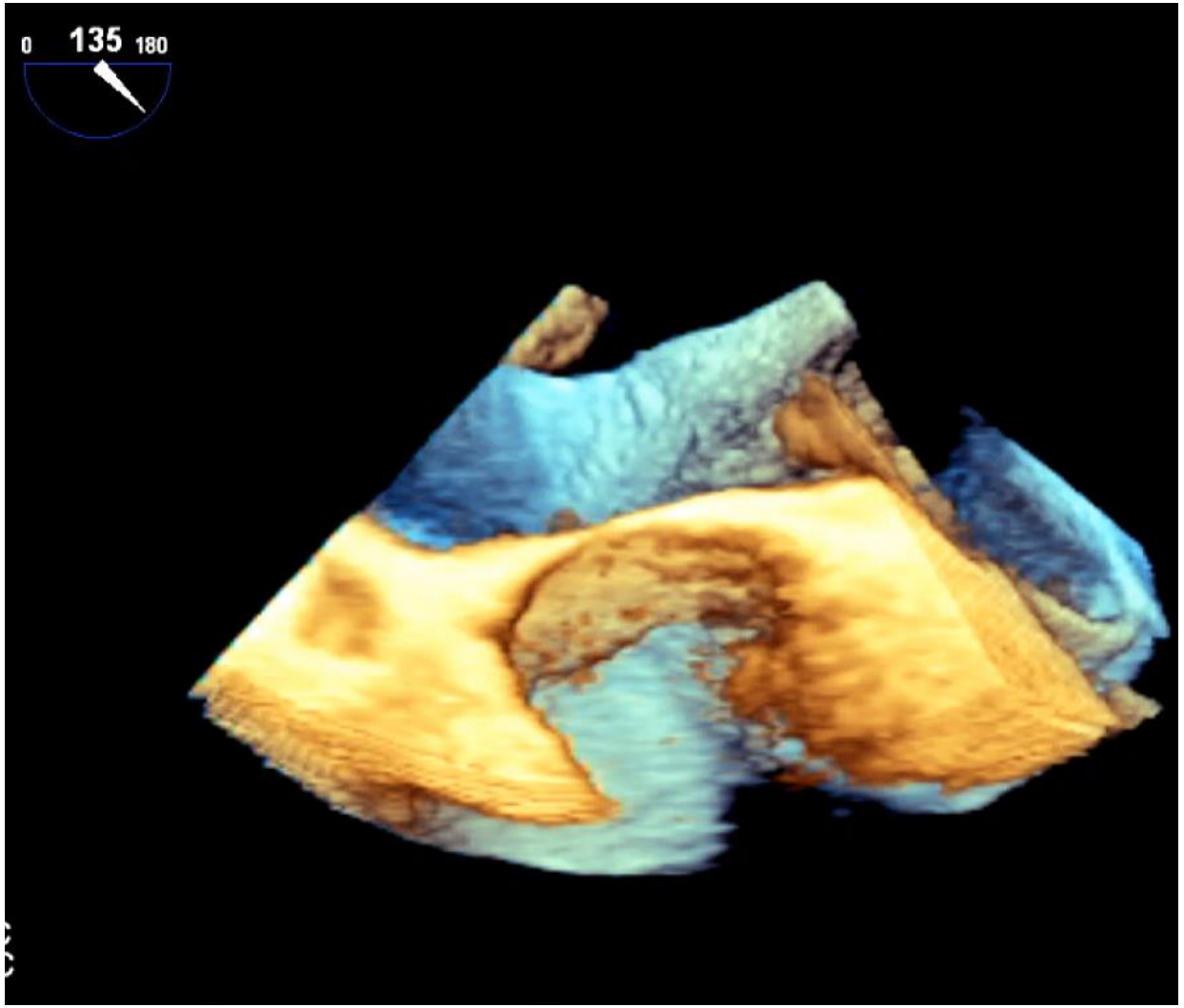
3D TEE Tricks: Atrial Septal Defect



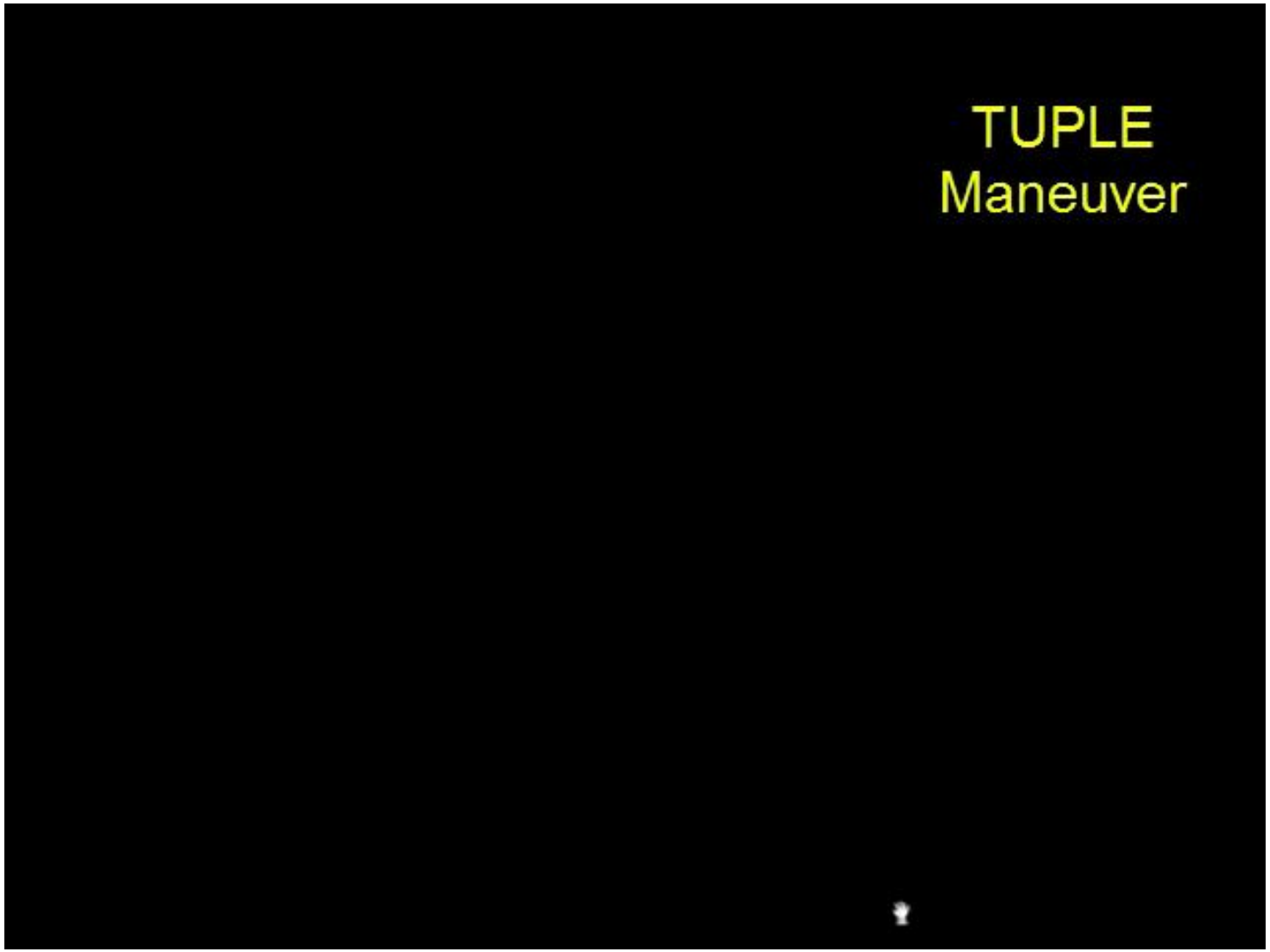
Biplane Imaging: Secundum ASD



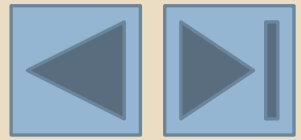
Secundum ASD: TUPLE Maneuver



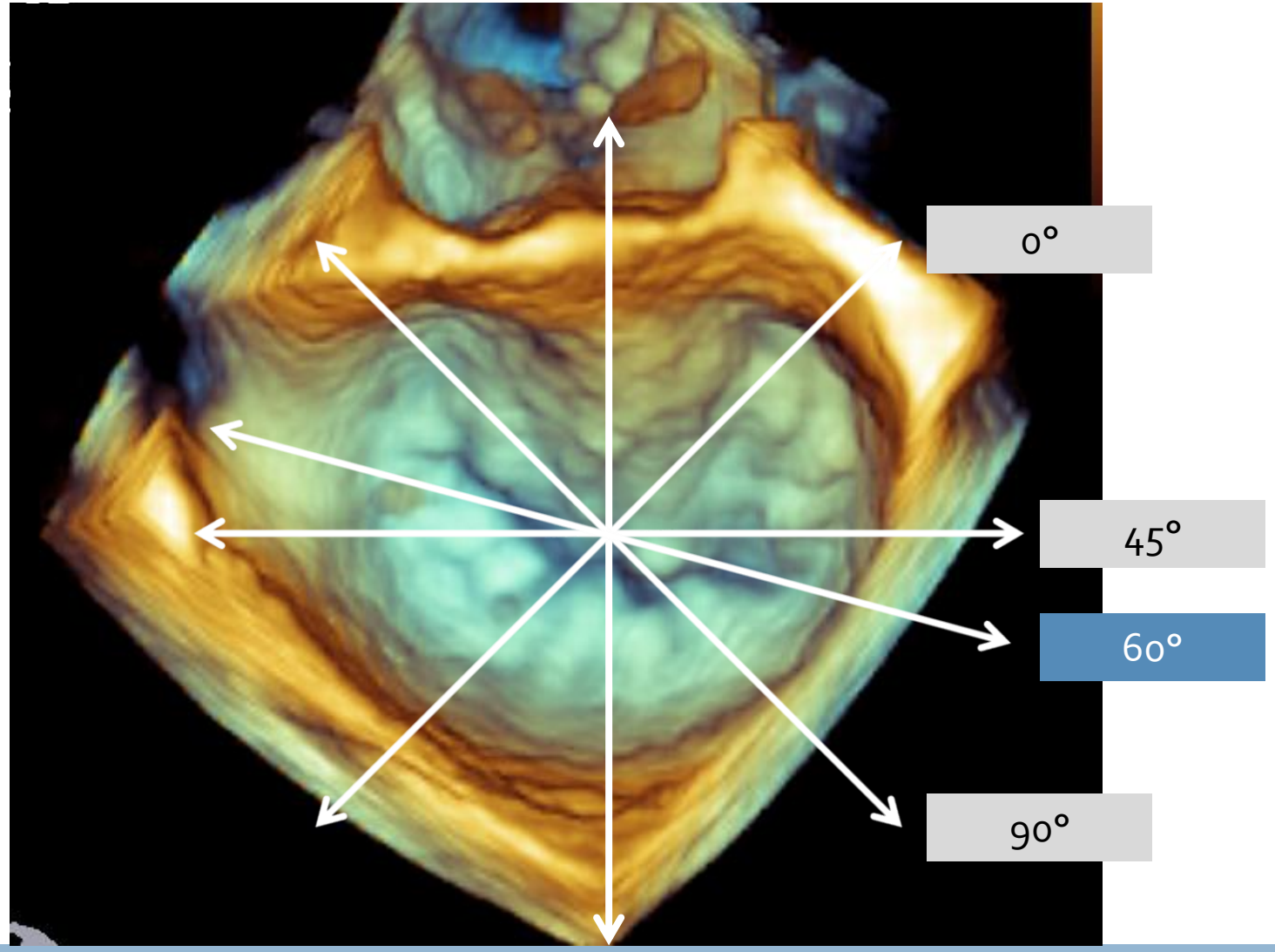
3D TEE: Secundum ASD TUPLE Maneuver

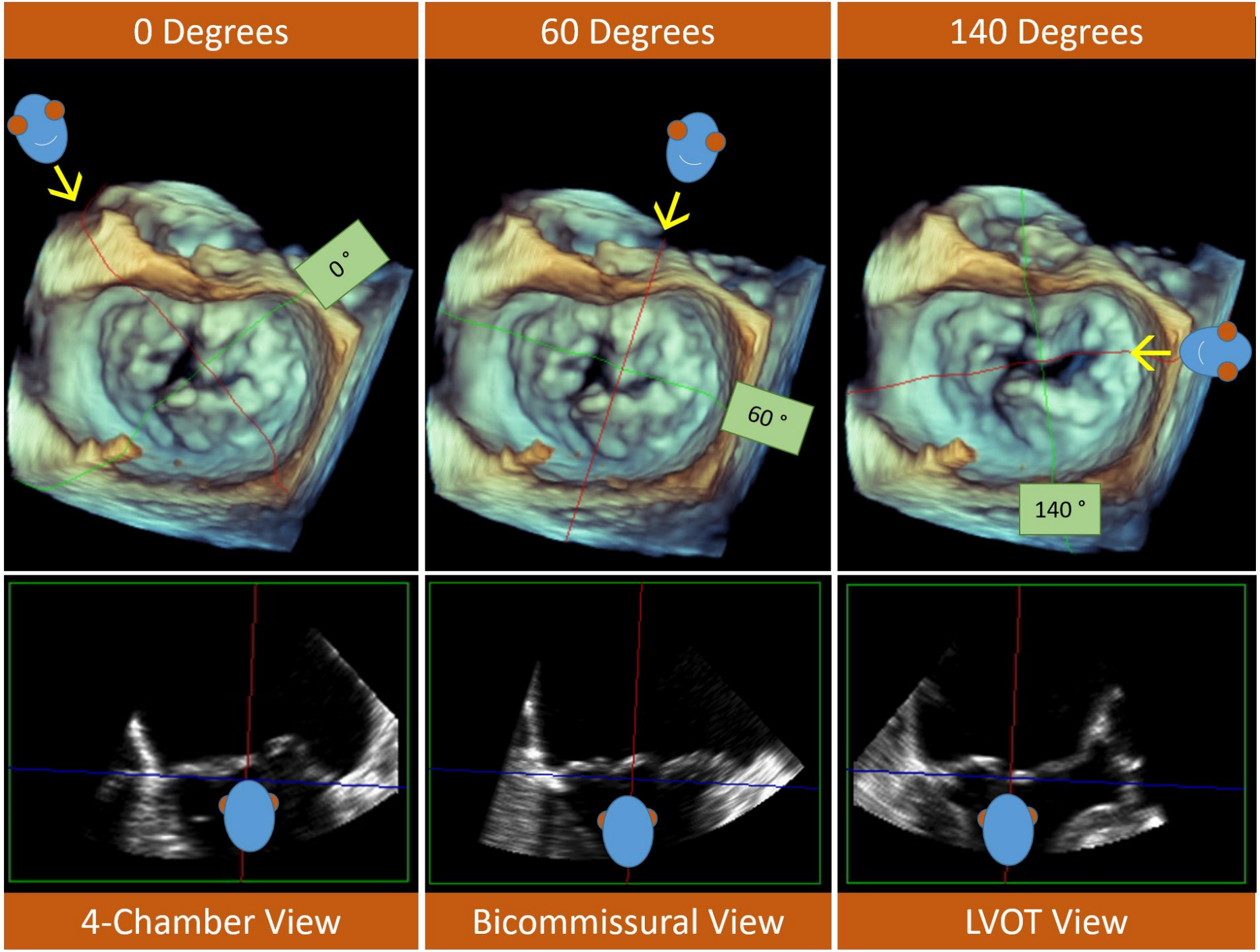


3D TEE Tricks: Mitral Valve

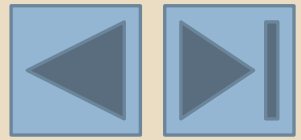


Surgical View of Mitral Valve



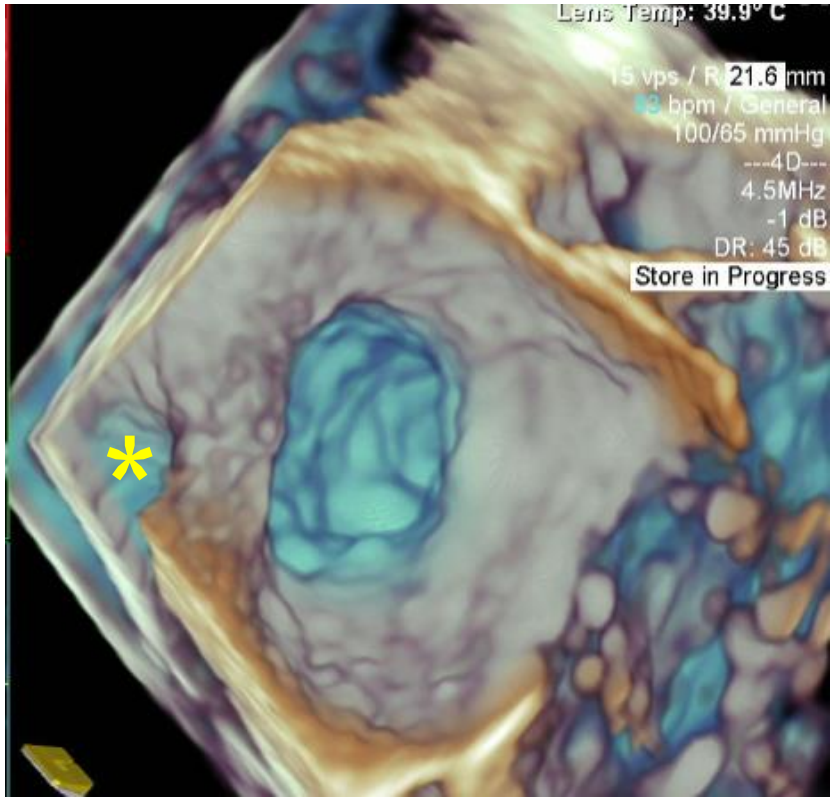

0 Degrees
60 Degrees
140 Degrees
0 °
60 °
140 °
4-Chamber View
Bicommissural View
LVOT View

Questions

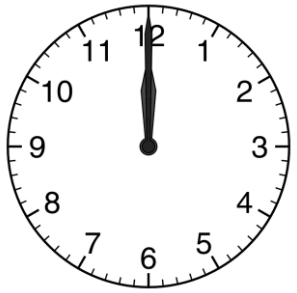


Question #1

On the enclosed image, the asterisk marks which of the following structures?

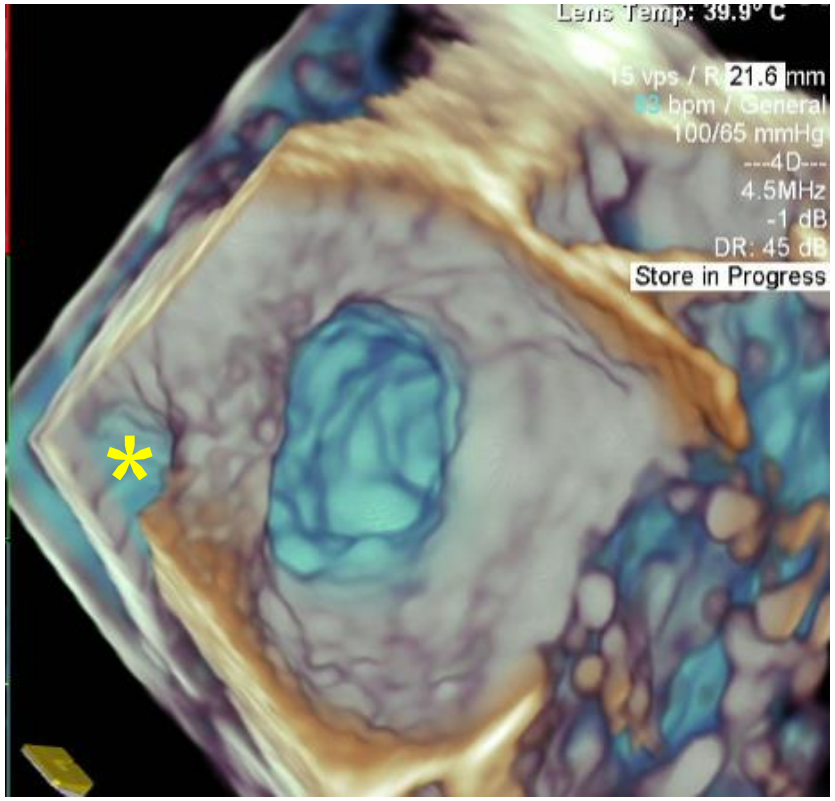


A. Coronary sinus
B. Left atrial appendage
C. Mitral valve
D. Pulmonary artery
E. Pulmonary vein



Question #1

On the enclosed image, the asterisk marks which of the following structures?

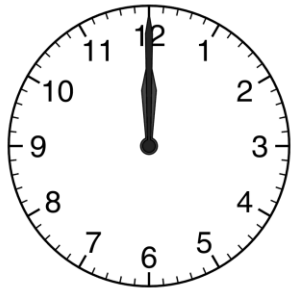


A. Coronary sinus
B. Left atrial appendage
C. Mitral valve
D. Pulmonary artery
E. Pulmonary vein

Question #2

When measuring the landing zone diameter of the LA appendage in preparation for device closure of LAA, which one of the following 2D TEE imaging angles is typically NOT used for such a measurement?

A. 0°
B. 25°
C. 45°
D. 90°
E. 135°



Question #2

When measuring the landing zone diameter of the LA appendage in preparation for device closure of LAA, which one of the following 2D TEE imaging angles is typically NOT used for such a measurement?

A. 0°
B. 25°
C. 45°
D. 90°
E. 135°

Thank You

New York University Langone Health