



Heart & Vascular
Center

2024 Northern California Structural Heart Summit



Techniques to optimize intraprocedural imaging guidance for LAAO

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DISCLOSURE

- No relevant conflicts of interest



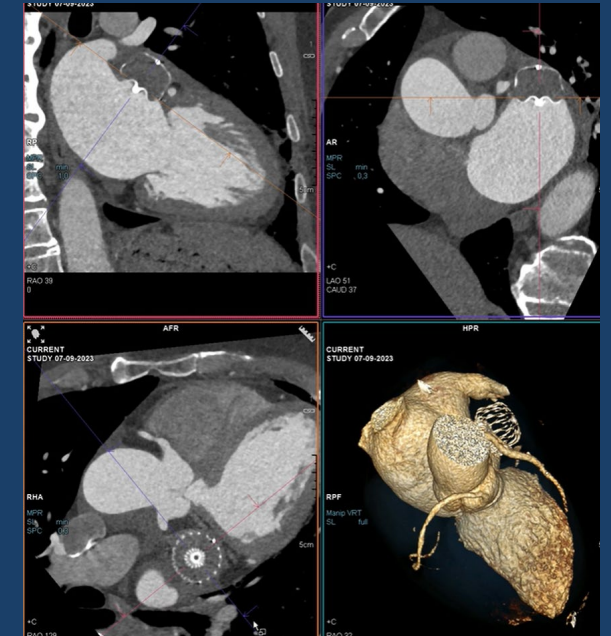
OBJECTIVES

- Provide a brief overview of multi-modality imaging in LAAO guidance
- Outline the different aspects of TEE guidance of LAAO procedures
- Review techniques for intraprocedural TEE imaging optimization



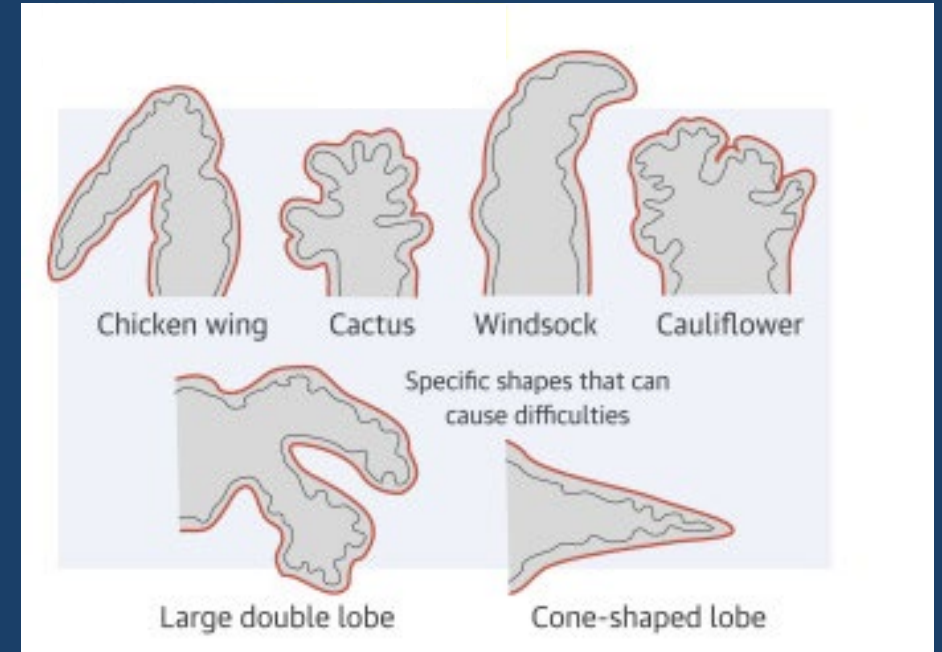
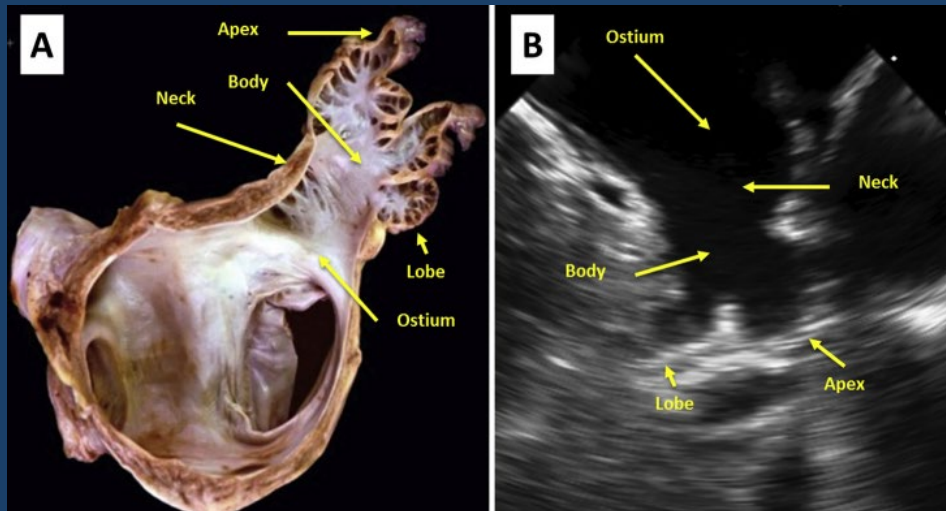
Multi-modality imaging

- Important tool in assessing and guiding LAAO procedures
- Pre and post procedural assessment
 - TEE (2D and 3D MPR)
 - Cardiac CT
- Intraprocedural guidance
 - TEE
 - ICE
 - Fluoroscopy



TEE Pre-procedural LAA assessment

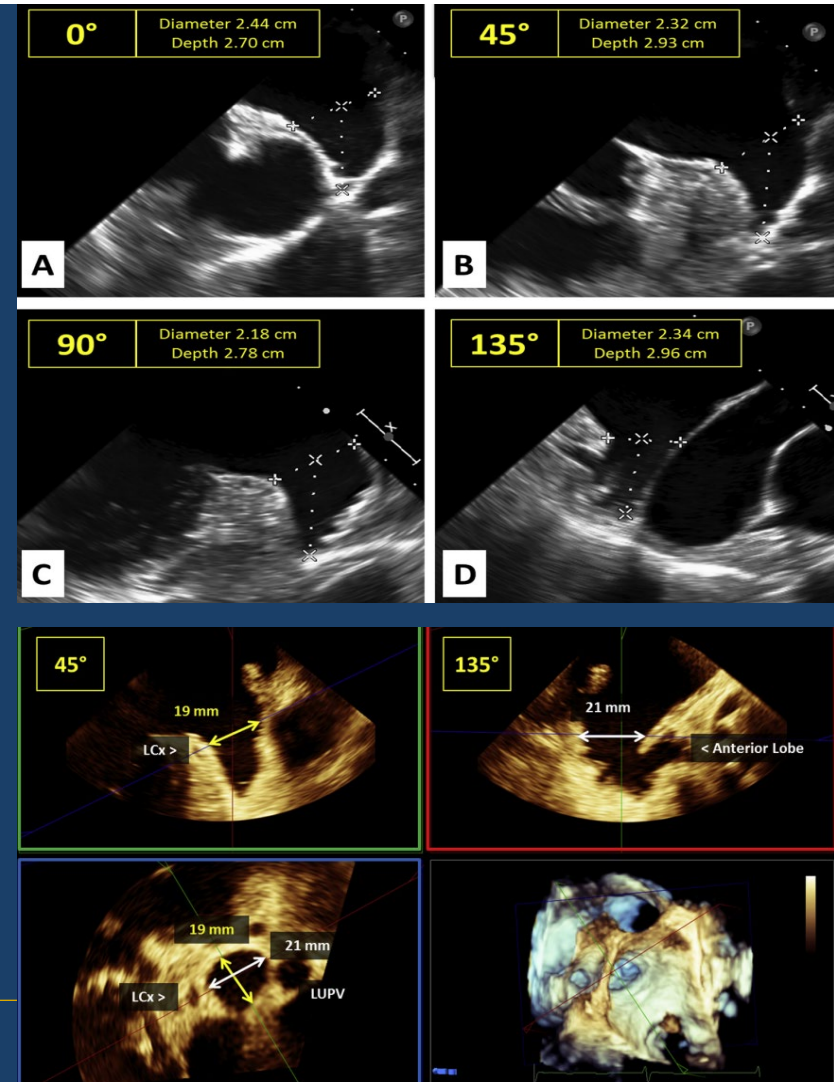
- Detail LAA anatomy
 - Morphology
 - Lobes, angulations, trabeculations
 - Surrounding structures



Wunderlich et. al. JACC Cardiovasc Imaging 2015.

Pre-procedural LAA assessment

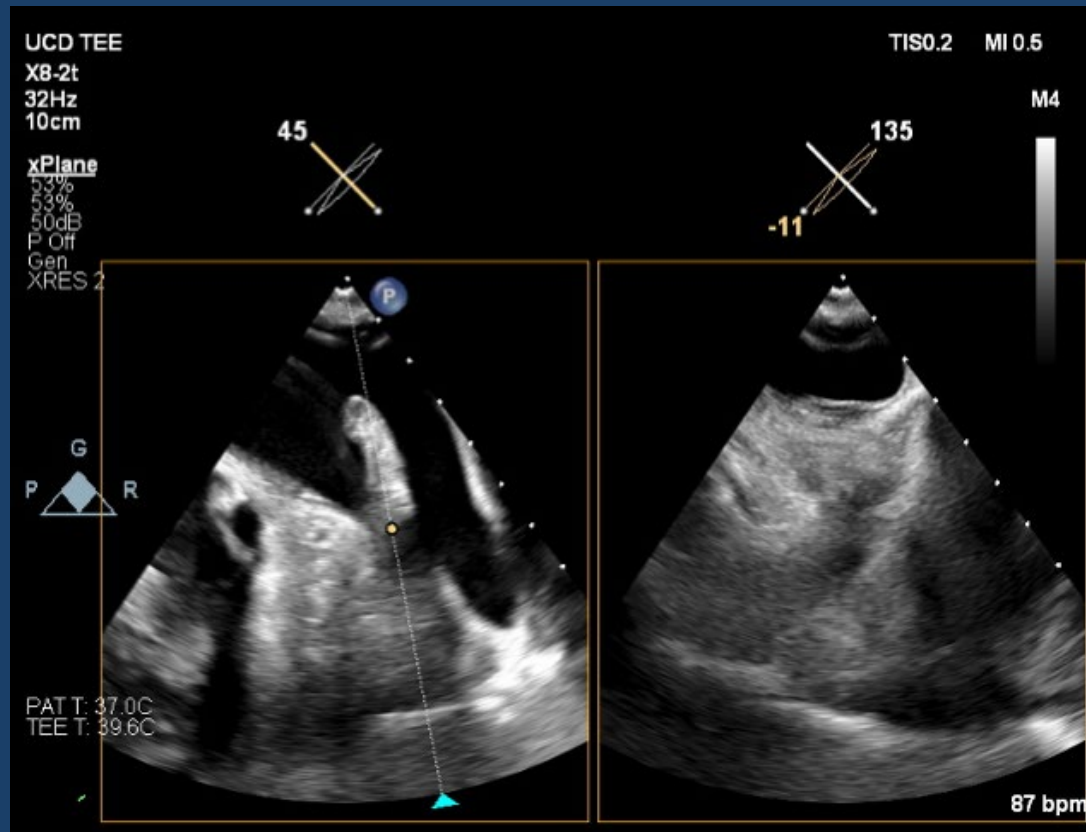
- LAA sizing
- Suitability for closure
- Appropriate device
 - Standard views (0, 45, 90, 135 degrees)
 - Ostial or landing zone diameter, depth
- 2D and 3D with MPR assessment
- Evaluate for potential complicating factors:
 - LA/LAA thrombus
 - Pacemaker/ICD lead lesions
 - Atrial septal aneurysm, large shunts
 - Large pericardial effusions



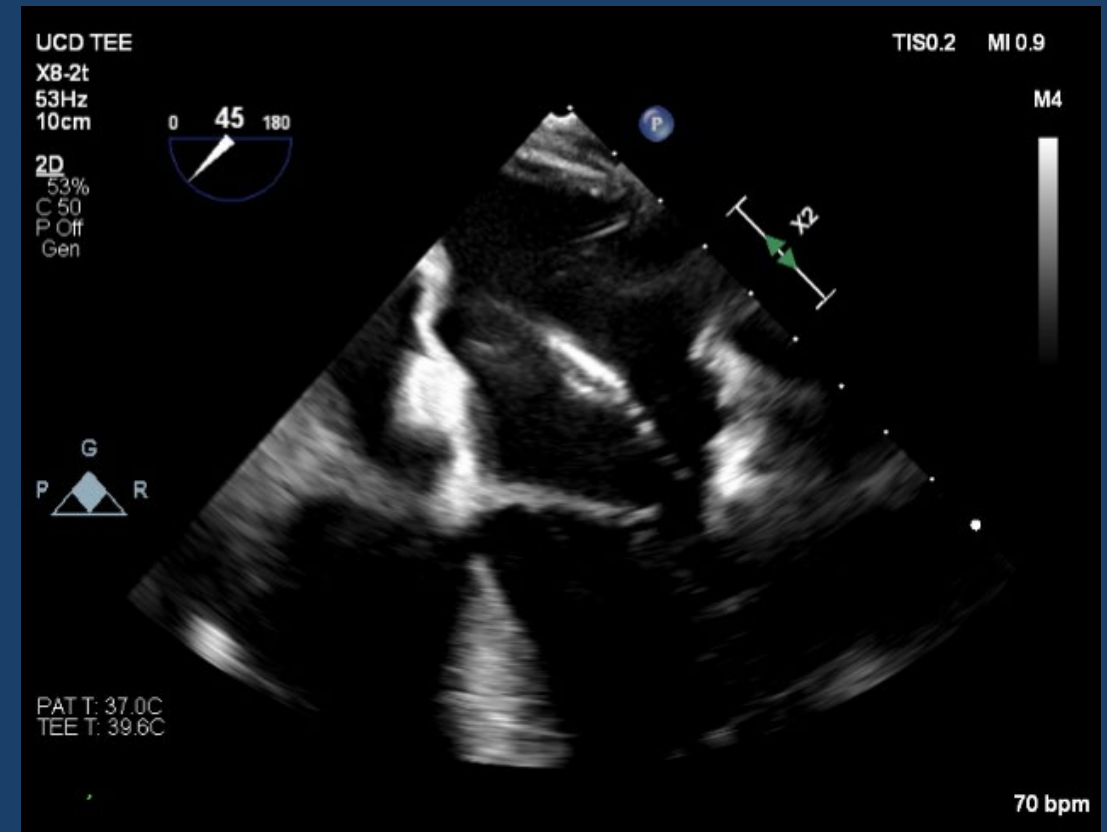
Vainrib et. al. JASE 2018.

Common LAA imaging challenges

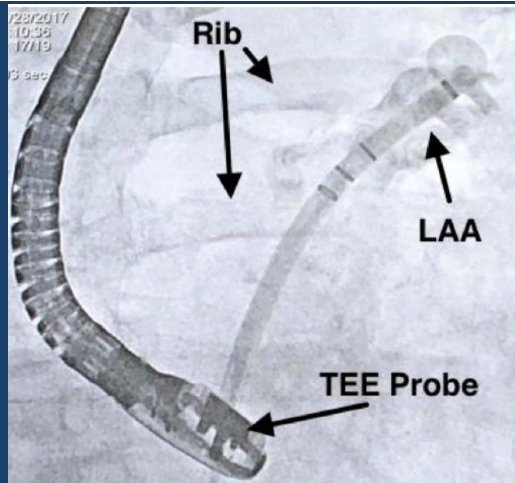
The overriding Coumadin ridge



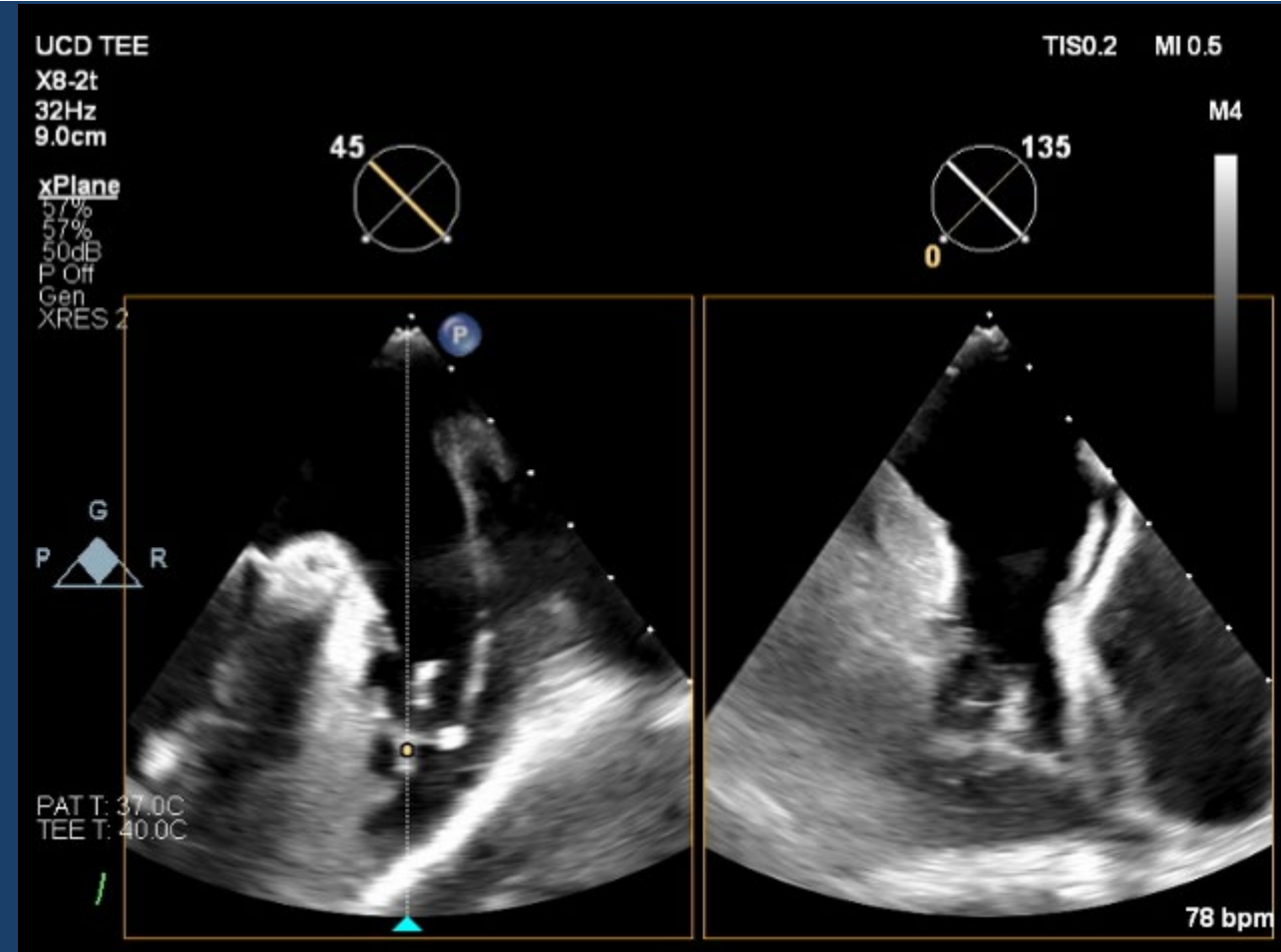
The unfocused image



LAA Image Optimization

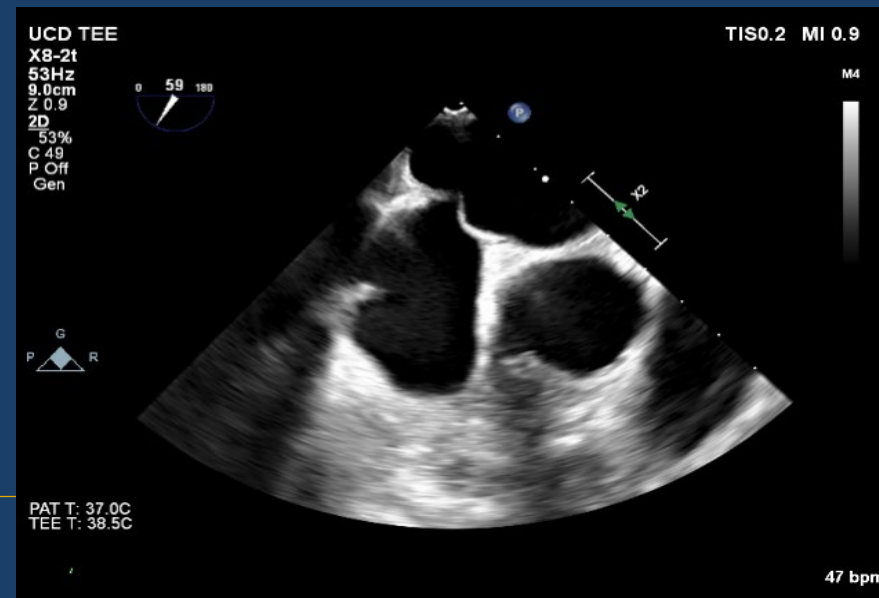
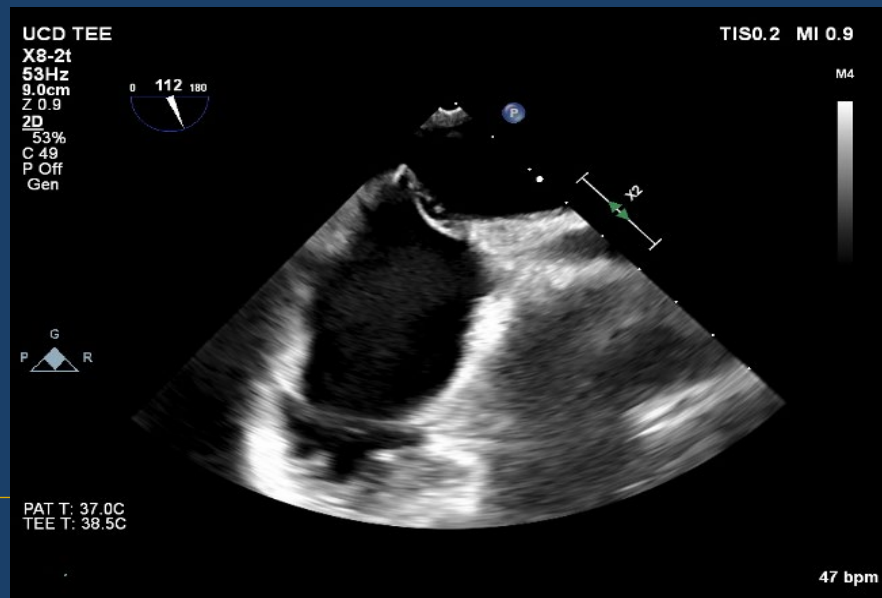
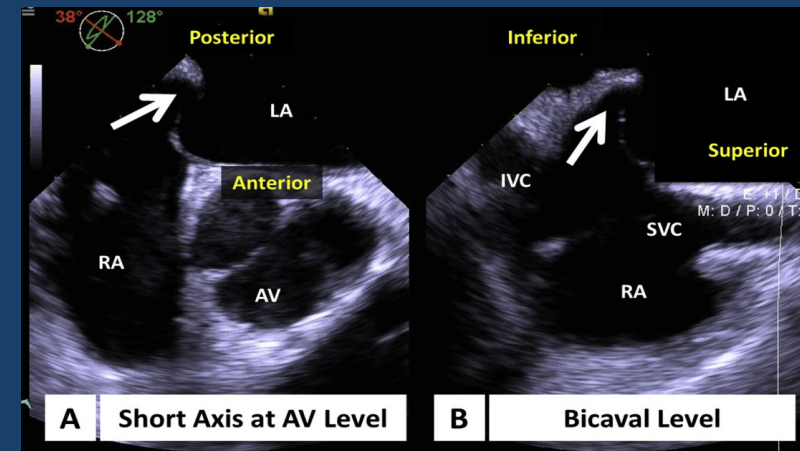


- TEE probe advancement and anteflexion
- Utilizing image post processing tools
 - Narrow *sector width*, increase *frame rate*
 - Decrease *depth* (instead of using *zoom*)
 - Optimize *gain* and *gray scale*
 - Adjust *focus*



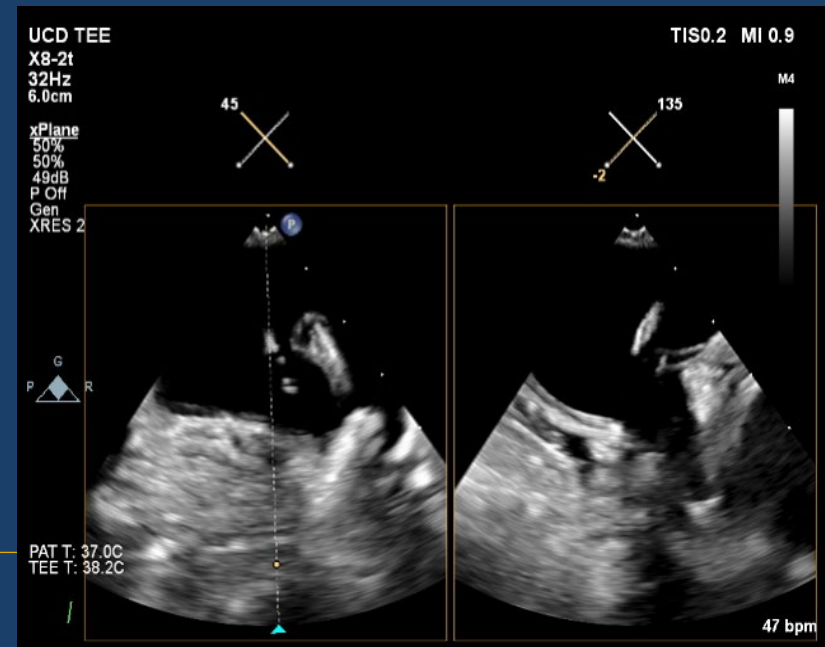
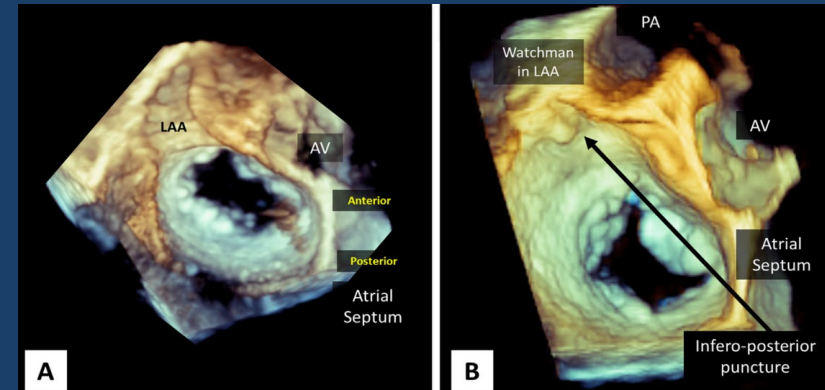
Intraprocedural Guidance – crossing the septum

- Trans-septal puncture
 - Clearly show the superior-inferior (bicaval), anterior-posterior (short AV) axes of the IAS
 - Cross in the inferior-posterior part
 - Avoid LASH
 - Ensure no thrombus crosses



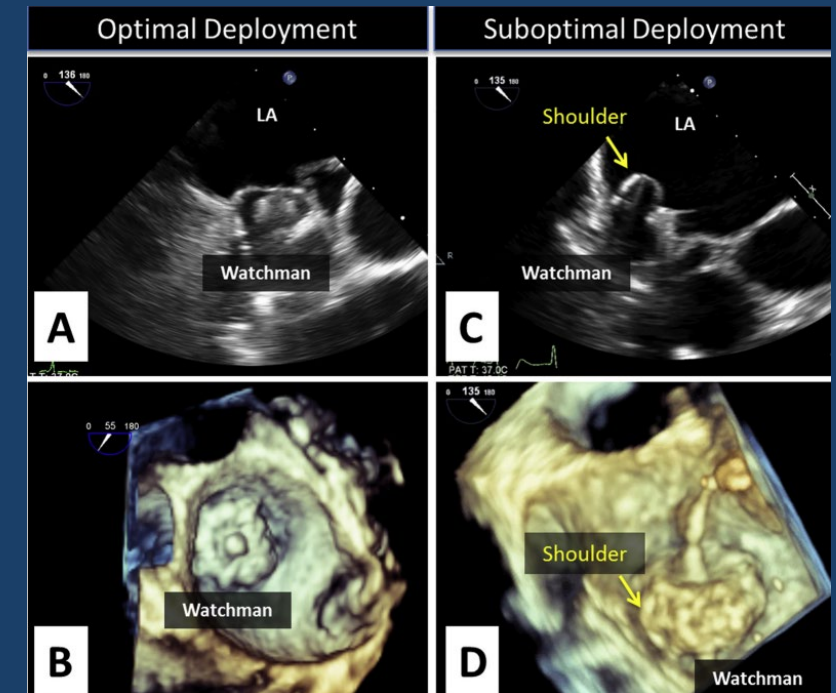
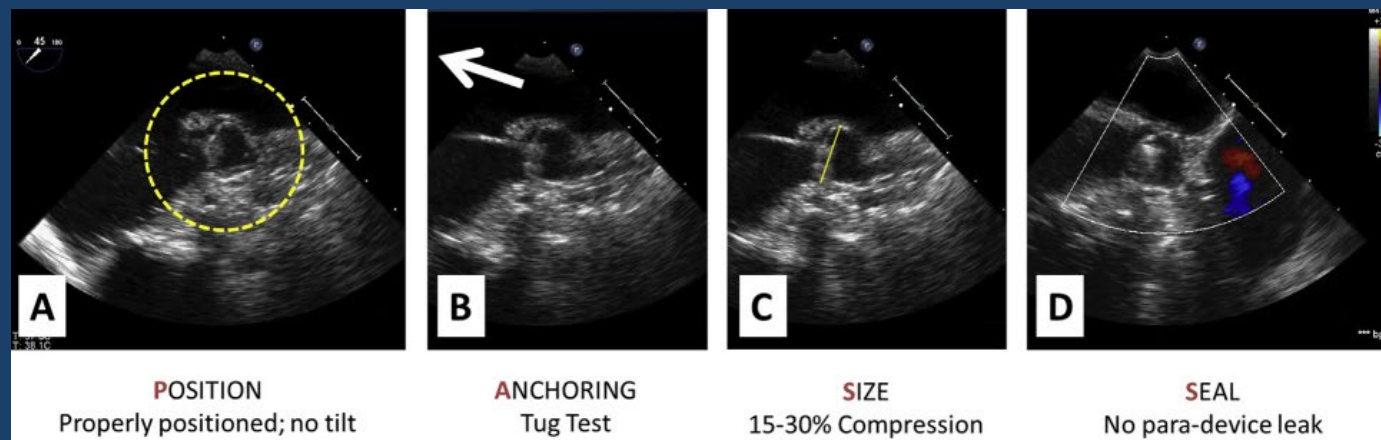
Intraprocedural Guidance – advancing to the LAA

- Guide catheter advancement to the LAA
 - Show advancement of the pigtail into the LAA
 - 3D can help confirm location and guide advancement



Intraprocedural Guidance – device deployment

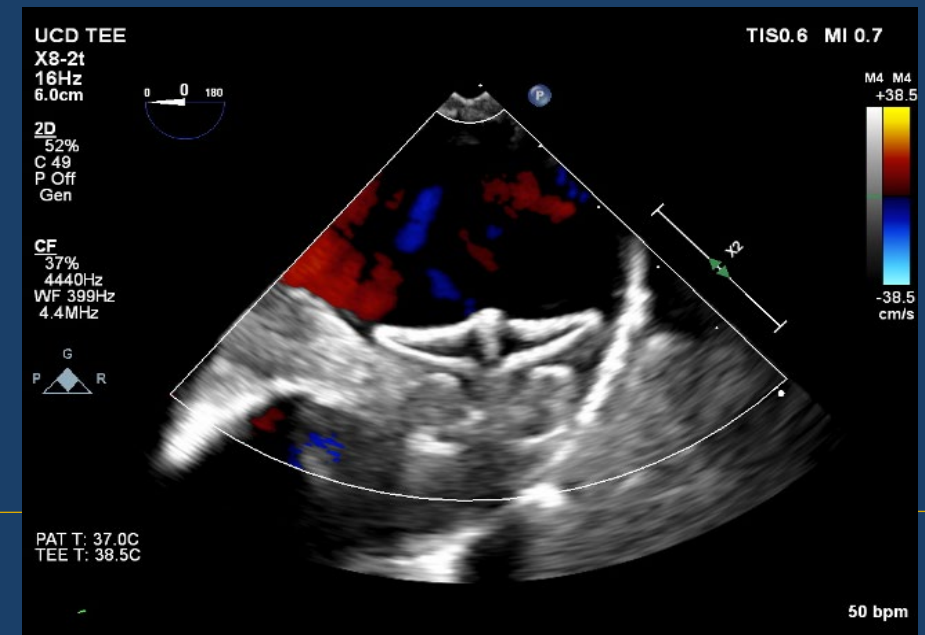
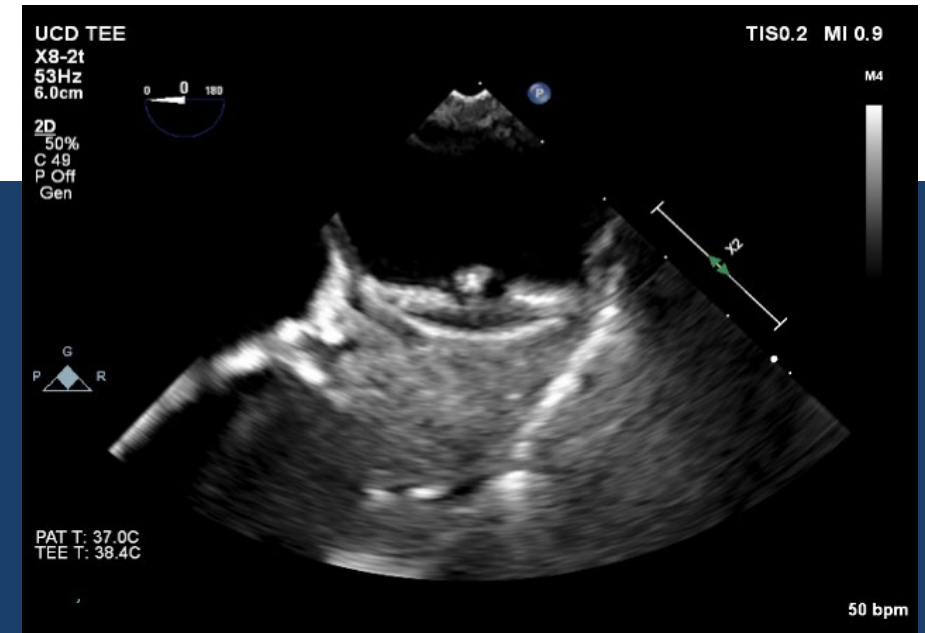
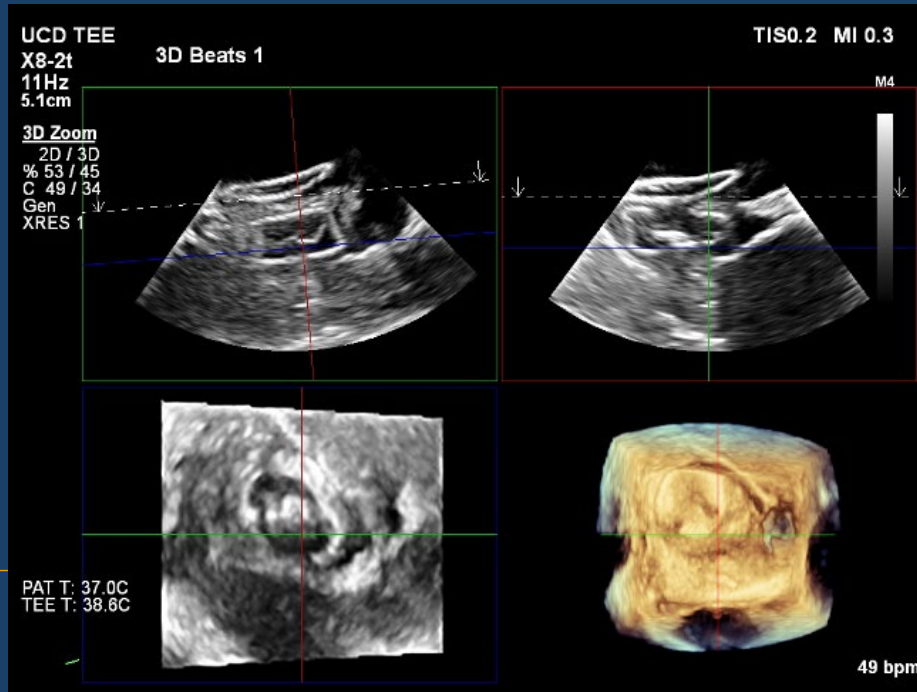
- LAAO device deployment
 - Optimize visualization during deployment
 - Ensure device stability
 - Adequate device compression
 - Peri-device leak



Vainrib et. al. JASE 2018.

Device assessment

- 3D MPR can enhance device assessment post-deployment
- Assess for PDL using a low Nyquist limit (30 cm/s) to increase detection sensitivity



SUMMARY

- Know your anatomy
- Communicate clearly with your interventional team and with a common language
- Use all available tools to find the best image
 - Probe adjustment tools (advancing/retracting probe, ante/retroflexion, right/left, angles)
- Use 3D with MPR to enhance your assessment
- Center the object of interest and optimize resolution using processing tools
 - Sector width/frame rate, depth, focus, gain, gray scale



References

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THANK YOU

