

## Complex Cases: Mitral Regurgitation and HF

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## Disclosures

- Academic Echo Core Lab
  - Abbott / St Jude Medical
  - Edwards
  - Medtronic
  - Boston Scientific
  - Caisson - Livanova
  - NeoVasc
  - GDS Ancora



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- 80 M
- HTN, HLP, Chronic A fib on anticoag
- CKD, stage 3 w Cr: 1.8-2.4
- AMI 1993, Inf and IL walls
- CABG x 4, 2003
- Known MR for 10 years
- Chronic HF, Worsening DOE for 1 year,
- Recent admissions for HF.
- Loop diuretics, BB

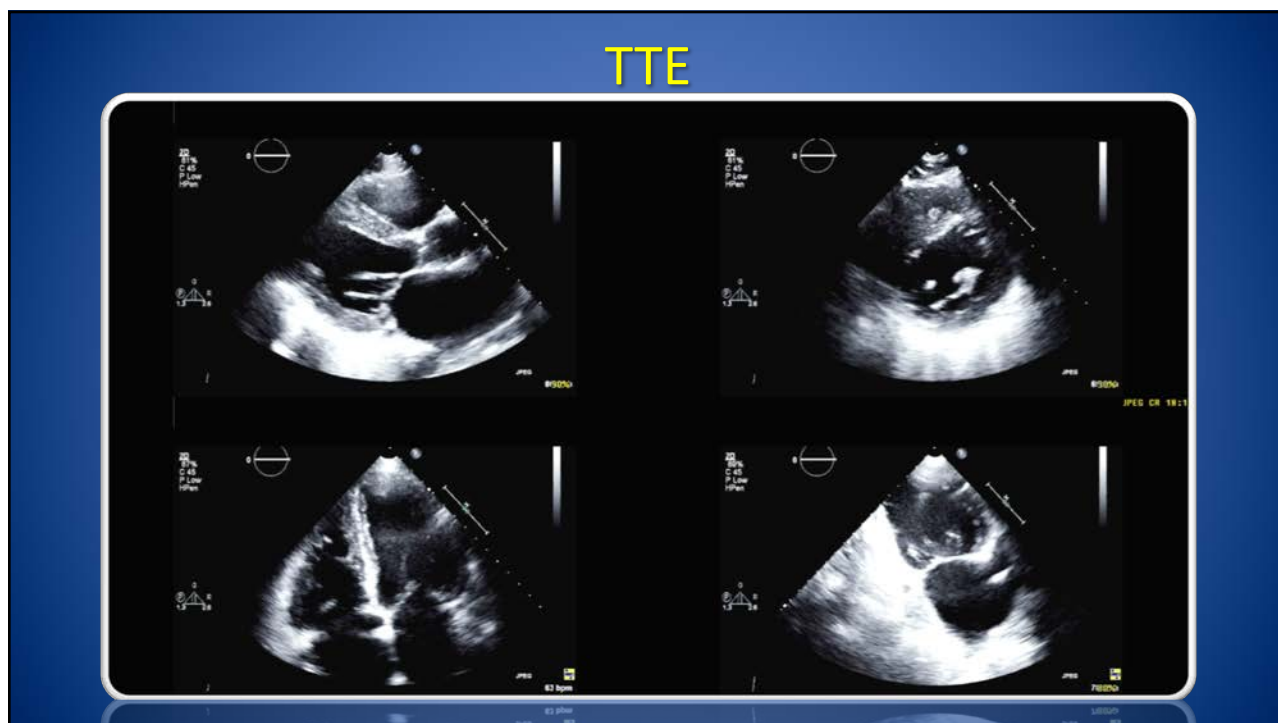
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Will get an echo...  
What information are we seeking for?

- MR?
- Severity?
- Etiology?

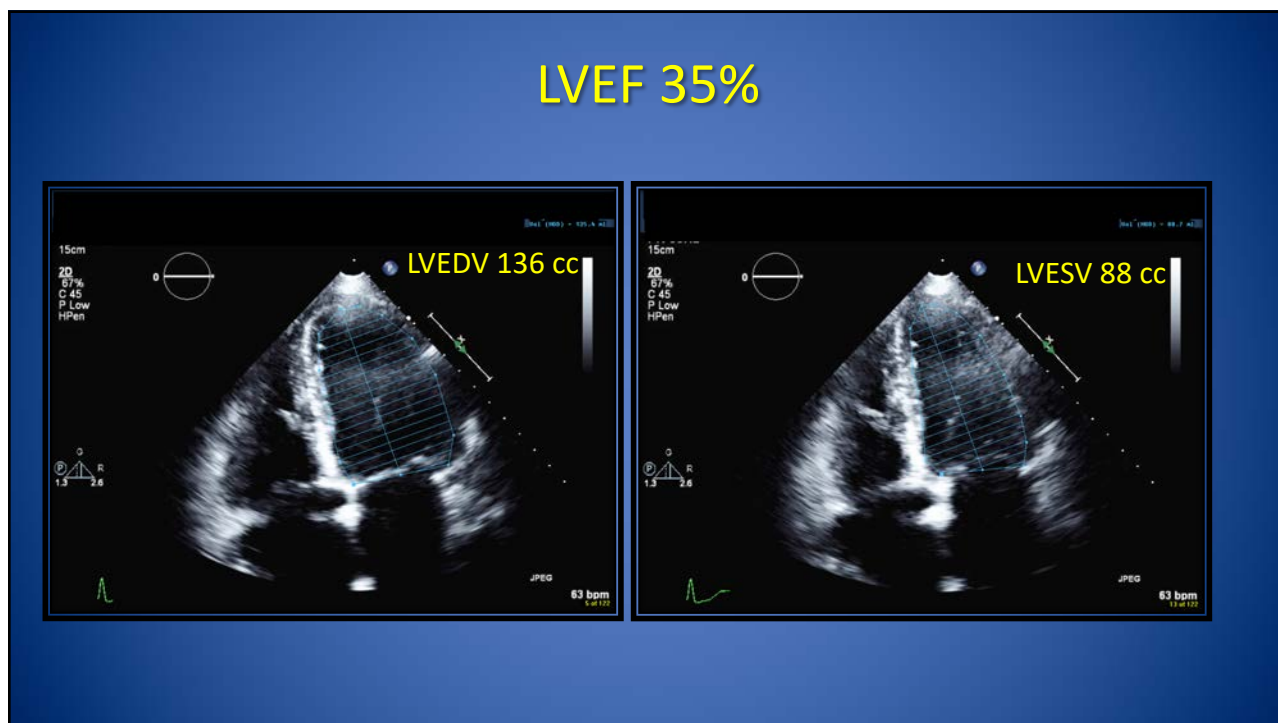
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## TTE



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## LVEF 35%



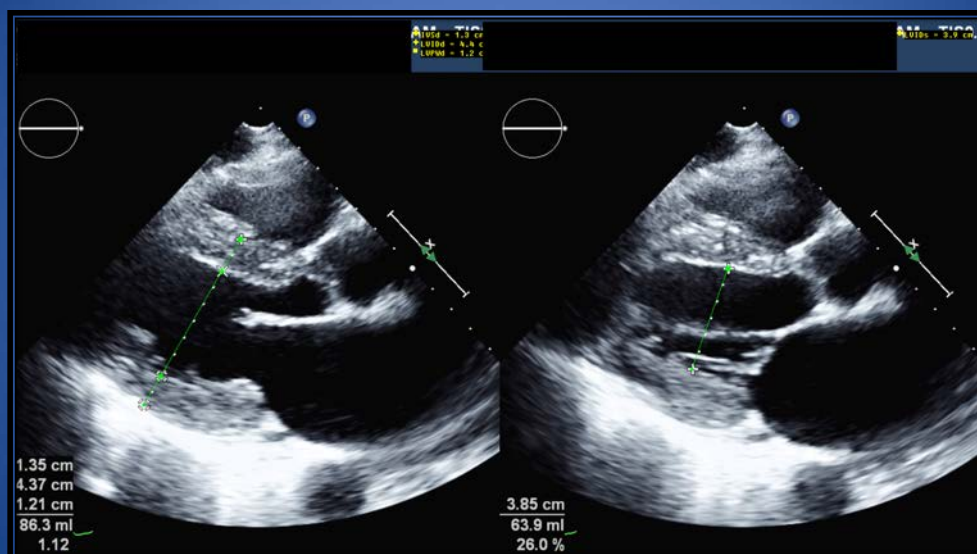
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## PLAX

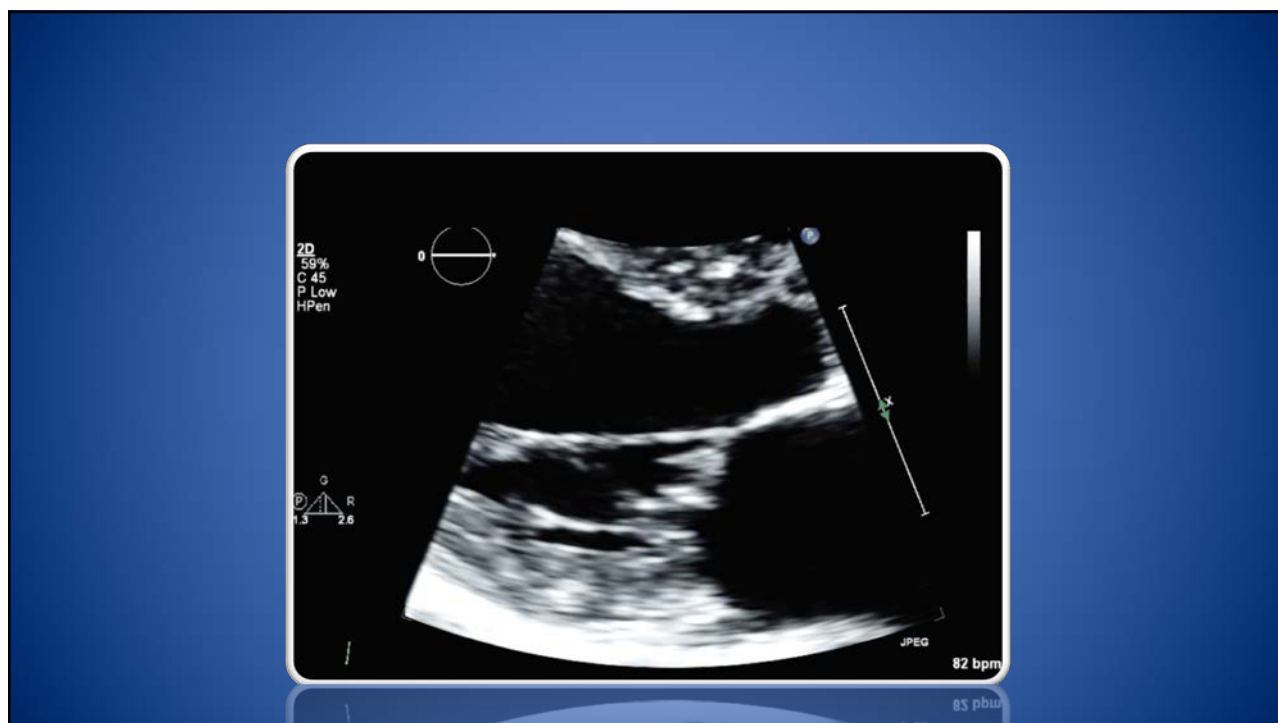


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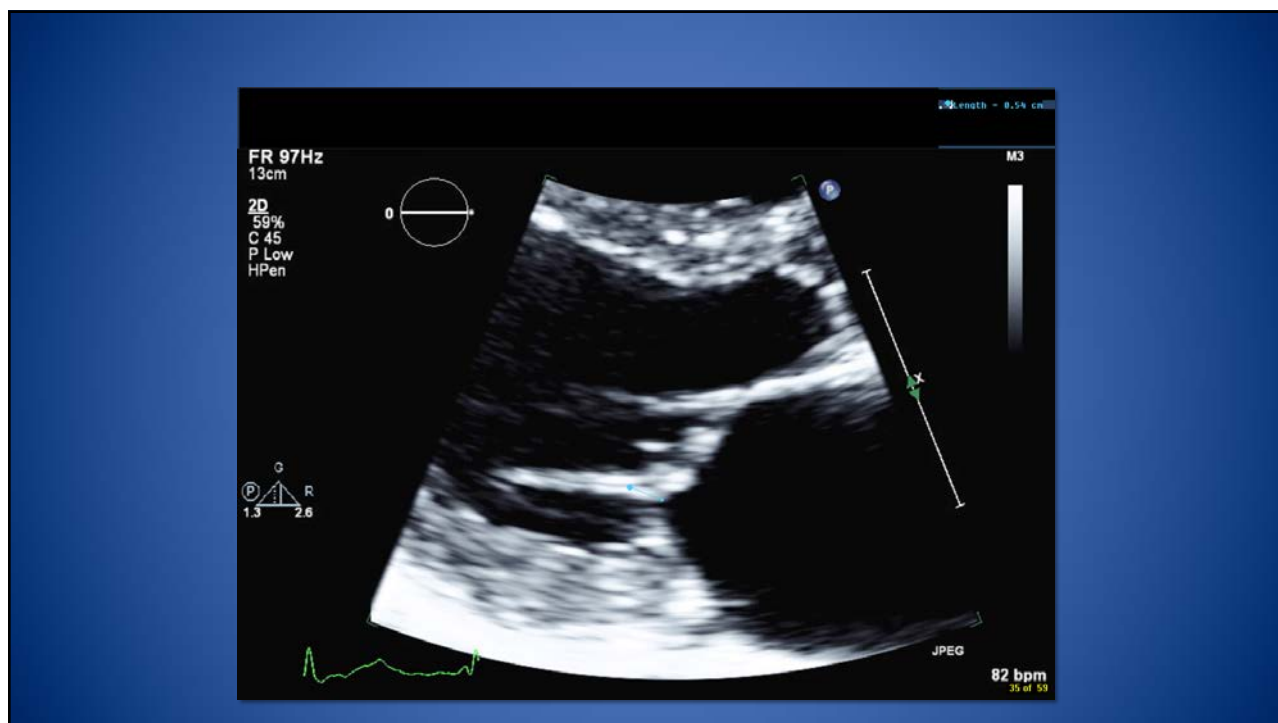
## LV Dimensions



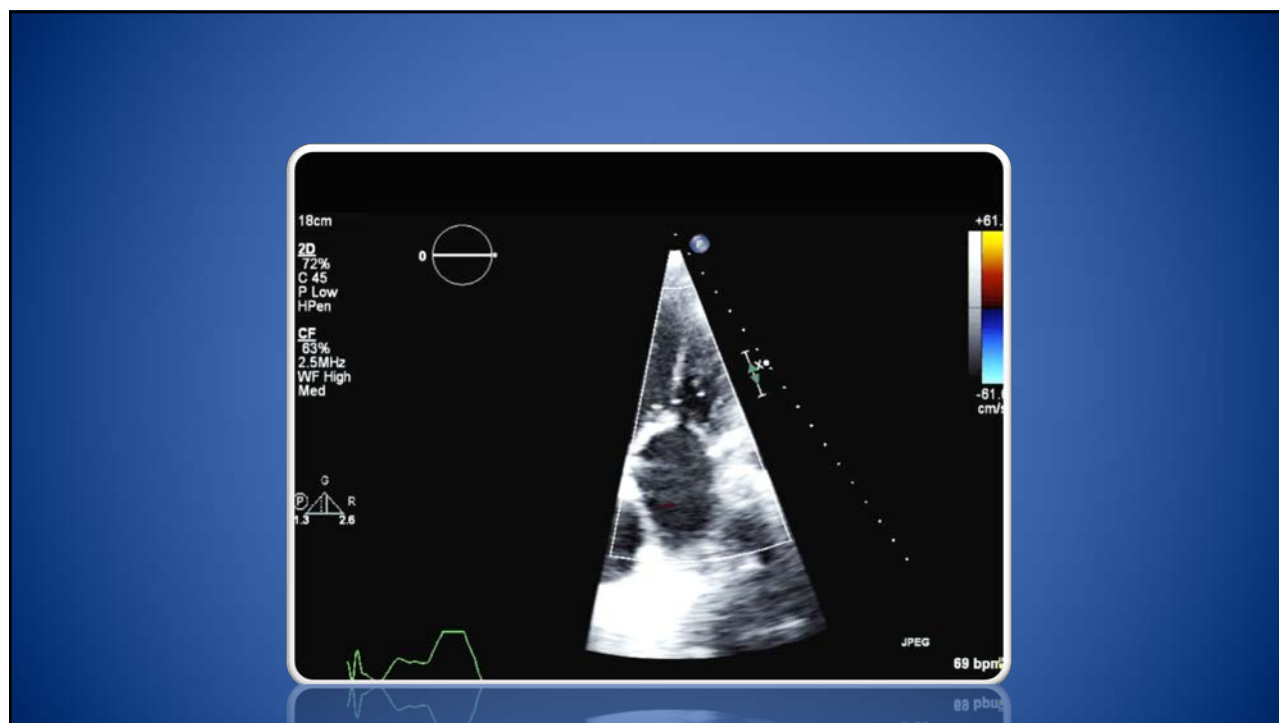
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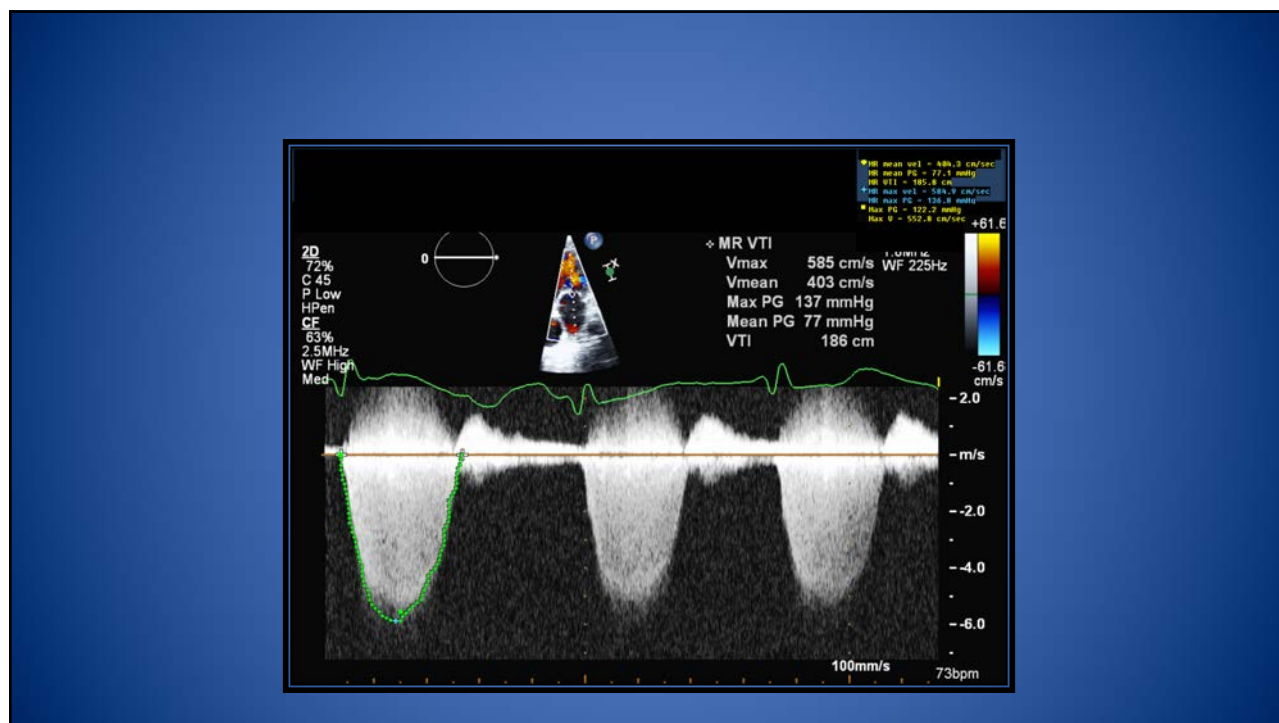
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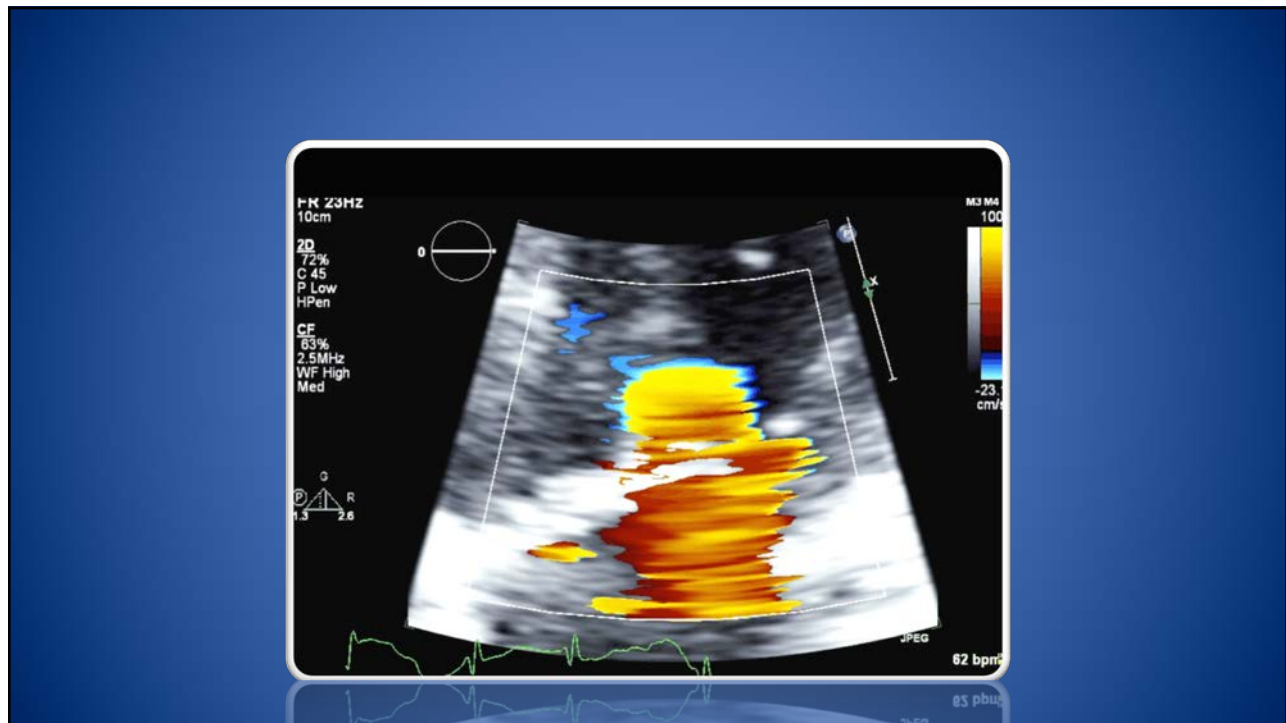


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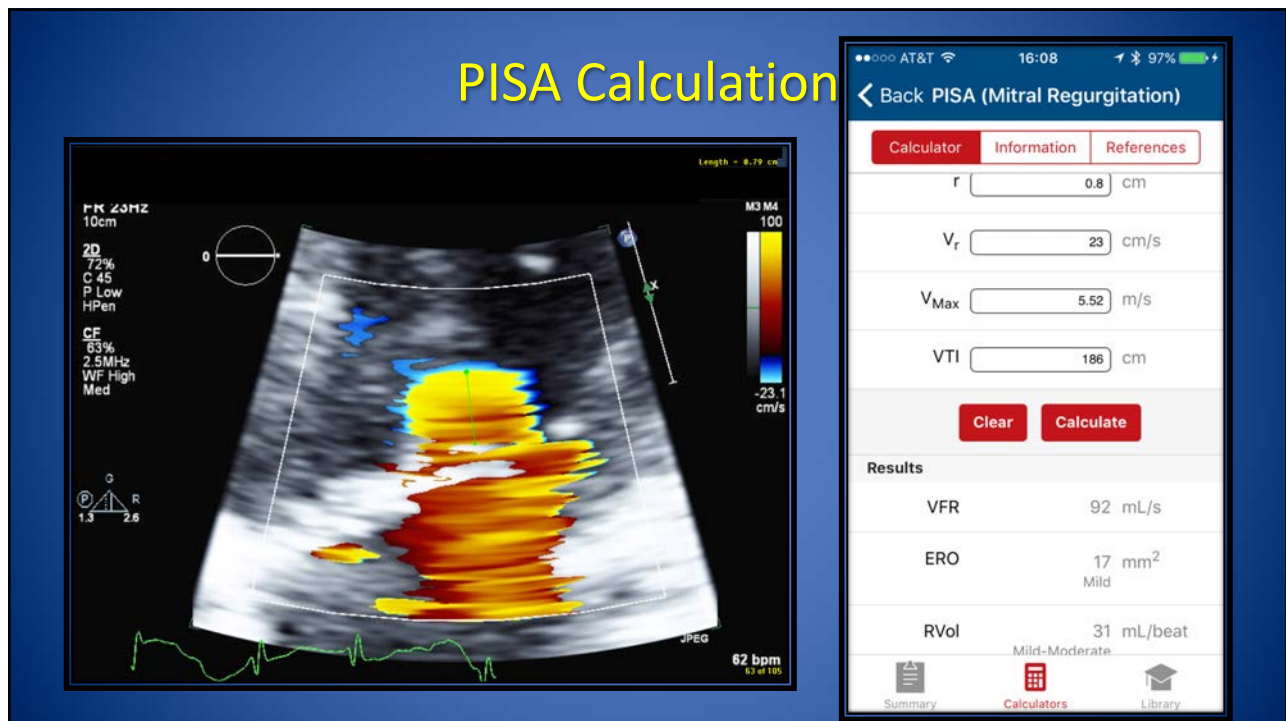


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## What is the most likely MR etiology?

1. Primary (degenerative –DMR-), rheumatic
2. Primary (degenerative –DMR-), prolapse
3. Secondary (functional), LV remodeling
4. Secondary (functional), LA remodeling
5. Mixed / Cannot determine yet

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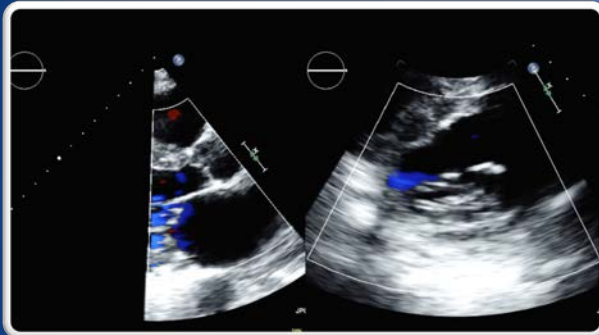
## How would you grade the SMR severity?

1. Mild
2. Moderate
3. Moderate to Severe
4. Severe
5. Need more info, Cannot determine yet

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## PISA



### Pitfalls

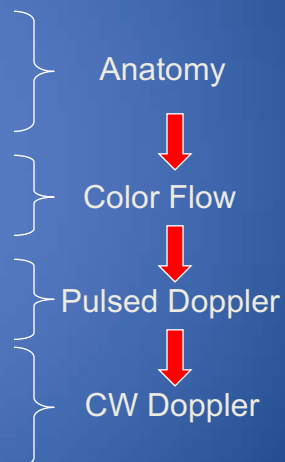
- Can be used semi-quantitatively
- Assumptions of hemispheric geometry
- Less accurate in eccentric jets
- Variability during the cardiac cycle and limitations in non-holosystolic MR

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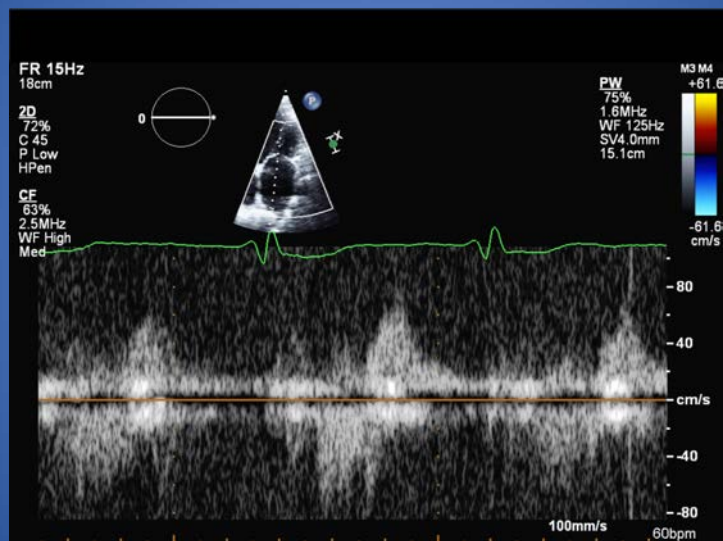
## Mitral Regurgitation

### *Indicators of Severity*

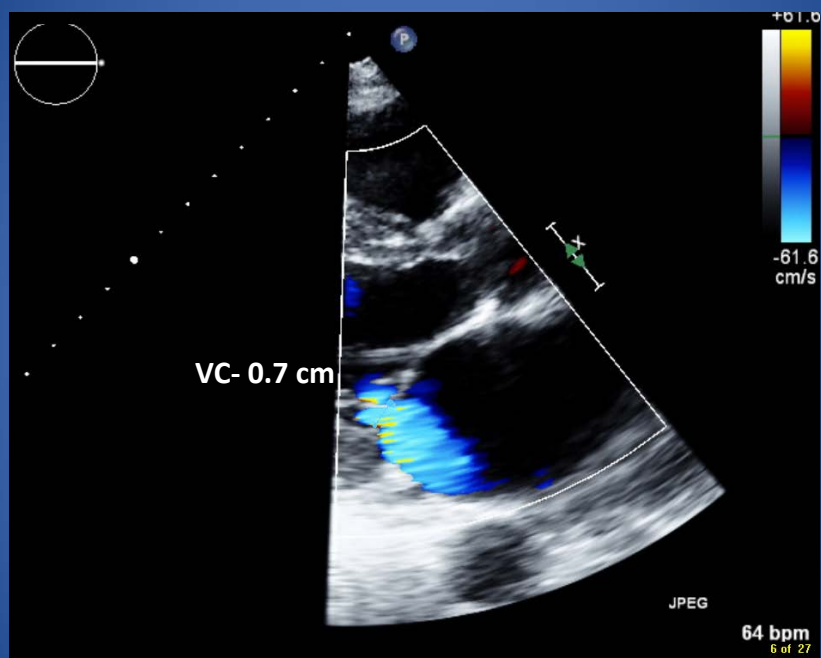
- Mitral valve pathology
- LV/ LA size
- Color Doppler:  
Vena contracta, Jet Area, Flow convergence
- Mitral E; Pulmonary vein pattern
- Regurgitant flow/fraction
- CW density and contour



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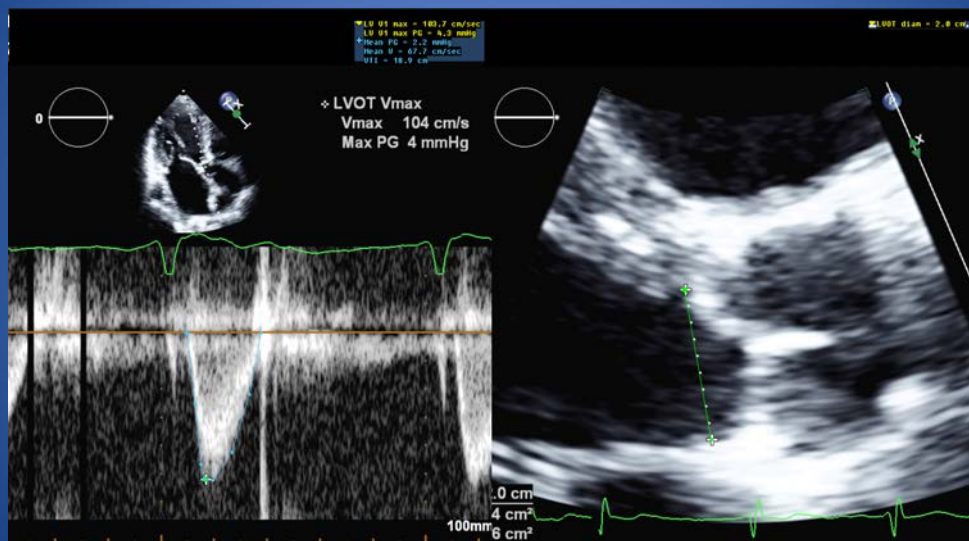


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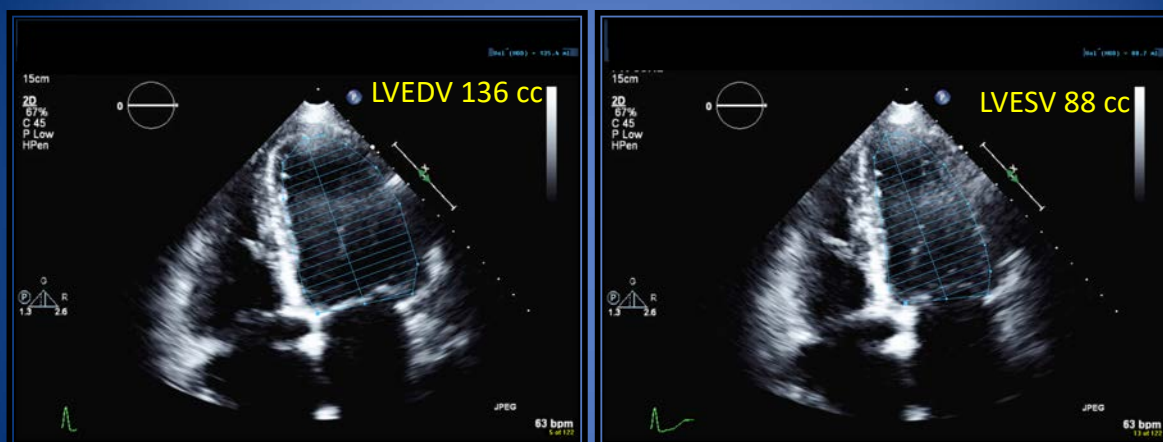
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## LVOT SV – 60 ml



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## SV - 48



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## Regurgitant Volume & Fraction

### Advantages

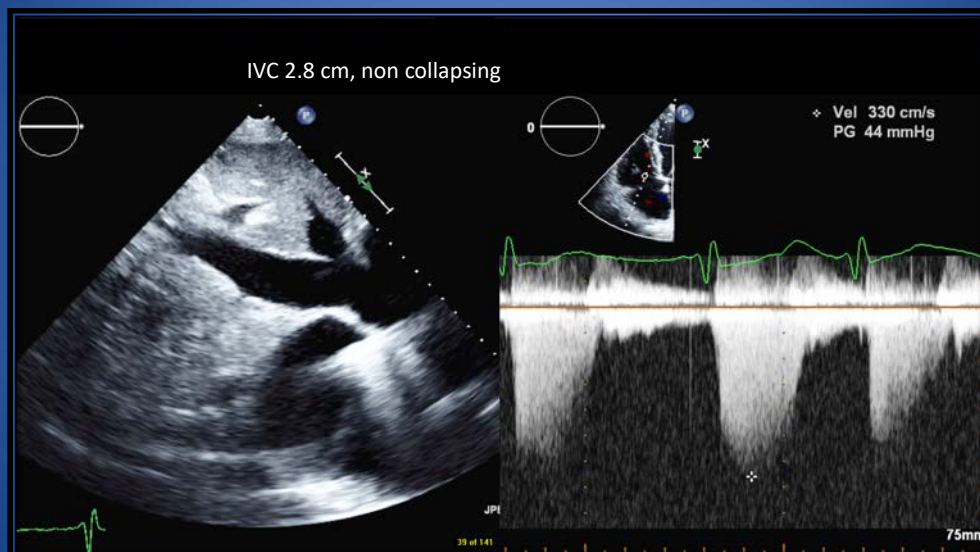
- Quantitative, valid in multiple jets and eccentric jets
- Provides both lesion severity and volume overload

### Limitations

- Needs training; Cumbersome; wide (20%) confidence limits
- Measurement of flow at MV annulus is less reliable in calcific MV and/or annulus
- 2D LV volumes underestimate, cannot combine with Doppler or 3D values for calculations.

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## PASP: >60-65 mmHg



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## TTE Summary

- Low EF (35%)
- Discordant values for MR severity:
  - Large jet by color Doppler
  - VC= 0.7
  - PISA
    - EROA: 0.17
    - RV 31 ml
  - PV systolic flow reversal
  - Dense CW
- Pulmonary Hypertension

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## Discussion

- Is this MR significant? ...
- Is etiology relevant?

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## ASE GUIDELINES AND STANDARDS

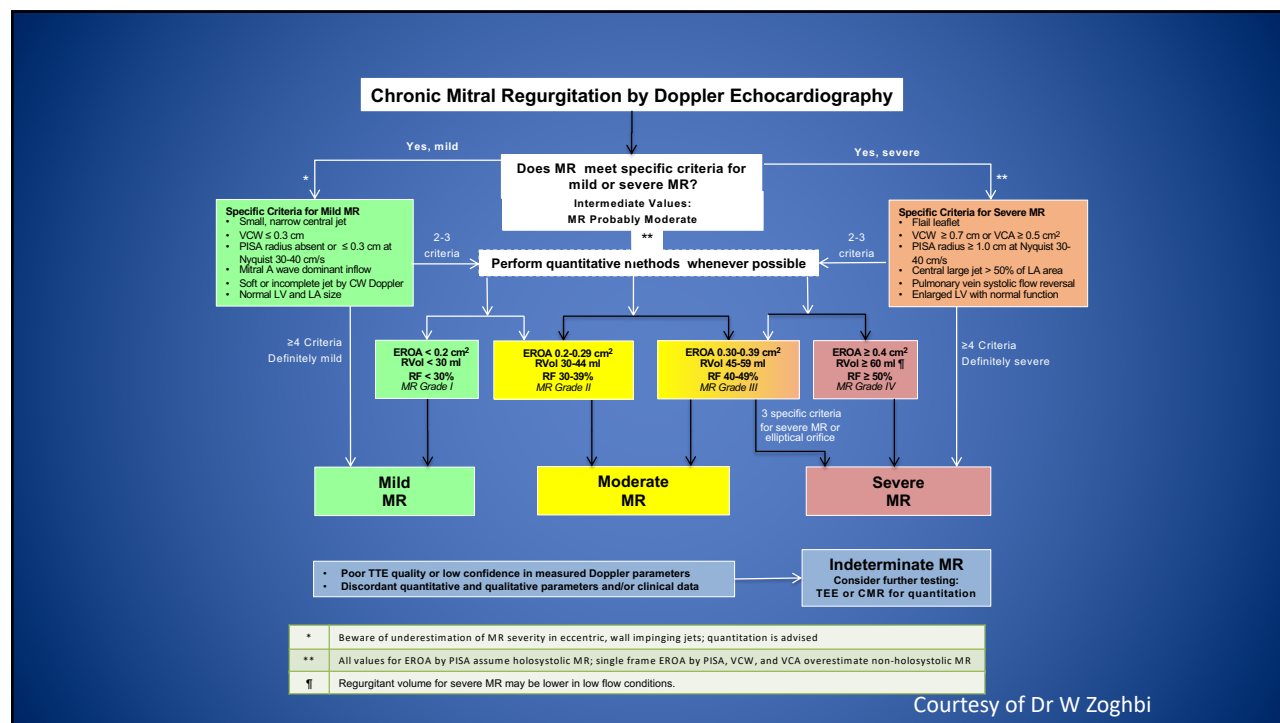
### Recommendations for Noninvasive Evaluation of Native Valvular Regurgitation

A Report from the American Society of Echocardiography  
Developed in Collaboration with the Society for Cardiovascular Magnetic Resonance

William A. Zoghbi, MD, FASE (Chair), David Adams, RCS, RDCS, FASE, Robert O. Bonow, MD, Maurice Enriquez-Sarano, MD, Elyse Foster, MD, FASE, Paul A. Grayburn, MD, FASE, Rebecca T. Hahn, MD, FASE, Yuchi Han, MD, MMSc,\* Judy Hung, MD, FASE, Roberto M. Lang, MD, FASE, Stephen H. Little, MD, FASE, Dipan J. Shah, MD, MMSc,\* Stanton Shernan, MD, FASE, Paaladinesh Thavendiranathan, MD, MSc, FASE,\* James D. Thomas, MD, FASE, and Neil J. Weissman, MD, FASE, *Houston and Dallas, Texas; Durham, North Carolina; Chicago, Illinois; Rochester, Minnesota; San Francisco, California; New York, New York; Philadelphia, Pennsylvania; Boston Massachusetts; Toronto, Ontario, Canada; and Washington, DC*

J Am Soc Echocardiogr. 2017 Apr;30(4):303-371

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## Discussion

- Should MR be treated?
- What else do we need to decide on best mitral valve treatment?

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## Cath 5/22/17

- RA 18
- PA 80/40
- PCWP 35 (large V wave)
- CI 1.6
- PA sats 50%
  
- Grafts are patent (SVG to LAD/Dg, OM, PDA)

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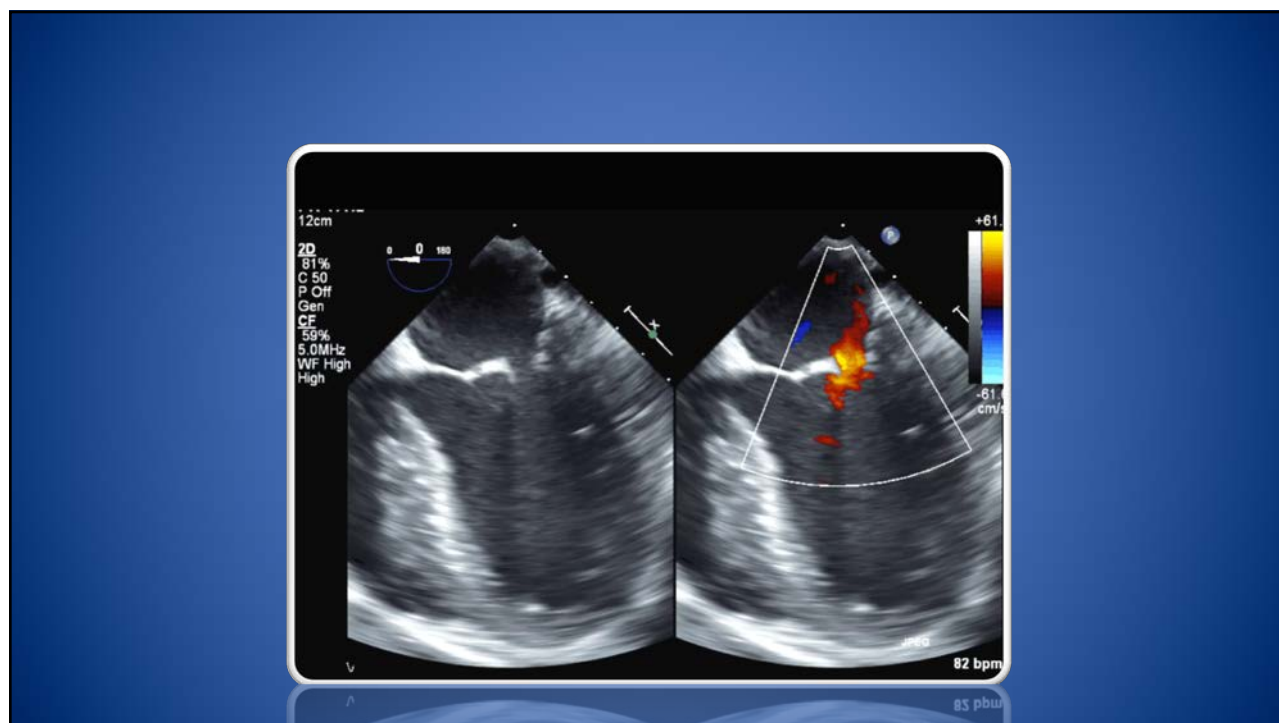


- Given inability to diurese and compensate, IABP was placed awaiting therapeutic decisions to be made:
- Medical Therapy ?
- Surgical MVR/R ?
- TMVR ?
- Mitral Clip or other percutaneous interventions?

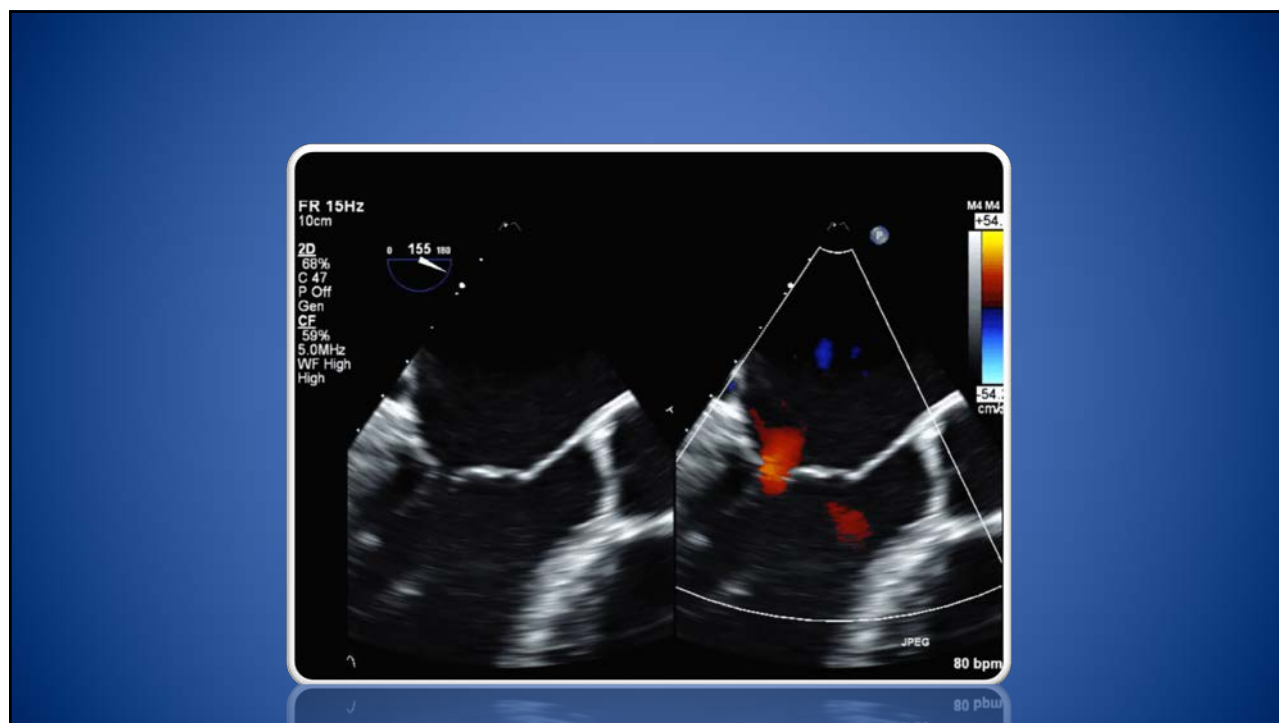
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TEE

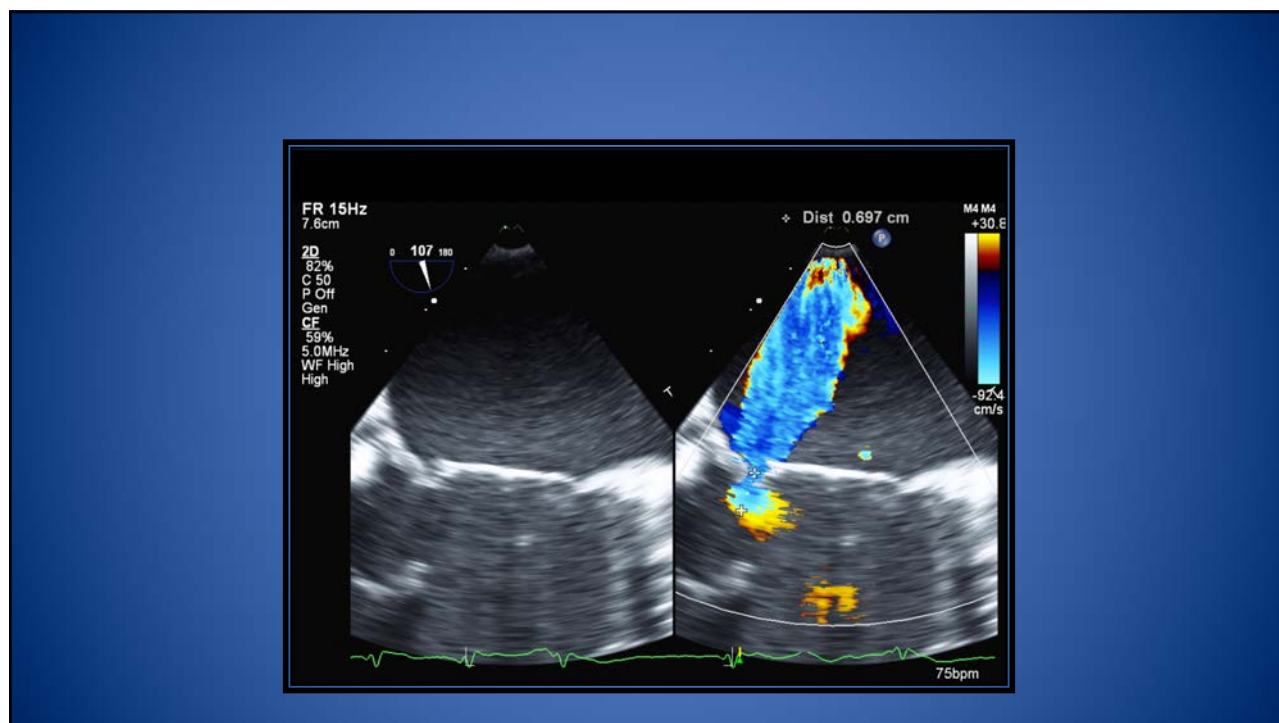
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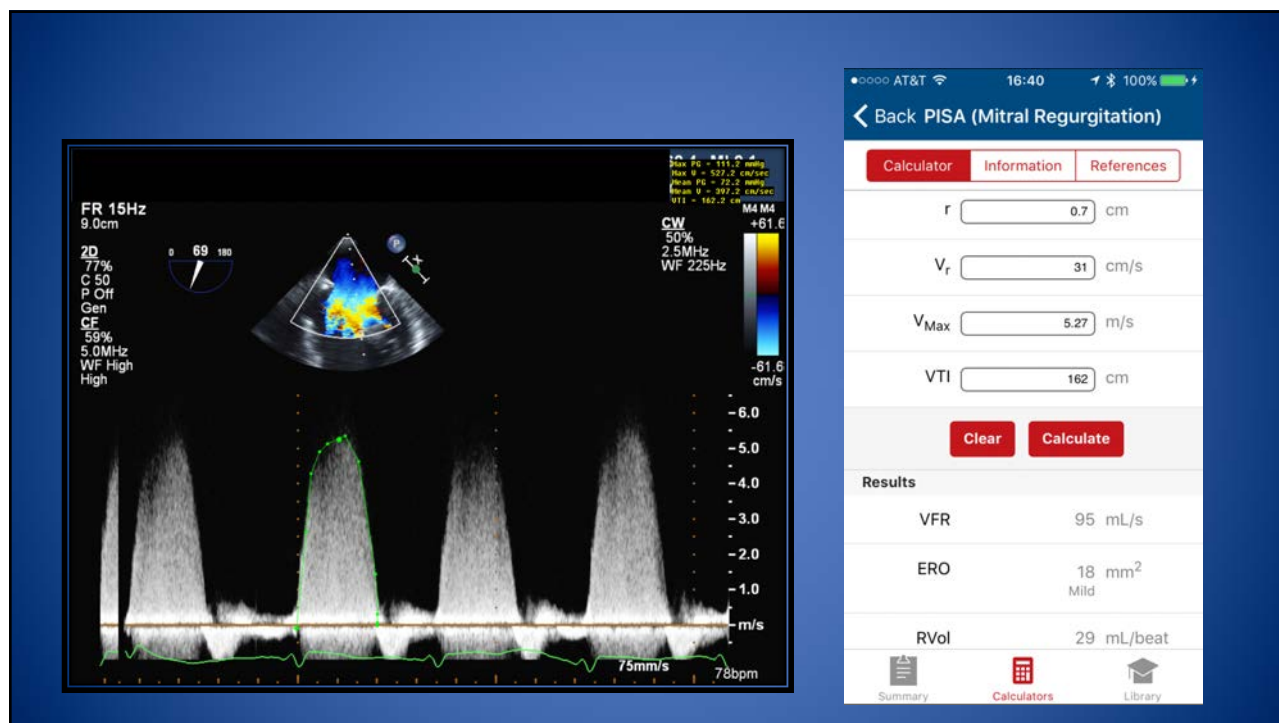
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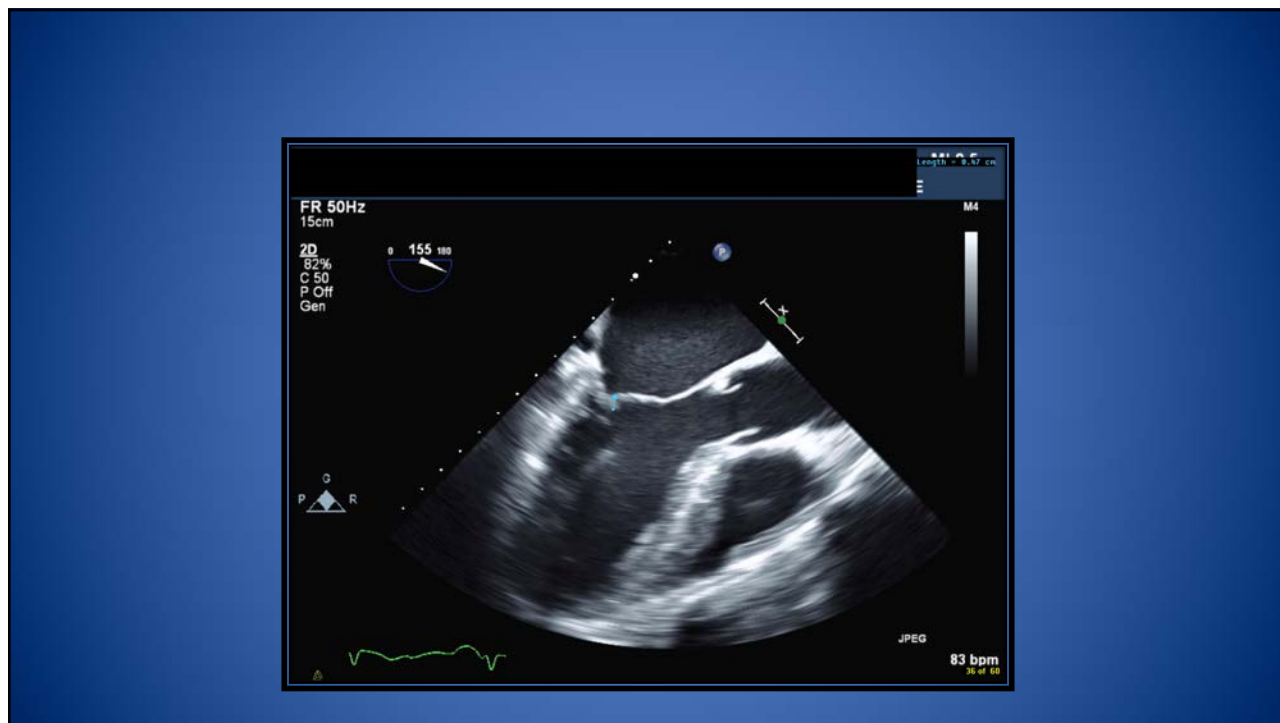
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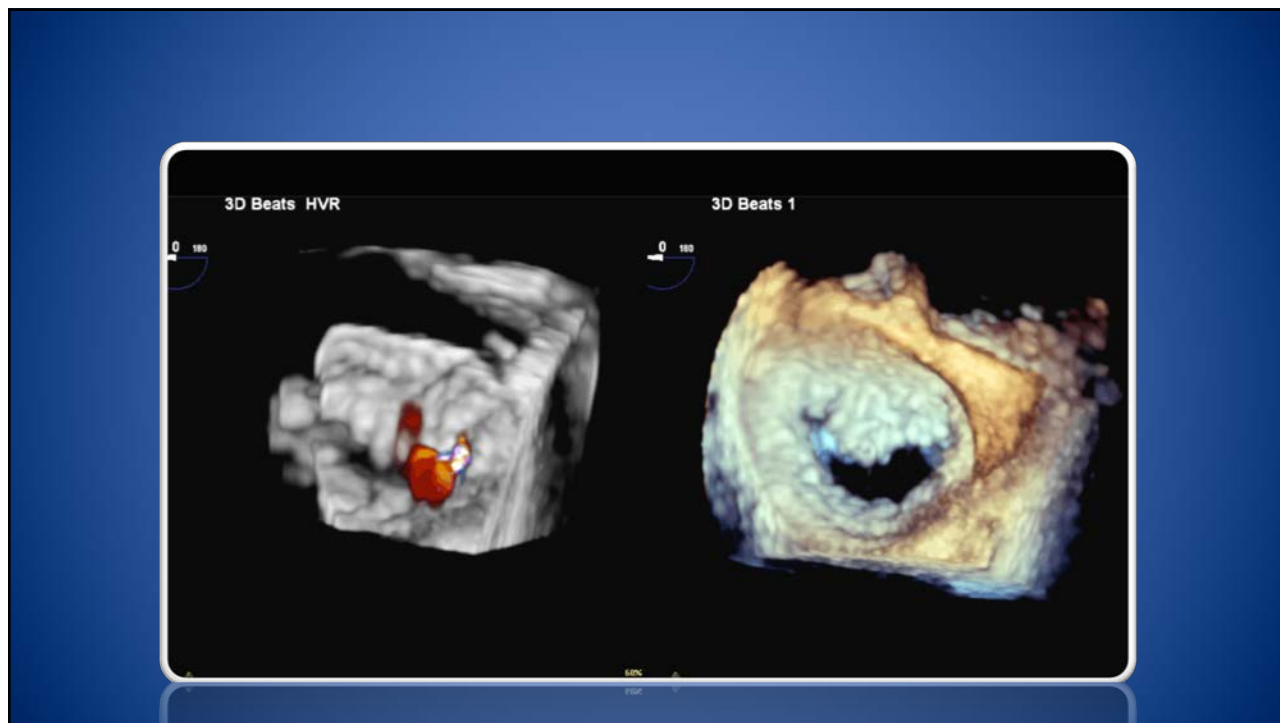
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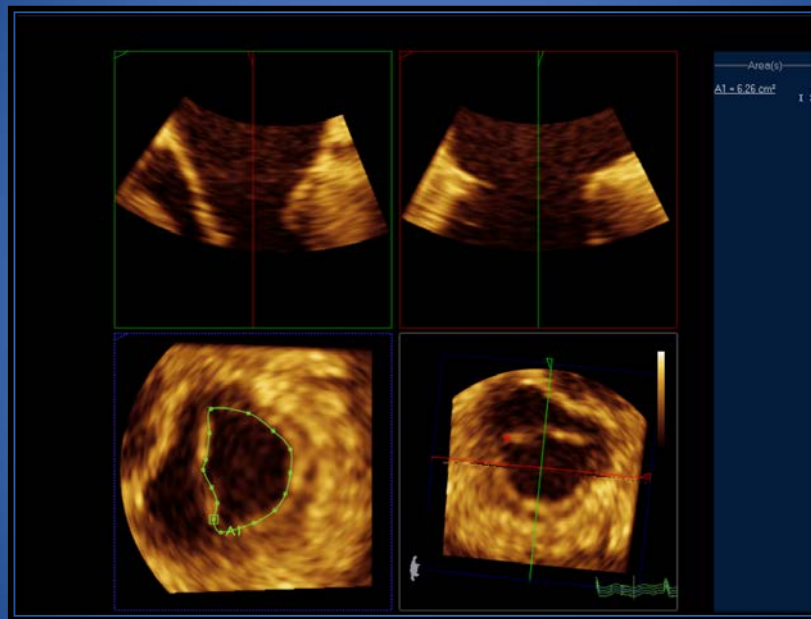
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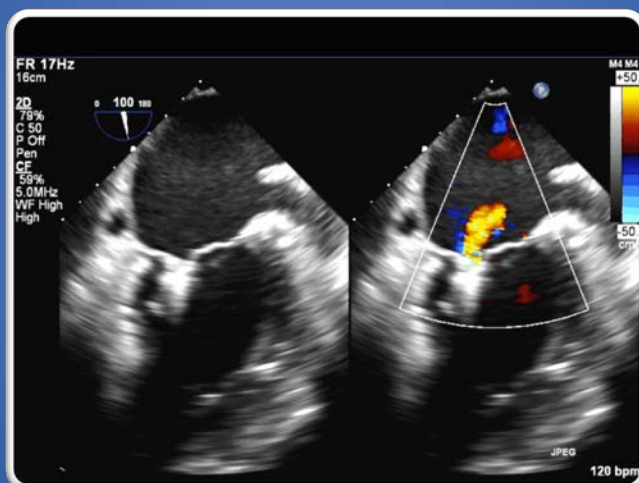
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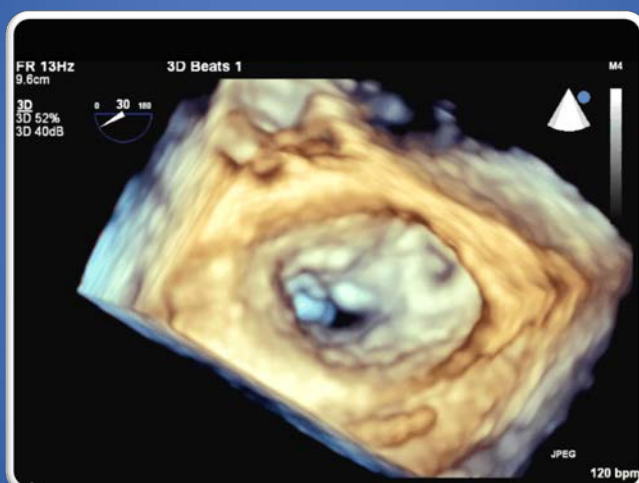
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## COAPT - Randomized to MitraClip

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Post 2<sup>nd</sup> clip

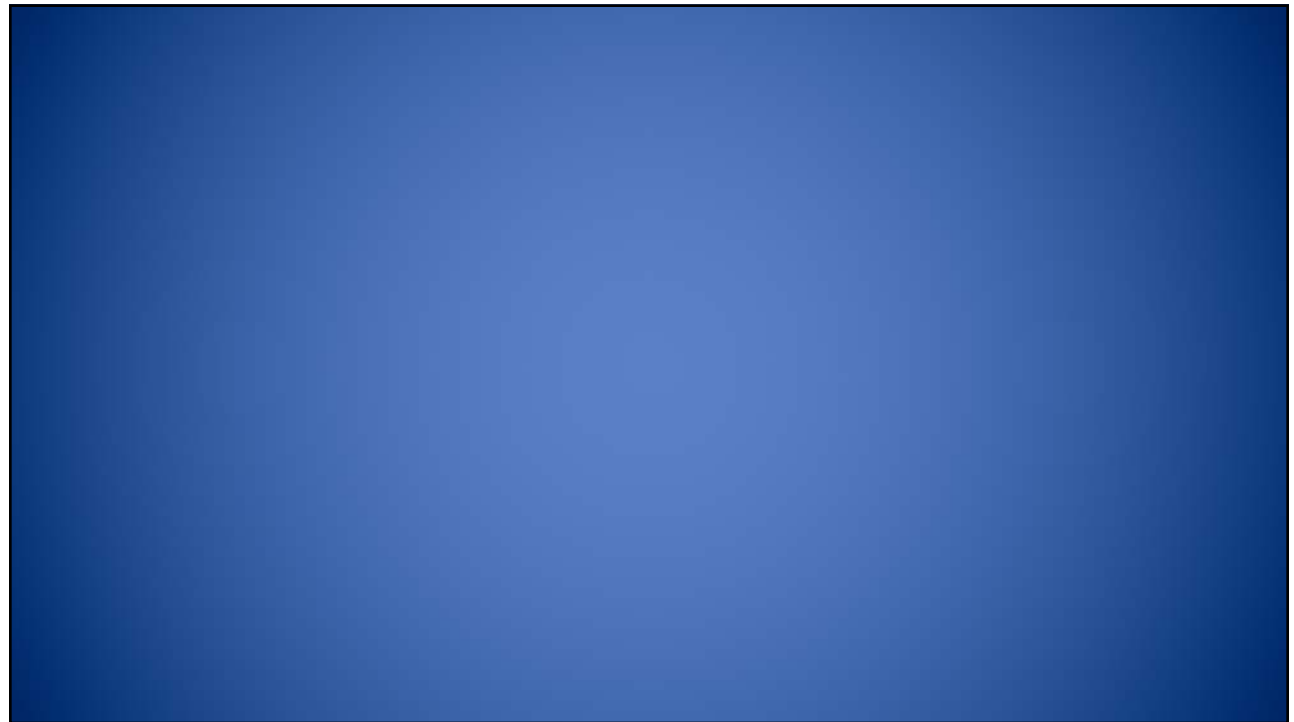
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- Thank You

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