

MitraClip Procedure : Step by Step

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Development of MitraClip: Since 2003

“Challenge for Unmet needs”



First in man in 2003

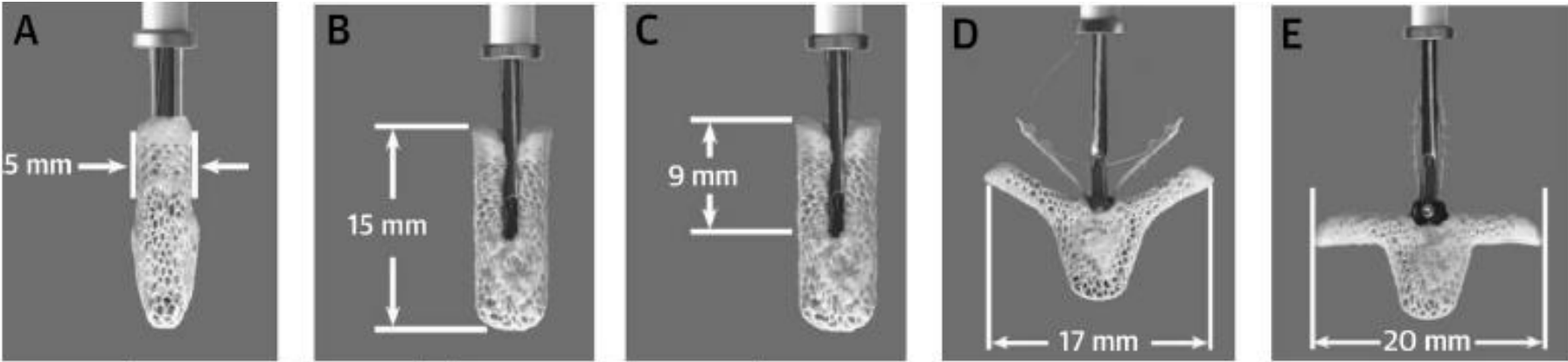
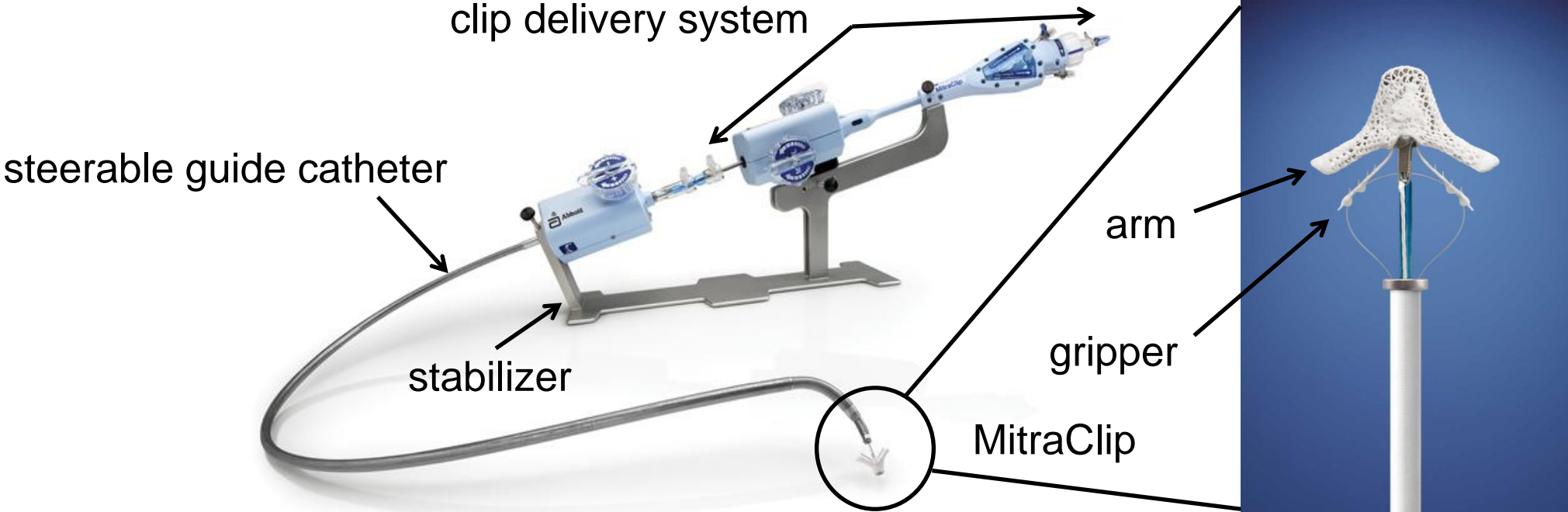
CE mark in 2008

FDA approval in 2013

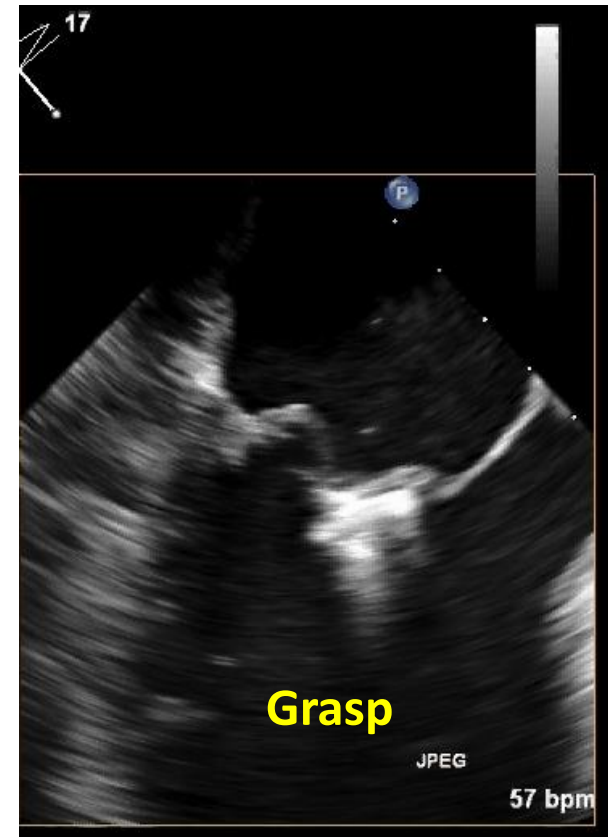
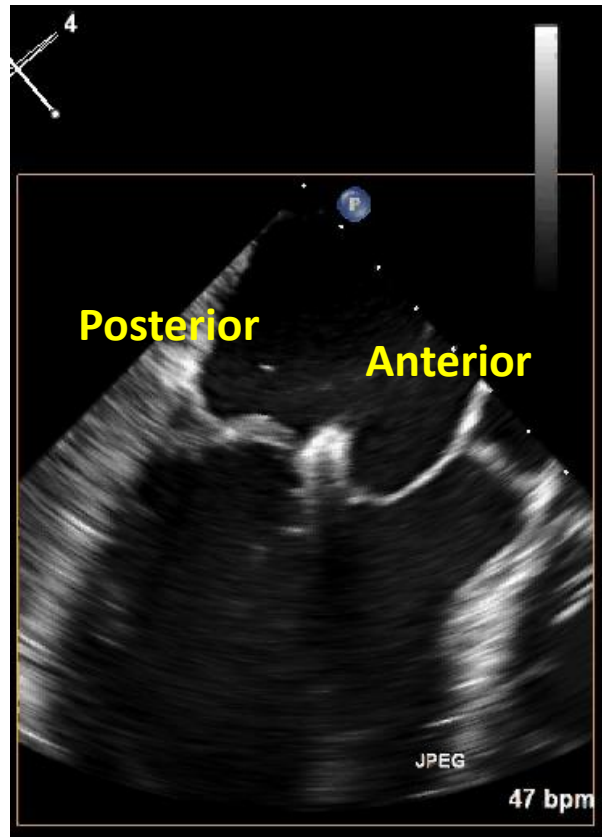
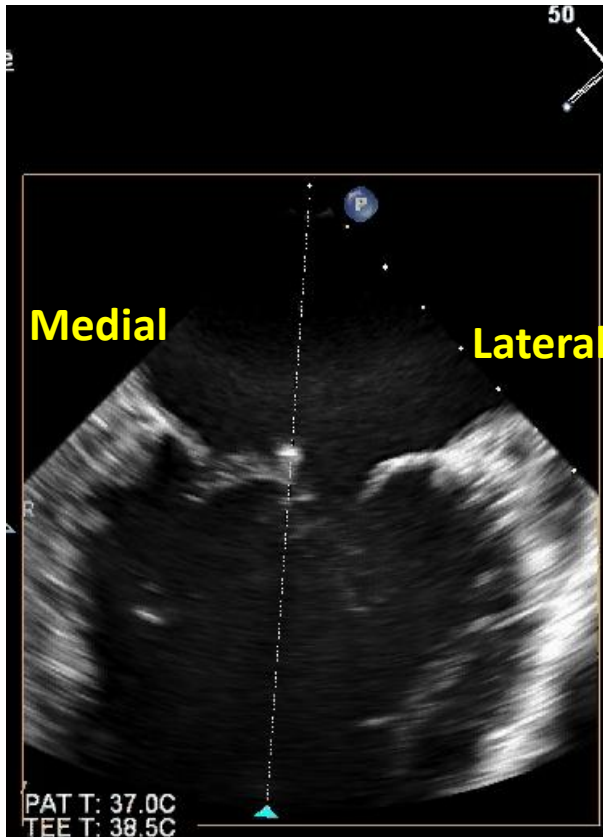
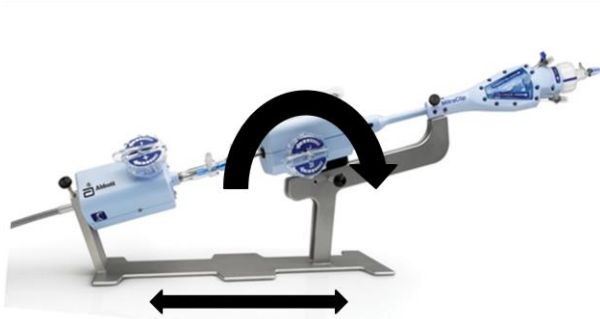
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MitraClip experiences of more than 70000 cases in the world.

MitraClip System



MitraClip Maneuver



Case Summary

Patient Demographics

- Age: 76 years
- Gender: Male

Past Medical History

- CKD (eGFR = 25)
- Chronic AF
- Dilated cardiomyopathy

Risk Score

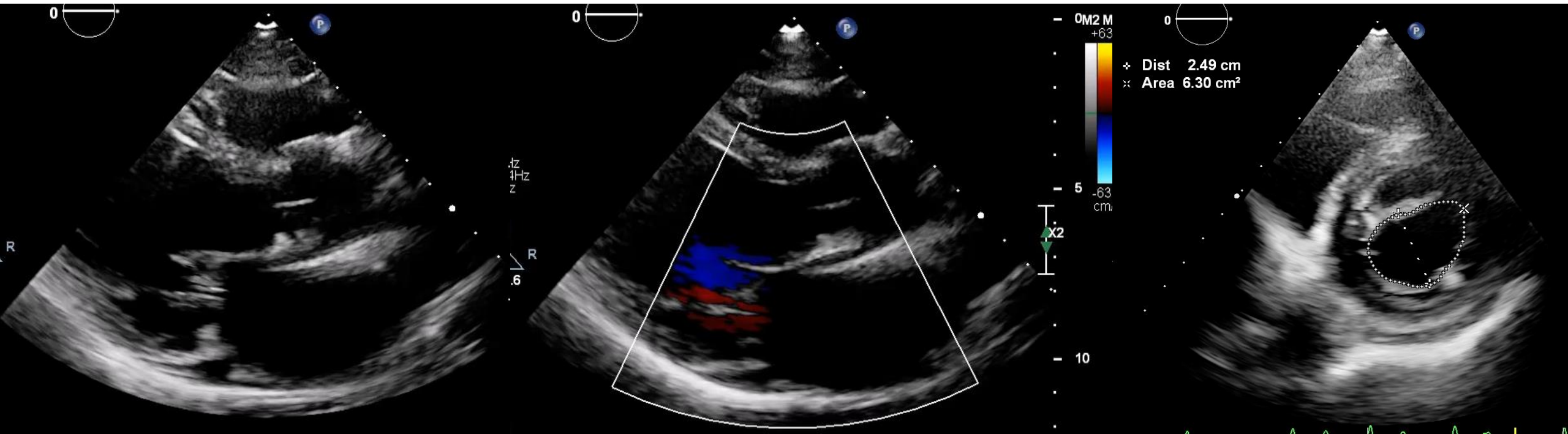
- STS score 4.0% for replacement
- Clinical frailty scale = 3

Clinical Presentation

- Dyspnea (NYHA class 3)
- 2 times HF hospitalization within 1 year

Functional MR with mild LV dysfunction (COAPT candidate)

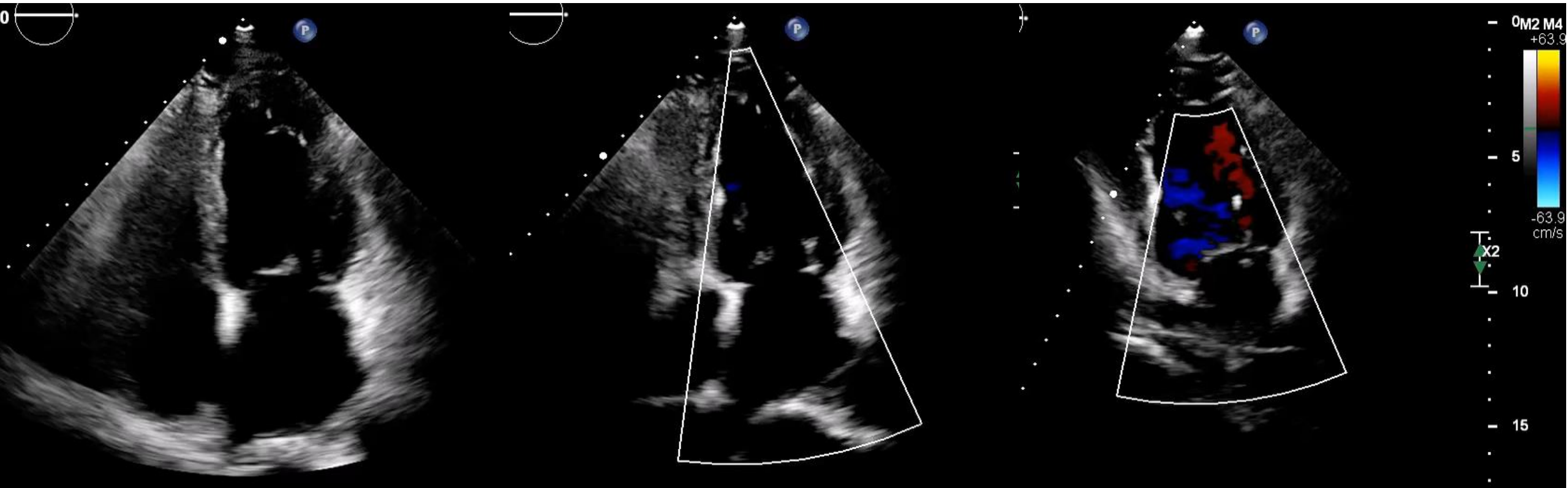
Baseline TTE



LV motion diffuse mild hypokinesia

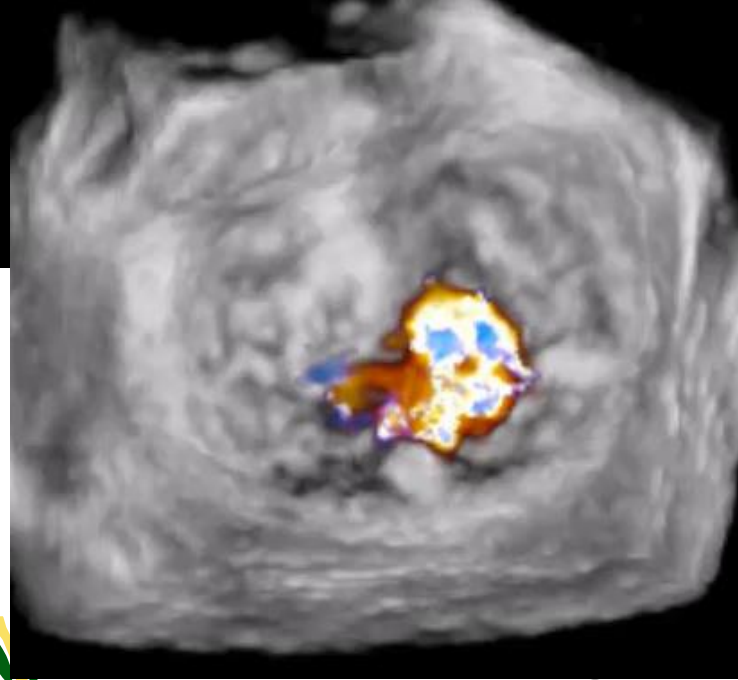
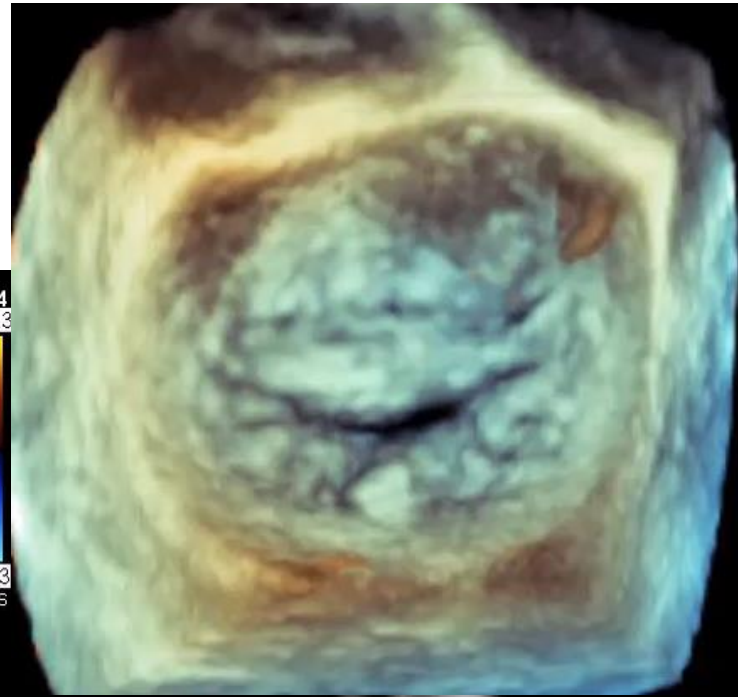
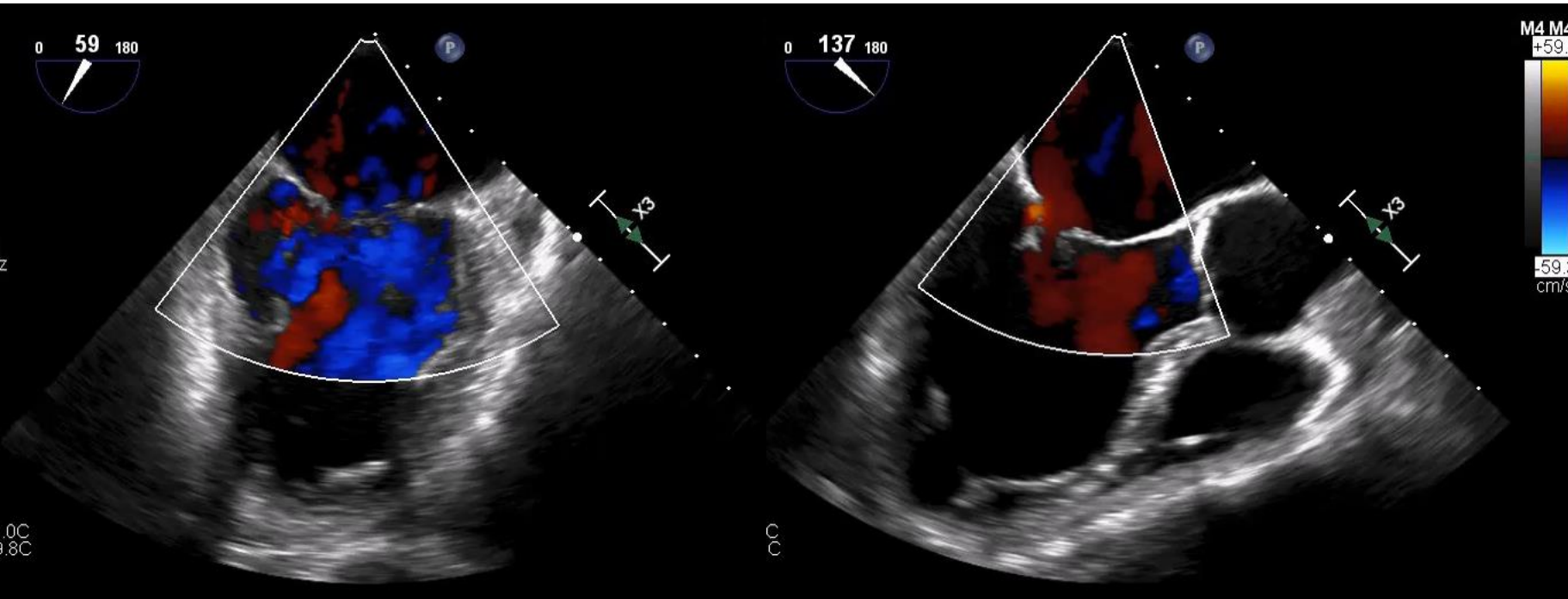
LVDd/Ds = 55/37 mm, LVEF = 46%, mitral valve orifice area = 6.3 cm²

Baseline TTE



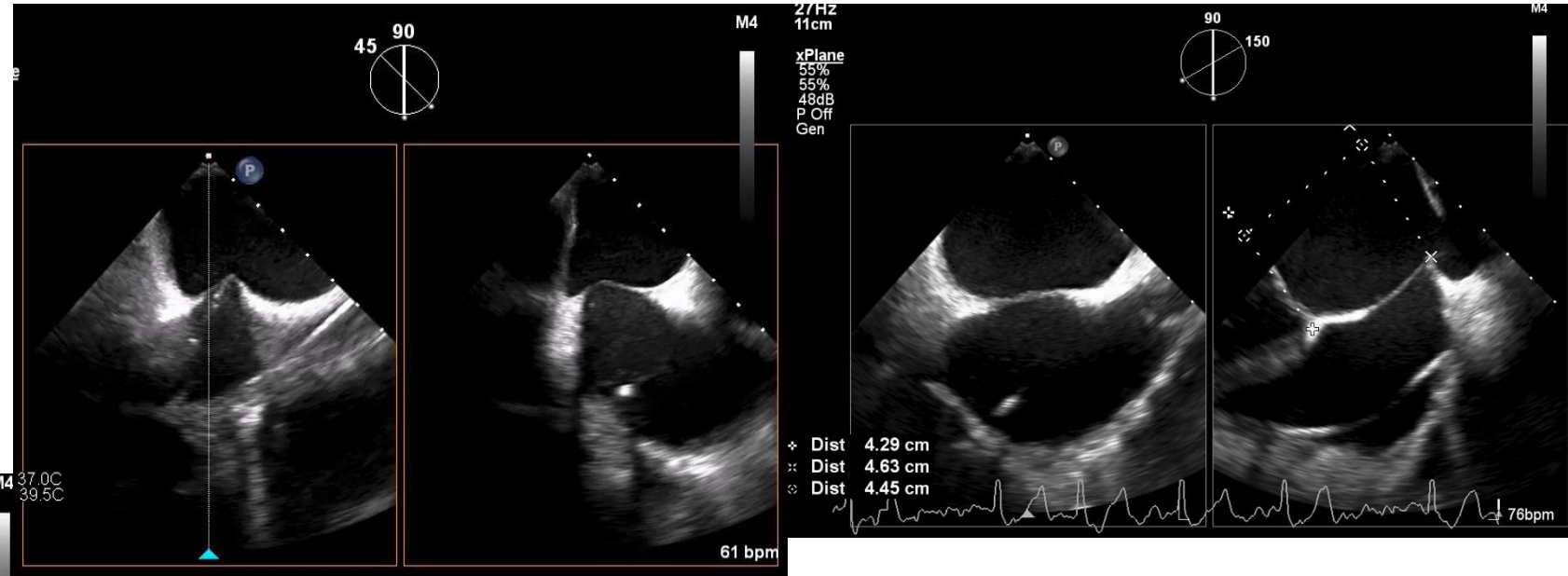
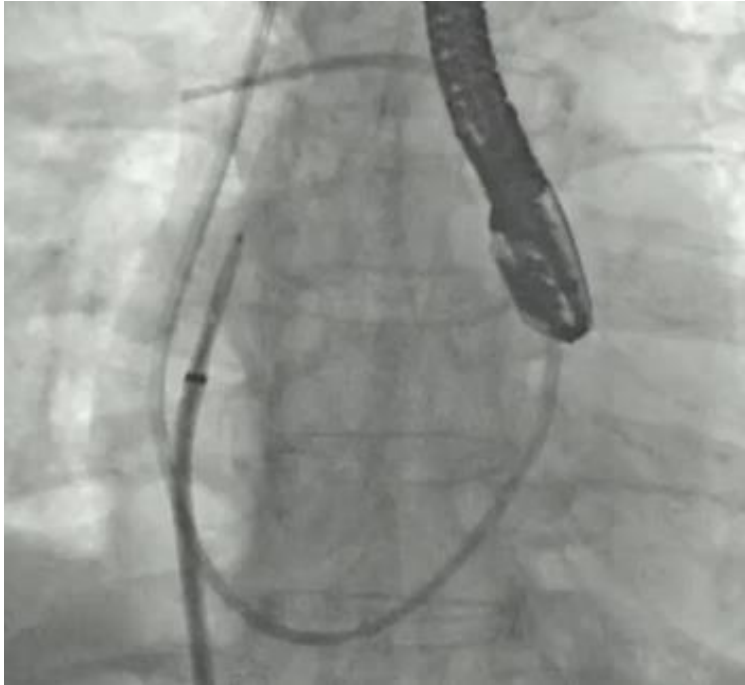
Severe MR, vena contracta 7.9 mm, EROA = 0.38 cm²
TR trivial, TR-PG = 21 mmHg

Baseline TEE



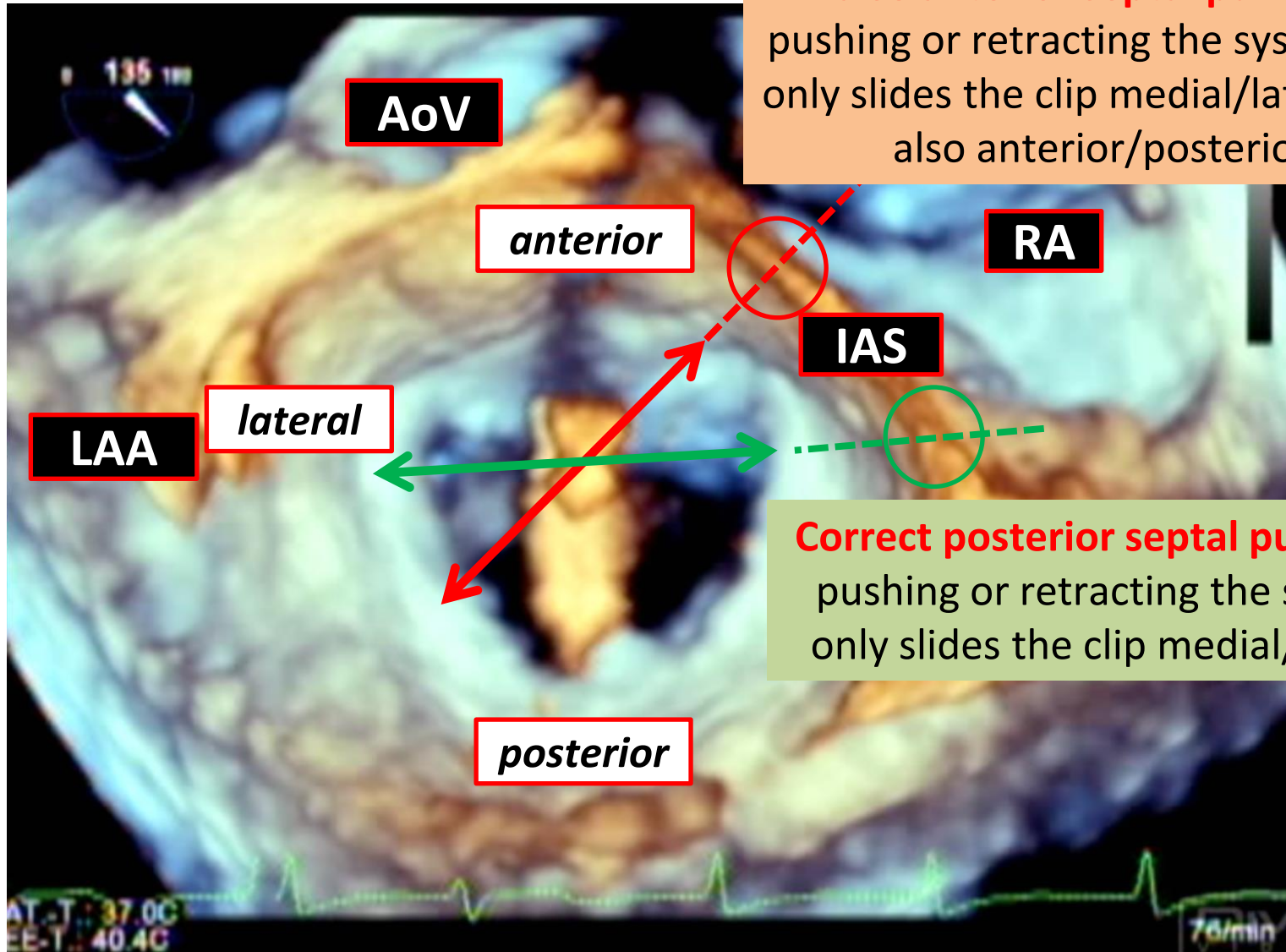
- Wide central MR
- Small gap at lateral A2/P2 in 3D TEE
- Sufficient PML length

Transseptal Puncture



- SL1.0 sheath + BRK (RF needle)
- We bended a tip of RF needle
- Tenting at posterior/mid-superior aspect of fossa ovalis
- Punctured from 45 mm from mitral valve annulus

Why Posterior Puncture?



False anterior septal puncture:
pushing or retracting the system not only slides the clip medial/lateral but also anterior/posterior

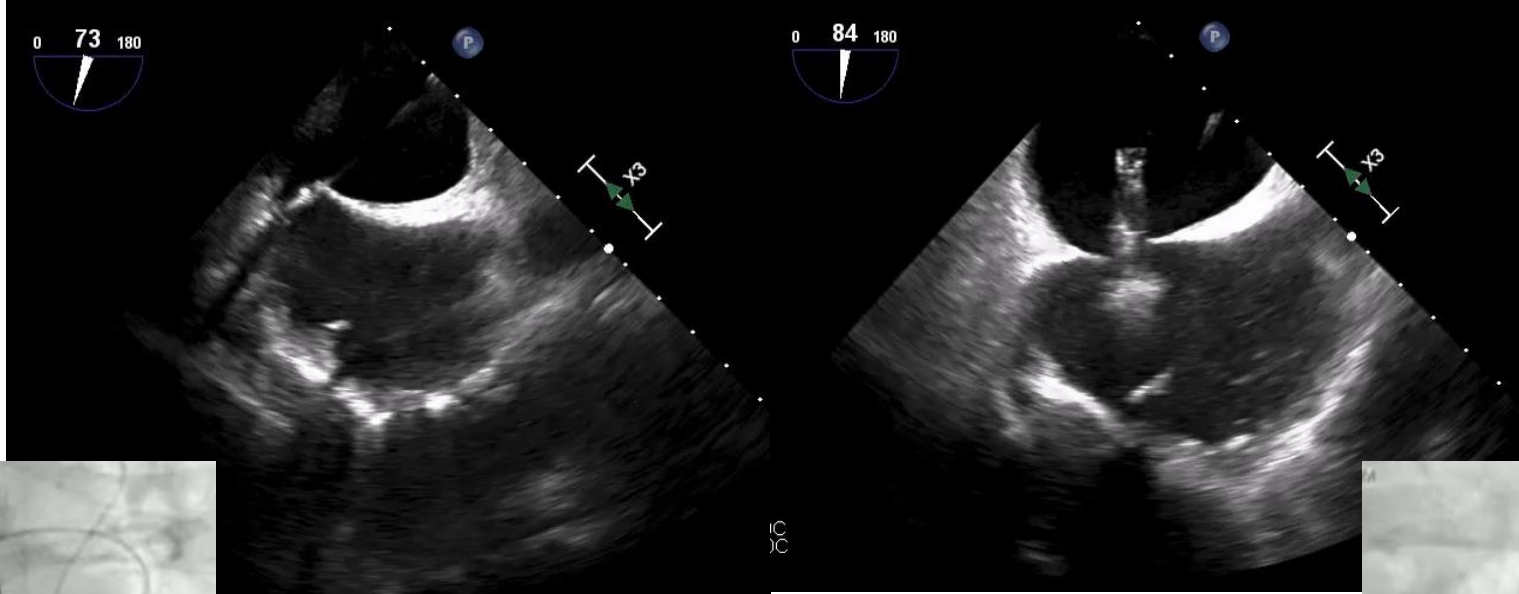
Correct posterior septal puncture:
pushing or retracting the system only slides the clip medial/lateral

AT-T: 37.0C
EE-T: 40.4C

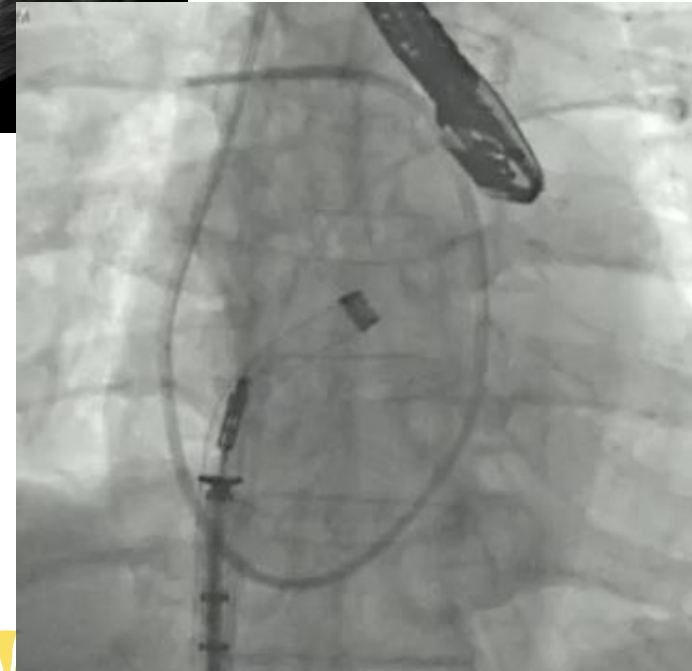
70/min

Insertion of MitraClip Device

“SGC Insertion”

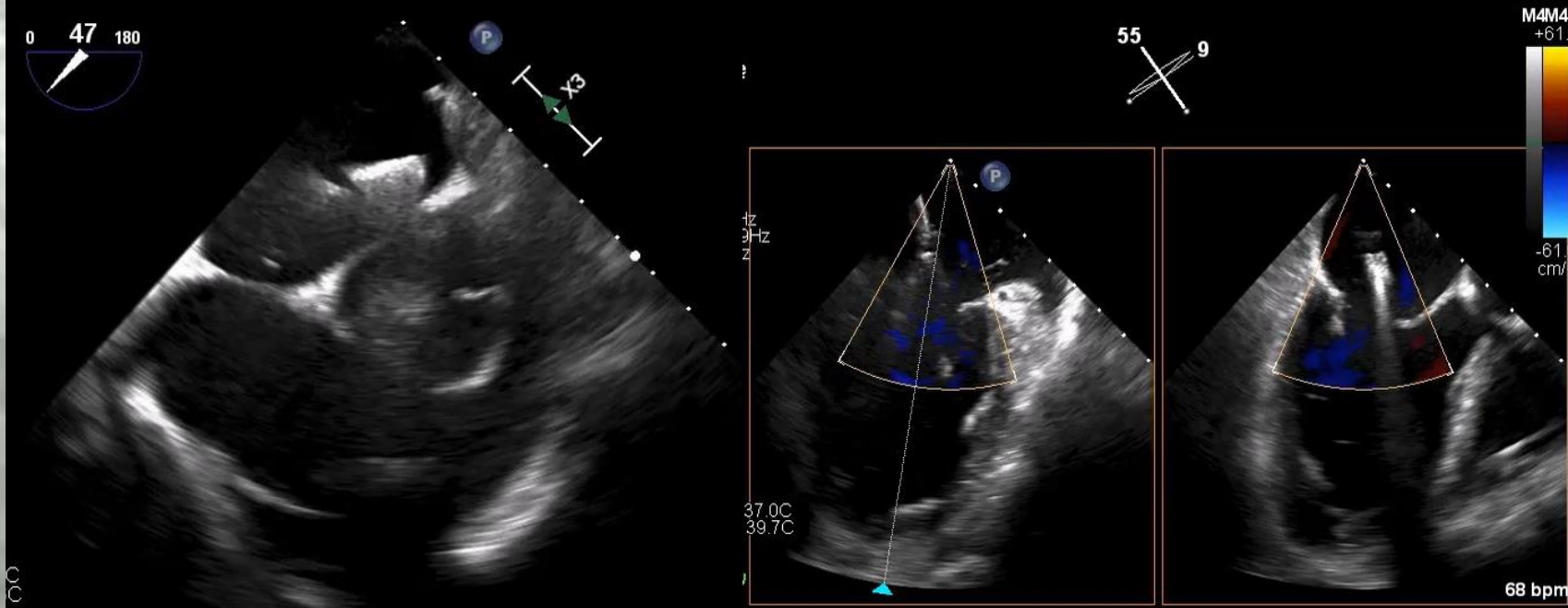
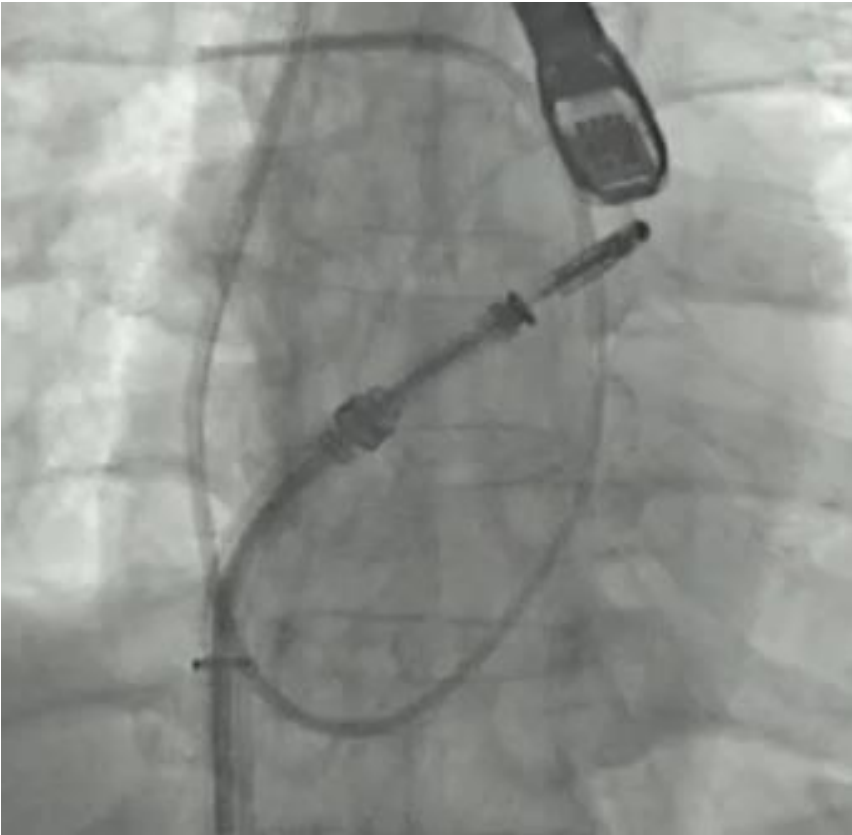


“CDS Insertion”

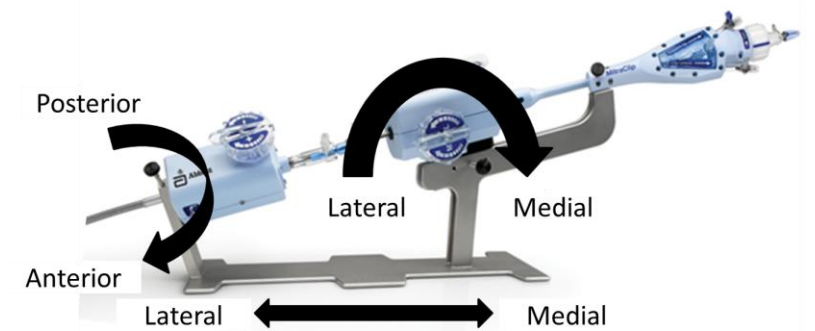


- We used pigtail catheter for LA pressure monitoring
- Gently advanced SGC
- Prevent CDS to touch the PV ridge or LAA in TEE

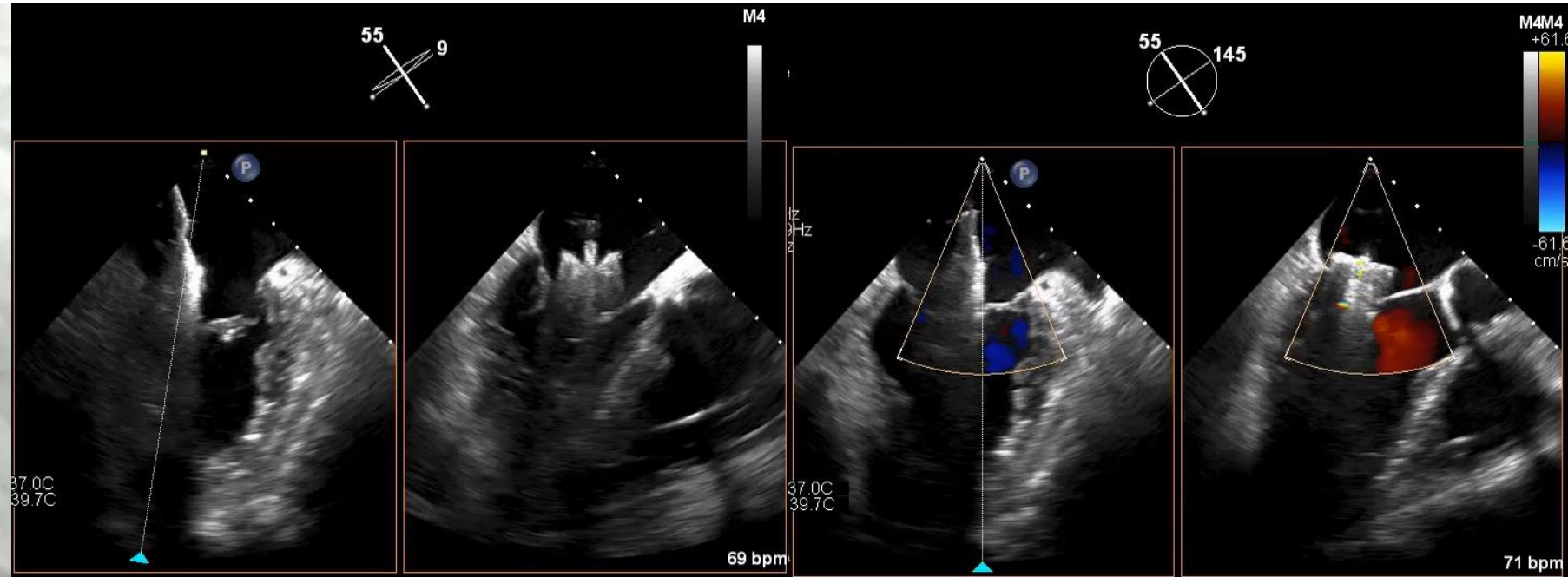
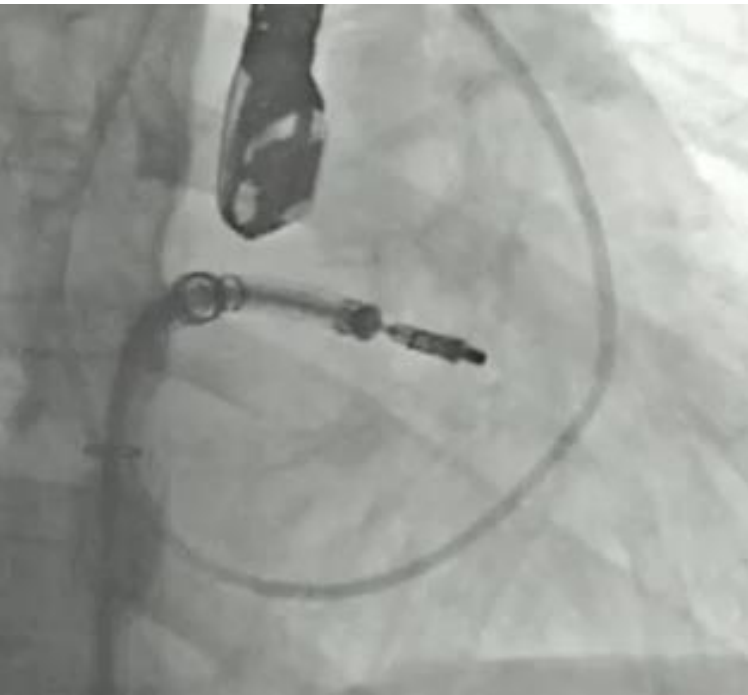
Steering Down



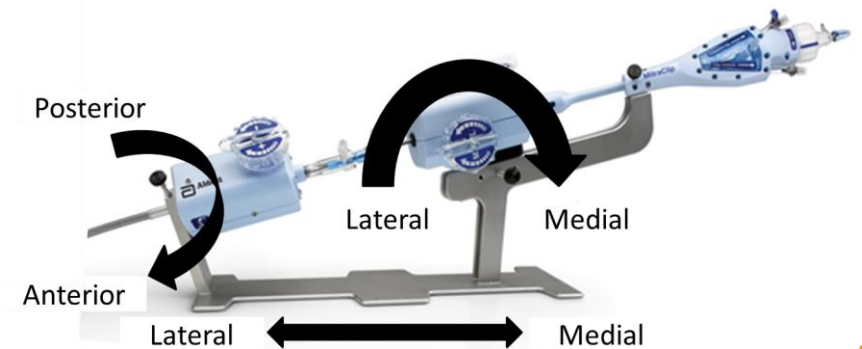
- Once we inserted CDS, we advanced the clip to mitral valve using “M knob” in CDS and “clockwise torque” of SGC



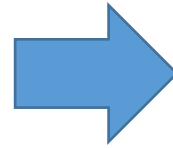
Clip Maneuver in Left Atrium



- Open the clip and check trajectory



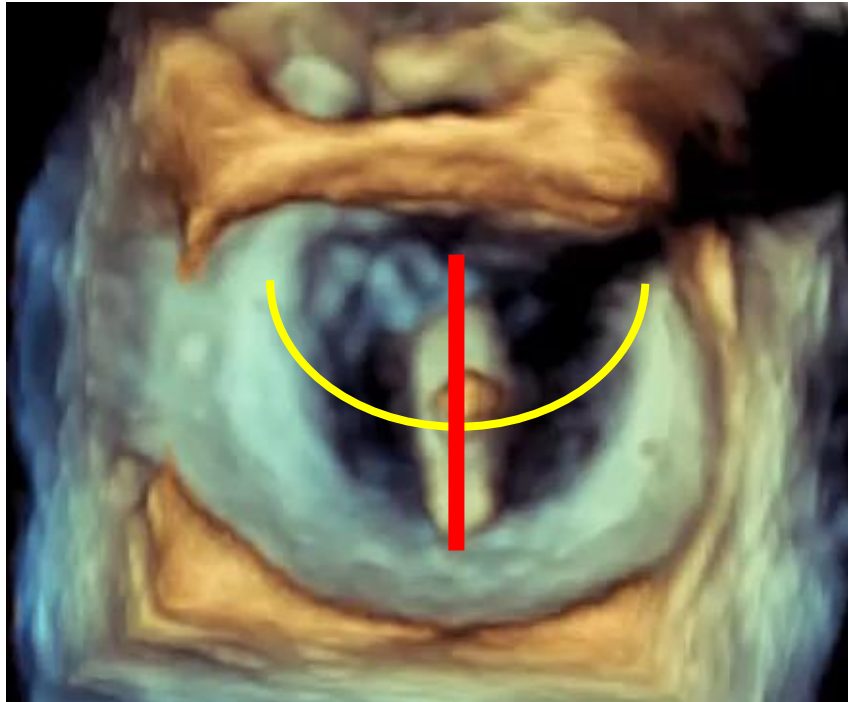
Clip Maneuver in Left Atrium



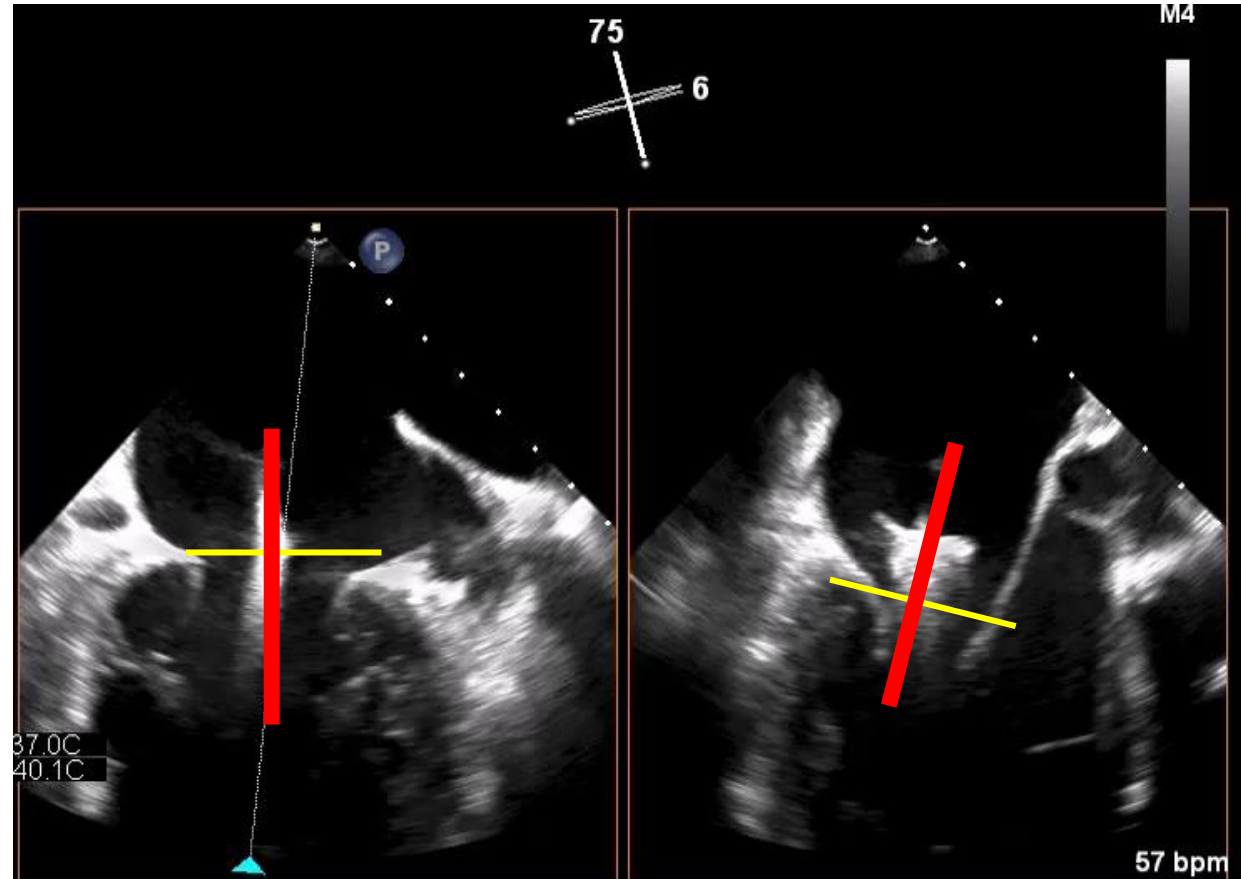
- Rotate the CDS handle to be coaxial to mitral valve coaptation line in 3D TEE

Important Maneuver

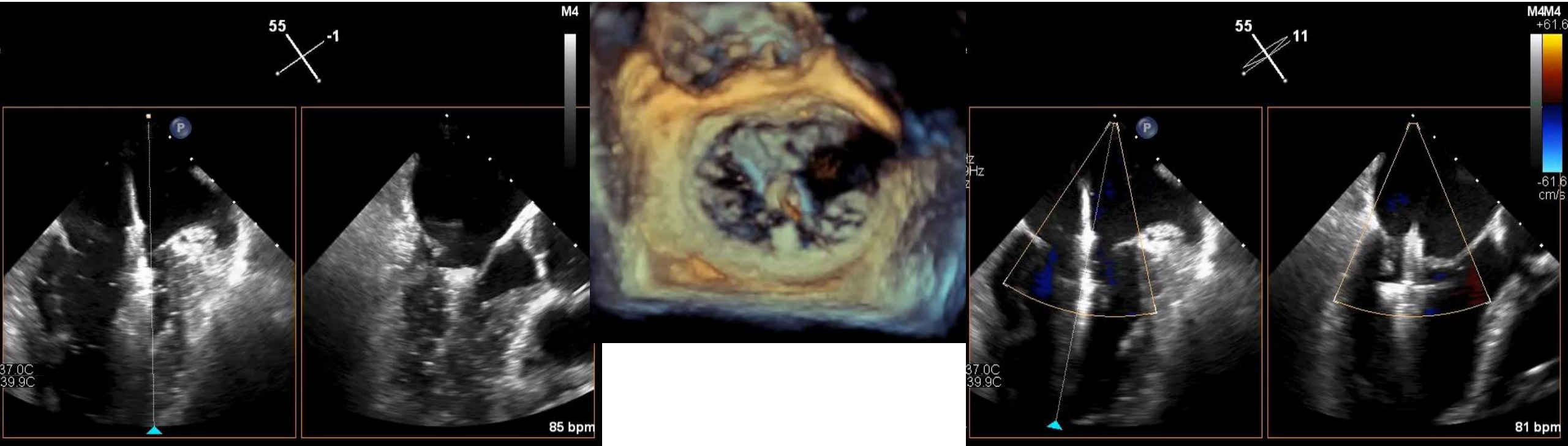
“3D en face”



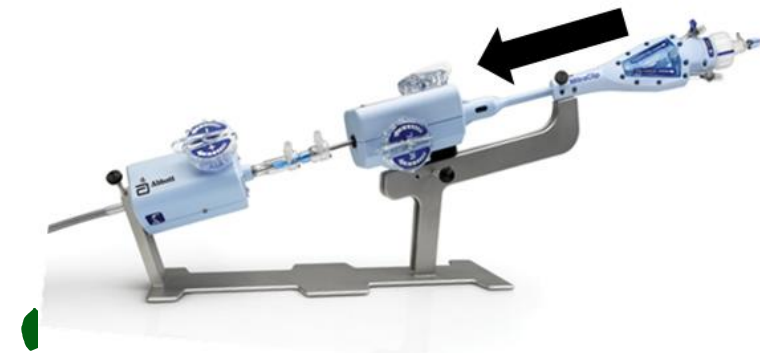
“Bicom and LVOT”



Clip Maneuver in Left Ventricle

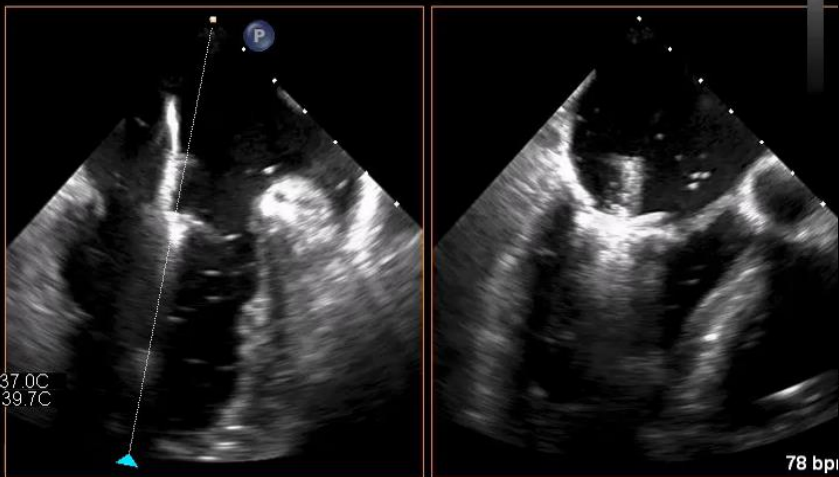


- Inserted the clip to LV
- Reassess the clip orientation in 3D TEE
- Grasp the leaflet by pulling up the CDS



Grasping Leaflets

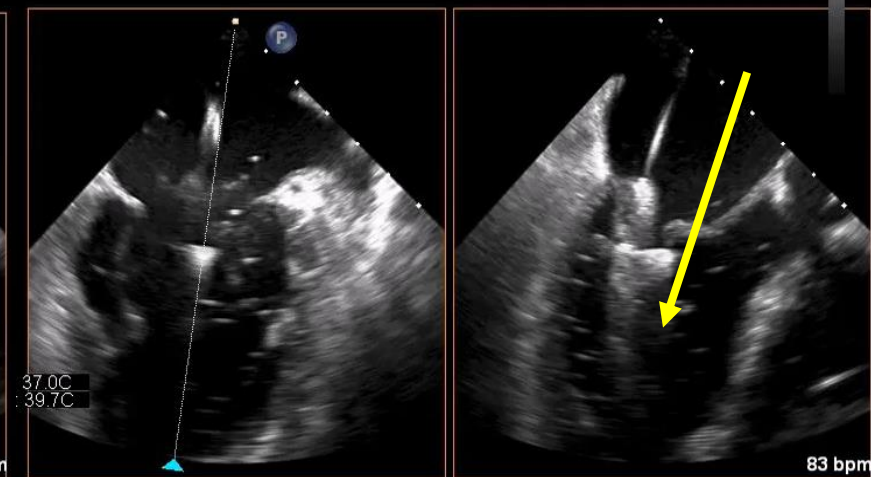
Off the PML above the arm



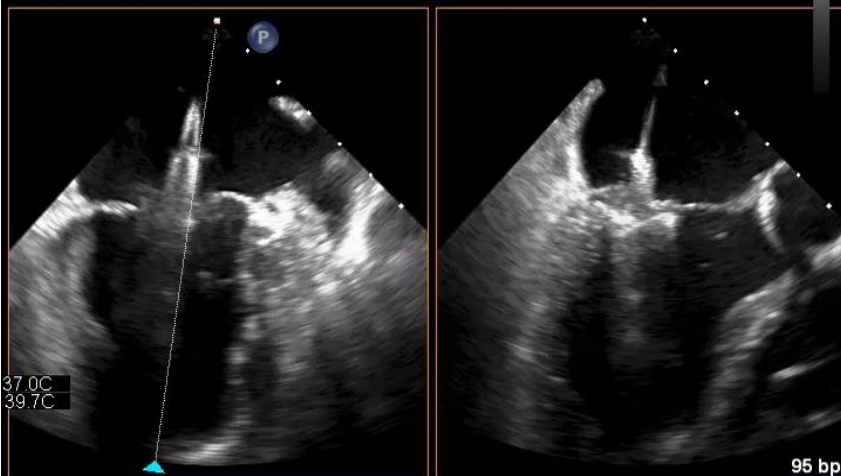
Change the trajectory



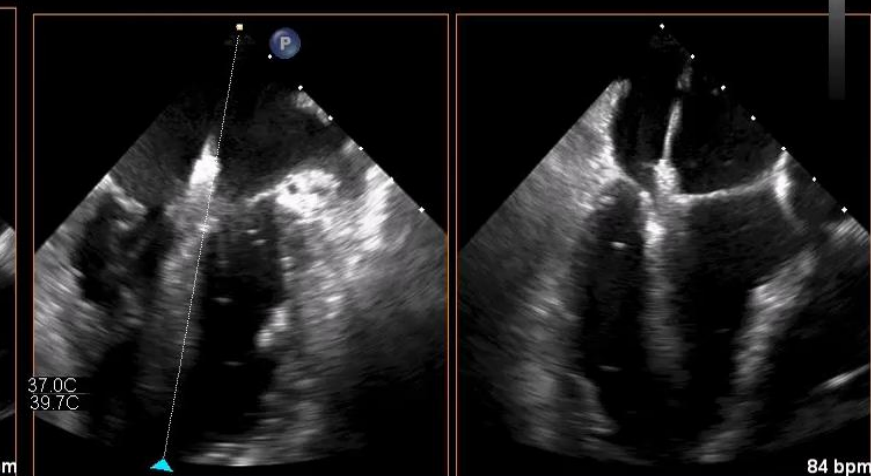
Use “- knob” and clockwise SGC



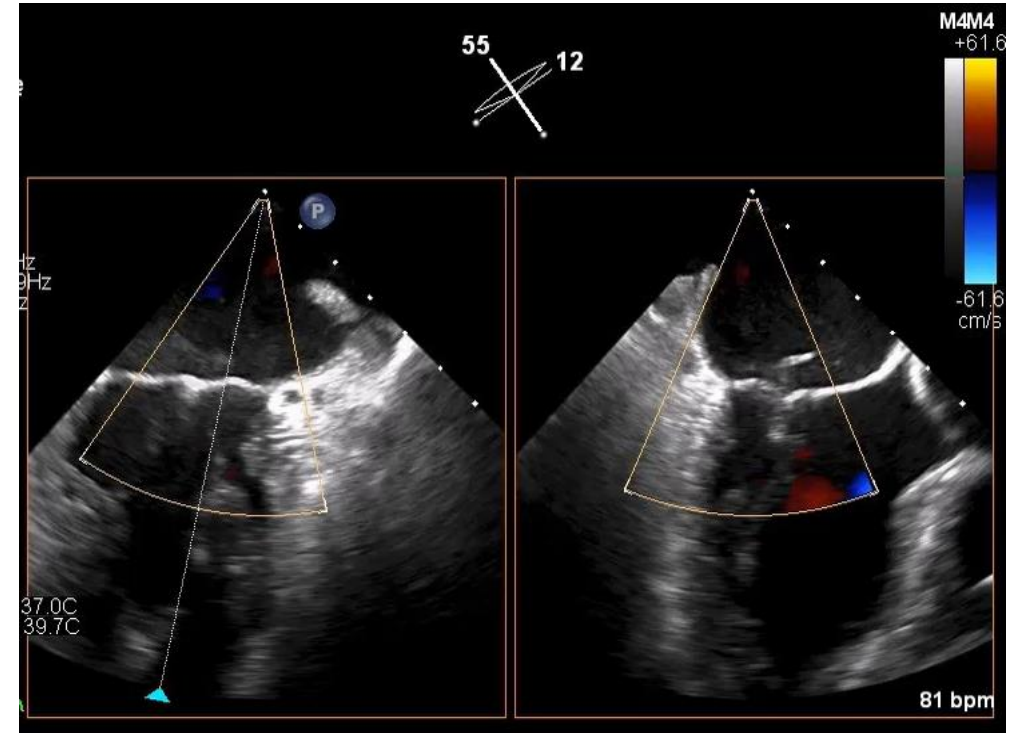
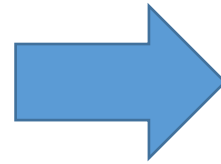
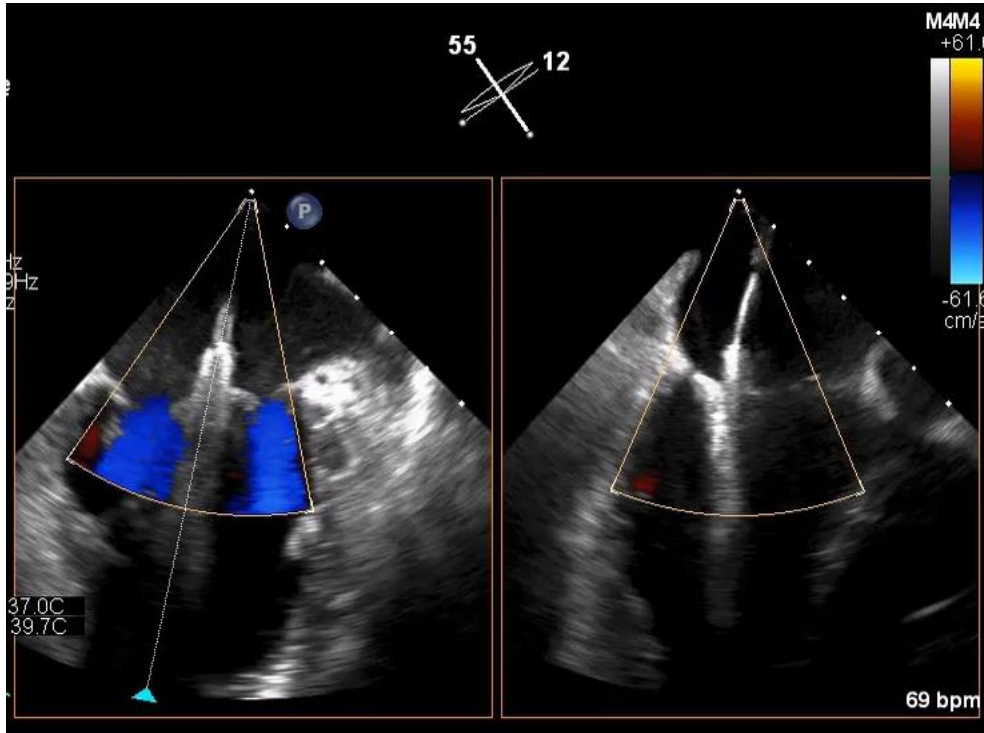
Gripper down



Close the clip by 60 degree



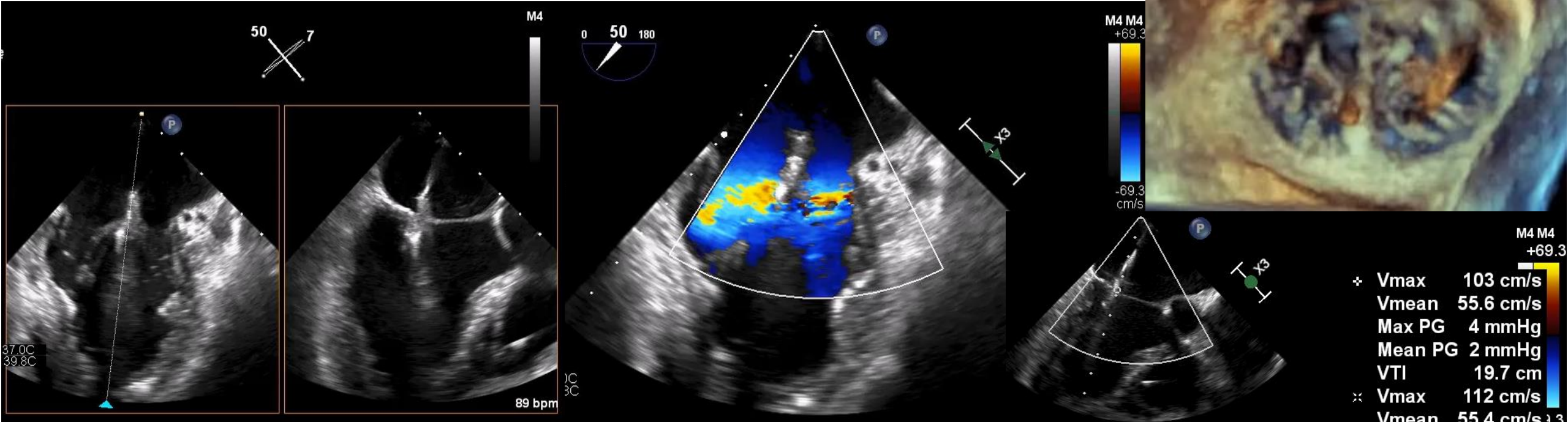
Closing Clip



- smoke sign (+) in LA
- Trivial MR after full closing the clip
- Confirm the clip position (lateral A2/P2)

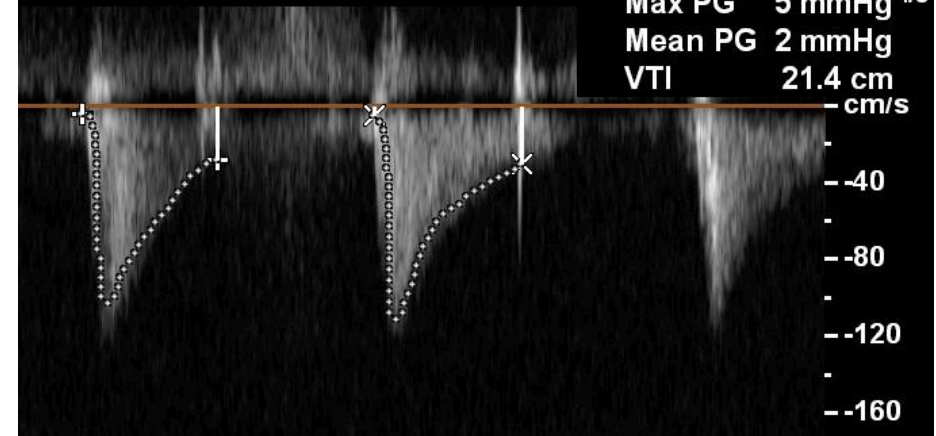


Before Releasing Clip



【Our Check Points】

- Leaflet tissue assessment
- MR reduction
- Tissue bridge and double orifice assessment
- Absence of stenosis (MV mean PG <6 mmHg)



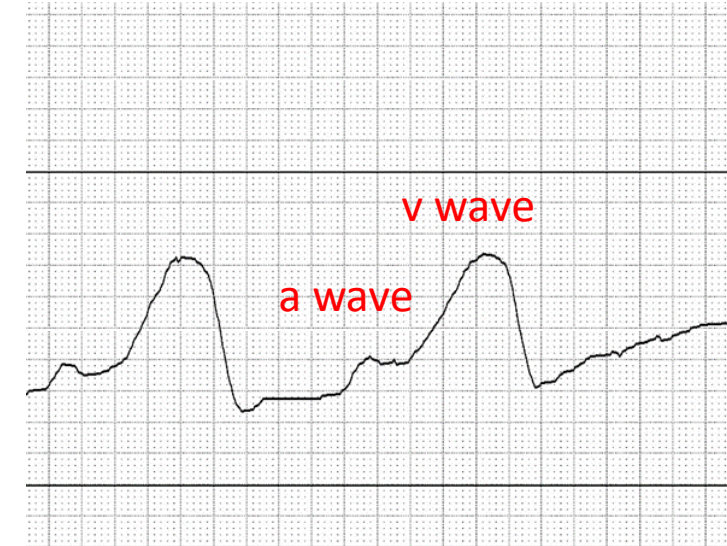
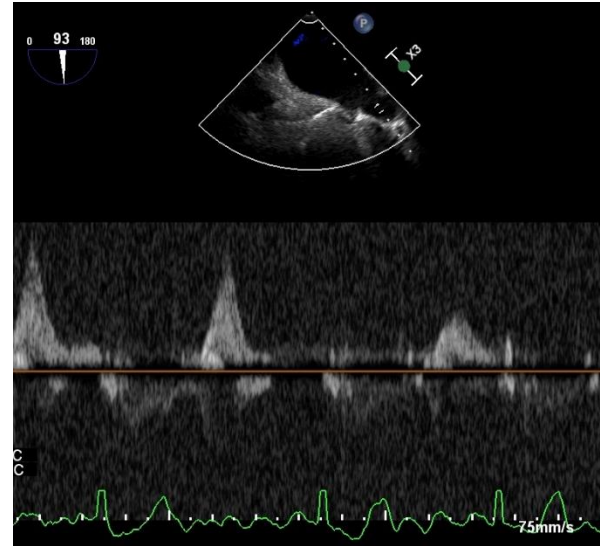
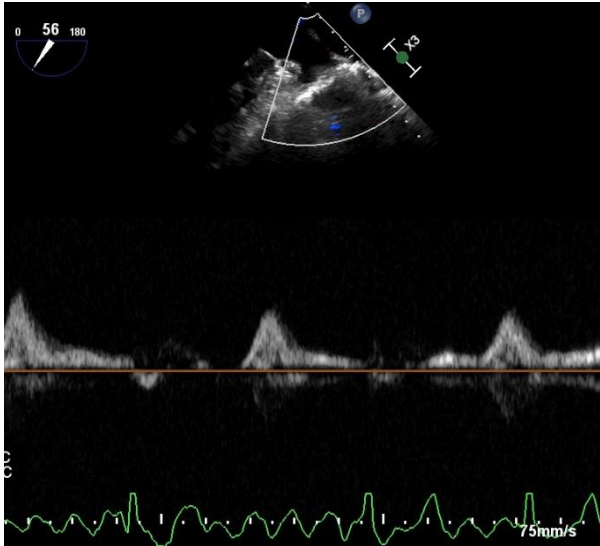
Hemodynamic Assessment

“LSPV”

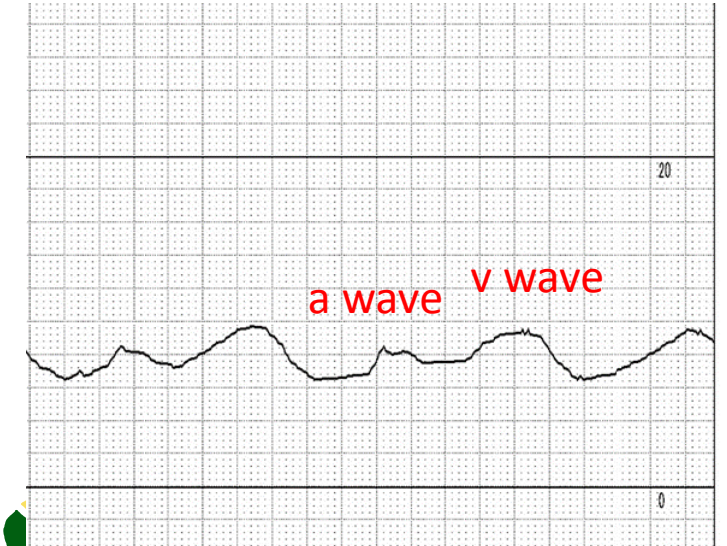
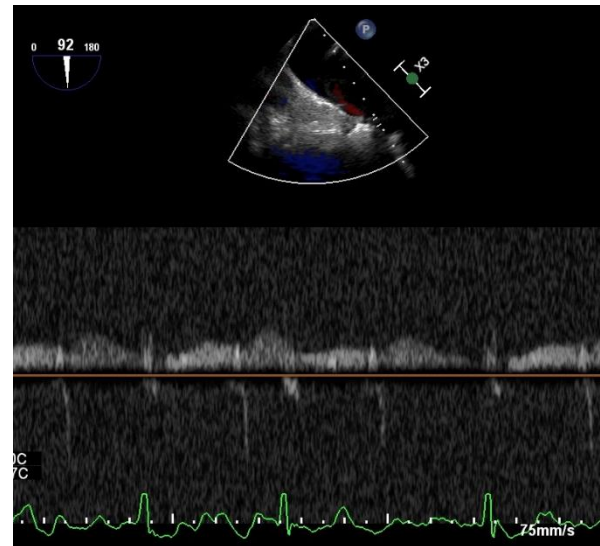
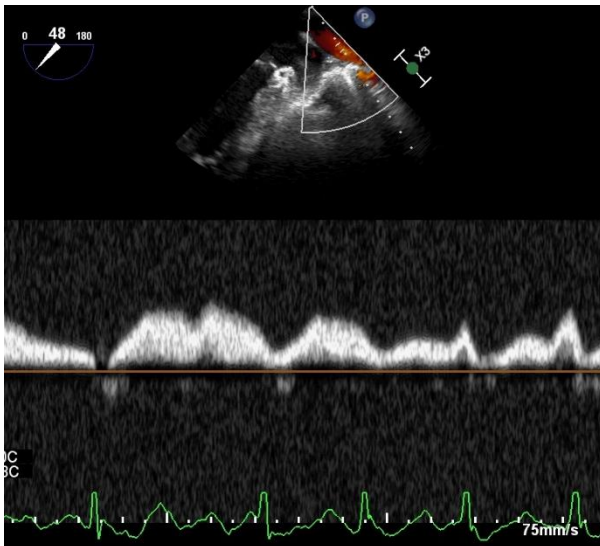
“RSPV”

“LA Pressure”

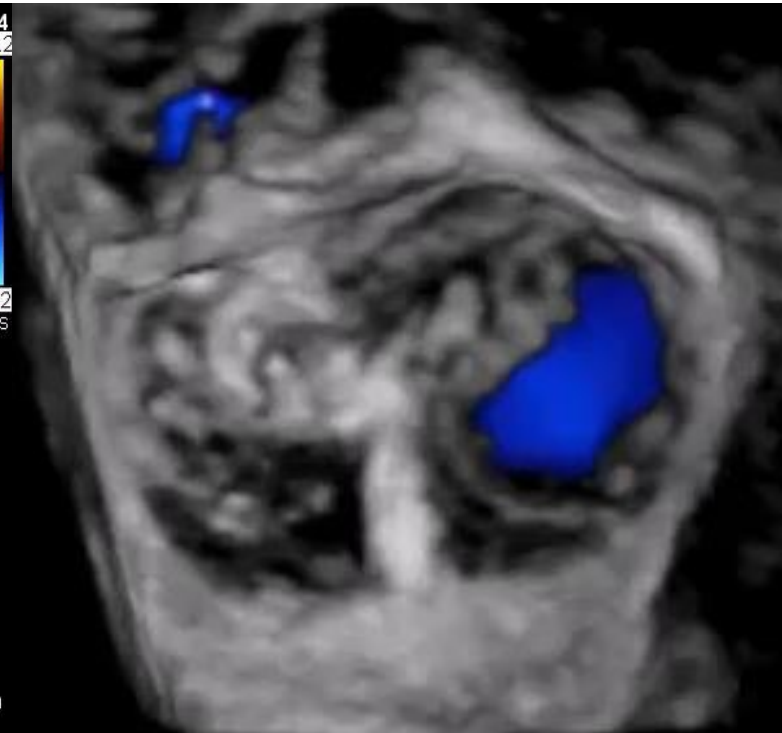
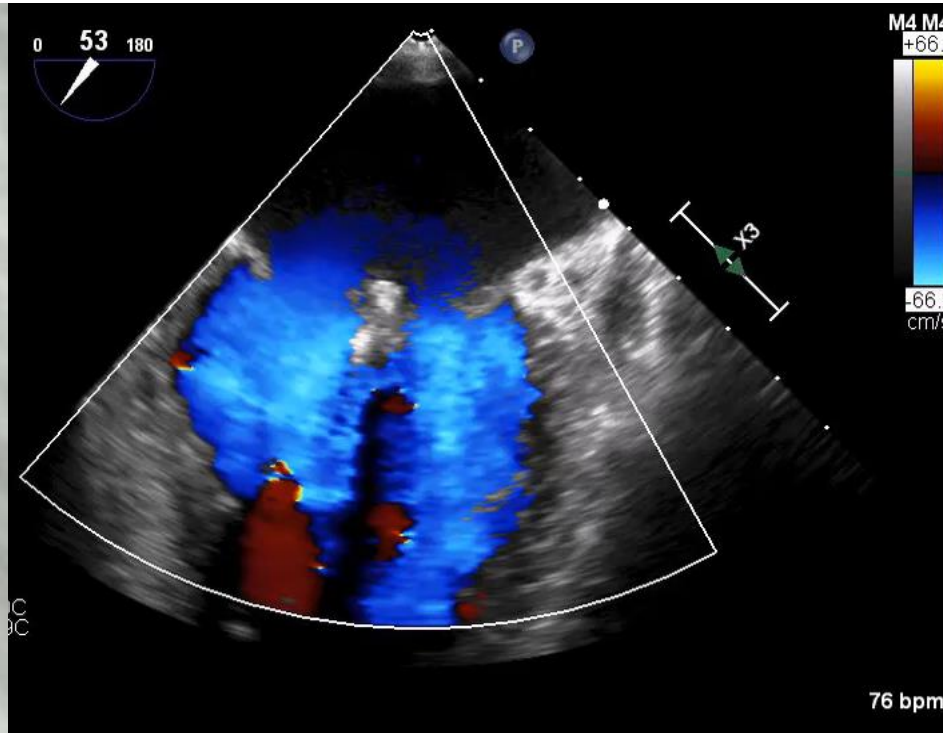
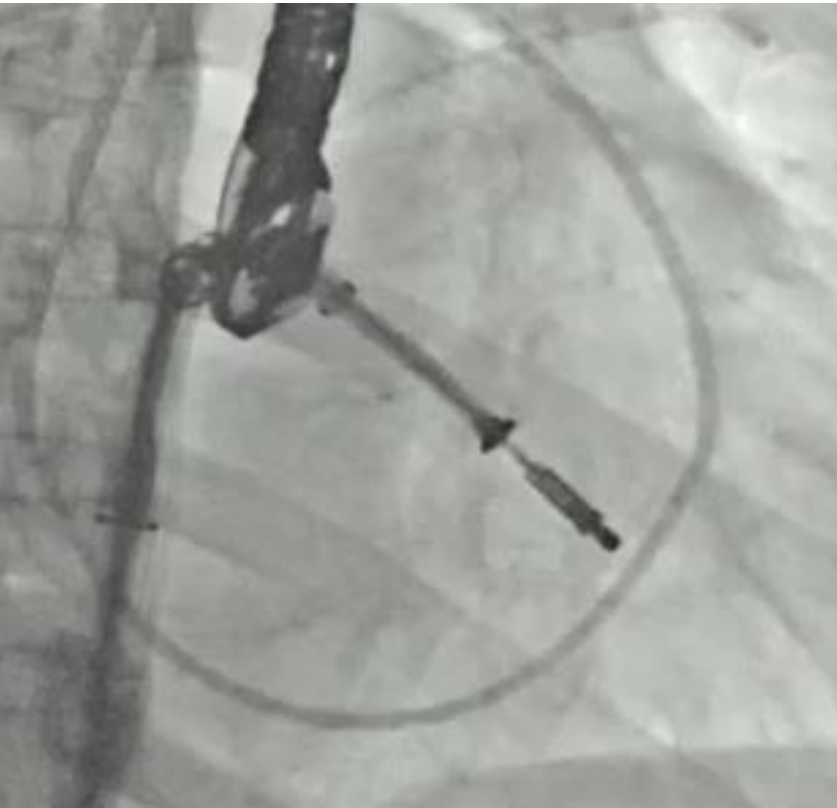
“Pre MitraClip”



“Post 1 Clip”

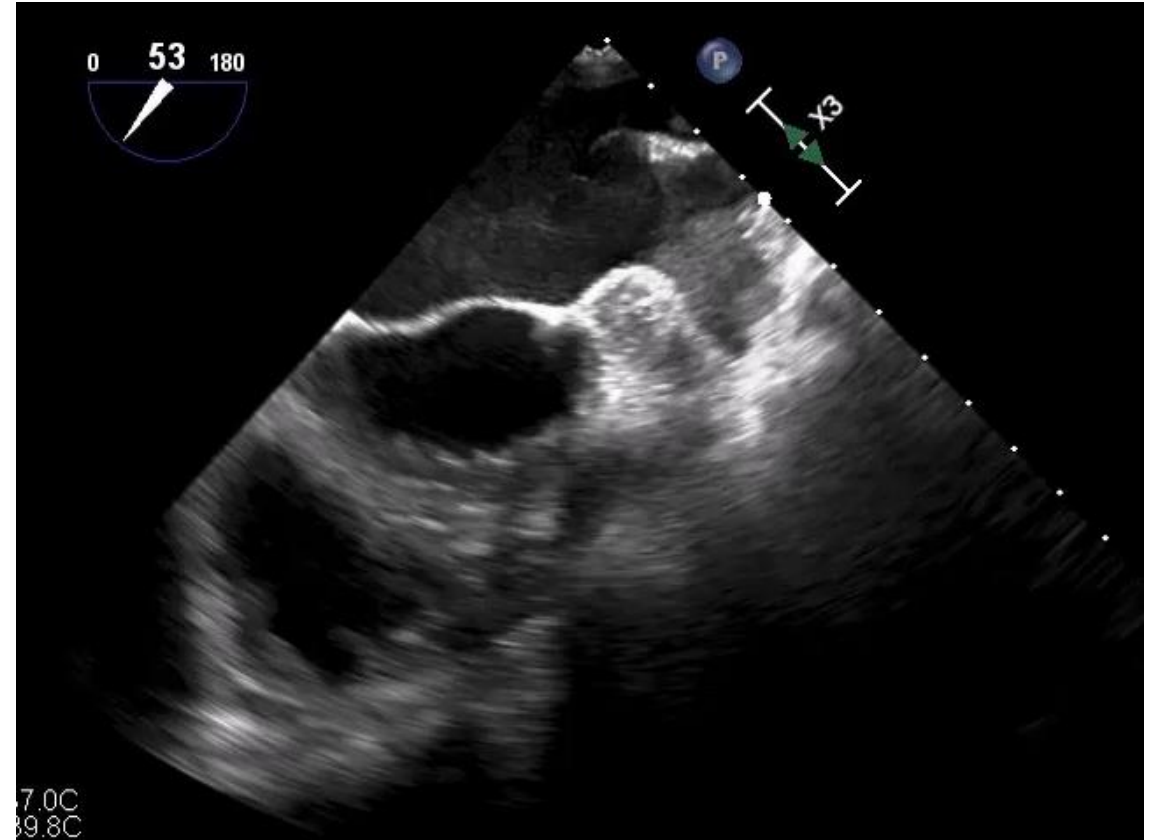
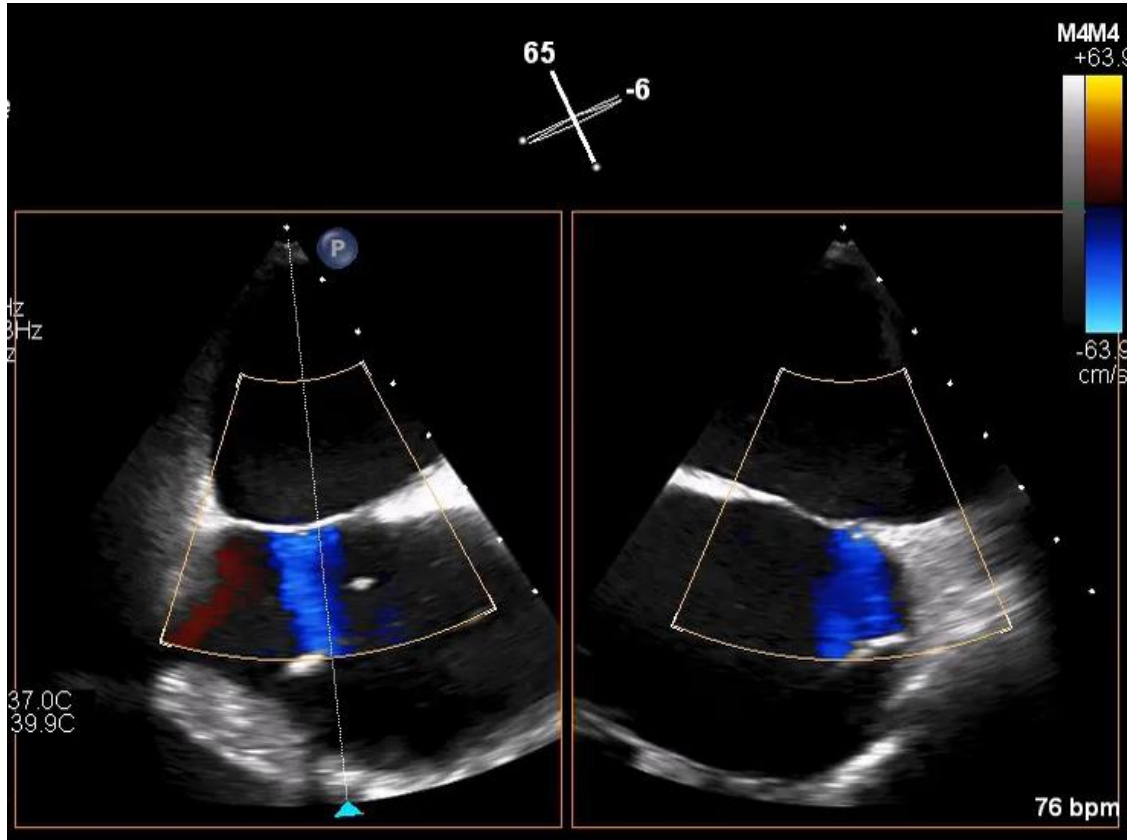


Clip Release



- Trivial MR after releasing the clip
- Good double orifice valve
- Assessment of residual MR and additional clipping

Taking Care...



- Right-to-left shunt, septal tear
- Pericardial effusion
- LAA thrombus

Summary

- MitraClip is a “completely” TEE based procedure.
- Transseptal puncture is a key step through the entire procedure.
- Clip orientation and trajectory is important for clip grasping and MR reduction.
- The clip assessment before release should be confirmed in all members in OR.