

Japan Challenging Case

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Potential conflicts of interest

Speaker's name : Shunsuke Kubo

I have the following potential conflicts of interest to declare:

Clinical Proctor : Abbott Medical, Boston Scientific

Lecture fees : Abbott Medical, Boston Scientific

73 Years, Male

【Present illness】

2020/2: MV plasty + CABG (LITA-LAD, SVG-RCA#4PD)

⇒ Physio 30mm + artificial chordae, edge-to-edge in A3/P3

2022: Hospitalized for heart failure multiple times

⇒ TTE revealed recurrent MR

2023: Referred to our hospital for management of severe MR

【Medial therapy】

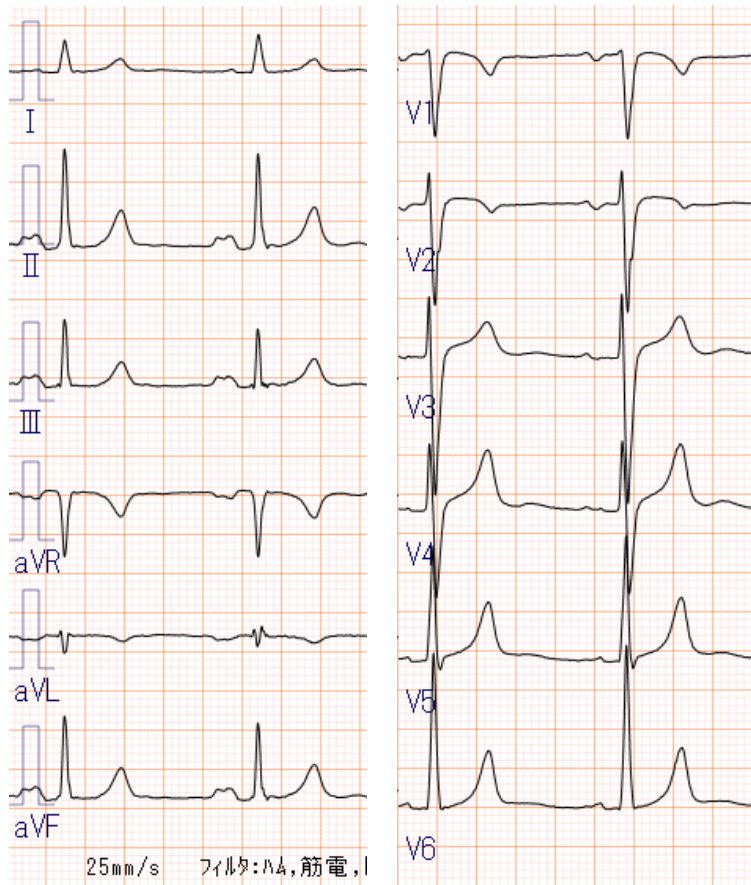
Furosemide 10mg, Spironolactone 25mg, Enalapril 2.5mg, Empagliflozin 10mg, Bisoprolol 1.25mg, Aspirin 100mg, Rosuvastatin 2.5mg

【Risk score】

163cm, 47 kg, NYHA 3, Clinical frailty scale 3, STS score 3.82 (MVR)

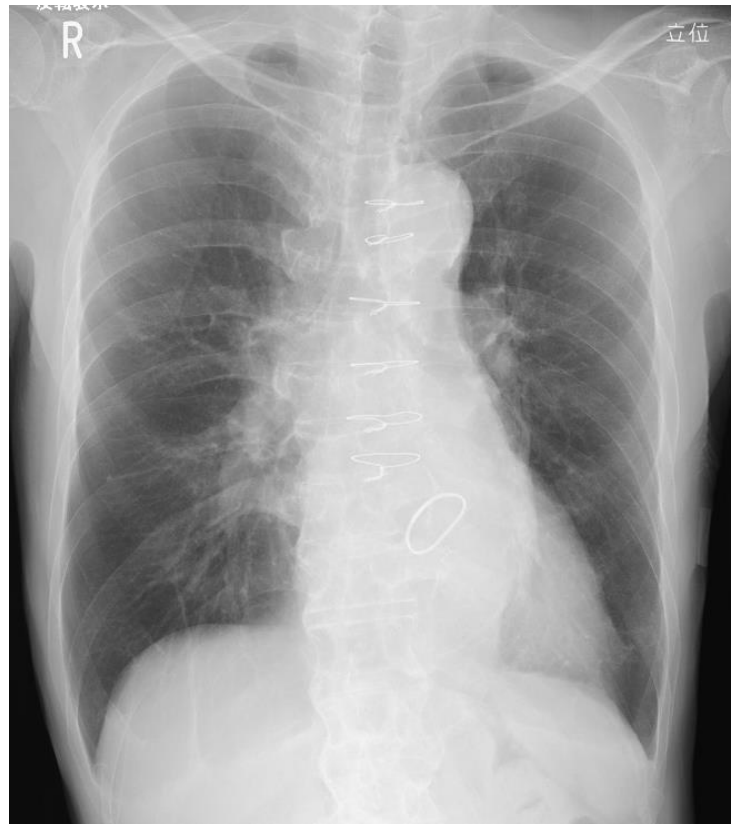
Examinations

【ECG】



Sinus

【Chest X-ray】

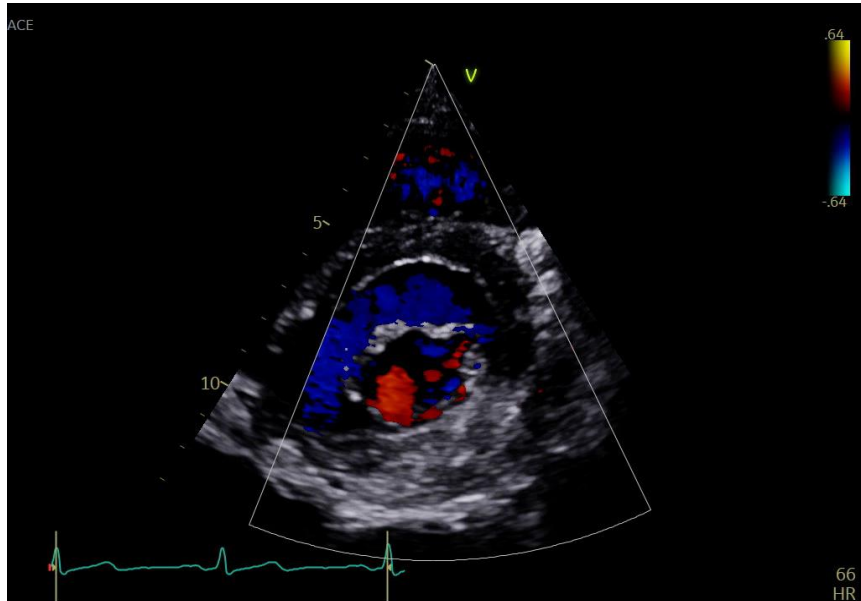
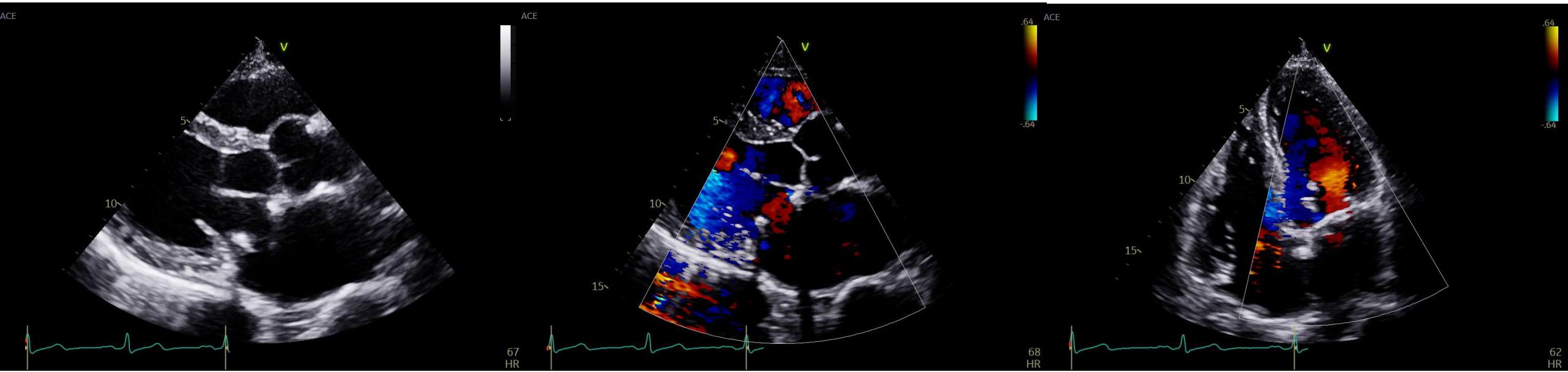


Congestion (+)

【Laboratory】

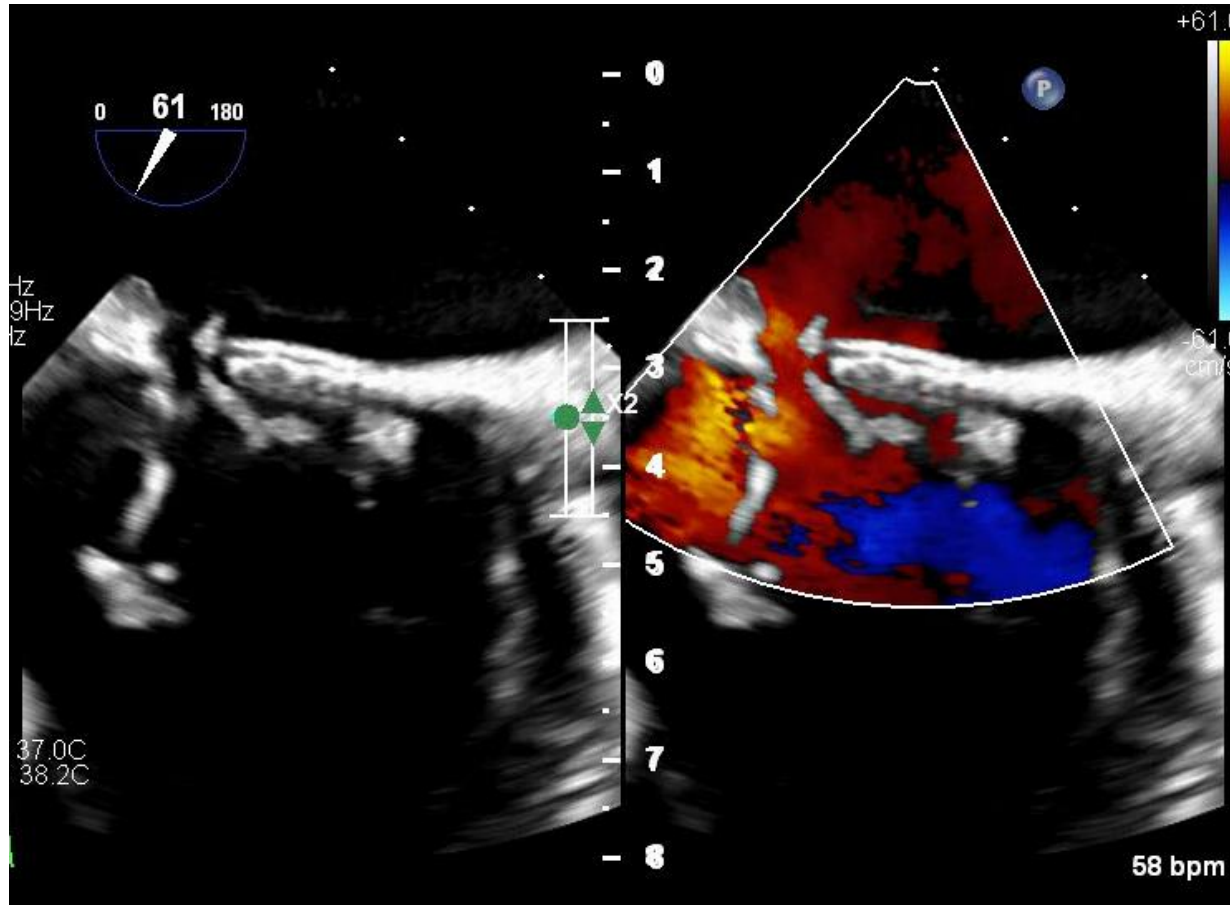
AST	36	U/L
ALT	27	U/L
LDH	500	U/L
CRE	0.94	mg/dL
eGFR	60.6	
BUN	22	mg/dL
Na	138	mmol/L
K	4.6	mmol/L
BNP	512.1	pg/mL
Hb	11.8	g/dL

TTE

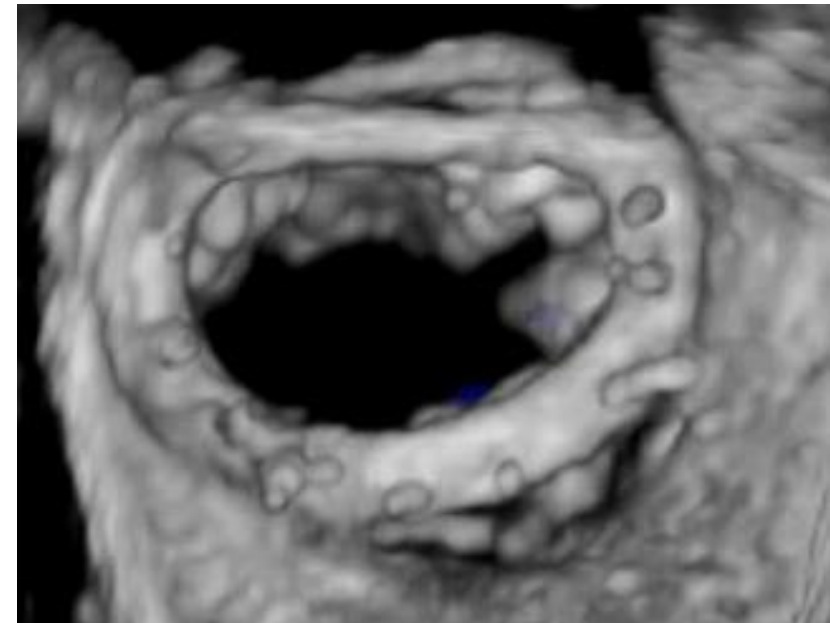
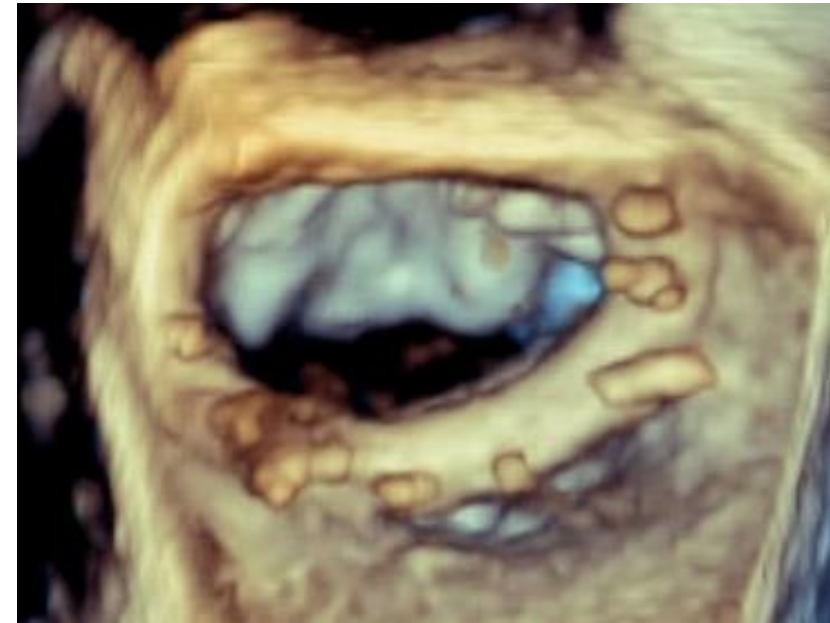


LVDd/Ds = 49/34mm, LVEF = 62%
Severe MR,
EROA = 0.65, Vena contracta 14.6mm
MVA 4.73, Mean PG = 3mmHg
Moderate TR, PASP 41mmHg

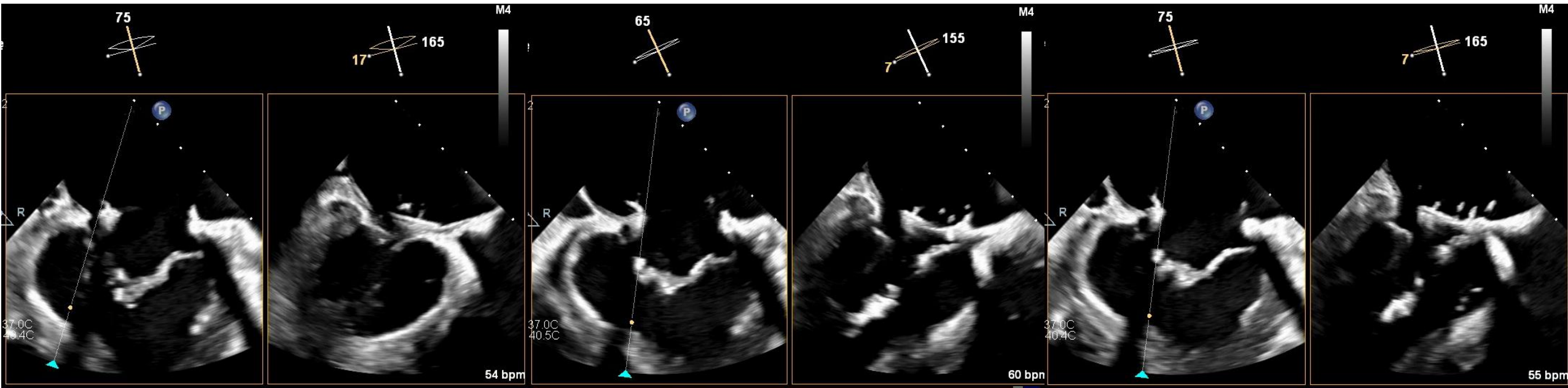
TEE



Severe MR from central-medial
A2/P2
MR jet between ring and annulus

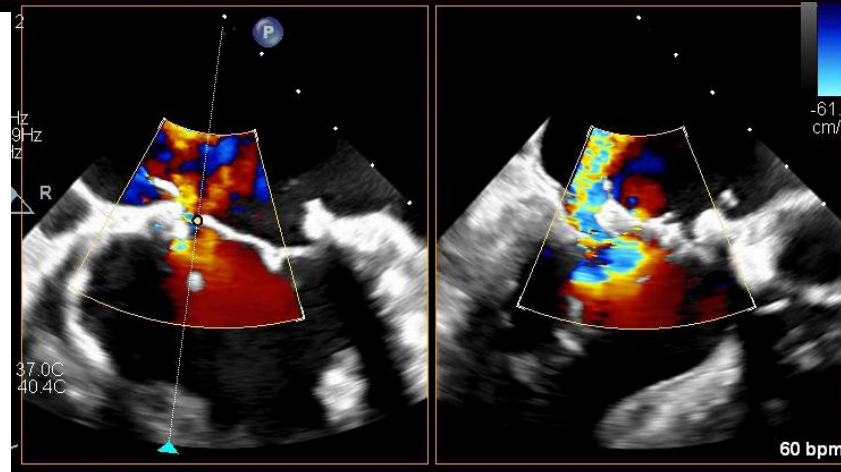


Xplane Image



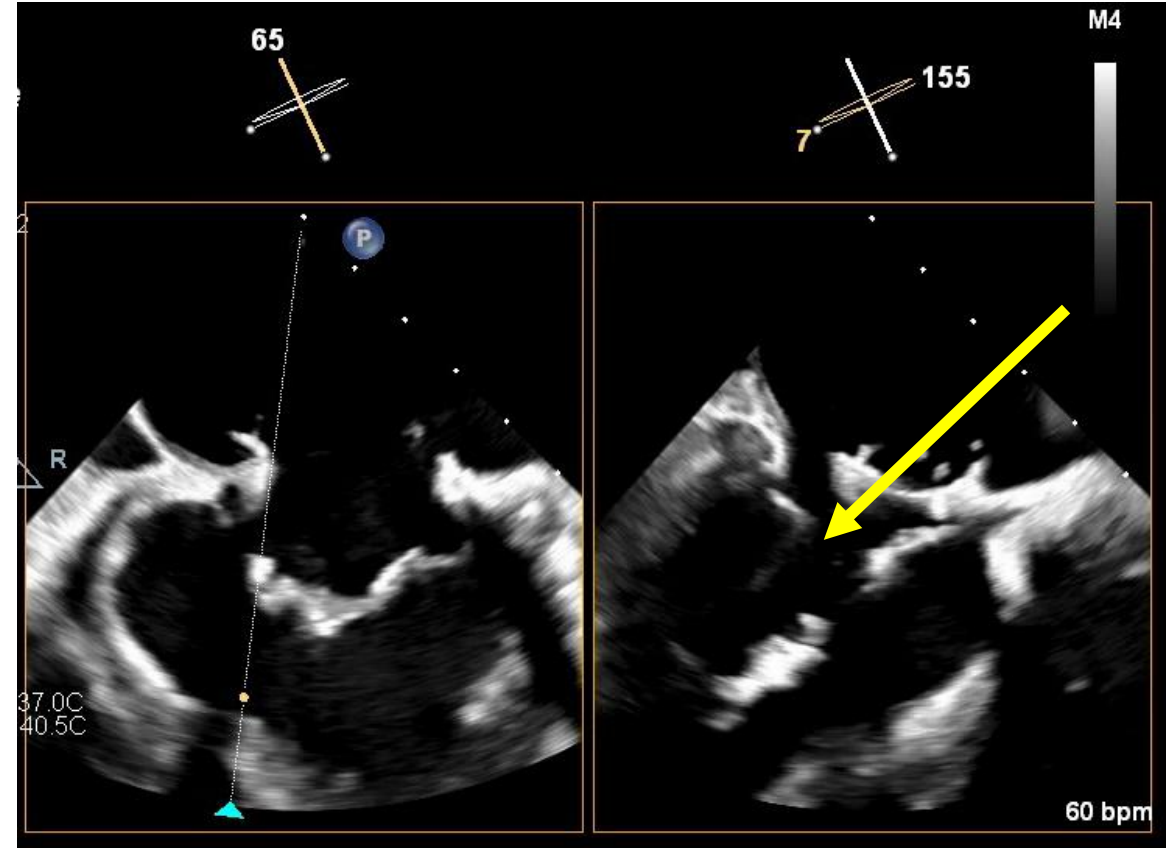
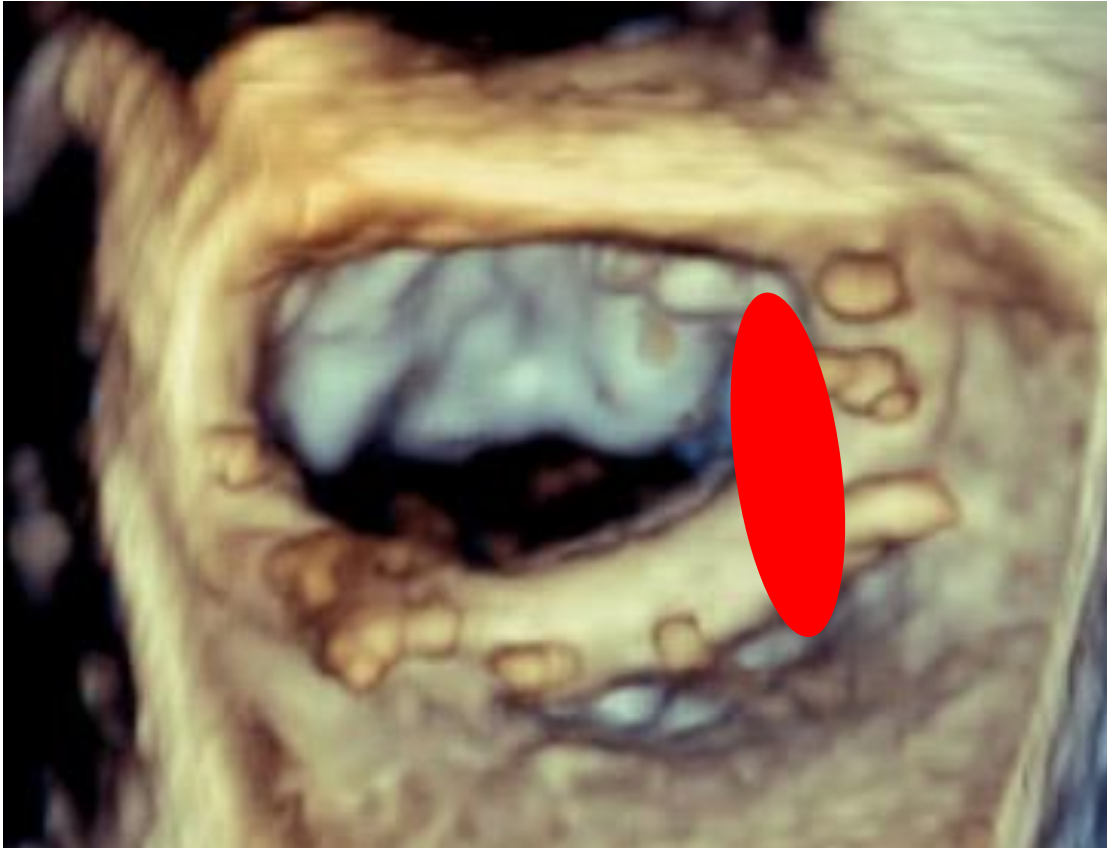
Most Medial
Observe ruptured chordae
But, posterior leaflet
cannot be observed

We can see both anterior
and posterior leaflet, but detached ring was close to leaflet



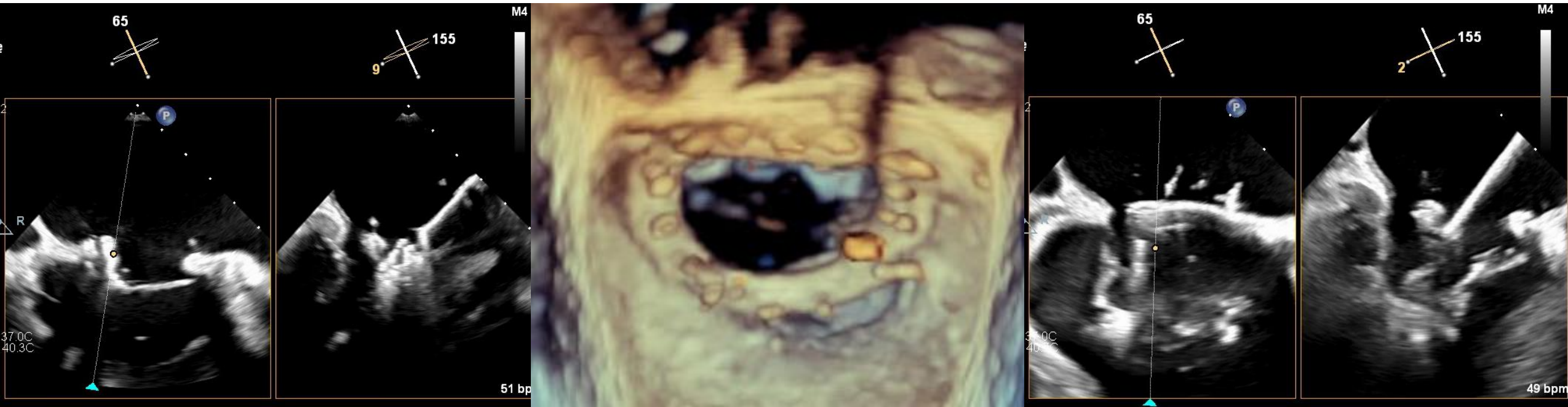
Most lateral
Tethered posterior leaflet is
far from ring
But, ruptured chordae
cannot be observed

Clipping Strategy



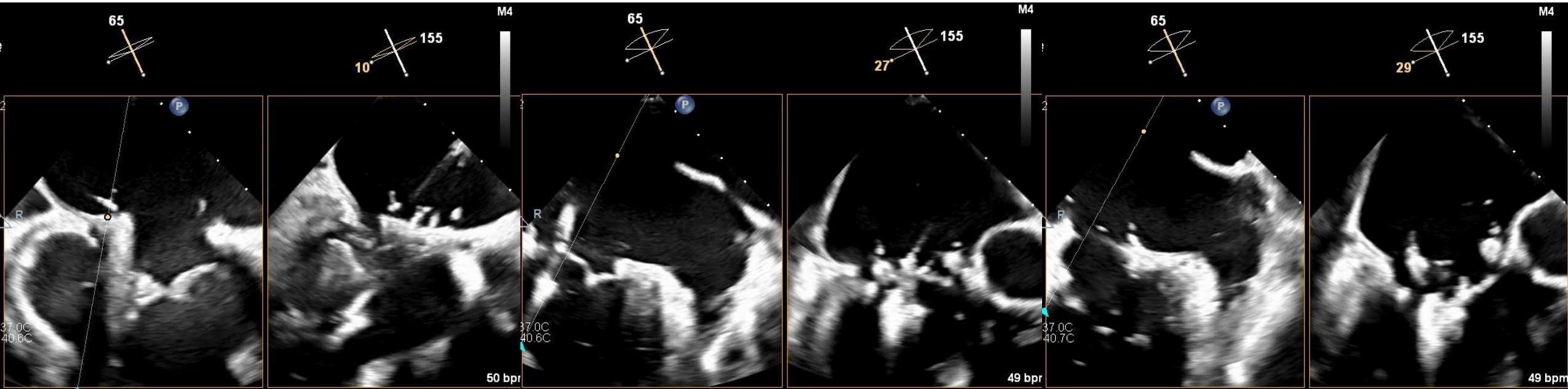
- Use NT clip
- Put - knob to make Ao hugger trajectory
- Try CGA if the simultaneous grasping is difficult

1st Grasp



Simultaneous grasping is difficult because detached ring interfere the posterior gripper
Using CGA, grasp posterior leaflet first, and then grasp posterior.

1st Grasp

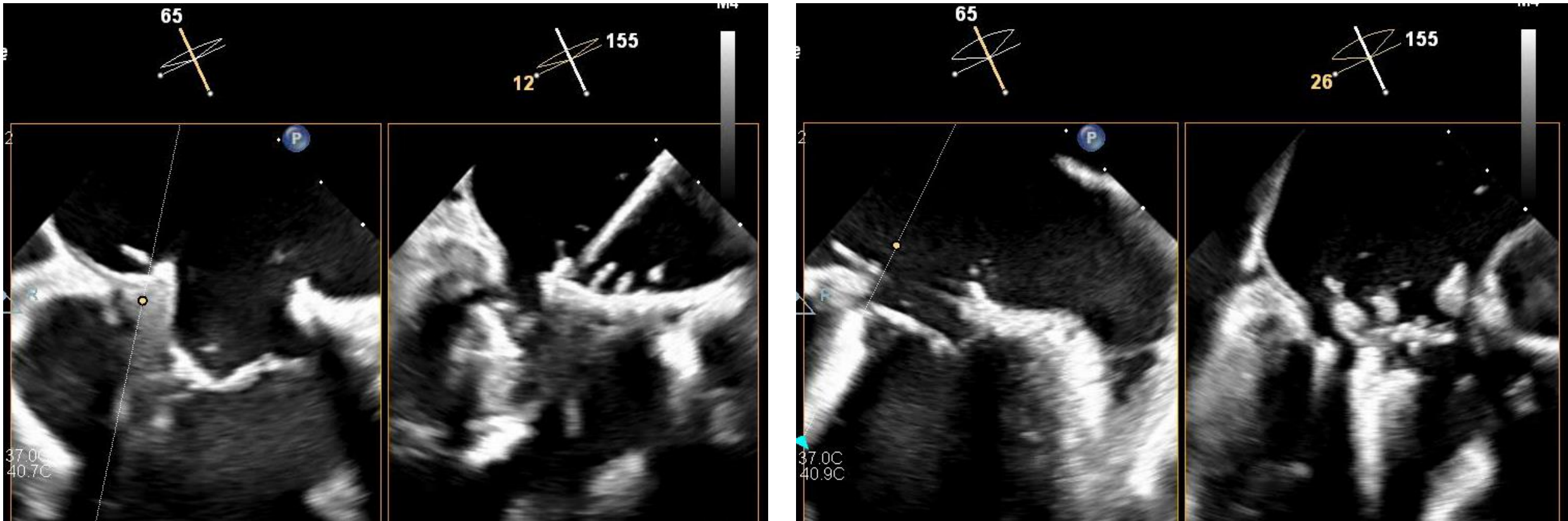


Successfully grasp posterior leaflet.

But, difficult to grasp anterior leaflet.

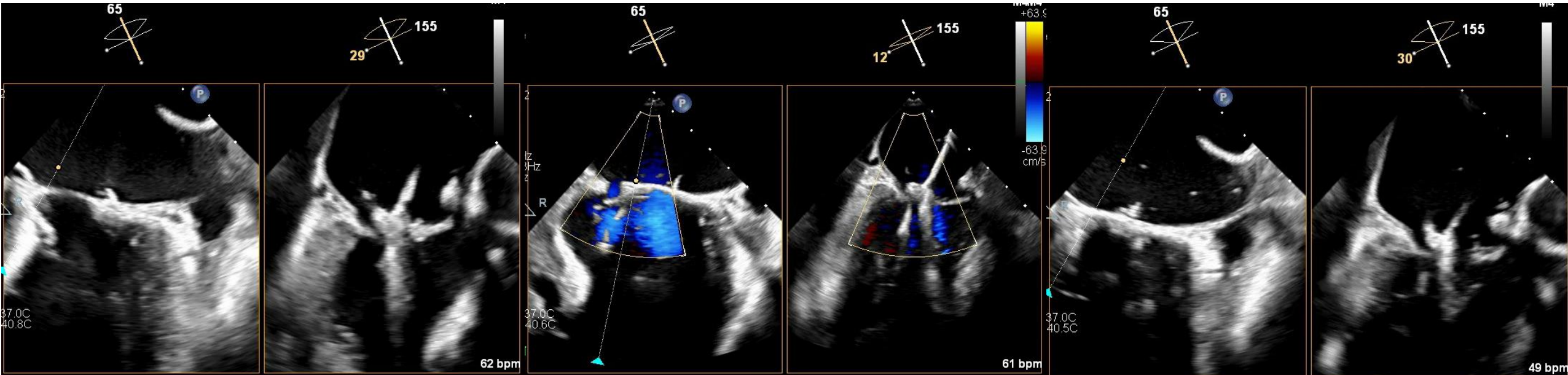
Anterior gripper cannot limit the movement of the anterior leaflet.

2nd Grasp: Adenosine use



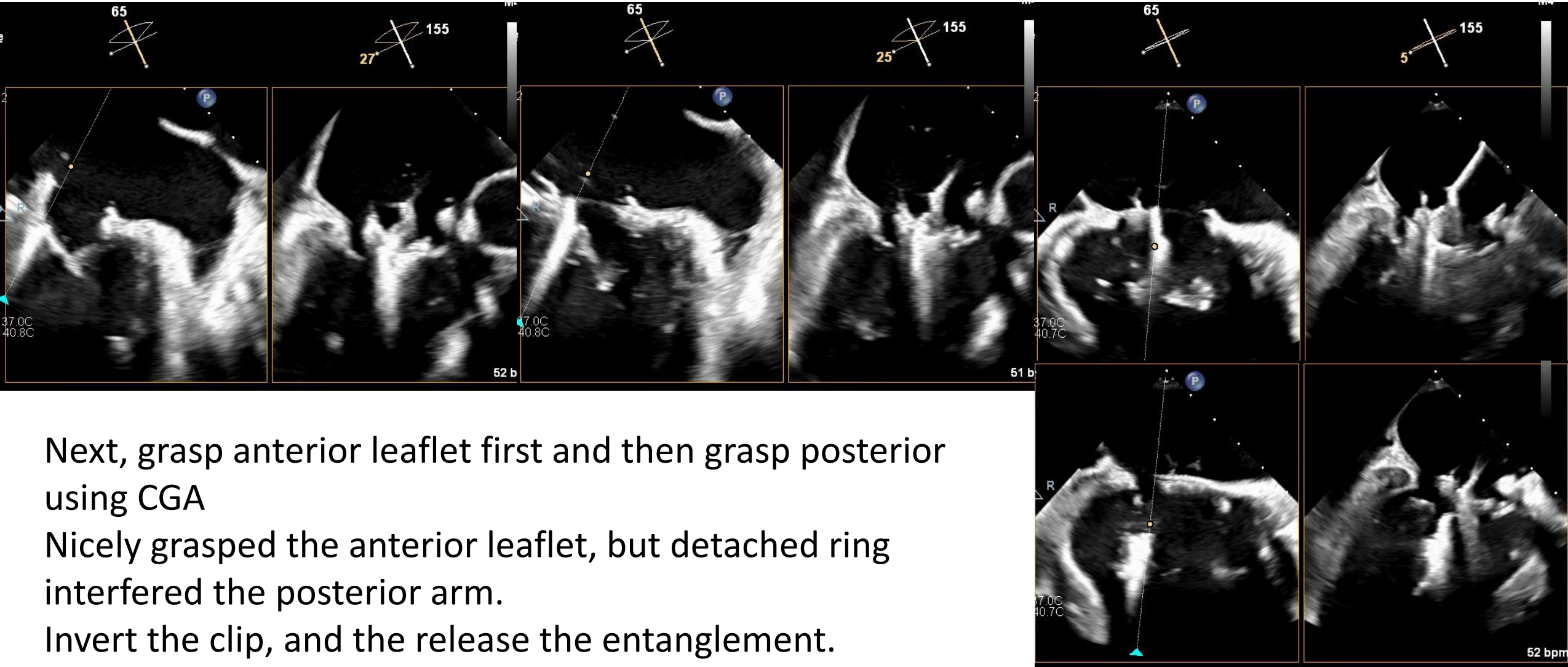
To limit the anterior leaflet motion, we used adenosine 1A. After the adenosine injection, anterior leaflet motion was limited and successfully got by gripper.

2nd Grasp: Adenosine use

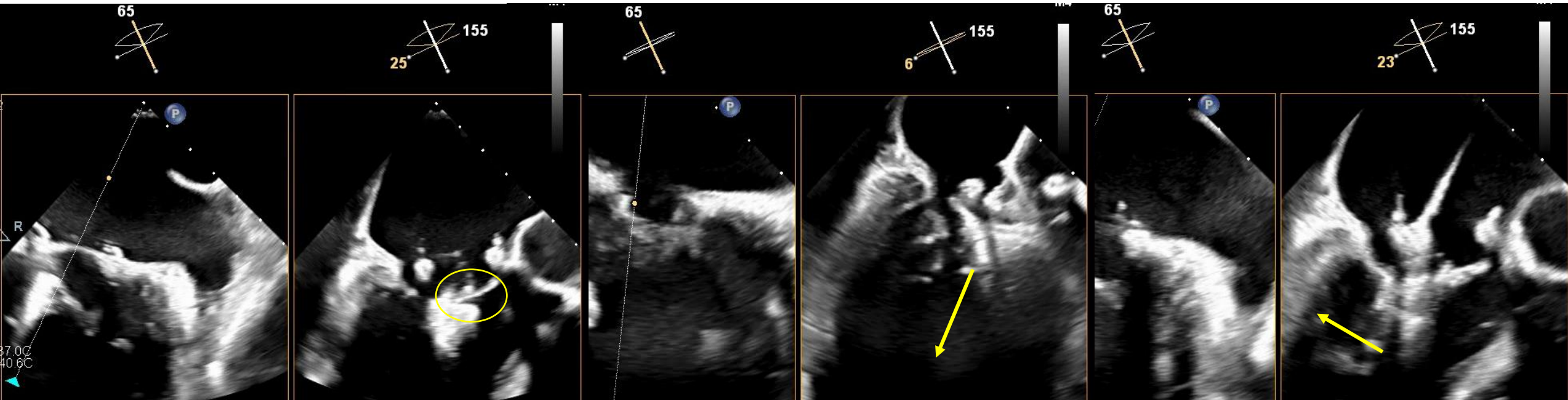


Once we closed the clip, MR dramatically reduced.
But, after fully closing the clip, anterior leaflet slipped off from the clip.
Same phenomenon occurred after some grasping.
So, we should consider another method.

3rd Grasp: A3 ⇒ P3



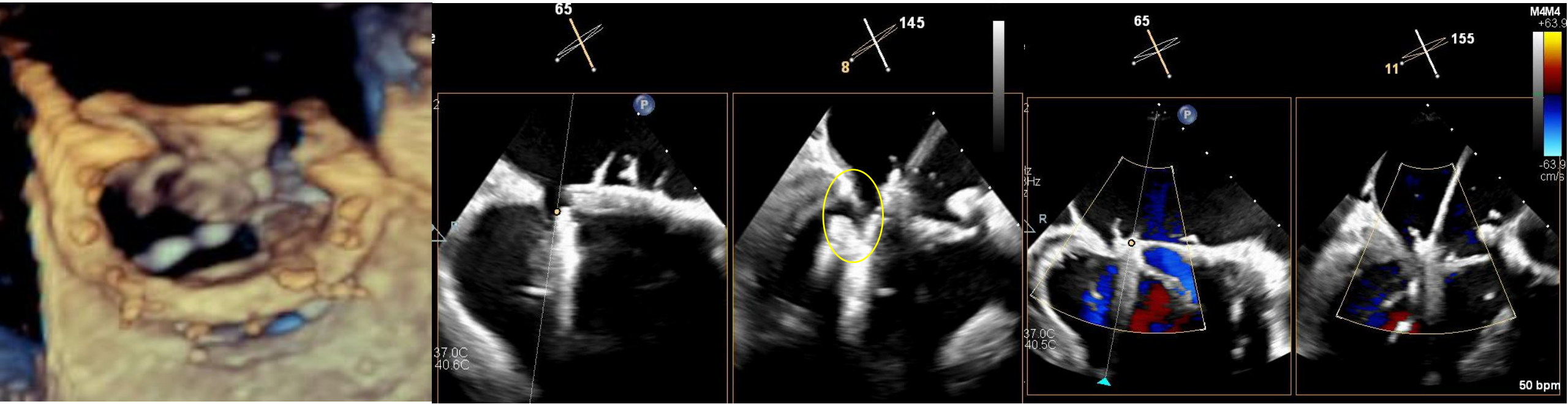
4th Grasp: A3⇒P3



Grasp anterior leaflet

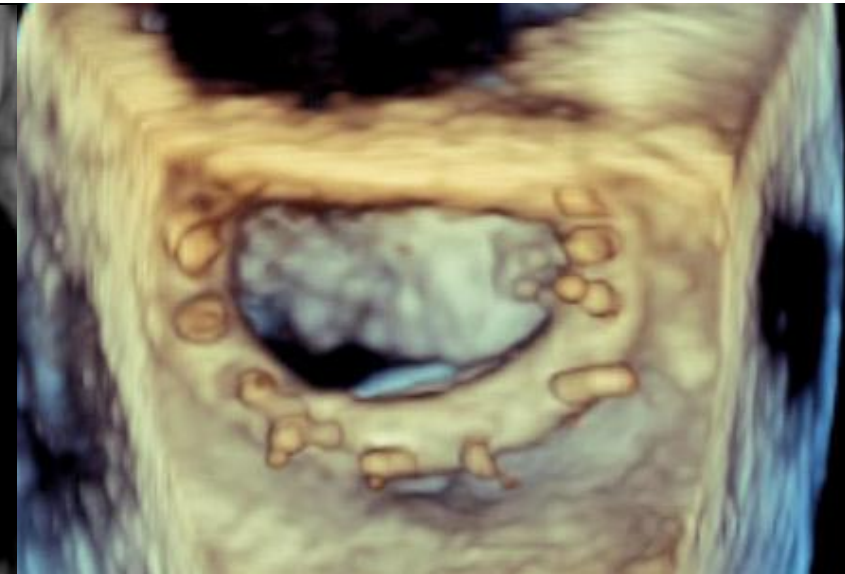
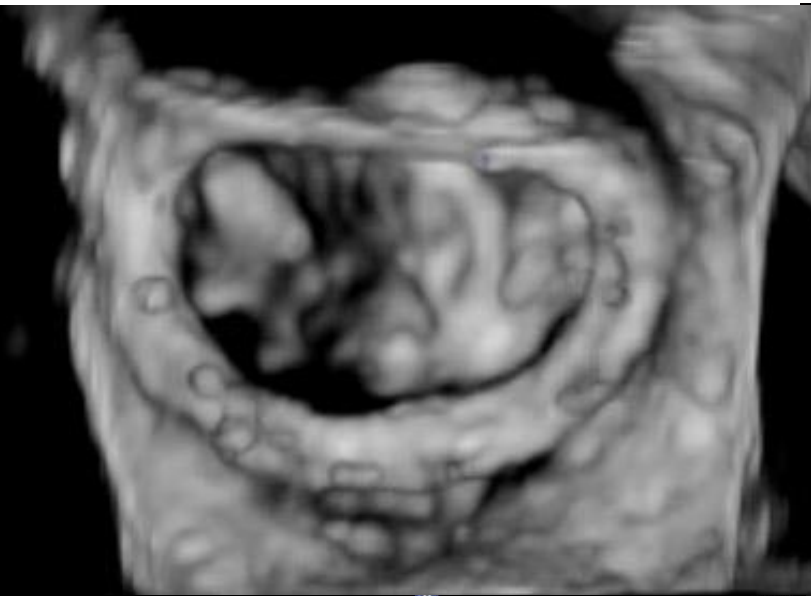
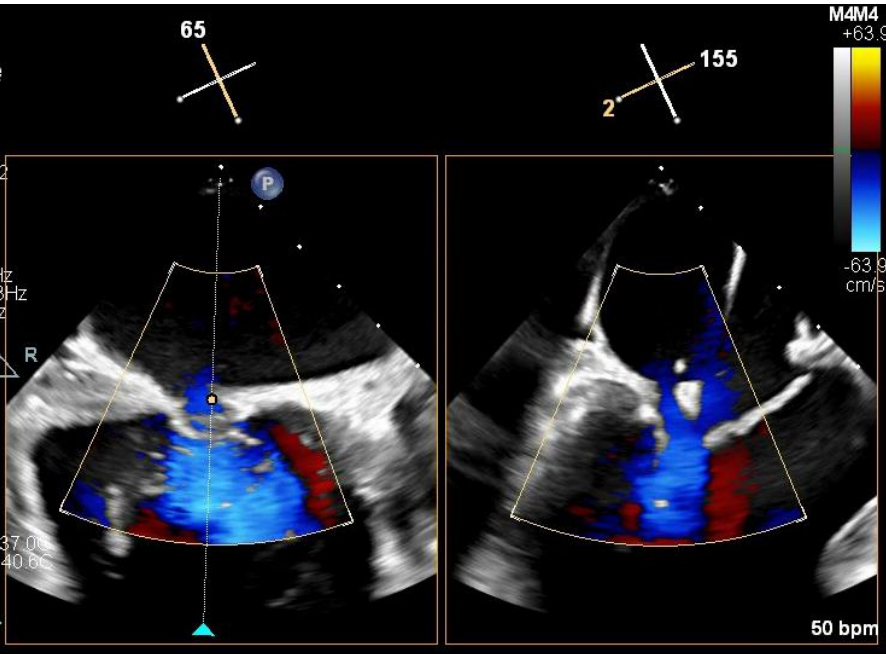
Then, move the clip to LV apex and posterior leaflet

4th Grasp: A3 ⇒ P3

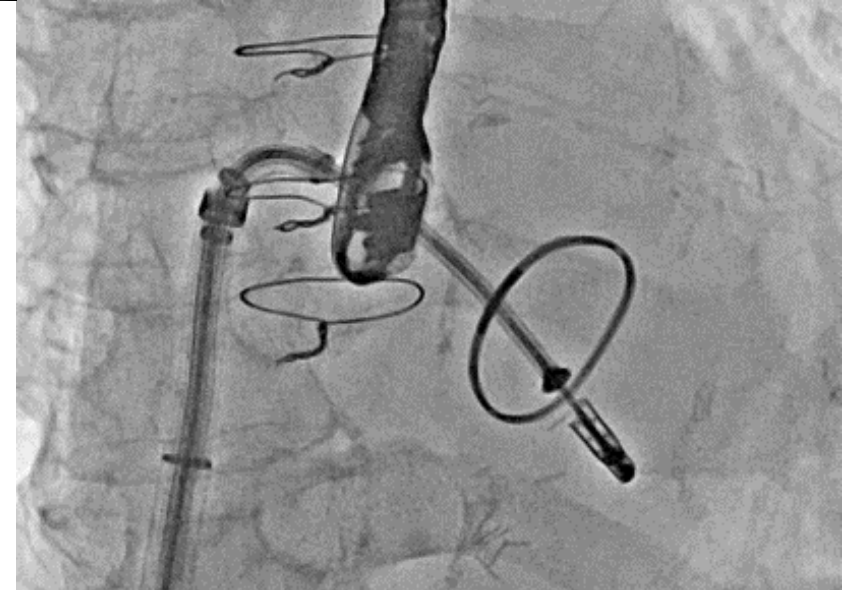
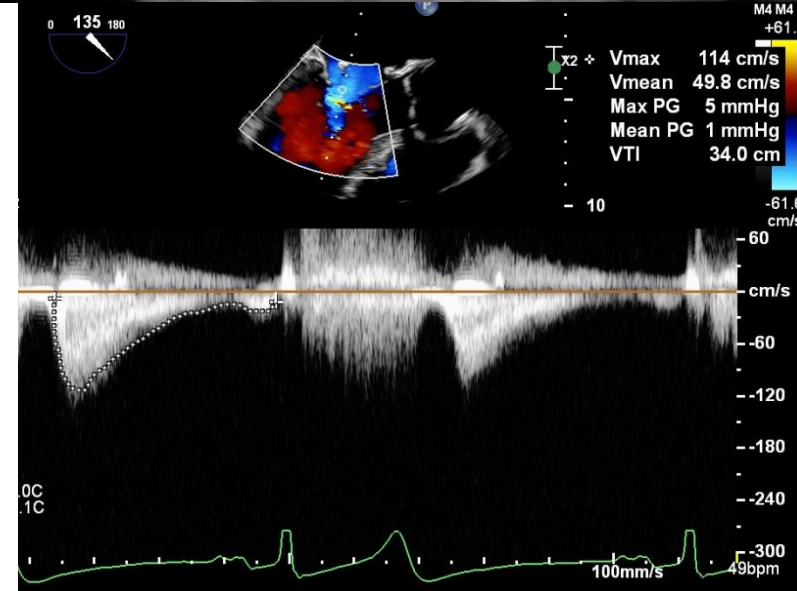


Confirm the clip orientation in 3D
We drop the posterior gripper down
After closing the clip, MR reduced to mild

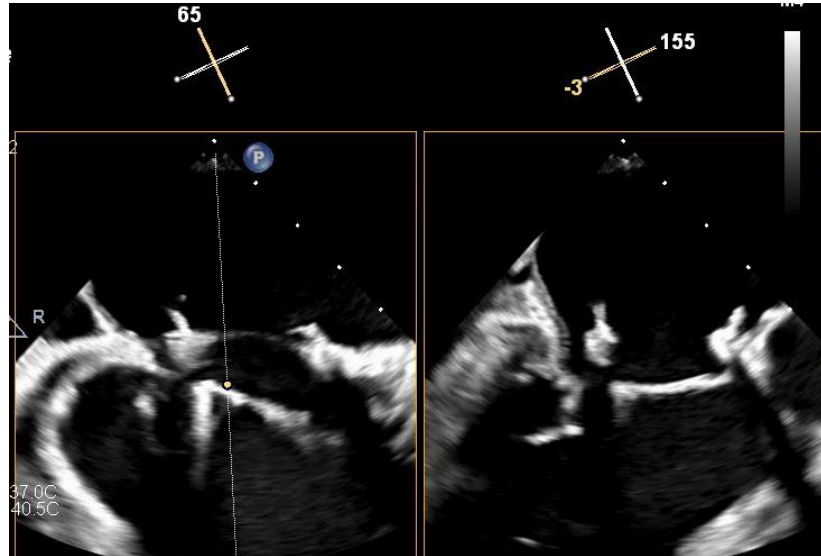
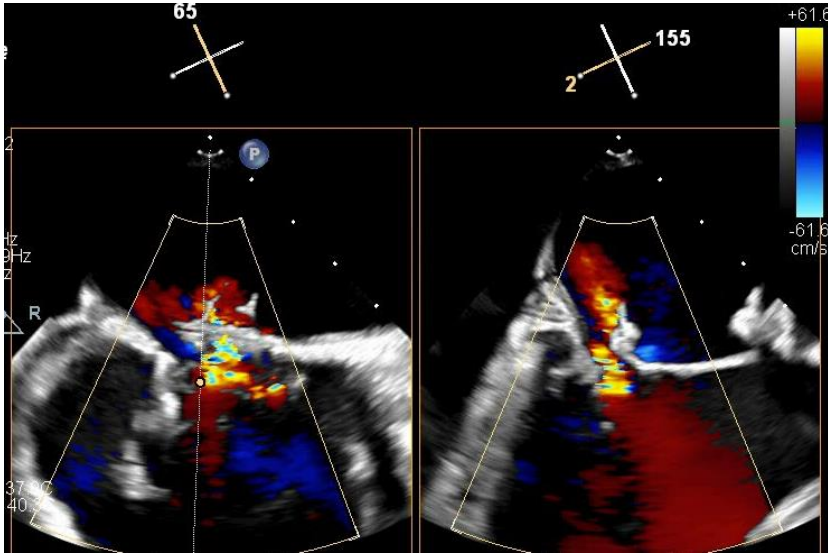
Clip Close



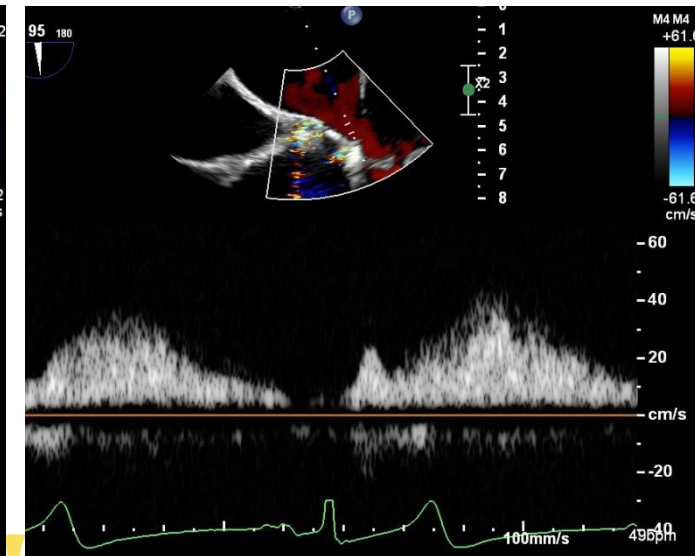
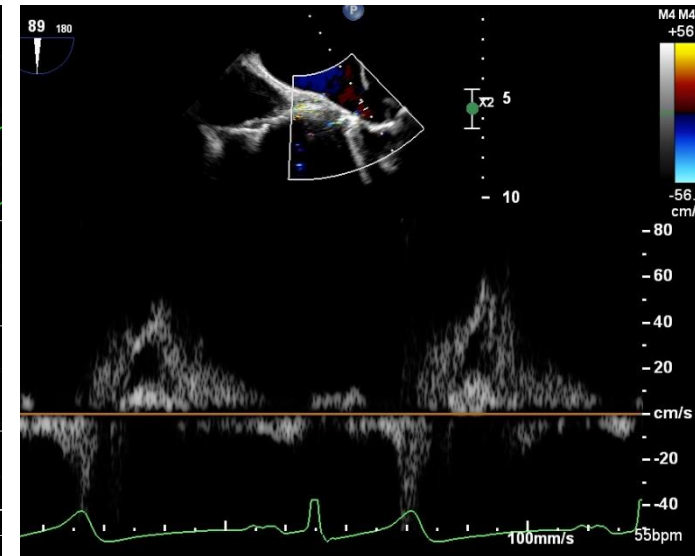
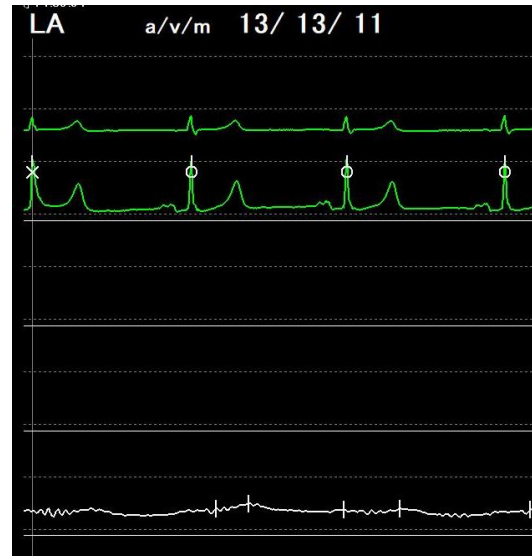
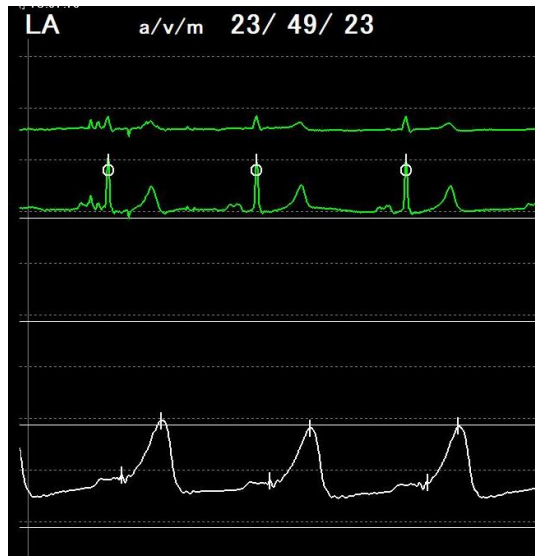
No medial jet
Mild lateral jet
No mitral stenosis
Release the clip



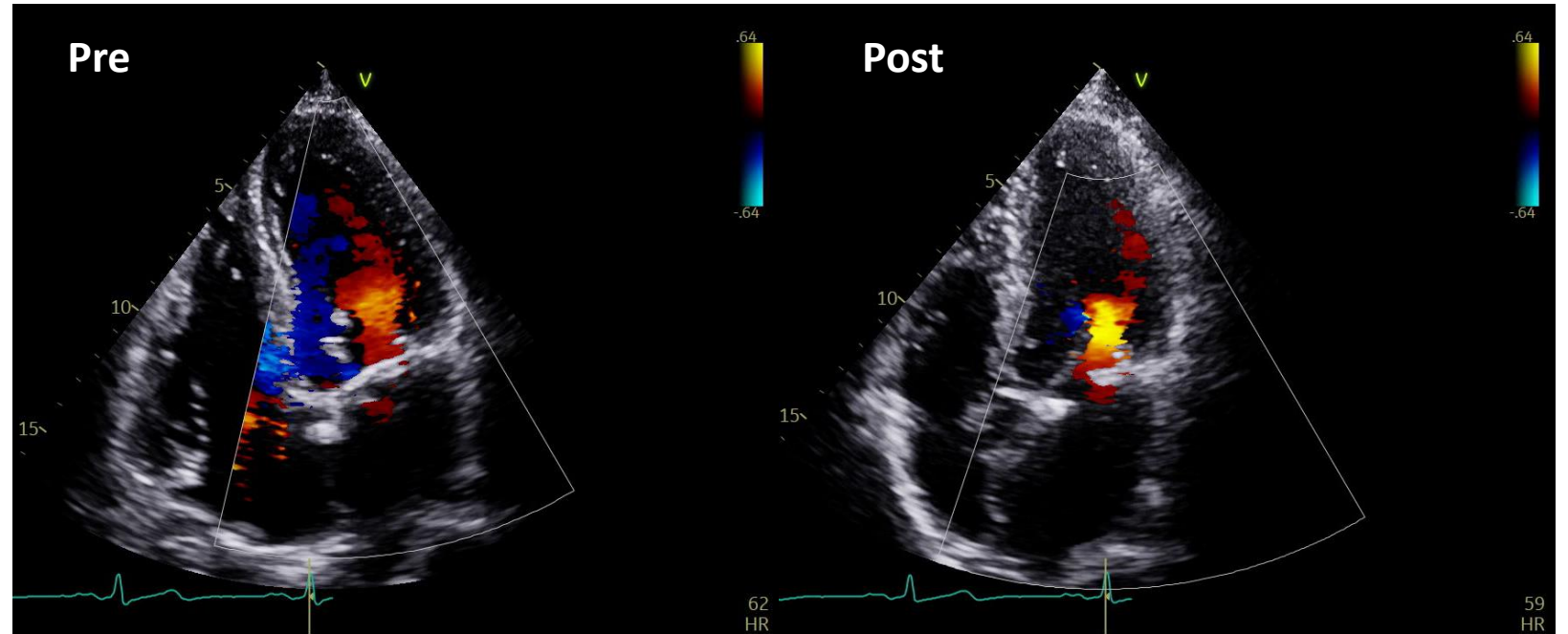
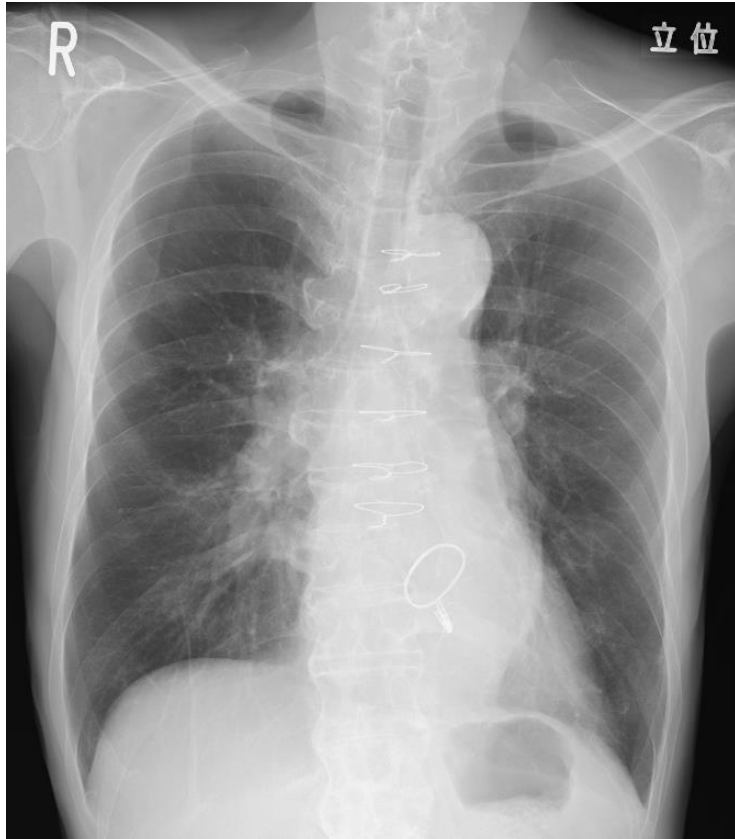
2nd Clip or not ?



Mild MR
Hemodynamic improve
2nd clip gripper will touch
the detached ring
⇒ Finish the procedure



Follow-Up



NYHA 2

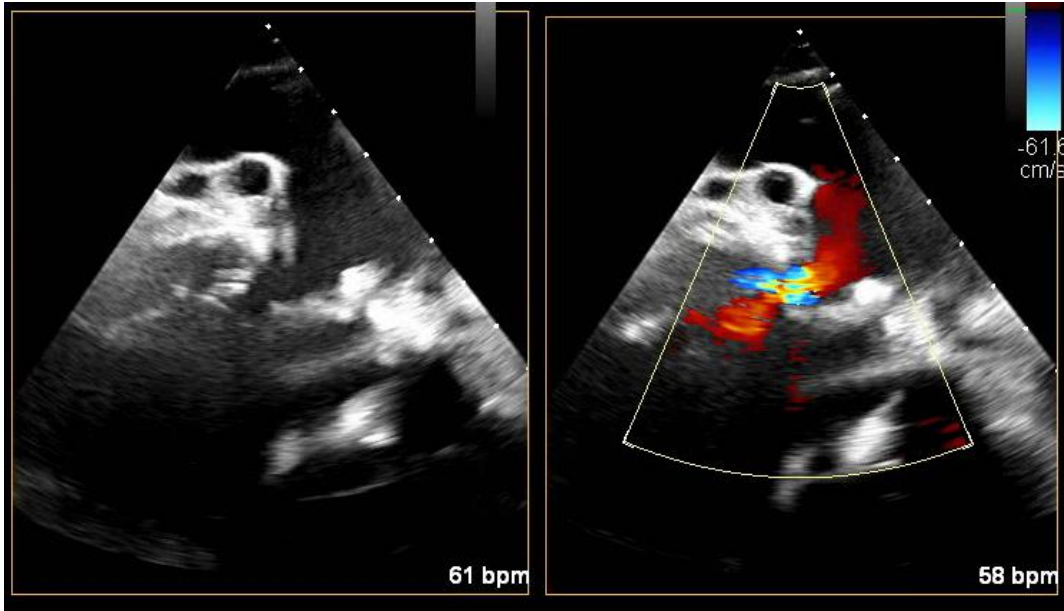
No hospitalization

Mild MR, No PH

TEER for Failed MV Plasty

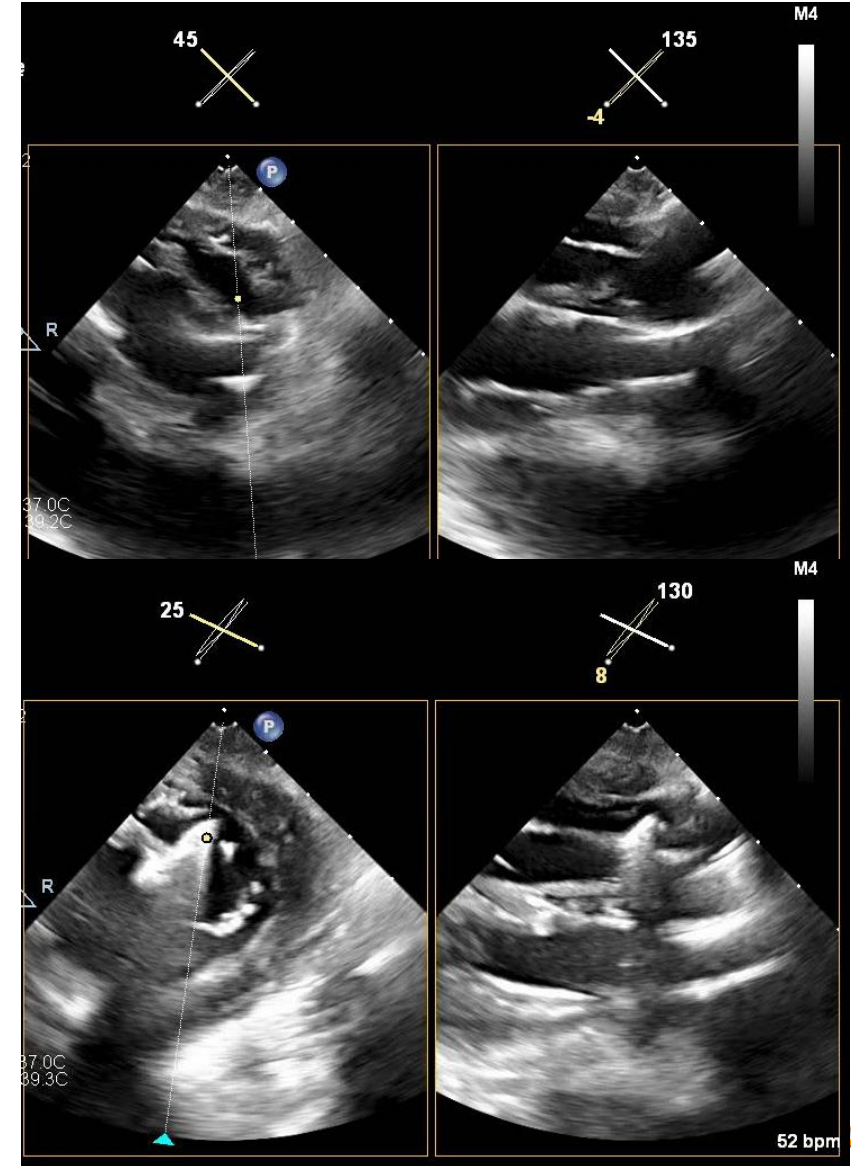
- Leaflet visibility and posterior leaflet length
- Risk of mitral stenosis
- Interference of detached ring

Visibility of Posterior Leaflet

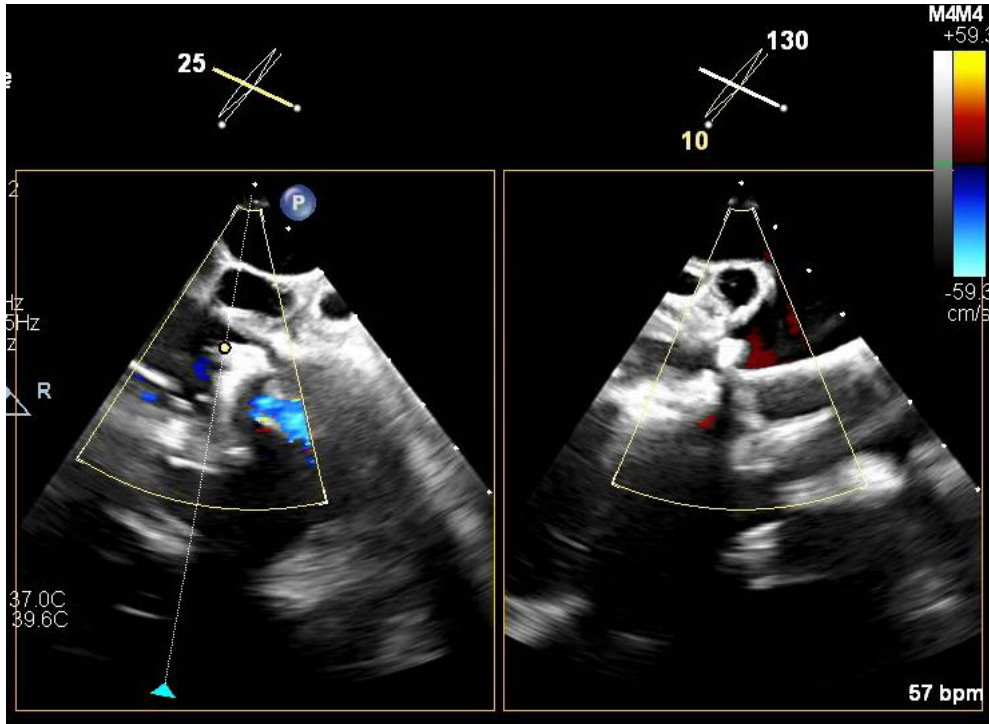


Severe MR, but PML was not well visualized due to the ring.

Deep esophageal image or transgastric image was useful to visualize posterior leaflet.

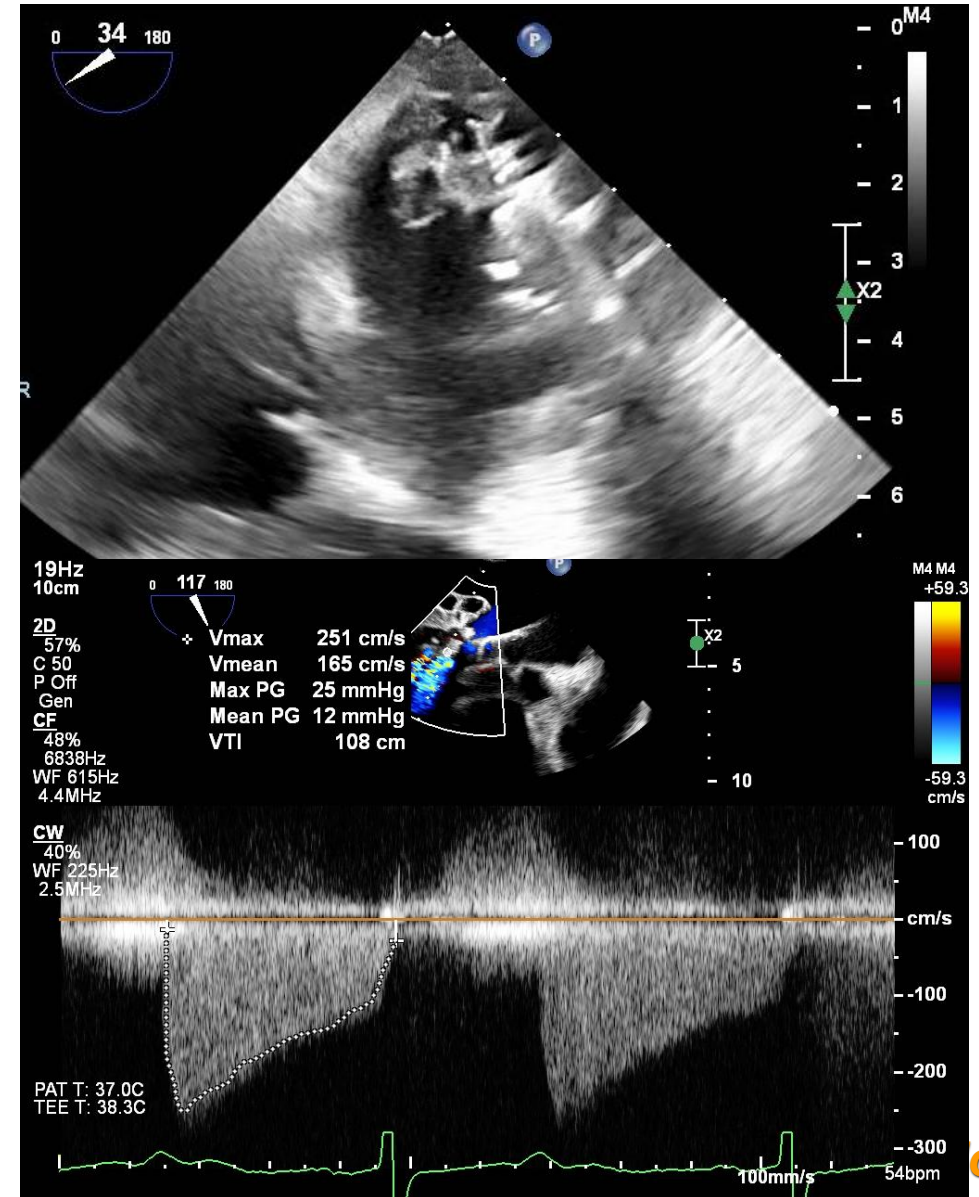


Risk of Mitral Stenosis

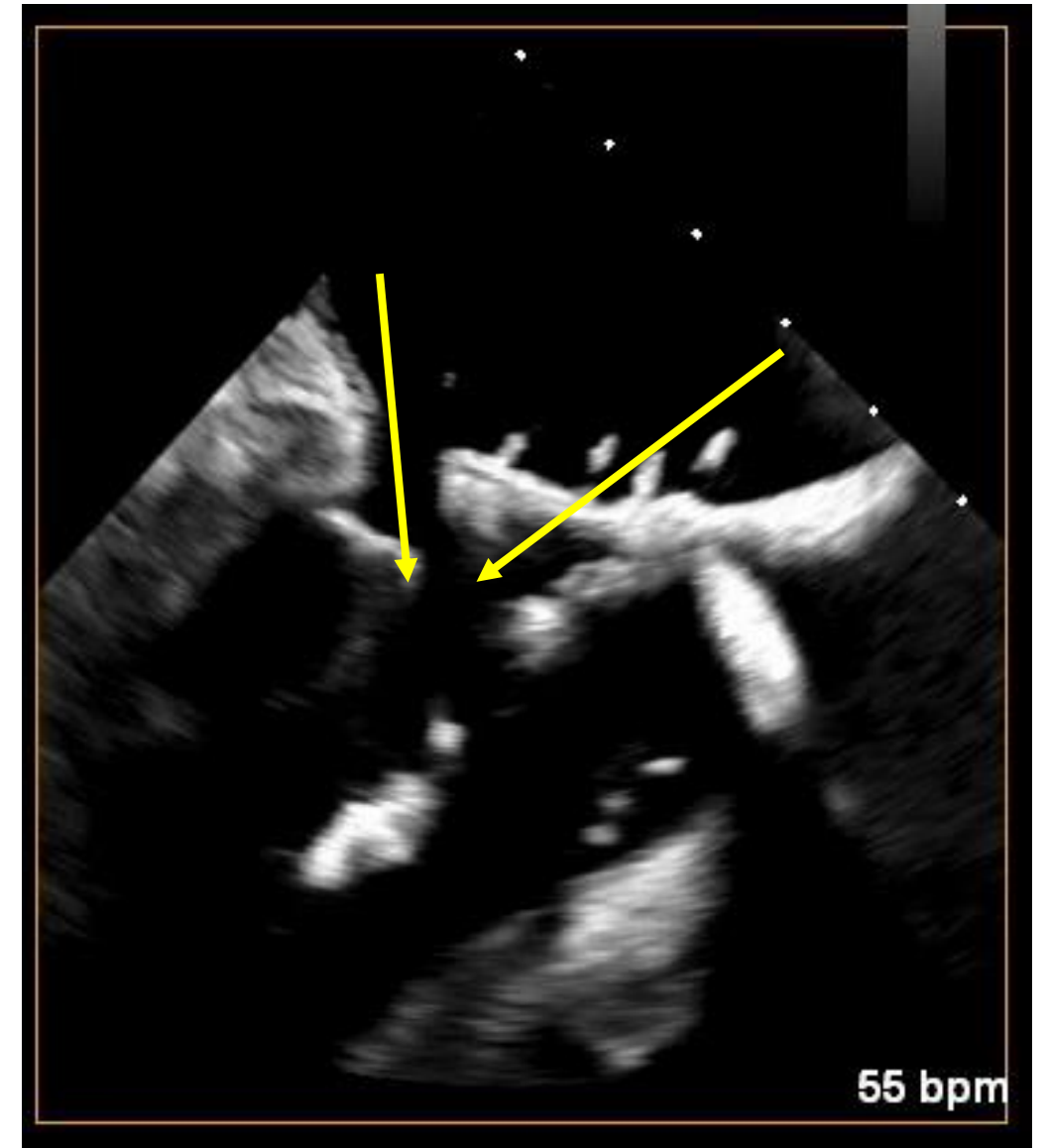
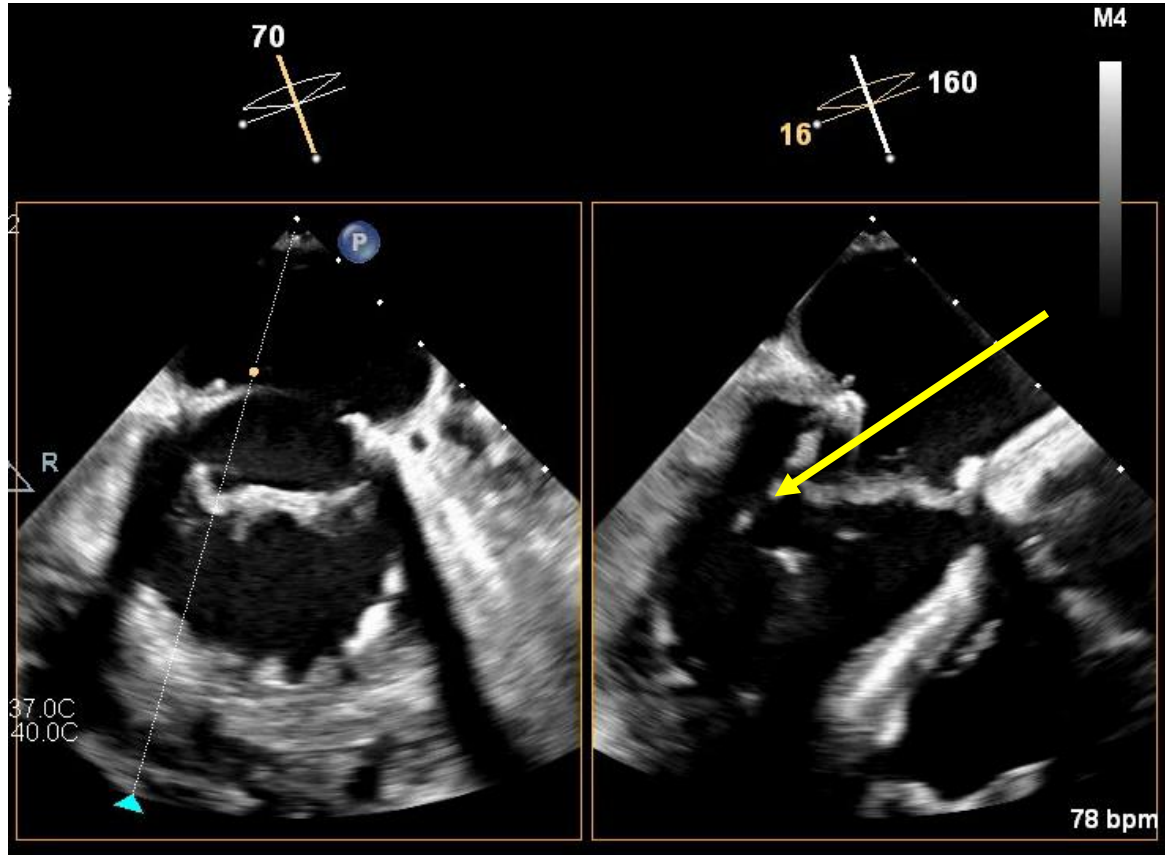


Pre MVA = 2.36

**In cases with small MVA,
withdrawal should be considered.**



Presence of Detached Ring



Generally, clip inserted to LV inside of ring
If the detached space is huge, consider to insert the clip outside of ring.

TEER for Failed MVP

- Possible, but still challenging, due to
 - Poor leaflet visibility
 - Risk of mitral stenosis
 - relationship of detached ring
- CGA and adenosine are sometimes useful for difficult grasping and assessment of leaflet insertion