Challenging TEER for Complex Primary MR

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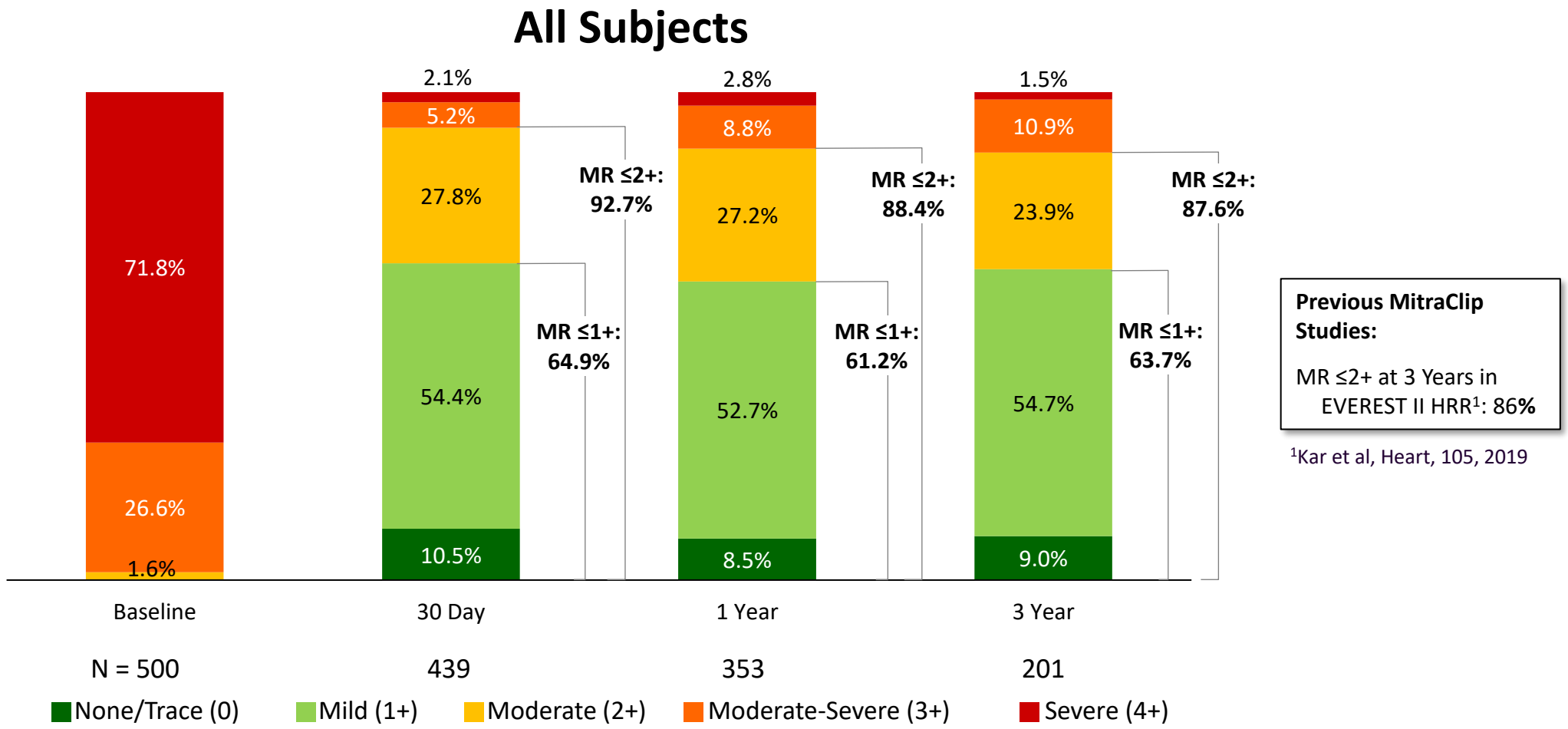
Potential conflicts of interest

Speaker's name : Shunsuke Kubo

☑ I have the following potential conflicts of interest to declare:

Clinical Proctor	: Boston Scientific, Abbott Medical
Honoraria or consultation fees	: Boston Scientific, Abbott Medical

MR Reduction from Japan PMS Study



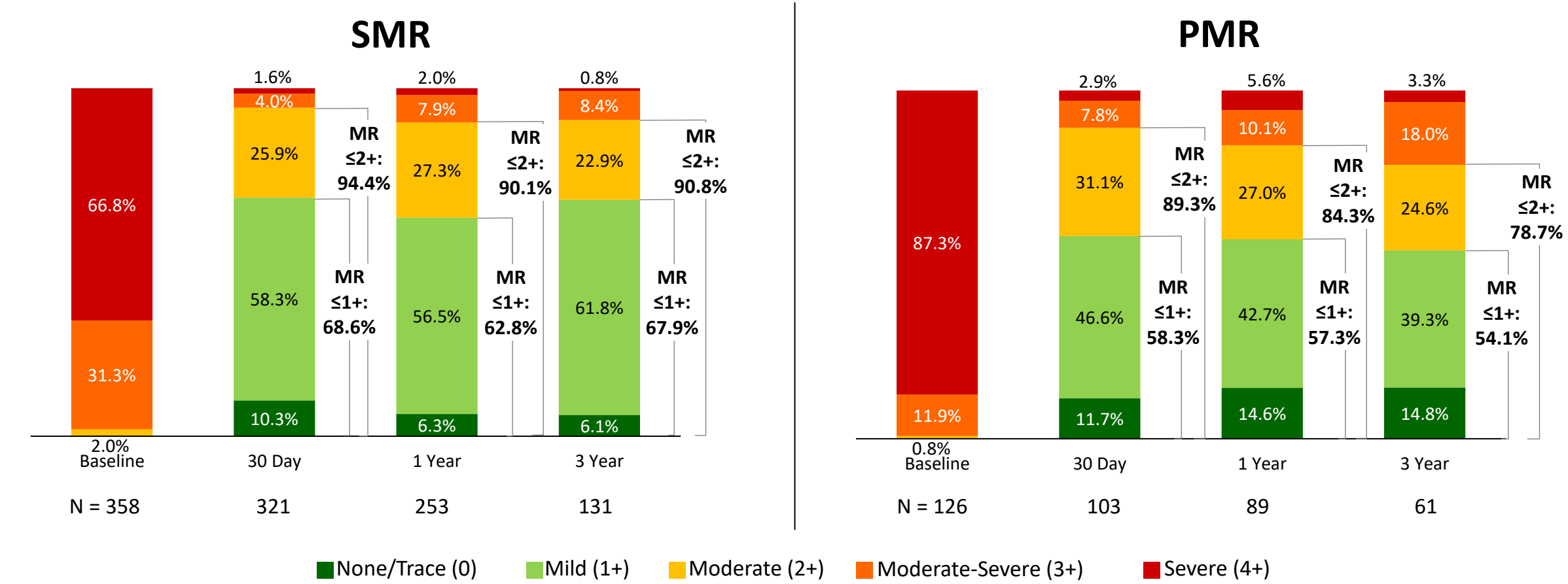
Previous MitraClip Studies:

MR ≤2+ at 3 Years in EVEREST II HRR[1]: 86%

[1]Kar et al, Heart, 105, 2019

Durable and effective MR reduction was achieved through 3 years.

MR Reduction by Etiology



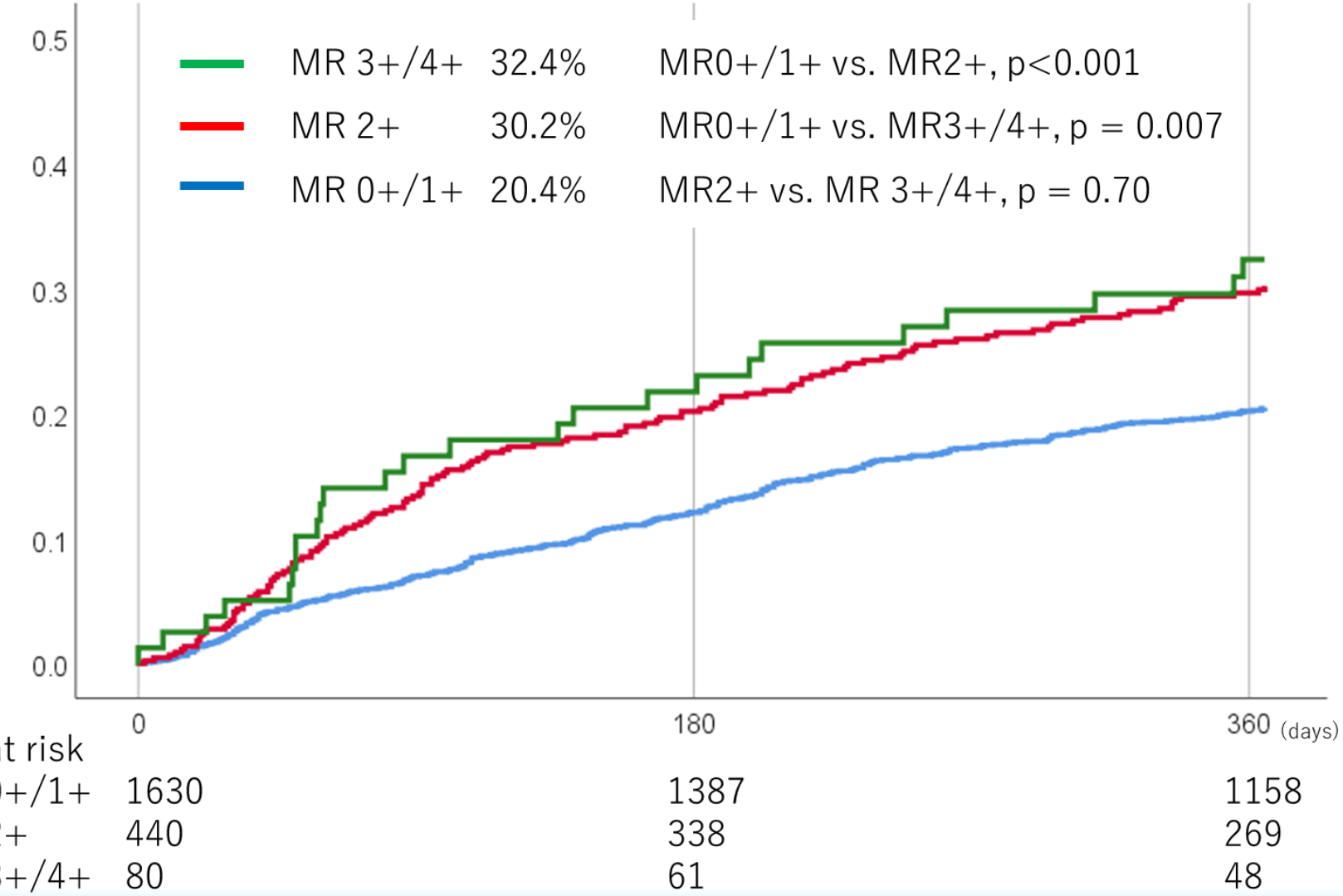
Despite subjects having more severe MR at baseline, particularly in subjects with PMR, effective MR reduction with durable mild MR was achieved through 3 years.

Impact of Residual MR on Death/HF Hospitalization

Cox proportional hazard model

Residual MR	
MR 2+ vs. MR 0+/1+	p <0.001
HR 1.59, 95% CI (1.30-1.95)	
MR3+/4+ vs. MR 0+/1+	p=0.008
HR 1.73. 95% CI (1.15-2.60)	

Adjusted by 24 covariates

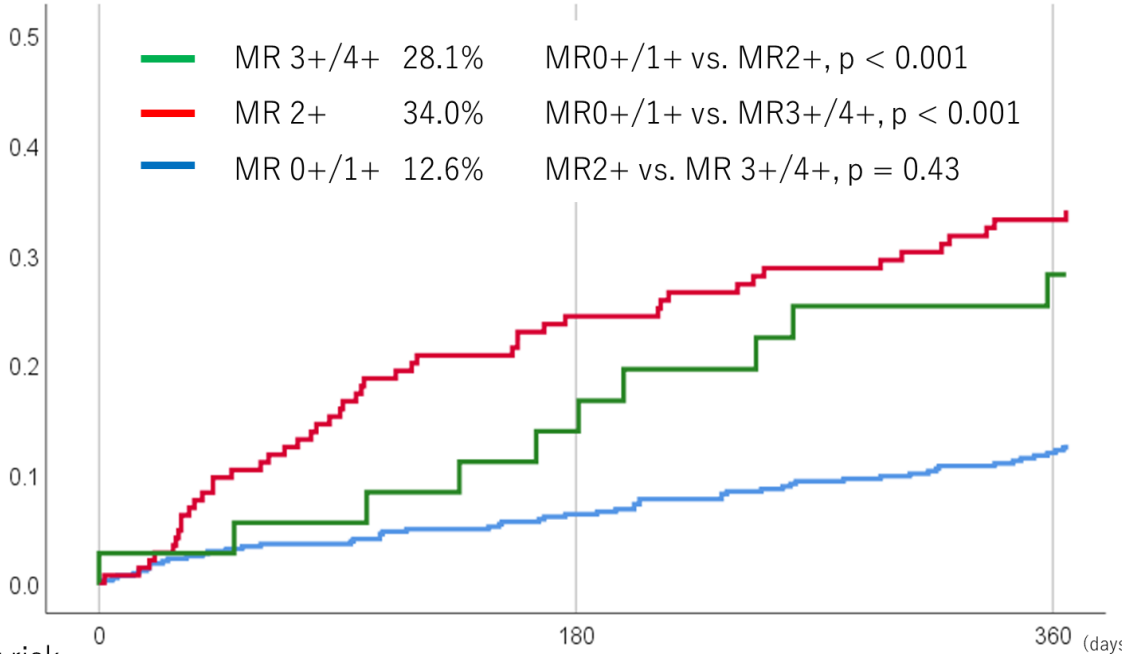


Kubo S, et al. JAHA 2023; In press.

Even residual moderate MR was associated with worse clinical outcomes.

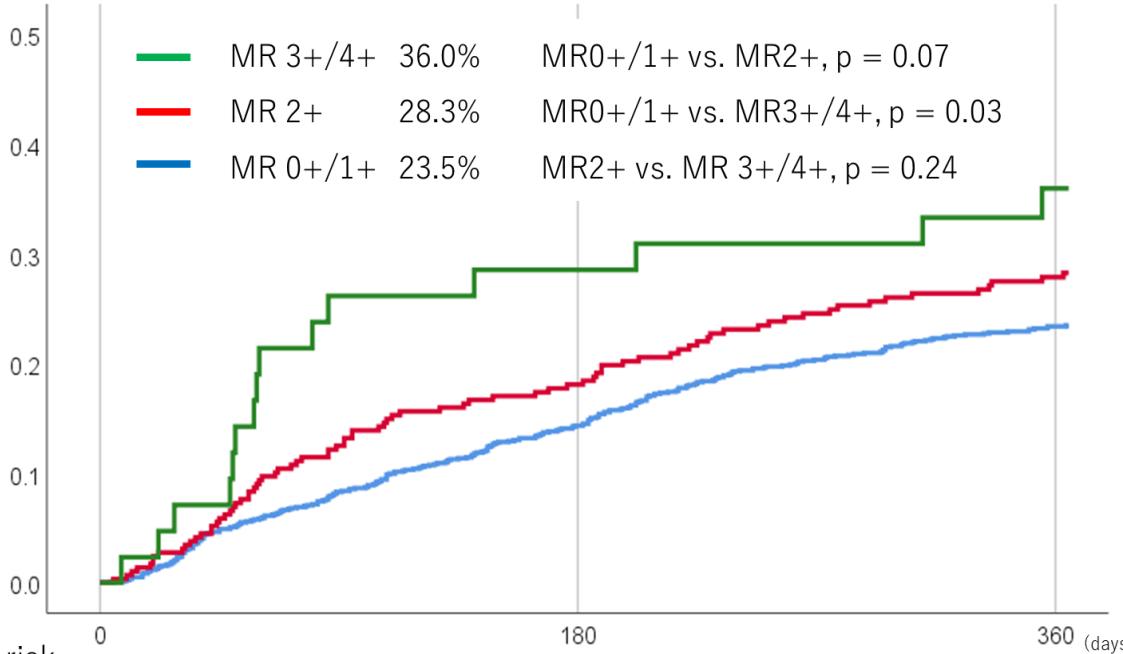
Impact of Residual MR and MR Etiology

Primary MR



No. at risk			
MR 0+/1+	455	412	359
MR 2+	147	105	82
NR 3+/4+	37	31	24

Secondary MR



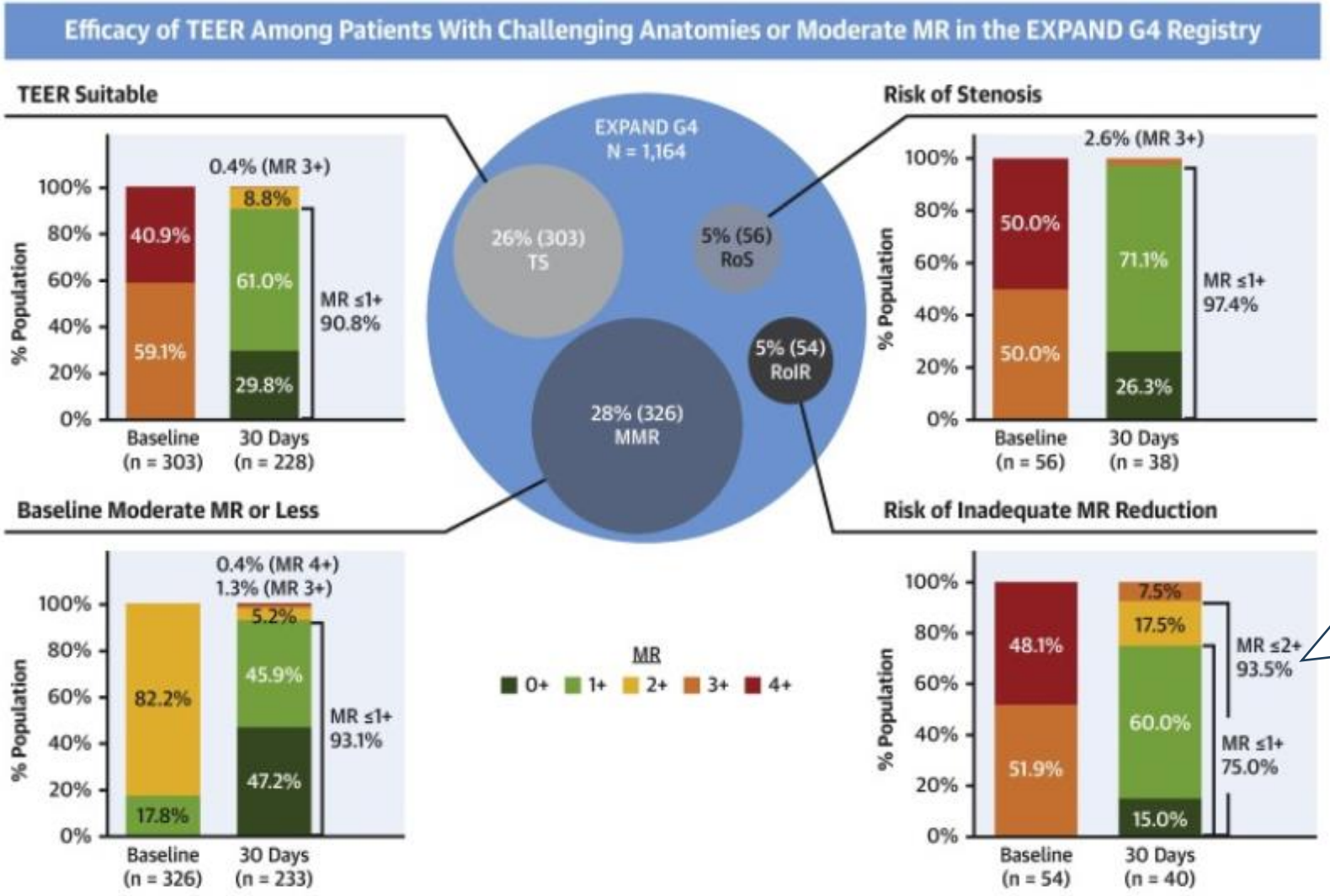
No. at risk			
MR 0+/1+	1175	975	799
MR 2+	293	233	187
NR 3+/4+	43	30	24

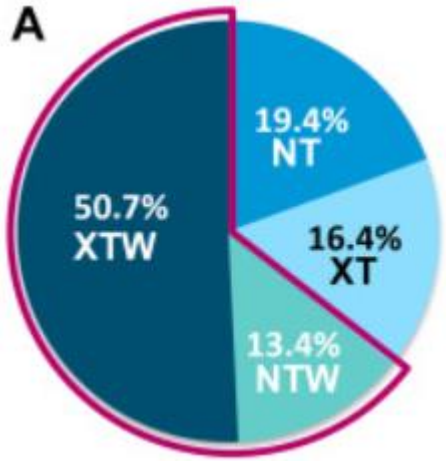
Kubo S, et al. JAHA 2023; In press.

OCEAN-SHD

Impact of residual MR was more prominent in the primary MR.

Expand G4 Registry





Primary MR 96%

Barlow's disease, bileaflet flail or prolapse, significant secondary jet, severe leaflet degeneration with large gaps, minimal leaflet tissue, or significant cleft or scallop.

Rogers JH, et al. JACC Cardiovasc Interv. 2023;16(12):1474-1485.

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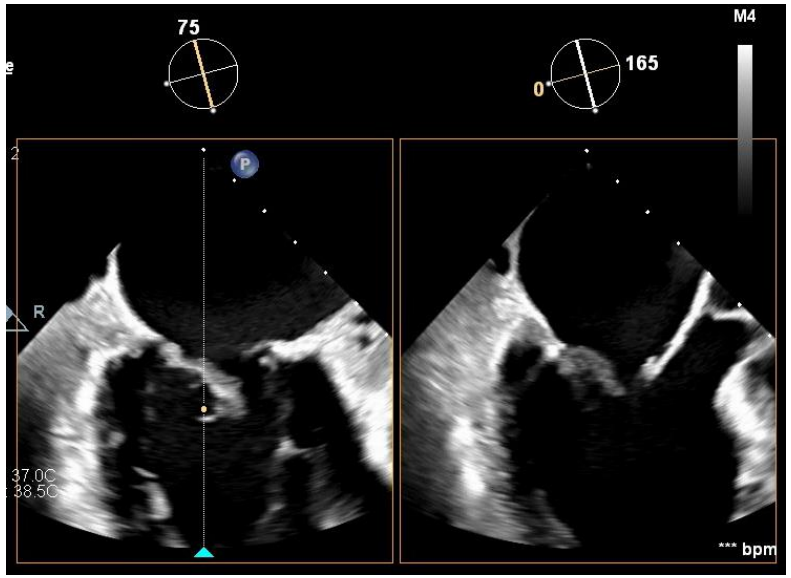
What is complex primary MR?

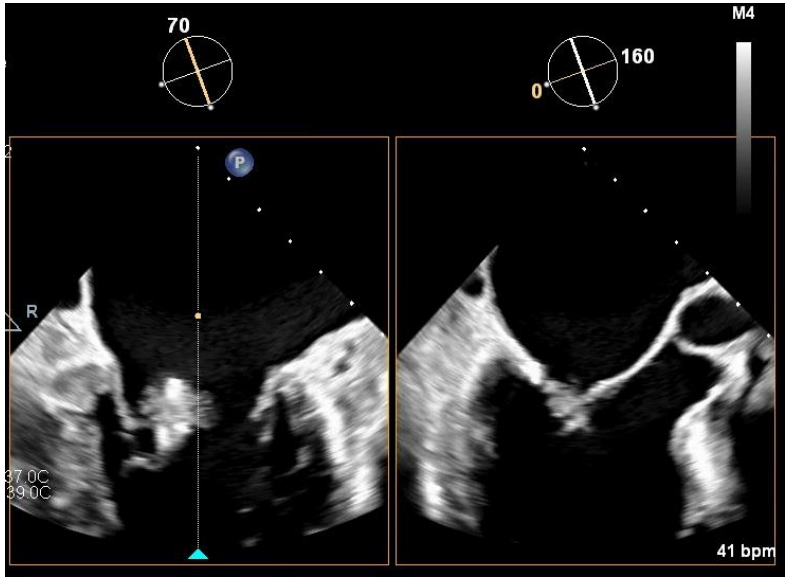
- Large/wide flail
- Non-central MR, Isolated commissure prolapse

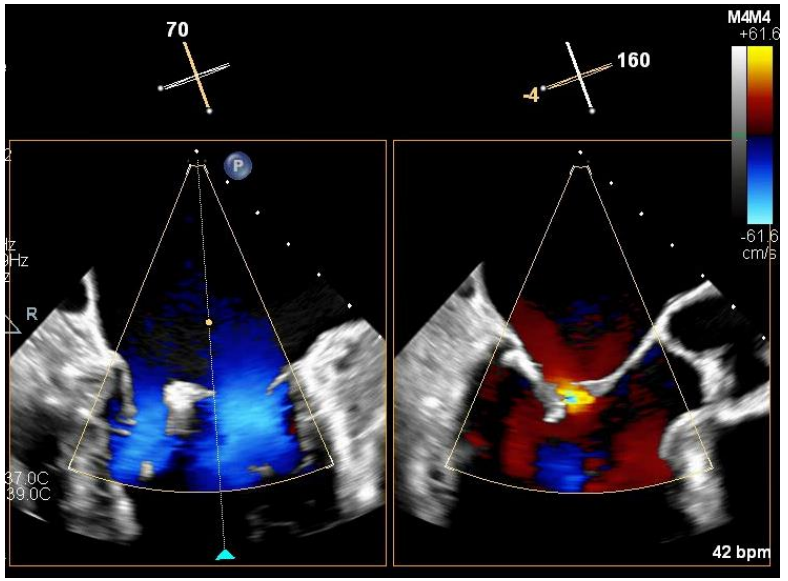
How to treat these anatomies most effectively?

- Don’t accept residual flail (Planned 2 clips)
- Put the clip in main origin of MR
- No MR and flail in commissural side to the clip

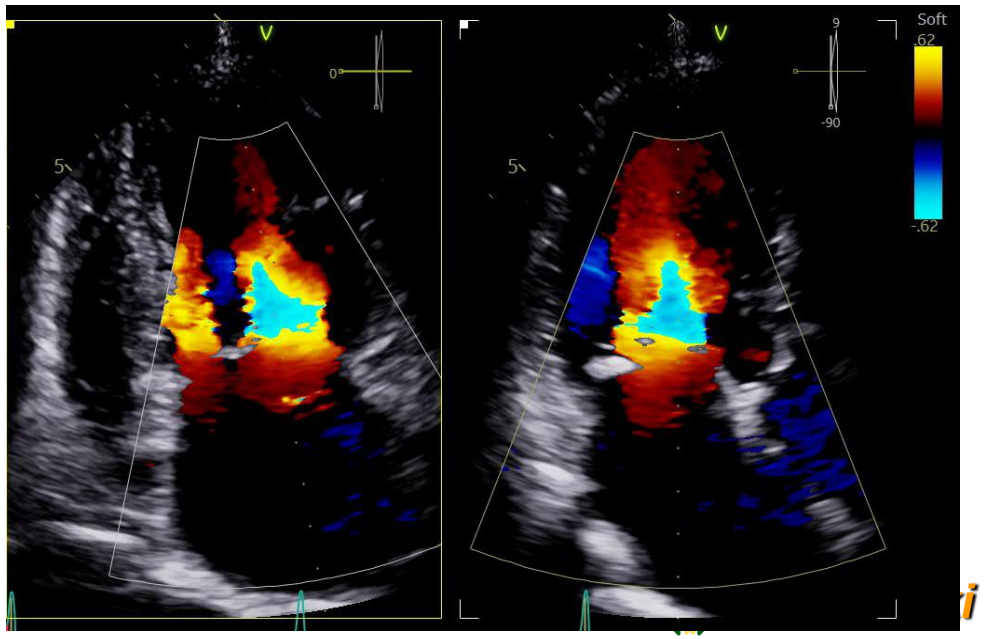
MR Recurrence in MitraClip G4 Era





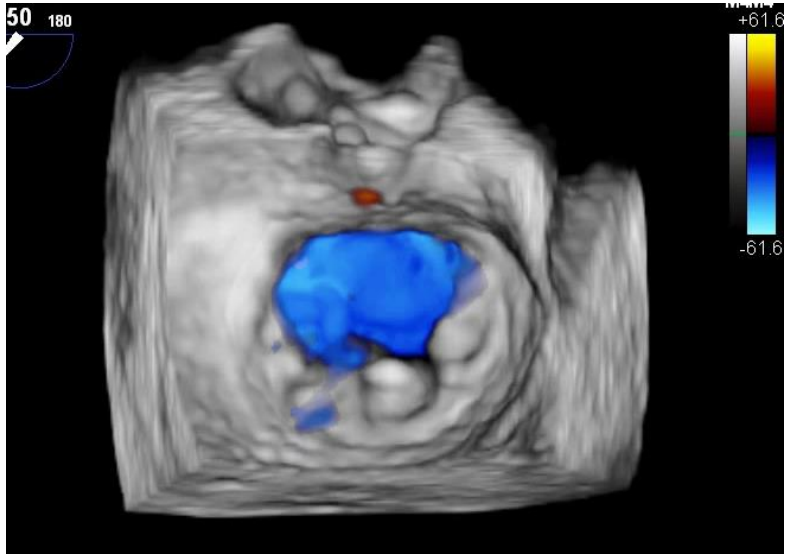


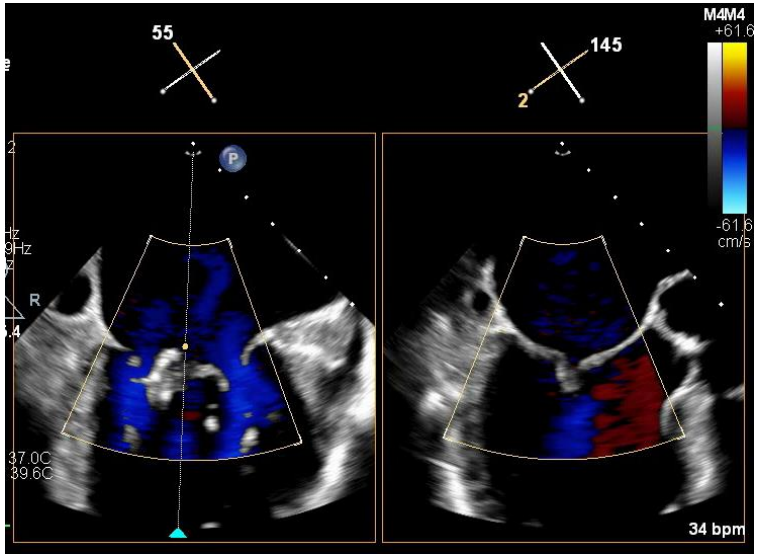
85 years, female
P2 prolapse
1 XTW, mild MR
6 months follow-up



moderate MR

Clipping Strategy to Prevent MR Recurrence





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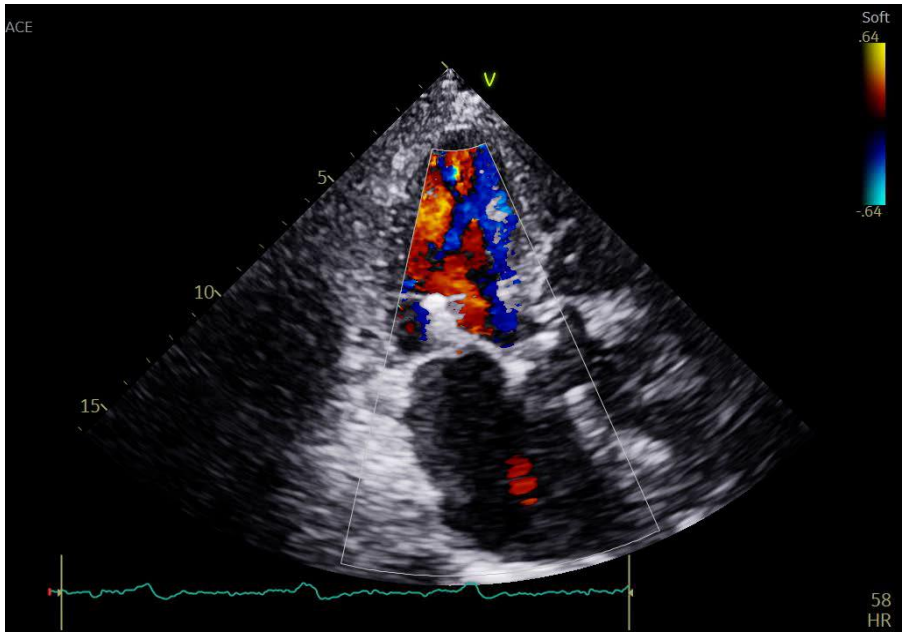
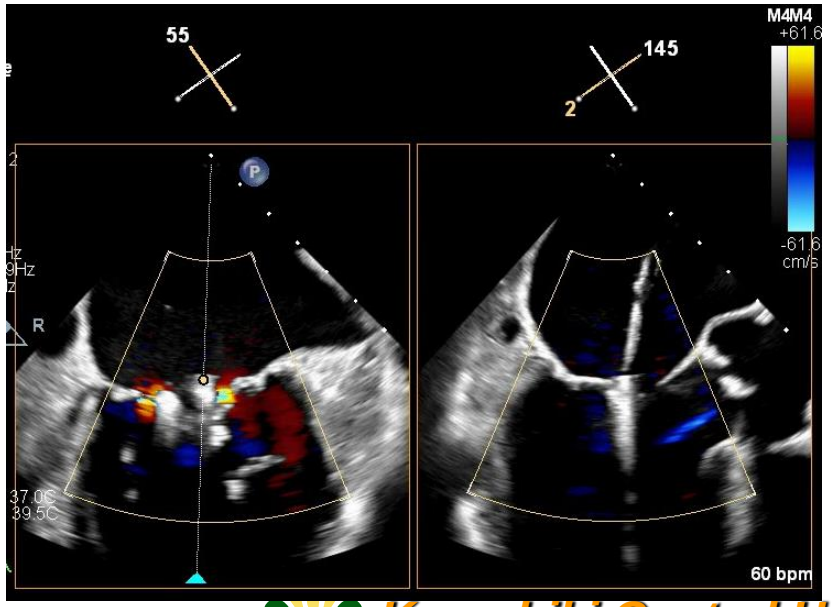


1 XTW + 1 XT
mild MR



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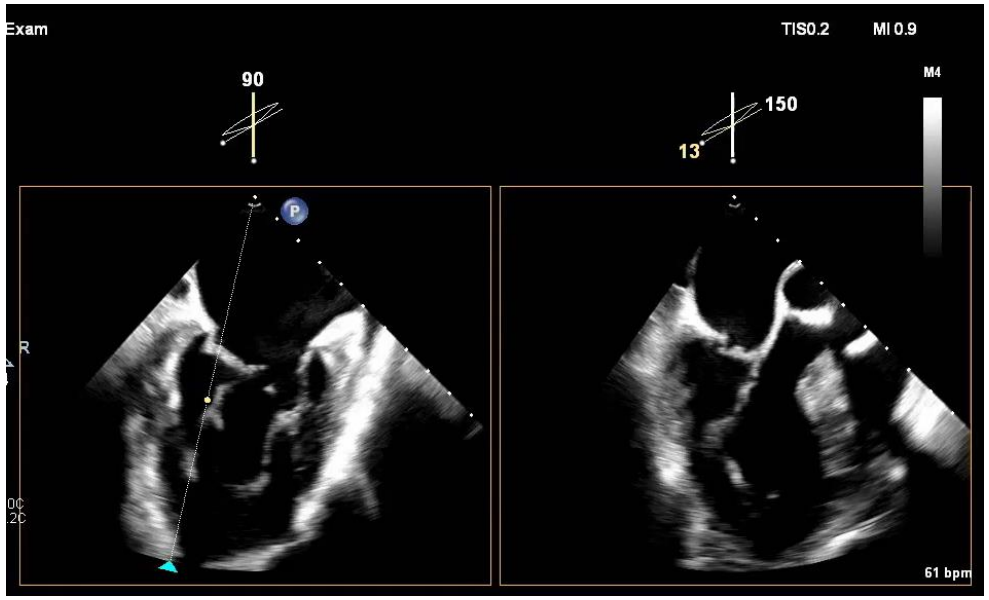
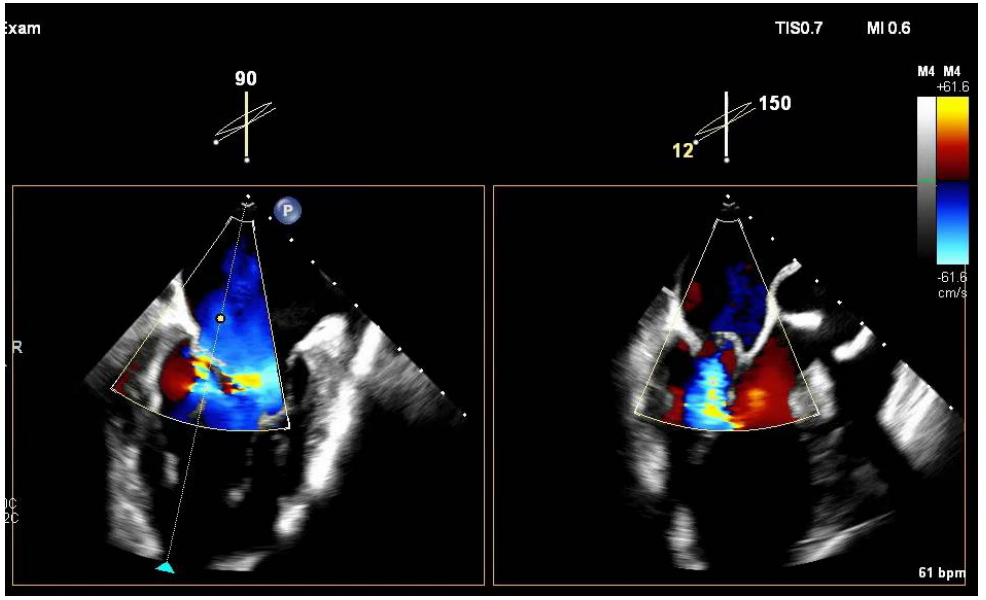
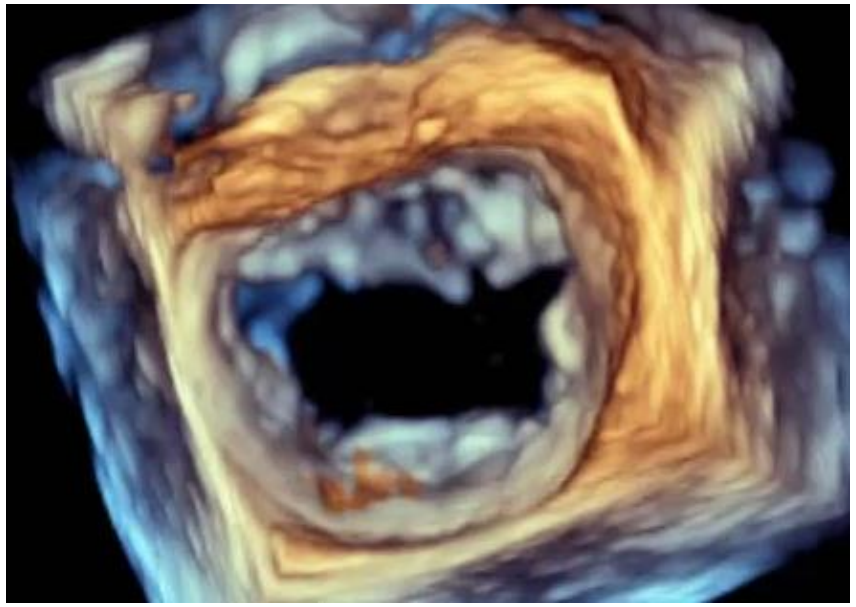
93 years, Male : A3/P3/PCOM Prolapse







P3 length = 8mm

How about optimal clip orientation?

Which clip should we use?

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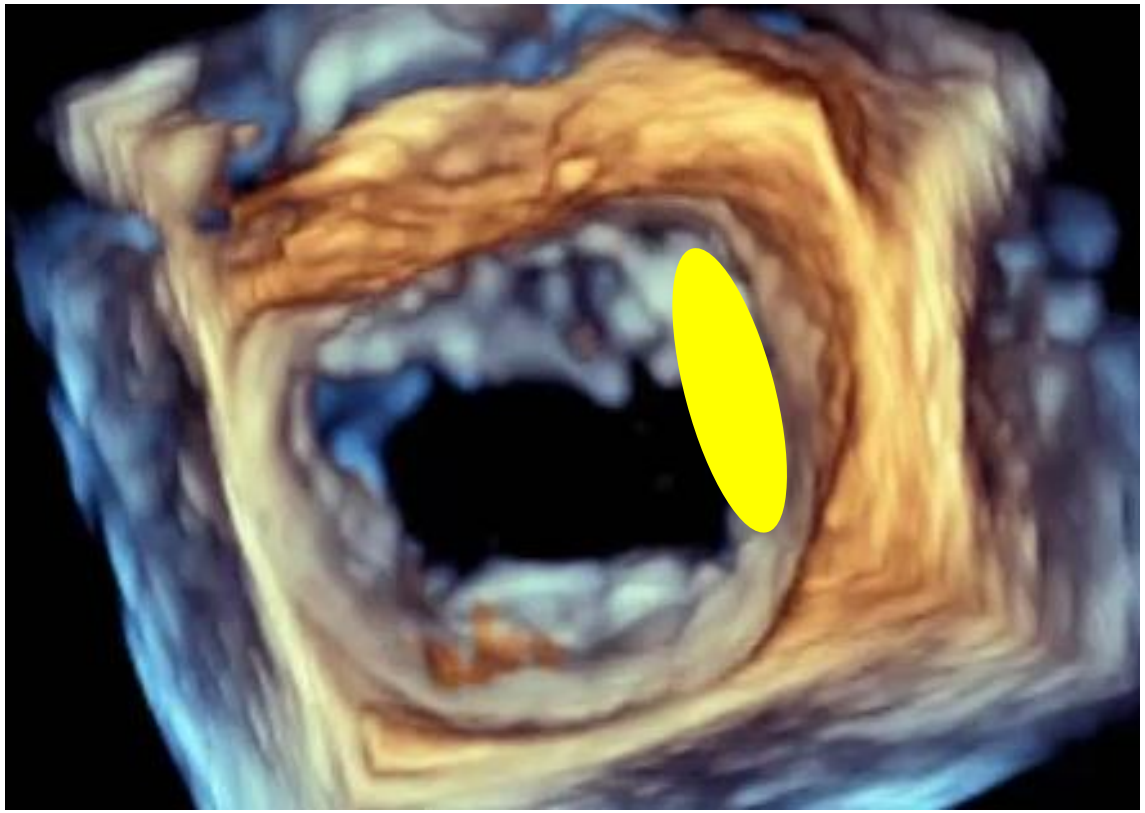
Our Strategy



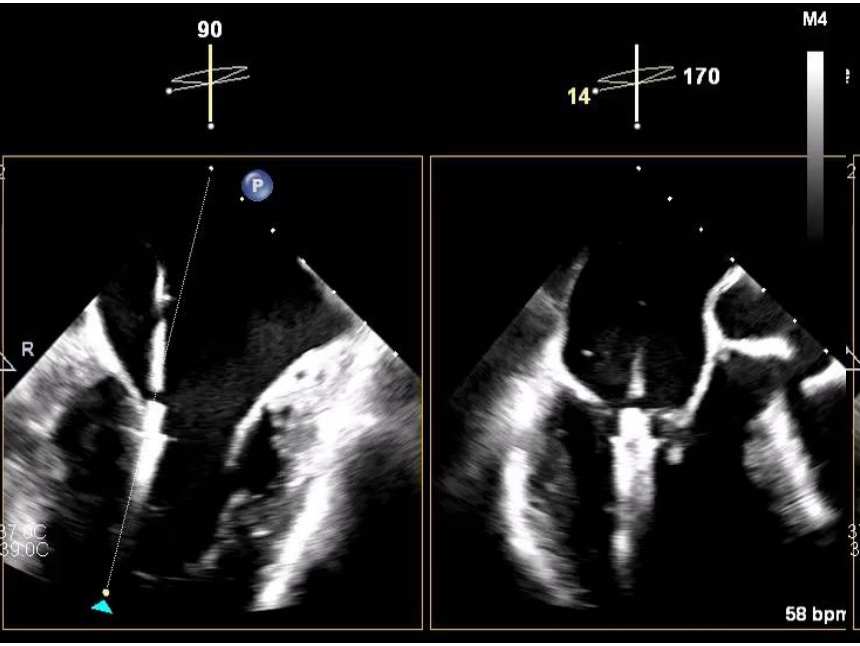
NTW because of the limited P3 length

Orientation is decided based on the A3/P3

coaptation line

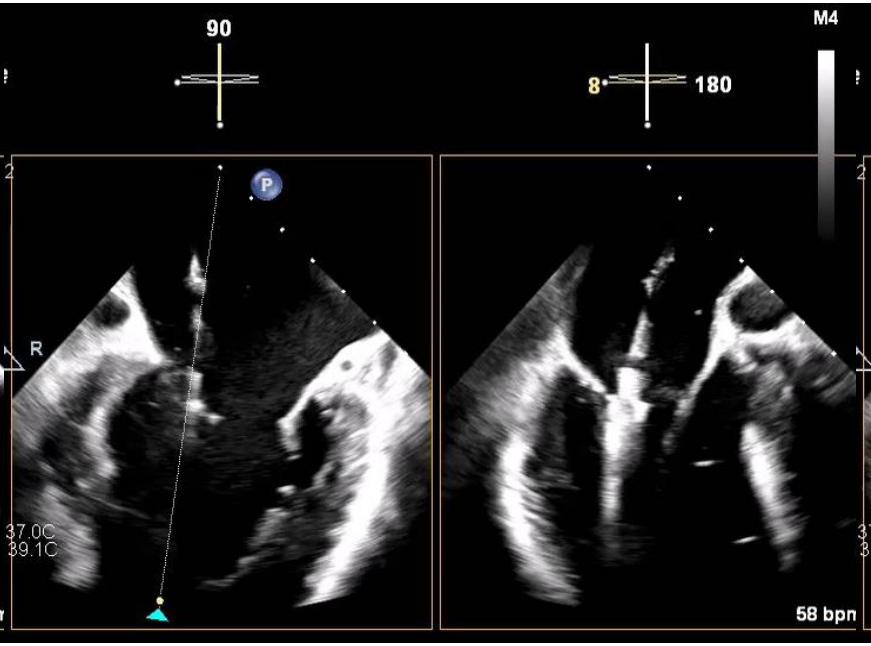
MitraClip

1st Try



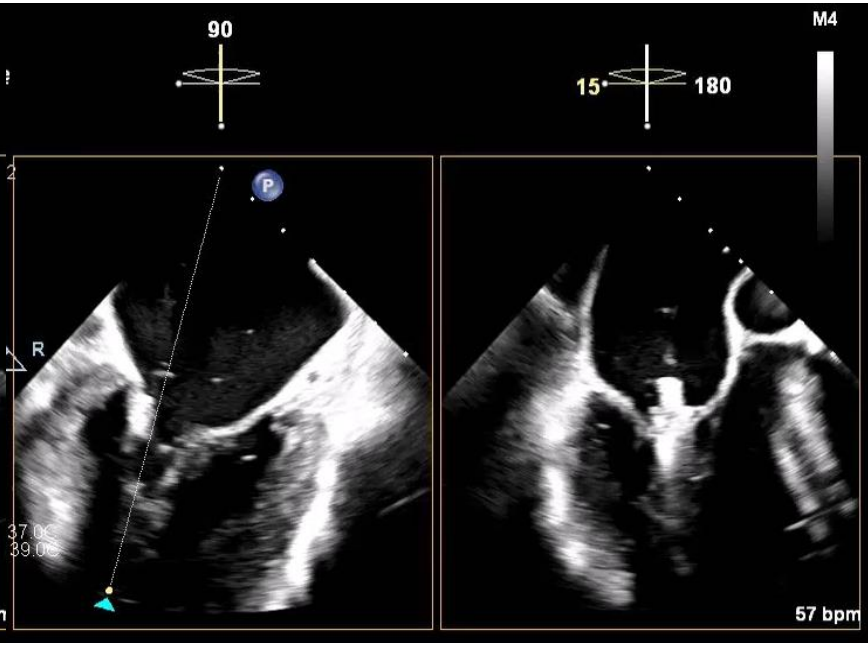
More medial ?
Go back to LA

2nd Try



Little bit more medial?
Go back to LA again

3rd Try



Good position
Go to LV

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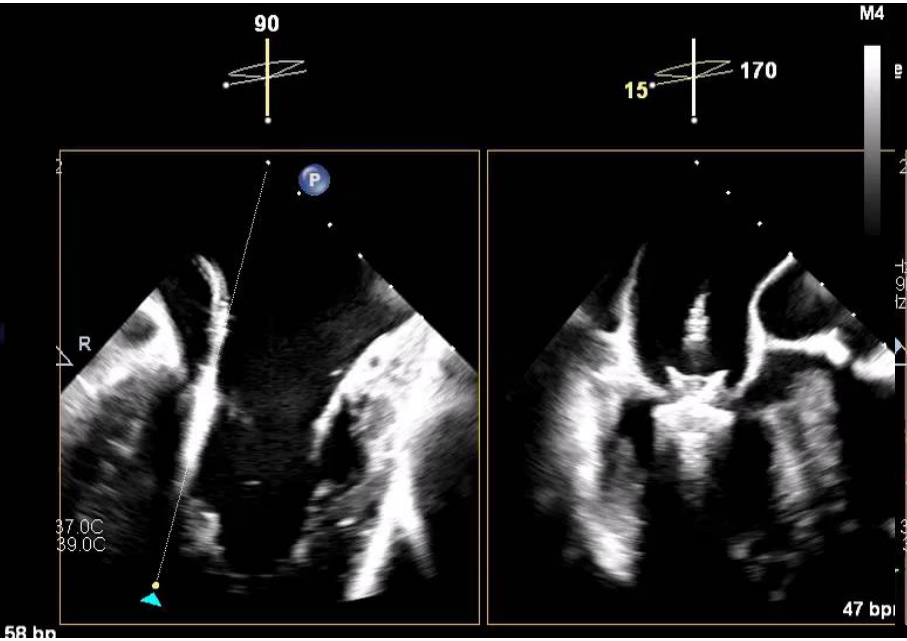
MitraClip

Orientation

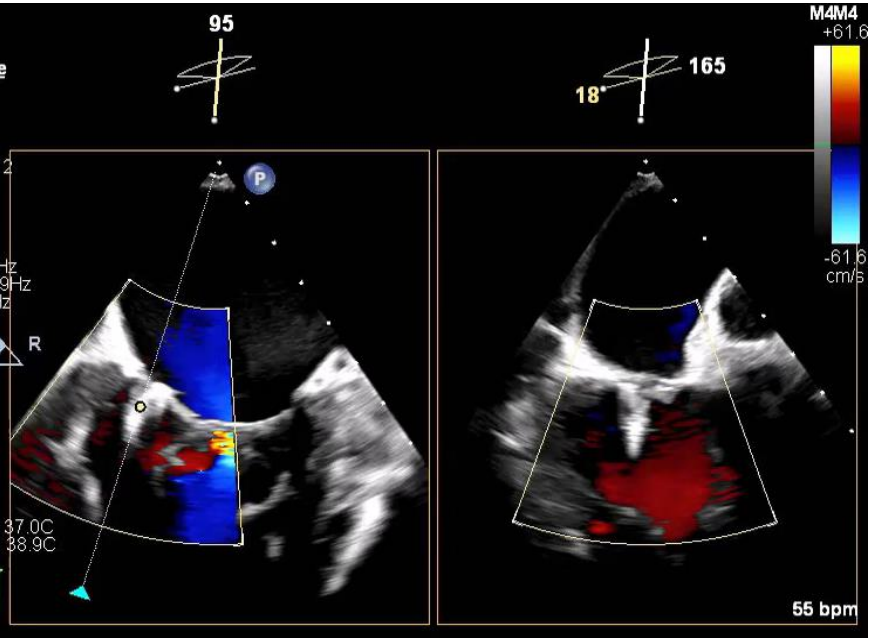
Check clip orientation
below the valve

Gripper down



Maximally pull the clip up
and gripper down

Final result



Closing the clip
Mild MR

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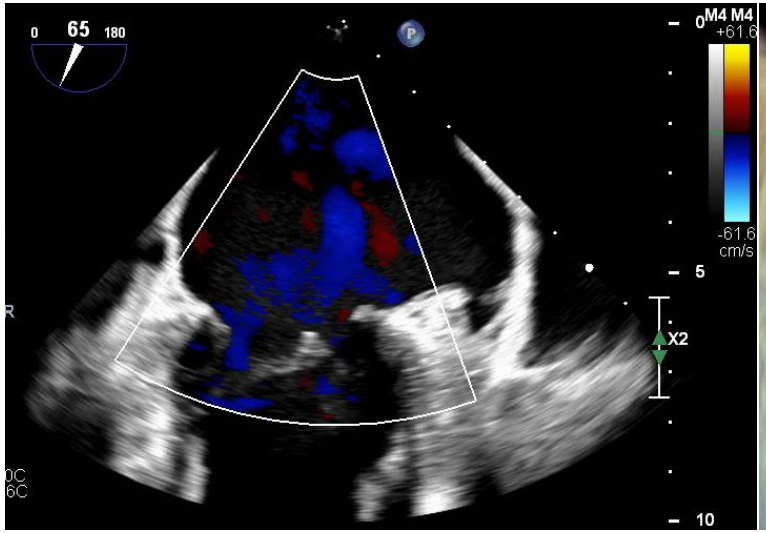
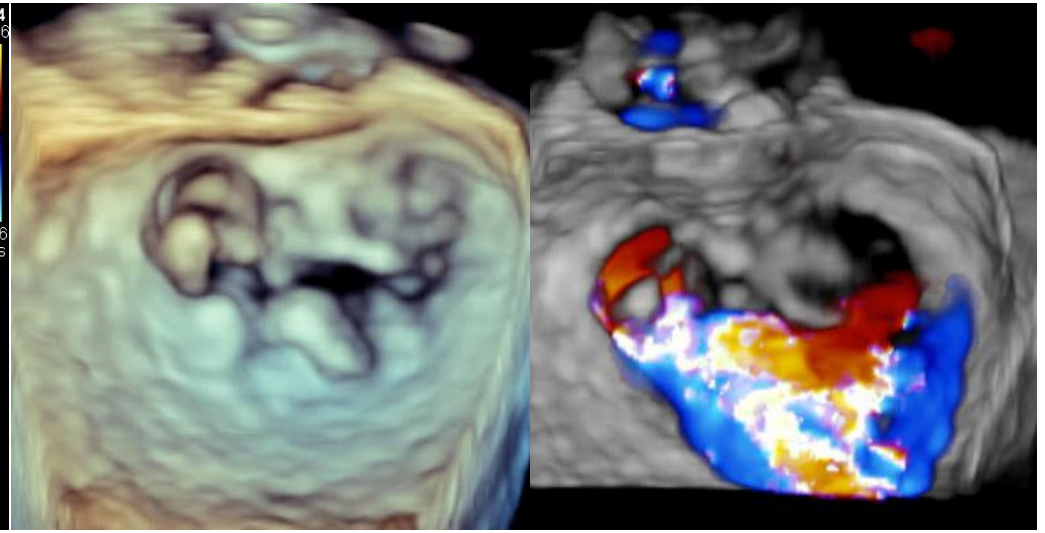
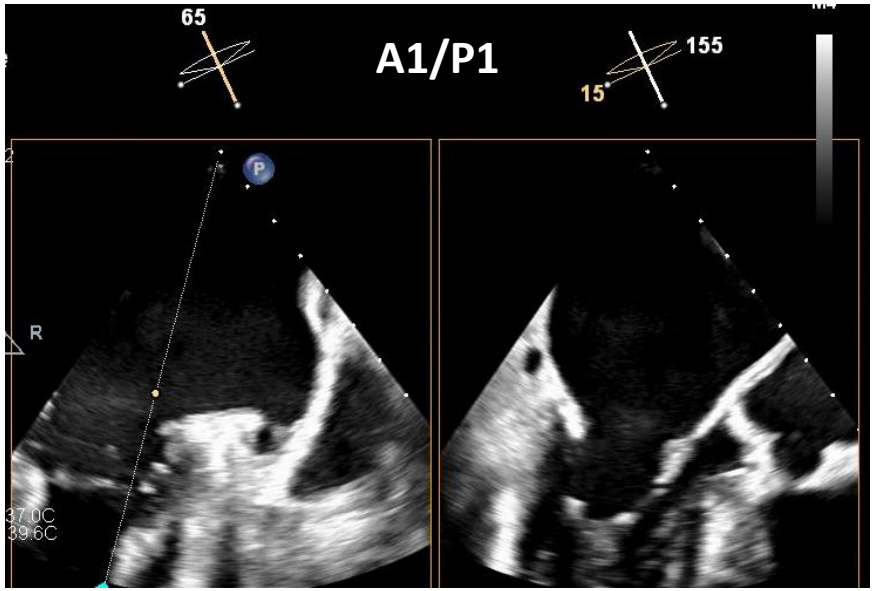
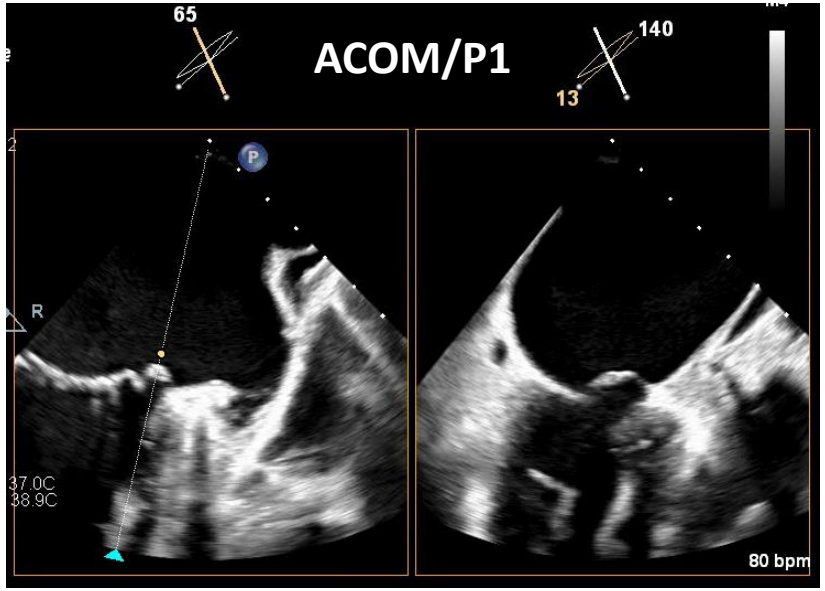
91 years, Female : ACOM/A1 Prolapse

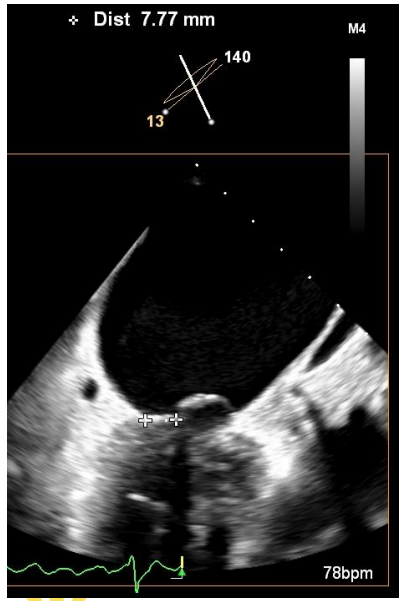




Clip orientation ?
Clip type ?







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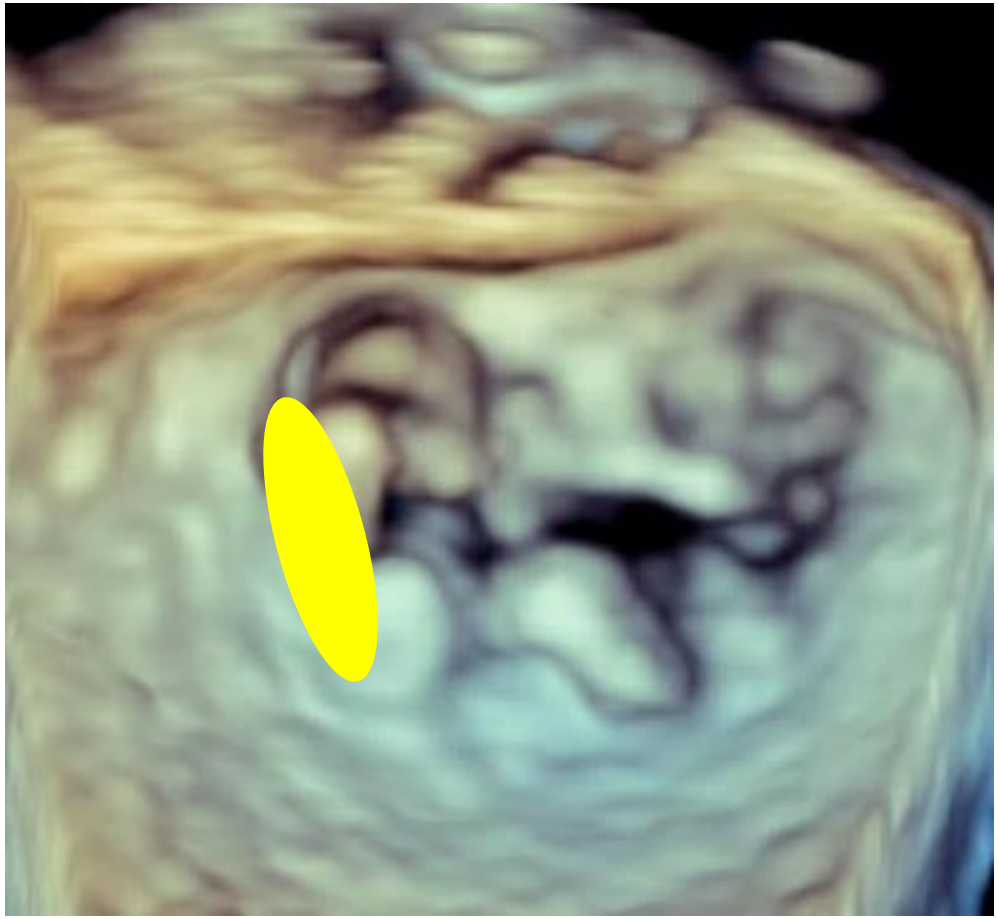
Our Strategy

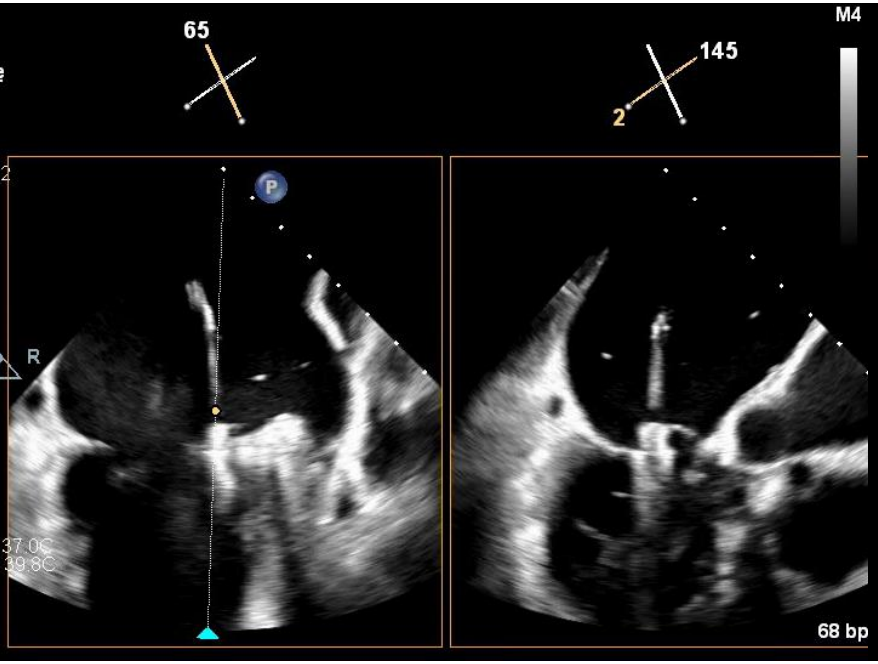


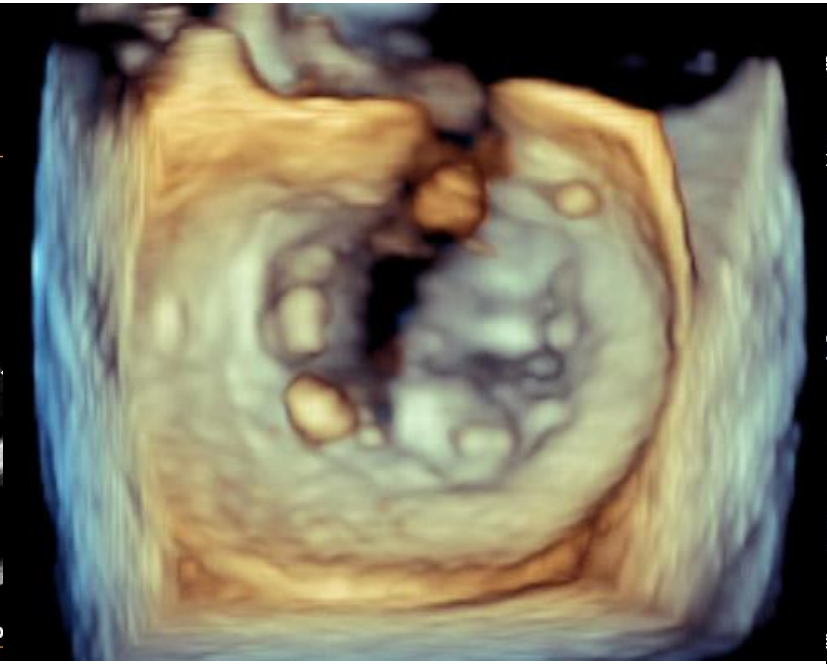
NT based on the limited P1 length and narrow

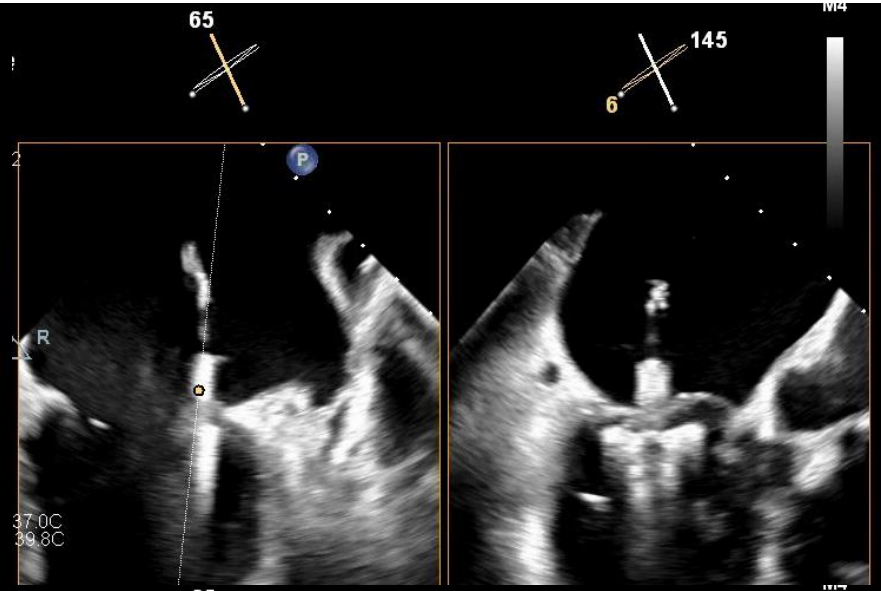
ACOM scallop

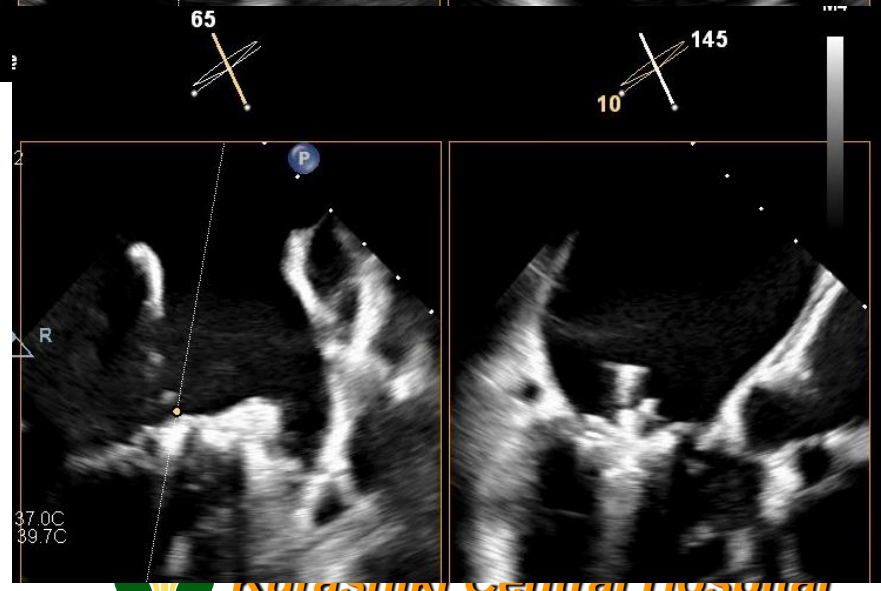
Orientation is decided to grasp A-COM scallop

Grasping







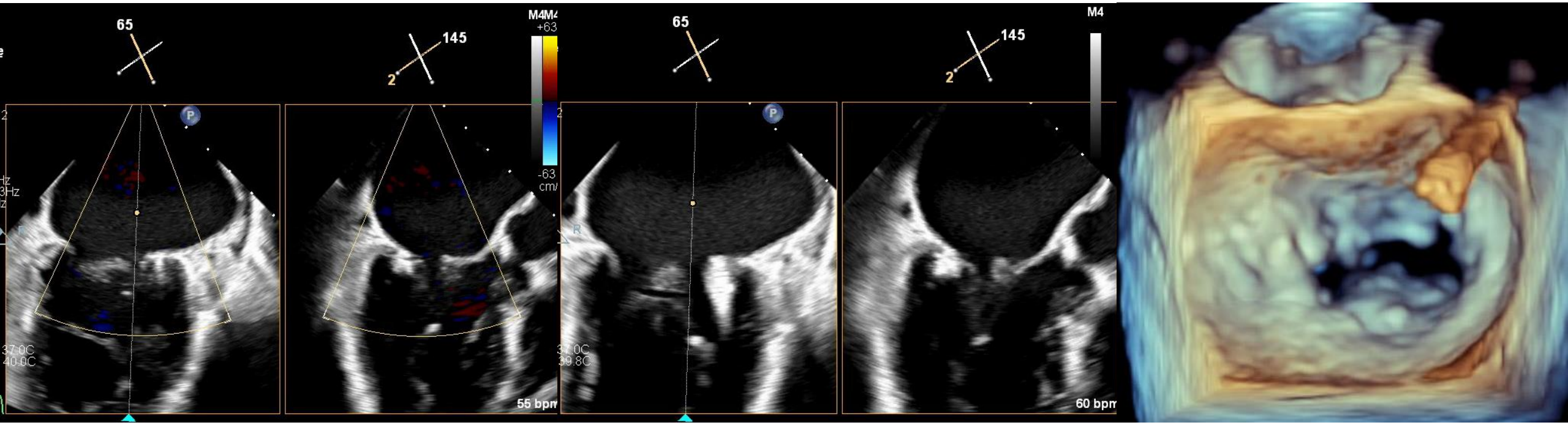


Insert to LV at most lateral part

Turn counterclockwise below mitral valve

Try simultaneous grasping, and confirm the leaflet insertion of ACOM using CGA

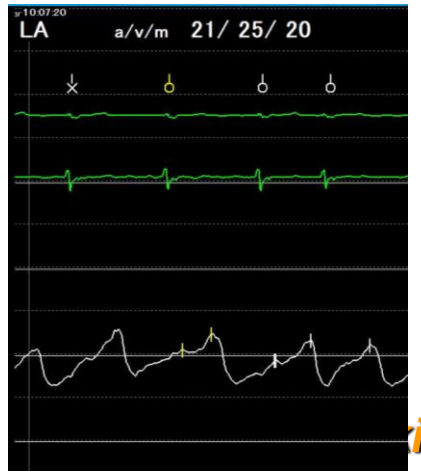
Post 1st Clip

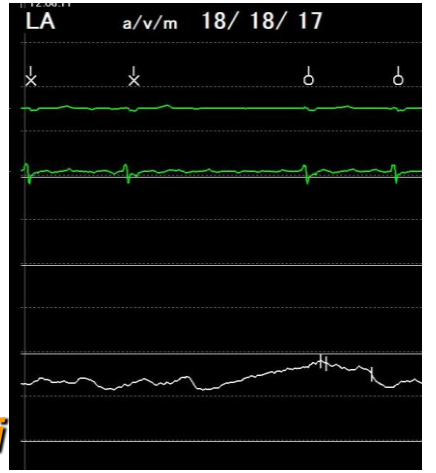


Nicely covered ACOM scallop by the clip

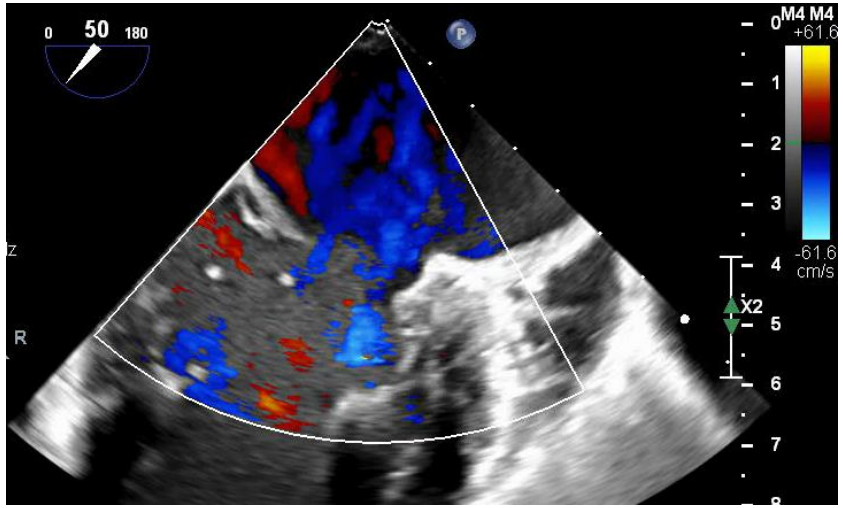
No eccentric MR

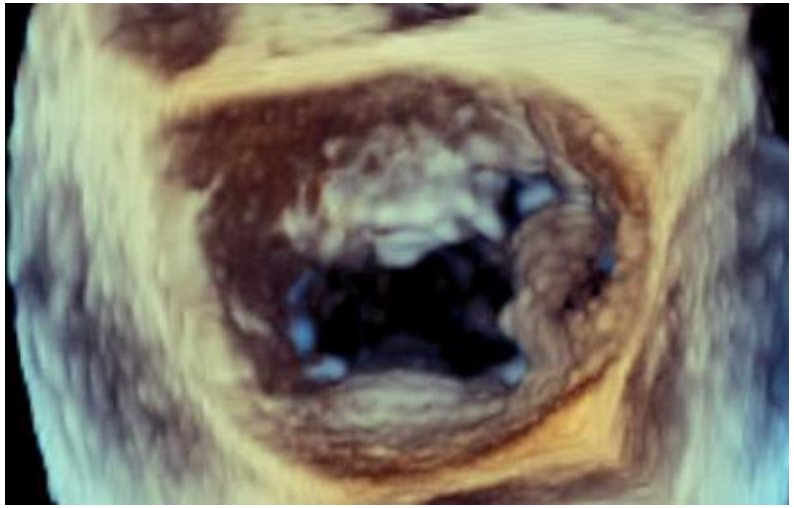
Mild-moderate MR, LAP improved

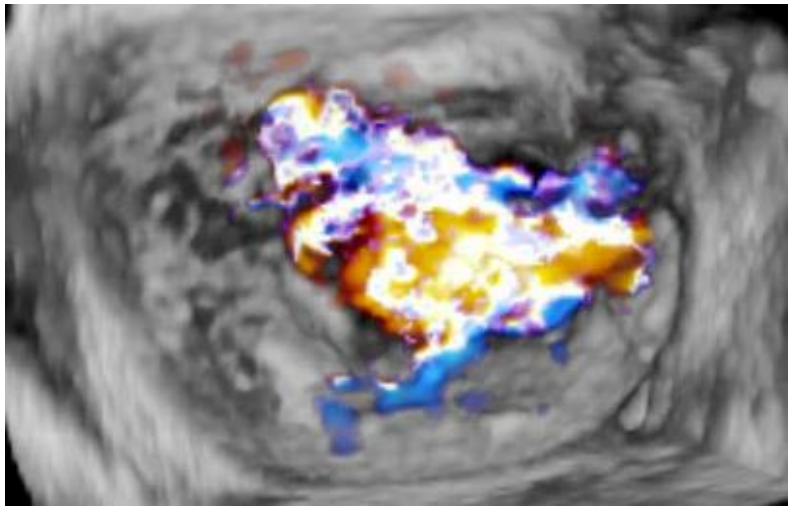




85 years, female : Huge P3 Prolapse



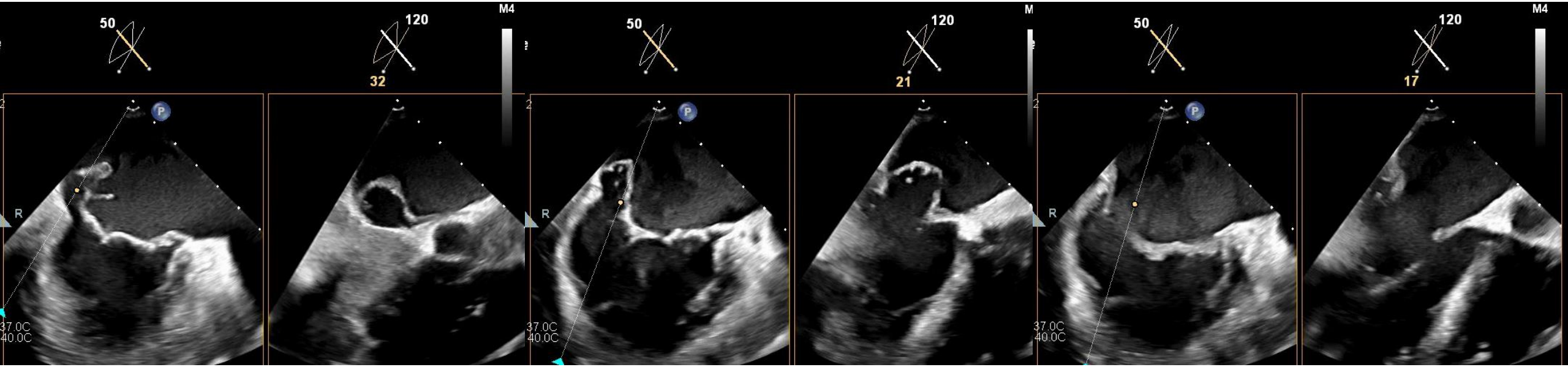




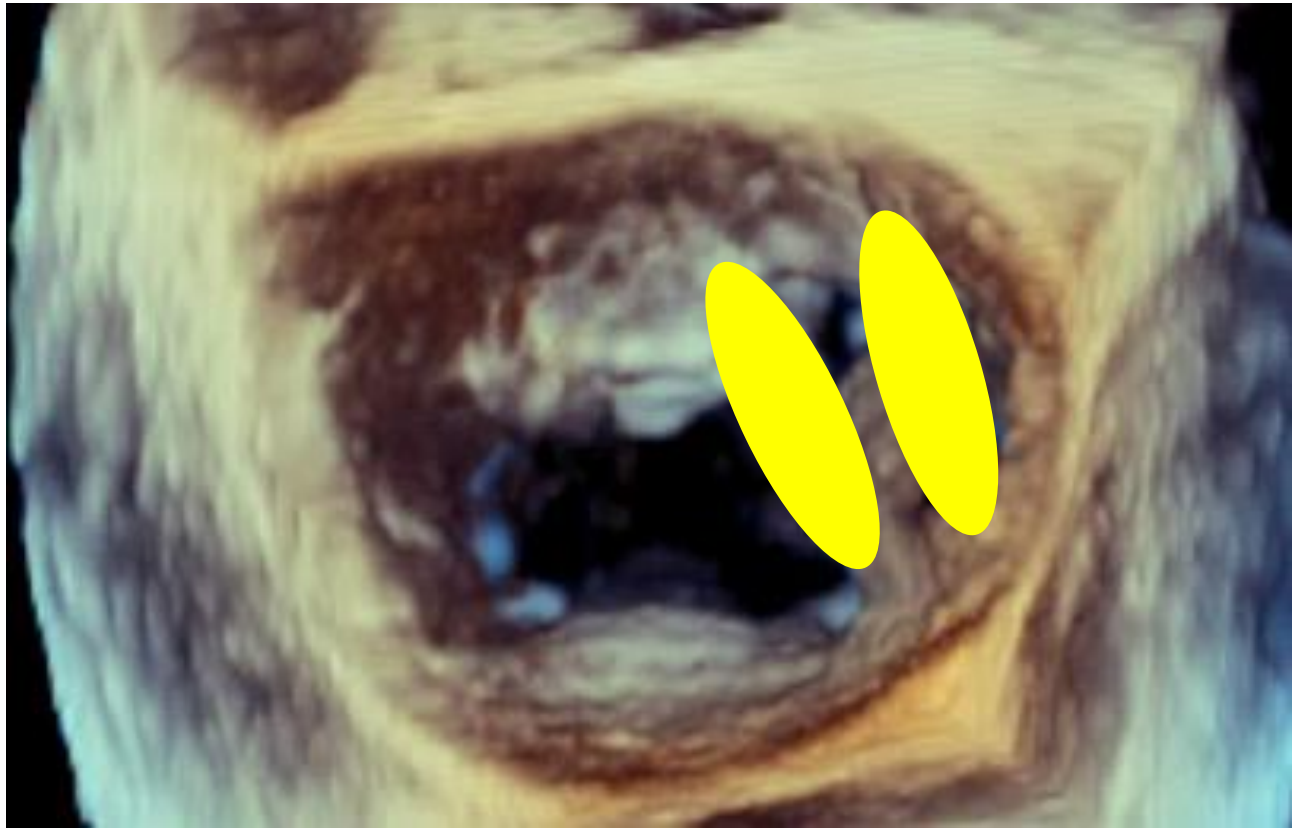
PCOM

Medial A3/P3

Lateral A3/P3



Our Strategy

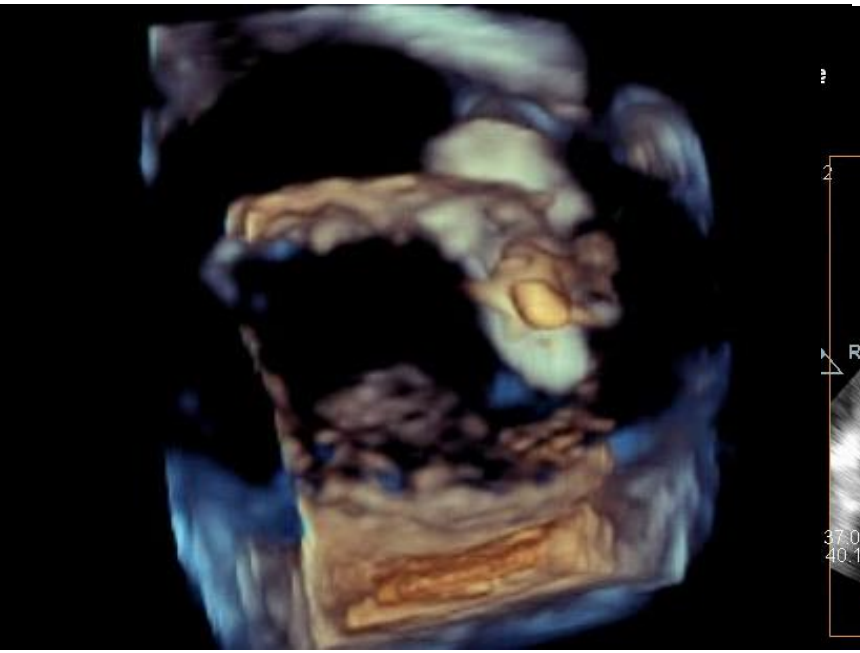


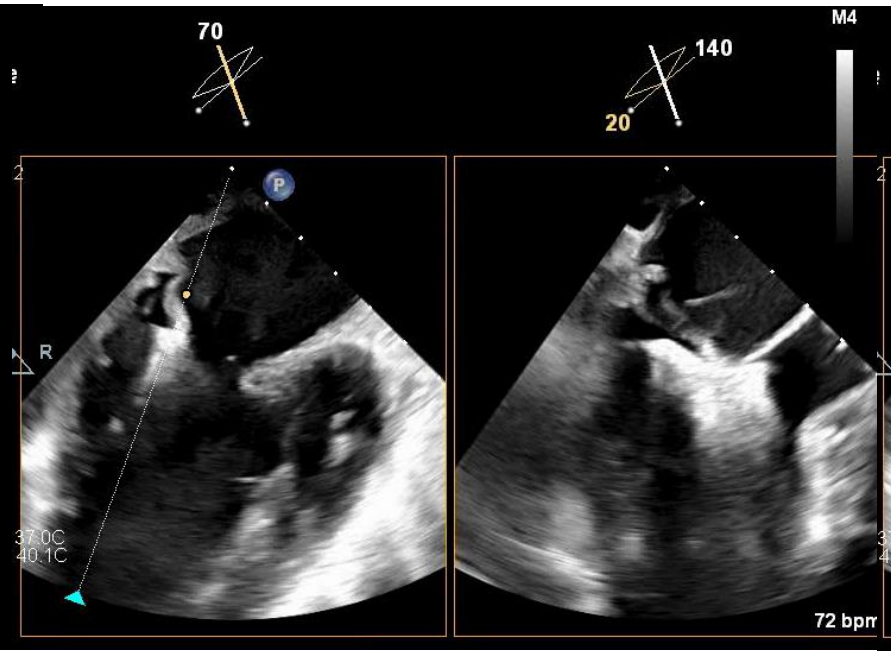
2 clip strategy with XT series

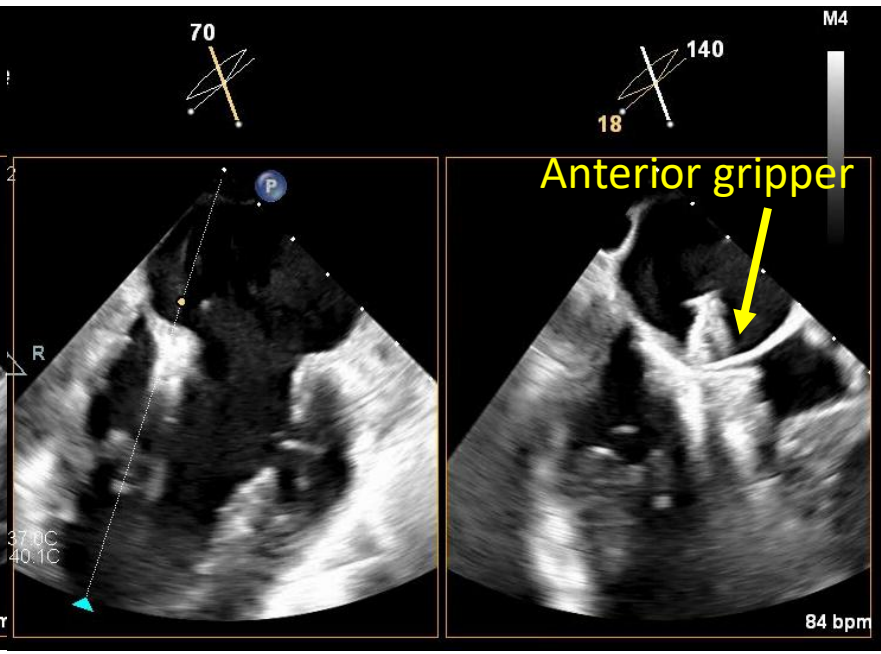
Orientation is decided based on the

A3/P3 coaptation line

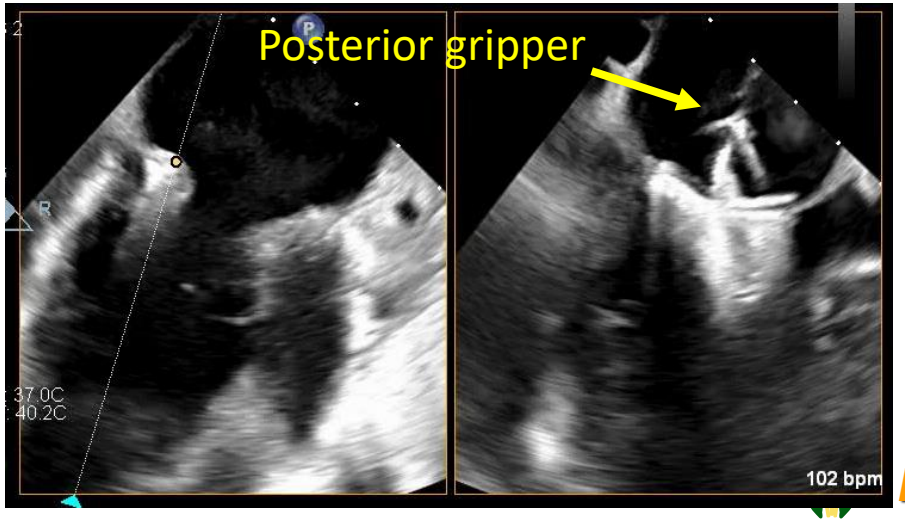
1st clip

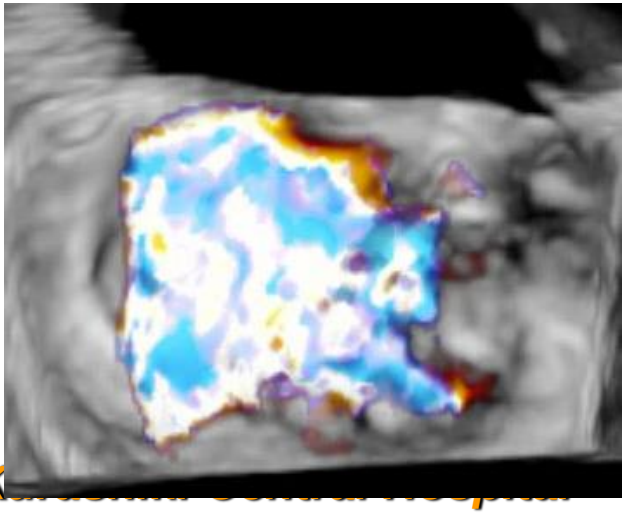




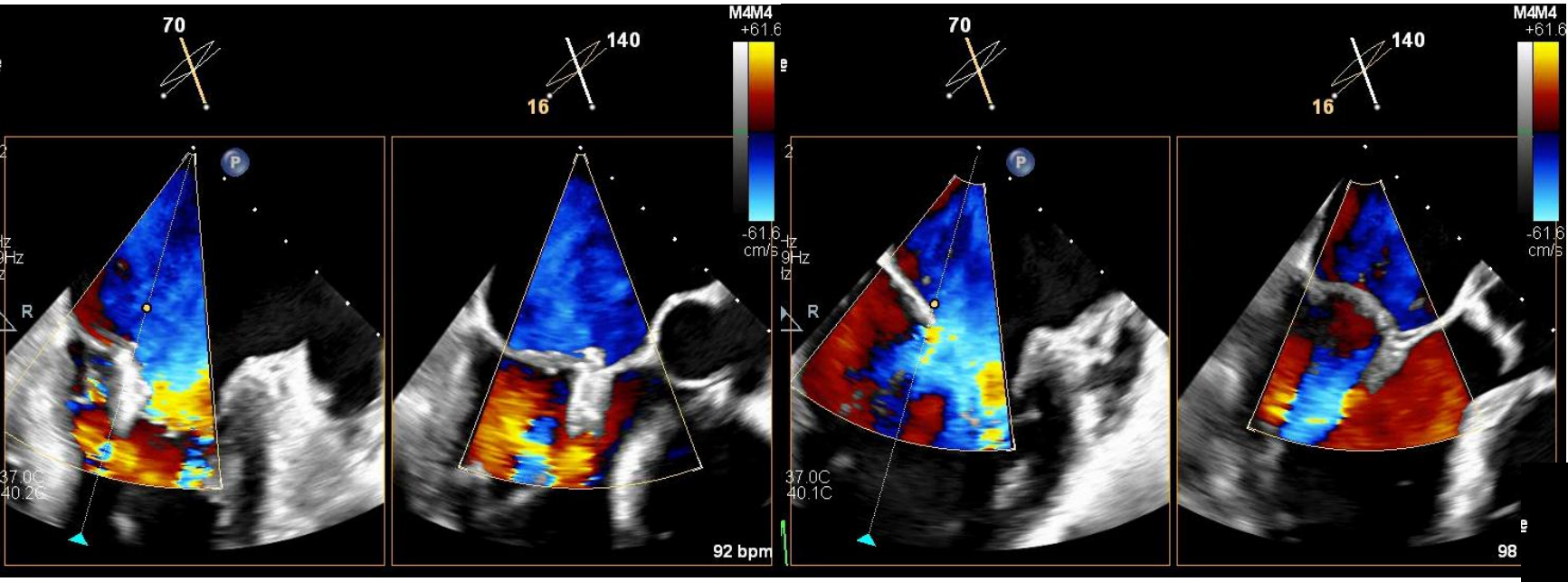


Grasping P3 is very challenging
Grasp AML first, and then PML
In TEE, leaflet insertion seemed to be good





Post 1st clip

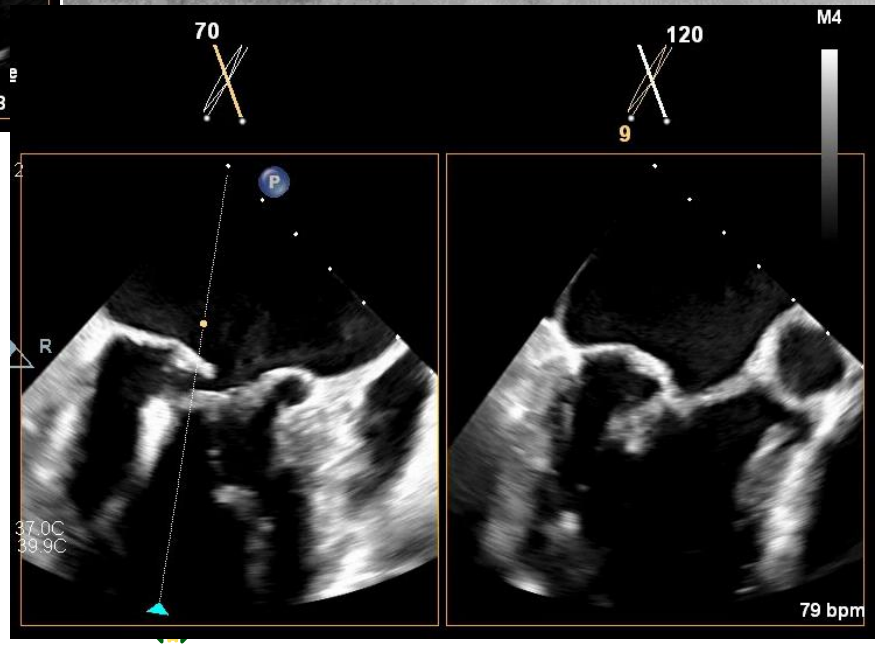


No MR medial to the clip

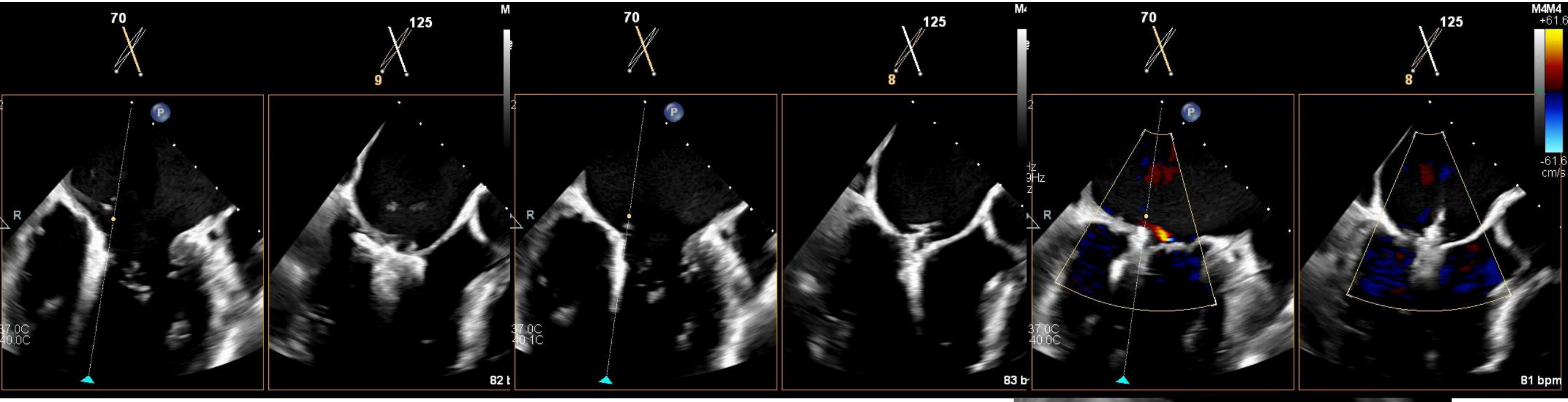
Severe MR lateral to the clip.

Release and select XT for 2nd clip

Target of 2nd clip

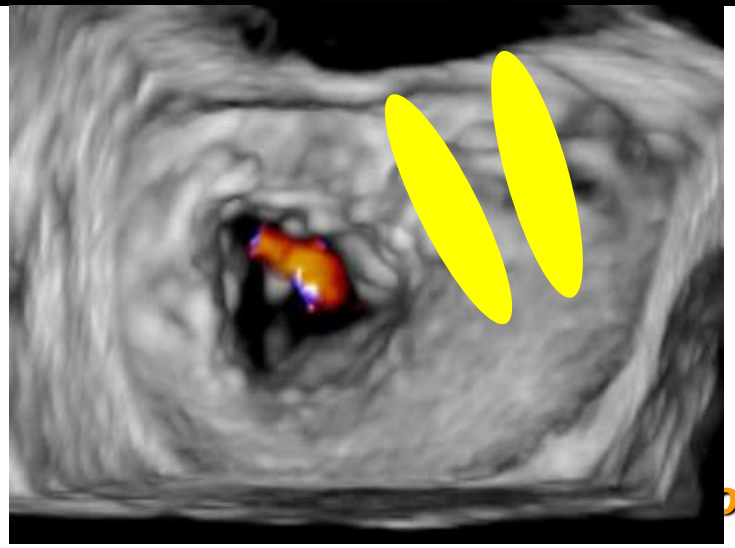


2nd Clip



Using CGA, put the anterior gripper down after grasping posterior leaflet

MR reduced to mild and no eccentric MR



Key Points for Complex Primary MR

- Non-central MR
  - Clip selection based on the leaflet length opposite side of prolapse
  - Clip orientation based on the coaptation line
- Non-central MR with commissural lesion
  - Clip selection and orientation to grasp commissural scallop
- Huge and wide flail
  - Controlled gripper actuation system for better grasping
  - Planned 2 clips to cover whole part of flail