Beginner's Perspective of TEER

Central dMR vs. non-Central dMR

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Disclosure

- No Disclosure

Outcomes of TEER

between Central and noncentral dMR

Echocardiographic and Clinical Outcomes of Central Versus Noncentral Percutaneous Edge-to-Edge Repair of Degenerative Mitral Regurgitation

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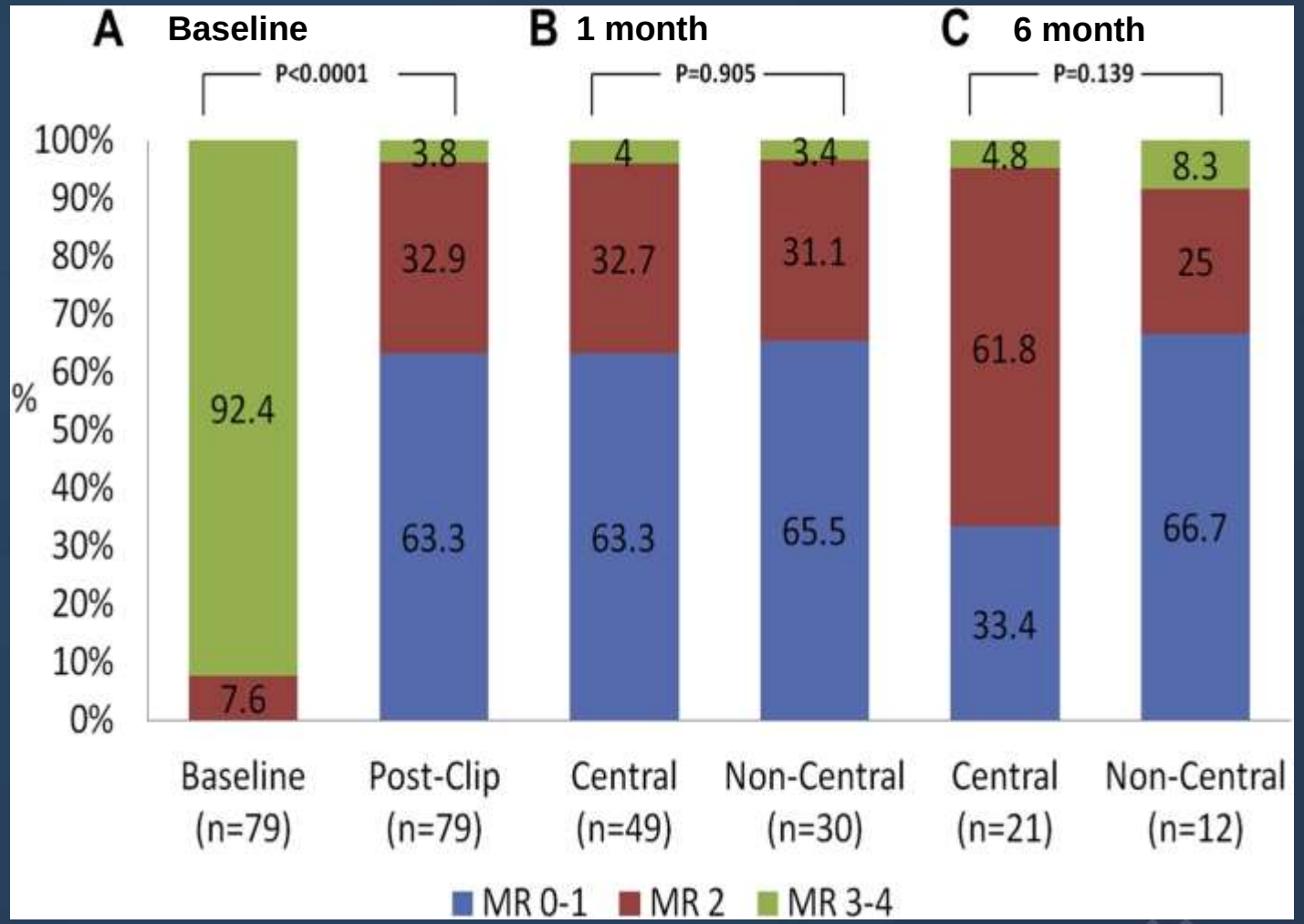
Outcomes of TEER

between Central and noncentral dMR

Table 3 Periprocedural Adverse Events

	Overall (N = 79)	Central (n = 49)	Non-Central (n = 30)	p Value
Clip embolization	0 (0)	0 (0)	0 (0)	—
Partial clip detachment	2 (2.5)	1 (2)	1 (3.3)	1.000
Prolonged clip entanglement	0 (0)	0 (0)	0 (0)	1.000
Chordal rupture	1 (1.2)	1 (2)	0 (0)	1.000
Cardiac tamponade	1 (1.2)	1 (2)	0 (0)	1.000
Gastro-intestinal bleeding	2 (2.5)	1 (2)	1 (3.3)	1.000
Stroke	0 (0)	0 (0)	0 (0)	—
Transient AV block	1 (1.2)	1 (2)	0 (0)	1.000
Pneumonia	1 (1.2)	1 (2)	0 (0)	1.000
Mitral valve surgery	1 (1.2)	1 (2)	0 (0)	1.000
Death	1 (1.2)	0 (0)	1 (3.3)	1.000
All complications	10 (12.6)	7 (14.3)	3 (10)	0.734



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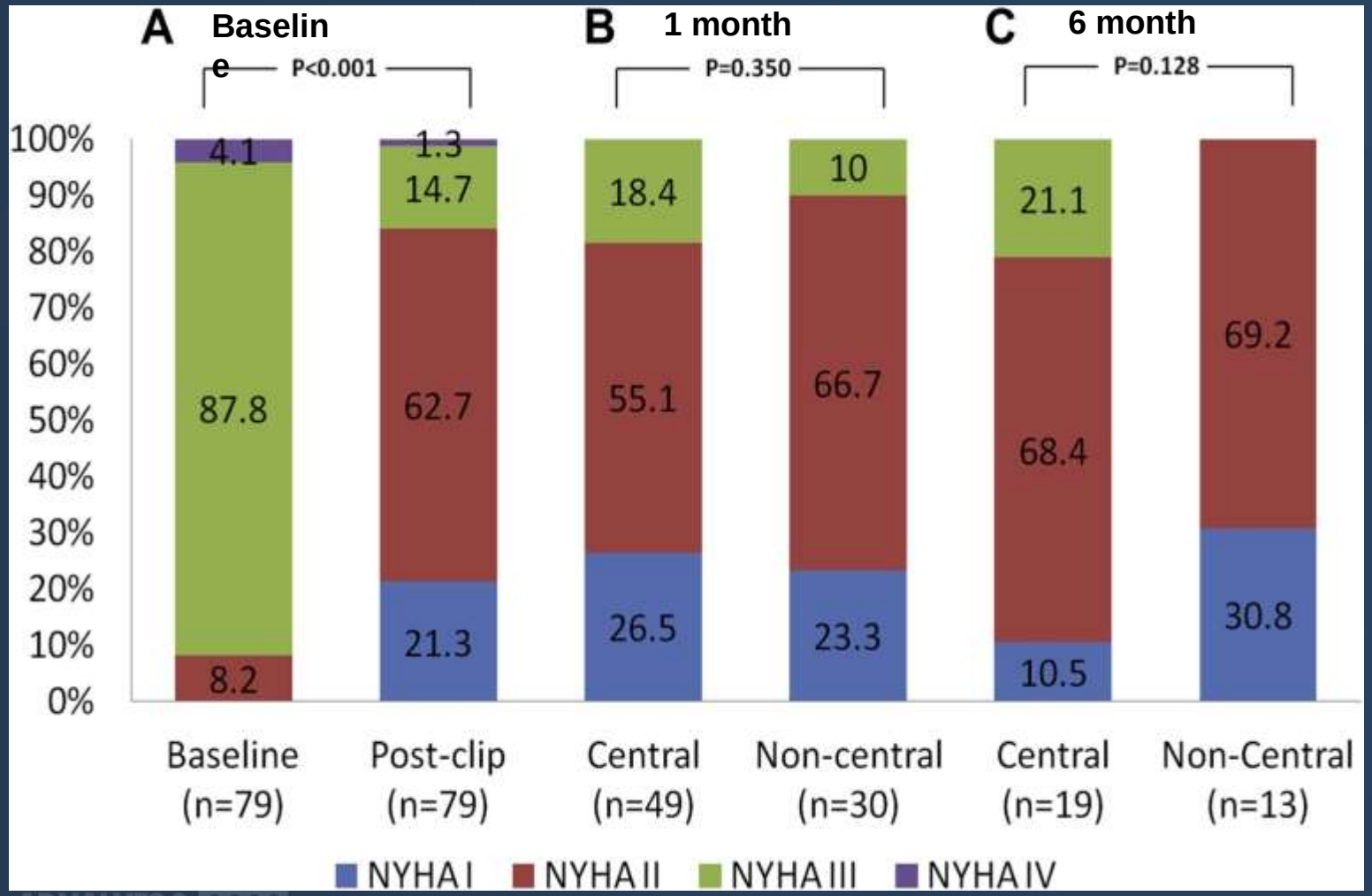
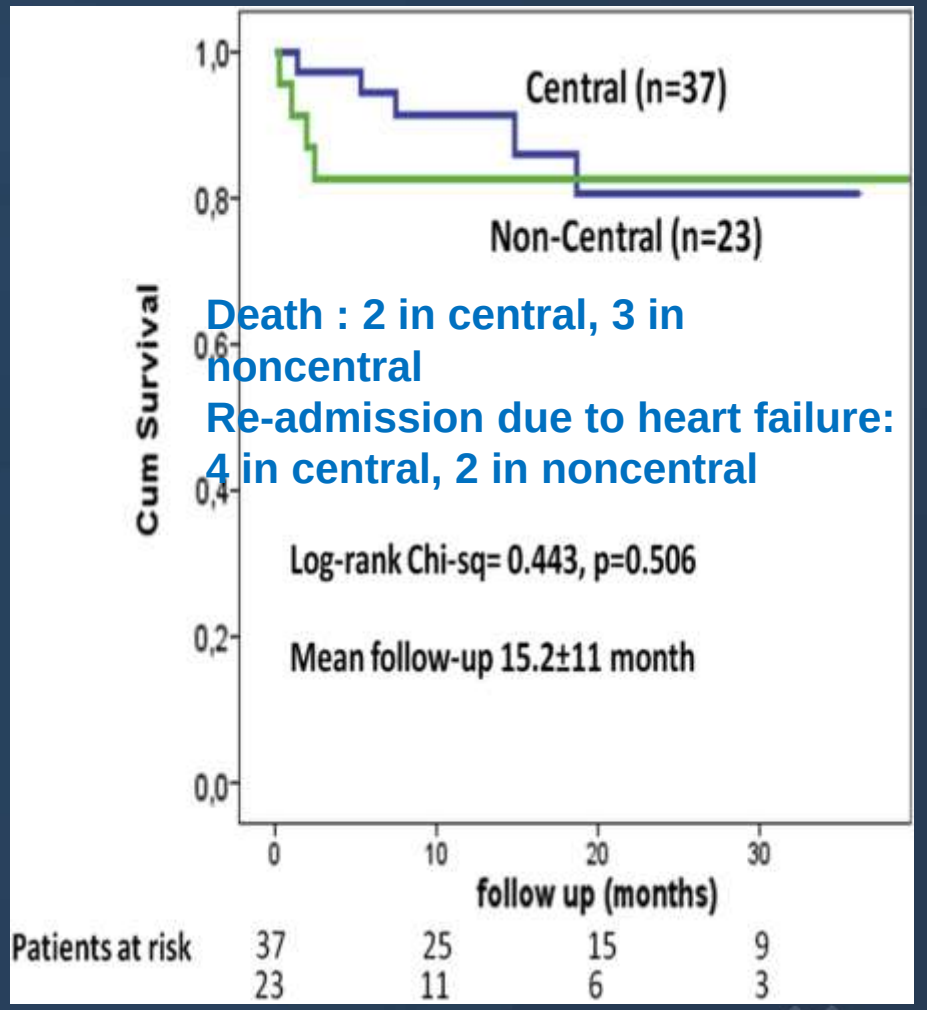
Outcomes of TEER

between Central and noncentral dMR





Death : 2 in central, 3 in noncentral

Re-admission due to heart failure: 4 in central, 2 in noncentral

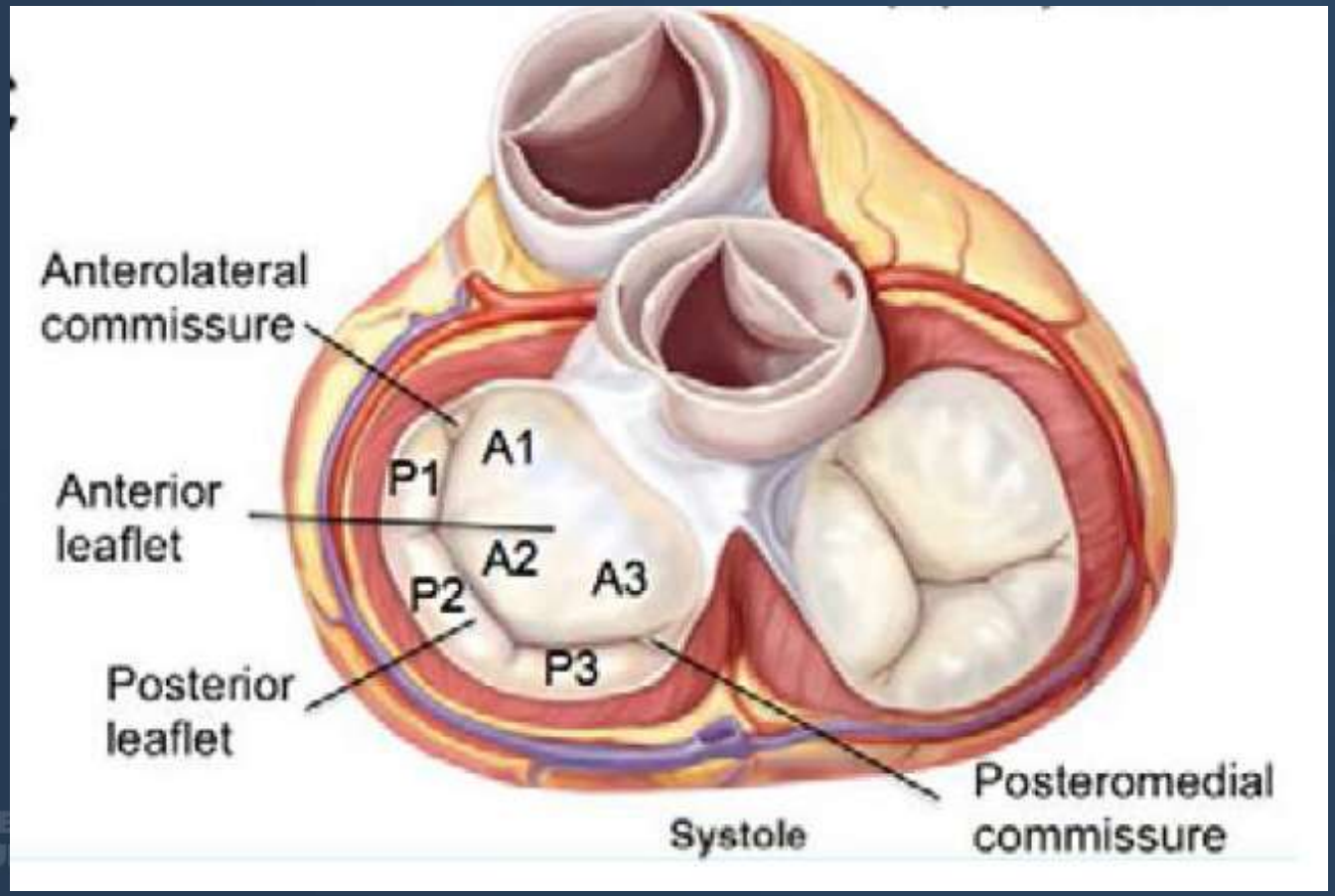
Log-rank Chi-sq= 0.443, p=0.506

Mean follow-up 15.2±11 month

J Am Coll Cardiol 2013;62:2370-7

Short review of MV anatomy

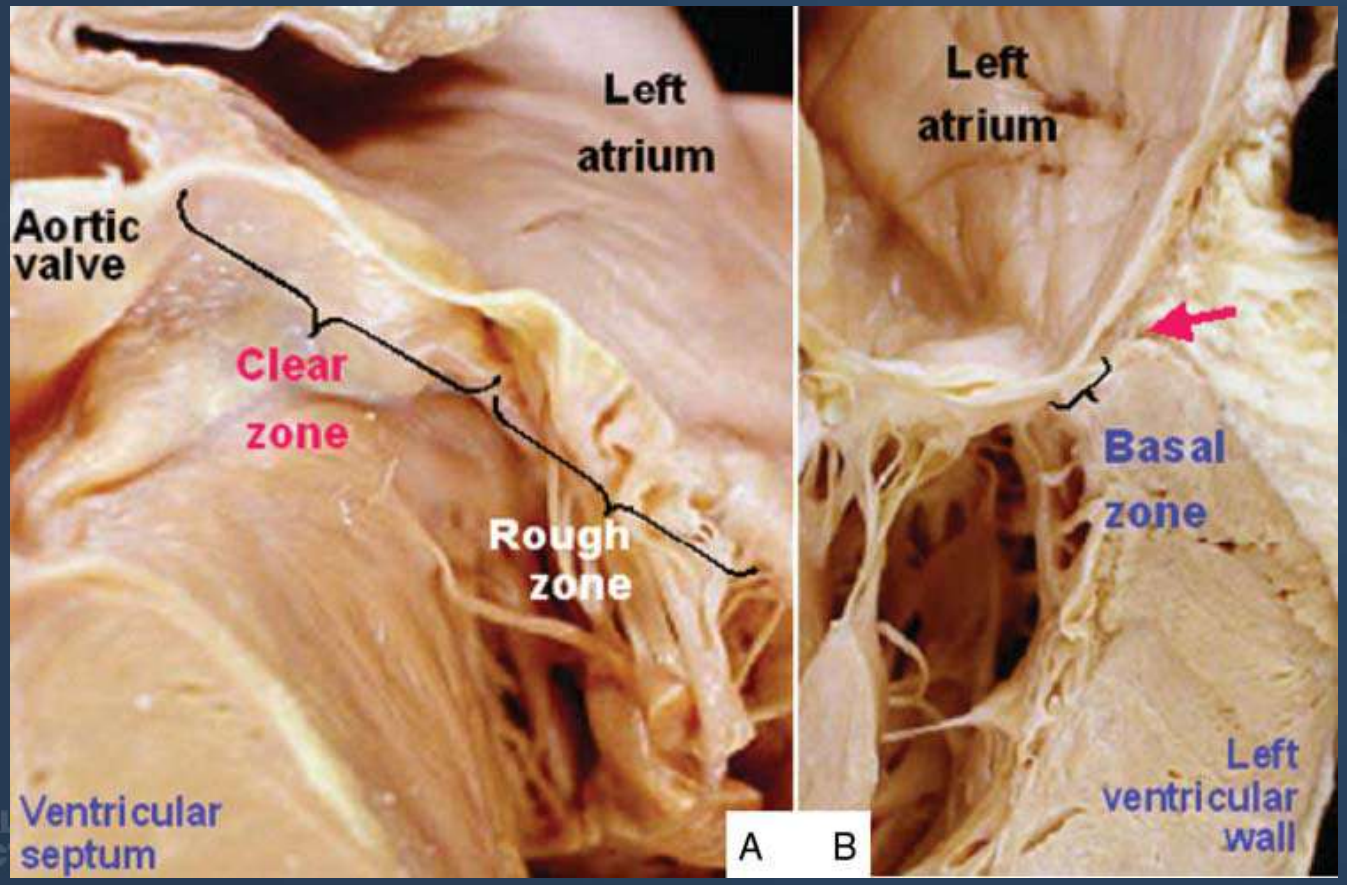
- **Anterior leaflet = aortic leaflet, semicircular, broader, 1/3 of annular circumference**
- **Posterior leaflet = mural leaflet, crescentic, narrow, 2/3 of annular circumference**

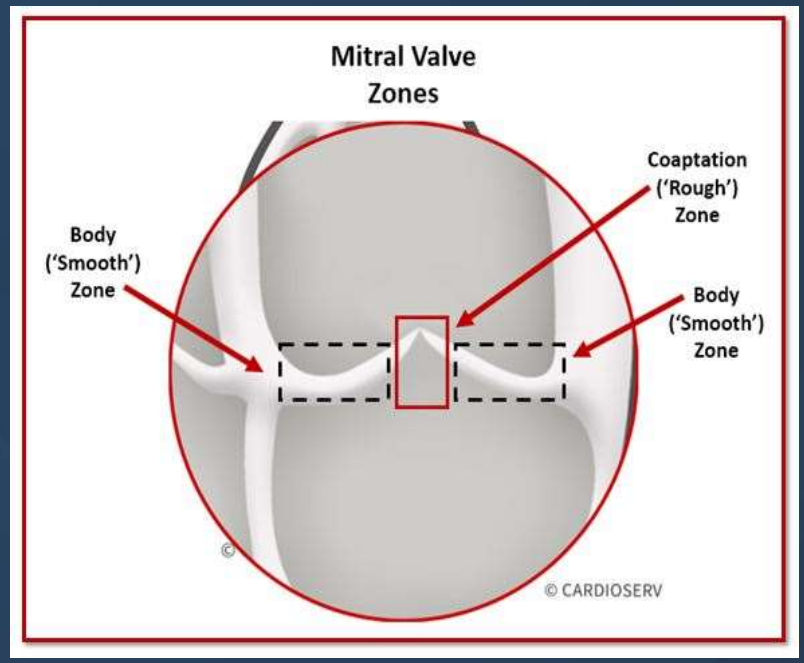


Eur J Echocardiogr 2010;11:i3-9
Curr Cardiol Rep 2019;21:61
Cardiol Clin 2013;31

Short review of MV anatomy

- **Zone of leaflet**
  - ✓ **Basal zone: leaflet connect to the atriovetricular junction**
  - ✓ **Clear zone: central portion of leaflet**
  - ✓ **Rough zone: free edge**





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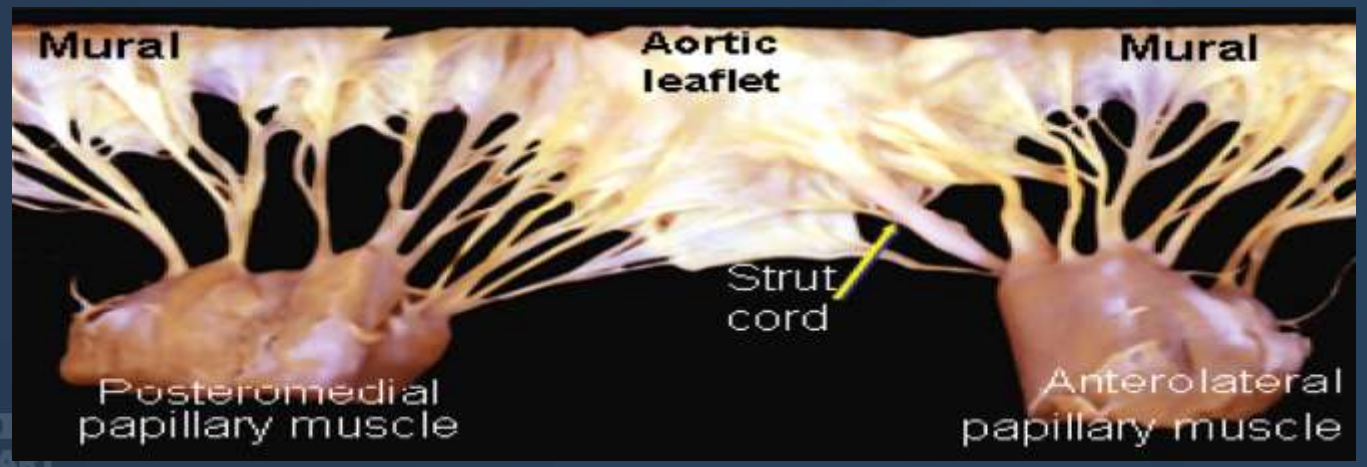
Curr Cardiol Rep 2019;21:61
Cardiol Clin 2013;31

Short review of MV anatomy

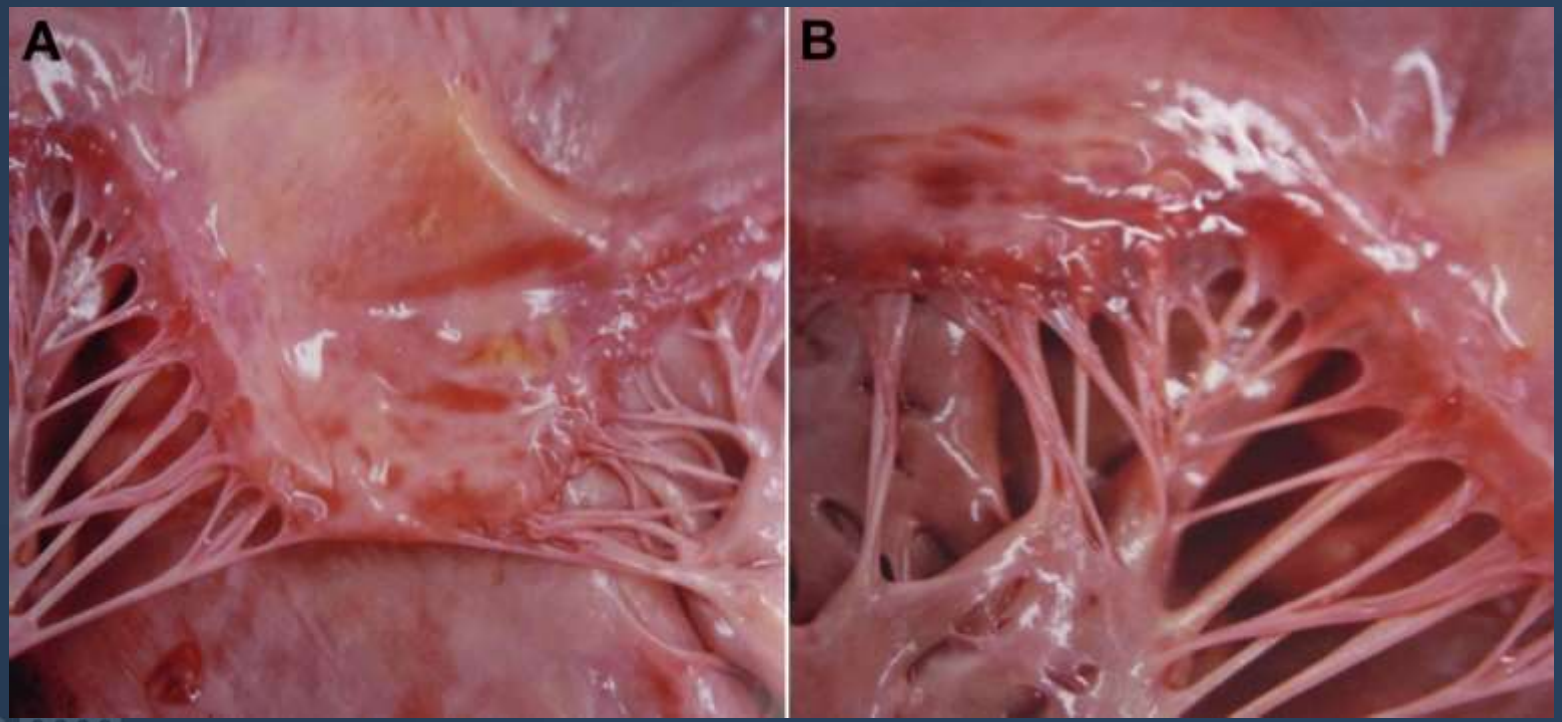
- **Components of chordae**
  - ✓ **Primary chordae: attach to leaflet free edge, thinner, higher collagen fiber (limited extensibility, reduced crimping) → prevent leaflet edge eversion (flail leaflet)**
  - ✓ **Secondary chordae: attach to rough zone, thicker, more extensible**
  - ✓ **Tertiary chordae: attach to basal zone of mural leaflet**



Eur J Echocardiogr 2010;11:i3-9
Curr Cardiol Rep 2019;21:61
Cardiol Clin 2013;31

Complexity of noncentral dMR

- There is a chordae-free zone in the central part of the anterior leaflet
- However, the structure of the chordae in the commissural areas is more complex



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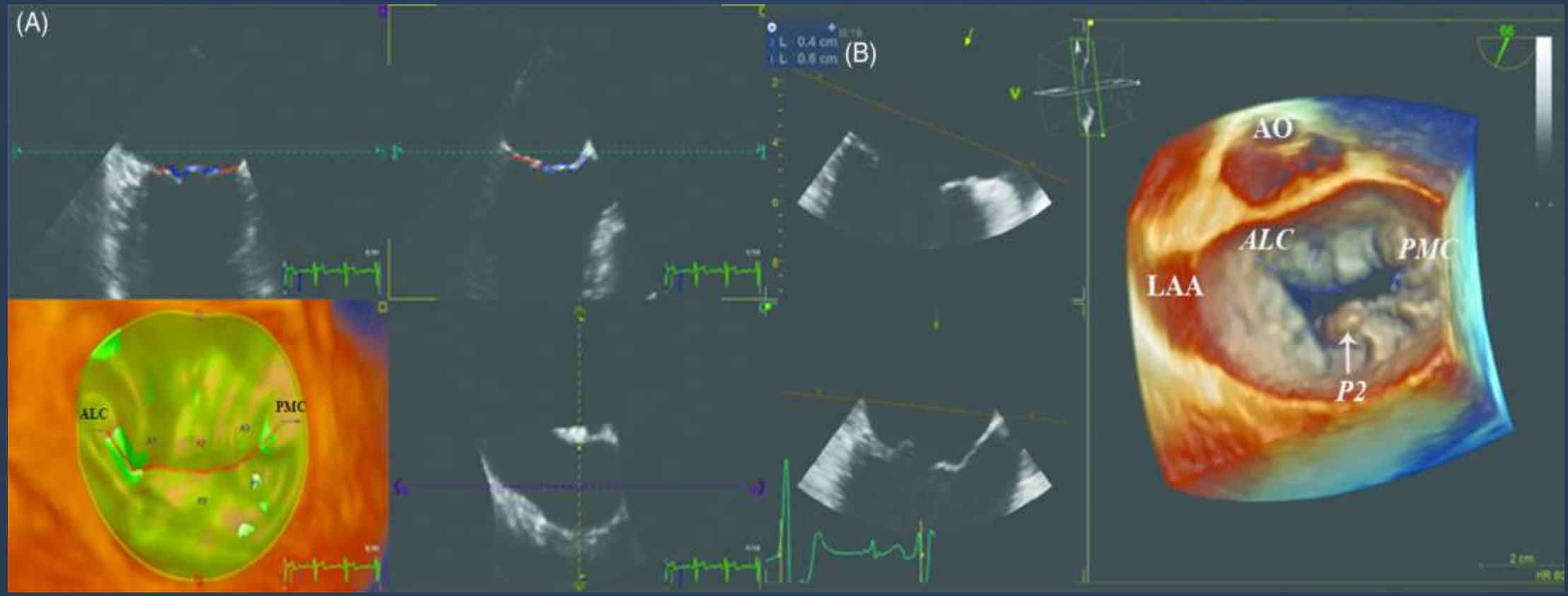
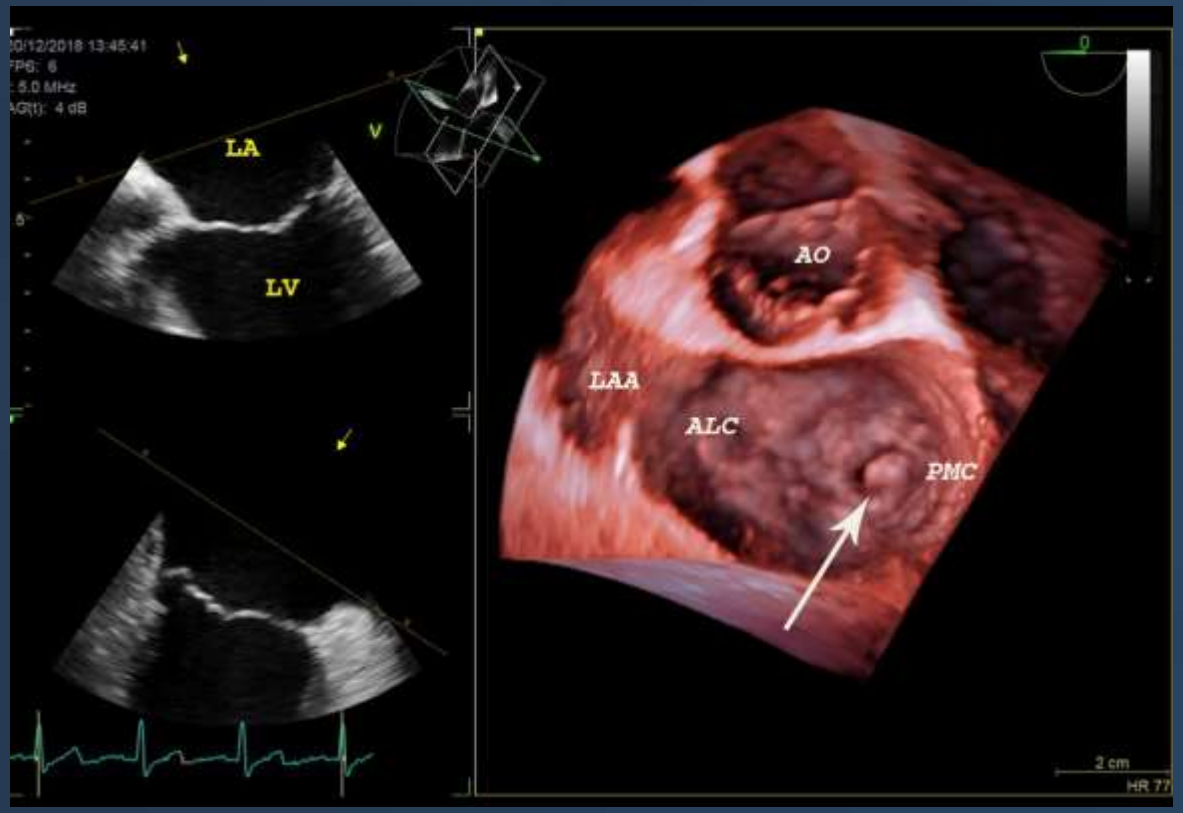
Normal MV morphology and central MR

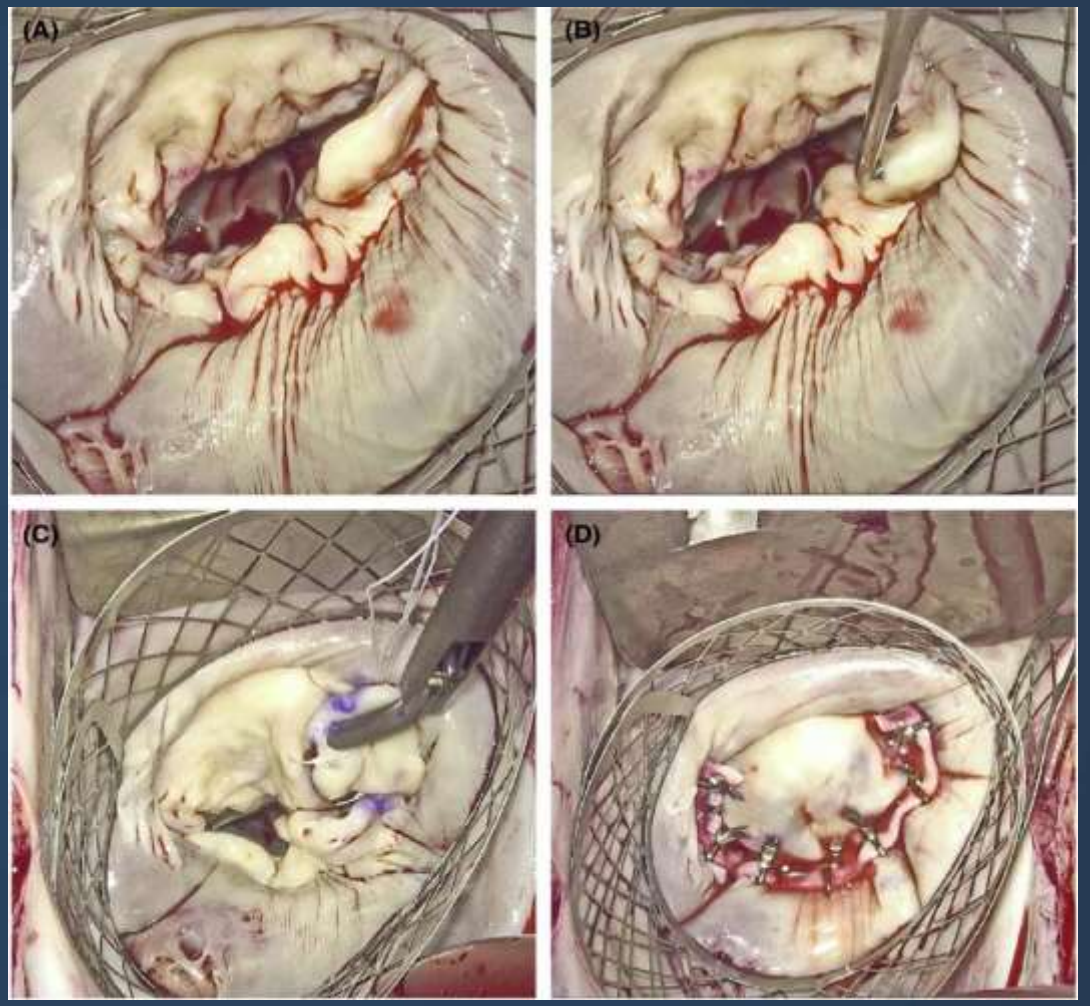


Echocardiography. 2021;38:646–656.

Commissural MR, extreme noncentral MR



Isolated PMC prolapse



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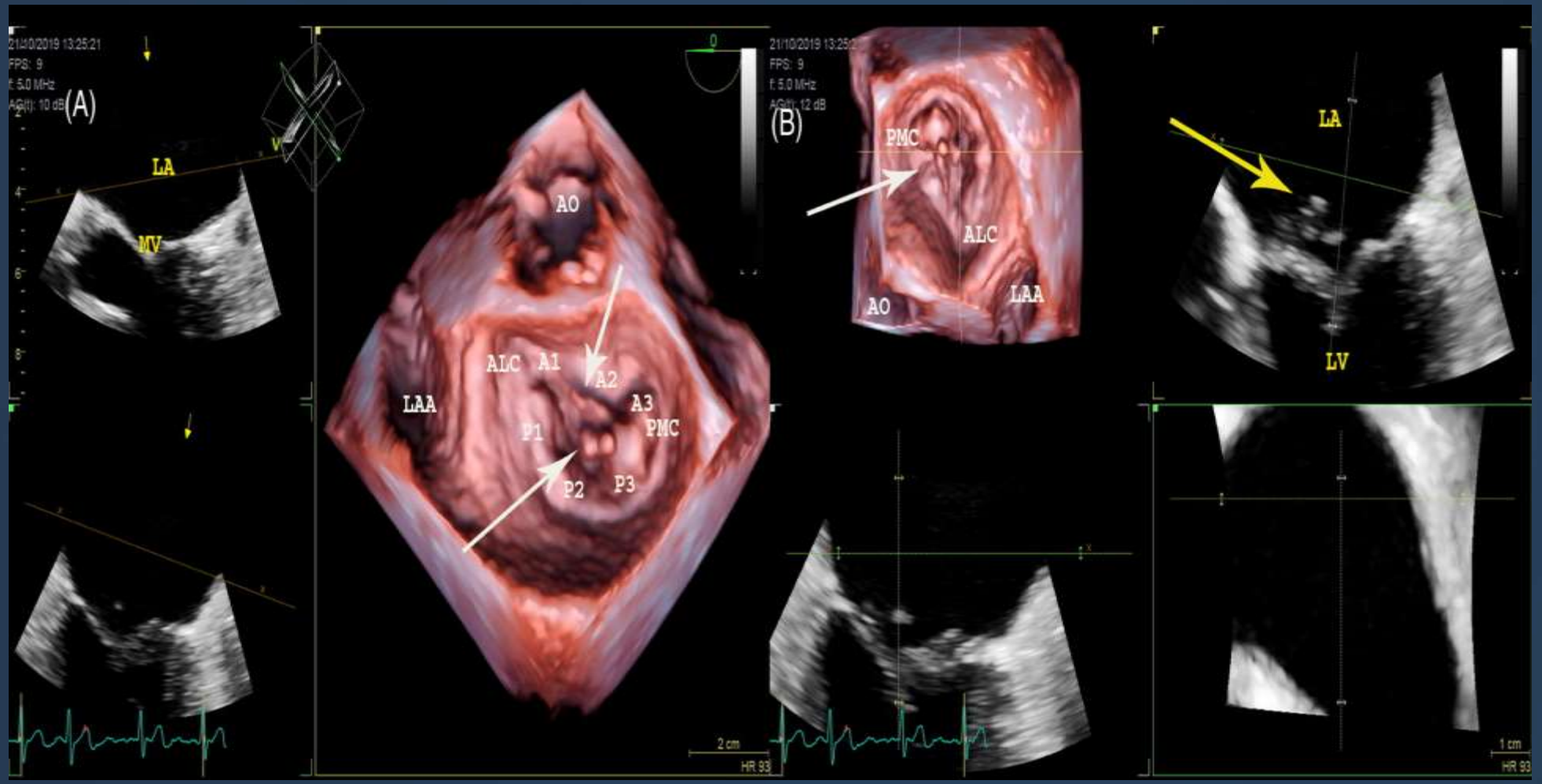
Commissural MR, extreme noncentral MR



Flail PMC

Echocardiography. 2021;38:646–656.

Commissural MR, extreme noncentral MR

Combined prolapse of ALC and P2 scallop

Echocardiography. 2021;38:646–656.

Commissural MR, extreme noncentral MR

- **Surgical treatment of commissural MR: various technique and combined technique**
  - ✓ **Ring and band annuloplasty with**
  - ✓ **Resection or plication of prolapsing or redundant leaflet tissue**
  - ✓ **Papillary muscle repositioning and chordal transposition**
  - ✓ **Chordal replacement with expanded polytetrafluoroethylene (PTFE) neochords**
  - ✓ **Commissural closure: standing the test of time → We can treat noncentral MR by Mitraclip**

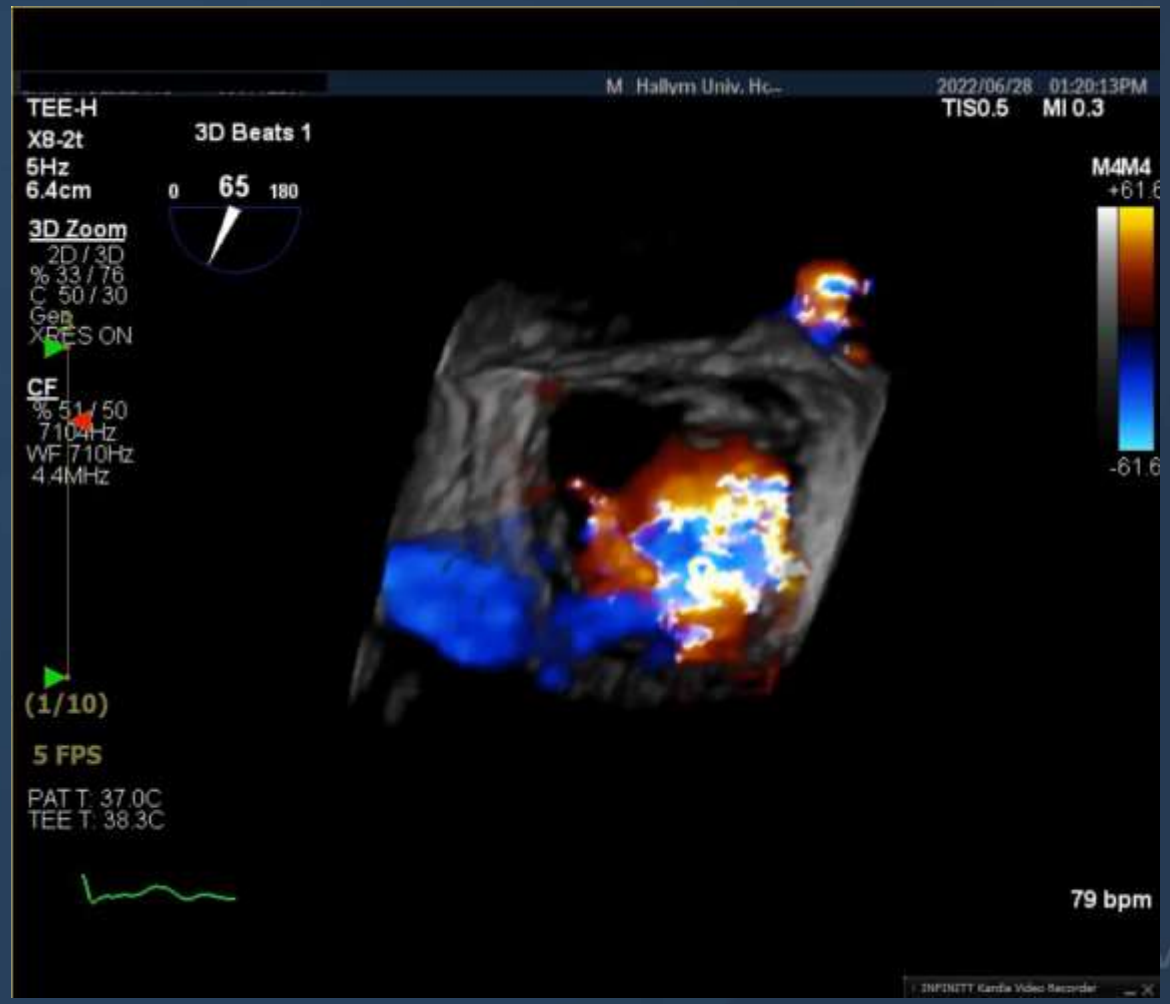
Echocardiography. 2021;38:646–656.

However,

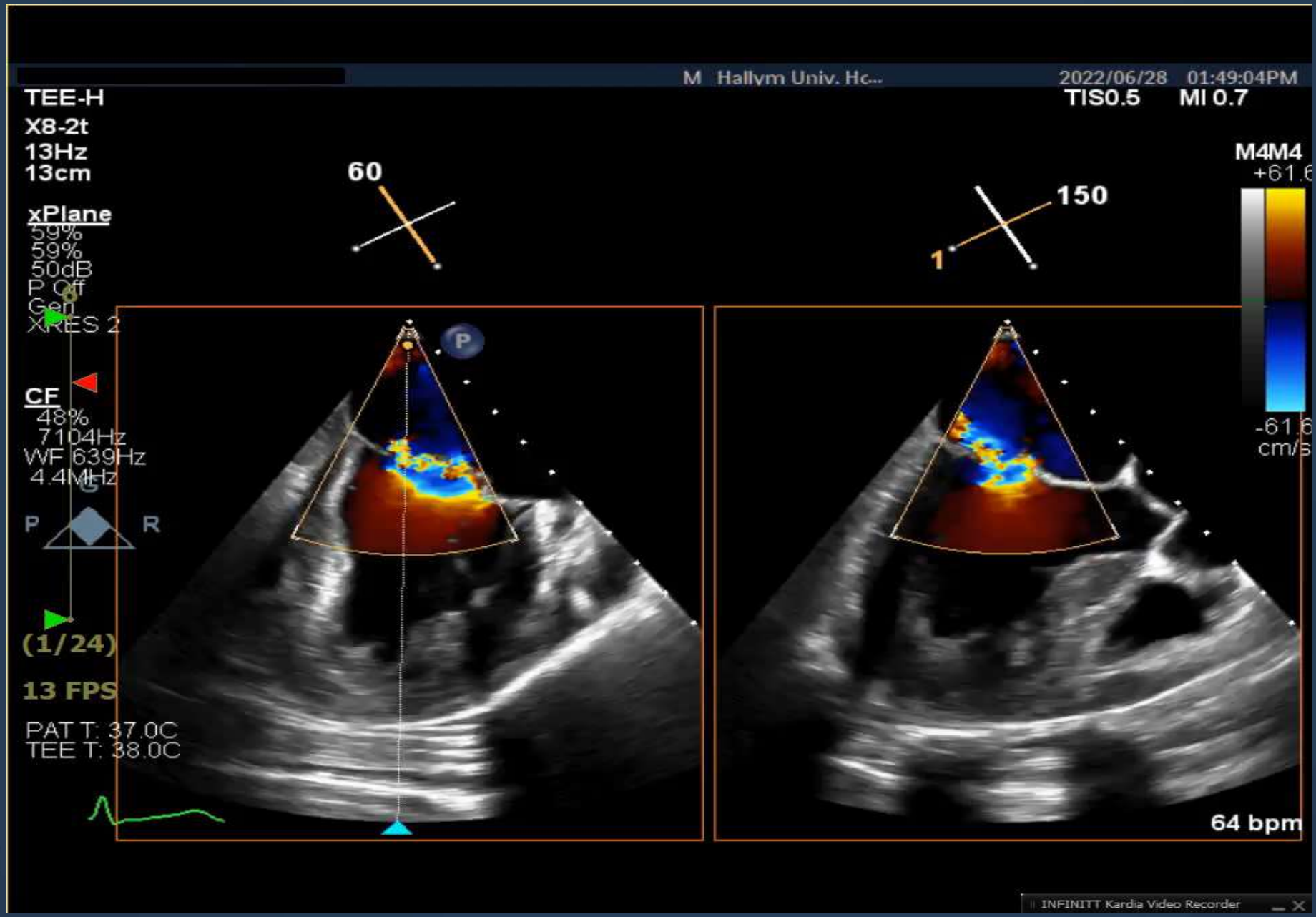
For the beginner of TEER

CASE 1

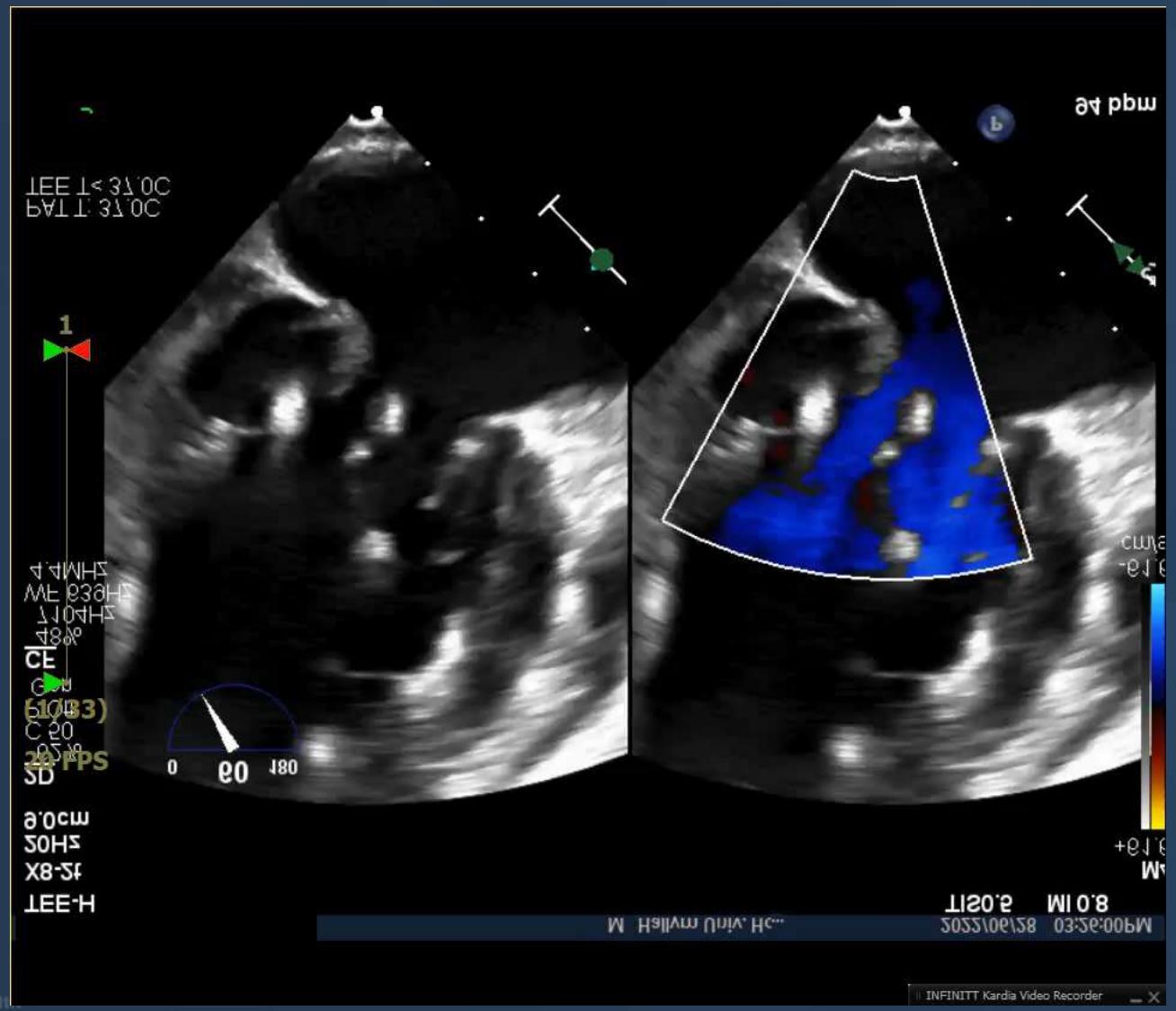
- 82/M, STS score: 8.754
- ECG: AF
- Mainly central MR (A2-3 prolapse)

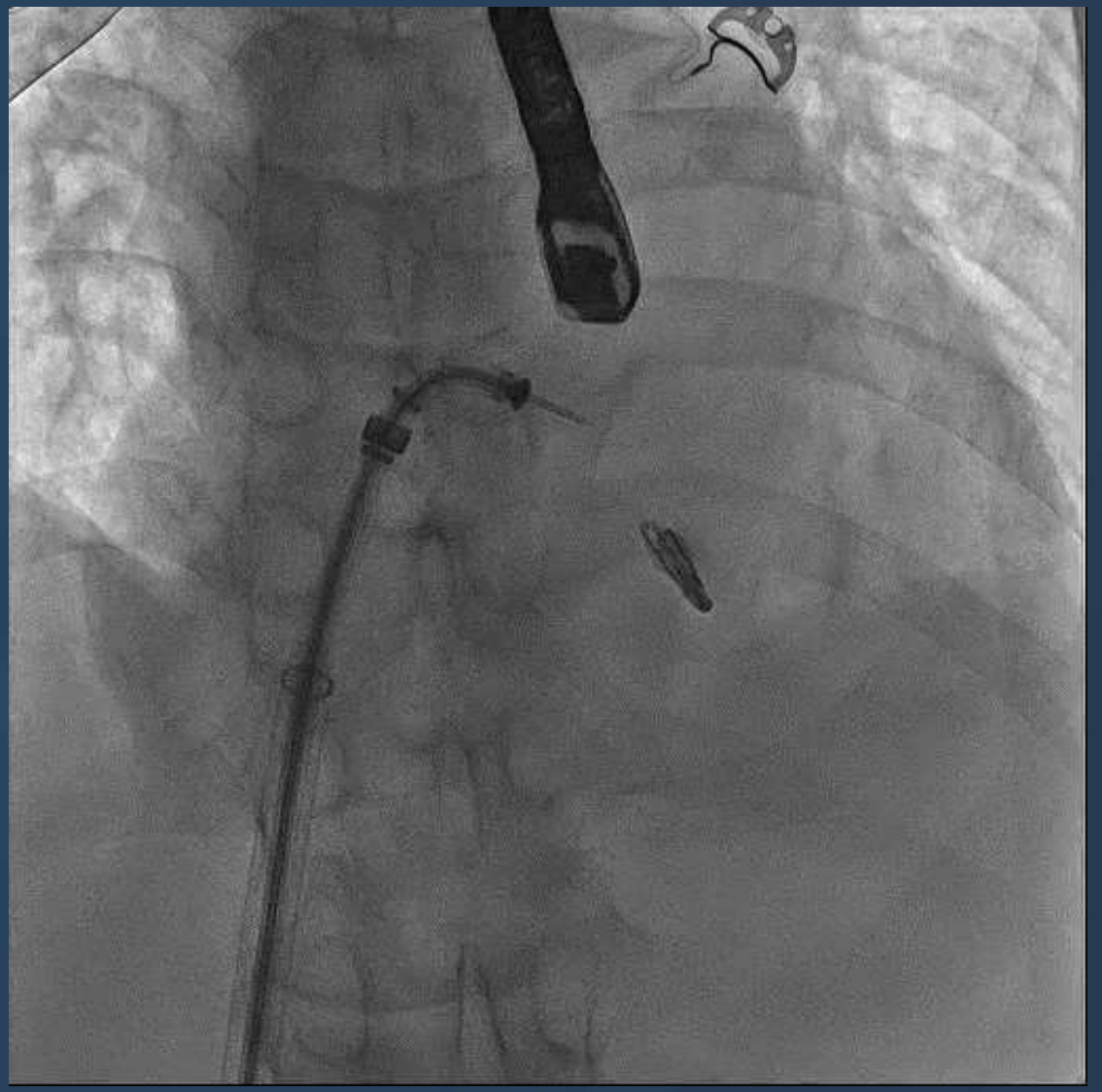


CASE 1

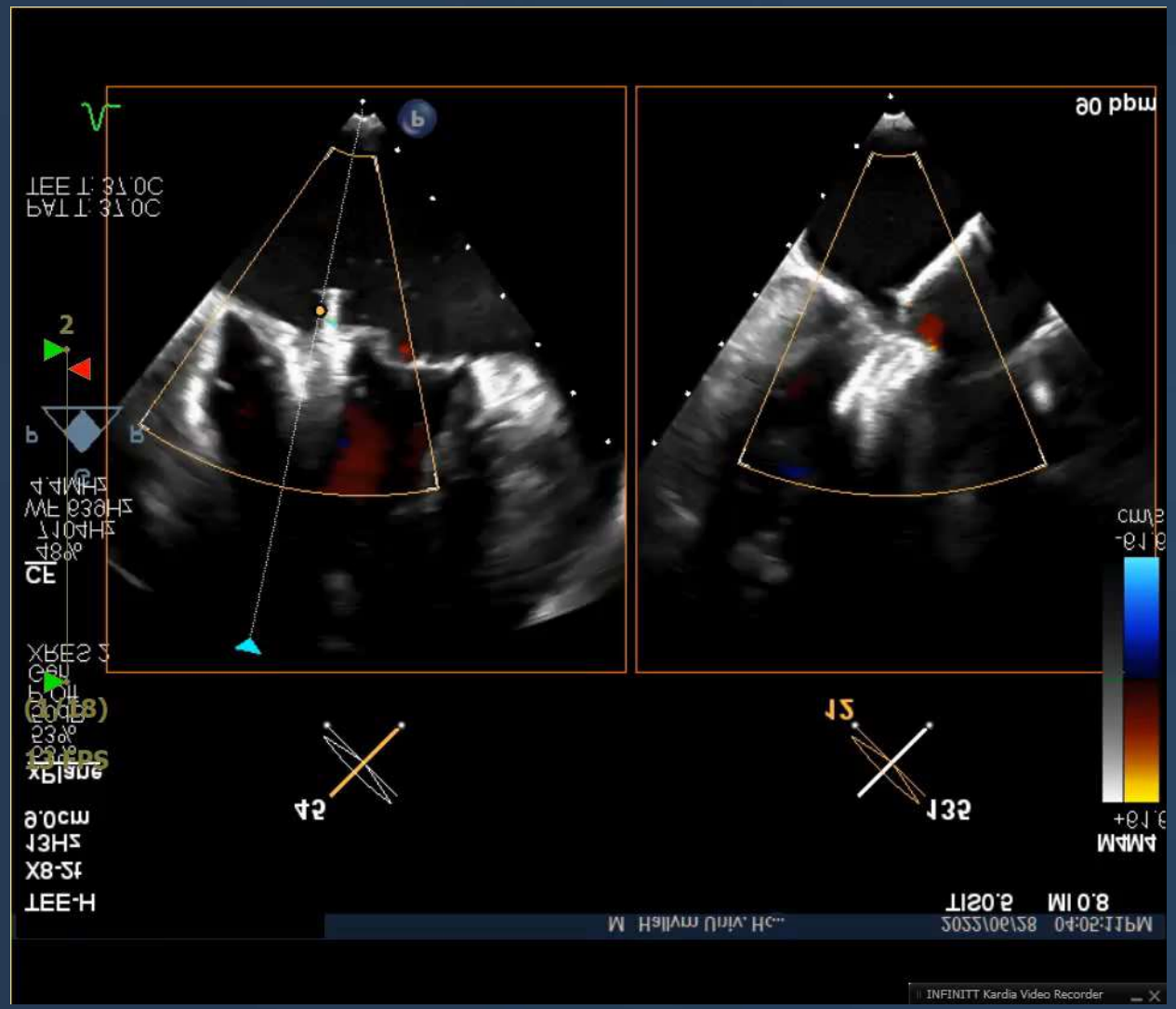


CASE 1



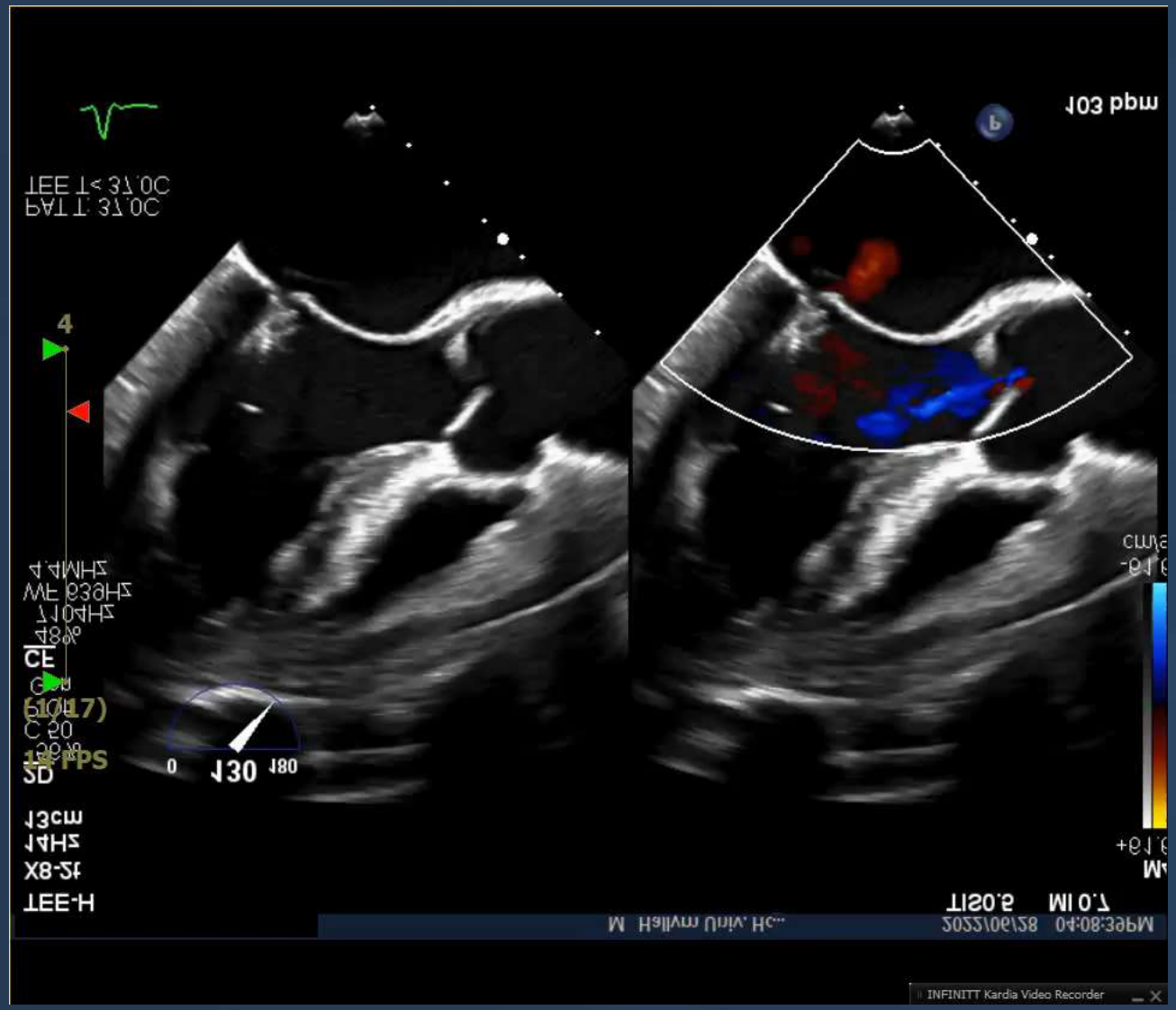


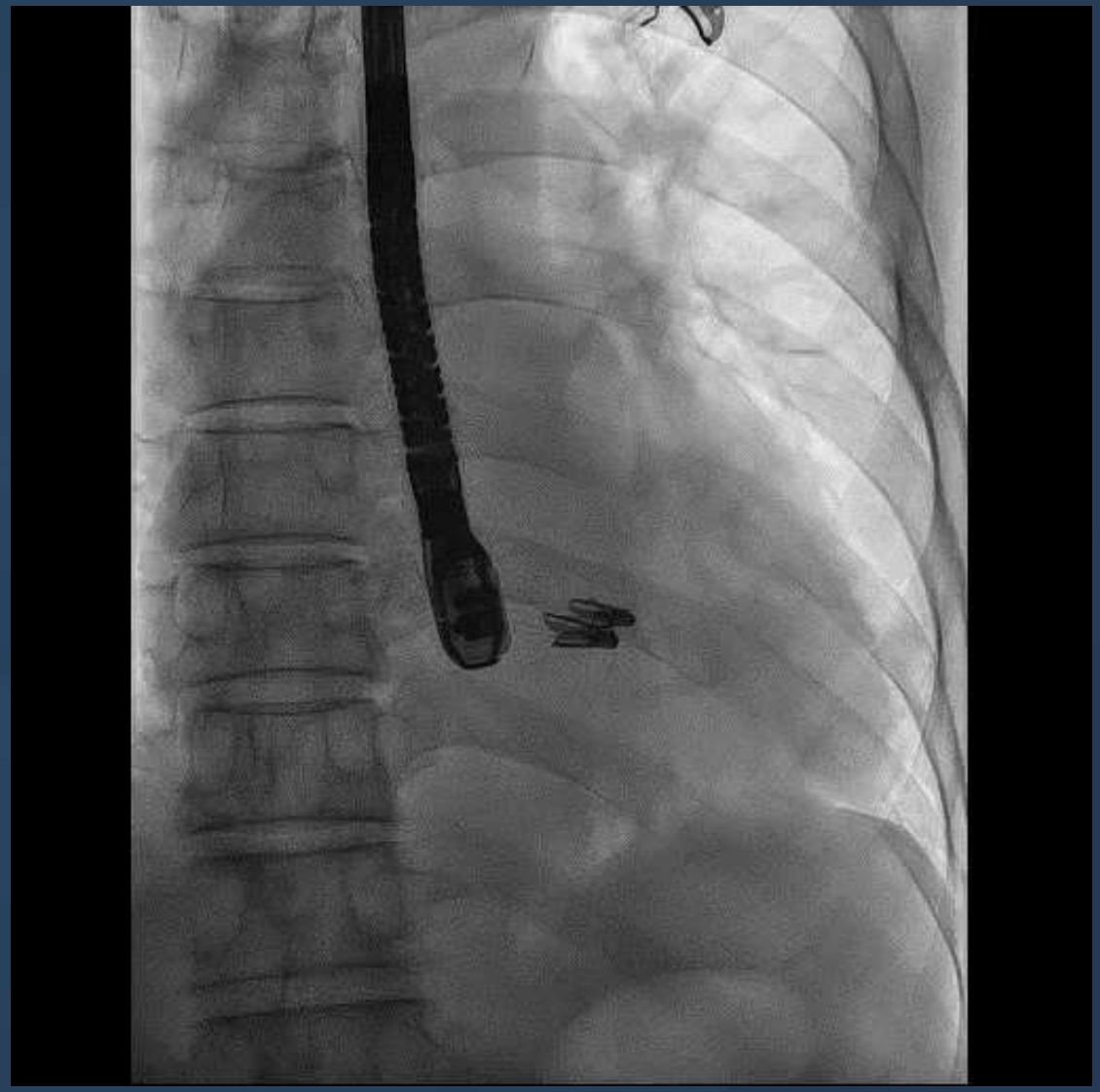
CASE 1


TEE-H
X8-2t
5Hz
6.3cm
3D Zoom
2D / 3D
% 30 / 73
C 50 / 30
Gen
XRES ON
CF
% 51 / 50
7104Hz
WF 710Hz
4.4MHz
(1/7)
5 FPS
PAT T: 37.0C
TEE T: 37.1C
3D Beats 1
0
45
180
M Hallym Univ. Hc...
2022/06/28 04:05:43PM
TIS0.5 MI 0.3
M4M4
+61.6
-61.6
95 bpm
INFINITT Kardia Video Recorder


INFINITT Kardia Video Recorder

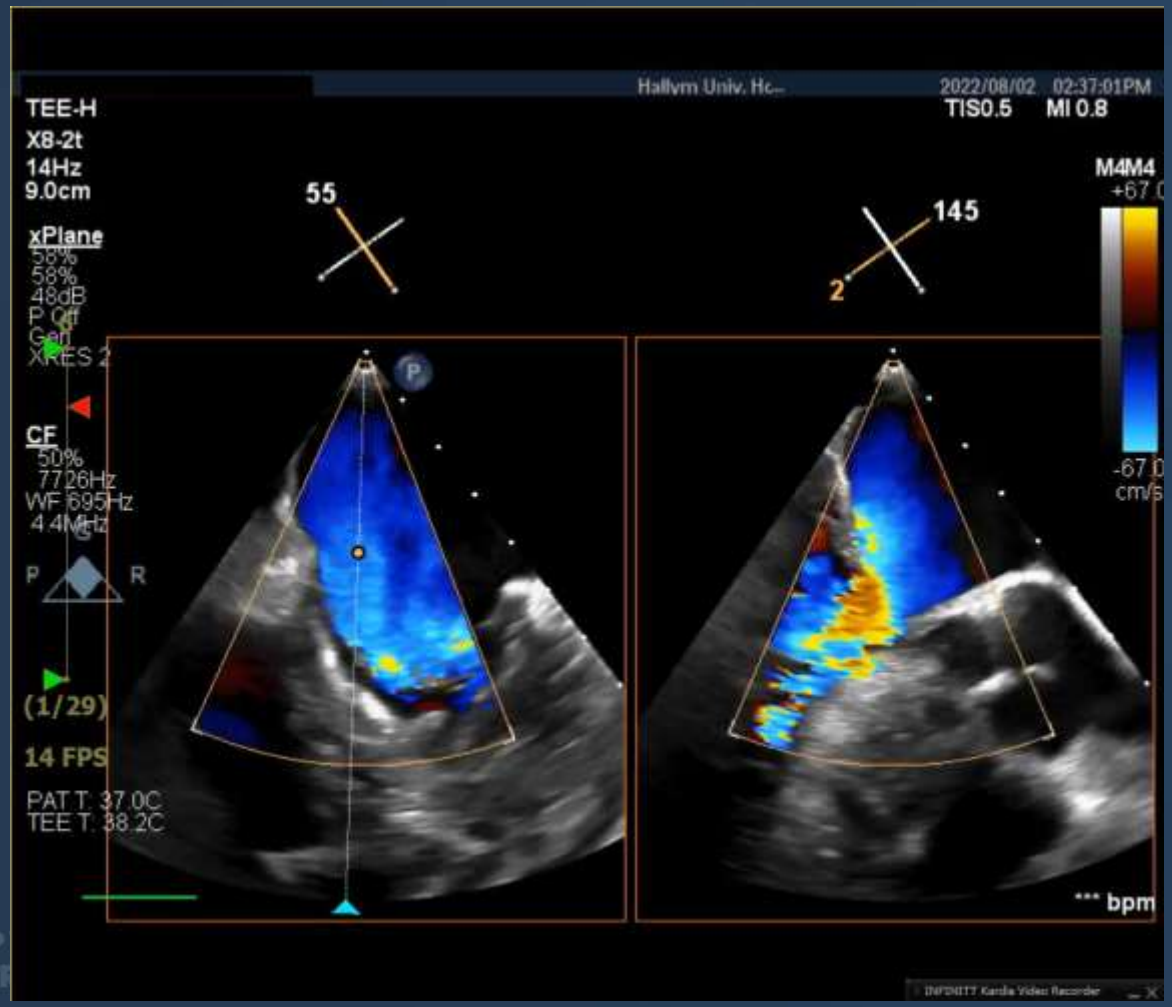
CASE 1

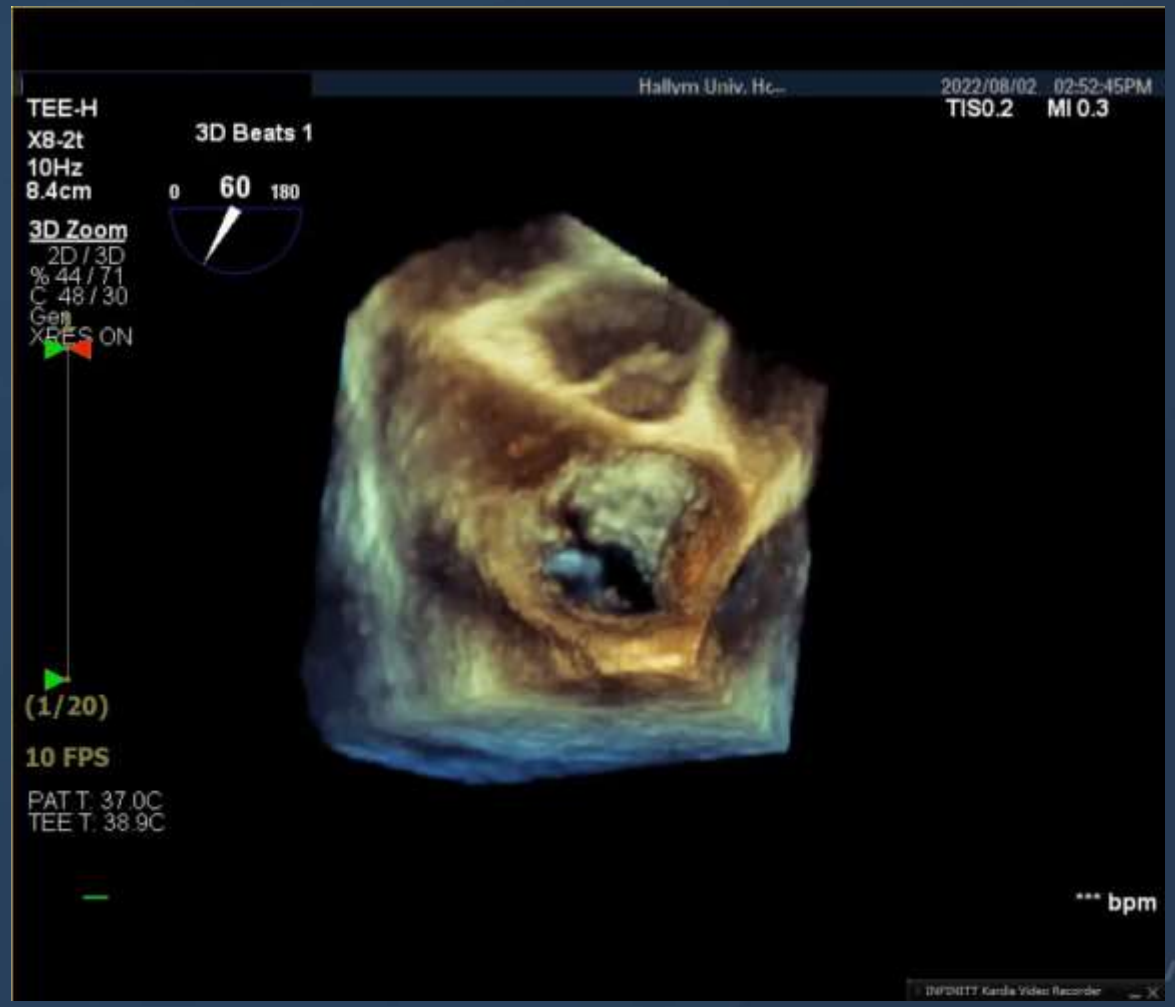




CASE 2

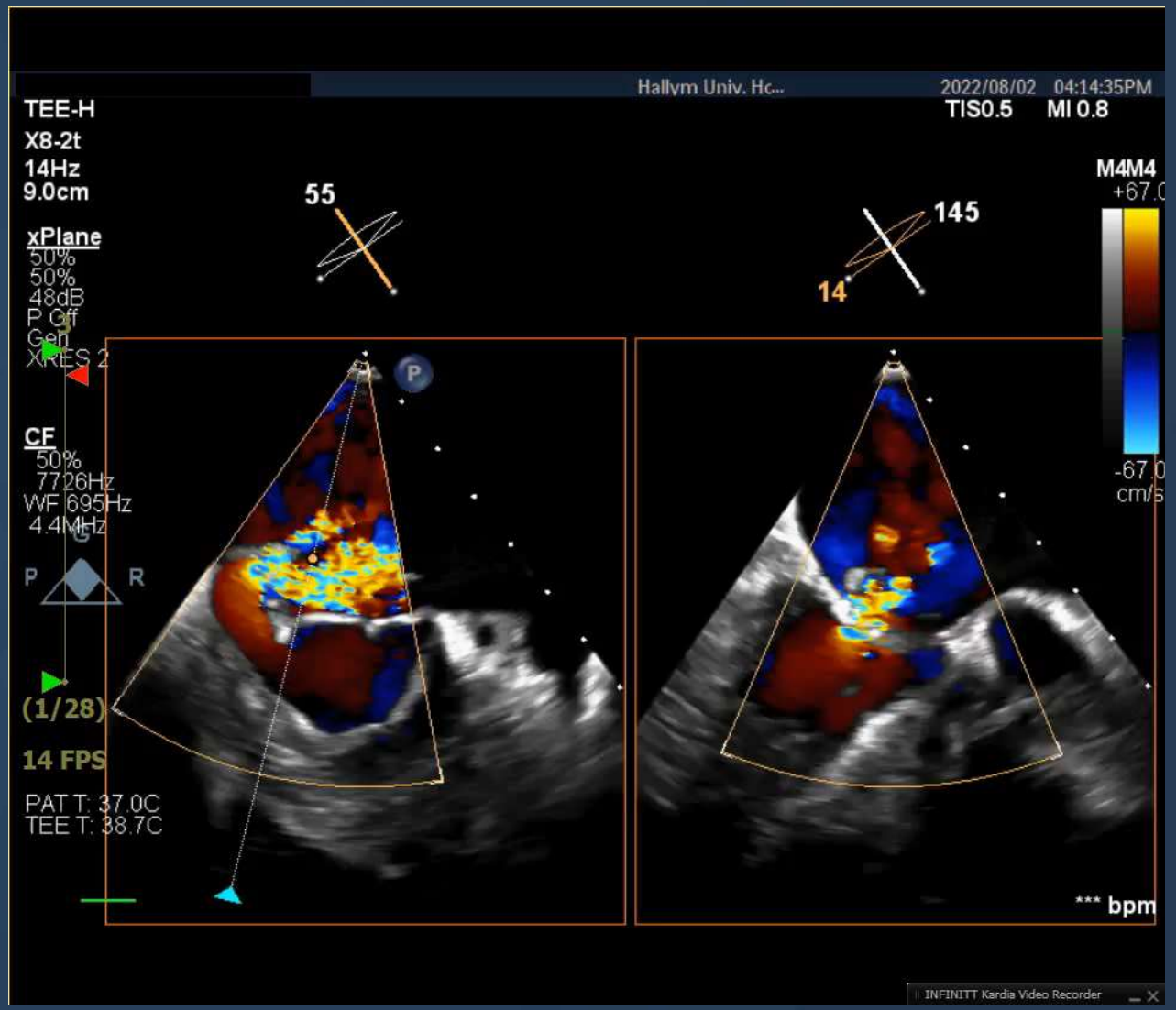
- 57/M, STS score: 4.754, LC (Child pugh C) with HCC, LT candidate
- ECG: paroxysmal AF
- Extremely commissural MR (P3 and PMC flail, flail gap 4.5 mm, width 18 mm)





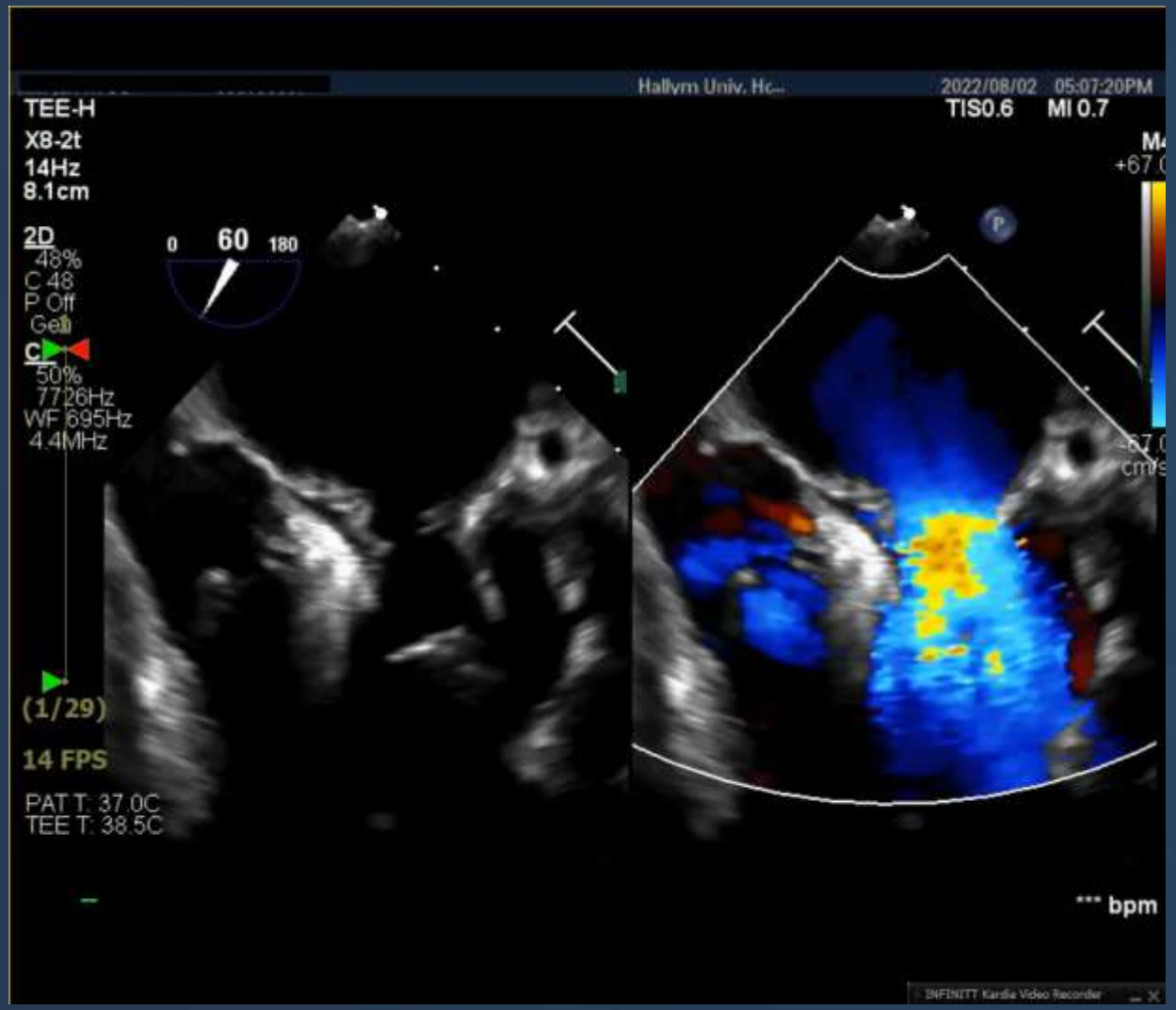
CASE 2

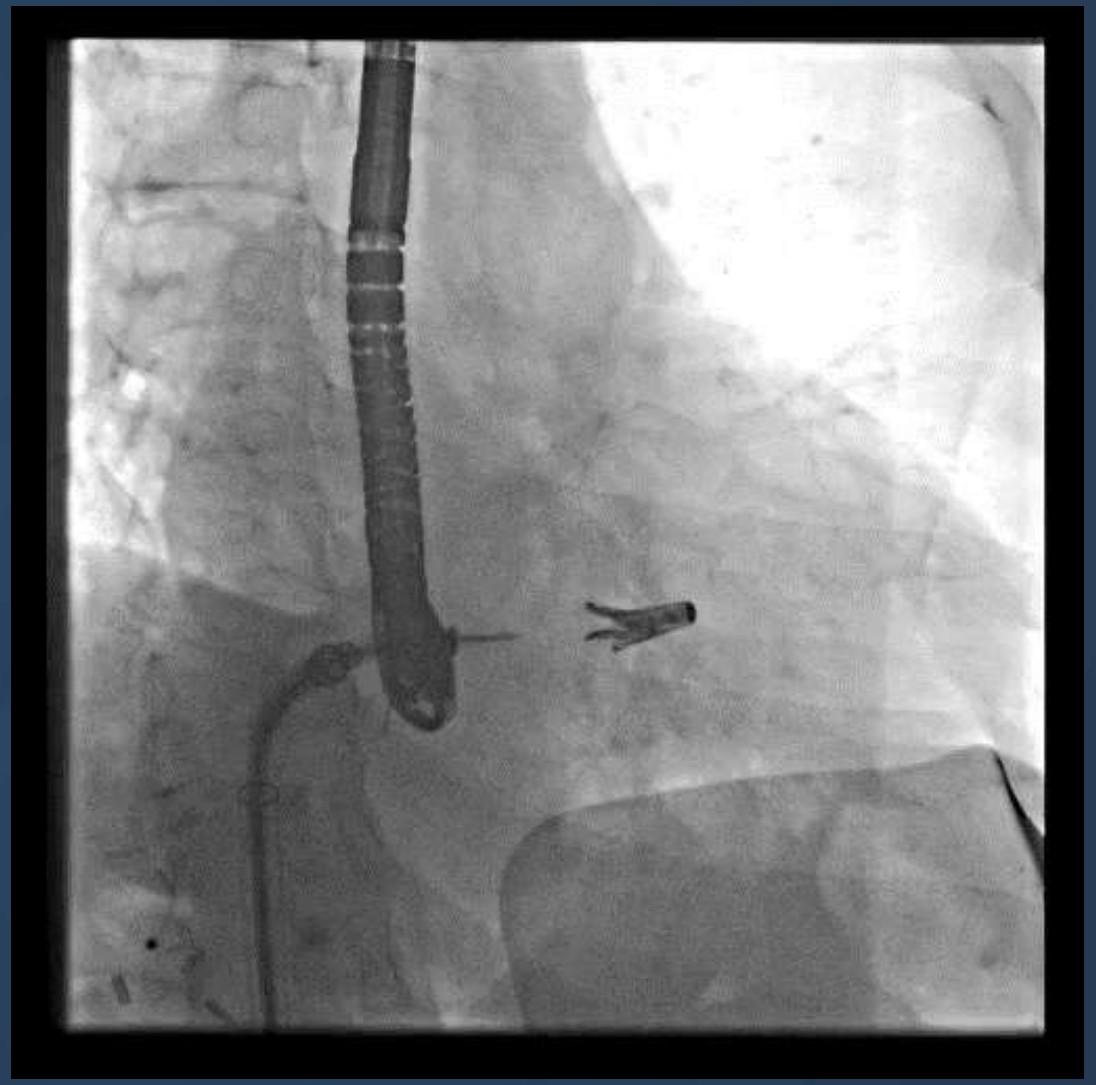

Hallym Univ. Hc...
2022/08/02 04:06:58PM
TIS0.5 MI 0.8
TEE-H
X8-2t
14Hz
9.0cm
M4M4
60
150
14
xPlane
50%
50%
48dB
P Off
Gen
XRES 2
CF
50%
7726Hz
WF 695Hz
4.4MHz
P
R
(1/28)
14 FPS
PAT T: 37.0C
TEE T: 38.4C
*** bpm
INFINITT Kardia Video Recorder


Hallym Univ. Hc...
2022/08/02 04:14:35PM
TIS0.5 MI 0.8
TEE-H
X8-2t
14Hz
9.0cm
M4M4
55
145
14
xPlane
50%
50%
48dB
P Off
Gen
XRES 2
CF
50%
7726Hz
WF 695Hz
4.4MHz
P
R
(1/28)
14 FPS
PAT T: 37.0C
TEE T: 38.7C
*** bpm
INFINITT Kardia Video Recorder

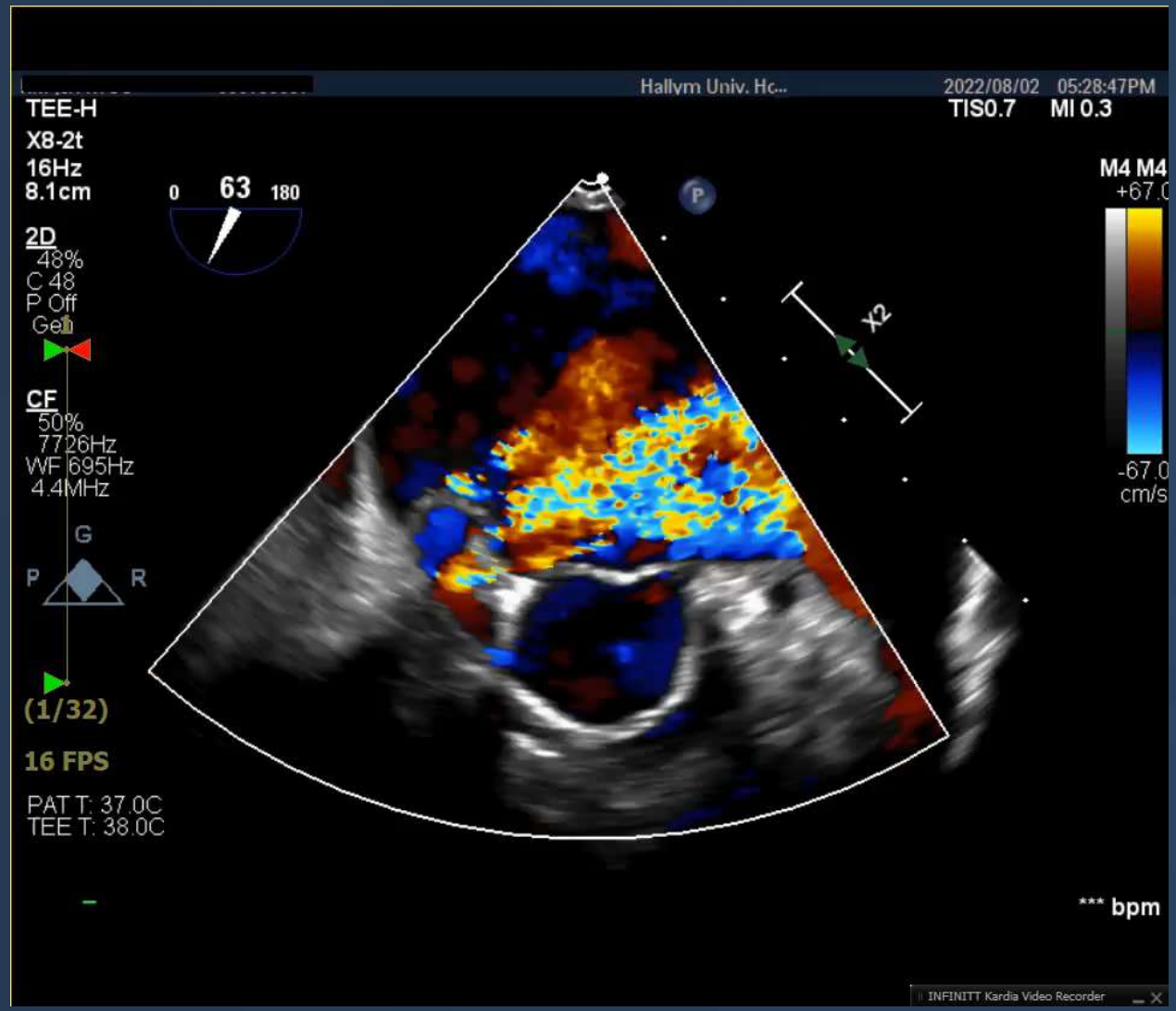
CASE 2

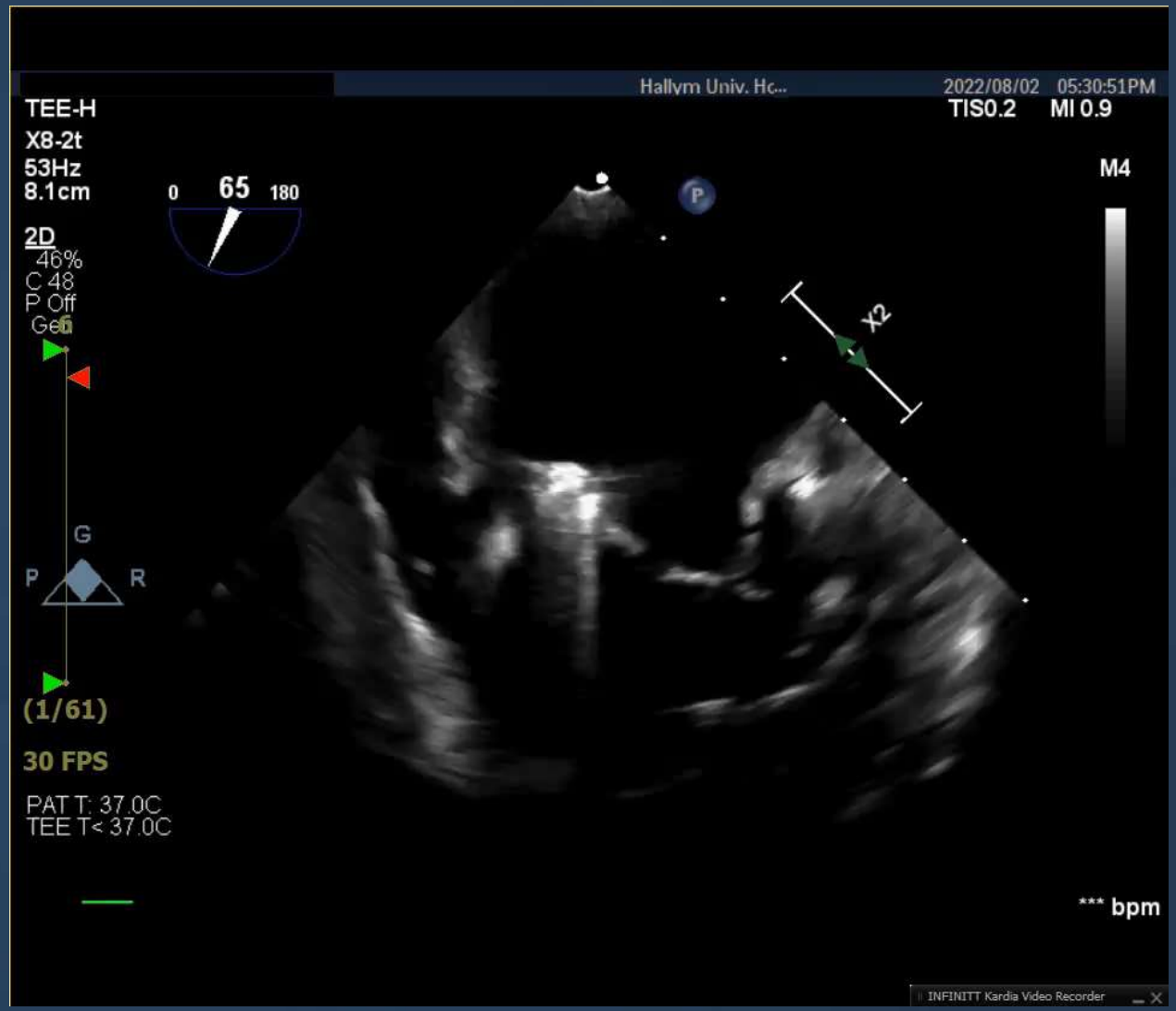
CASE 2


Hallym Univ. Hc...
2022/08/02 05:07:20PM
TEE-H
X8-2t
14Hz
8.1cm
TIS0.6 MI 0.7
2D
48%
C 48
P Off
Gain
C
50%
7726Hz
WF 695Hz
4.4MHz
0 60 180
(1/29)
14 FPS
PAT T: 37.0C
TEE T: 38.5C
*** bpm
INFINITT Kardia Video Recorder



CASE 2





→ **Surgical conversion**

CASE 2

OP findings

- ✓ **Single leaflet detachment of posterior leaflet**
- ✓ **PML is very thickened**
- ✓ **Many chordae rupture**

→ **Replacement by tissue valve**

Conclusion

- Commissural MR is challengable for TEER so far.
- However, concept of TEER is suitable for commissural MR like surgical commissural closure.
- So, preprocedural planning such as location, number of clip, etc. is very important.
- In a few latest published cases, commissural MR used by two clips and vascular plug on the gap between two clips is treated successfully.
- However, especially for beginner, should be vey careful and conscious!!!
- If you are beginner, Must consider again open surgery!!!