

# Are all patients with DMR the same ? Surgical implications

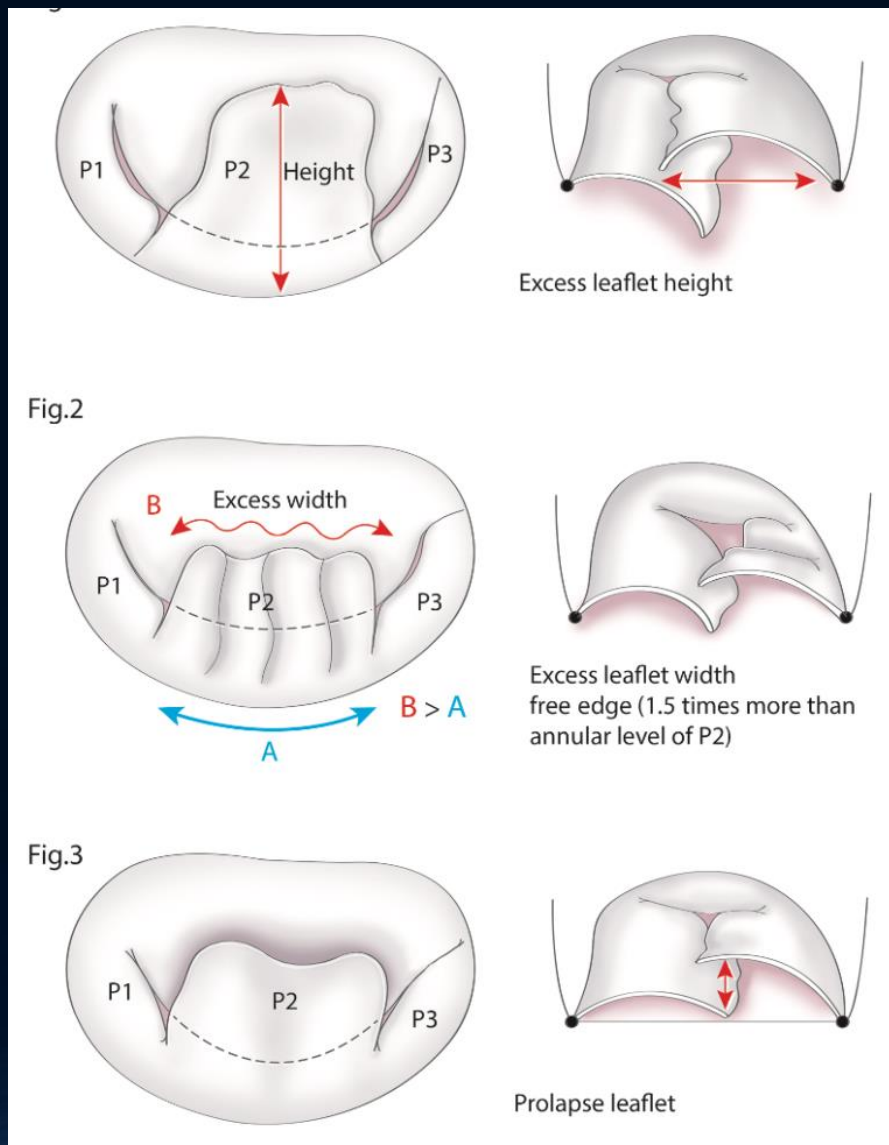
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INSTITUT MONTSOURIS, PARIS

**Eurovalve 2021** – Liège, Belgium

# DMR Most Common Lesions

3 lesions MUST  
be addressed



**Excess height**

**Excess width**

**Prolapse**

# DMR Other Lesions

- Commissural prolapse ( billowing ? )
- Anterior leaflet prolapse
- Bi leaflet prolapse
- MAC
- MAD

All patients with DMR are not the same at all

- **Respect rather than resect**
- **Resect with respect**



# PL Prolapse

## 2 GoreTex® 1 Ring 2 Years after



# Resect with Respect

- RESECTION AIMS TO SUPPRESS EXCESS TISSUE WHICH IS THE FATE OF CHRONIC MR
- RESECTION AIMS TO REDUCE EXCESS HEIGHT , EXCESS WIDTH OR BOTH

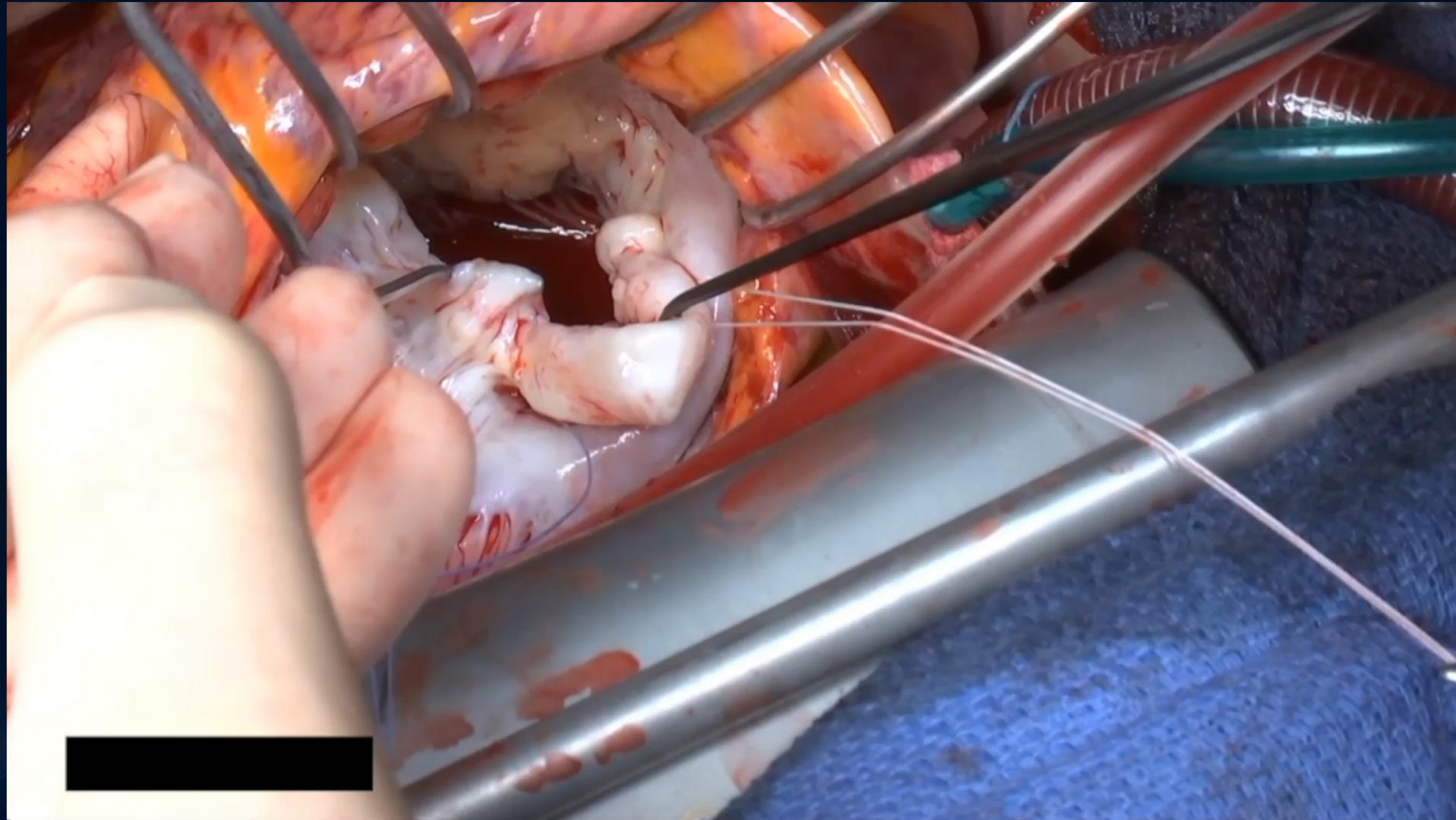
# Resect with Respect

RESECTION CAN EITHER BE :

- TRIANGULAR
- QUADRANGULAR WITH SLIDING
- TRANSVERSAL
- BUTTERFLY / ASYMMETRICAL

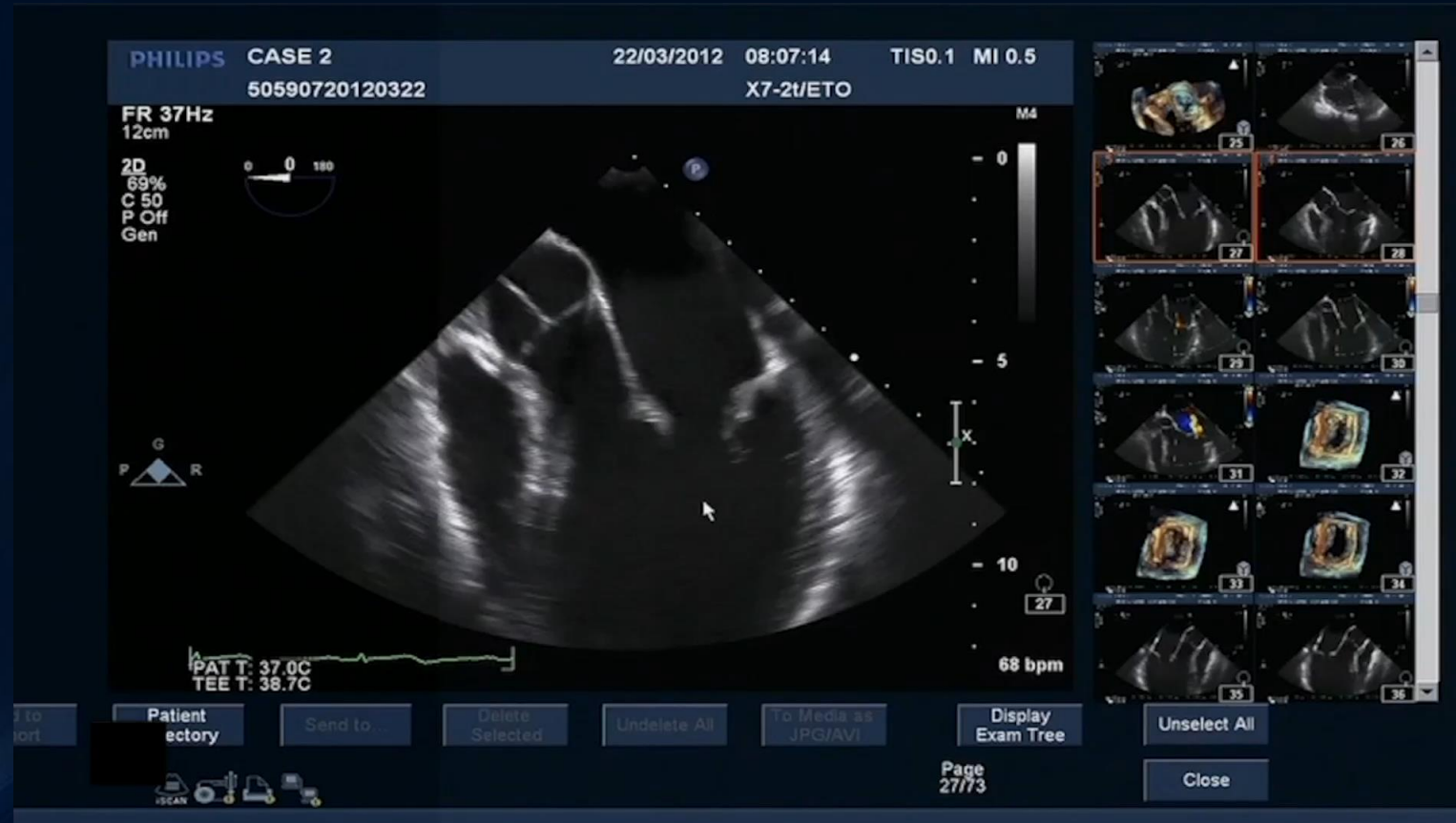


# Posterior Leaflet Prolapse and PC Prolapse





# Bi Leaflet Prolapse and PC Prolapse



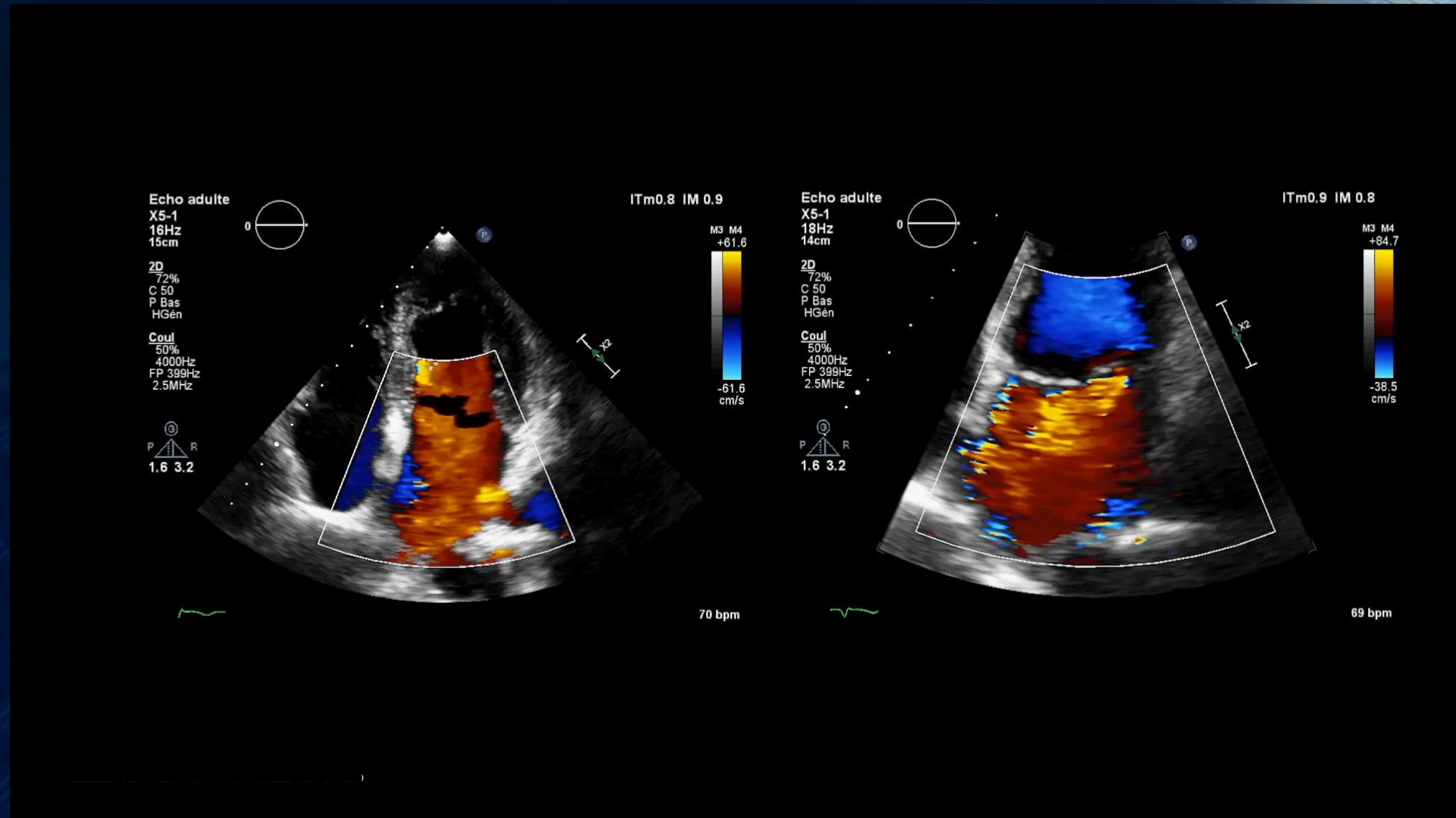
# Papillary Muscle Repositionning



**PAPILLARY  
MUSCLE  
REPOSITIONNING**

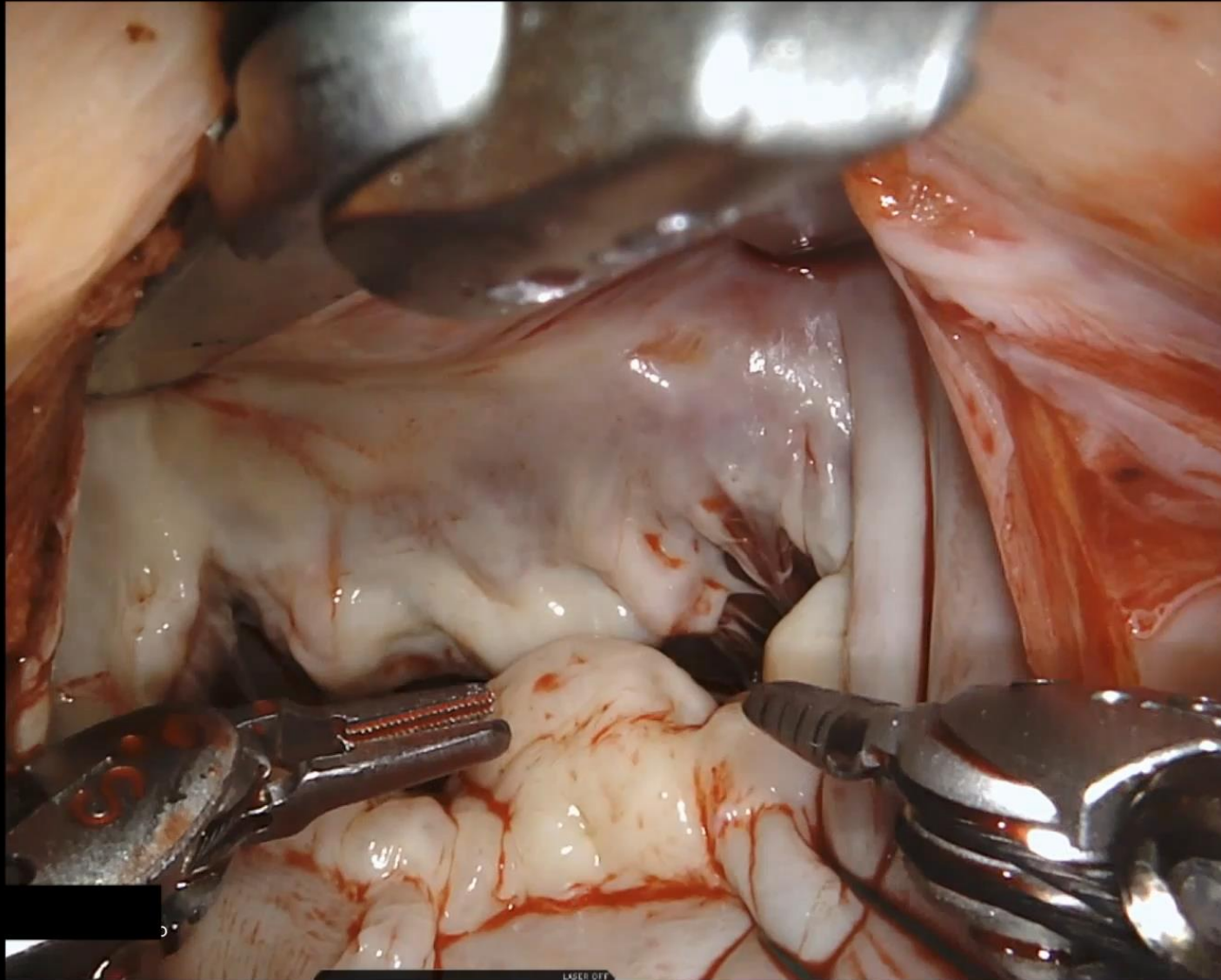
Pr. Gilles DREYFUS - 2

# Triangular Resection as Sole Technique

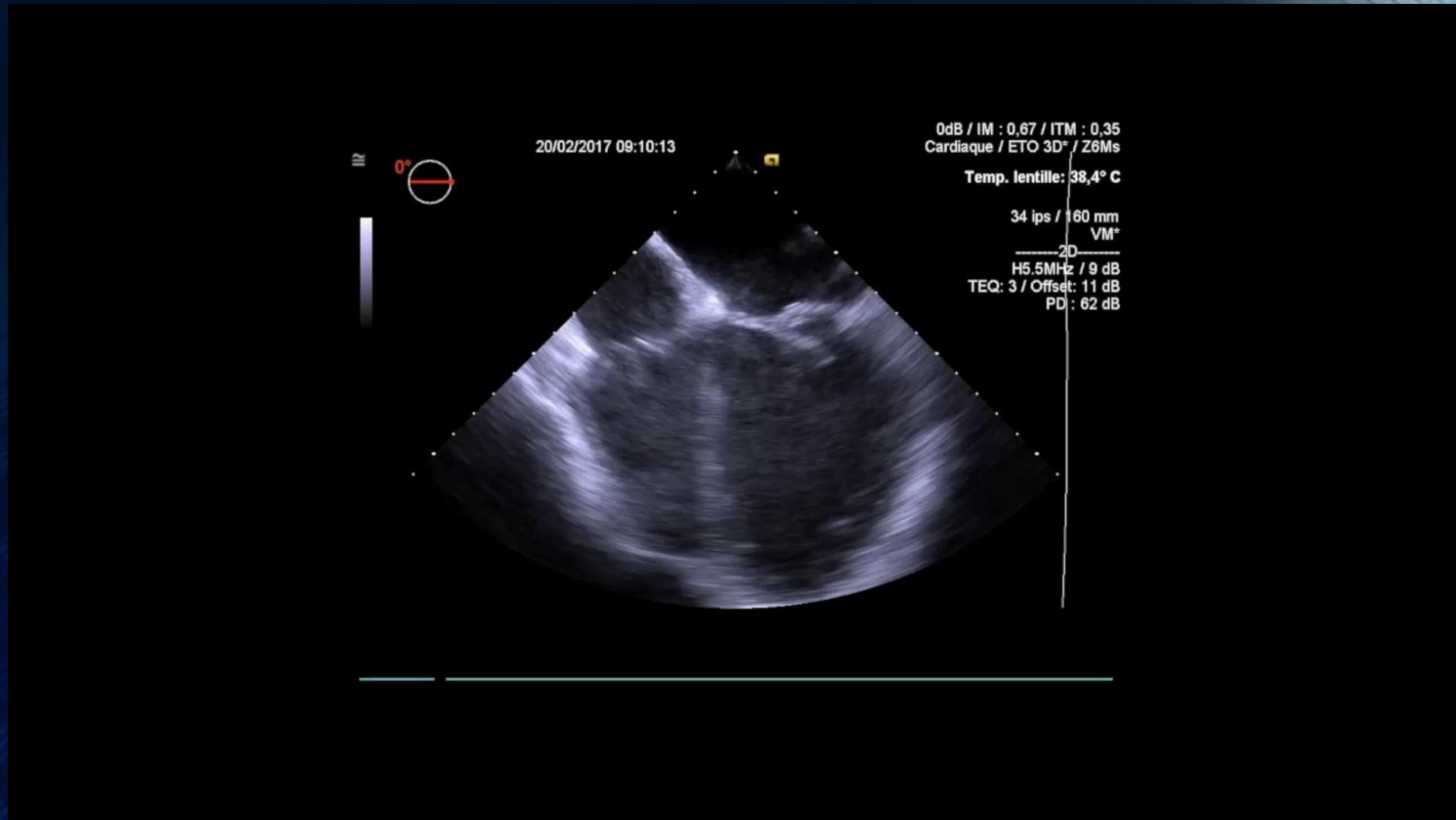




# Triangular Resection for Excess Width, Height and Prolapse

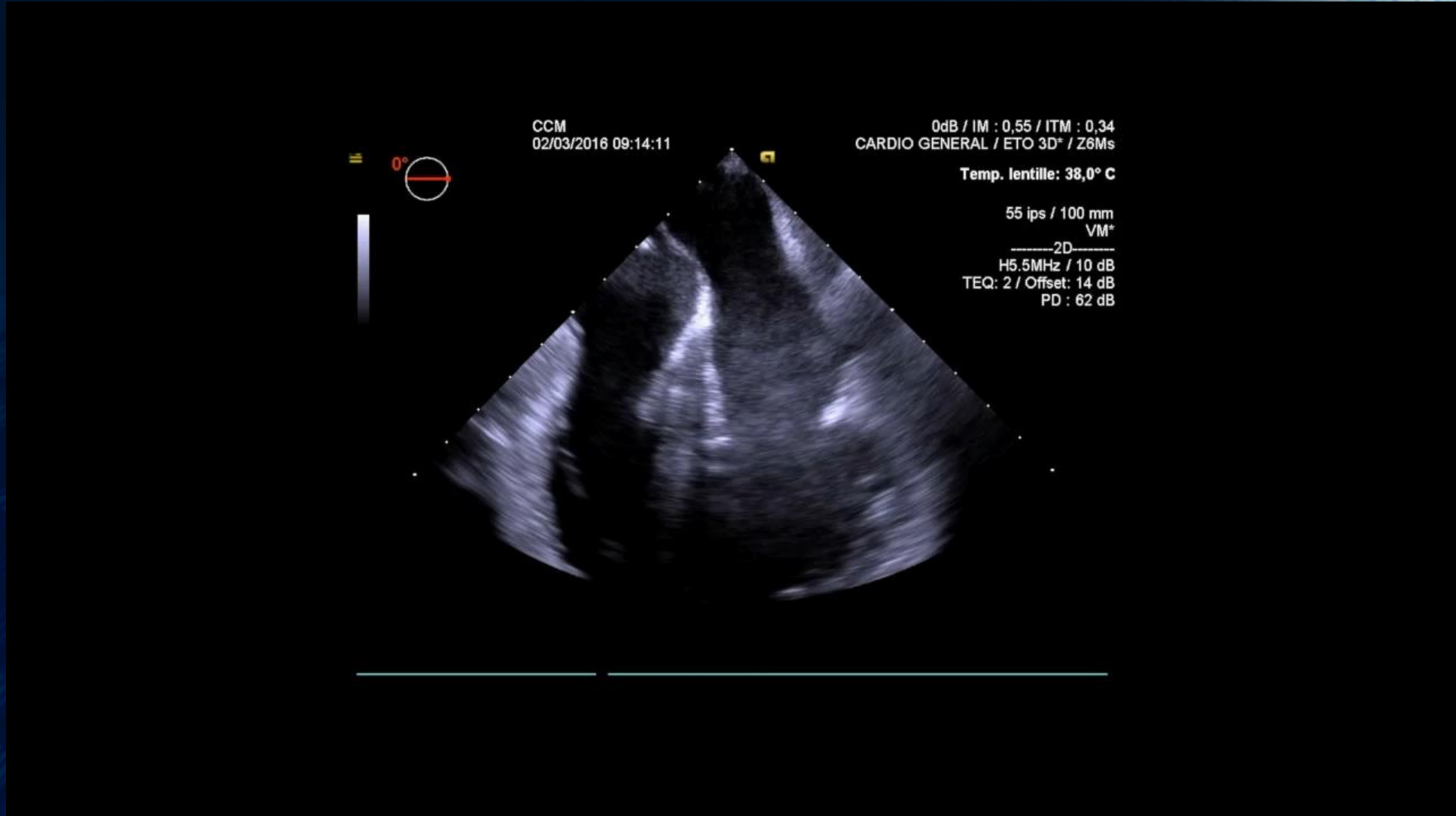


# Transversal Resection with Neo Chordae Resuspension





# Transversal Resection with Native Chordae Resuspension



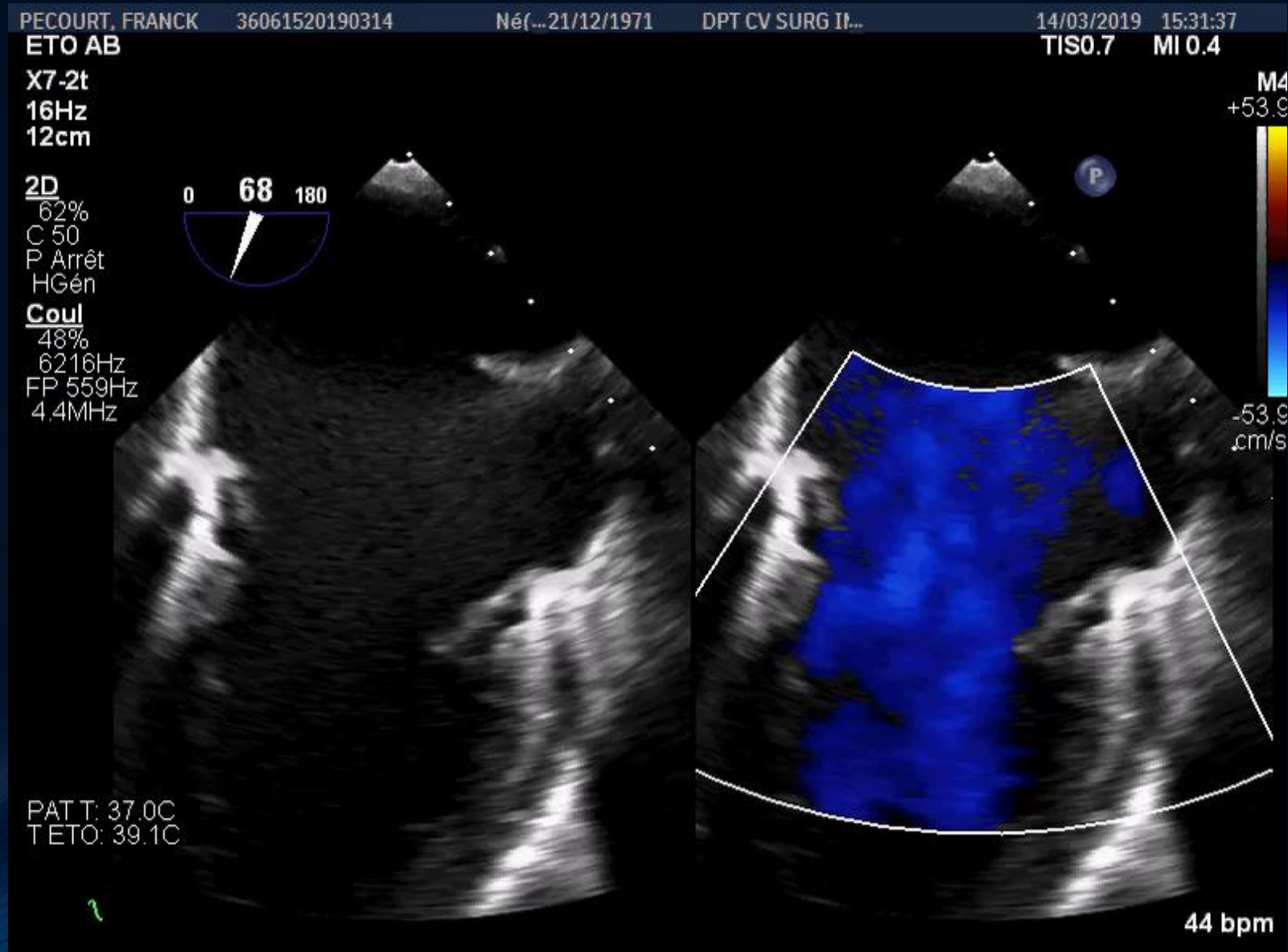


## Two issues

- Massive annular calcification
- Mitro annular disjunction (MAD)

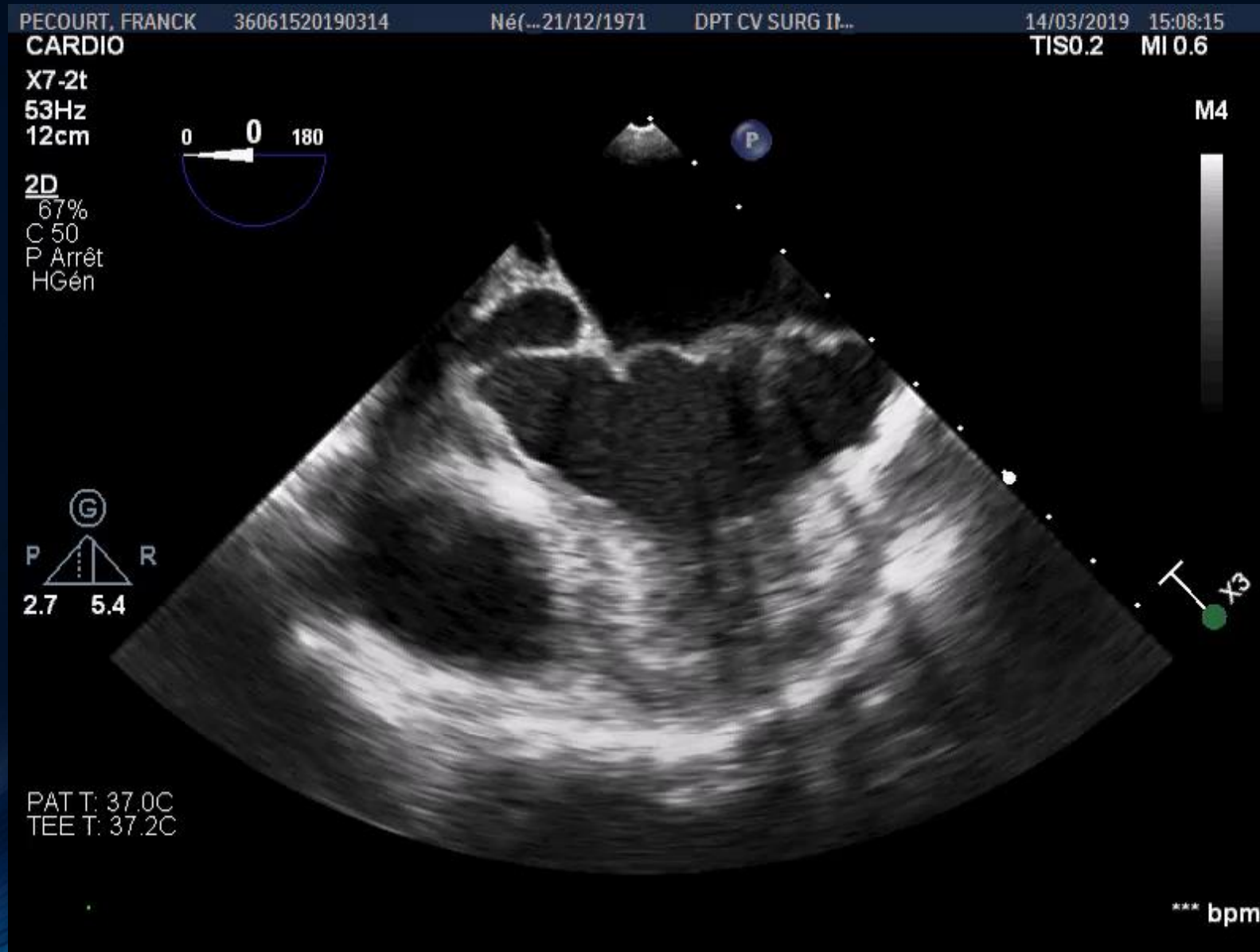
# Massive Annular Calcification

# Preop T.O.E.

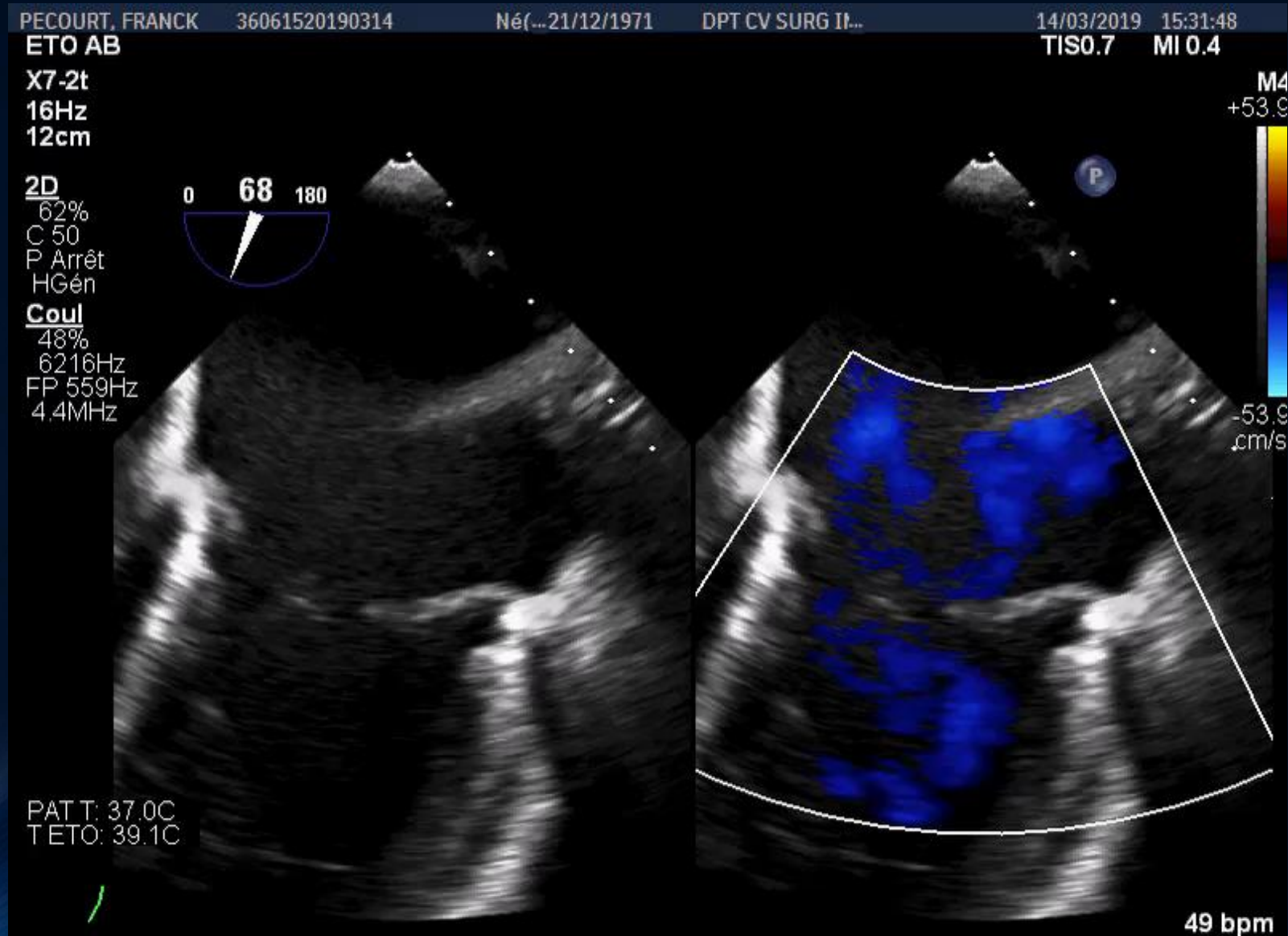




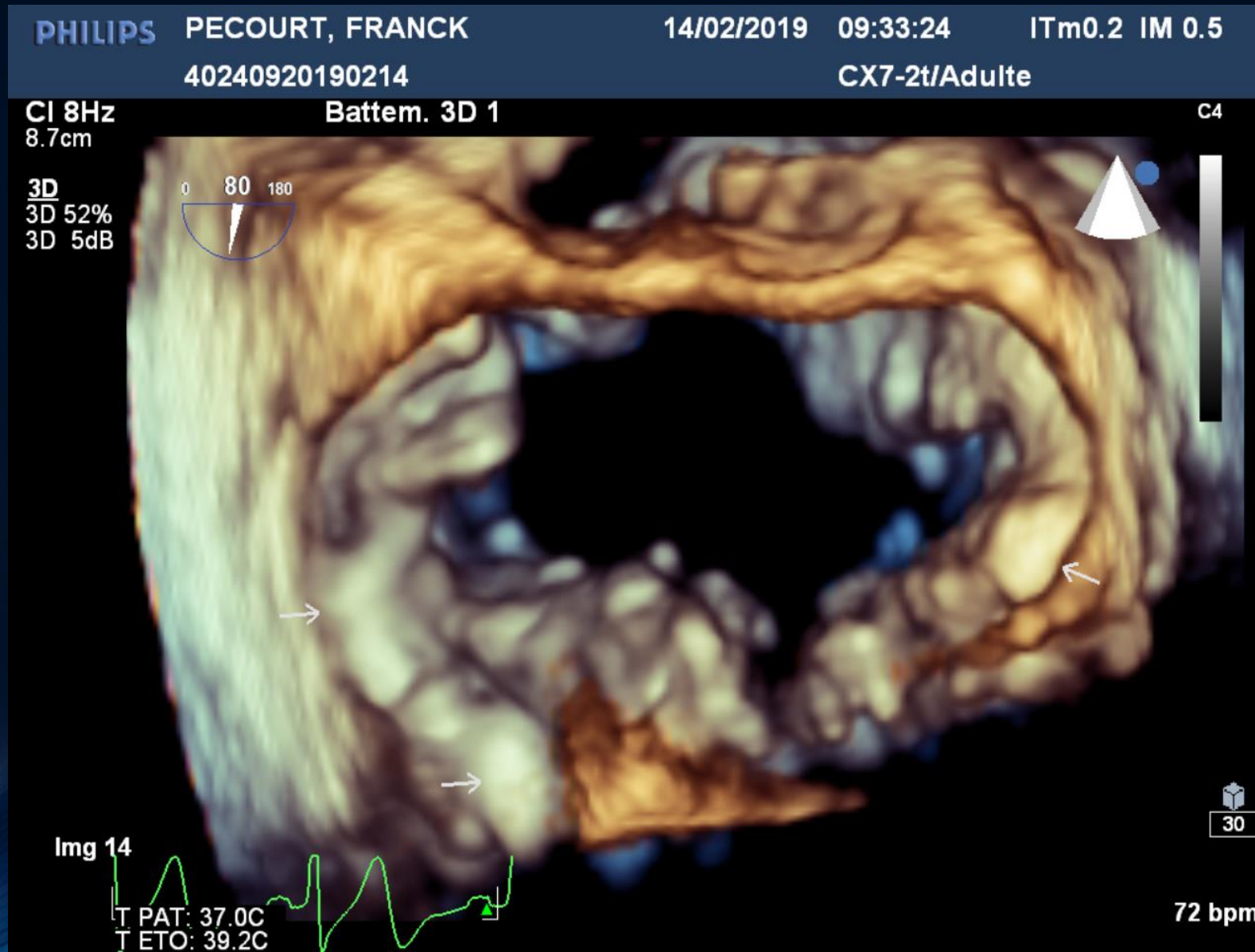
# Preop T.O.E.



# Preop T.O.E.



# Preop T.O.E.

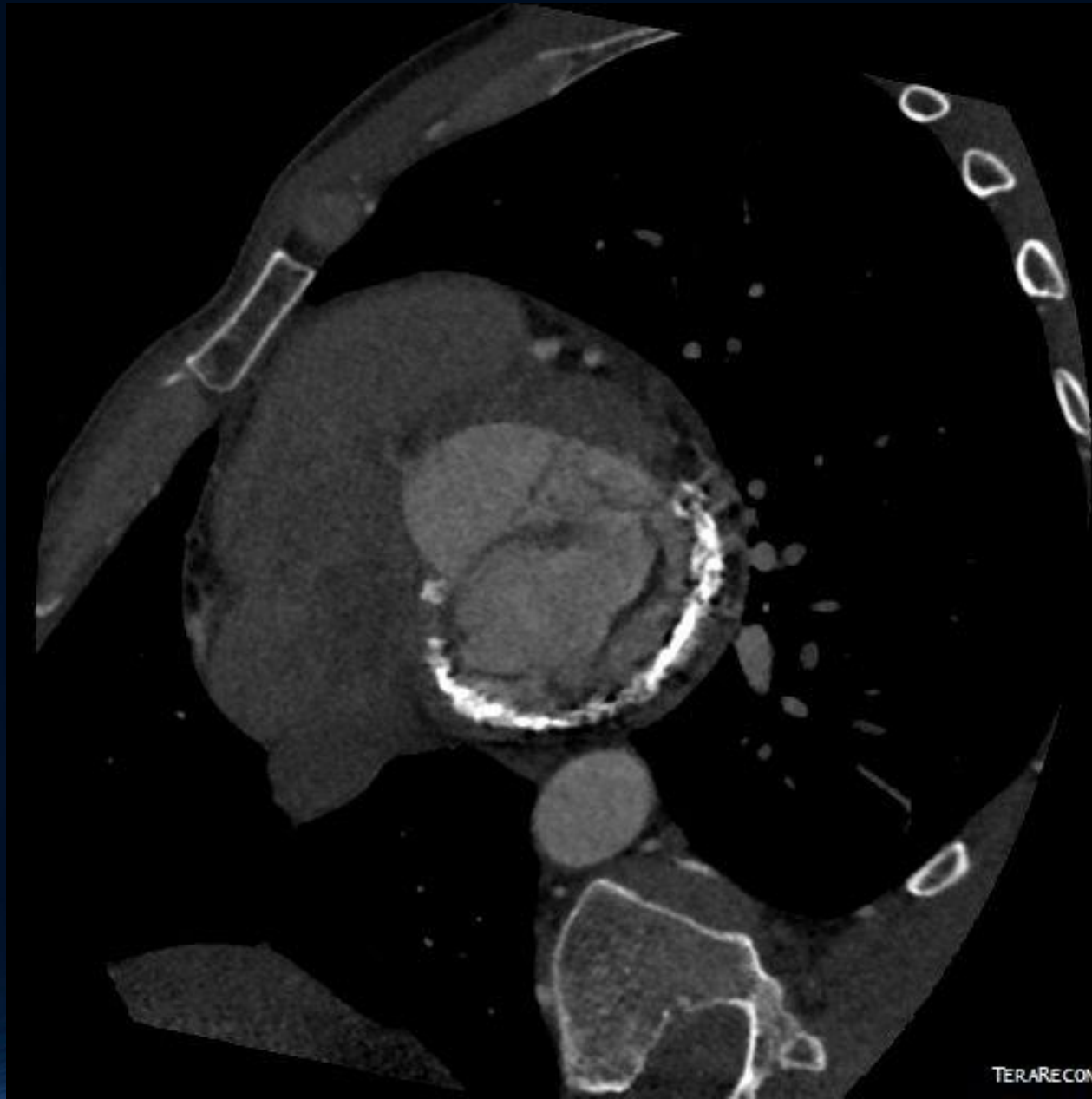




# Preop T.O.E.



# CT Scan

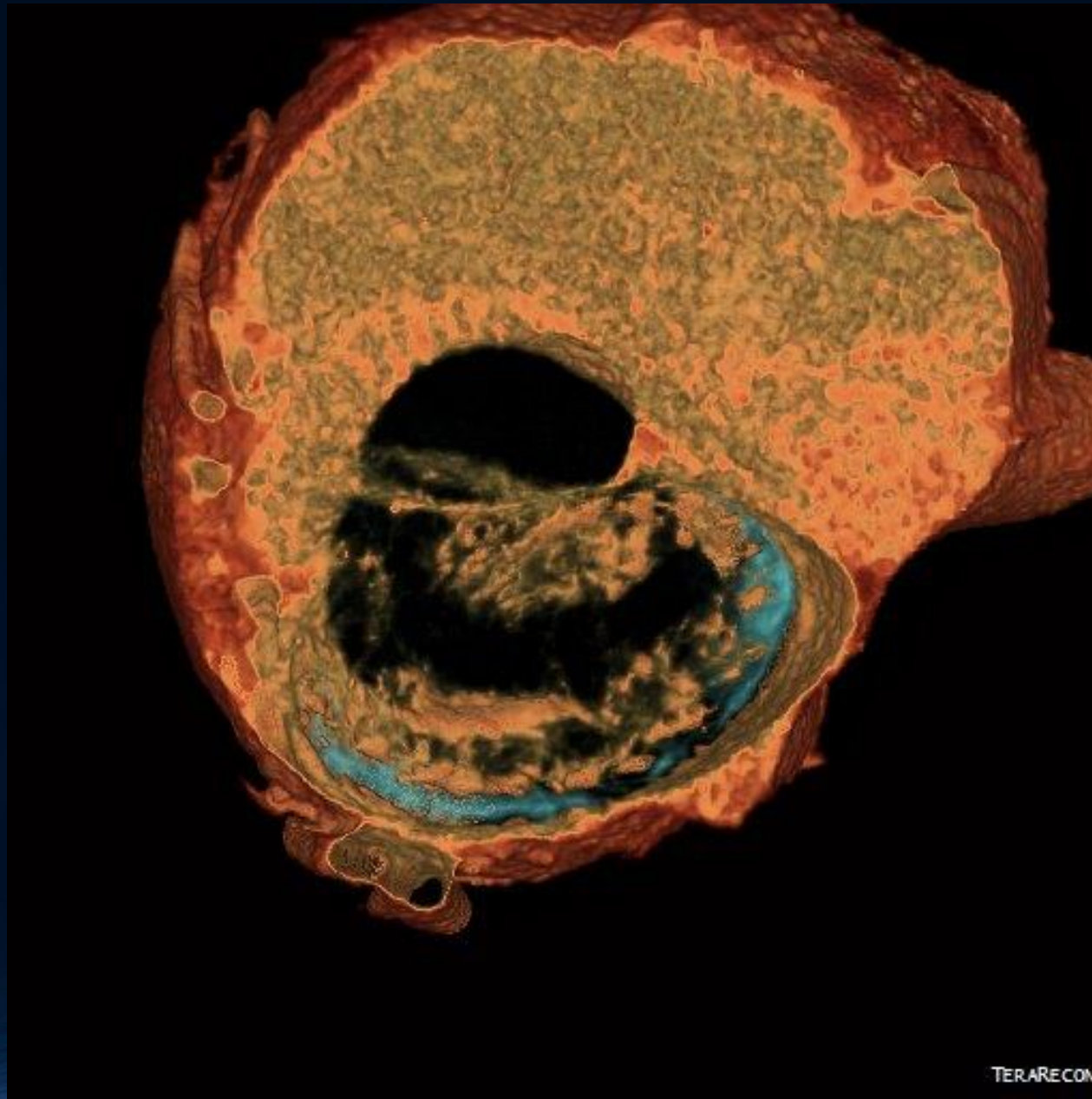


# CT Scan

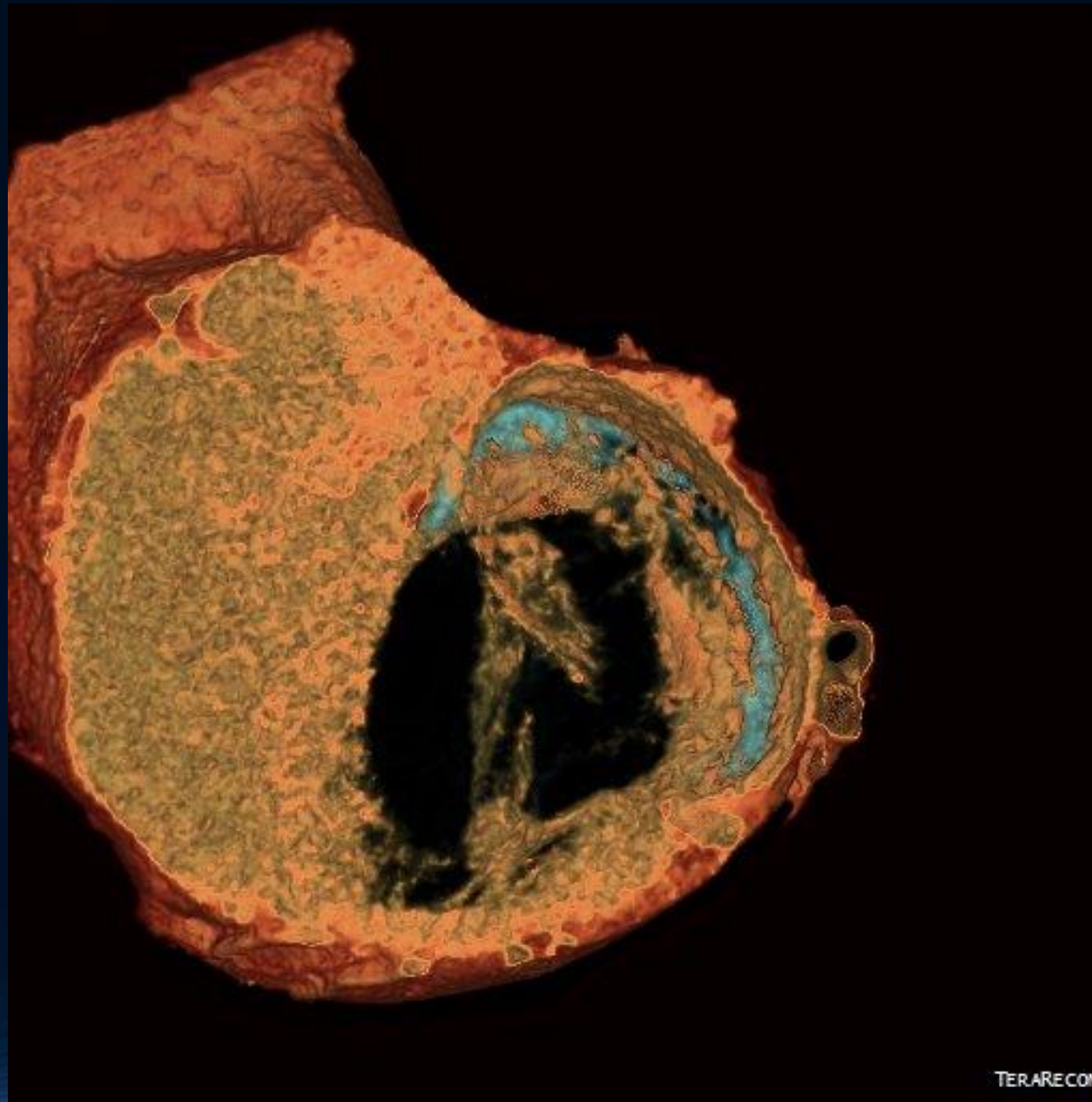




# 3D CT Scan

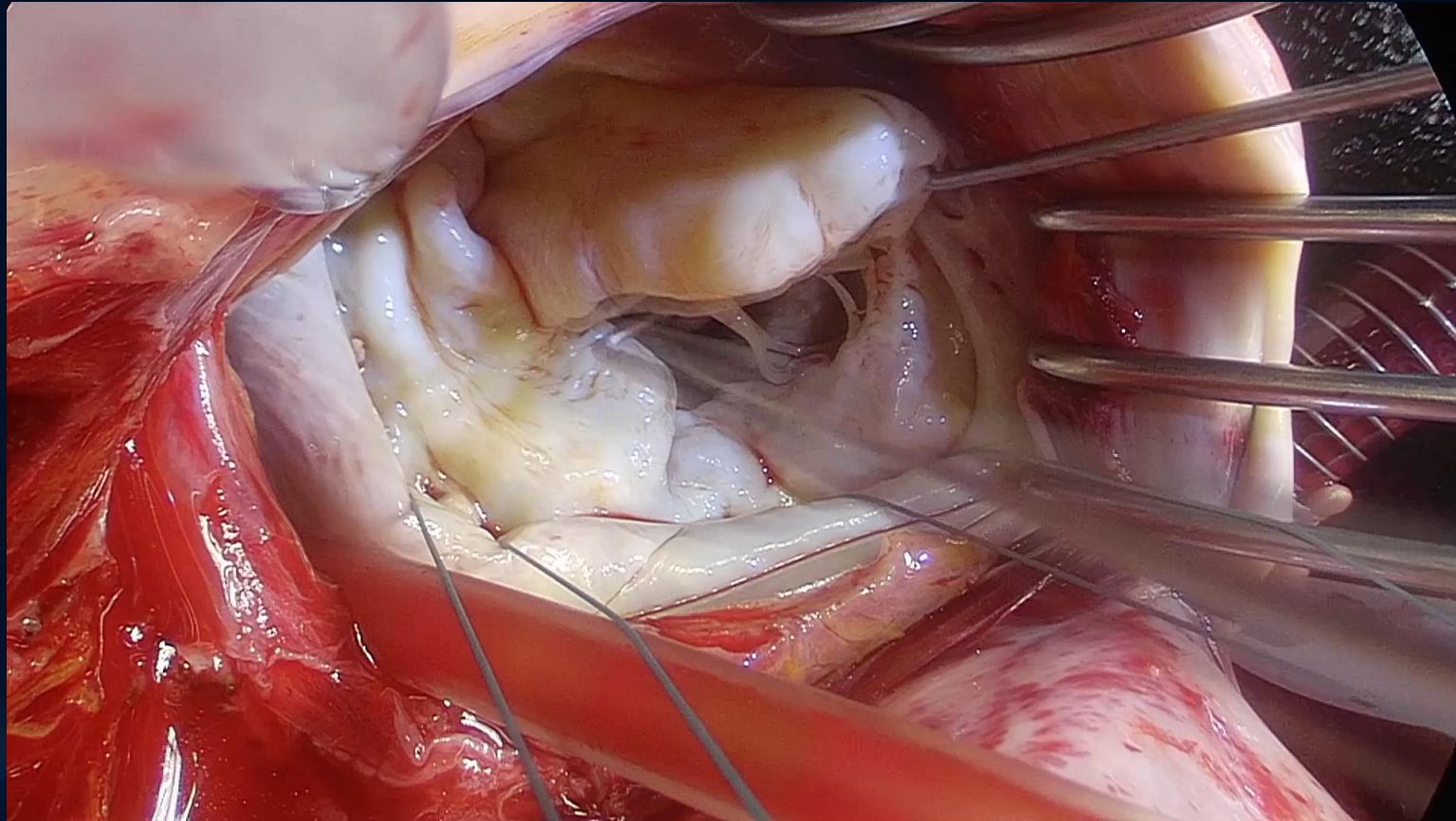


# 3D CT Scan



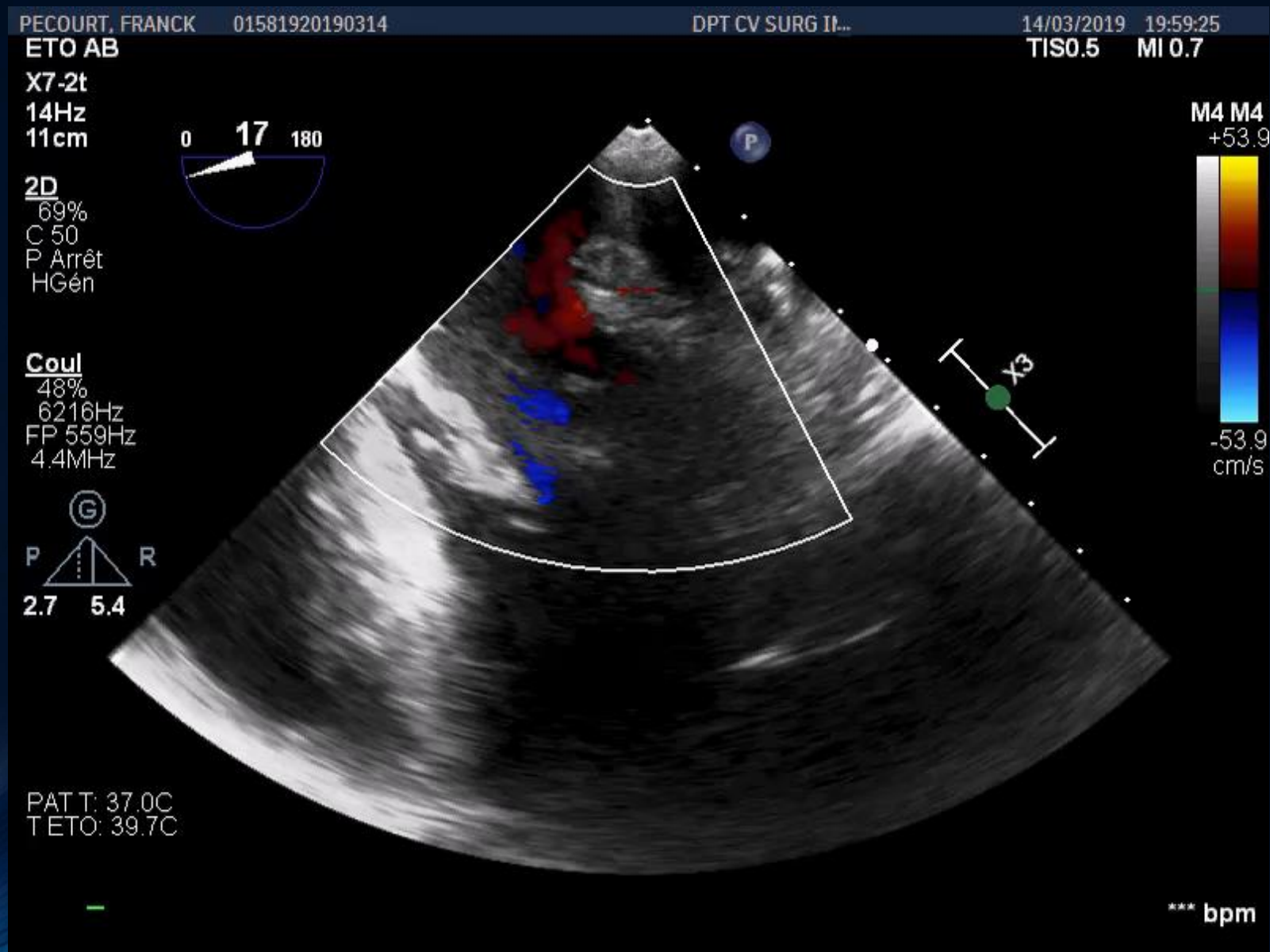


# Surgical Technique

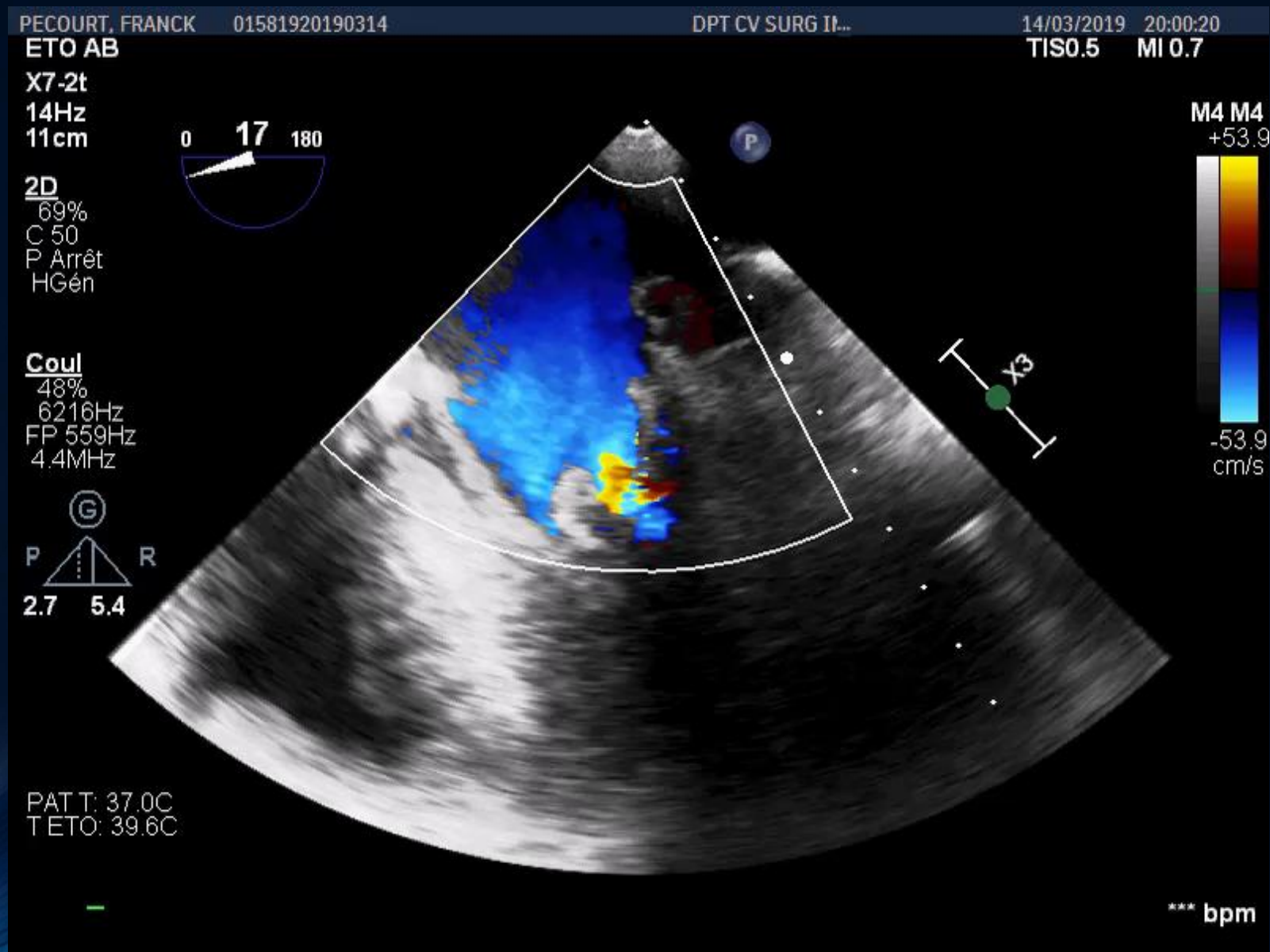




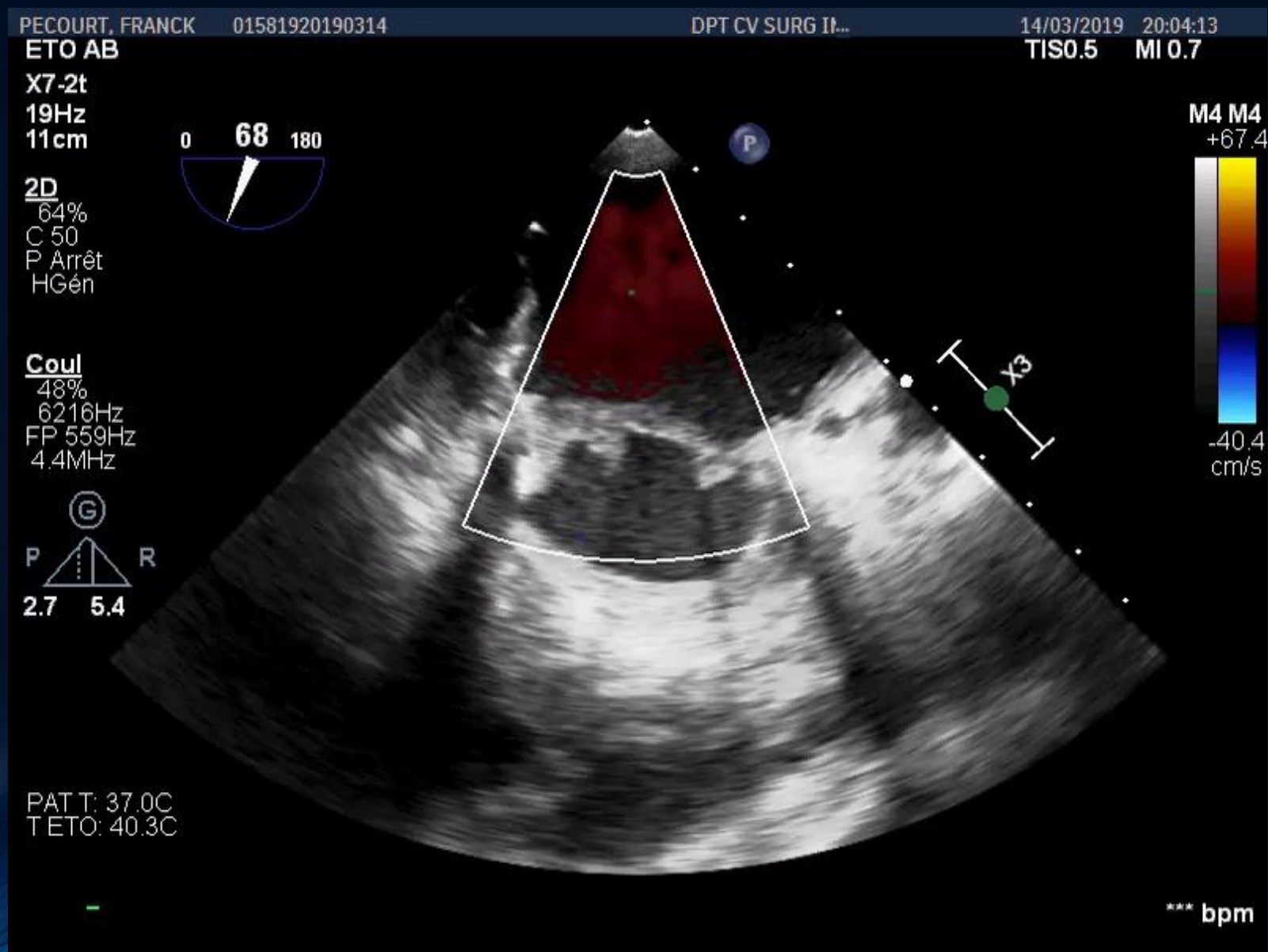
# Post op T.O.E.



# Post op T.O.E.

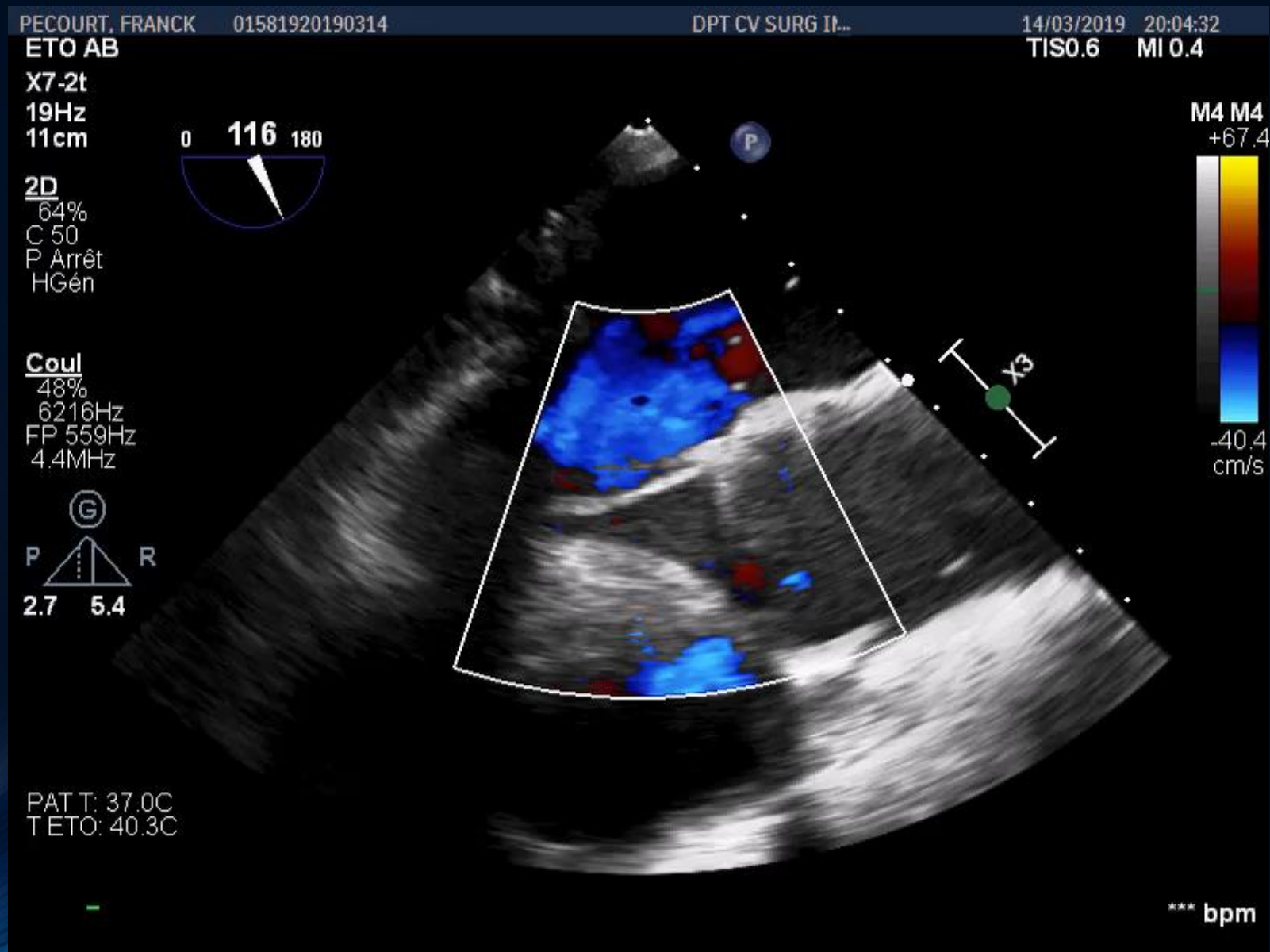


# Post op T.O.E.





# Post op T.O.E.



# Can You Repair A Prolapse Just with A Ring?

Just in MAD only in MAD

# Repairing prolapse just with a ring

- **Yes you can !!!**

Can be a dangerous message

- **In very highly selected cases of AV disjunction  
in Barlow's diseases**



# The AV Disjunction Mechanism

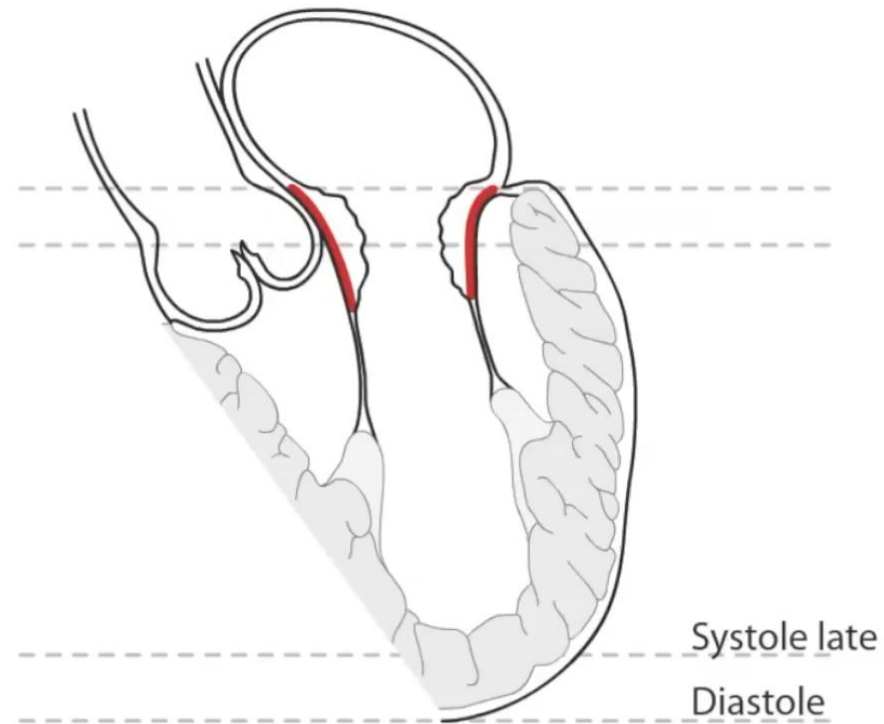


Illustration  
Manon Zuurmond  
[www.manonproject.com](http://www.manonproject.com)

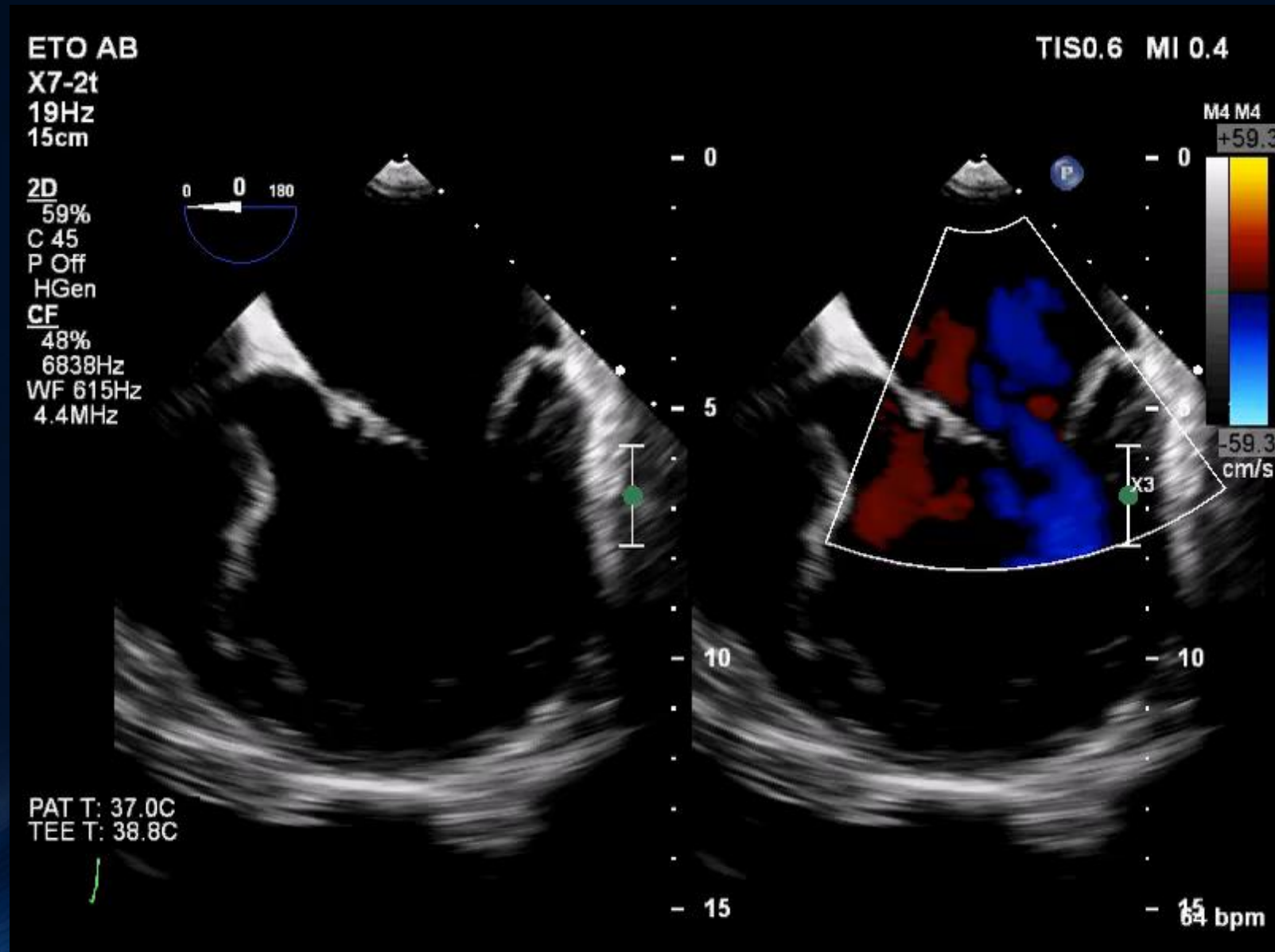
Animation  
Dana Hamers  
[www.scientific-art.nl](http://www.scientific-art.nl)

Courtesy R. Klaus

# Key Echocardiographic Features

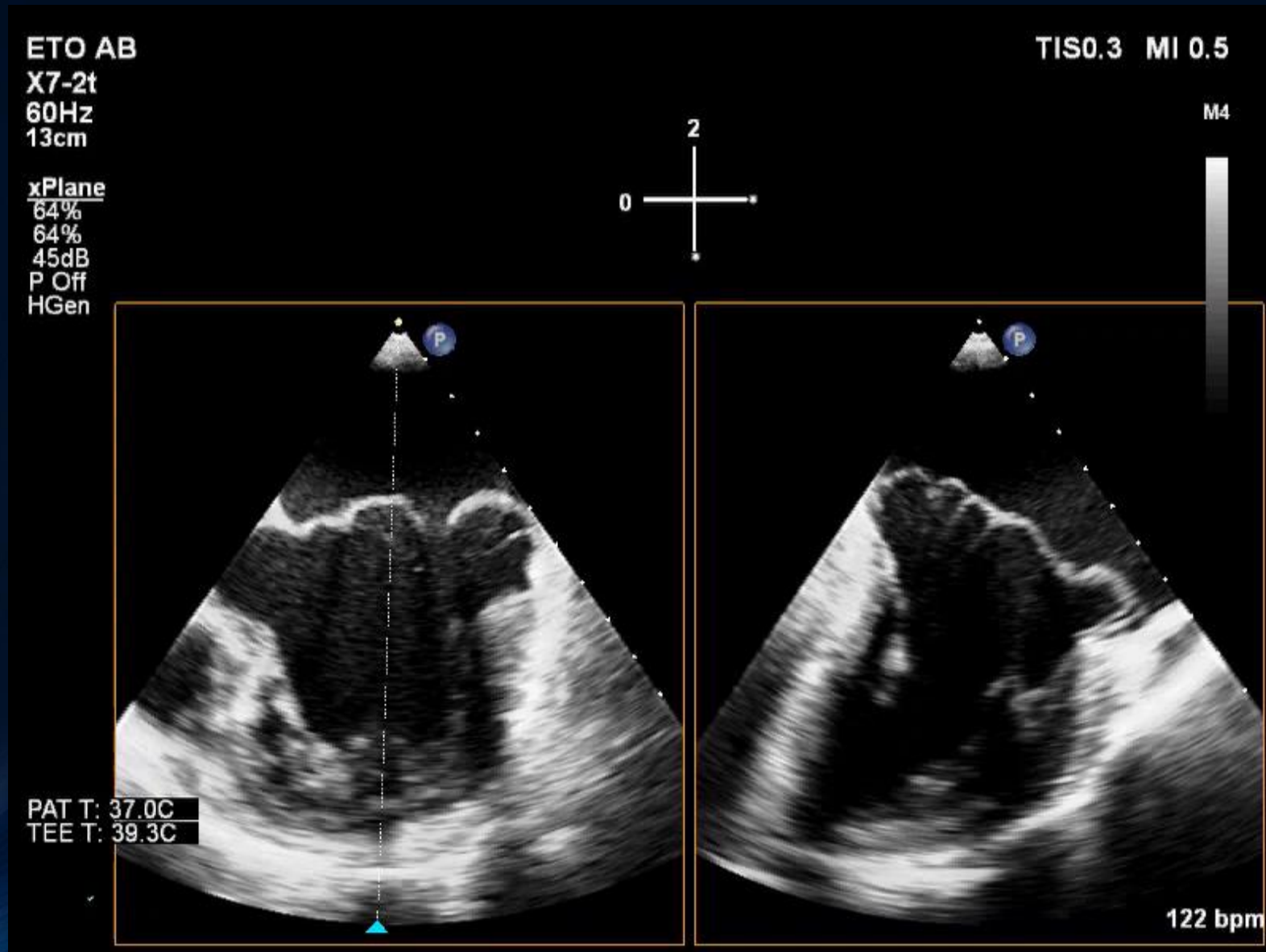
- Symmetrical “prolapse”
- No bulgy septum
- Centrally directed regurgitation jet
- MR maybe ‘moderate’ to ‘severe’

# The AV Disjunction Features

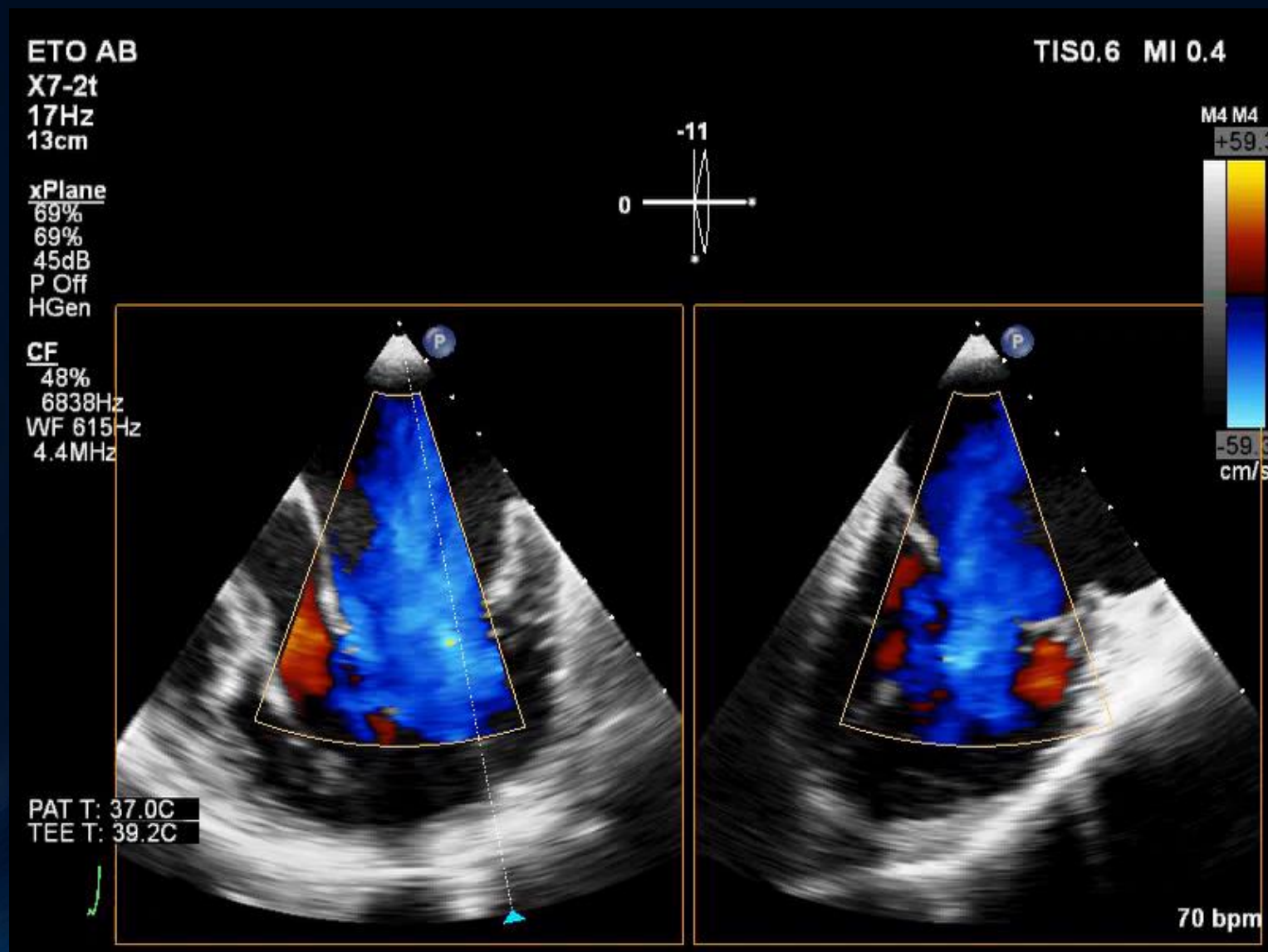




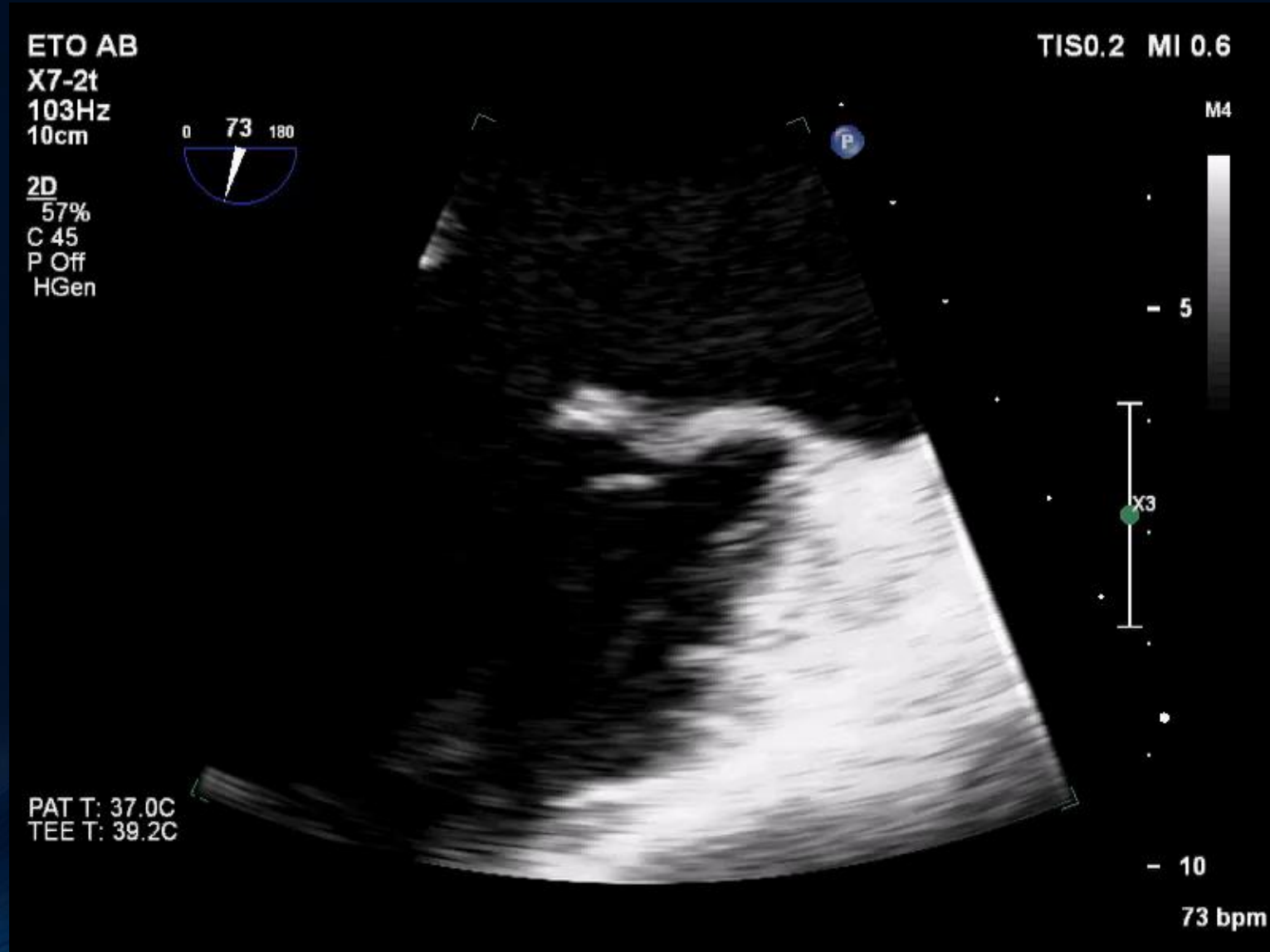
# The AV Disjunction Features



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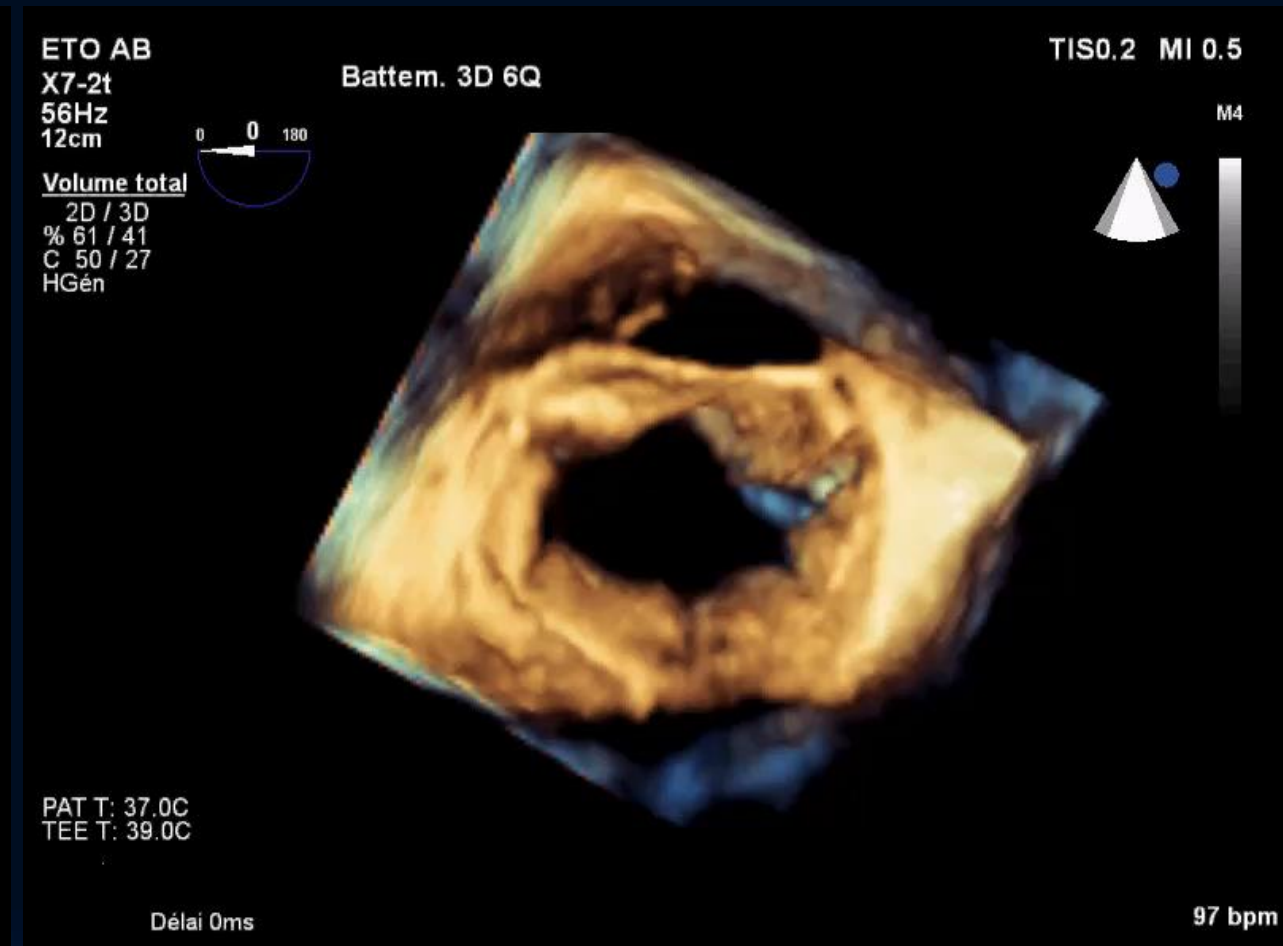
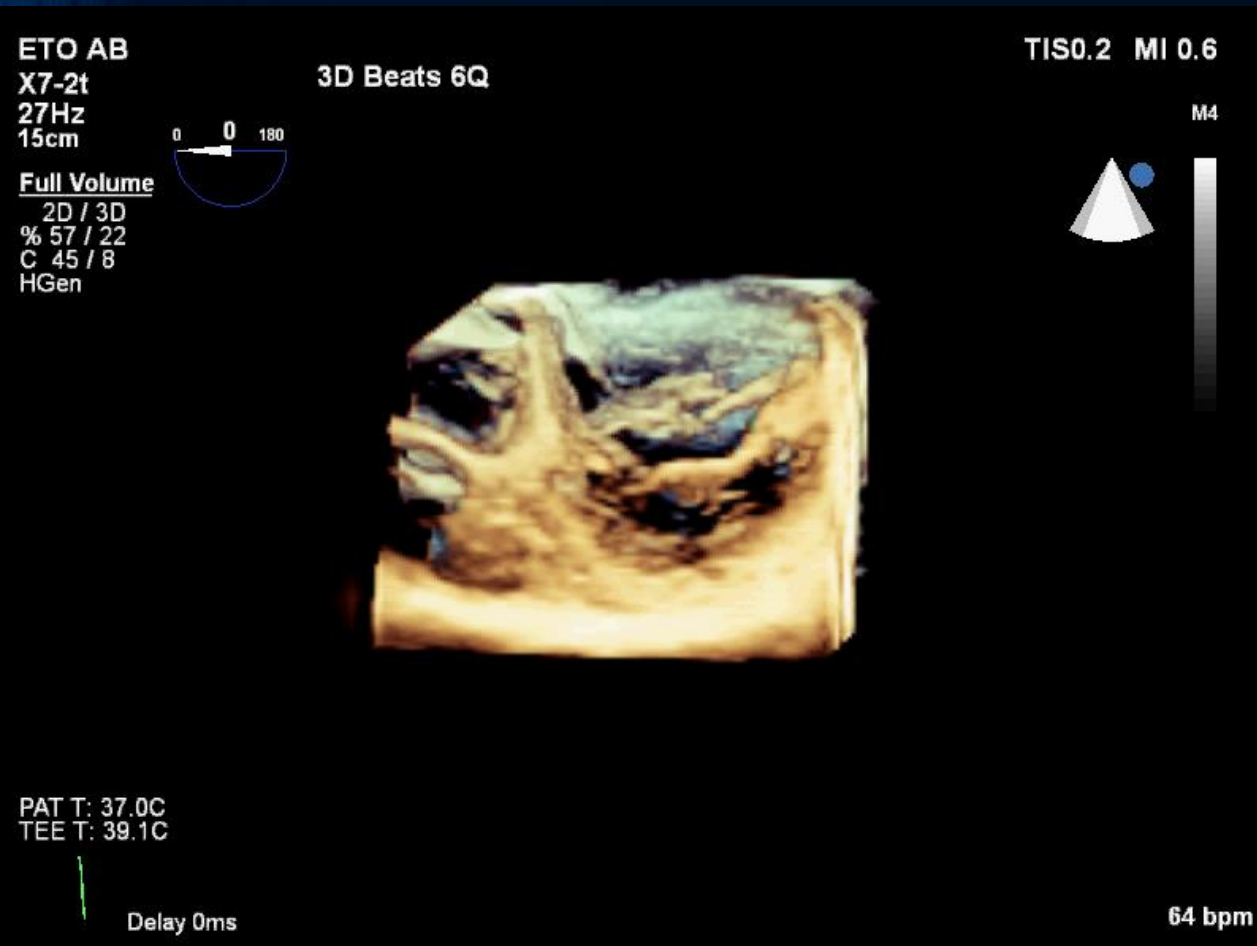


# The AV Disjunction Features

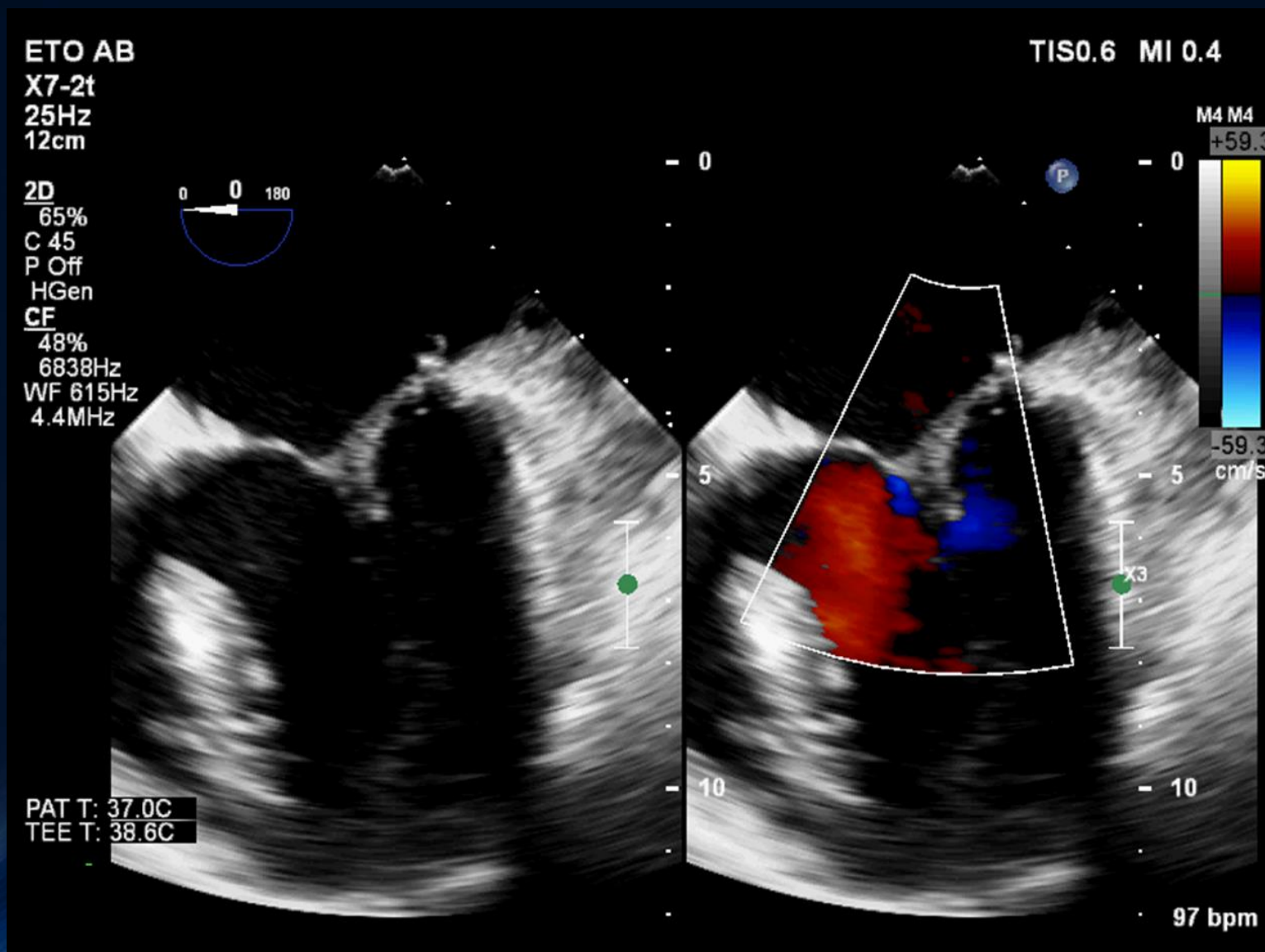




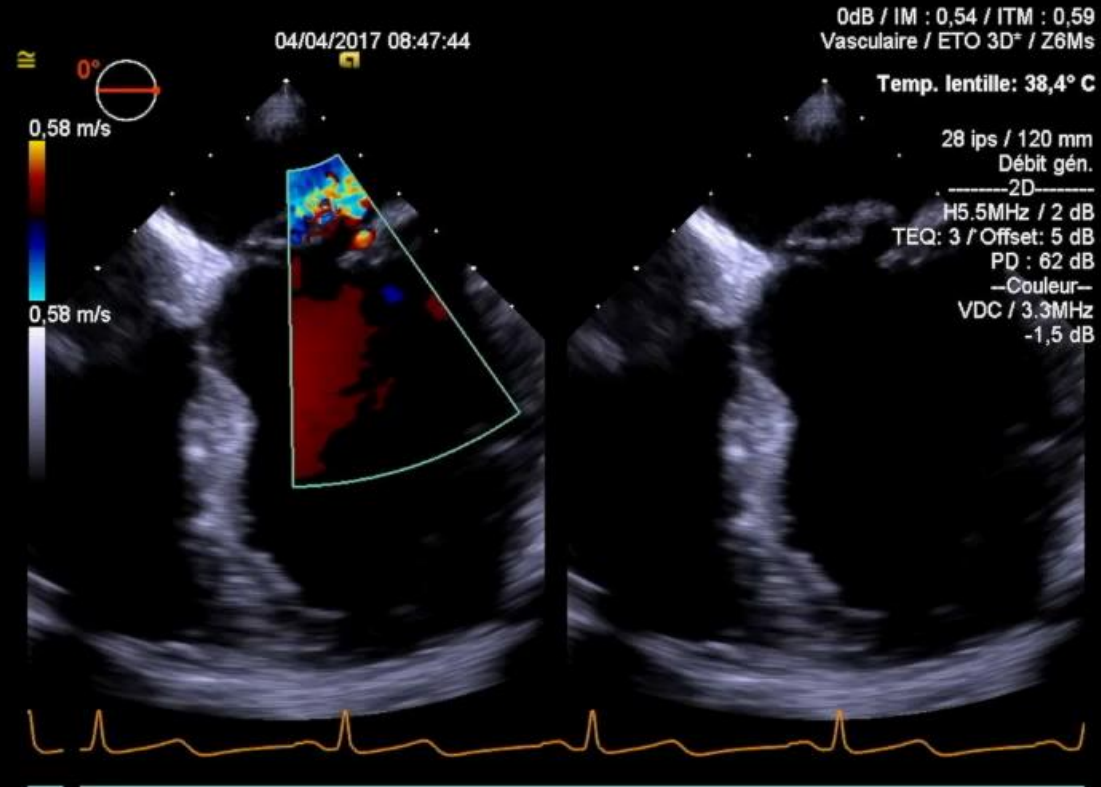
# The AV Disjunction Features



# Successful Isolated Annuloplasty

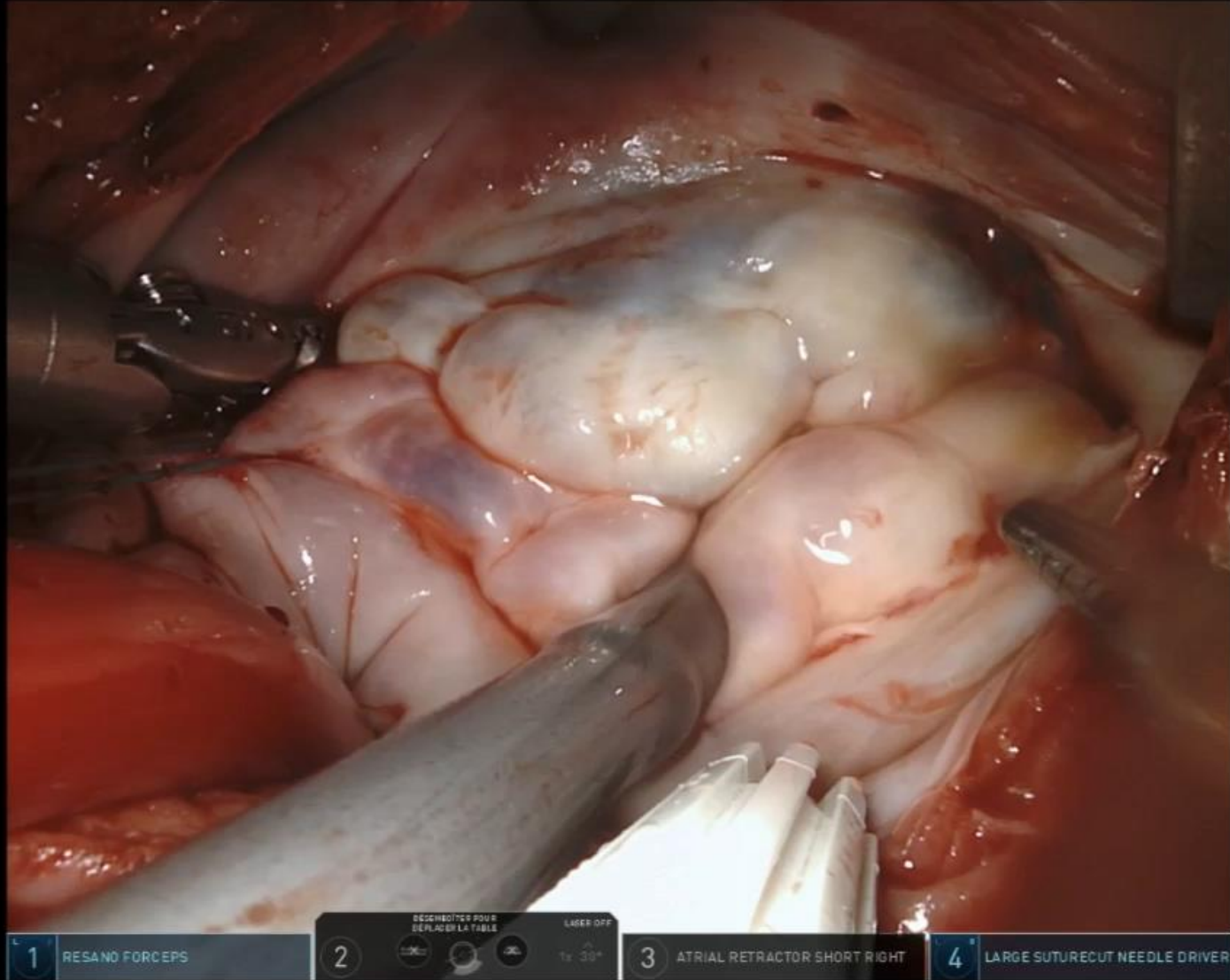


# The AV Disjunction Features





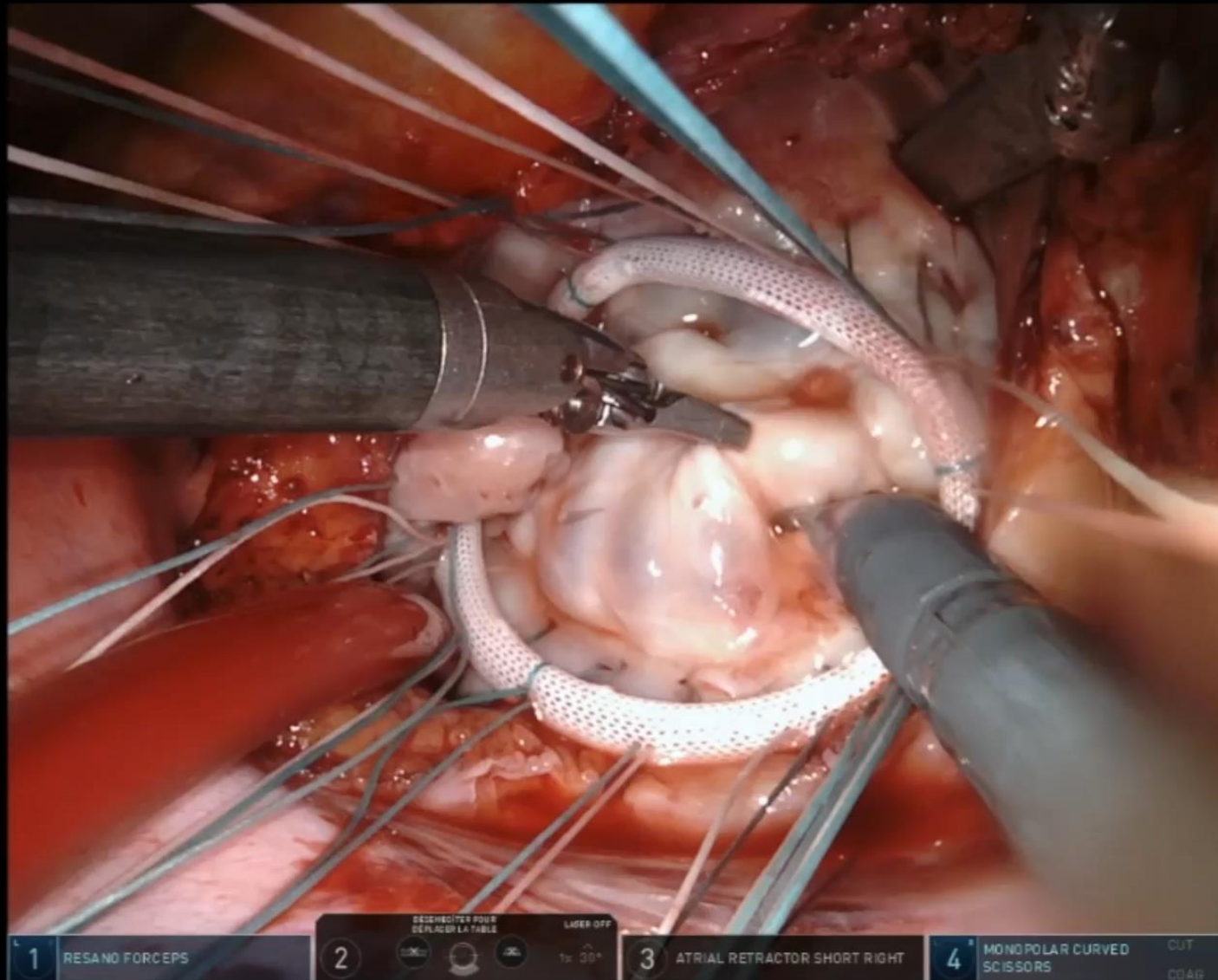
# Isolated Annuloplasty



**Unacceptable Closure Line**

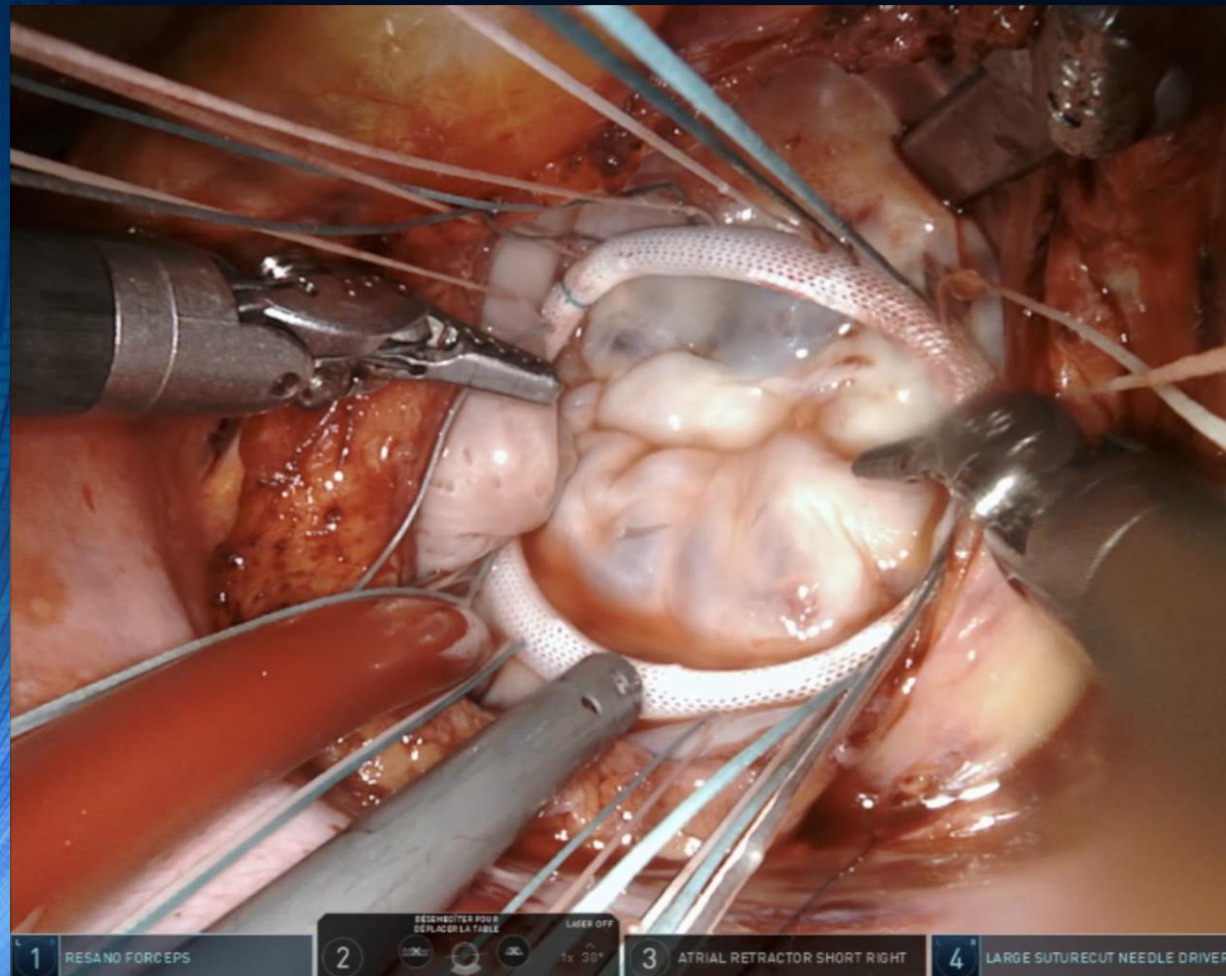
**Risk of SAM**

# Added Resection

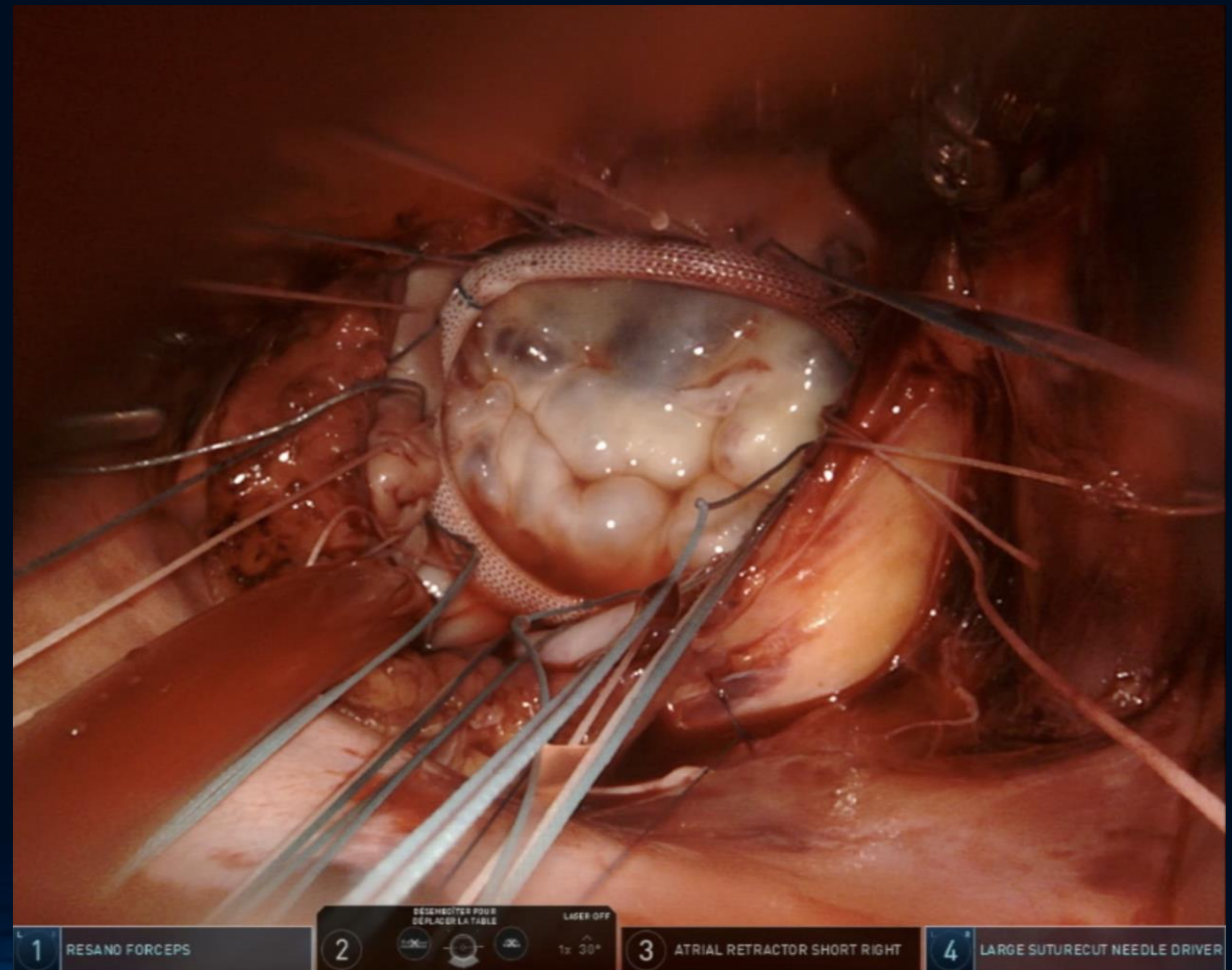




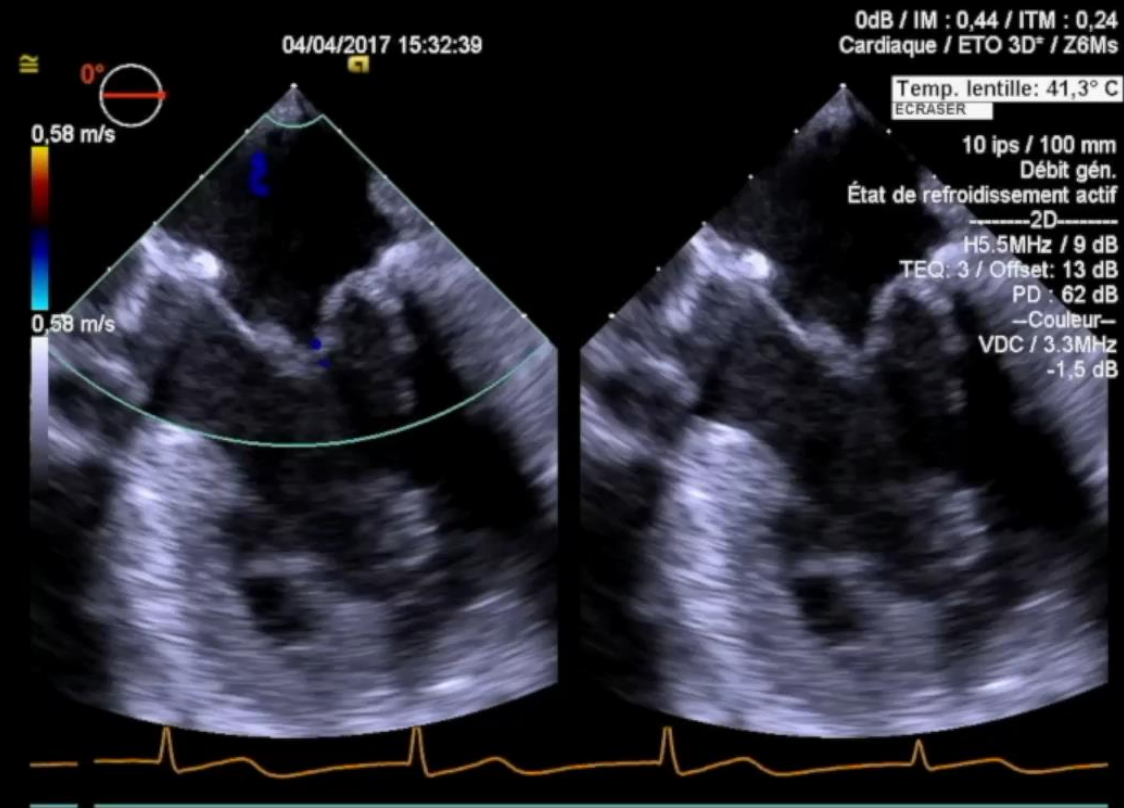
# Before



# After



# Postoperative TOE Control





# Better Appraisal of MAD by MRI

## The Mitral Annulus Disjunction Arrhythmic Syndrome

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### ABSTRACT

**BACKGROUND** Mitral annulus disjunction (MAD) is an abnormal atrial displacement of the mitral valve leaflet hinge point. MAD has been associated with mitral valve prolapse (MVP) and sudden cardiac death.

**OBJECTIVES** The purpose of this study was to describe the clinical presentation, MAD morphology, association with MVP, and ventricular arrhythmias in patients with MAD.

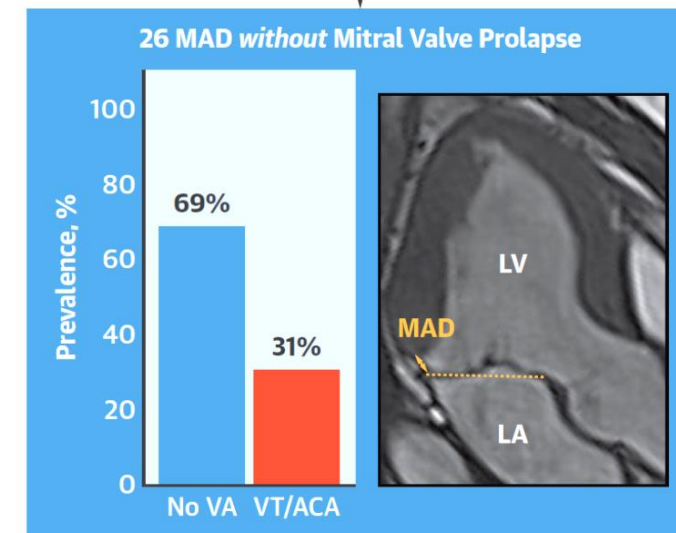
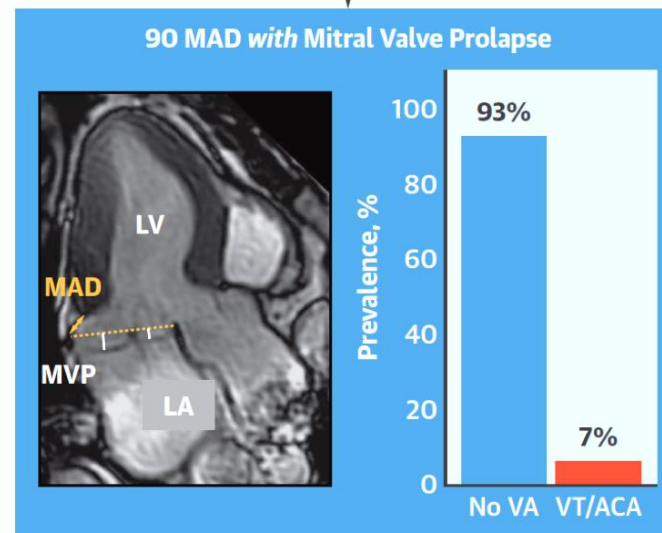
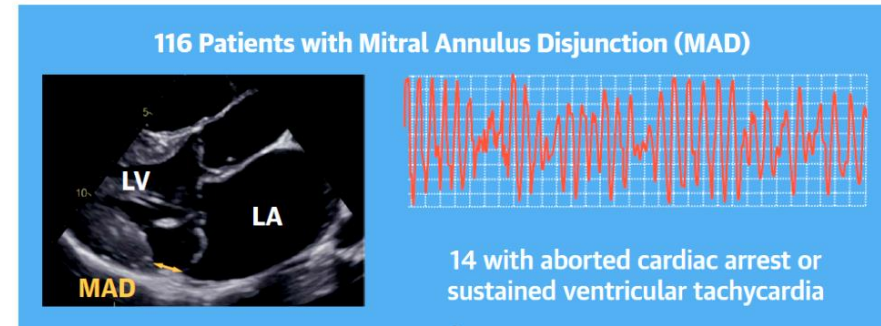
**METHODS** The authors clinically examined patients with MAD. By echocardiography, the authors assessed the presence of MVP and measured MAD distance in parasternal long axis. Using cardiac magnetic resonance (CMR), the authors assessed circumferential MAD in the annular plane, longitudinal MAD distance, and myocardial fibrosis. Aborted cardiac arrest and sustained ventricular tachycardia were defined as severe arrhythmic events.

**RESULTS** The authors included 116 patients with MAD (age  $49 \pm 15$  years; 60% female). Palpitations were the most common symptom (71%). Severe arrhythmic events occurred in 14 (12%) patients. Longitudinal MAD distance measured by CMR was 3.0 mm (interquartile range [IQR]: 0 to 7.0 mm) and circumferential MAD was  $150^\circ$  (IQR:  $90^\circ$  to  $210^\circ$ ). Patients with severe arrhythmic events were younger (age  $37 \pm 13$  years vs.  $51 \pm 14$  years;  $p = 0.001$ ), had lower ejection fraction ( $51 \pm 5\%$  vs.  $57 \pm 7\%$ ;  $p = 0.002$ ) and had more frequently papillary muscle fibrosis (4 [36%] vs. 6 [9%];  $p = 0.03$ ). MVP was evident in 90 (78%) patients and was not associated with ventricular arrhythmia.

**CONCLUSIONS** Ventricular arrhythmias were frequent in patients with MAD. A total of 26 (22%) patients with MAD did not have MVP, and MVP was not associated with arrhythmic events, indicating MAD itself as an arrhythmogenic entity. MAD was detected around a large part of the mitral annulus circumference and was interspersed with normal tissue. (J Am Coll Cardiol 2018;72:1600-9) © 2018 The Authors. Published by Elsevier on



Repair techn





# Conclusions

- In degenerative MR, this specific MAD or AV disjunction syndrome is not very frequent
- Provided that the regurgitant jet is central

**Annuloplasty alone is efficient as it freezes the tilting motion of the AV disjunction**

# Conclusions

- Isolated annuloplasty may be sufficient

**In no other instances an isolated annuloplasty can restore coaptation**

# Conclusions

**DMR is an entity but all cases are different one from the other**

**Such discrepancies explain various surgical techniques and level of complexity**