



Β' ΠΑΝΕΠΙΣΤΗΜΙΑΚΗ
ΚΑΡΔΙΟΛΟΓΙΚΗ ΚΛΙΝΙΚΗ
Α.Π.Θ.

ΕΤΑΙΡΕΙΑ
ΑΘΗΡΟΣΚΛΗΡΩΣΗΣ
ΒΟΡΕΙΟΥ ΕΛΛΑΔΟΣ



ΙΠΠΟΚΡΑΤΕΙΕΣ ΗΜΕΡΕΣ ΚΑΡΔΙΟΛΟΓΙΑΣ

ΛΗΨΗ ΚΛΙΝΙΚΩΝ ΑΠΟΦΑΣΕΩΝ ΜΕΣΑ ΑΠΟ ΤΗΝ
ΠΑΡΟΥΣΙΑΣΗ ΠΕΡΙΣΤΑΤΙΚΩΝ
ΜΕ ΔΙΕΘΝΗ ΣΥΜΜΕΤΟΧΗ

16-17 ΜΑΪΟΥ 2025
ELECTRA PALACE / **ΘΕΣΣΑΛΟΝΙΚΗ**

ΤΡΑΠΕΖΙ 3

Καρδιακή Ανεπάρκεια. Πώς να εφαρμόσω τις οδηγίες

Πρόεδροι: **Θ. Καραμήτσος, Κ. Νάκα, Γ. Σιάσος**

Περιστατικό με καρδιακή ανεπάρκεια και επιδεινούμενη νεφρική ανεπάρκεια

Παρουσίαση Περιστατικού: **Φ. Δημητριάδης**

Τί λένε οι κατευθυντήριες οδηγίες; **Ο.-Δ. Παύλου**

Περιστατικό με τελικού σταδίου καρδιακή ανεπάρκεια

Παρουσίαση Περιστατικού: **Ε. Θεοφιλογιαννάκος**

Τί λένε οι κατευθυντήριες οδηγίες; **Χ. Τσαβούσογλου**

Περιστατικό με καρδιακή ανεπάρκεια και βαλβιδοπάθεια

Παρουσίαση Περιστατικού: **Δ. Κωνσταντίνου**

Τί λένε οι κατευθυντήριες οδηγίες; **Β. Αναστασίου**

Περιστατικό με καρδιακή ανεπάρκεια μετά από χημειοθεραπεία

Παρουσίαση Περιστατικού: **Μ. Σωτηριάδου**

Τί λένε οι κατευθυντήριες οδηγίες; **Στ. Βεργόπουλος**

Experts Opinion: **Α. Σταυράτη, Χρ. Παπαδόπουλος,**

Β. Νινιός, Θ. Μπισχιγιώτης

Case presentation 9/2021

ECG

- LBBB (QRSd 174ms), intermittent episodes of complete AV block

Echo

- Bicuspid AV with severe reg (PHT 236ms).
- Functional MR (EROA 40mm²)
- LVEDD 75mm, LVEDV 295ml, EF 35%
- RVSP 70mm

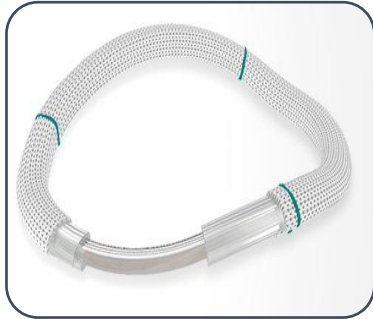
CAG

- Coronaries with no stenosis

Treatment



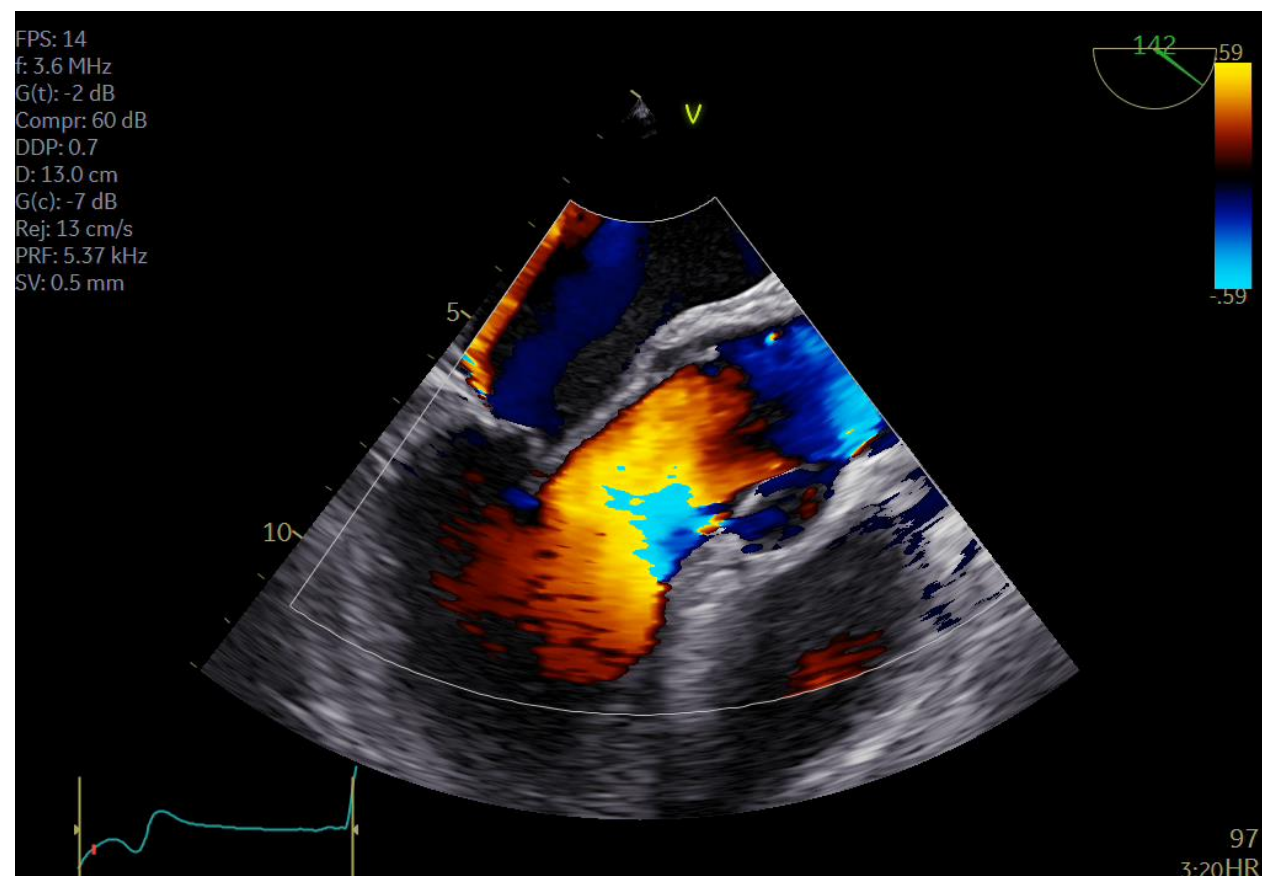
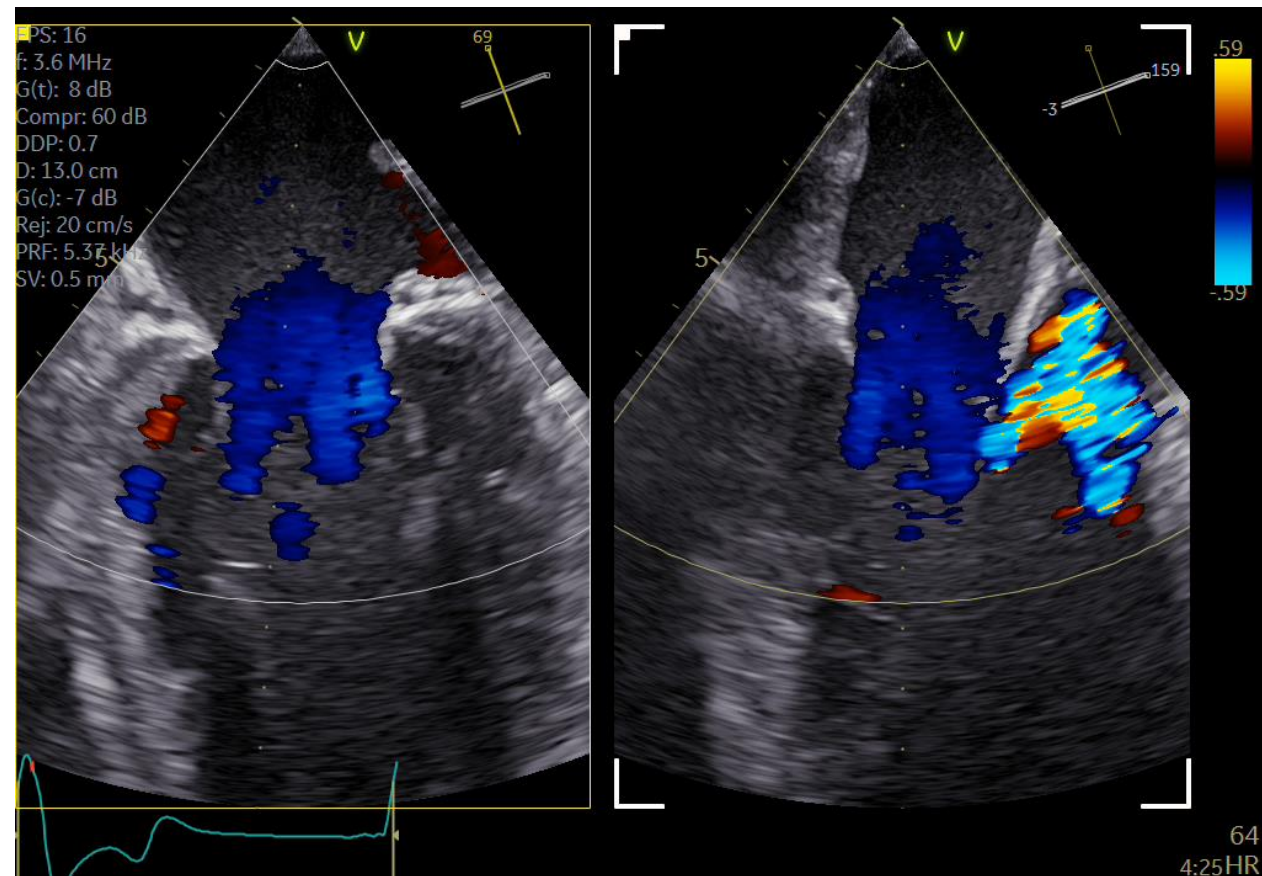
CRT-D implantation (9/2021)



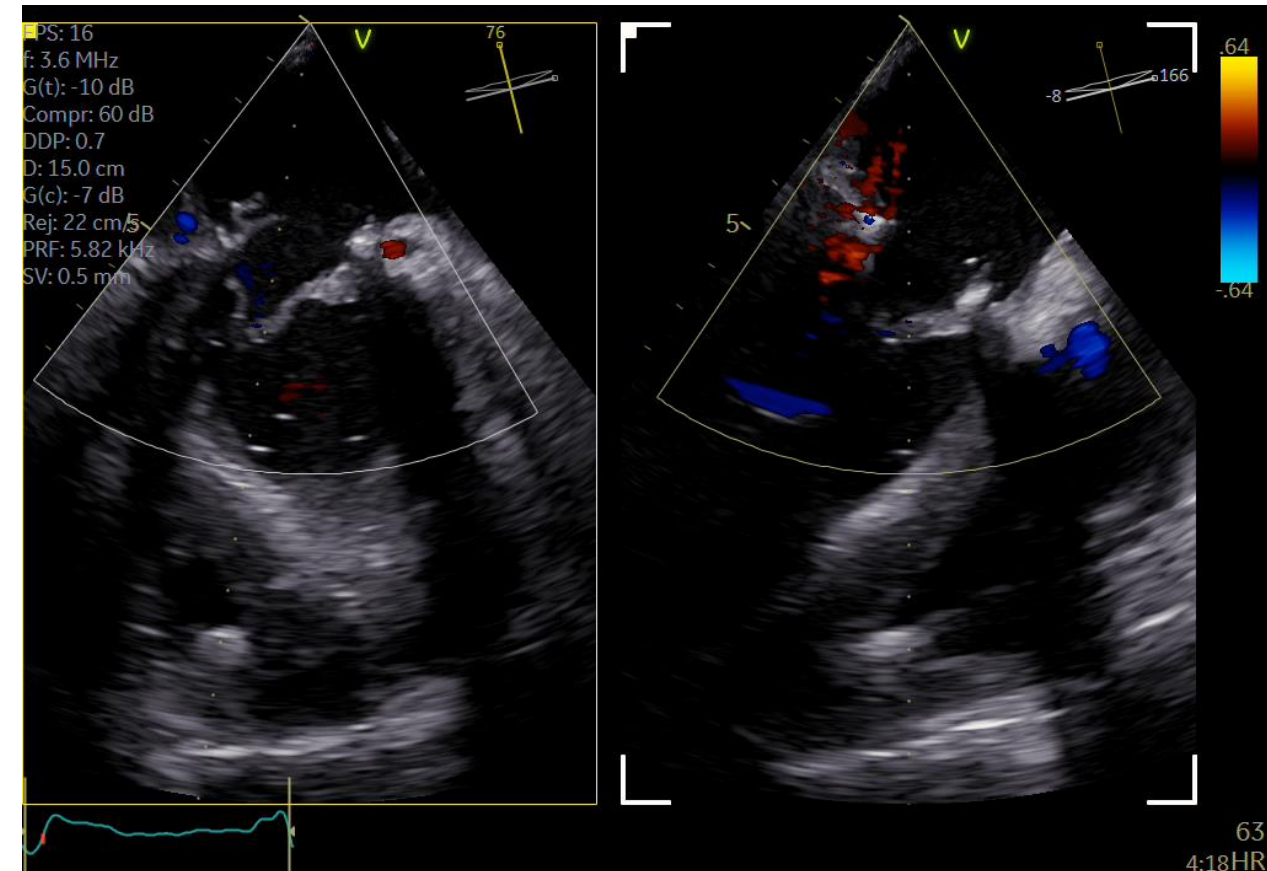
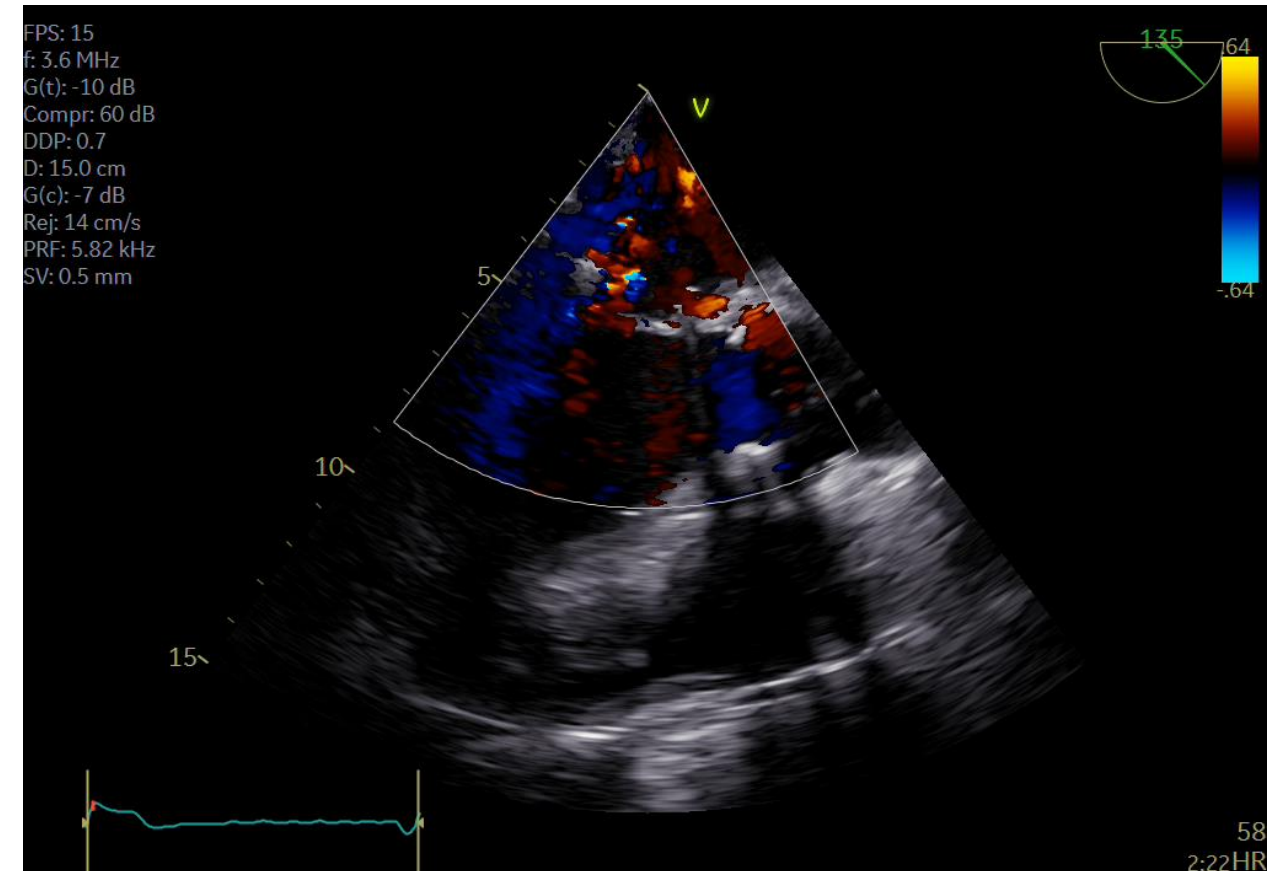
SAVR with Inspiris Resilia 25mm and MR valvuloplasty with Edwards Physio II ring 30mm (10/2021)



TEE pre-OP



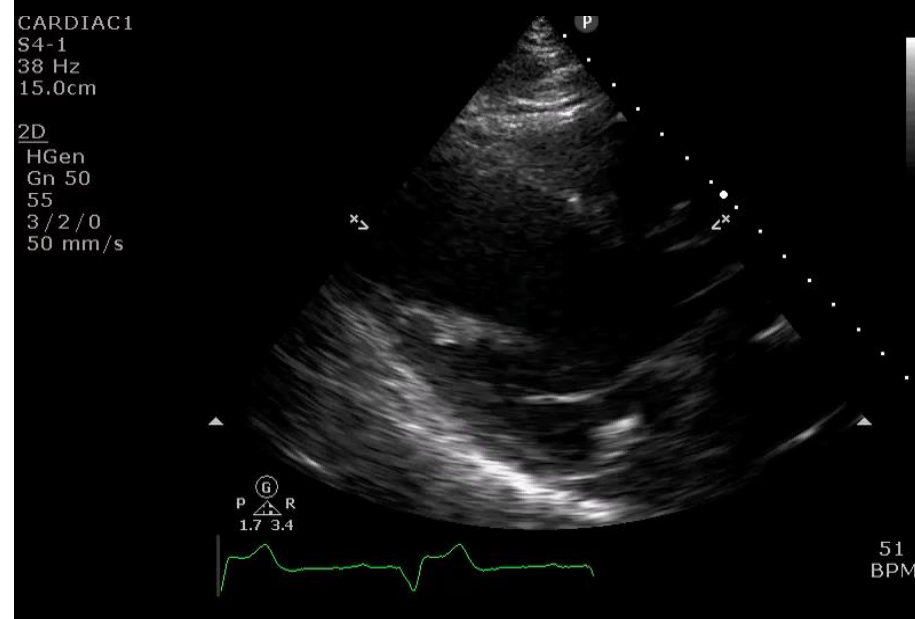
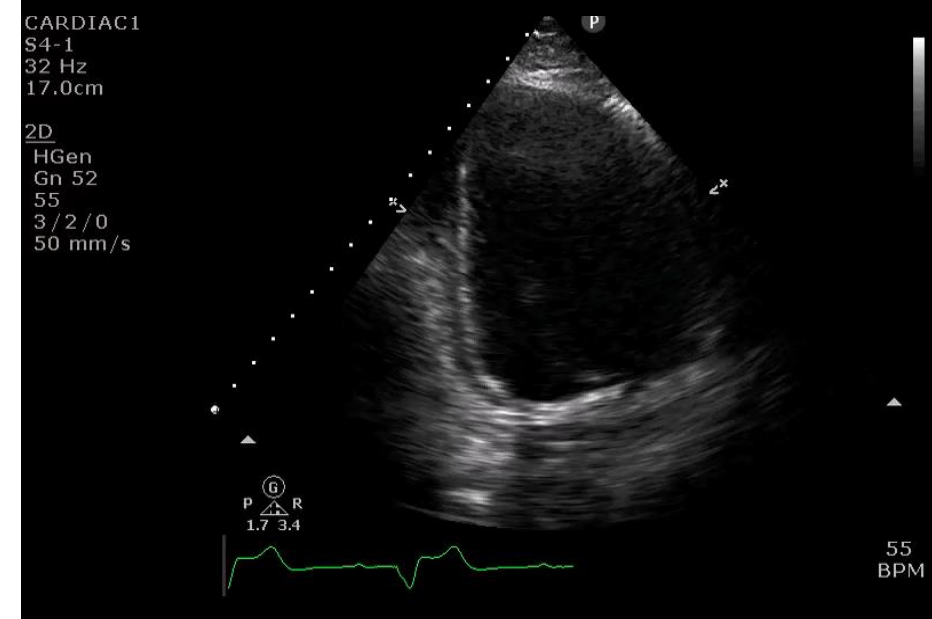
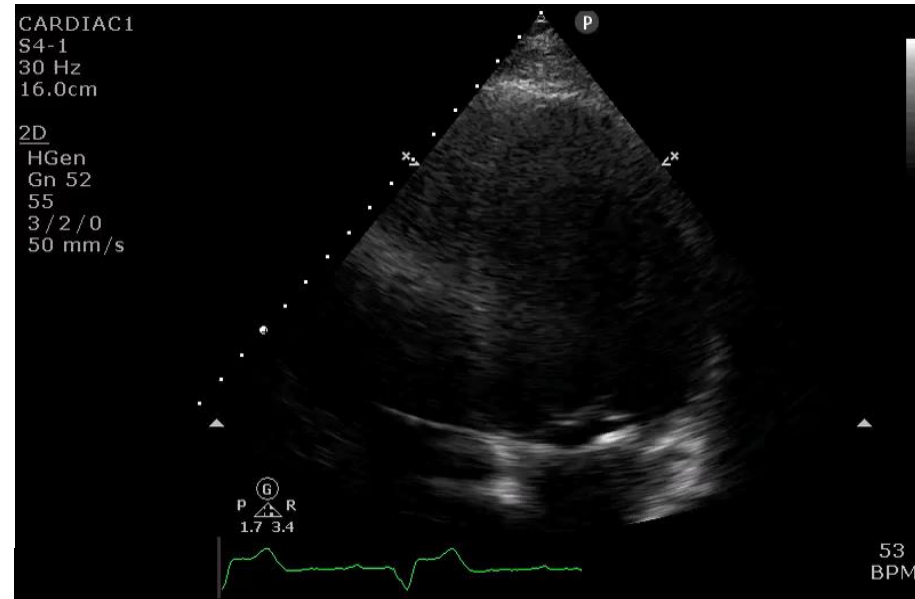
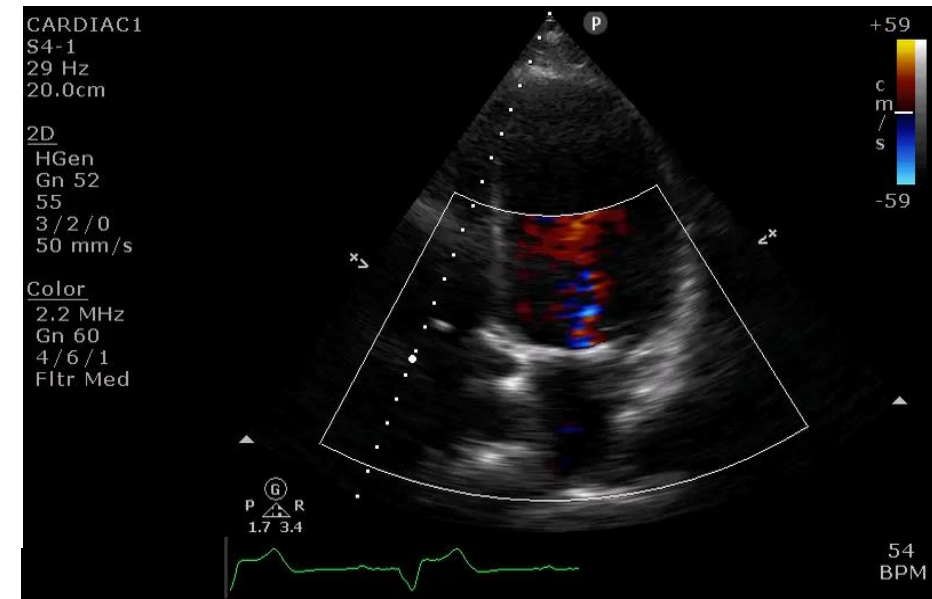
Intraoperative TEE (post)



Follow-up 2022-2023

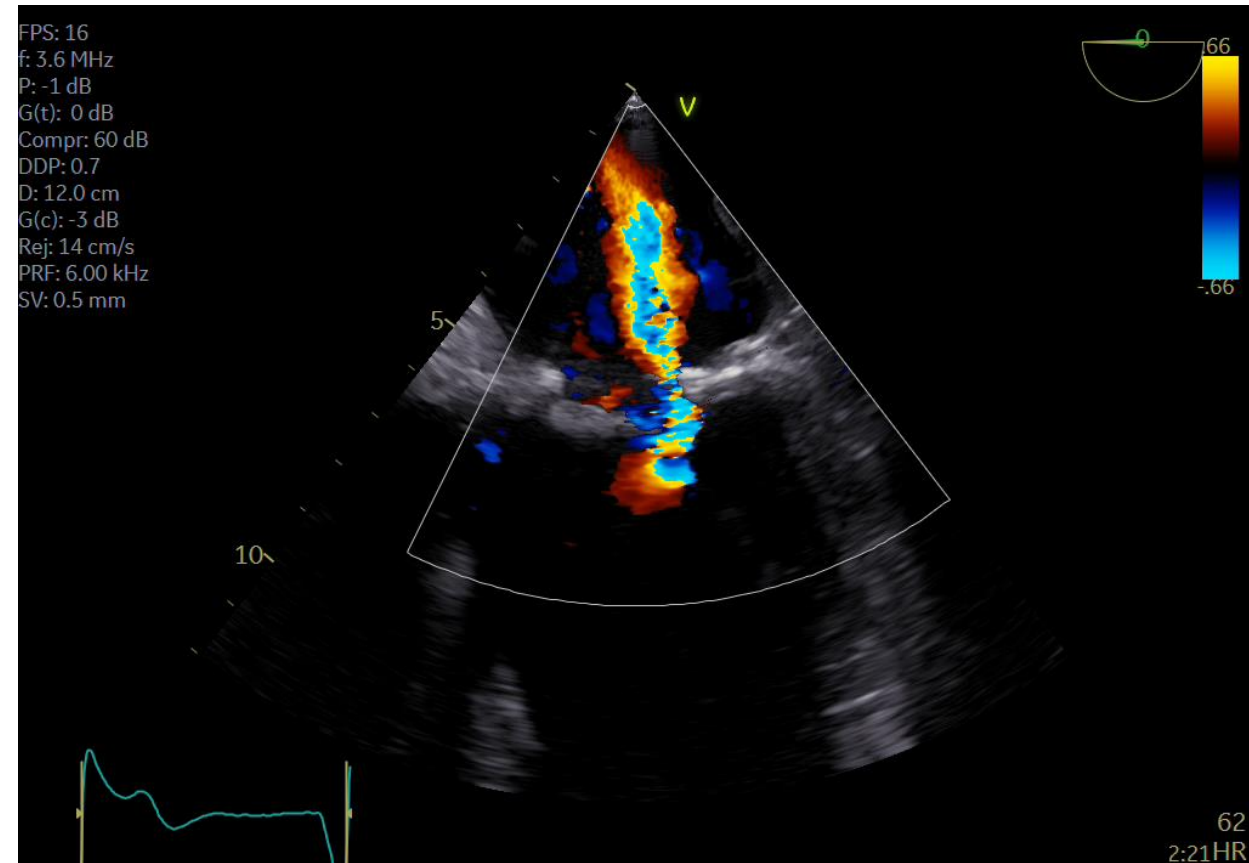
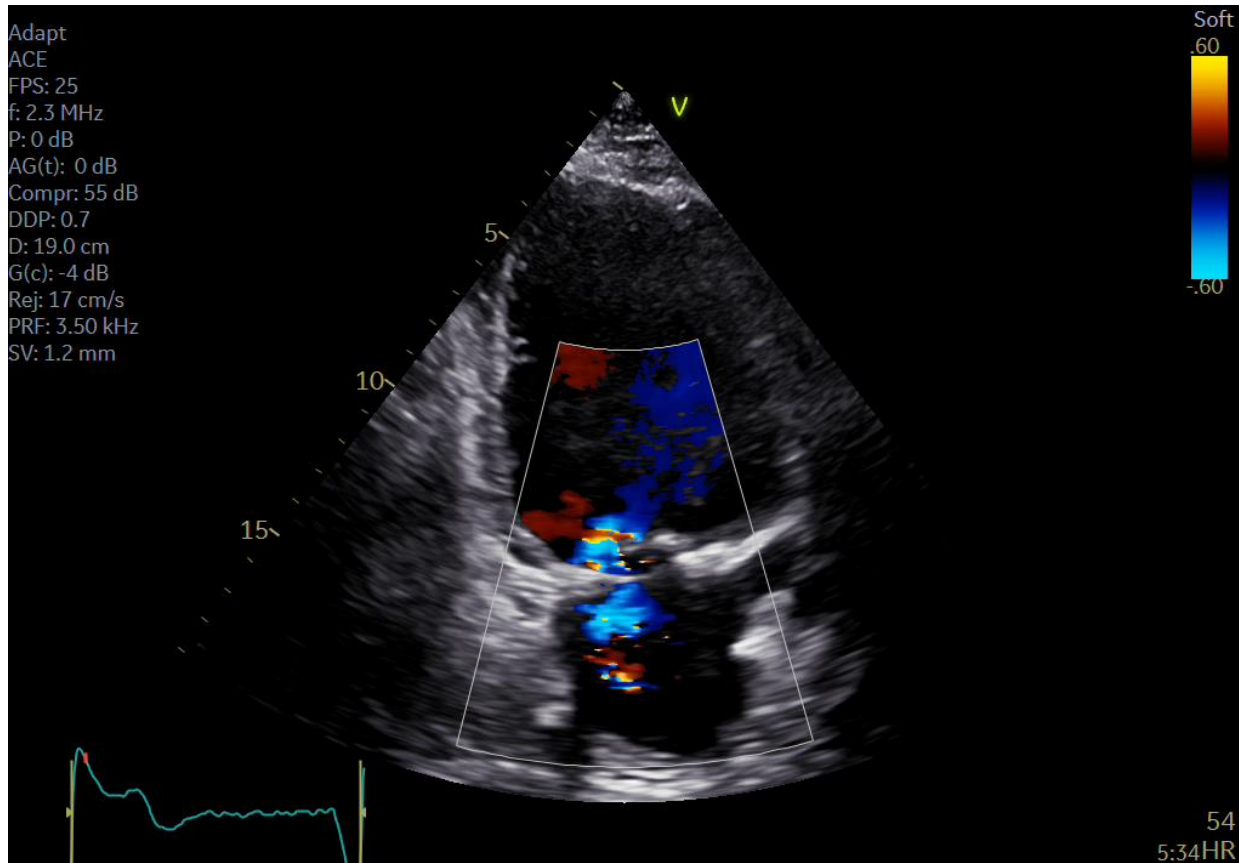
- Patient is in NYHA I
- Able to perform normal activities and moderate exercise
- In serial echocardiograms the LV (already reduced in size and volume) started to enlarge
- Severe MR

Follow-up TTE 10/2023



EDD=61mm,
ESD=41mm
EDVi=116mL/m²
ESVi=53mL/m²
EF=55%
E/e' avg=28
MV meanPG=5mmHg

Follow-up TEE 2023



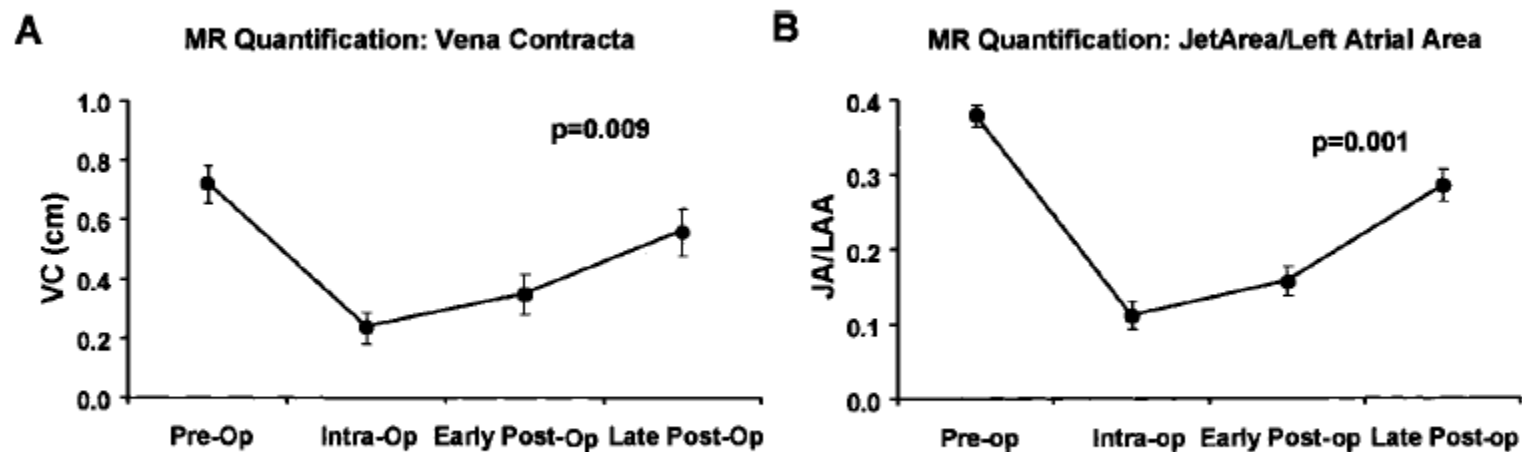


Figure 2. This shows the changes in MR as measured by vena contracta (VC) (A) or jet area/left atrial area ratio (B) at preoperative, intra-operative, early postoperative, and late postoperative stages. Reported as mean±SEM.

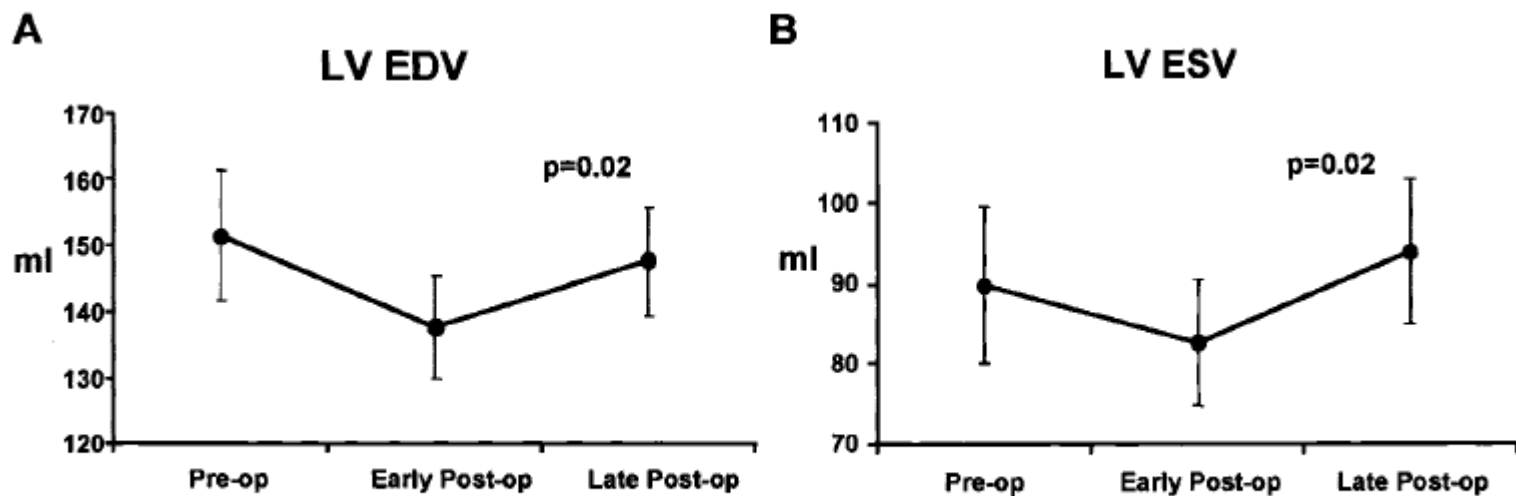


Figure 3. This shows the changes in LV end-diastolic (EDV) (A) and end-systolic (ESV) (B) at preoperative, early postoperative, and late postoperative stages. Reported as mean±SEM.

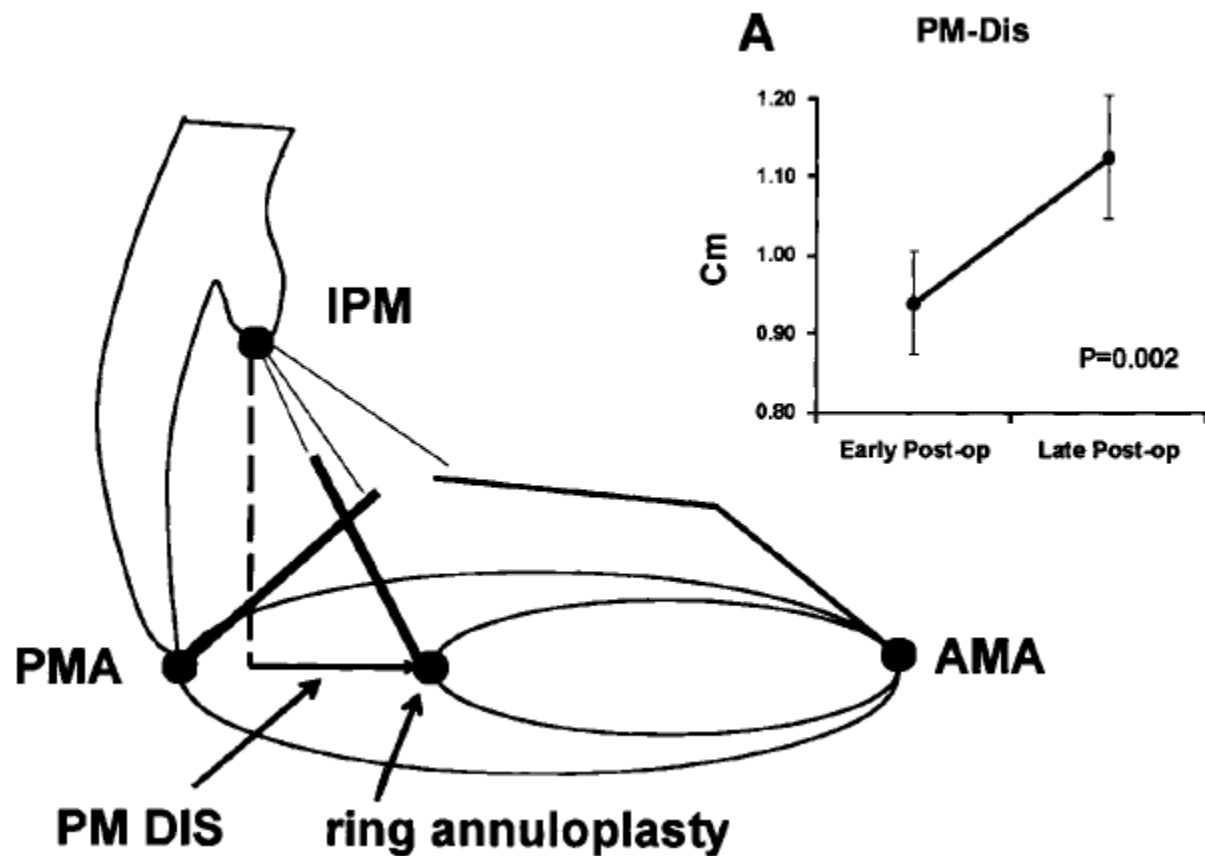


Figure 1. To measure the PM-Dis, which is the projected papillary muscle displacement outside of the annular ring, a perpendicular line is drawn from the tip of the papillary muscle to the mitral annular level. The distance from this projection to the mitral ring is the displacement distance. PMA indicates posterior mitral annulus; AMA, anterior mitral annulus; IPM, ischemic papillary muscle. A, Increase in the PM-Dis from early to late postoperative stages.

Summary

Recurrent MR after ring annuloplasty relates to continued LV remodeling. Approaches that also alleviate ventricular remodeling could therefore potentially be part of a more comprehensive and effective management strategy for patients with ischemic MR.

Effect of concurrent mitral valve surgery for secondary mitral regurgitation upon mortality after aortic valve replacement or coronary artery bypass surgery

Shyamal R. Asher^{1*}, Chin Siang Ong², Raymond J. Malapero³, Mahyar Heydarpour⁴, Gregory W. Malzberg³, Jasmine T. Shahram⁵, Thy B. Nguyen⁵, Douglas C. Shook³, Stanton K. Shernan³, Prem Shekar⁶, Tsuyoshi Kaneko⁶, Rodolfo Citro⁷, Jochen D. Muehlschlegel³ and Simon C. Body⁸

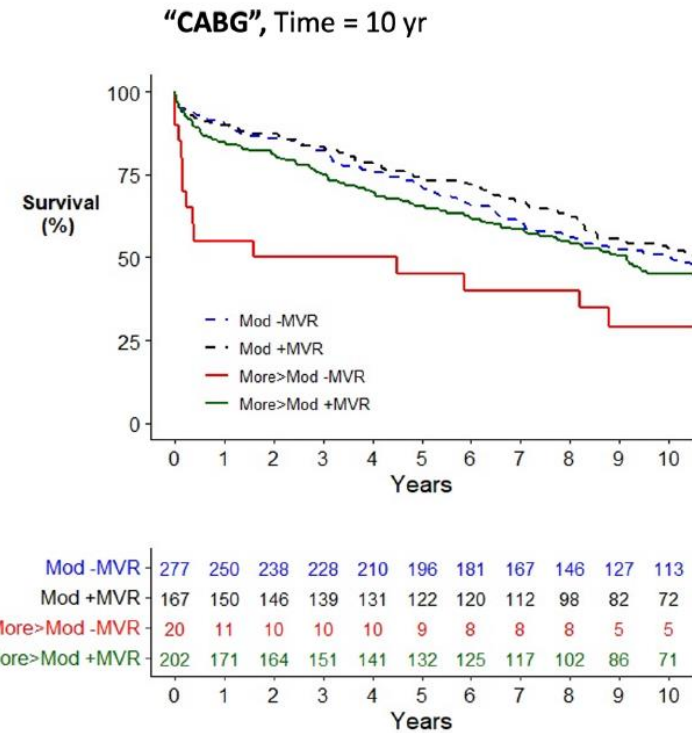


FIGURE 3
Kaplan–Meier plot of survival of 672 patients undergoing CABG who underwent MVR/P or not stratified by the worst measured severity of MR. Observed mortality is stratified by the source of the most severe grade of MR (moderate, >moderate) and whether or not MVR/P was concurrently performed. Pairwise comparison of survival between CABG patients with moderate MR who underwent MVR/P or did not showed no statistical significance ($P = 0.49$) after adjustment for two comparisons. Pairwise comparison of survival between patients with more-than-moderate MR who underwent MVR/P or did not showed statistical significance when adjusted for two comparisons ($P = 0.028$), which was explained by mortality in the first 2 postoperative years.

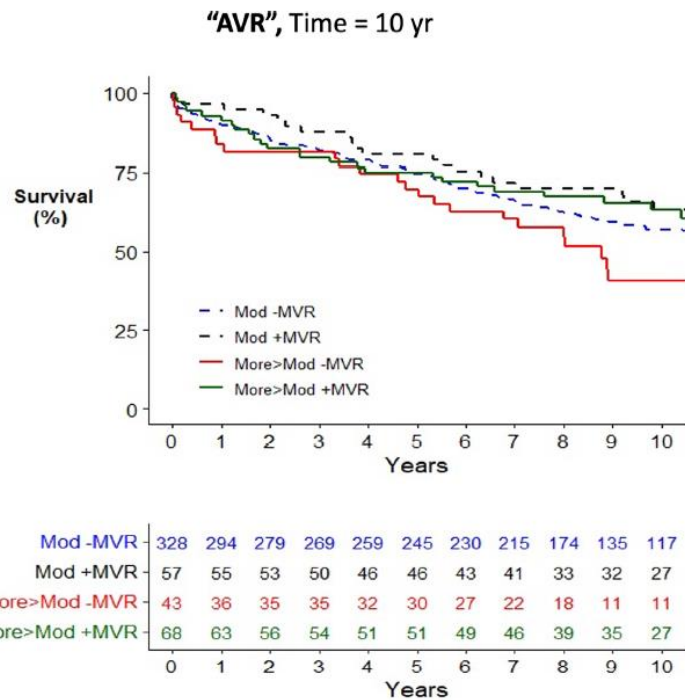
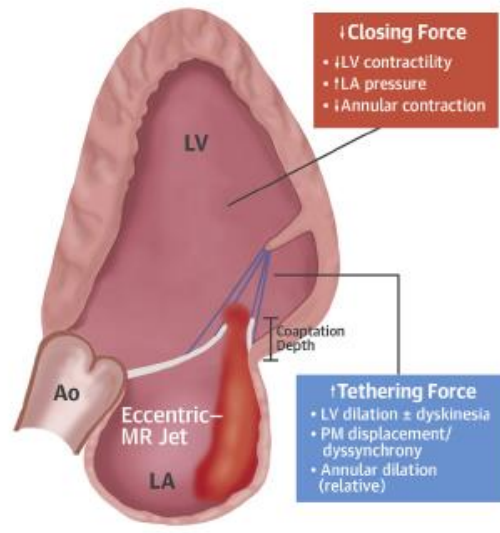
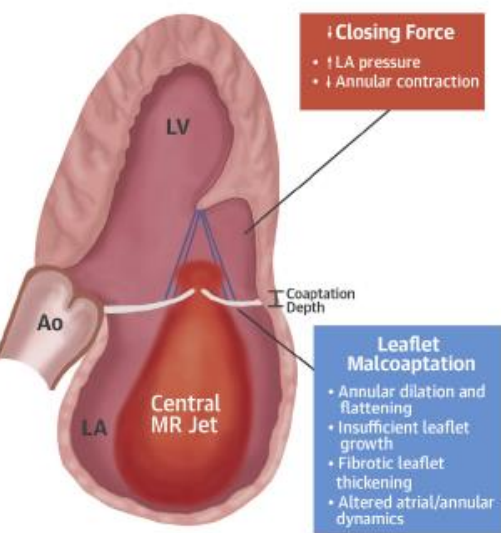


FIGURE 2
Kaplan–Meier plot of survival of 501 patients undergoing AVR who underwent MVR/P or not, stratified by the worst measured severity of MR. Observed mortality is stratified by the source of the most severe grade of MR (moderate, >moderate) and whether or not MVR/P was concurrently performed. Pairwise comparison of survival between AVR patients with moderate MR who underwent MVR/P or did not showed no statistical significance ($P = 0.31$) after adjustment for two comparisons. Pairwise comparison of survival between patients with more-than-moderate MR who underwent MVR/P or did not showed no statistical significance ($P = 0.063$) after adjustment for two comparisons.

Conclusions

In this retrospective study comparing survival in patients with secondary MR undergoing CABG and/or AVR, we assessed whether concurrent MVR/P improved survival. Improved survival was only observed in a small cohort of patients with more-than-moderate MR undergoing CABG surgery and only in the first 2 years after surgery. This improvement in survival was not observed in patients undergoing AVR or CABG/AVR surgery nor in patients with moderate MR undergoing any operation. Our findings suggest that MVR/P for more-than-moderate MR at the time of CABG is reasonable in a suitably selected population but is not indicated when undergoing AVR, with or without CABG.

CENTRAL ILLUSTRATION Secondary Mitral Regurgitation Versus Atrial Functional Mitral Regurgitation

Secondary Mitral Regurgitation	Atrial Functional Mitral Regurgitation
 <p>↓ Closing Force</p> <ul style="list-style-type: none"> • ↓ LV contractility • ↑ LA pressure • ↓ Annular contraction <p>↑ Tethering Force</p> <ul style="list-style-type: none"> • LV dilation ± dyskinesia • PM displacement/dyssynchrony • Annular dilation (relative) <p>Coaptation Depth</p> <p>Eccentric MR Jet</p> <p>LV, LA, Ao</p>	 <p>↓ Closing Force</p> <ul style="list-style-type: none"> • ↑ LA pressure • ↓ Annular contraction <p>Leaflet Malcoaptation</p> <ul style="list-style-type: none"> • Annular dilation and flattening • Insufficient leaflet growth • Fibrotic leaflet thickening • Altered atrial/annular dynamics <p>Coaptation Depth</p> <p>Central MR Jet</p> <p>LV, LA, Ao</p>
<p>Etiology and Prevalence</p> <ul style="list-style-type: none"> • 11%-59% post myocardial infarction • >50% in dilated cardiomyopathy 	<ul style="list-style-type: none"> • 6%-7% in lone AF • Up to 53% in HFpEF
<p>Diagnosis</p> <ul style="list-style-type: none"> • Systolic LV dysfunction • Restricted leaflet motion and tethering • Eccentric jet > central jet • Relative LA dilation 	<ul style="list-style-type: none"> • Normal systolic LV function • Normal leaflet motion • Central jet • Severe LA dilation
<p>Management</p> <ul style="list-style-type: none"> • Optimal HF therapy • Cardiac resynchronization therapy • Revascularization • MitraClip 	<ul style="list-style-type: none"> • Address AF/HFpEF risk factors and lifestyle • HF therapy, diuretics as indicated • Early sinus restoration strategy • ?Intervention, annuloplasty, MitraClip

Deferm, S. et al. *J Am Coll Cardiol.* 2019;73(19):2465-76.

AF = atrial fibrillation; Ao = aorta; HF = heart failure; HFpEF = heart failure with preserved ejection fraction; LA = left atrium; LV = left ventricle; MR = mitral regurgitation; PM = papillary muscle.

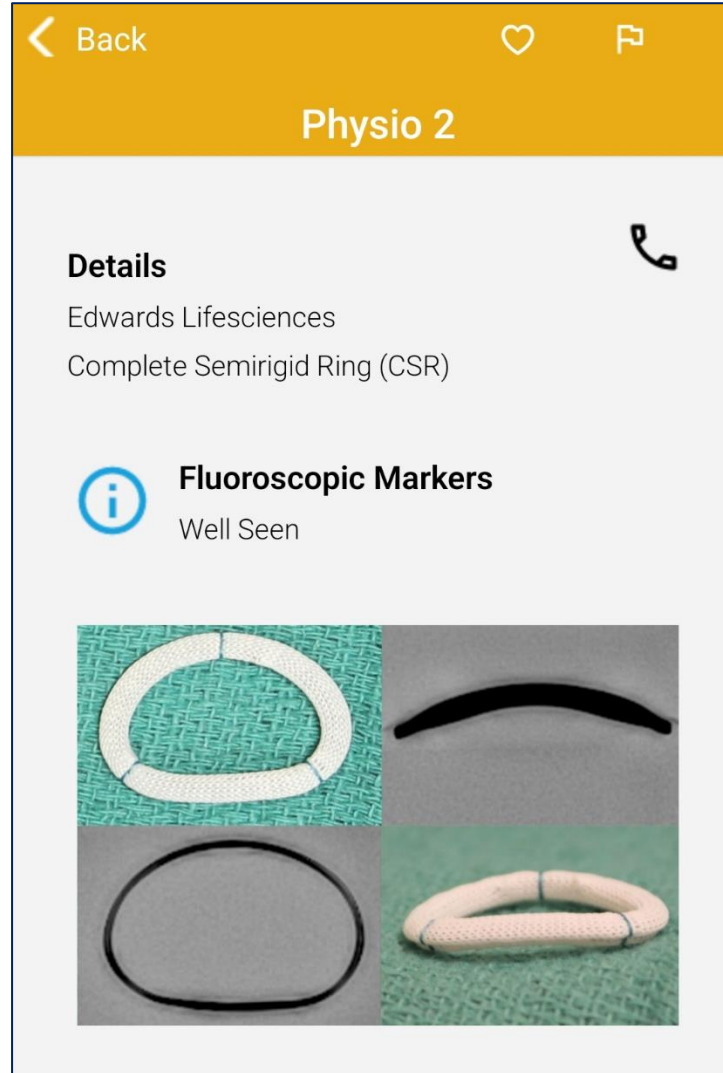
Mitral VIR Procedural Planning

Ring classification

- complete
- nearly complete
- incomplete
- rigid
- semi rigid**
- flexible

Ring properties

- Ring circularity
- Ring anchoring
- Ring size and dimensions
- **Radio-opacity**

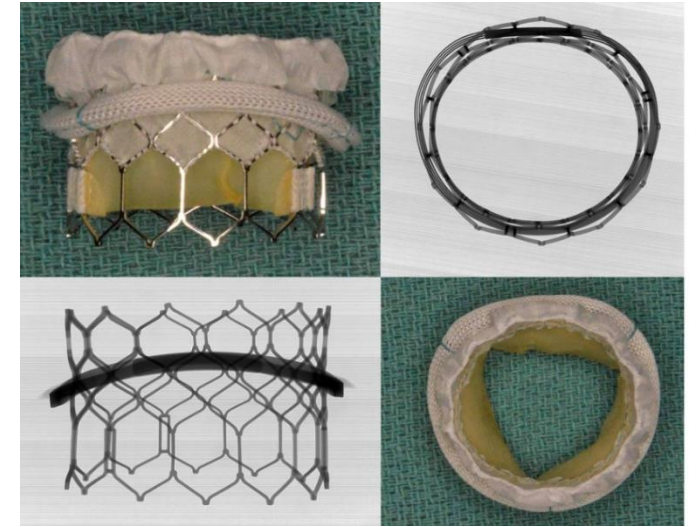
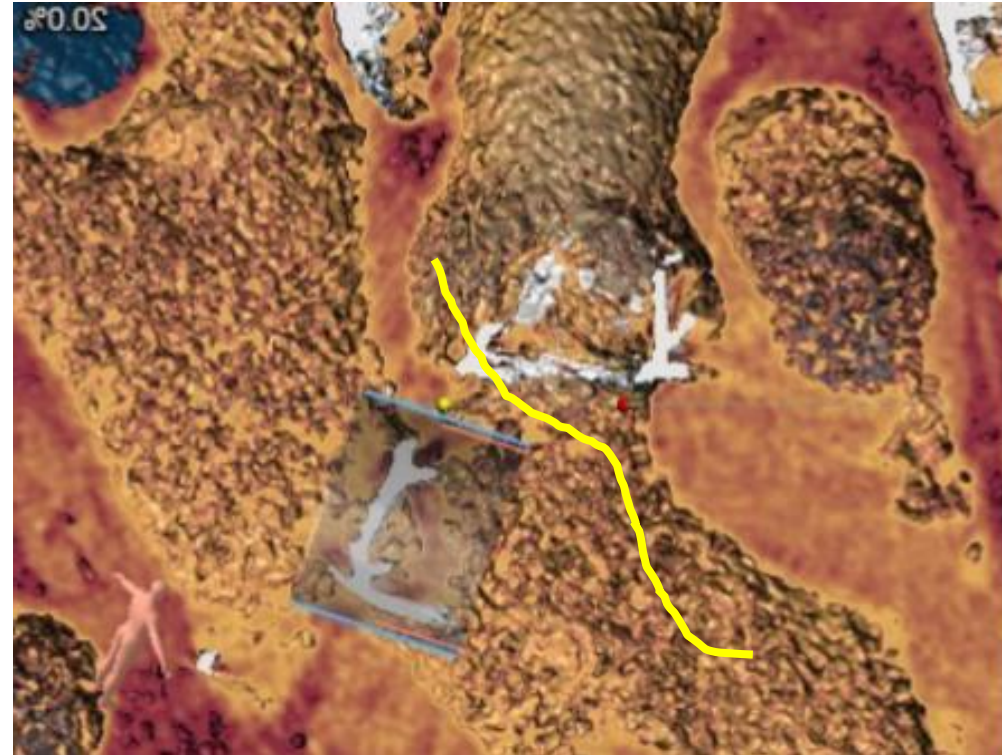
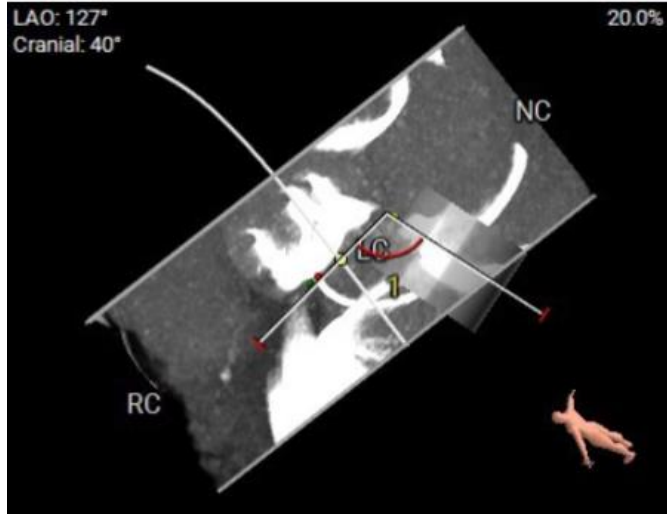


Implications

- Rigid and **semi rigid**: good anchor
- Flexible **complete bands**: borderline
- Incomplete: insecure anchor

- Rigid rings provide anchor but lack circularity
- Semi rigid rings achieve a good balance of circularity and anchoring

Valve in Ring case with a Sapien Ultra 29mm



A lot of space for neo-LVOT

**Predicted neo-LVOT
<170-190mm²**

- Presence of a bulky septum
- The aorto-mitral angle
- The morphology of anterior leaflet and subvalvular apparatus
- The dimensions of the LV

Mitral ViR Preparation & Operative Technique



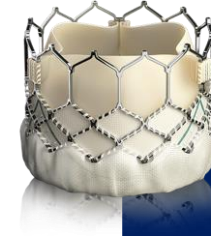
Stage 1

- Hybrid room General anesthesia and Hemodynamic support
- Clear plan for bail out
- Enhance guidance and rule out LAA thrombus and para-valvular leak with TEE
- Check deployment view before preparing the patient
- Confirm radiopaque objects are not overlapping the field of interest



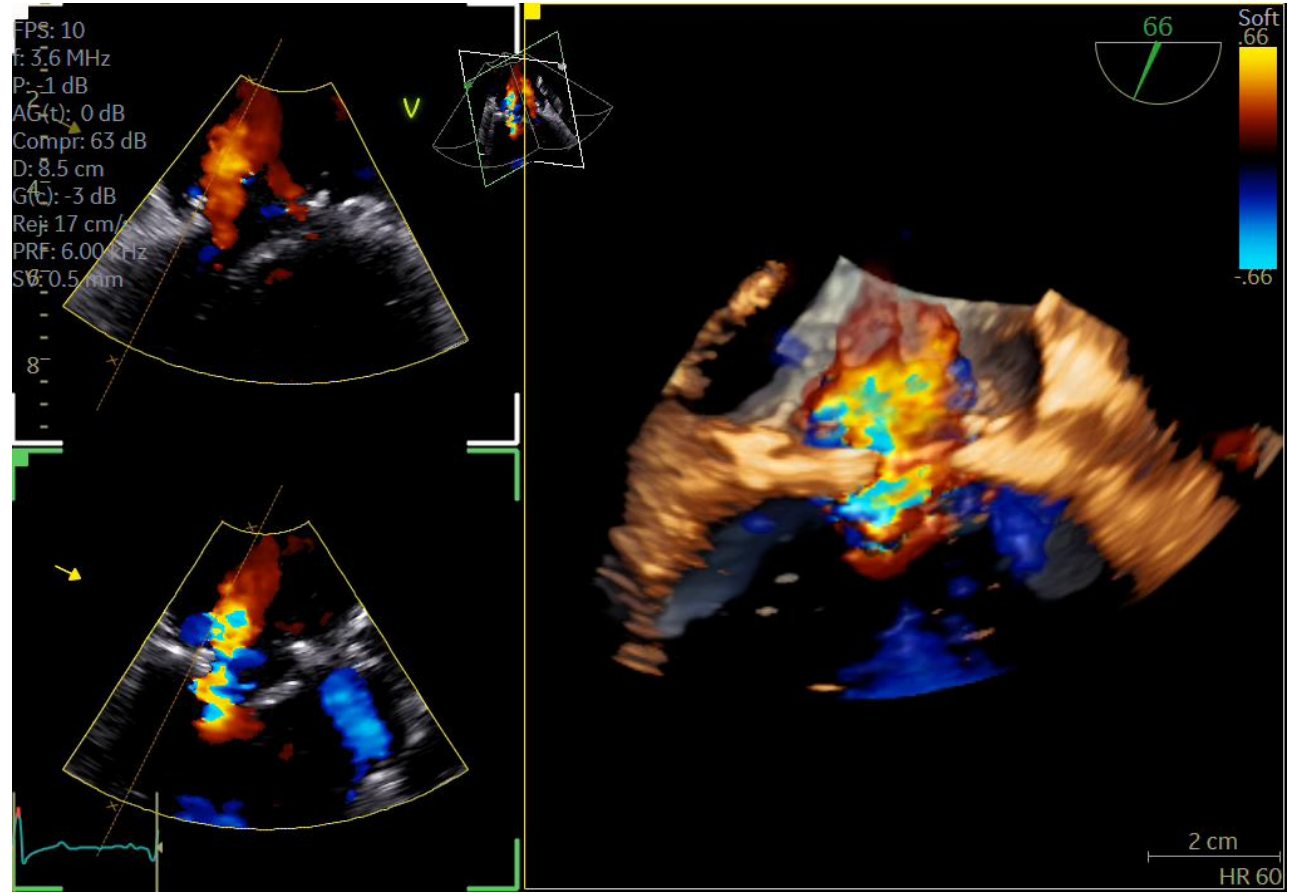
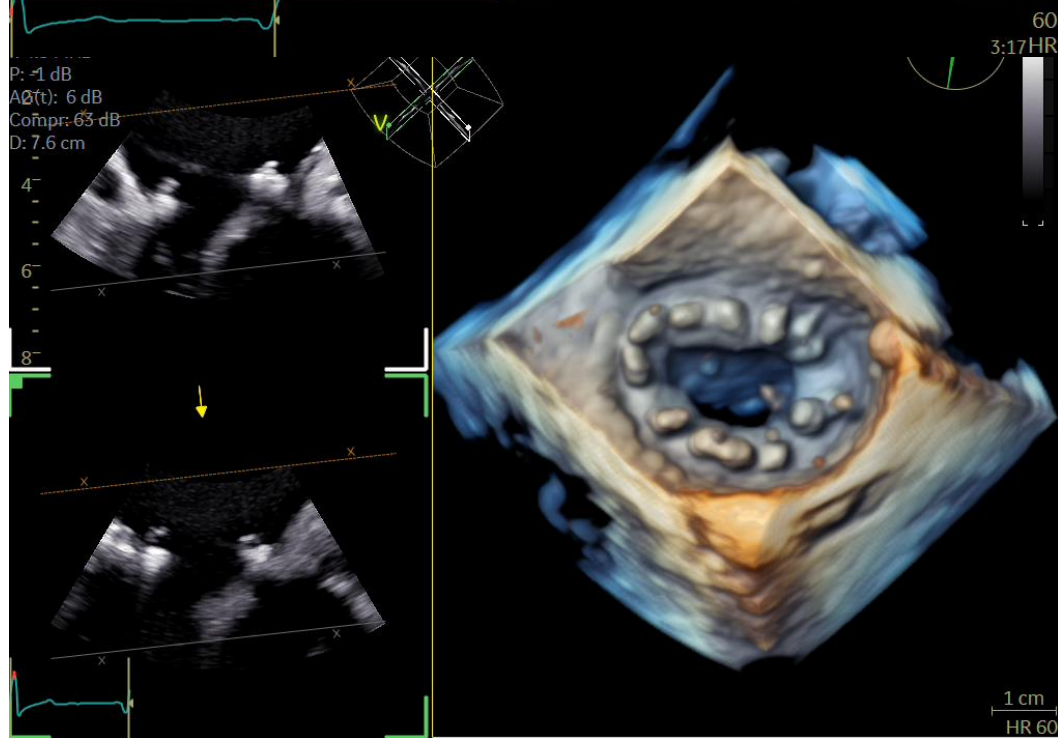
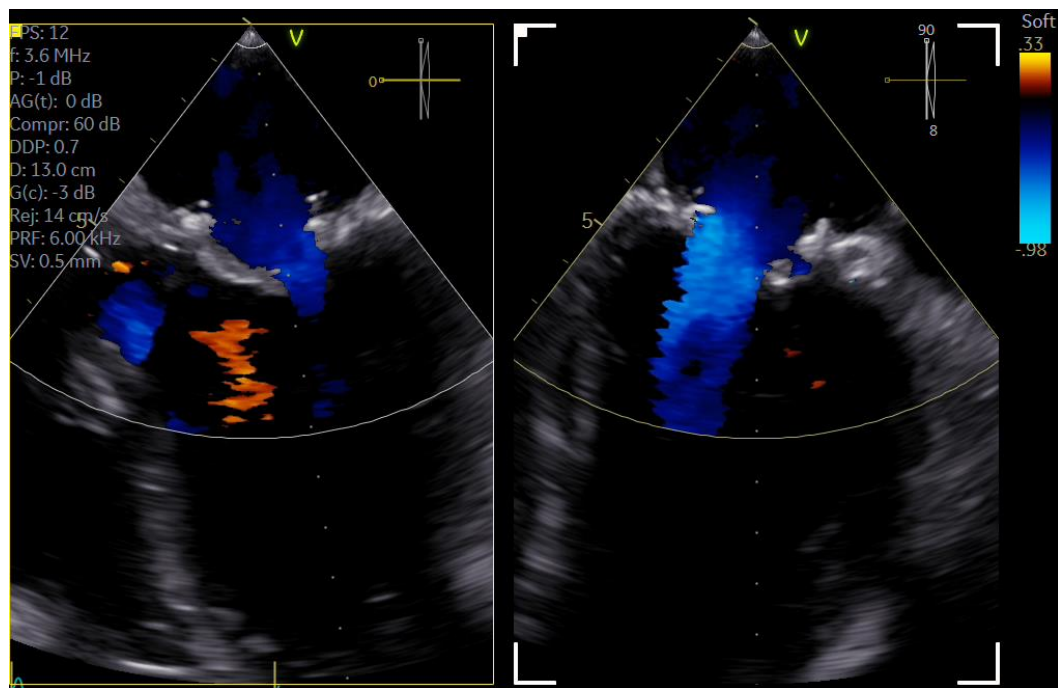
Stage 2

- Vein Sheath
- Transeptal
- Wire to PV
- Agilis sheath 8.5F
- Crossing of MV
- Pigtail in LV
- Safari XS
- Wire pacing test



Stage 3

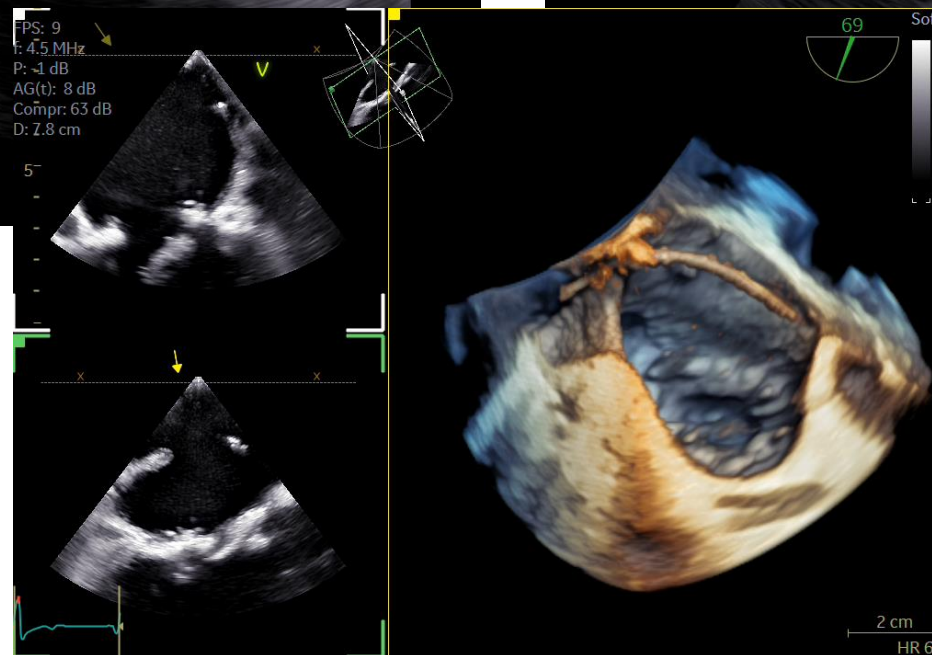
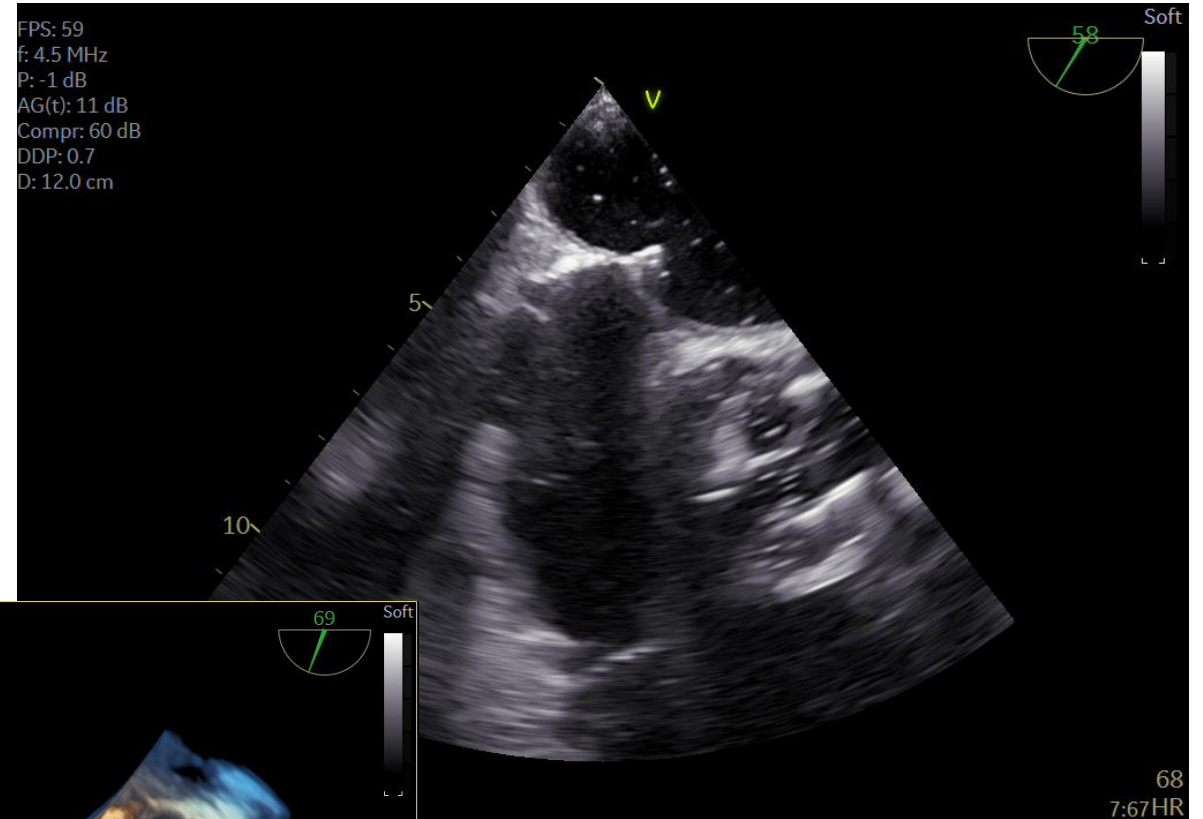
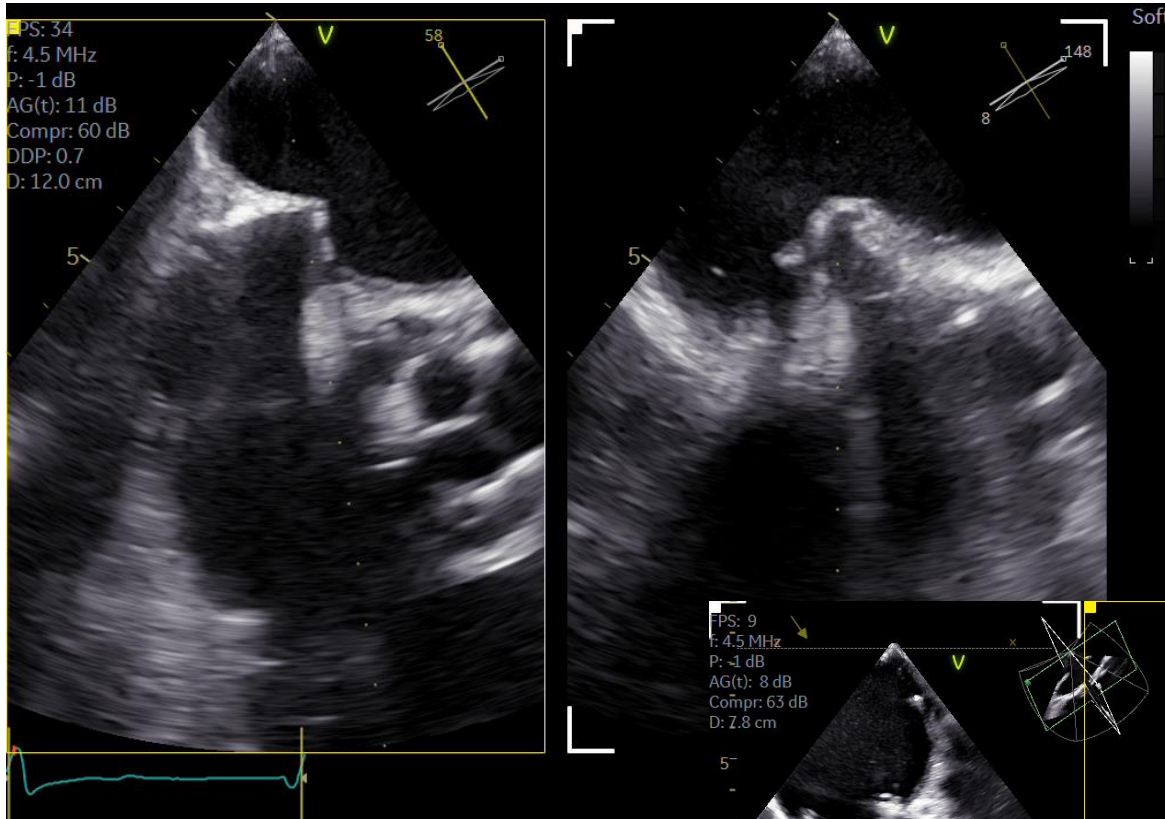
- Removal of Agilis
- Edwards e sheath
- Septostomy with 14mm balloon
- S3 29mm valve
- Femoral closure with figure of 8 stitch



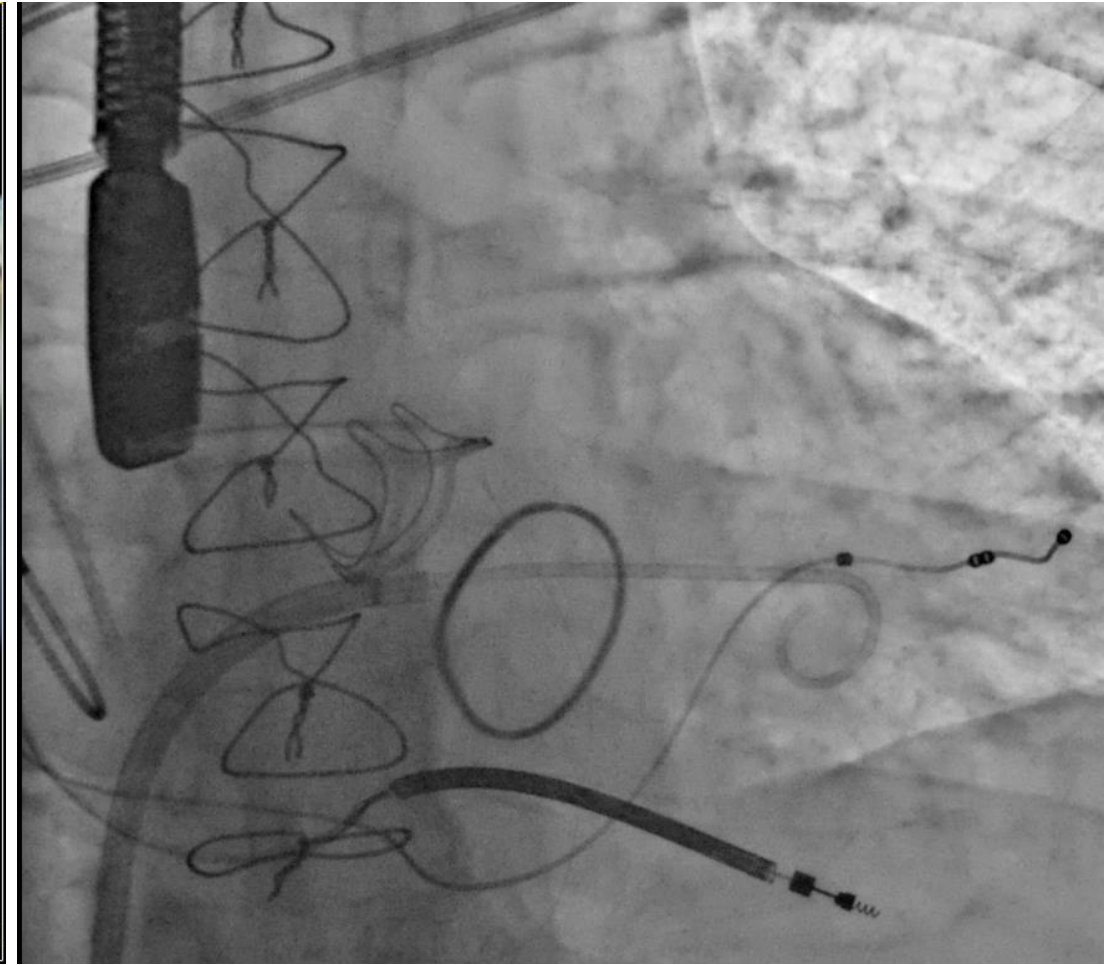
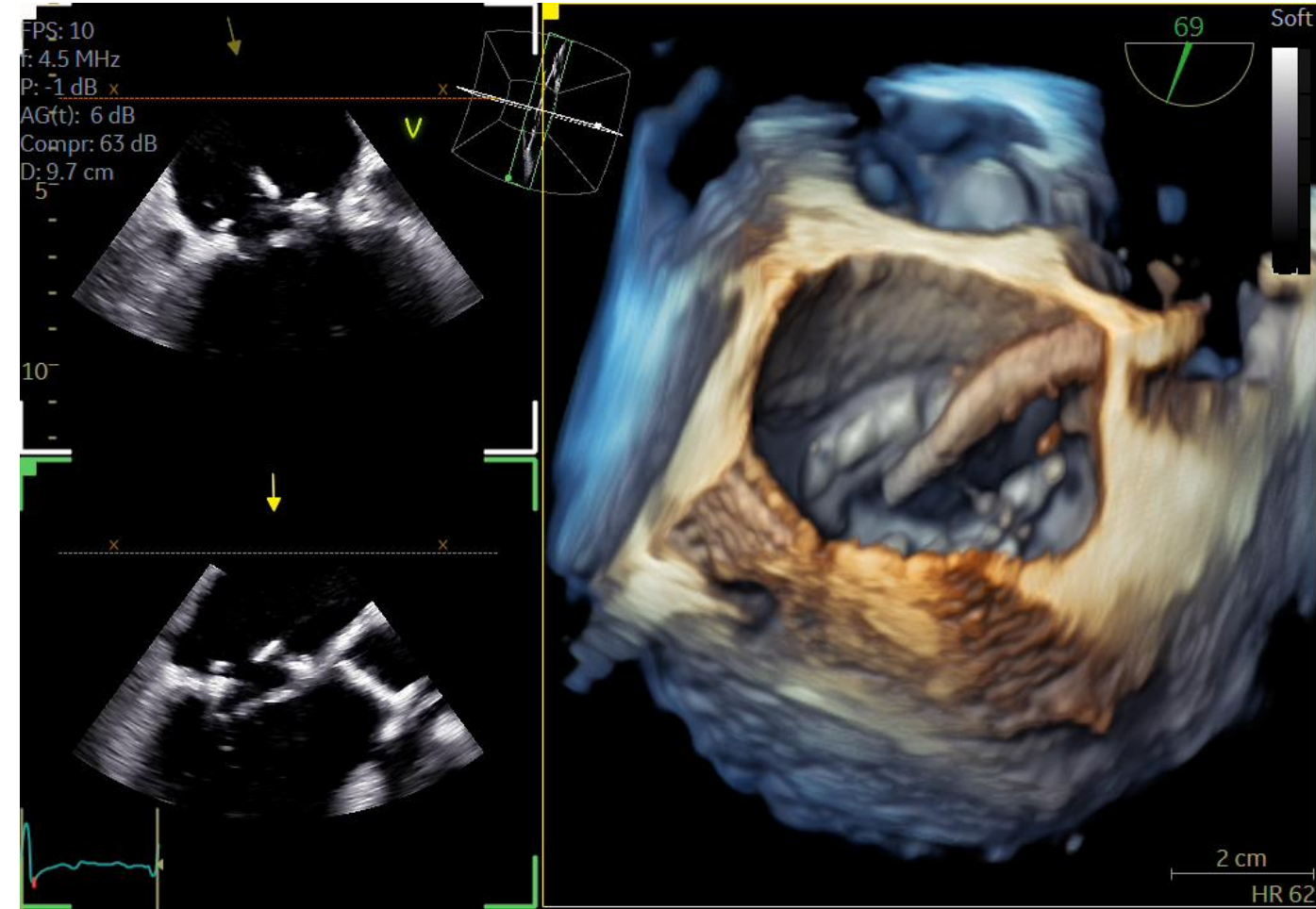
Valve in Ring



Valve in Ring-Transeptal BRK-1



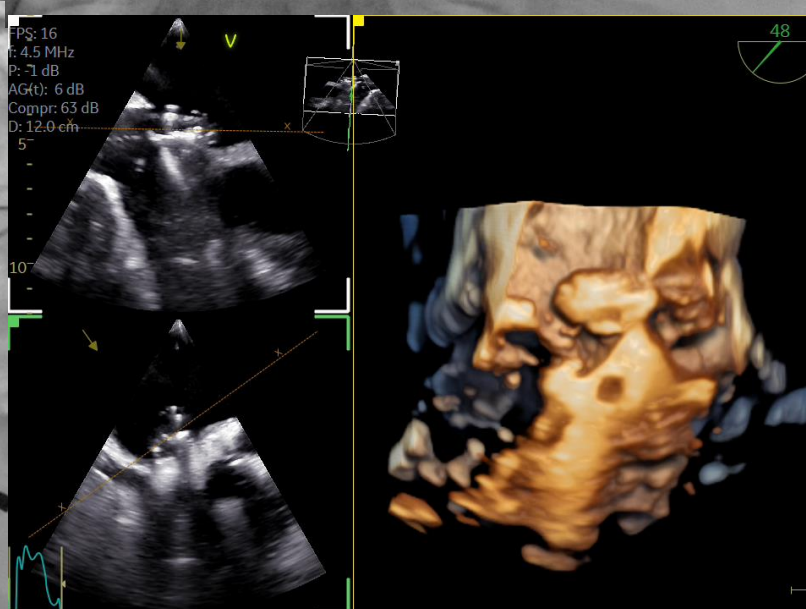
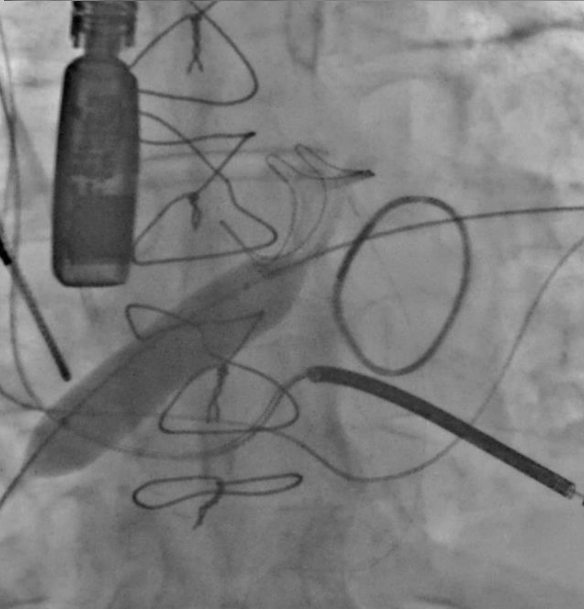
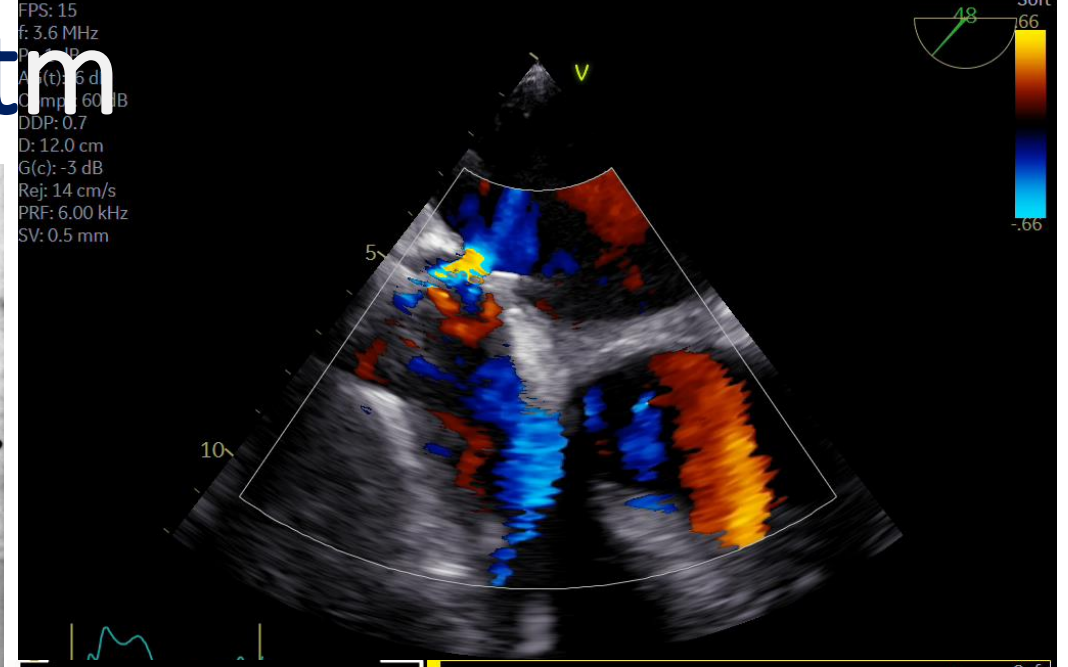
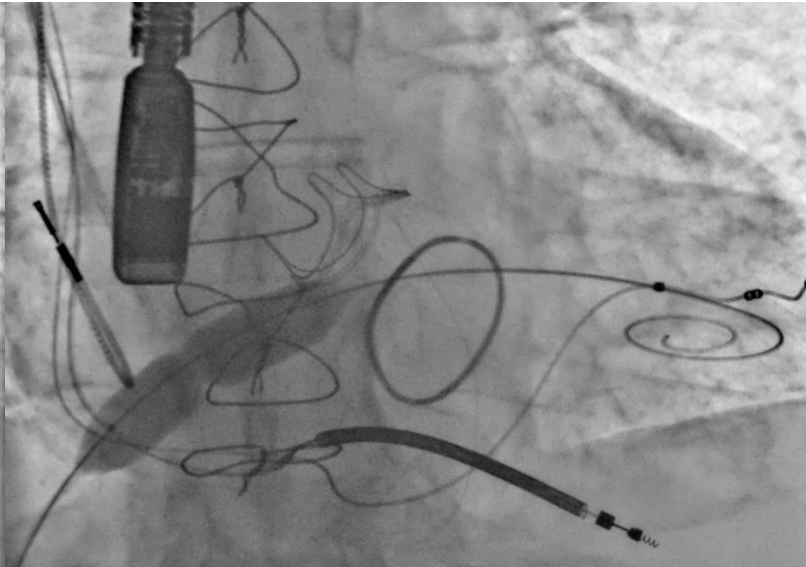
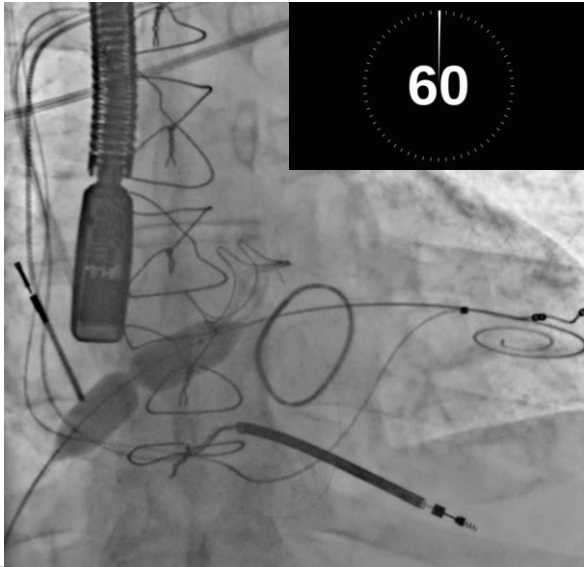
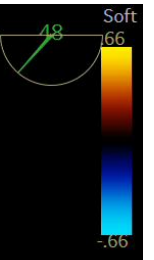
Valve in Ring-Safari XS



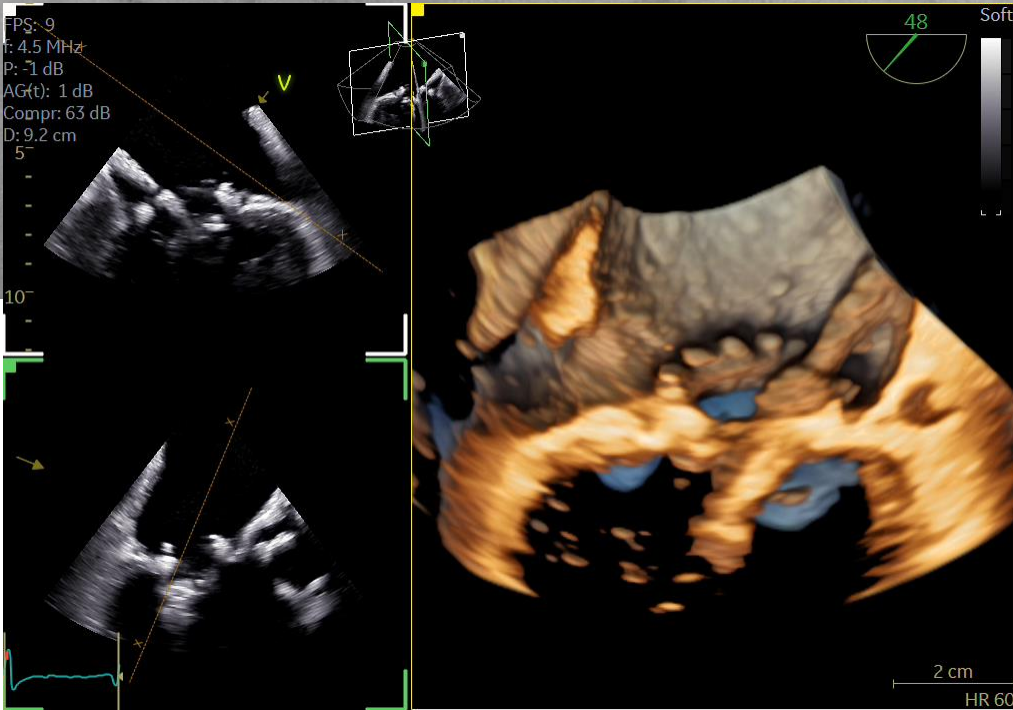
pericardium

Septostomy 14X40mm @2Atm

FPS: 15
f: 3.6 MHz
P: -1 dB
AG(t): 6 dB
Compr: 60 dB
DDP: 0.7
D: 12.0 cm
G(c): -3 dB
Rej: 14 cm/s
PRF: 6.00 kHz
SV: 0.5 mm

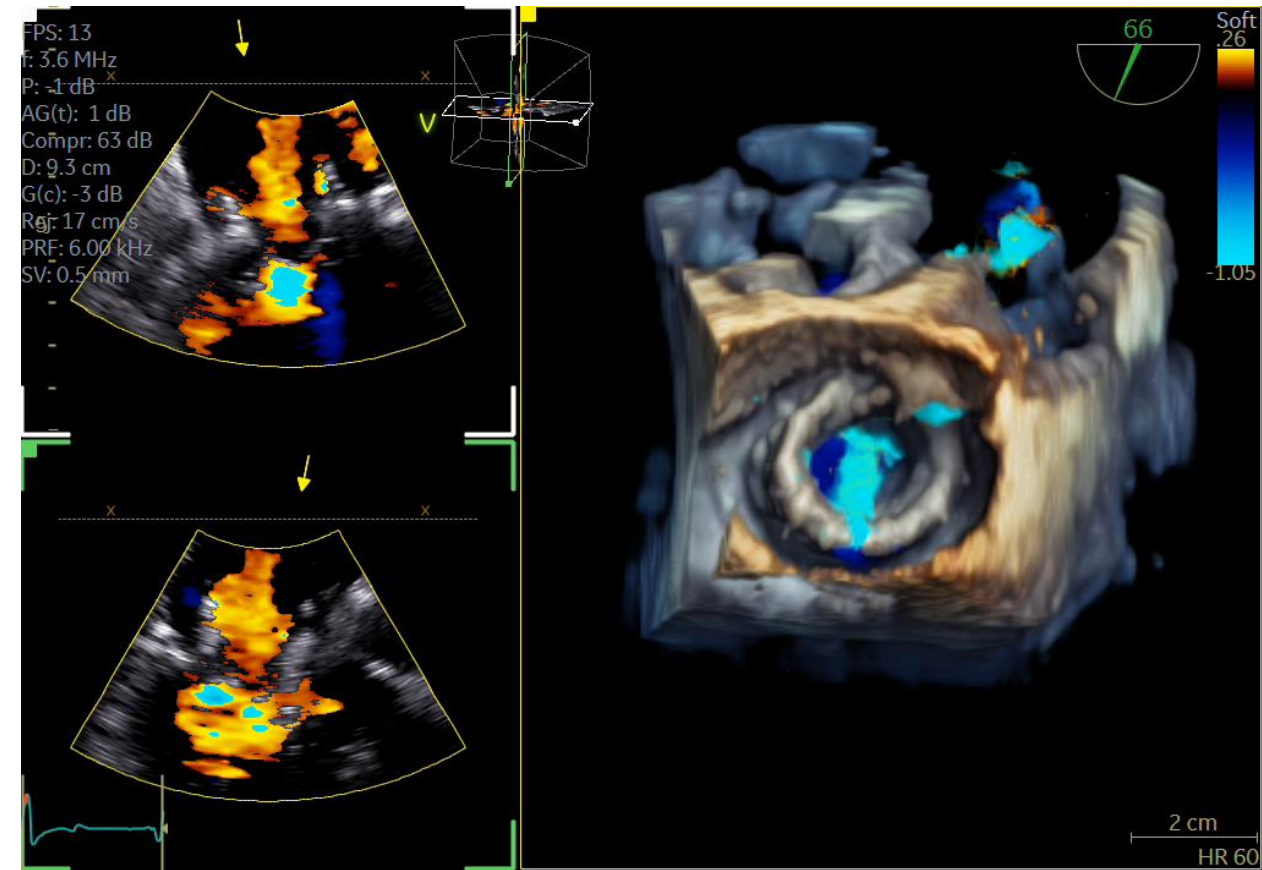
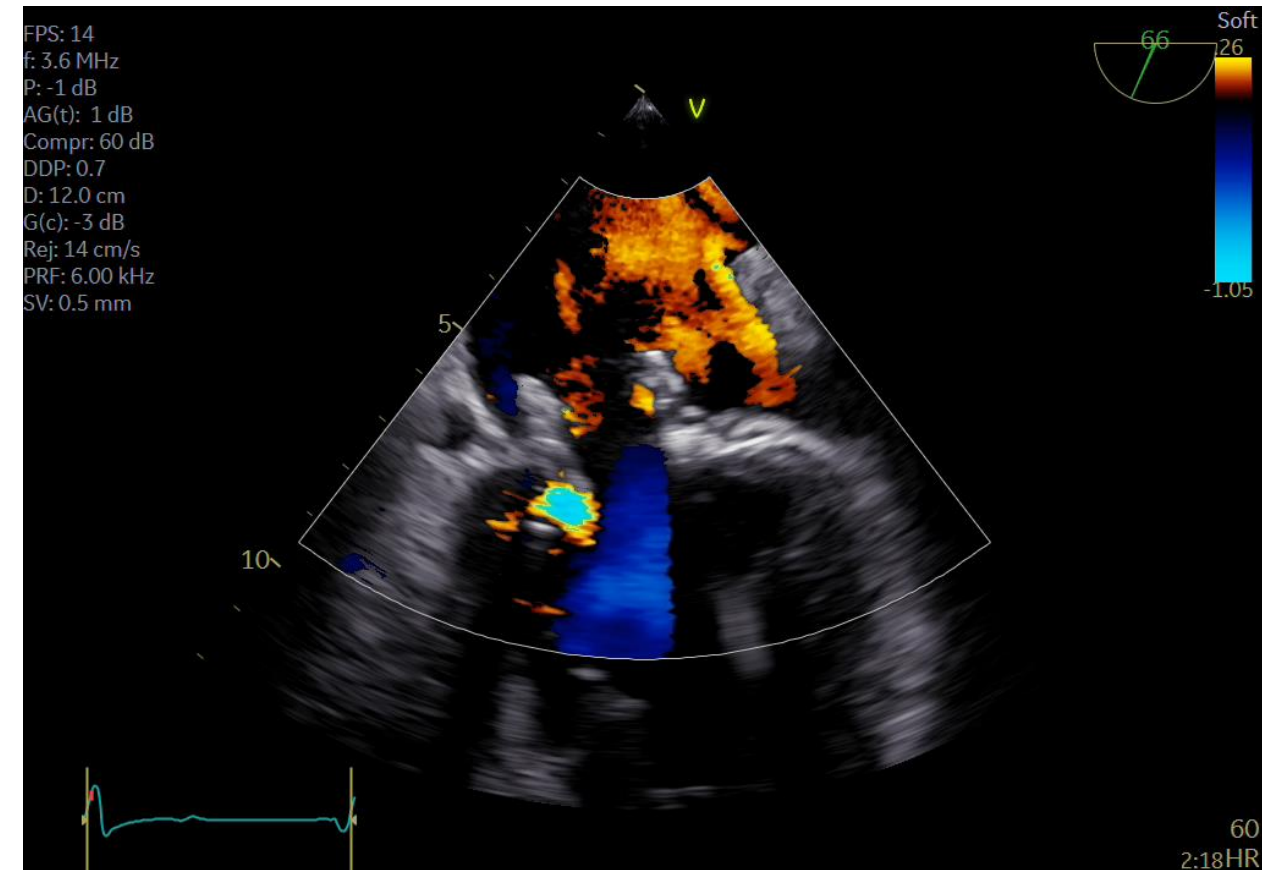


Valve in Ring-Wire pacing- Sapien 29mm

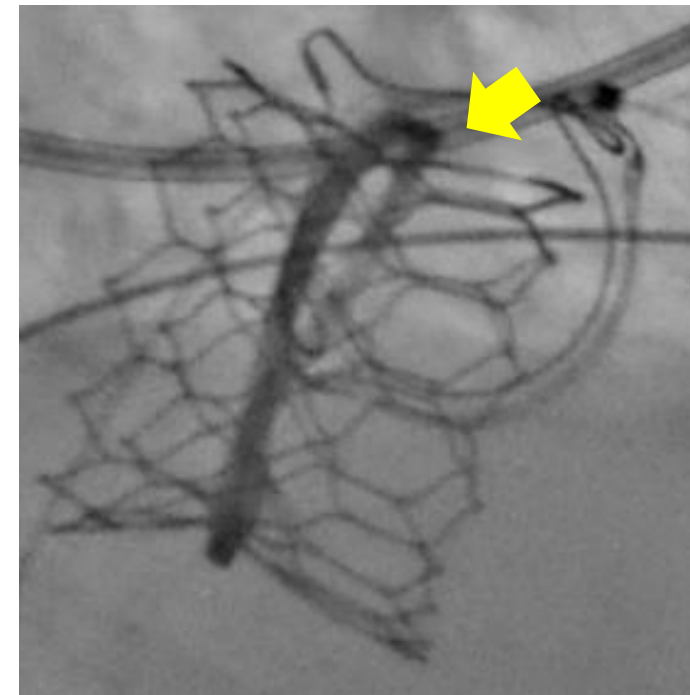
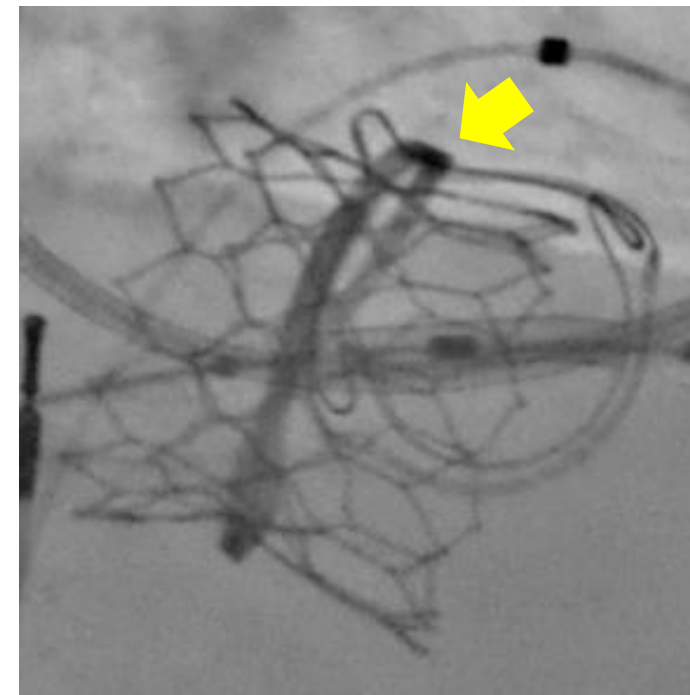
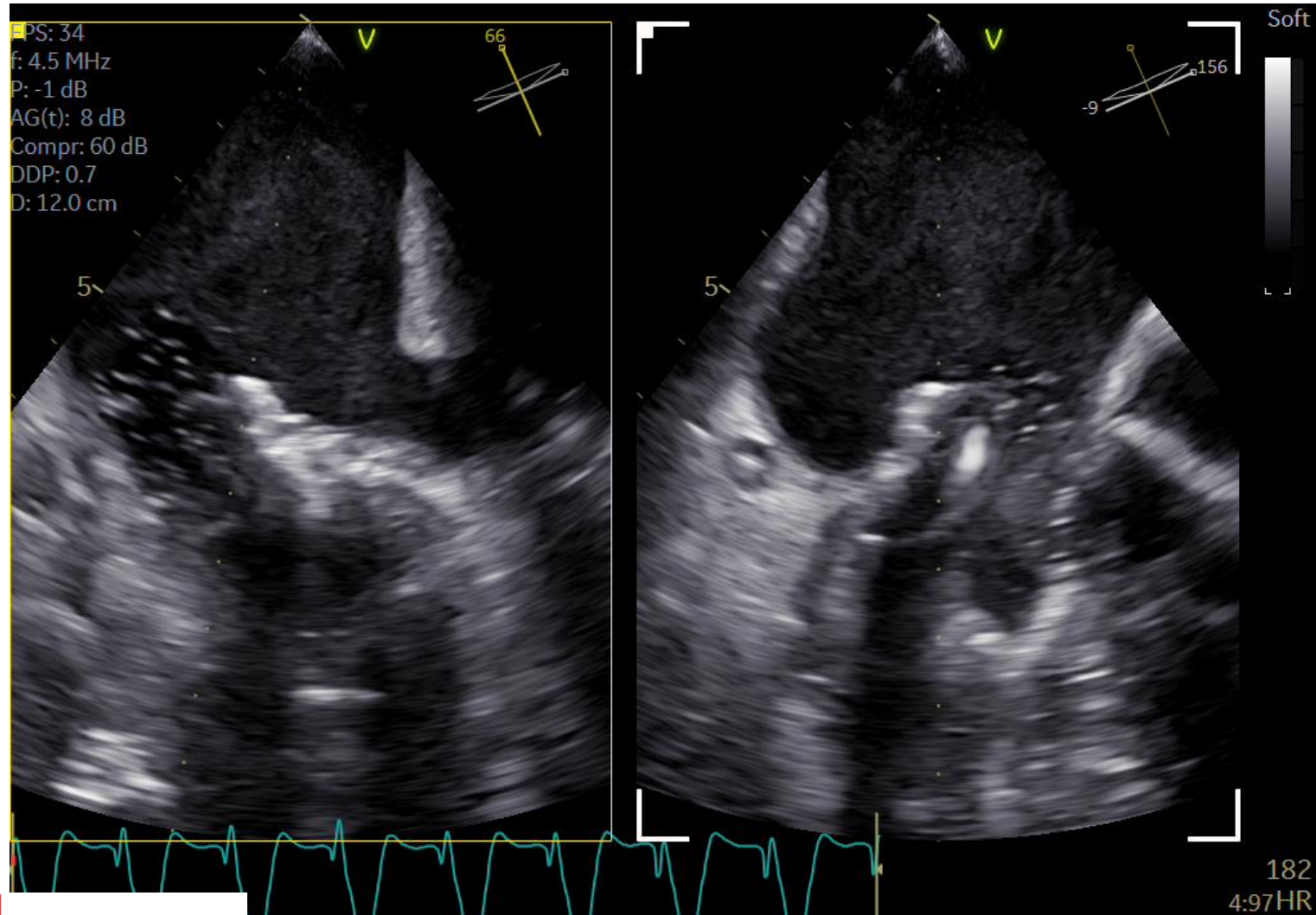


Conical Deployment
Avoid parallel risk of embolization!
20-30% atrial to the band

Valve in Ring-Post implantation

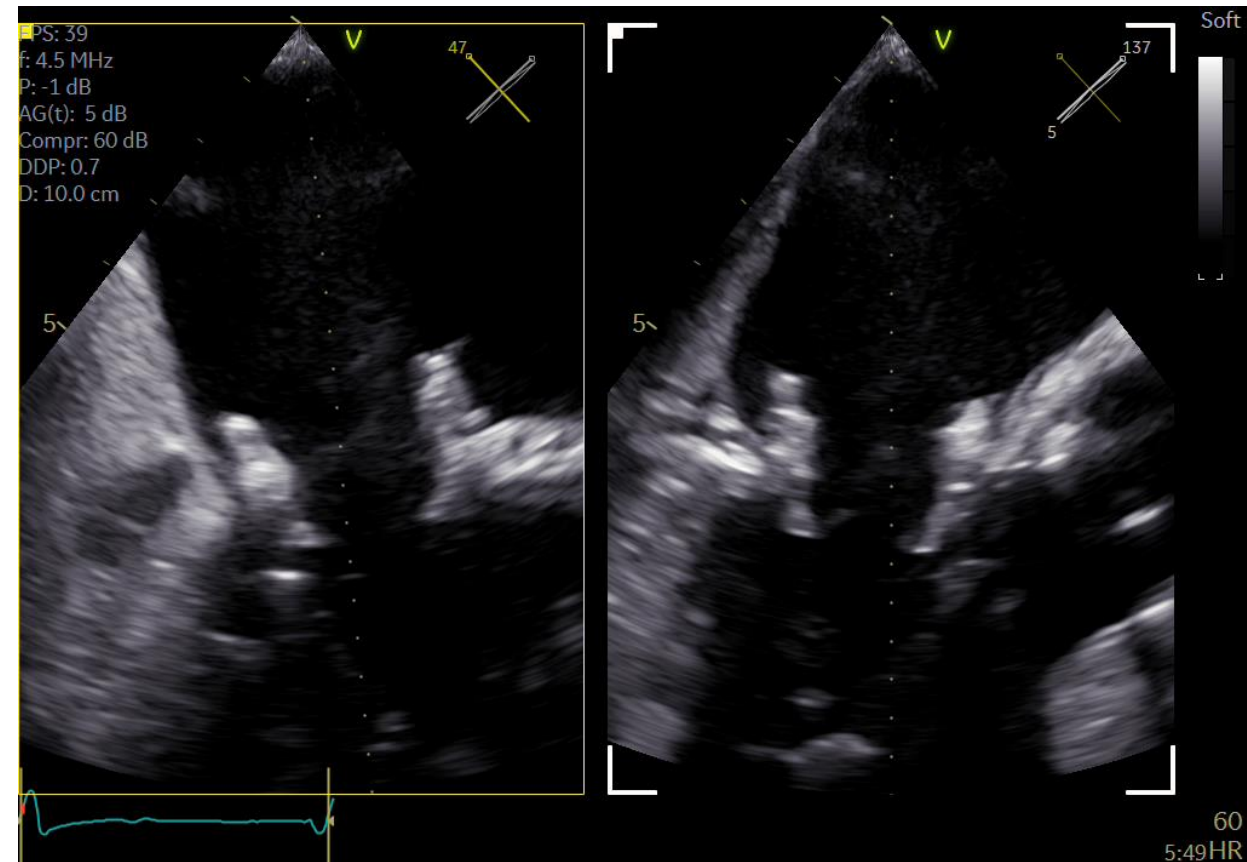
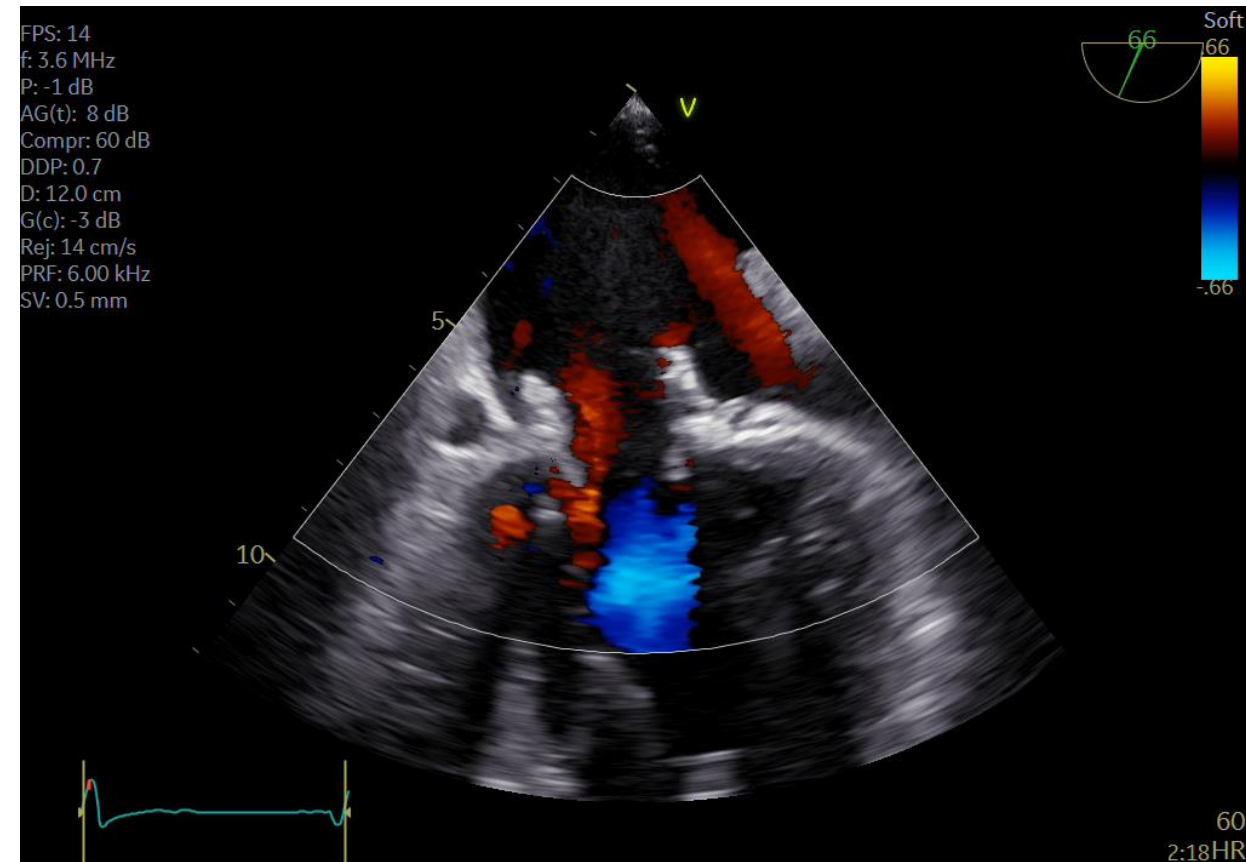


Valve in Ring Post Dilatation

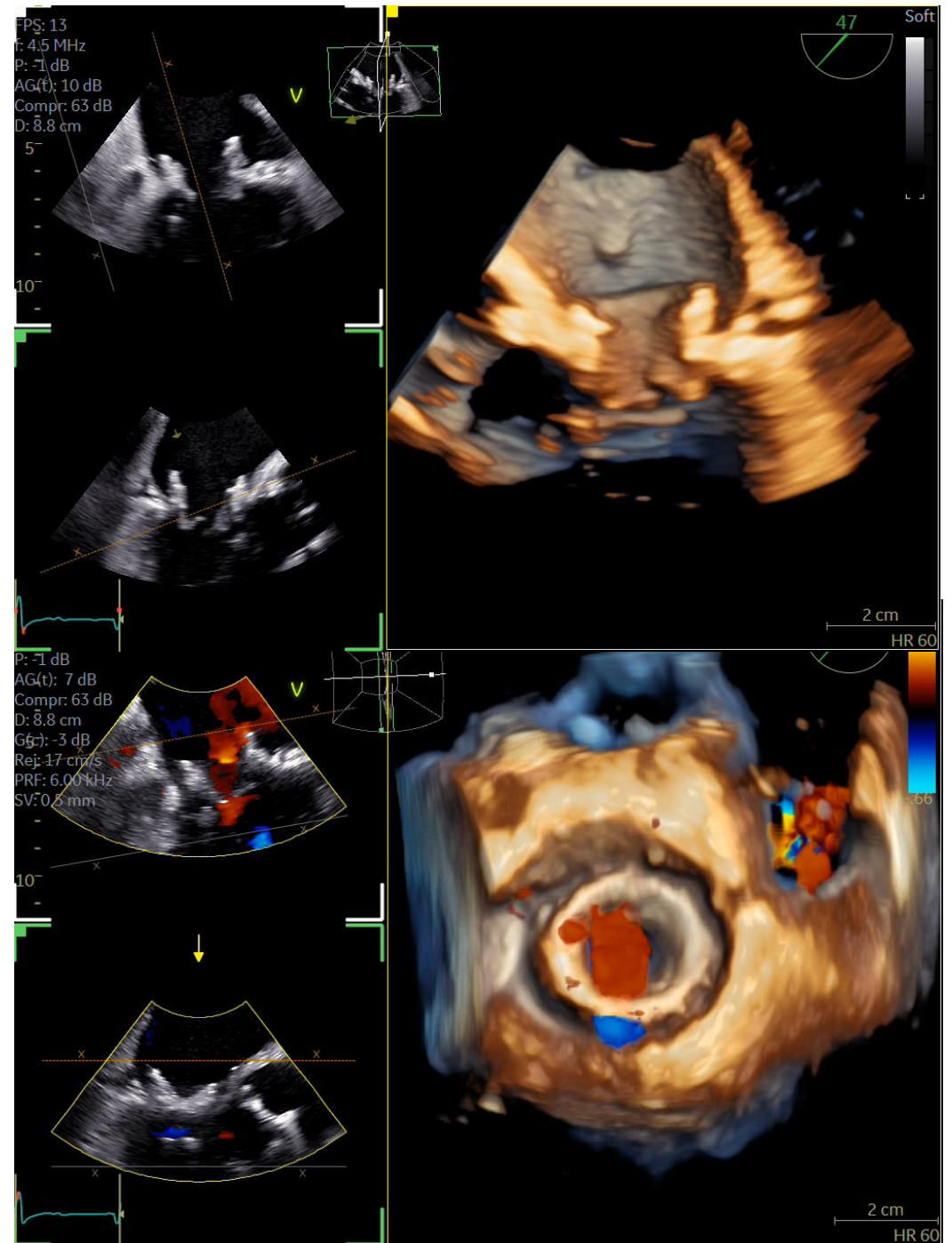
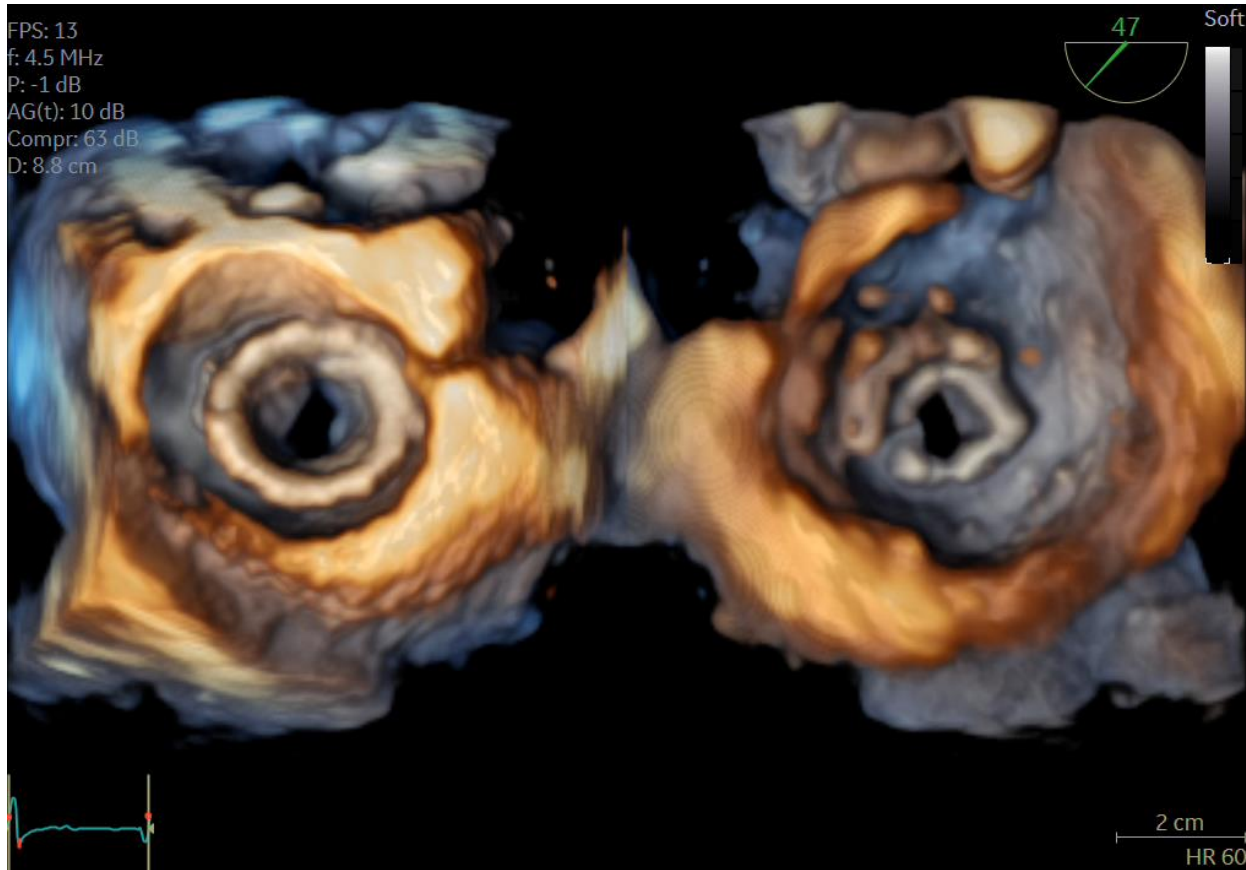


pericardium

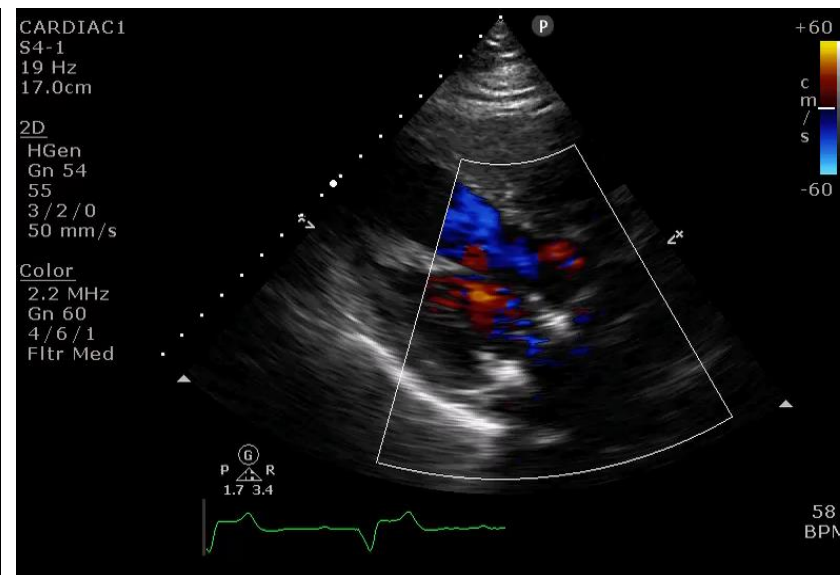
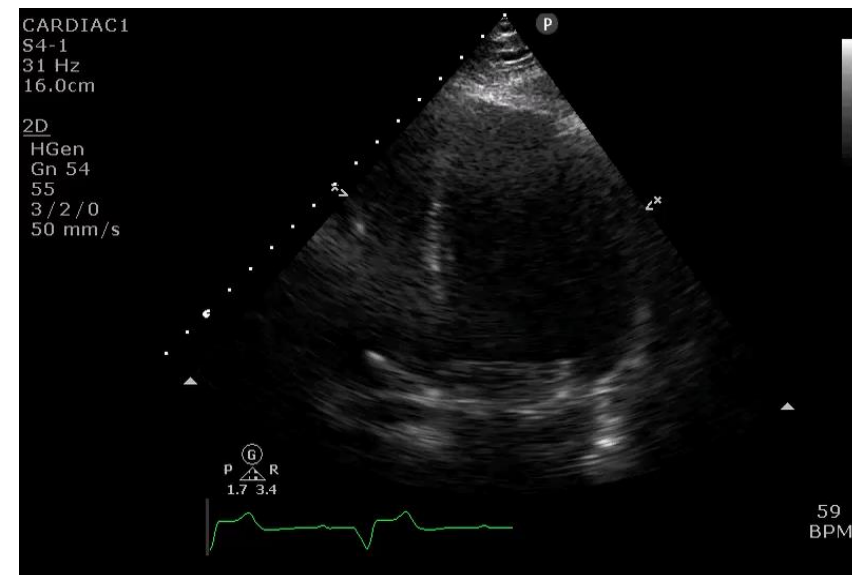
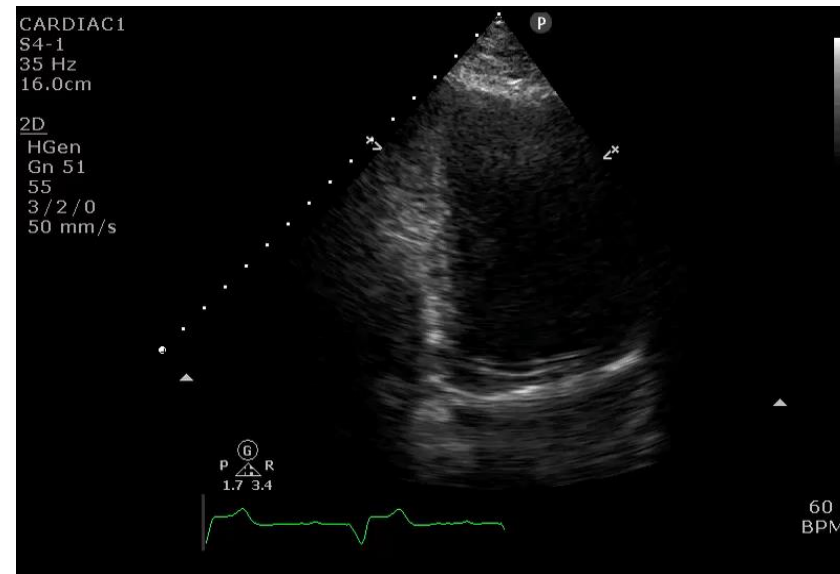
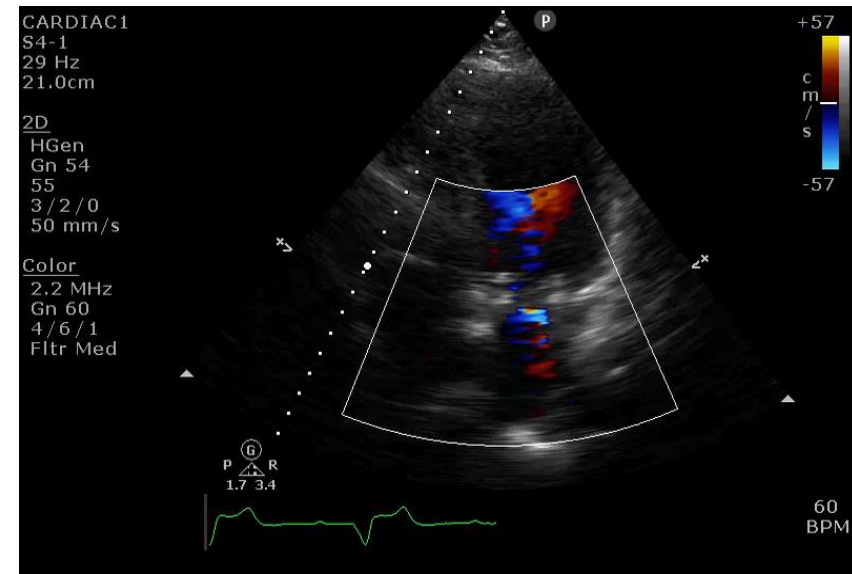
Valve in Ring-Final



Valve in Ring-Final



Follow-up @1m



EDD=52mm (61mm),
ESD=38mm (41mm)
EDVi=96mL/m² (116mL/m²)
ESVi= 38mL/m² (53mL/m²)
EF= 60% (55%)
MV meanPG=7mmHg (5mm)

Take home messages

- First line treatments for patients with Heart Failure with reduced ejection fraction AND functional MR include:
 - optimal medical therapy and
 - cardiac resynchronization therapy (if indicated)
- Concurrent surgical aortic valve replacement and MV repair should be avoided
- If the patient remains symptomatic, consider transcatheter edge-to-edge mitral valve repair (MitraClip, PASCAL)
- In patients with a previously failed annuloplasty, the implantation of a balloon expandable aortic valve (e.g. Edwards Sapien) is feasible



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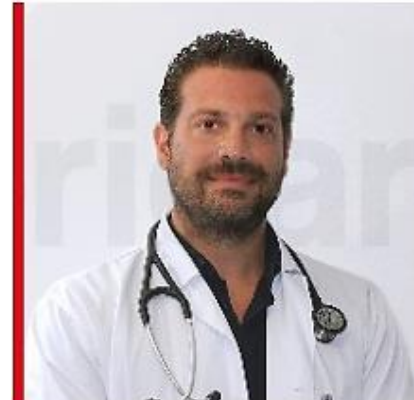
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