

# Challenging the experts (ESC Core Curriculum in VHD)

**A PATIENT WITH MODERATE MITRAL REGURGITATION AND LV SYSTOLIC DYSFUNCTION.**

Giovanni La Canna

**IRCCS Humanitas Clinical and Research Hospital,  
Rozzano (Milan), Italy**

[lacannagiovanni.cardio@gmail.com](mailto:lacannagiovanni.cardio@gmail.com)

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**I have nothing to declare**

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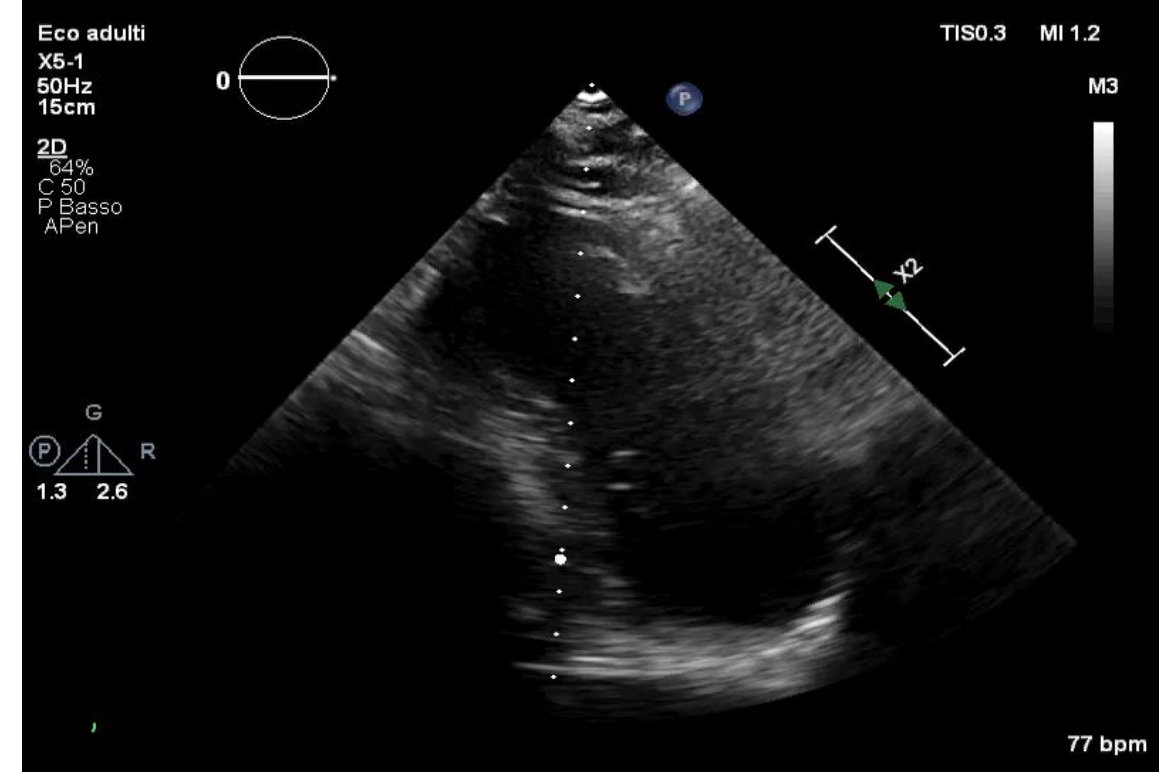
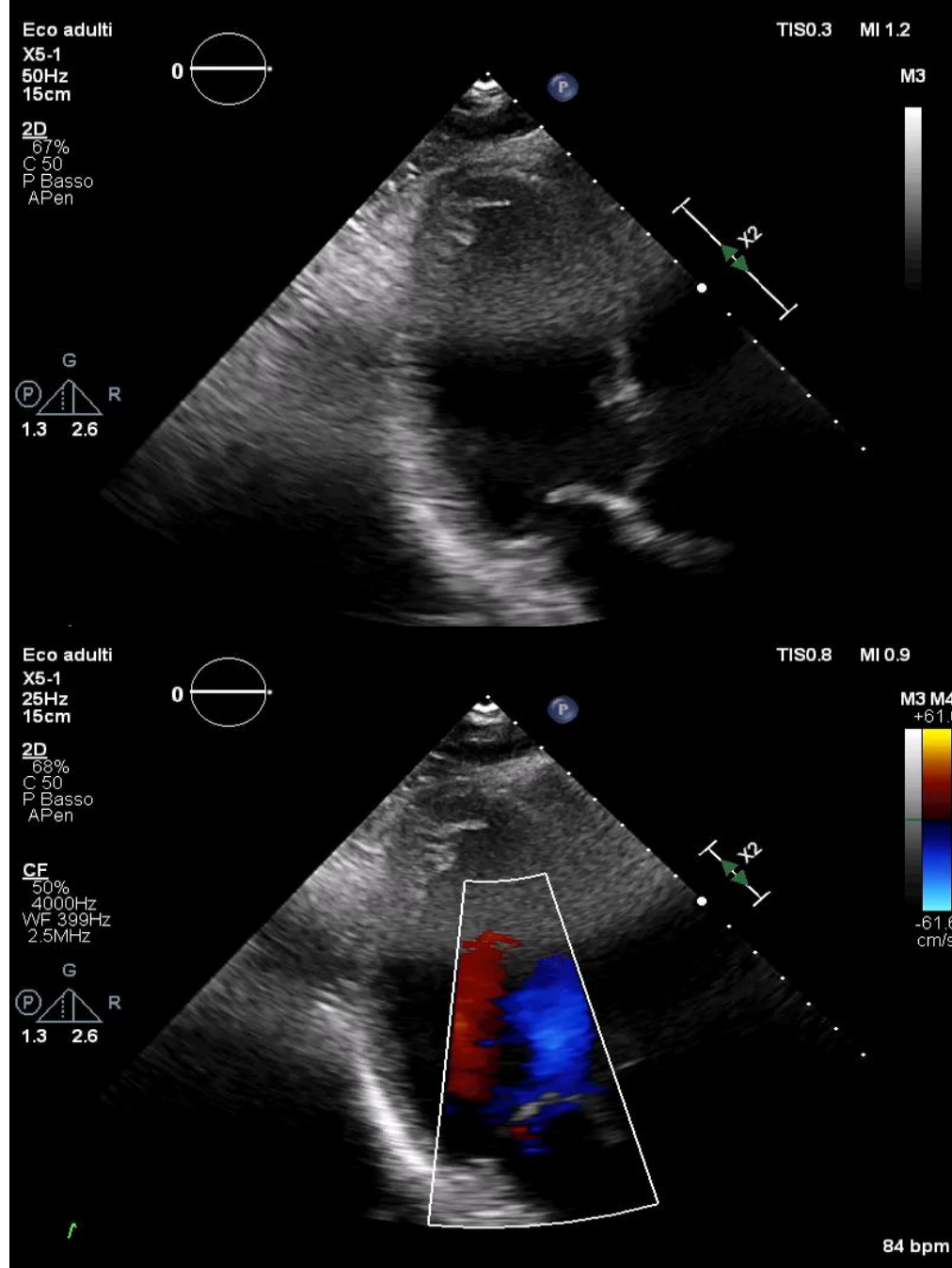
# EuroValve

October 28- 29 2021  
CONGRESS CENTER LIEGE BELGIUM

- Secondary Mitral Valve Regurgitation (SMR) is an additional predictor of poor prognosis in patients with LV dysfunction
- Definition of severity and mechanism of the SMR, and related LV disease are paramount to plan a tailored management
- In the setting of LV disease, surgical or percutaneous treatment may be beneficial in severe SMR but can be challenging in moderate cases

## Clinical case

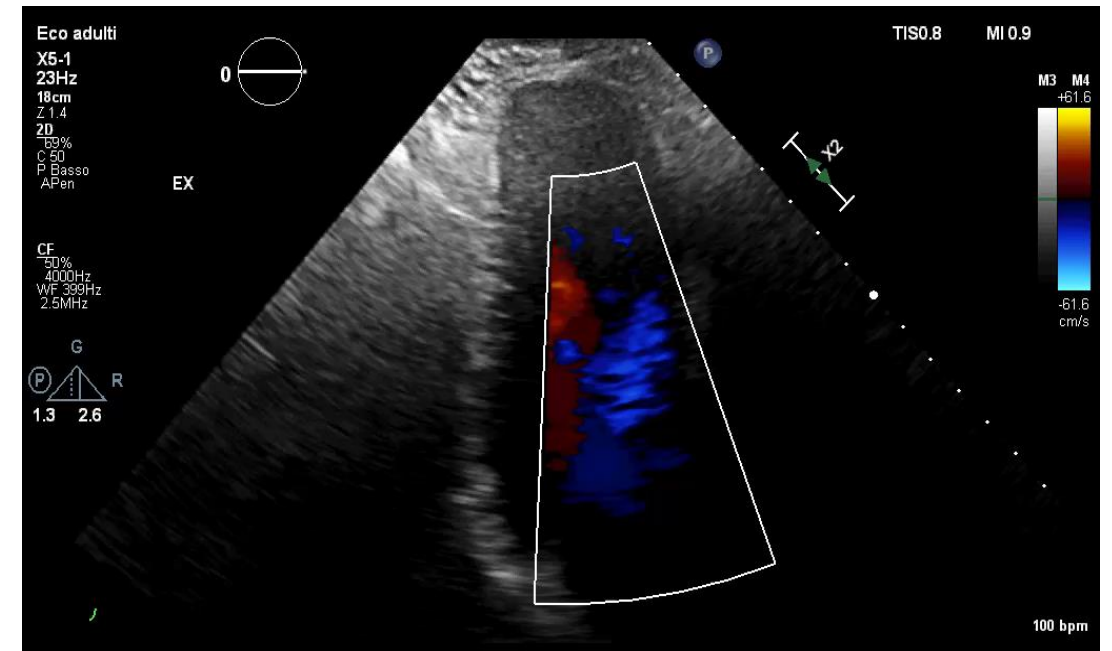
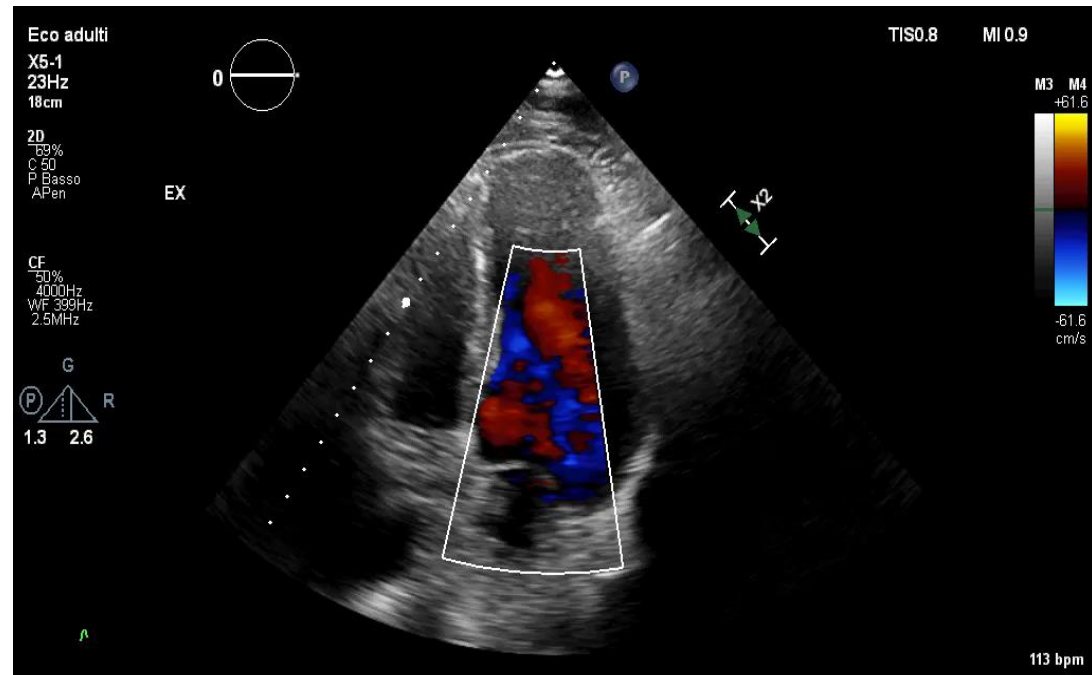
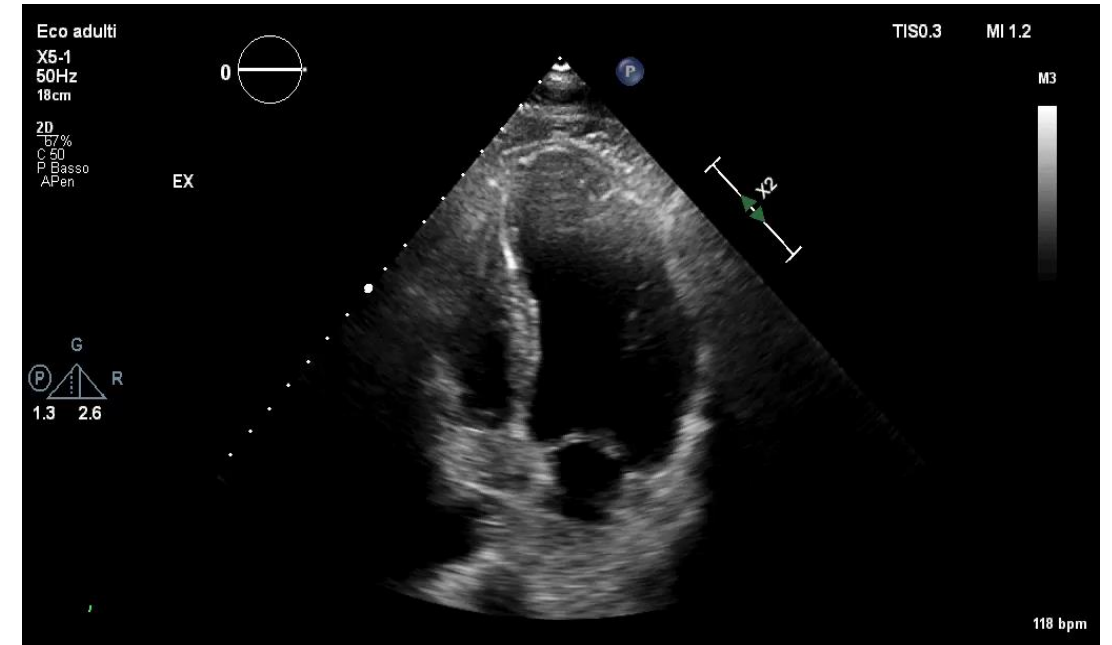
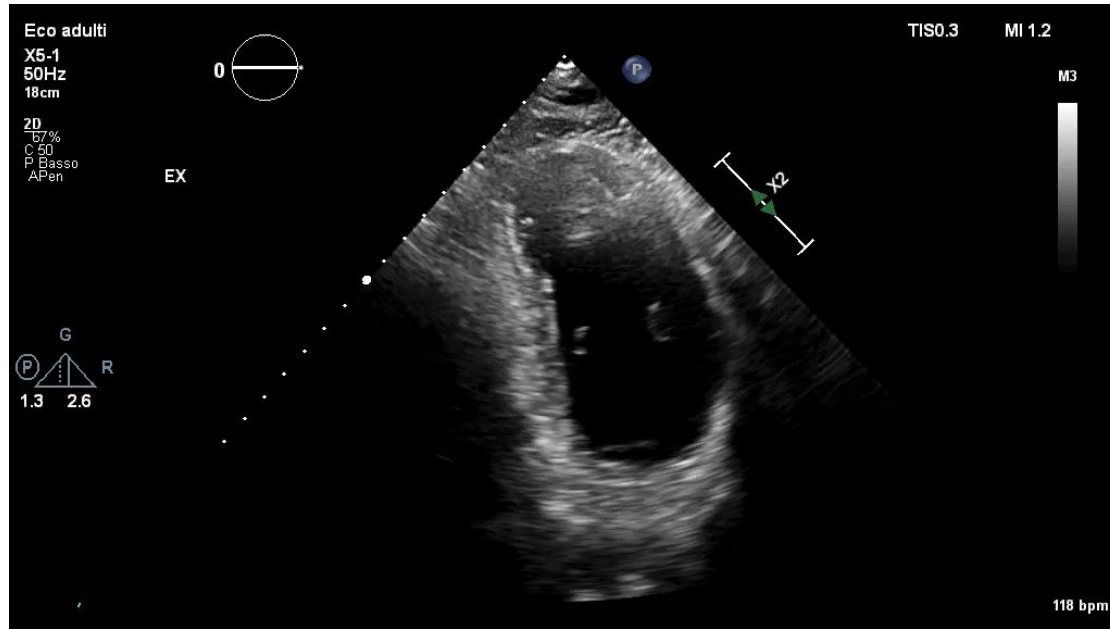
- N.A., 79-year-old man
- High coronary risk profile (dyslipidemia, high blood pressure)
- Transient cerebral ischemic attack with subsequent TEA (013)
- Pulmonary embolism ('013) with recurrence 1 year later ( warfarin vs. Rivaroxaban shift)
- Acute anterior myocardial infarction during rehabilitation for femoral fracture, underwent successful PCI with residual apical akinesia ,LVEF 40% ('018), moderate mitral regurgitation



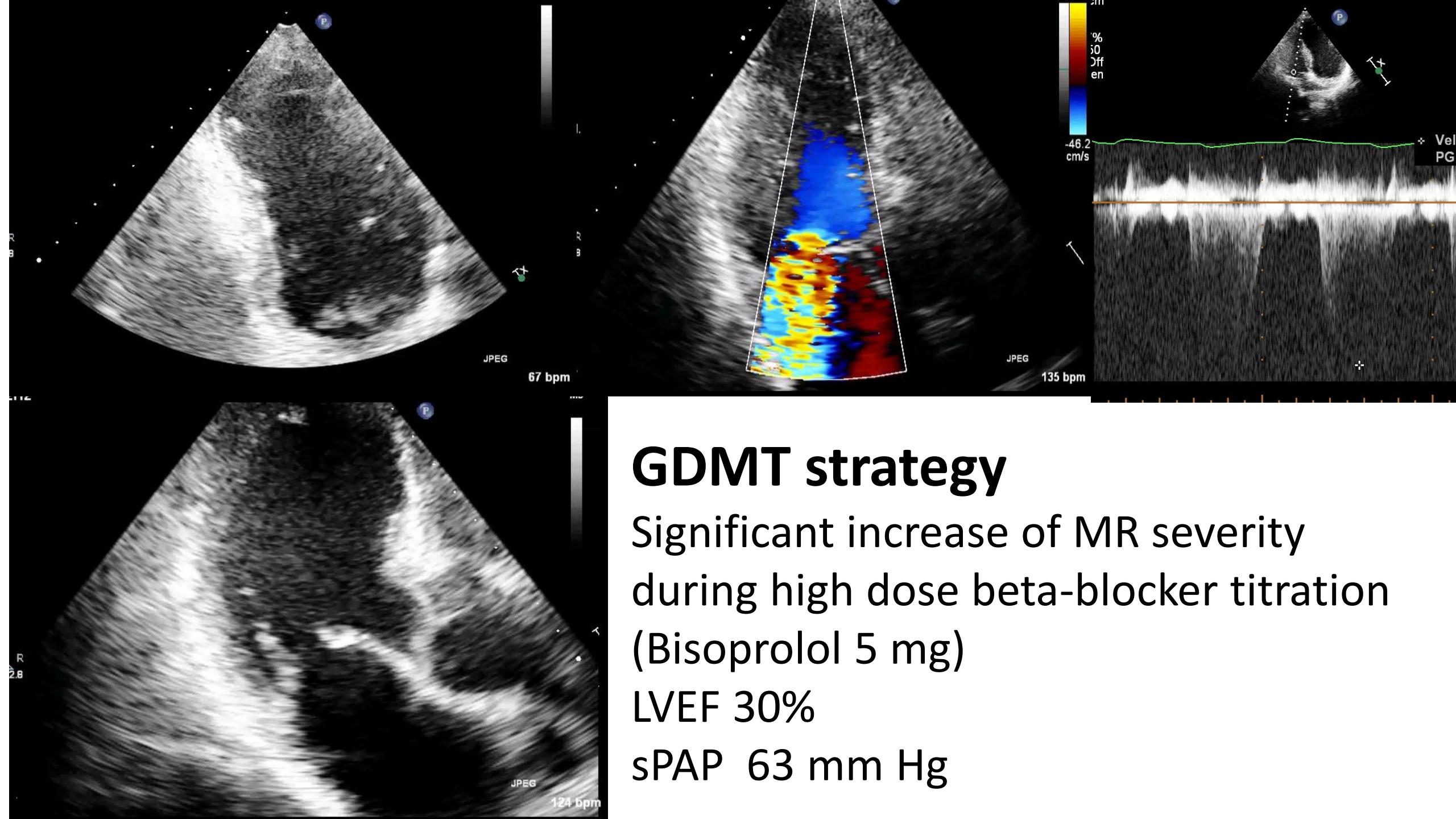
## Following LAD-PTCA

- **LV apical akinesia** with infero-segment sparing, moderate EF reduction (EF 40%)
- **Moderate non-significant MR** (VC 3 mm, ERO 0.1 cm<sup>2</sup>, RF 20%)  
*unchanged during Exercise ECHO*

# EXERCISE ECHO-DOPPLER







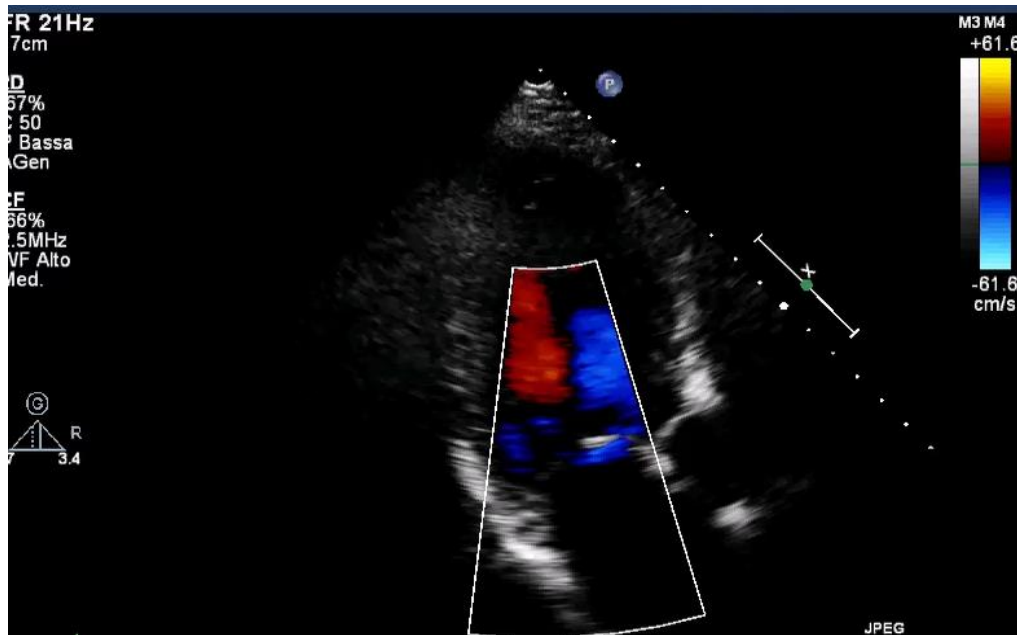
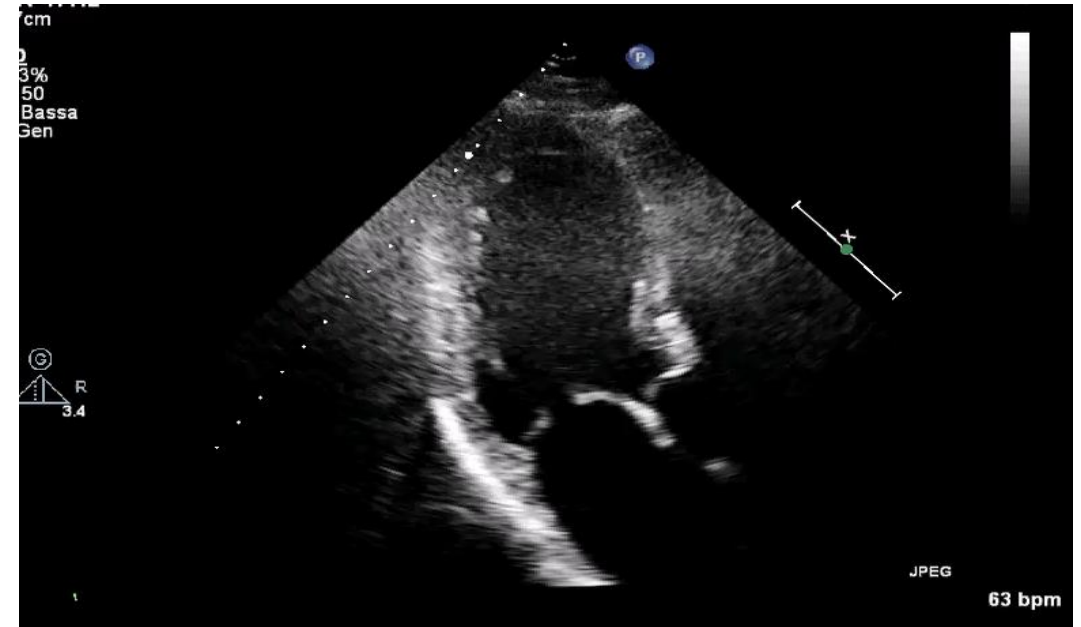
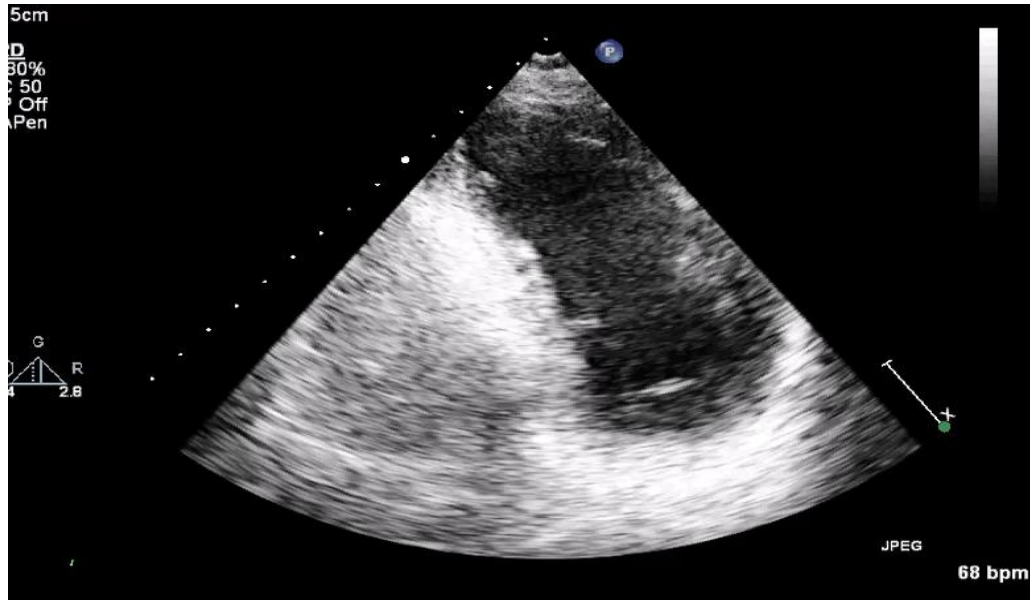
## GDMT strategy

Significant increase of MR severity  
during high dose beta-blocker titration  
(Bisoprolol 5 mg)

LVEF 30%

sPAP 63 mm Hg


# Low-dose Beta-blocking therapy: Bisoprolol 1,25 mg

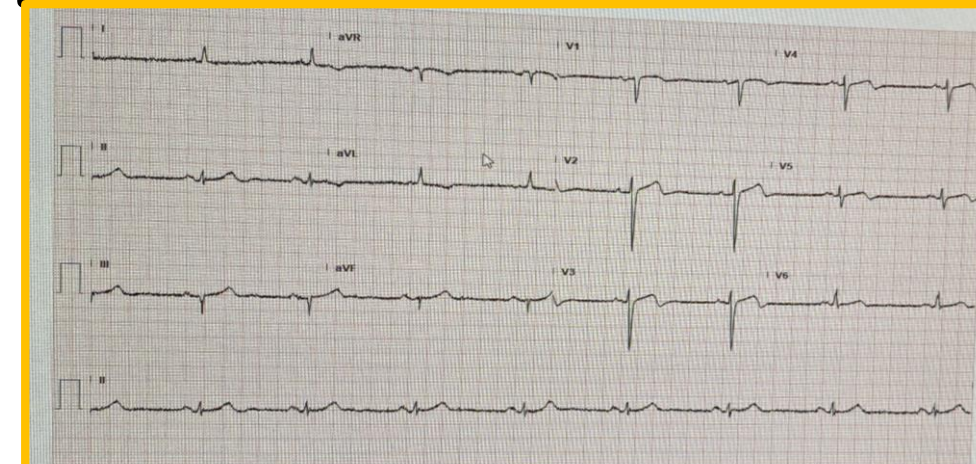
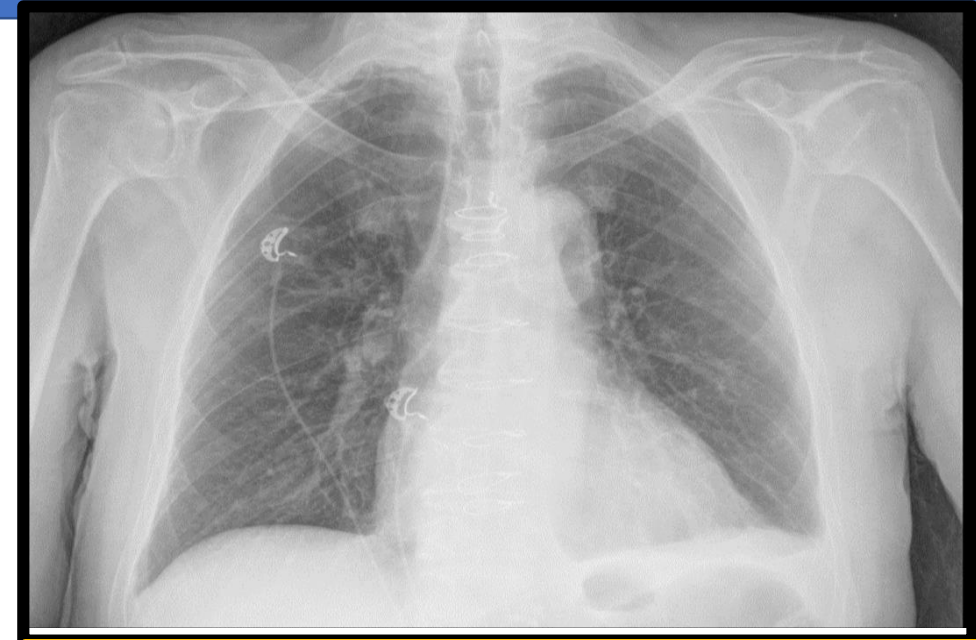


**Ultimate medical therapy**  
Bisoprolol 1.25 mg  
Sacubritil/valsartan 24/26  
Furosemide 25 mg x 2  
Aldactone 50 mg



# Two years later.....The patient on admission

- 
- Congestive Heart Failure ( NYHA class III)
  - No cardiac murmur
  - Apical LV aneurysm with thrombi (20 x19 mm), severe systolic dysfunction (EF 30%),
  - Severe MR

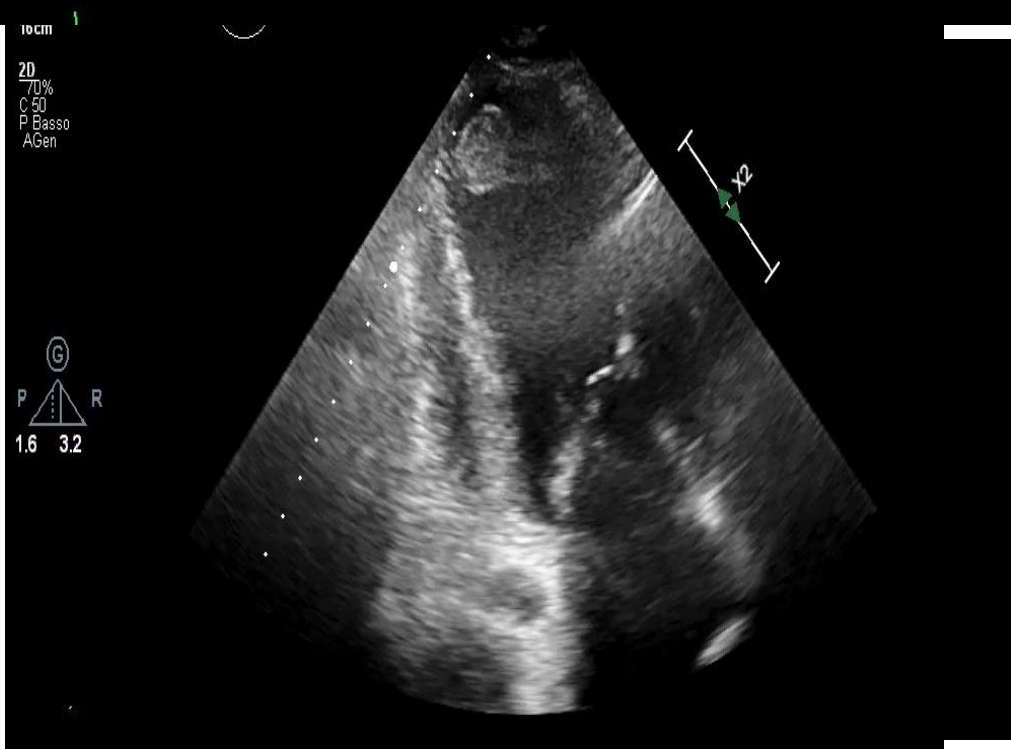




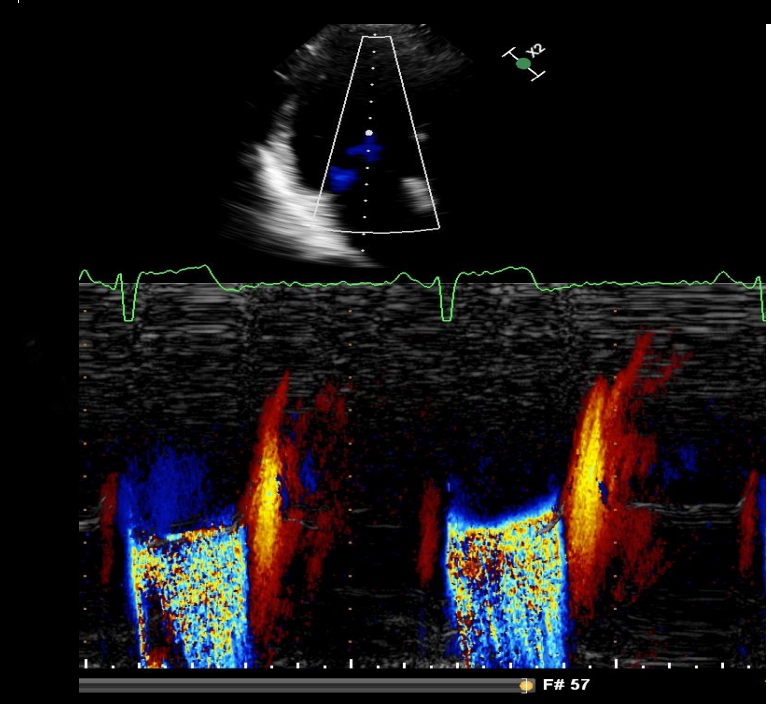
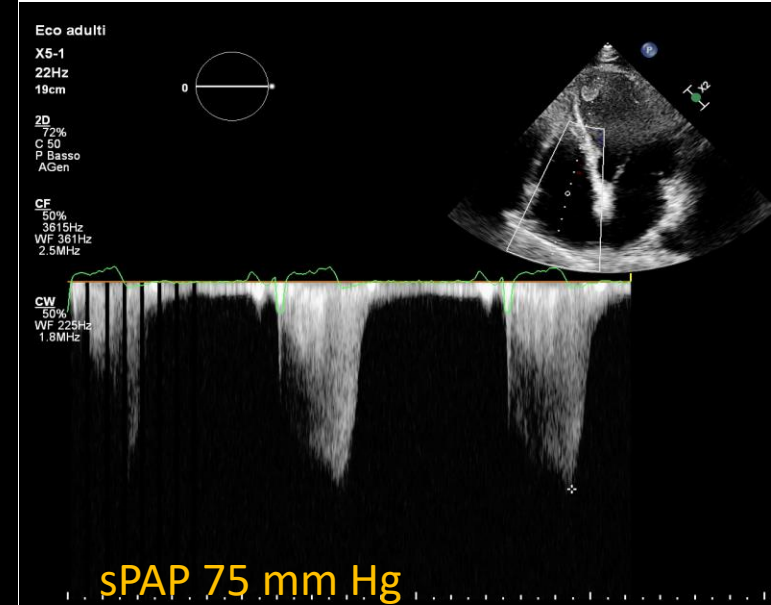
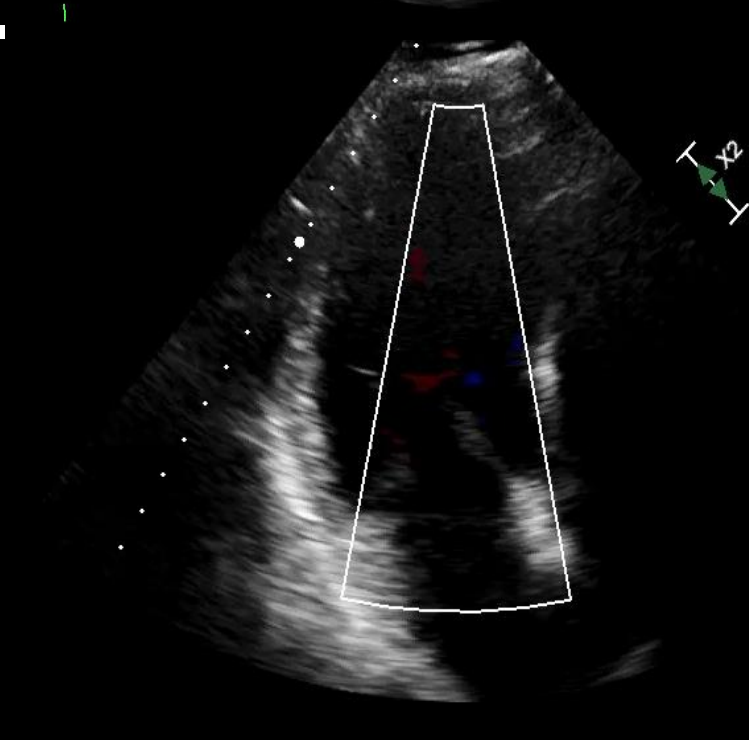
1.6 3.2

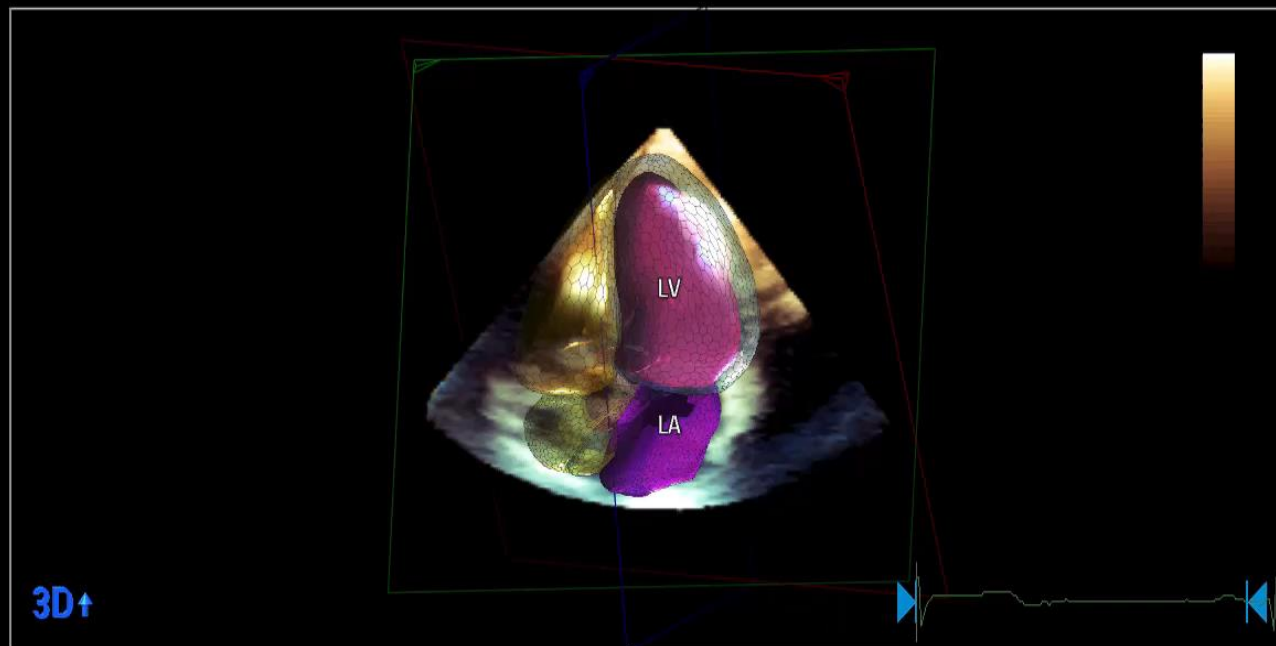


1.6 3.2



1.6 3.2





#### Battito attuale

##### Ventricolo sinistro

EDV	220 ml
ESV	144 ml
EF	35 %
EDL	10.3 cm
ESL	10.0 cm
SV	76 ml
CI	**** l/min/m <sup>2</sup>
Massa ED	208 g

##### Atrio sinistro

##### HR

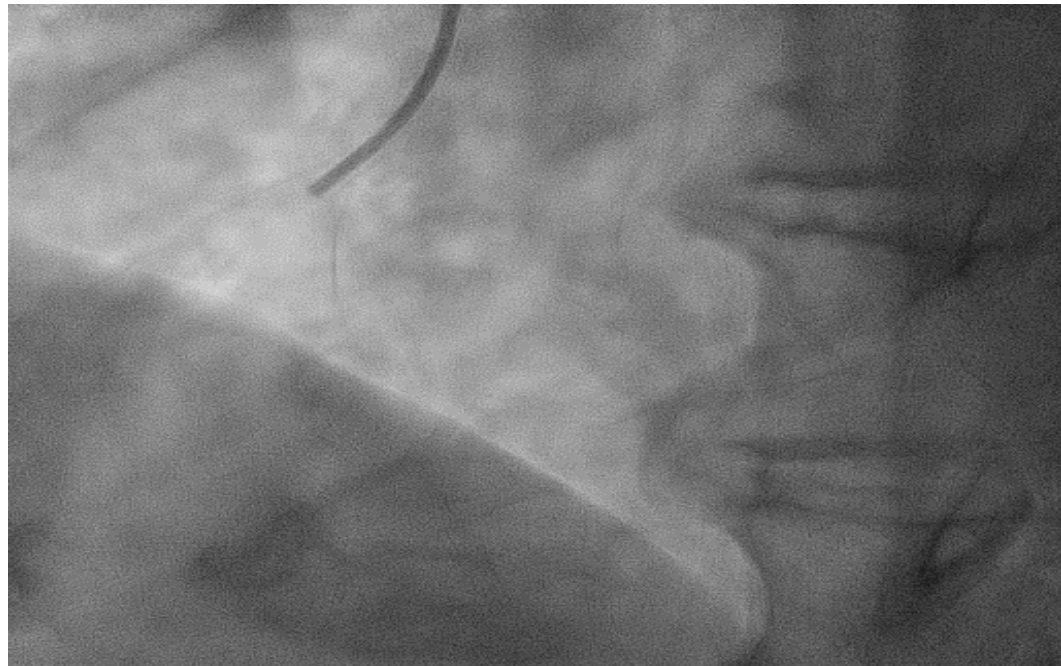
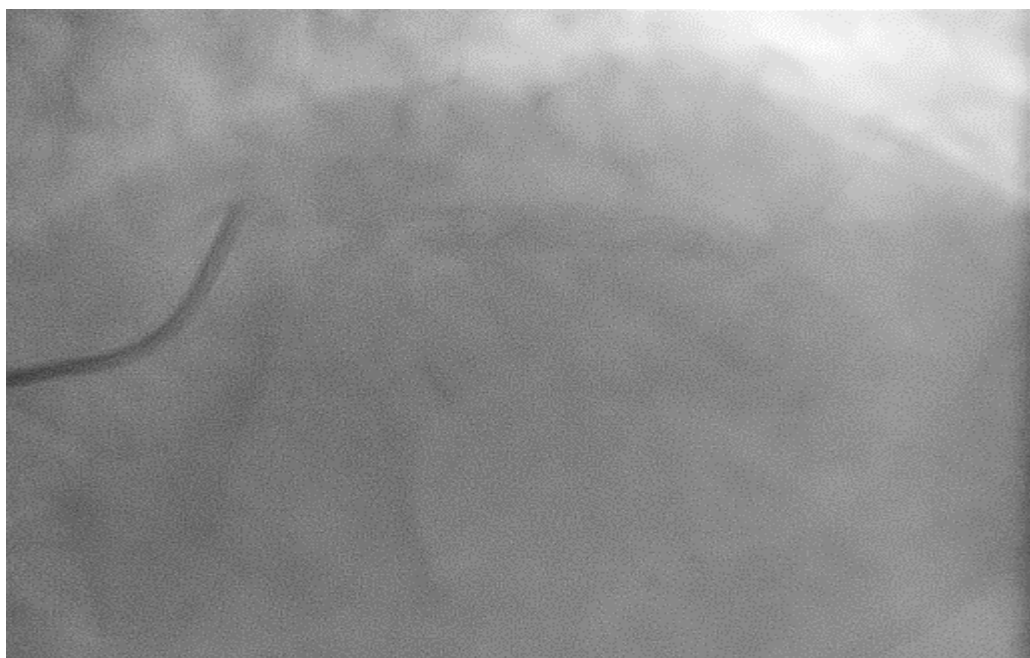
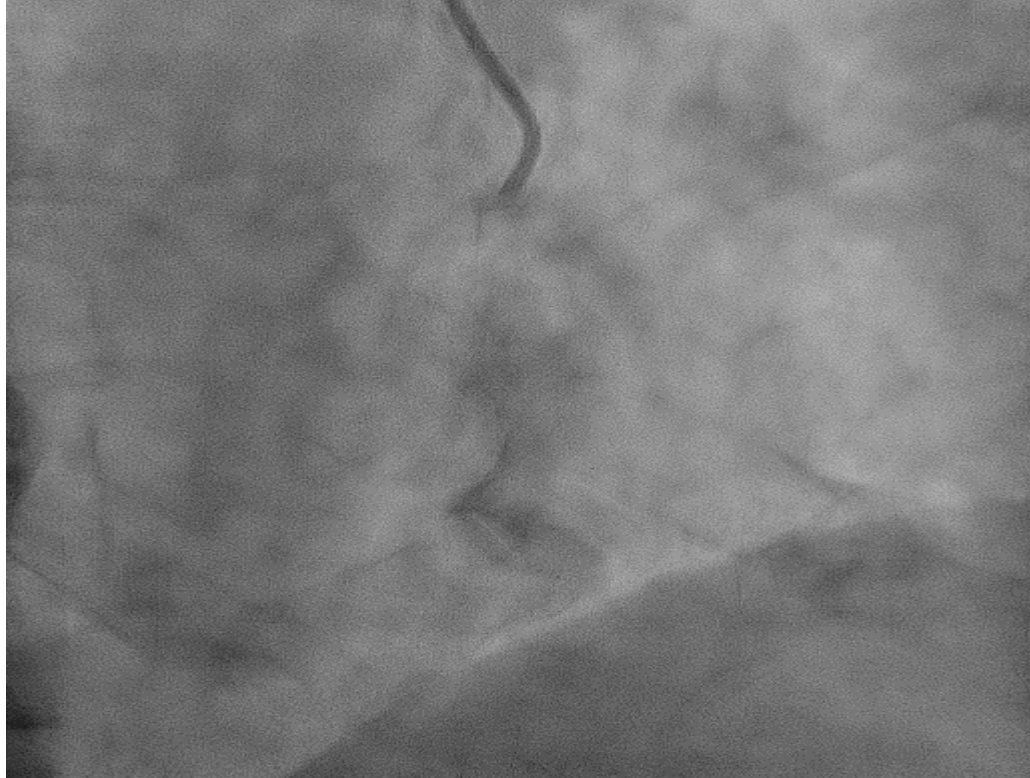
##### Altri

#### Impostazioni contorno

##### Attuale Predefinito

ED	60	60
ES	30 [R]	30





# Therapeutic options

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- 
- **Surgical LV restoration and thrombi excision without revascularization**  
**(euroscore 7.37%)**

**Concomitant mitral valve surgery**

**(replacement vs. repair) ?**

**Subsequent late percutaneous mitral valve therapy ?**

**Medical therapy ?**



30Hz  
18cm

xPlane  
71%  
71%  
50dB  
P Off  
Gen.

80  
28

M4

11Hz  
18cm

xPlane  
72%  
72%  
50dB  
P Off  
Gen.

80  
28

M4  
72%  
72%  
50dB  
P Off  
Gen.

PAT T: 37.0C  
Temp. TEE: 37.9C

Eco adulti  
X8-2t  
53Hz  
18cm

2D  
71%  
50dB  
P Off  
Gen.

0 69 180

G  
P R

PAT T: 37.0C  
Temp. TEE: 37.0C

TIS0.2

MI 0.5

14Hz  
18cm

2D  
72%  
50dB  
P Off  
Gen.

CF  
48%  
4817Hz  
WF 453Hz  
4.4MHz

G  
P R

PAT T: 37.0C  
Temp. TEE: 37.4C

68 bpm

0 80 180

64 bpm

PAT T: 37.0C  
Temp. TEE: 37.6C

TIS0.7

MI 0.1

Eco adulti  
X8-2t  
39Hz  
18cm  
Volume completo  
20 / 30  
% 70 / 45  
C 50 / 30  
Gen.

0 95 180

Battiti 3D 4Q

PAT T: 37.0C  
Temp. TEE: 38.6C

Ritardo 0ms

TIS0.2

MI 0.4

59

Eco adulti

X8-2t

17Hz

14cm

Z 1.1

2D

74%

C 50

P Off

Gen.

CF

48%

5276Hz

WF 474Hz

4.4MHz

0 14 180

TIS 0.6

MI 0.4

M4

+45.7

-45.7

cm/s

PAT T: 37.0C  
Temp. TEE: 39.4C

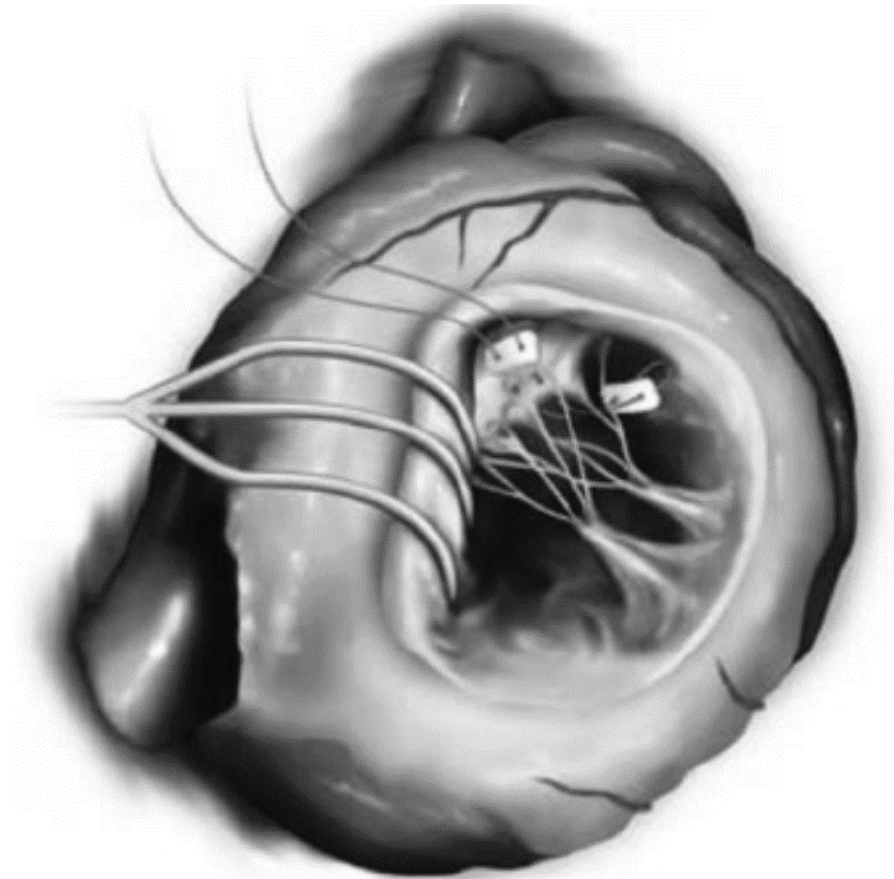
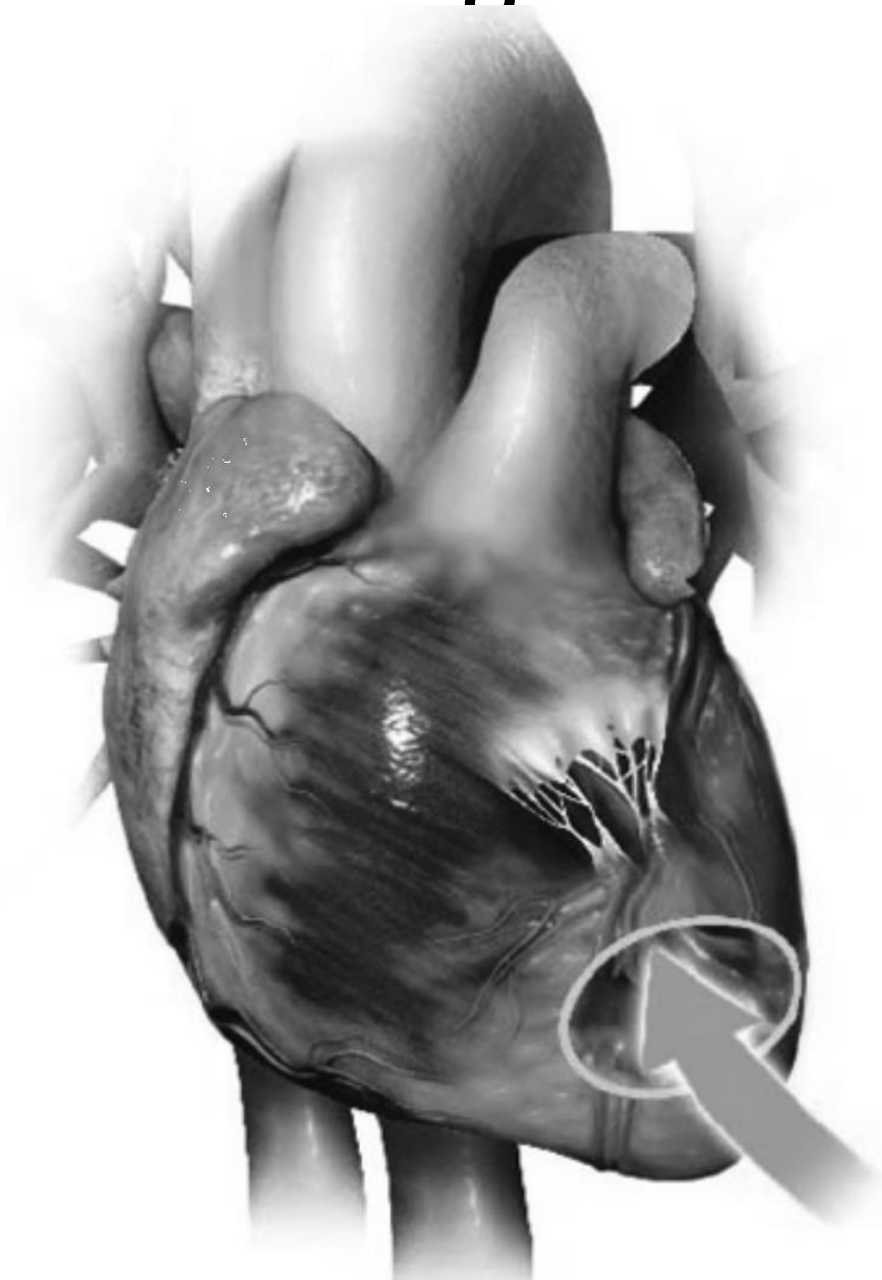
48 bpm

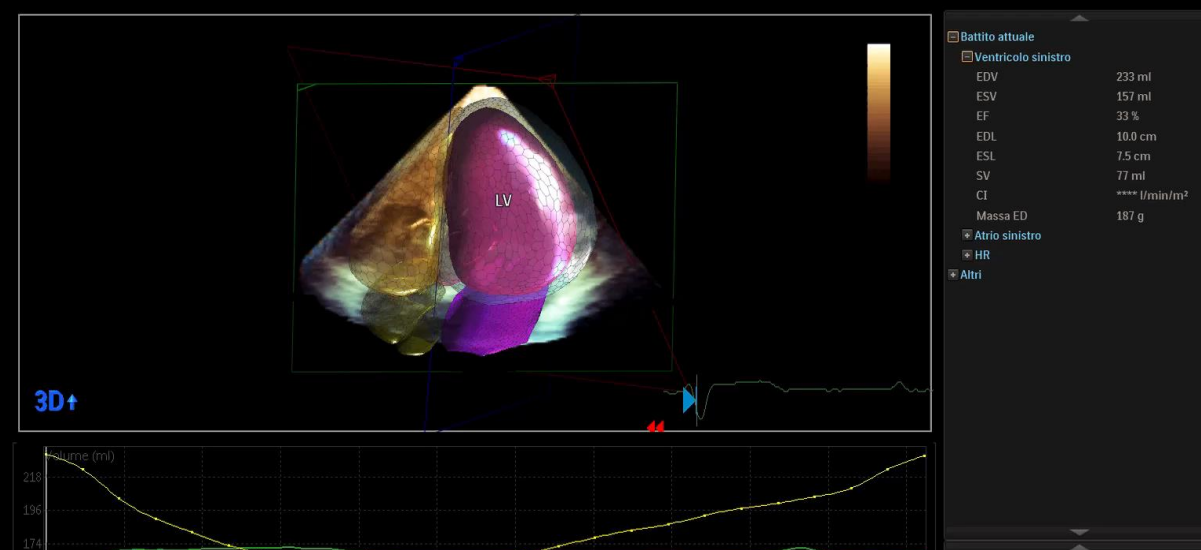
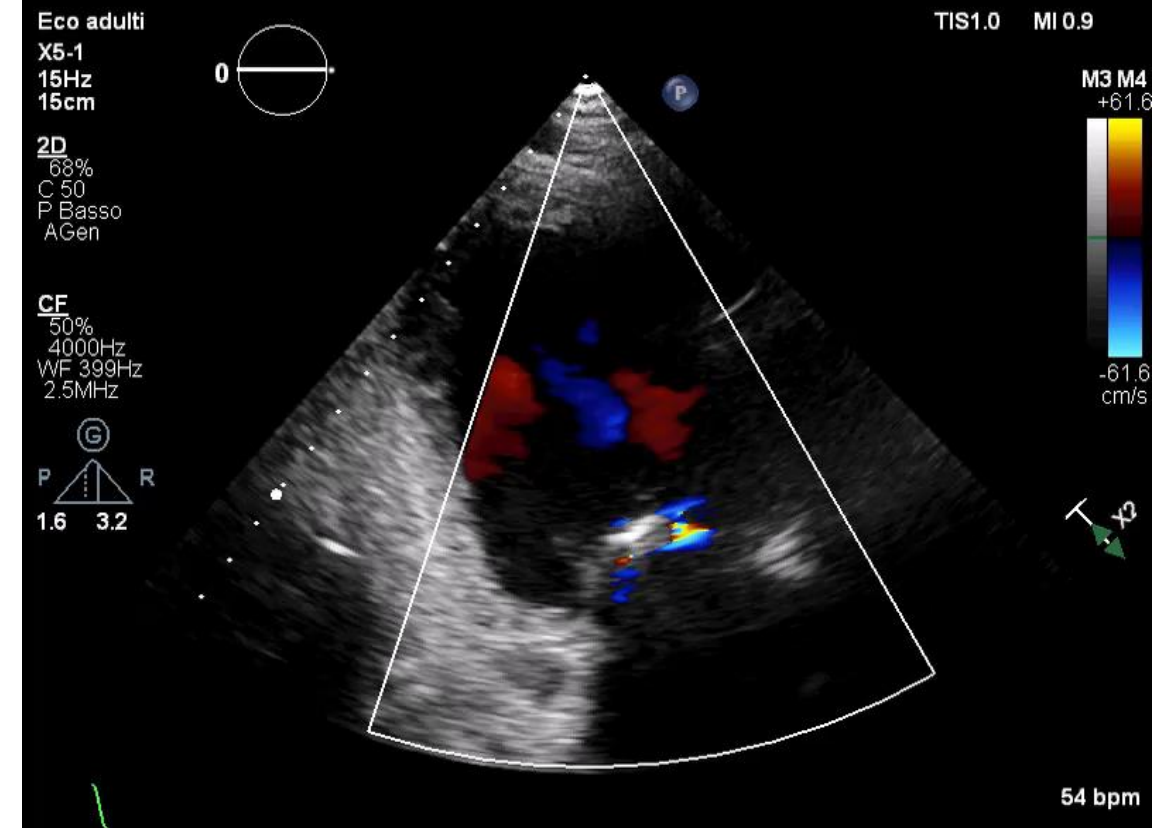
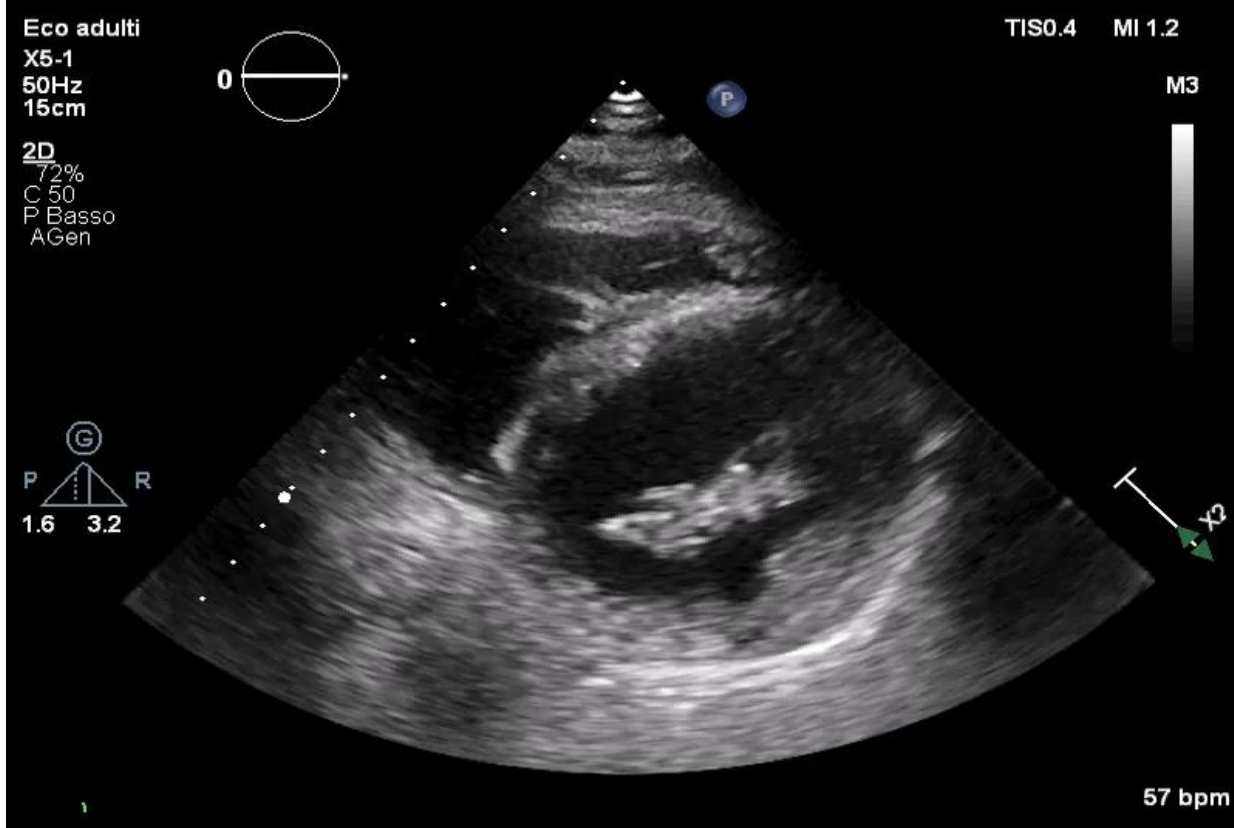




# Planning

- Left ventricular surgical restoration
- Concomitant trans-apical edge-to-edge repair and cleft closure





**Clinical benefit :**

NYHA Class I

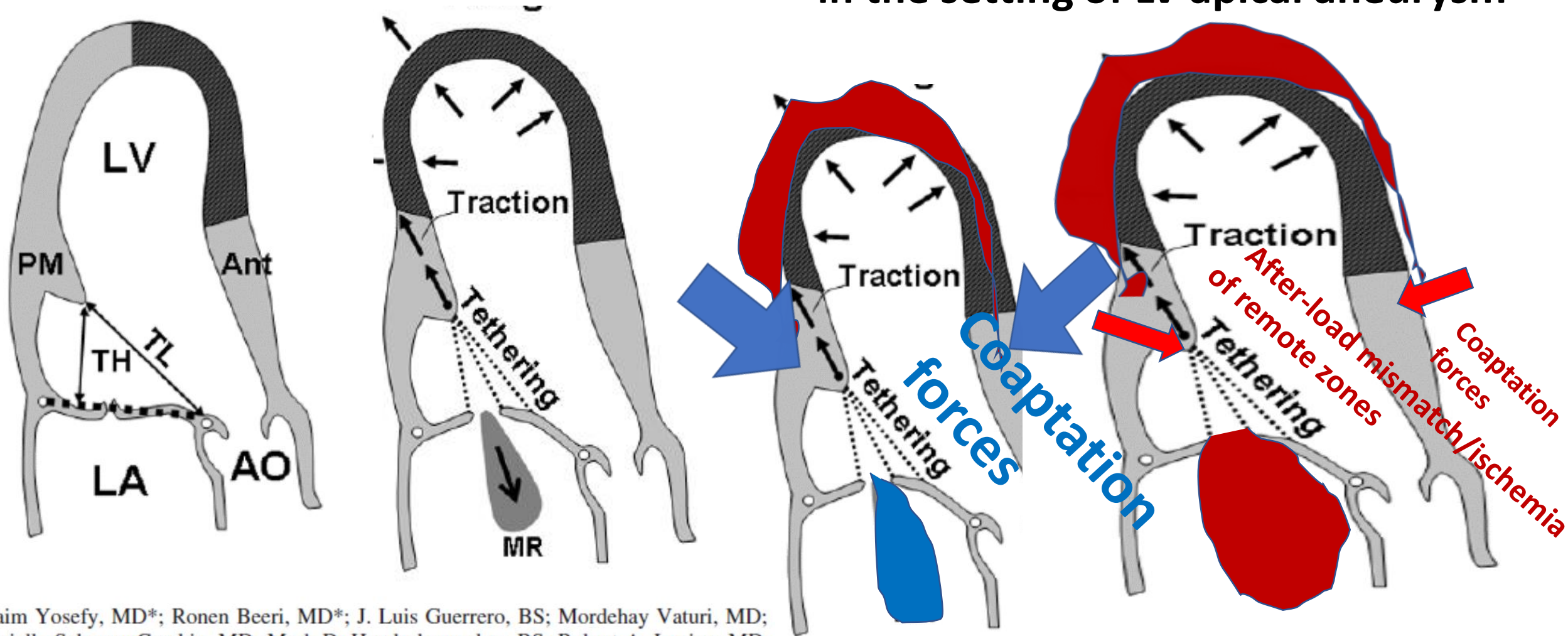
EF 50%

Mild mitral regurgitation



## LV aneurysm enlargement involving inferior segment

## Mitral regurgitation progression in the setting of LV apical aneurysm



Chaim Yosefy, MD\*; Ronen Beeri, MD\*; J. Luis Guerrero, BS; Mordehay Vaturi, MD; Marielle Scherrer-Crosbie, MD; Mark D. Handschumacher, BS; Robert A. Levine, MD

*Circulation.* 2011;123:1529-1536.

- Apical aneurysm should be considered as a mechanism of SMR
- Apical inferior segment involvement and after-load mismatch of remote zone are responsible for MR progression
- Transapical repair at time of LV restoration may be an useful strategy for MR repair
- Promise of percutaneous LV aneurysm and MR treatment

**TRAPS**

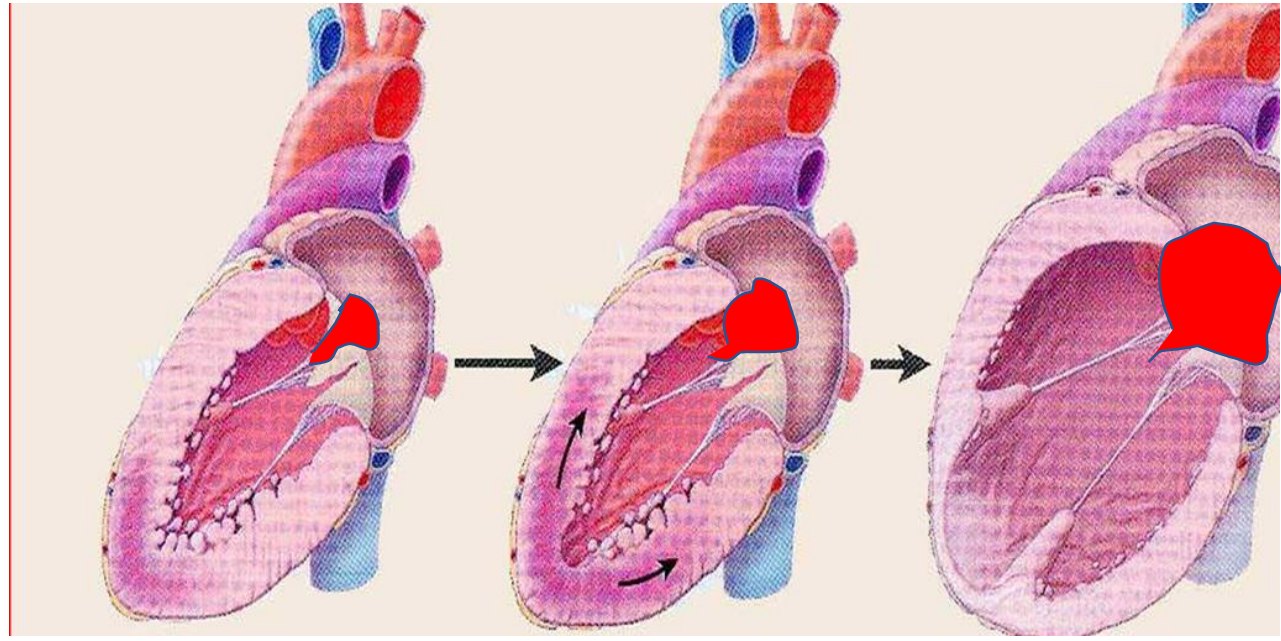
- Flash symptoms
- Transient ischemia
- Medications
- LBBB
- Tachyarrhythmias
- Blood Pressure Instability
- Excessive diuresis
- Hemodialysis

Mitral Regurgitation

mild

moderate

severe

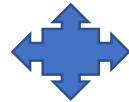


**TRICKS**

- Preload expansion
- Exercise echo
- Ischemia recovery
- AF treatment
- Jet velocity peak > 6 m/sec
- Inferior vena cava
- Interdialysis evaluation

Left Ventricular remodeling

**TRAJECTORY OF LV DISEASE AND MR SEVERITY**



ULTIMATE MITRAL REGURGITATION DEGREE