



**Οργάνωση:**

Β' Καρδιολογική Κλινική,  
Τμήμα Ιατρικής,  
Σχολή Επιστημών Υγείας,  
Πανεπιστήμιο Ιωαννίνων

# ΗΜΕΡΙΔΑ ΑΝΤΙΜΕΤΩΠΙΣΗΣ ΔΟΜΙΚΩΝ ΚΑΡΔΙΟΠΑΘΕΙΩΝ

ΣΤΕΝΩΣΗ ΑΟΡΤΗΣ  
ΑΝΕΠΑΡΚΕΙΑ ΜΗΤΡΟΕΙΔΟΥΣ

**ΣΑΒΒΑΤΟ**  
**16 ΜΑΡΤΙΟΥ 2019**



## ΤΑΞΙΝΟΜΗΣΗ - ΕΚΤΙΜΗΣΗ ΑΝΕΠΑΡΚΕΙΑΣ ΜΗΤΡΟΕΙΔΟΥΣ. Ο ΡΟΛΟΣ ΤΟΥ ΤΤΕ ΚΑΙ ΤΟΕ

**ΛΑΚΚΑΣ ΛΑΜΠΡΟΣ**  
**ΕΠΙΚΟΥΡΙΚΟΣ ΕΠΙΜΕΛΗΤΗΣ Β'**  
**Β' ΚΑΡΔΙΟΛΟΓΙΚΗ ΚΛΙΝΙΚΗ**  
**ΠΓΝΙ**

**ΔΕΝ ΕΧΩ ΚΑΜΜΙΑ ΣΥΓΚΡΟΥΣΗ ΣΥΜΦΕΡΟΝΤΩΝ**

## ΠΕΡΙΣΤΑΤΙΚΟ

- **ΑΣΘΕΝΗΣ 52 ΕΤΩΝ**
- **ΠΡΟΣΘΙΟ STEMI 11/2017**
  - ΠΡΩΤΟΓΕΝΗΣ ΑΓΓΕΙΟΠΛΑΣΤΙΚΗ LAD
  - ΚΕ 25%
  - ΚΑΚΟΗΘΕΙΣ ΑΡΡΥΘΜΙΕΣ
  - ΤΟΠΟΘΕΤΗΣΗ ICD (ΔΕΥΤΕΡΟΓΕΝΗΣ ΠΡΟΛΗΨΗ)

## ΠΕΡΙΣΤΑΤΙΚΟ

- 05/2018
  - ΑΠΟΡΡΥΘΜΙΣΗ ΙΣΧΑΙΜΙΚΗΣ ΚΑΡΔΙΑΚΗΣ ΑΝΕΠΑΡΚΕΙΑΣ
  - ΟΜΤ
  - ΣΤΕΦΑΝΙΟΓΡΑΦΙΑ
    - ΒΑΤΟ STENT LAD
    - ΣΗΜΑΝΤΙΚΗ ΣΤΕΝΩΣΗ
      - RCA
      - Dx
      - LCX
  - ΕΛΕΓΧΟΣ ΒΙΩΣΙΜΟΤΗΤΑΣ (THALLIUM-201)
  - PCI
    - ΠΛΗΡΗΣ ΕΠΑΝΑΓΓΕΙΩΣΗ

## ΠΕΡΙΣΤΑΤΙΚΟ

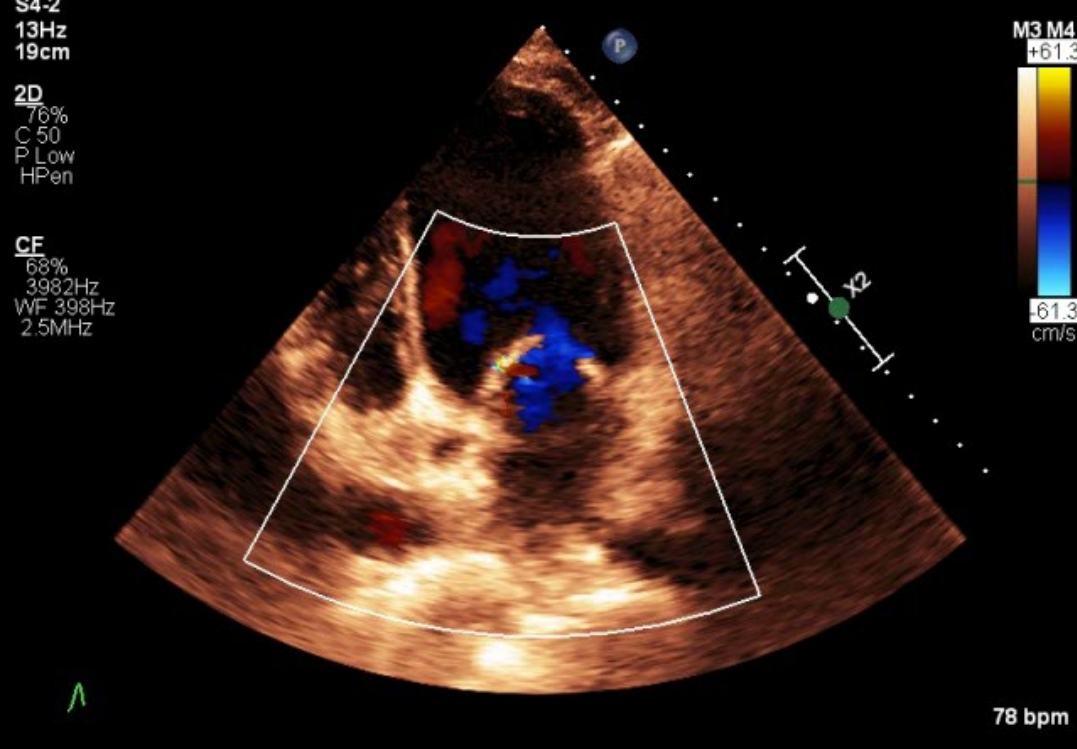
- **ΕΚΤΟΤΕ ΤΑΚΤΙΚΗ ΚΑΡΔΙΟΛΟΓΙΚΗ ΠΑΡΑΚΟΛΟΥΘΗΣΗ**
  - ΟΜΤ
  - 6ΜWT
  - ΒΝΡ
- **ΑΝΑΦΕΡΕΙ ΣΥΝΕΧΙΖΟΜΕΝΗ ΔΥΣΠΝΟΙΑ ΠΡΟΣΠΑΘΕΙΑΣ ΑΚΟΜΑ ΚΑΙ ΣΕ ΜΙΚΡΟ ΕΡΓΟ**
- **ΣΕ ΣΕΙΡΙΑΚΑ ΗΧΟΚΑΡΔΙΟΓΡΑΦΗΜΑΤΑ**
  - ΣΟΒΑΡΗ ΑΝΕΠΑΡΚΕΙΑ ΜΙΤΡΟΕΙΔΟΥΣ ΒΑΛΒΙΔΑΣ
  - ΜΕΤΡΙΑ ΑΝΕΠΑΡΚΕΙΑ ΤΡΙΓΛΩΧΙΝΑΣ ΒΑΛΒΙΔΑΣ

# **ΕΚΤΙΜΗΣΗ ΑΝΕΠΑΡΚΕΙΑΣ ΜΙΤΡΟΕΙΔΟΥΣ ΒΑΛΒΙΔΑΣ**

- **ΠΟΙΟΤΙΚΗ ΕΚΤΙΜΗΣΗ - ΕΙΔΟΣ ΑΝΕΠΑΡΚΕΙΑΣ**
  - **ΠΡΩΤΟΠΑΘΗΣ VS ΔΕΥΤΕΡΟΠΑΘΗΣ VS ΜΙΚΤΗ**
  
- **ΠΟΣΟΤΙΚΗ ΕΚΤΙΜΗΣΗ – ΕΚΤΙΜΗΣΗ ΣΟΒΑΡΟΤΗΤΑΣ**
  
- **ΧΡΗΣΙΜΟΠΟΙΟΥΜΕ ΤΤΕ ΚΑΙ ΤΟΕ**

# **ΠΟΙΟΤΙΚΗ ΕΚΤΙΜΗΣΗ ΑΝΕΠΑΡΚΕΙΑΣ ΜΙΤΡΟΕΙΔΟΥΣ ΒΑΛΒΙΔΑΣ**

- **ΜΗΧΑΝΙΣΜΟΣ ΑΝΕΠΑΡΚΕΙΑΣ**
  
  
  
  
  
  
  
  
  
  
- **ΠΕΡΙΟΧΗ ΒΛΑΒΗΣ (ΦΕΣΤΟΝΙΑ)**

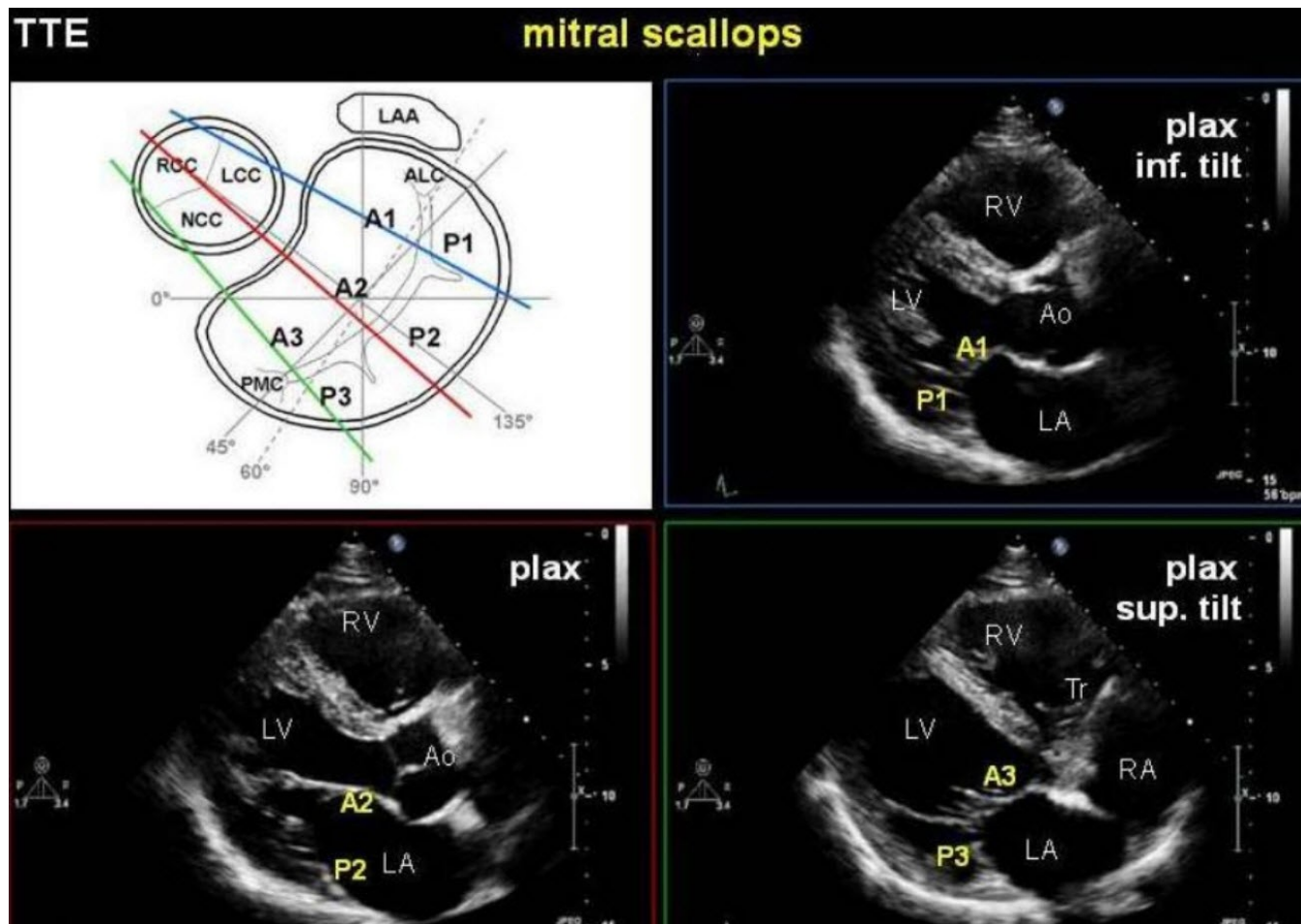


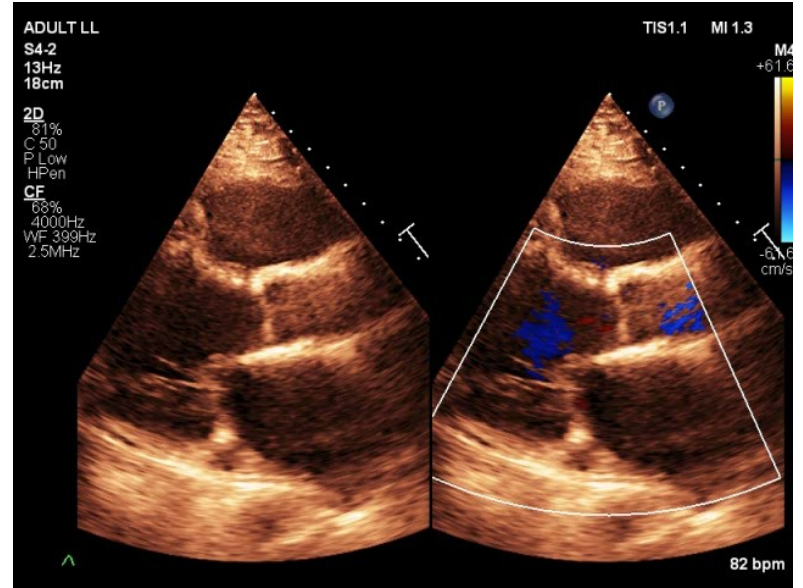
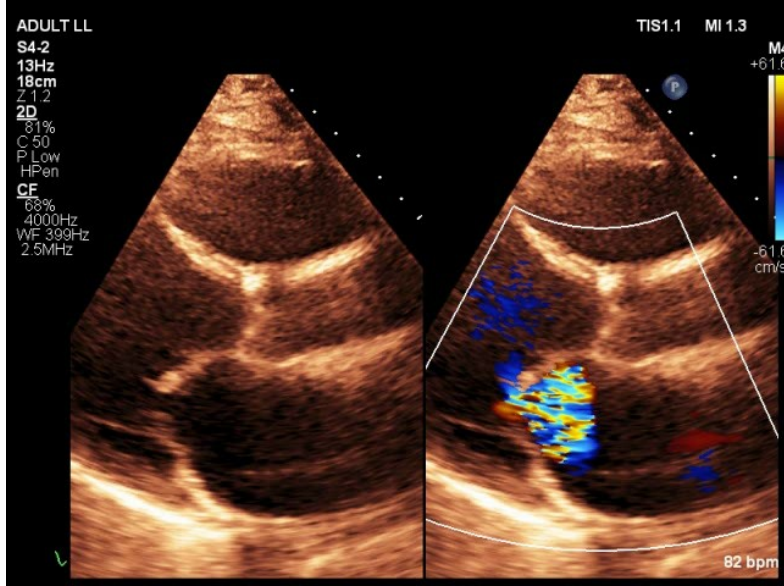
**ΠΡΩΤΑ ΕΝΤΟΠΙΖΟΥΜΕ ΧΩΡΟΤΑΞΙΚΑ ΤΗΝ ΑΝΕΠΑΡΚΕΙΑ**

**ΜΕΤΑ ΕΝΤΟΠΙΖΟΥΜΕ ΤΟ ΜΗΧΑΝΙΣΜΟ ΤΗΣ**

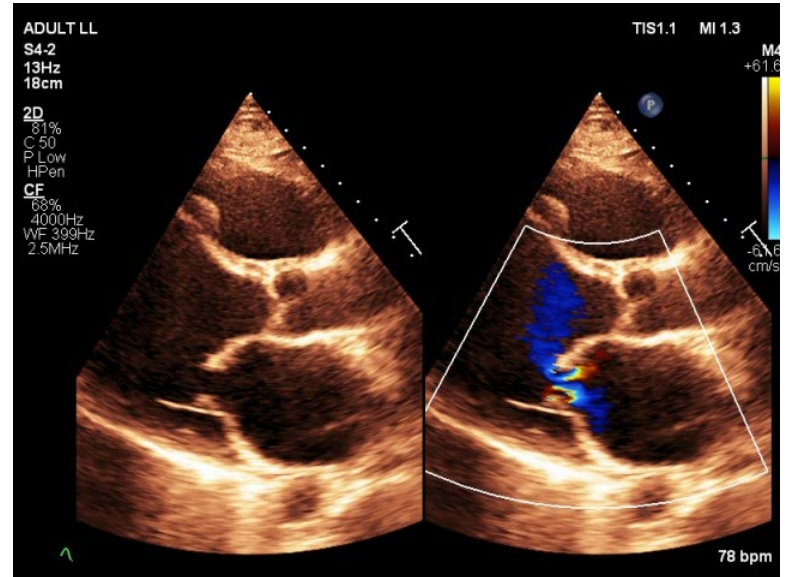


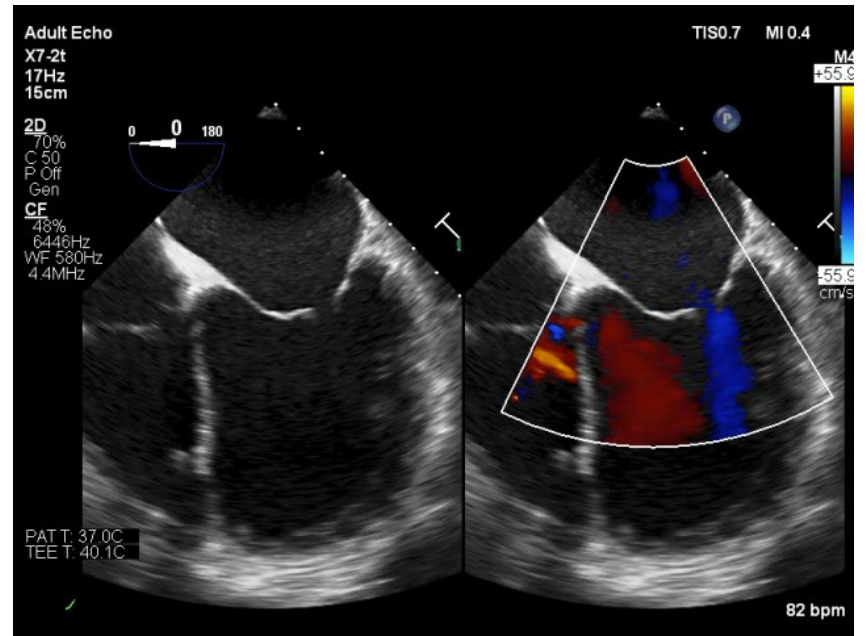
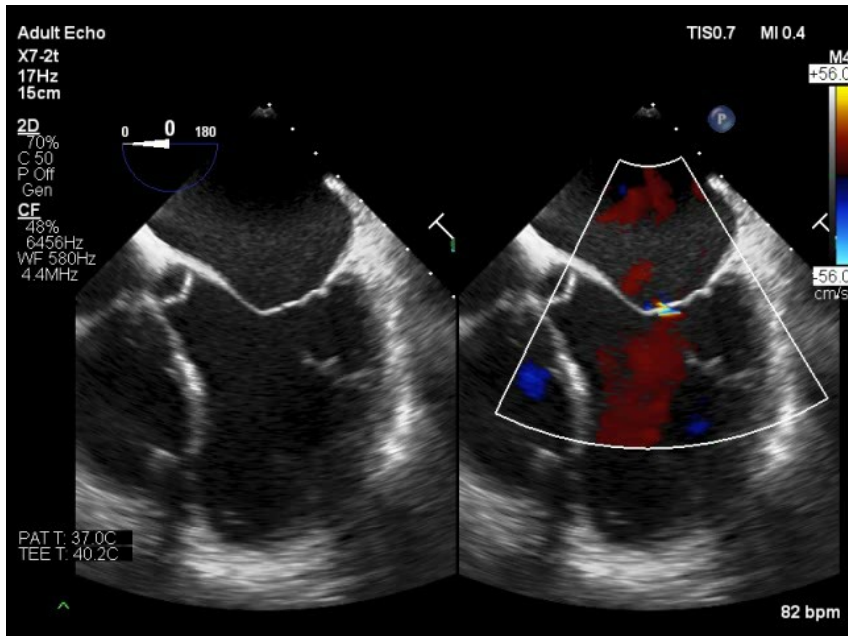
# ΠΟΙΟΤΙΚΗ ΕΚΤΙΜΗΣΗ ΑΝΕΠΑΡΚΕΙΑΣ ΜΙΤΡΟΕΙΔΟΥΣ ΒΑΛΒΙΔΑΣ



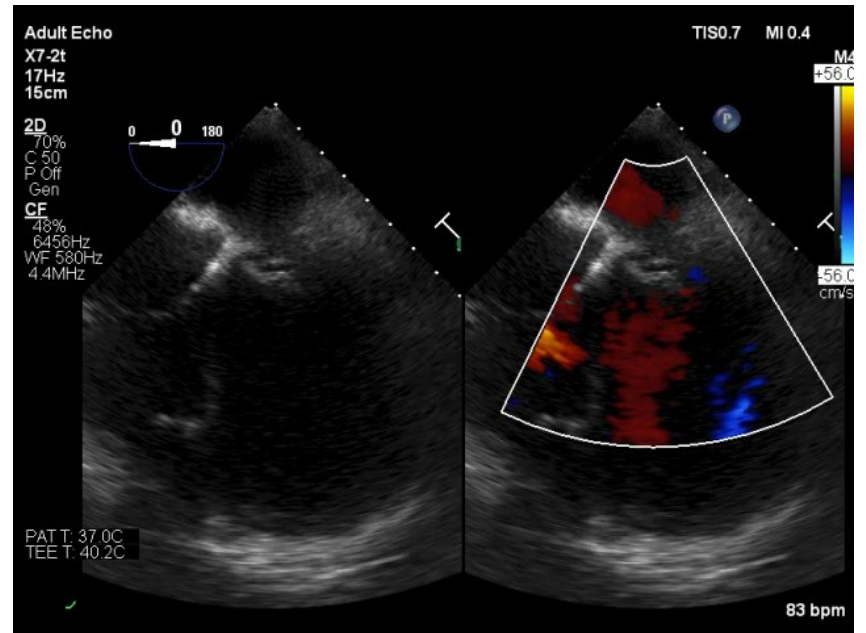


TTE

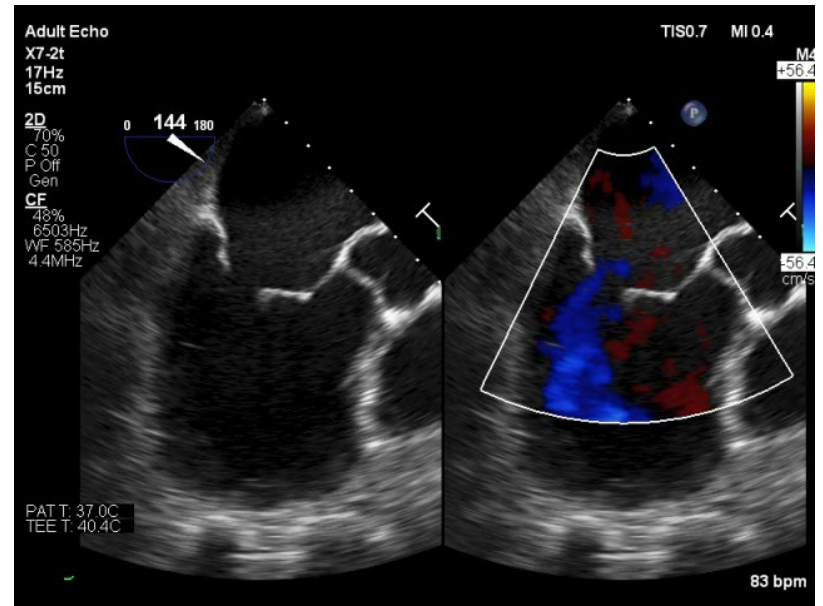
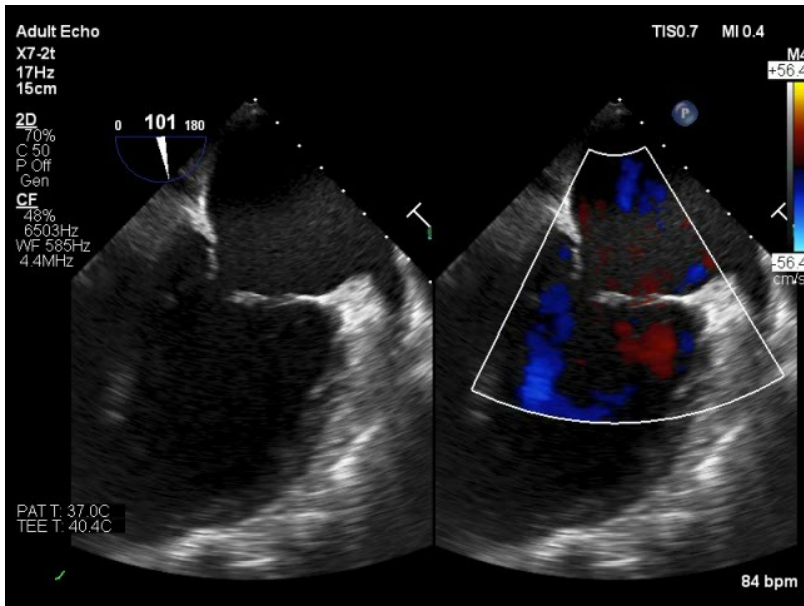




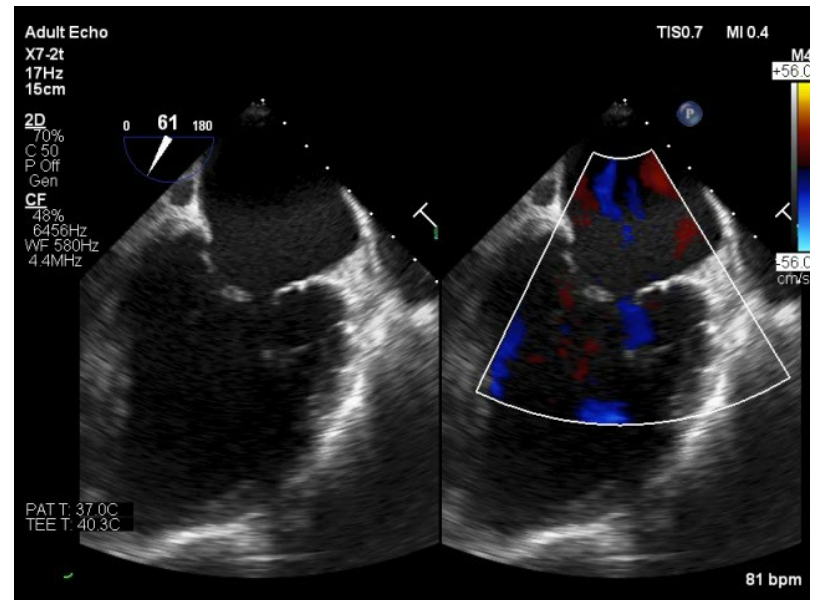
TOE







TOE



# ΠΟΙΟΣ ΕΙΝΑΙ Ο ΜΗΧΑΝΙΣΜΟΣ ΤΗΣ ΑΝΕΠΑΡΚΕΙΑΣ;

## Carpentier's "Functional Classification"

<b>Type I</b>	<b>Normal leaflet motion</b>
<b>Type II</b>	<b>Excess leaflet motion (leaflet prolapse)</b>
<b>Type III</b>	<b>Restricted leaflet motion</b>
<b>IIIa</b>	<b>Restricted opening</b>
<b>IIIb</b>	<b>Restricted closure</b>



Type I



Type II

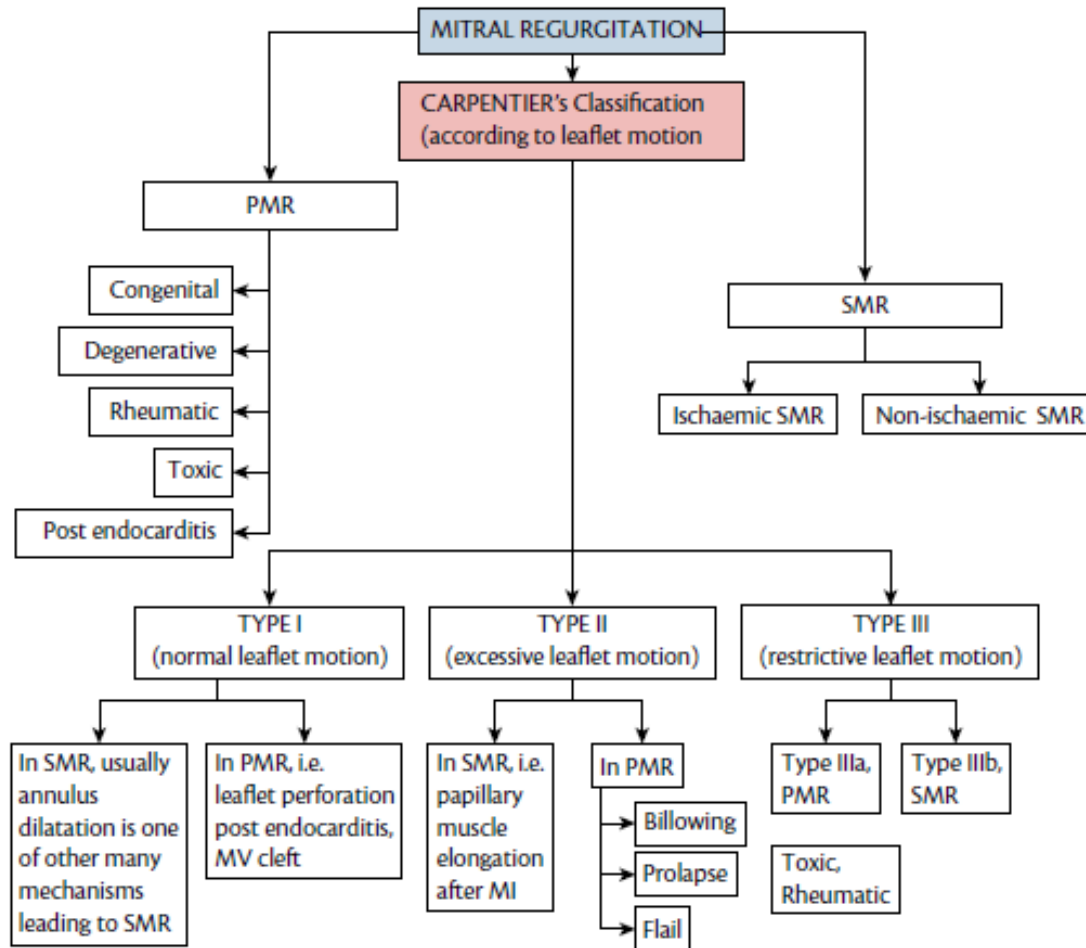


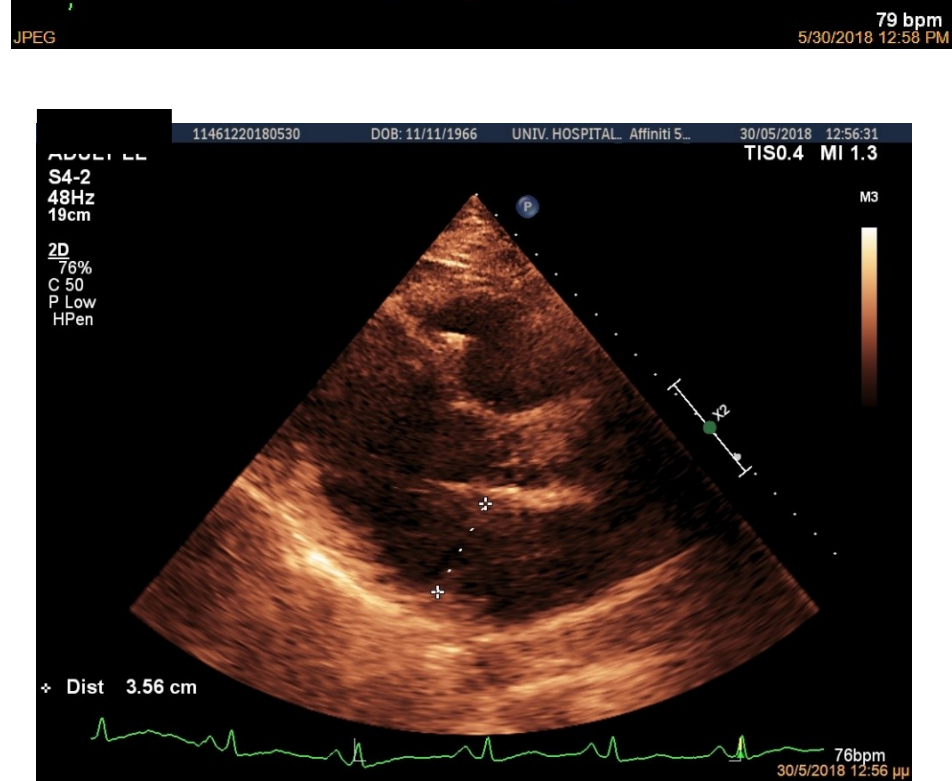
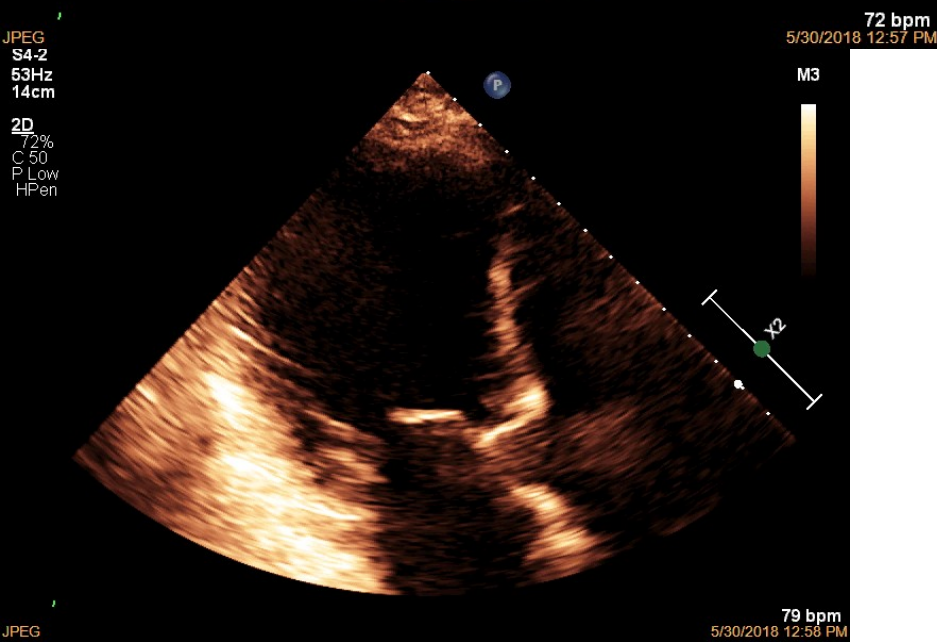
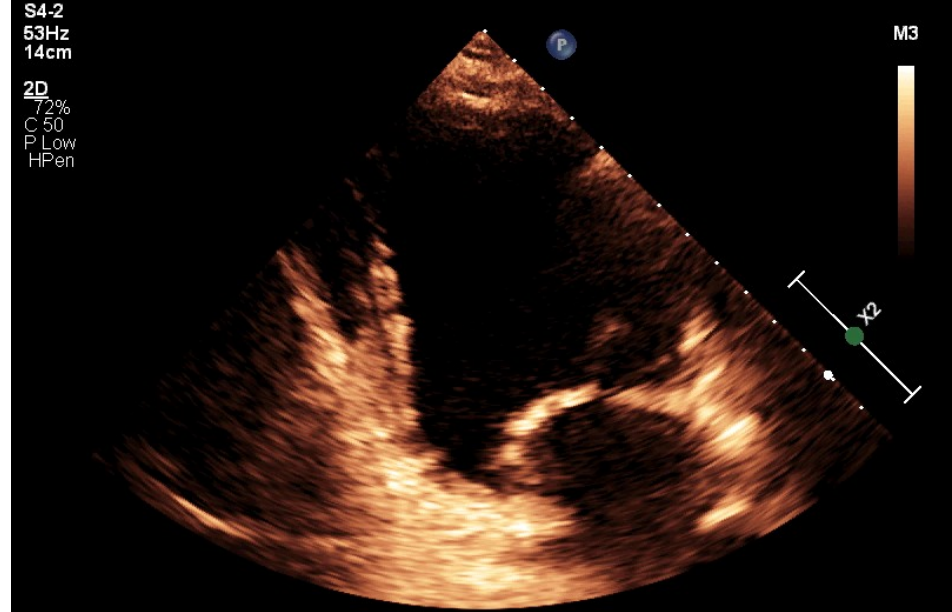
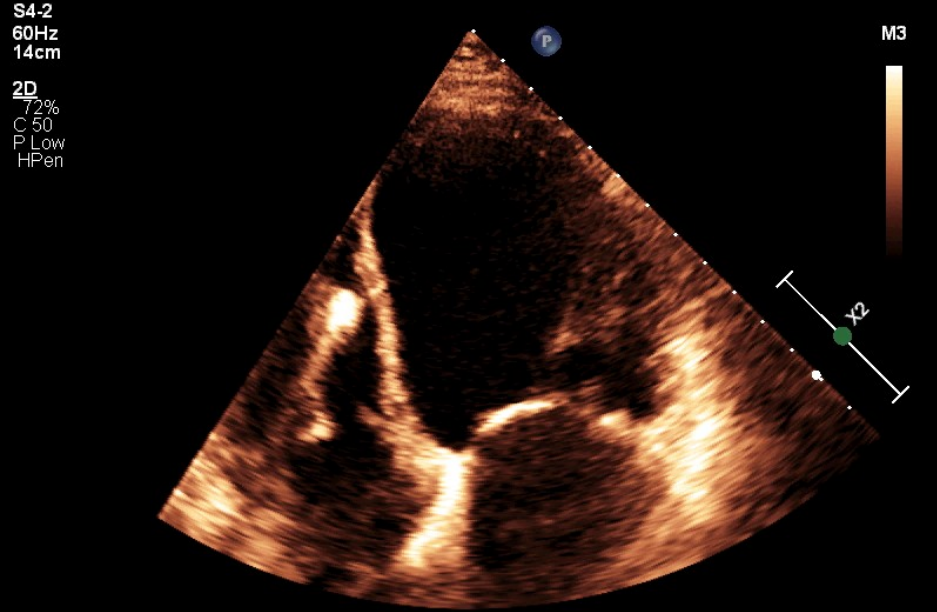
Type IIIa



Type IIIb

Dysfunction	Ventricular View	Atrial View	Etiologic Disorder
<b>Type I</b> Normal leaflet motion			Ischemic cardiomyopathy Dilated cardiomyopathy Endocarditis Congenital
<b>Type II</b> Increased leaflet motion (leaflet prolapse)			Degenerative disease Fibroelastic deficiency Marfan syndrome Forme fruste Barlow Barlow disease
<b>Type IIIA</b> Restricted leaflet motion (restricted opening)			Endocarditis Rheumatic disease Trauma Ischemic cardiomyopathy Ehlers-Danlos syndrome
<b>Type IIIB</b> Restricted leaflet motion (restricted closure)			Rheumatic disease Carcinoid disease Radiation Lupus erythematosus Ergotamine use Hypereosinophilic syndrome Mucopolysaccharidosis
			Ischemic cardiomyopathy Dilated cardiomyopathy







**Evaluate mitral valve morphology, LV size and function, LA size**

- Trace or mild MR is common in normal subjects and does not need to be further classified if above are normal
- Dilated LV/abnormal LVEF or dilated LA could be cause or consequence of MR
- An isolated inferolateral or posterobasal wall motion abnormality (e.g., following an MI) with globally preserved LV function can result in secondary MR
- Dilated LV with normal LVEF suggests severe MR
- Flail leaflet is highly specific for severe MR

**Define Leaflet Motion  
(Carpentier Classification)**

Type I

Normal

Type II

Prolapse or  
Flail

Type IIIA

Restricted in  
both systole  
and diastole

Type IIIB

Restricted in  
systole only

Abnormal  
Leaflet  
Morphology

Normal  
Leaflet  
Morphology

Abnormal Leaflet  
Morphology by  
Definition

Abnormal  
Leaflet  
Morphology

Normal Leaflet  
Morphology  
(minor age-related  
thickening allowed)

Secondary  
(atrial functional)  
MR

**Mixed Etiology**

Example: known secondary MR due to ischemic cardiomyopathy with new torn chord and flail leaflet  
Common Pitfall: anterior leaflet override due to posterior leaflet restriction is pure secondary MR and NOT mixed etiology

Primary MR

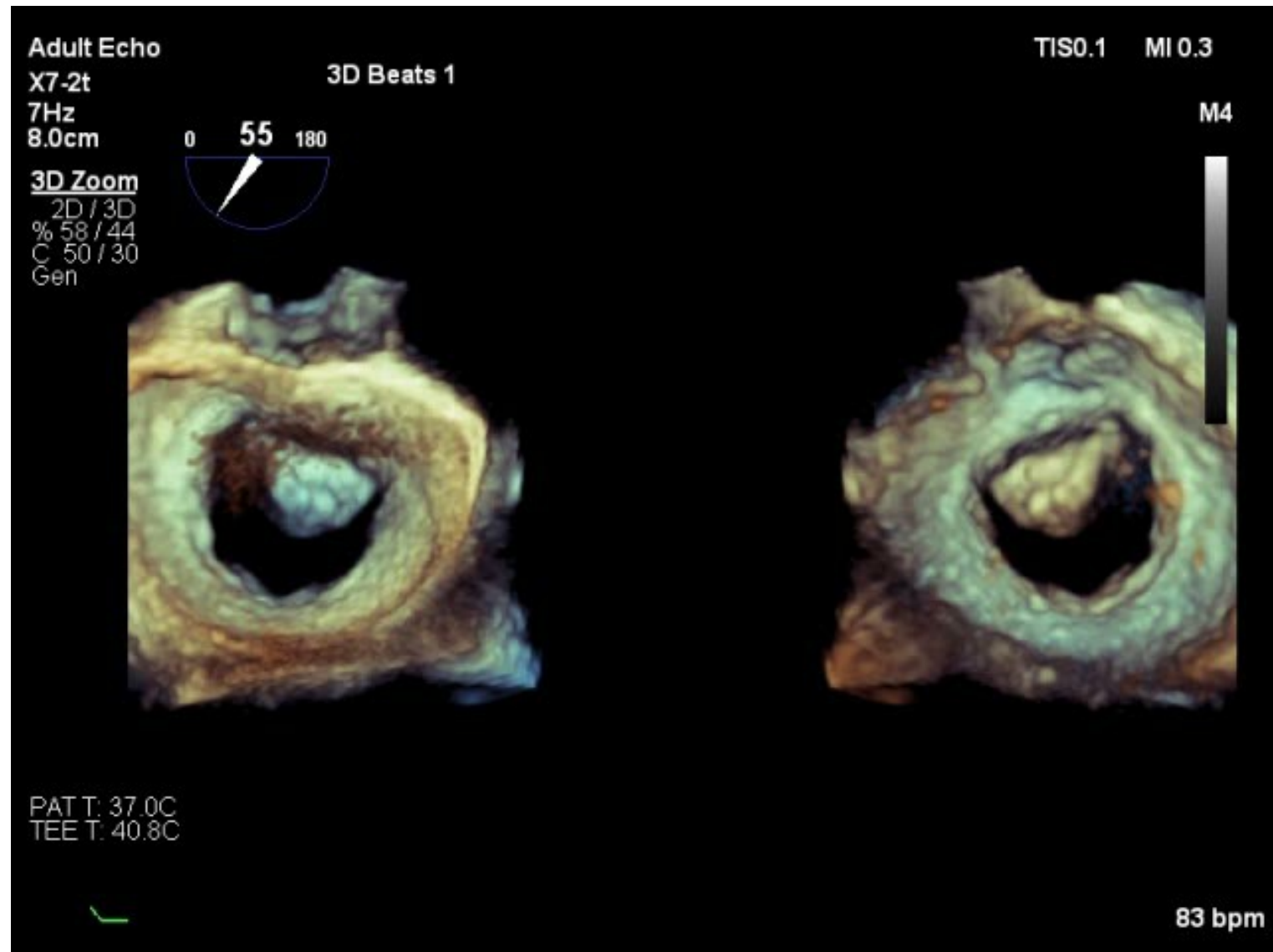
or

Secondary MR

or



# Ο ΡΟΛΟΣ ΤΟΥ 3D



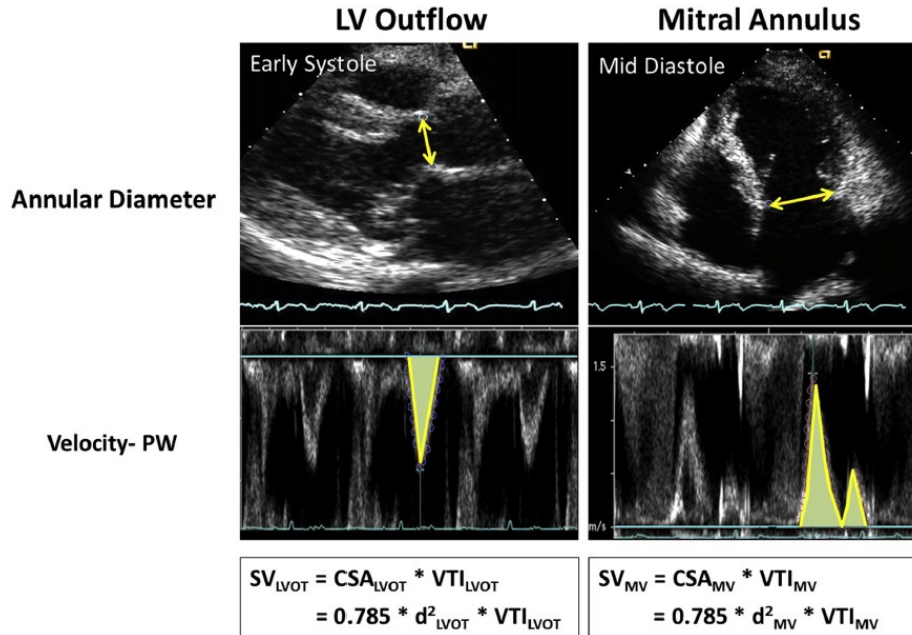
# ΠΟΣΟΤΙΚΗ ΕΚΤΙΜΗΣΗ ΑΝΕΠΑΡΚΕΙΑΣ ΜΙΤΡΟΕΙΔΟΥΣ ΒΑΛΒΙΔΑΣ

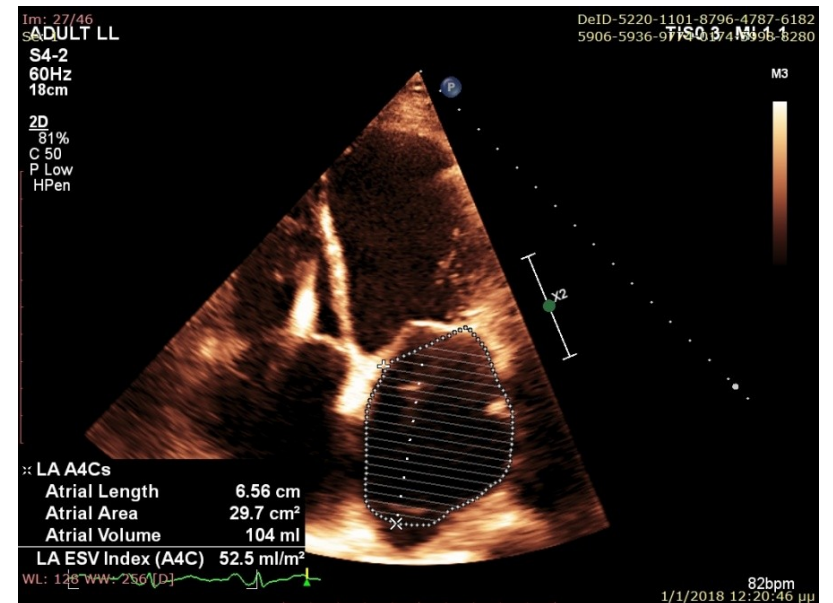
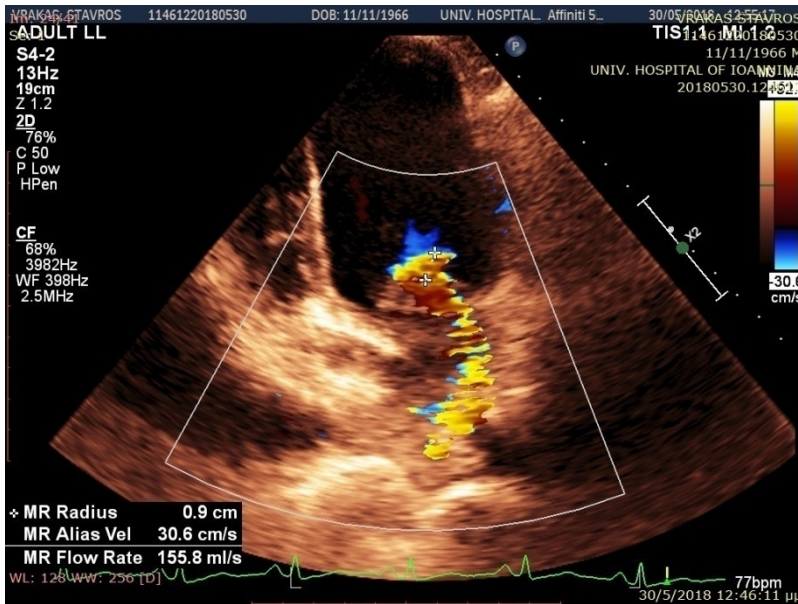
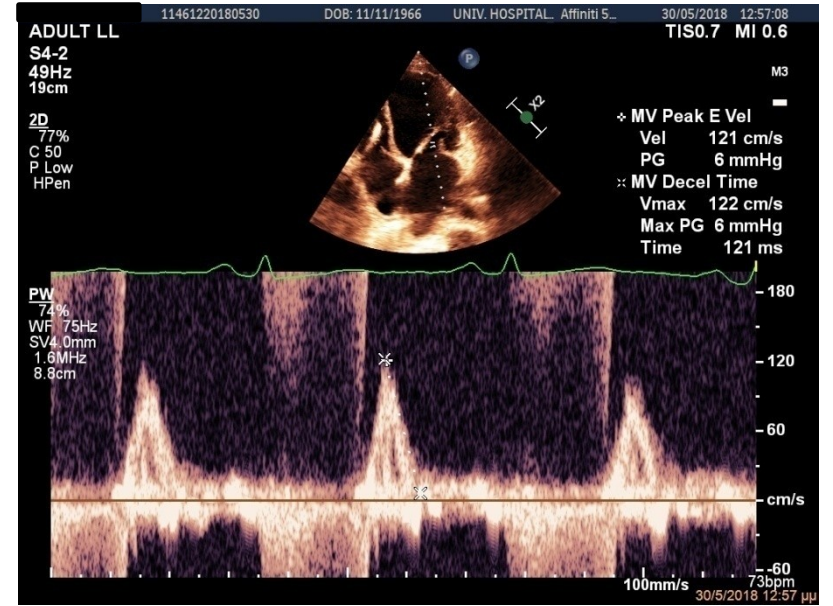
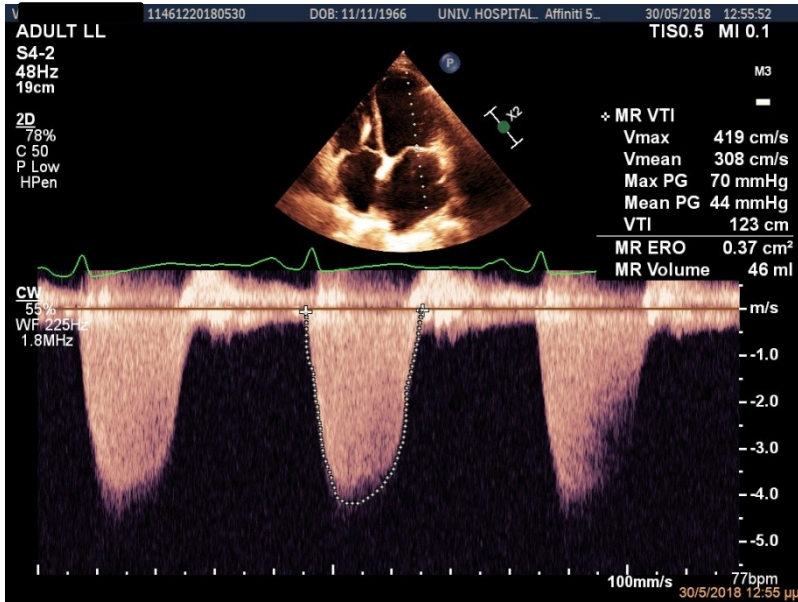
MR Parameters.

Parameter	Mild	Moderate	Severe
Qualitative			
LA size	Normal	Normal, dilated	Severely dilated
Jet area	Small, brief	Variable	Central $\geq 50\%$ LA Eccentric, wall-hugging
CW jet morphology	Faint	Dense, partial, or parabolic	Holosystolic, dense, and triangular
2D quantitative			
VC width (cm)	< 0.3	Variable	$\geq 0.7$
EROA (cm <sup>2</sup> )	< 0.2	0.2-0.39	$\geq 0.4$
RVol (mL)	< 30	30-59	$\geq 60$
RF (%)	< 30	30-49	$\geq 50$

Abbreviations: CW, continuous wave Doppler; EROA, effective regurgitant orifice area; LA, left atrium; RF, regurgitant fraction; RVol, regurgitant volume; VC, vena contracta.

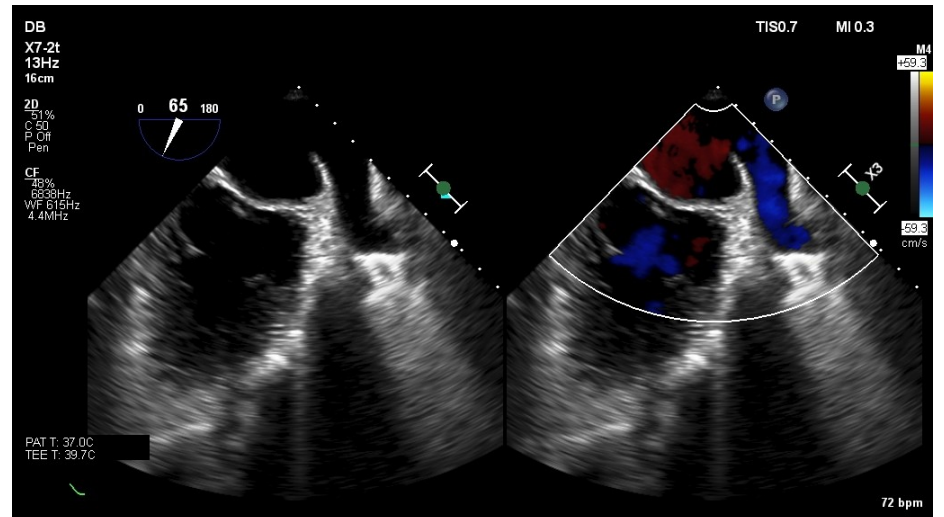
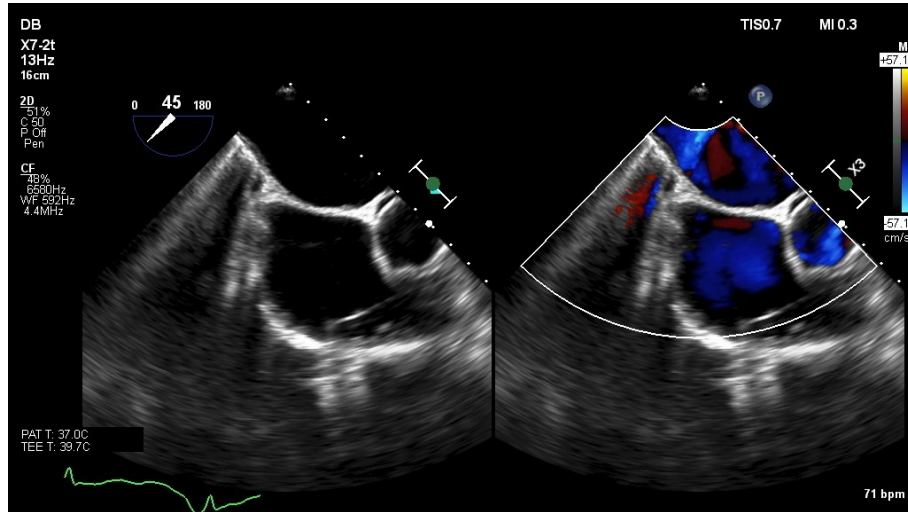
# ΠΟΣΟΤΙΚΗ ΕΚΤΙΜΗΣΗ ΑΝΕΠΑΡΚΕΙΑΣ ΜΙΤΡΟΕΙΔΟΥΣ ΒΑΛΒΙΔΑΣ



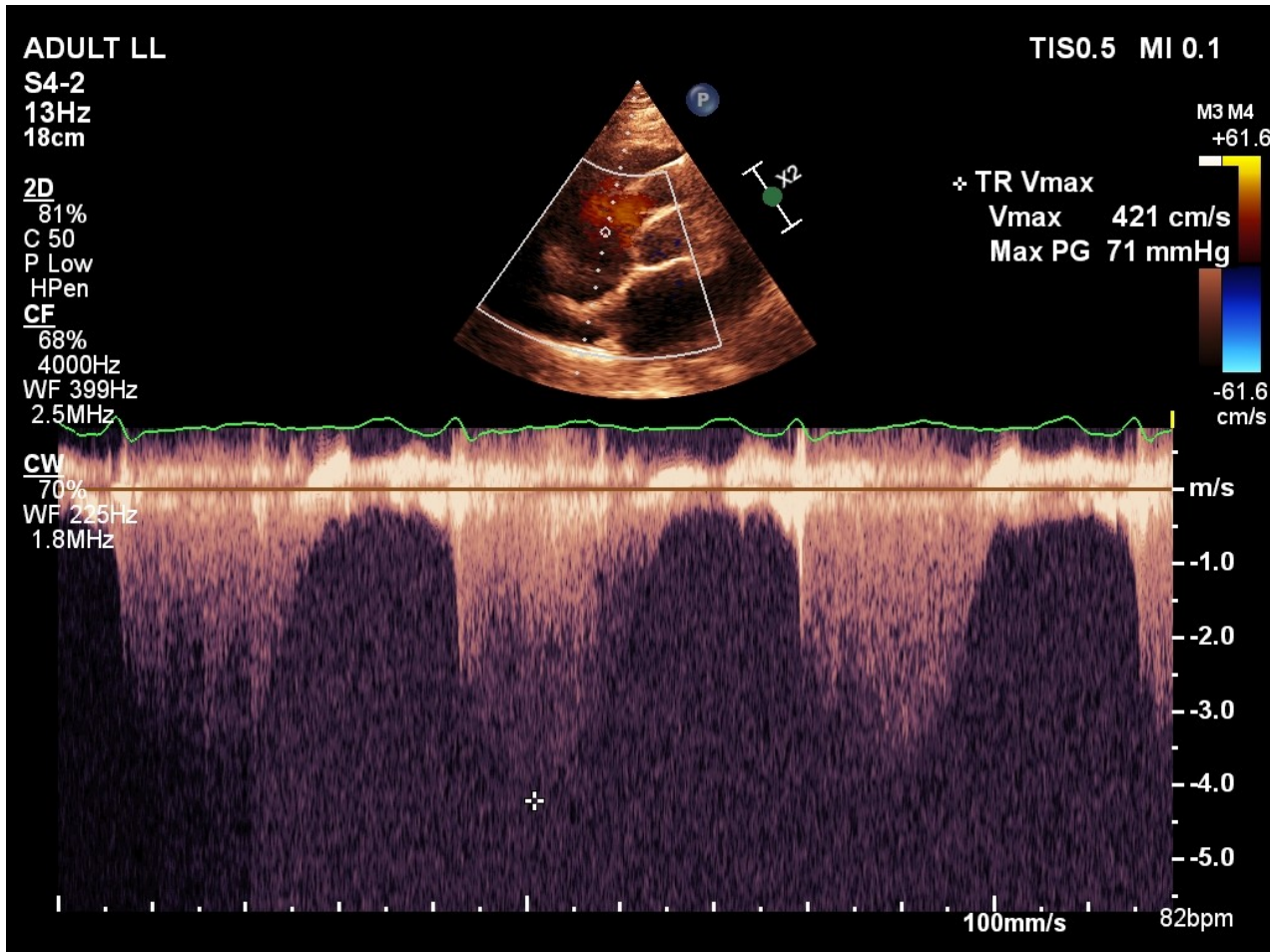




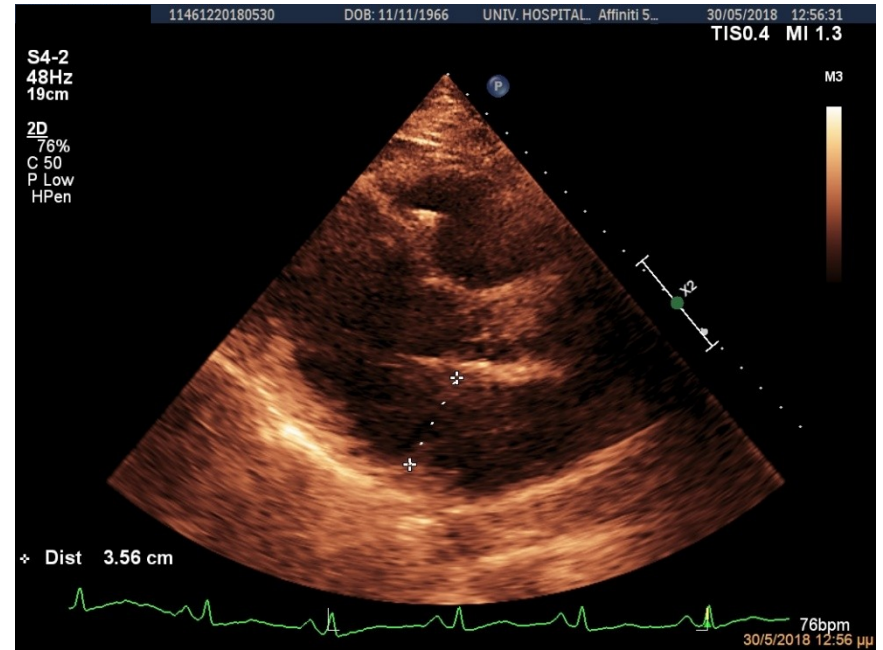
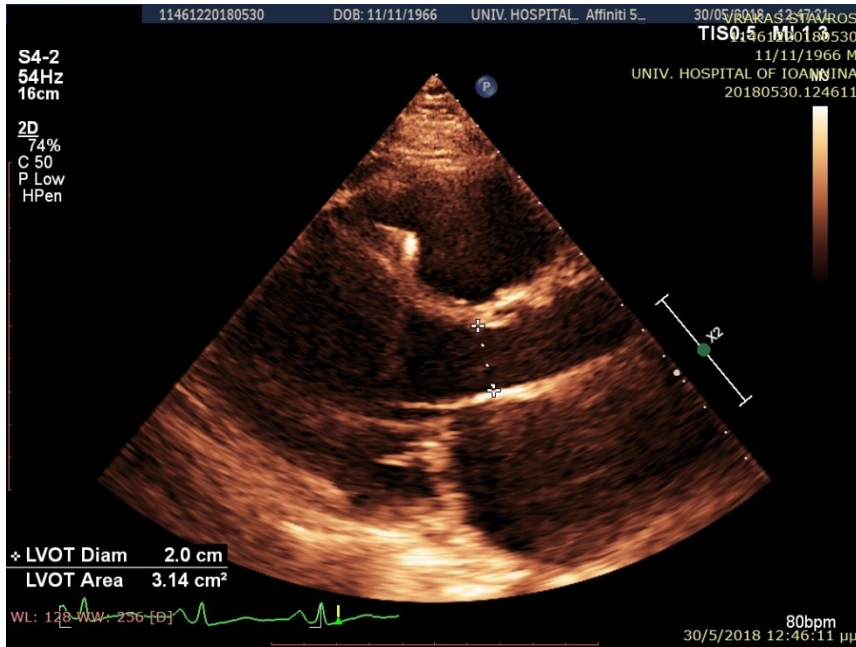
# ΠΝΕΥΜΟΝΙΚΕΣ ΦΛΕΒΕΣ



# PASP



# ΕΞΙΣΩΣΗ ΣΥΝΕΧΕΙΑΣ – ΕΚΚΕΝΤΡΟΣ ΠΙΔΑΚΑΣ



ΑΝΕΠΑΡΚΗΣ ΟΓΚΟΣ 45ml

# ΔΕΥΤΕΡΟΠΑΘΗΣ ΑΝΕΠΑΡΚΕΙΑ;

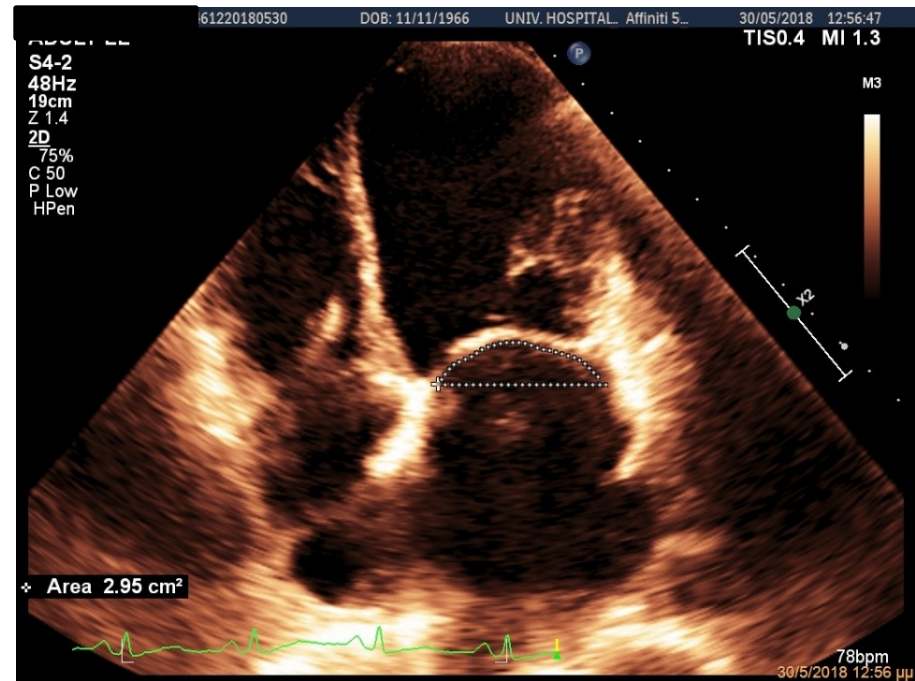
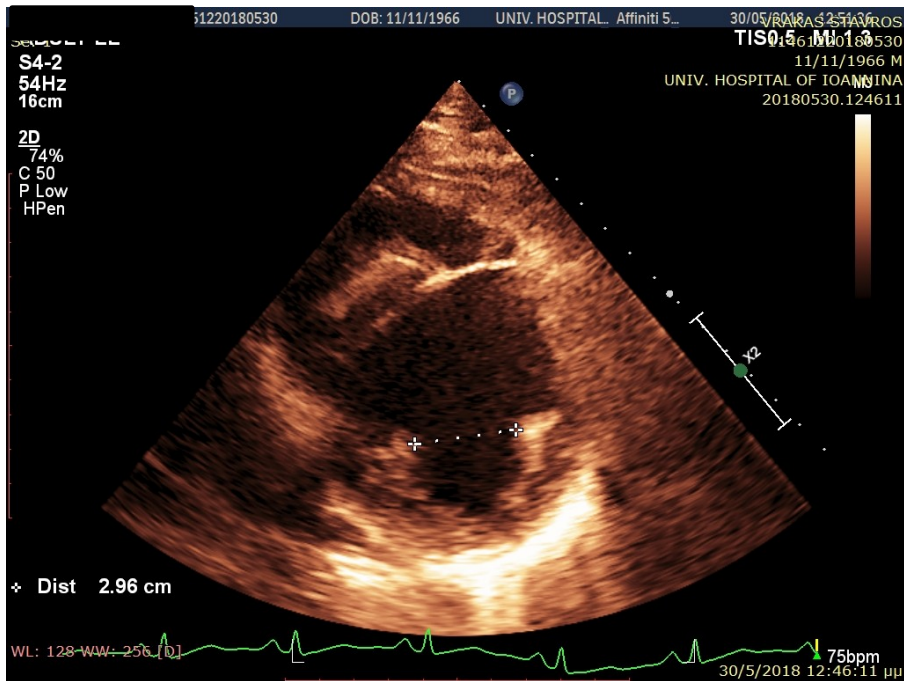
	MR severity*		
	Mild	Moderate	Severe
<b>Structural</b>			
MV morphology	None or mild leaflet abnormality (e.g., mild thickening, calcifications or prolapse, mild tenting)	Moderate leaflet abnormality or moderate tenting	Severe valve lesions (primary: flail leaflet, ruptured papillary muscle, severe retraction, large perforation; secondary: severe tenting, poor leaflet coaptation)
LV and LA size <sup>†</sup>	Usually normal	Normal or mild dilated	Dilated <sup>†</sup>
<b>Qualitative Doppler</b>			
Color flow jet area <sup>§</sup>	Small, central, narrow, often brief	Variable	Large central jet (>50% of LA) or eccentric wall-impinging jet of variable size
Flow convergence <sup>  </sup>	Not visible, transient or small	Intermediate in size and duration	Large throughout systole
CWD jet	Faint/partial/parabolic	Dense but partial or parabolic	Holosystolic/dense/triangular
<b>Semiquantitative</b>			
VCW (cm)	<0.3	Intermediate	≥0.7 (>0.8 for biplane) <sup>¶</sup>
Pulmonary vein flow <sup>#</sup>	Systolic dominance (may be blunted in LV dysfunction or AF)	Normal or systolic blunting <sup>#</sup>	Minimal to no systolic flow/ systolic flow reversal
Mitral inflow <sup>**</sup>	A-wave dominant	Variable	Variable
<b>Quantitative<sup>††,‡‡</sup></b>			
EROA, 2D PISA (cm <sup>2</sup> )	<0.20	0.20-0.29	0.30-0.39
RVol (mL)	<30	30-44	45-59 <sup>††</sup>
RF (%)	< 30	30-39	40-49

<http://dx.doi.org/10.1016/j.echo.2017.01.007>

Table 3. Key values in functional regurgitation and level of recommendation for treatment

Parameters	Cutoff	Level	Guidelines
EROA	≥20 mm <sup>2</sup>		European
RV	≥30 mL		European





# Ο ΡΟΛΟΣ ΤΗΣ ΑΠ ΚΑΙ ΤΗΣ ΦΟΡΤΙΣΗΣ ΣΤΗΝ ΕΚΤΙΜΗΣΗ ΤΗΣ ΣΟΒΑΡΟΤΗΤΑΣ ΤΗΣ ΔΕΥΤΕΡΟΠΑΘΟΥΣ ΑΝΕΠΑΡΚΕΙΑΣ ΜΙΤΡΟΕΙΔΟΥΣ ΒΑΛΒΙΔΑΣ

## The clinical use of stress echocardiography in non- ischaemic heart disease: recommendations from the European Association of Cardiovascular Imaging and the American Society of Echocardiography

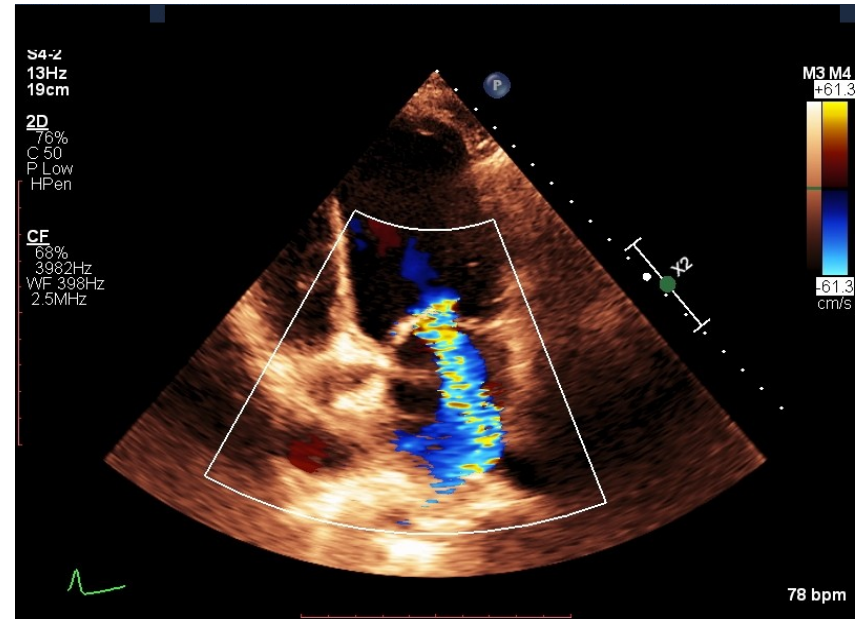
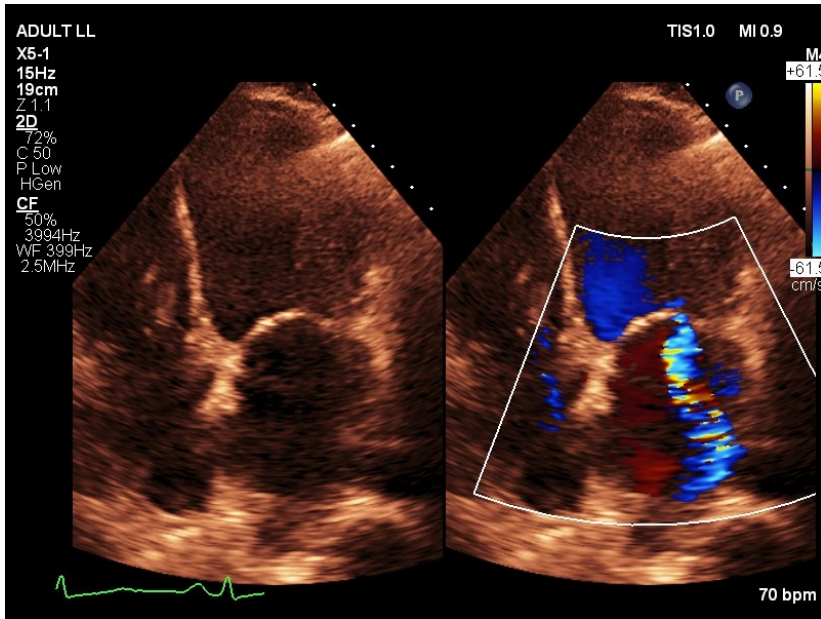
Patrizio Lancellotti<sup>1,2\*</sup>, Patricia A. Pellikka<sup>3</sup>, Werner Budts<sup>4</sup>, Farooq A. Chaudhry<sup>5</sup>,  
Erwan Donal<sup>6</sup>, Raluca Dulgheru<sup>1</sup>, Thor Edvardsen<sup>7</sup>, Madalina Garbi<sup>8</sup>, Jong-Won Ha<sup>9</sup>,  
Garvan C. Kane<sup>3</sup>, Joe Kreeger<sup>10</sup>, Luc Mertens<sup>11</sup>, Philippe Pibarot<sup>12</sup>, Eugenio Picano<sup>13</sup>,  
Thomas Ryan<sup>14</sup>, Jeane M. Tsutsui<sup>15</sup>, and Albert Varga<sup>16</sup>

### ΕΚΤΙΜΗΣΗ ΔΕΥΤΕΡΟΠΑΘΟΥΣ ΑΝΕΠΑΡΚΕΙΑΣ ΜΙΤΡΟΕΙΔΟΥΣ ΒΑΛΒΙΔΑΣ

- ΚΑΛΗ ΡΥΘΜΙΣΗ ΑΠ
- ΔΥΣΧΕΡΕΙΑ ΣΕ ΚΟΛΠΙΚΗ ΜΑΡΜΑΡΥΓΗ
- ΕΧΕΡΣΙΣ ΕΧΟΉ ΗΑΝΔΓΡΙΠ (ΕΛΛΕΙΨΗ ΤΟΥ ΠΡΩΤΟΥ)
- ΡΑΣΡ

- ΑΥΞΗΣΗ ΕΡΟ  $>0.13\text{cm}^2$

# HANDGRIP



# ΥΠΑΡΧΕΙ ΤΕΧΝΙΚΑ Η ΔΥΝΑΤΟΤΗΤΑ MITRACLIP;

Data from peer-reviewed journals	IFU-Warnings <sup>4</sup>	IFU-Contraindications <sup>4</sup>
<ul style="list-style-type: none"> <li>Central pathology in Segment A2-P2<sup>(1,2,3)</sup></li> </ul>	<ul style="list-style-type: none"> <li>Primary regurgitant jet outside of the A2-P2 area and/or presence of a clinically significant 2<sup>nd</sup> jet</li> </ul>	<ul style="list-style-type: none"> <li>Patients who cannot tolerate procedural anticoagulation or post procedural anti-platelet regimen</li> <li>Active endocarditis of the mitral valve</li> <li>Rheumatic mitral valve disease</li> <li>Evidence of intracardiac, inferior vena cava (IVC) or femoral vein thrombus</li> </ul>
<ul style="list-style-type: none"> <li>No leaflet calcification at the grasping area<sup>(1)</sup></li> </ul>	<ul style="list-style-type: none"> <li>Severe leaflet calcification in the grasping area</li> <li>Severe calcification of the annulus and/or subvalvular apparatus, such as the chordae tendinae</li> </ul>	
<ul style="list-style-type: none"> <li>Mitral valve opening area &gt;4cm<sup>2</sup><sup>(1,2,3)</sup></li> </ul>	<ul style="list-style-type: none"> <li>Mitral valve orifice area &lt; 4cm<sup>2</sup></li> </ul>	
<ul style="list-style-type: none"> <li>Flail-width &lt;15mm<sup>(1,2,3)</sup></li> <li>Flail-gap &lt;10mm<sup>(1,2,3)</sup></li> </ul>	<ul style="list-style-type: none"> <li>Leaflet Flail gap ≥ 10mm and/or Leaflet Flail width ≥ 15mm</li> </ul>	
<ul style="list-style-type: none"> <li>Mobile length of the posterior leaflet ≥10 mm<sup>(1,2,3)</sup></li> </ul>	<ul style="list-style-type: none"> <li>Severely restricted posterior leaflet</li> </ul>	
<ul style="list-style-type: none"> <li>Coaptation depth &lt;11mm<sup>(1,2,3)</sup></li> </ul>	<ul style="list-style-type: none"> <li>Cleft or perforation in the grasping area</li> <li>Coaptation length &lt;2mm</li> <li>Intracardiac mass</li> </ul>	

11461220180530

DOB: 11/11/1966

UNIV. HOSPITAL... Affiniti 5...

30/05/2018 12:56:10

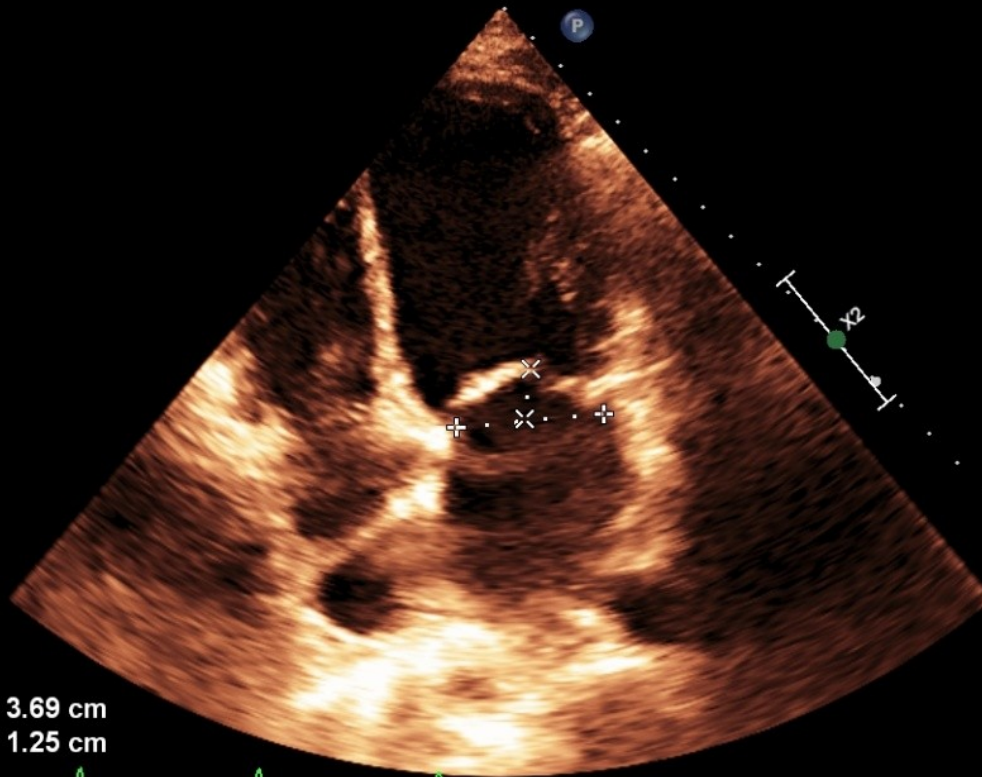
ADULT LL

TISO.4 MI 1.3

S4-2  
48Hz  
19cm

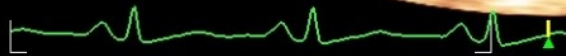
M3

2D  
76%  
C 50  
P Low  
HPen



✦ Dist 3.69 cm

✕ Dist 1.25 cm



77bpm  
30/5/2018 12:56 μμ

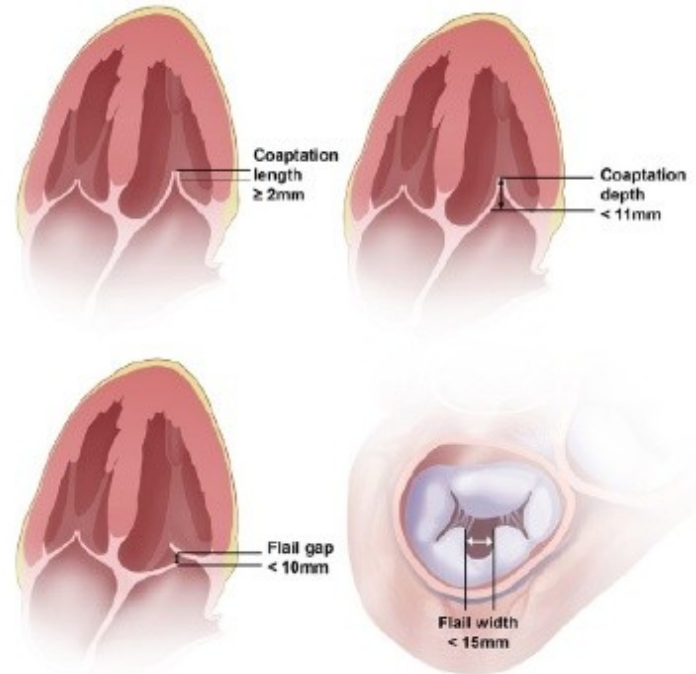


# MITRACLIP – EVEREST CRITERIA

## MitraClip anatomical patient selection considerations

### Recommended criteria<sup>1</sup>

- Moderate to severe MR (Grade 3 or more out of 4 grades)
- Pathology in A2-P2 area
- Coaptation length > 2 mm (depending on leaflet mobility)
- Coaptation depth < 11 mm
- Flail gap < 10 mm
- Flail width < 15 mm
- Mitral valve orifice area > 4cm<sup>2</sup> (depending on leaflet mobility)
- Mobile leaflet length > 1 cm



1. The current patient considerations are based on EVEREST II and commercial European experience to date. The MitraClip Patient Selection Considerations document has been endorsed by Expert Opinion (Crossroads institute).

# Transcatheter Mitral-Valve Repair in Patients with Heart Failure

G.W. Stone, J.A. Lindenfeld, W.T. Abraham, S. Kar, D.S. Lim, J.M. Mishell,  
B. Whisenant, P.A. Grayburn, M. Rinaldi, S.R. Kapadia, V. Rajagopal,  
I.J. Sarembock, A. Brieke, S.O. Marx, D.J. Cohen, N.J. Weissman,  
and M.J. Mack, for the COAPT Investigators\*

# Percutaneous Repair or Medical Treatment for Secondary Mitral Regurgitation

J.-F. Obadia, D. Messika-Zeitoun, G. Leurent, B. Lung, G. Bonnet, N. Piriou,  
T. Lefèvre, C. Piot, F. Rouleau, D. Carrié, M. Nejjari, P. Ohlmann, F. Leclercq,  
C. Saint Etienne, E. Teiger, L. Leroux, N. Karam, N. Michel, M. Gilard, E. Donal,  
J.-N. Trochu, B. Cormier, X. Armoiry, F. Boutitie, D. Maucort-Boulch, C. Barnel,  
G. Samson, P. Guerin, A. Vahanian, and N. Mewton, for the MITRA-FR Investigators\*

ΕΥΧΑΡΙΣΤΩ

