ASCeXAM / ReASCE

Practice Board Exam Questions

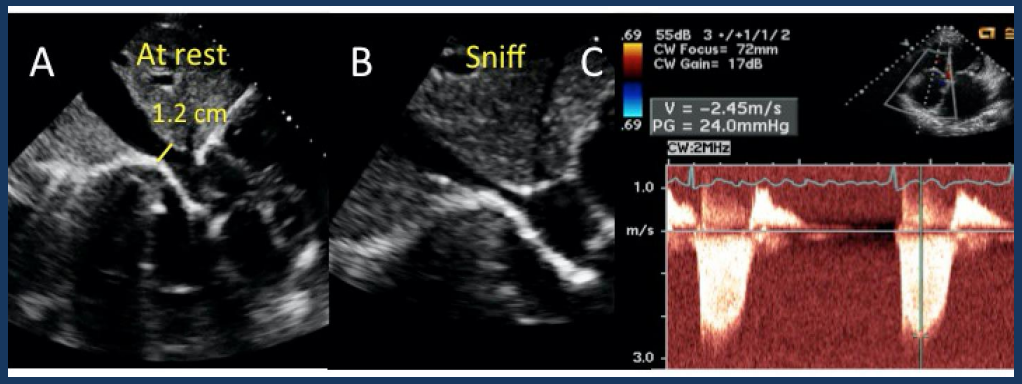
Saturday

- Evaluation of LV, RV and LA
- Chamber Quantification
- Endocarditis
- Echo-Doppler Assessment of RV and LV Hemodynamics
- LV Function and Hypertrophy

Guidelines for Chamber Quantification

Roberto Lang, MD, FASE

A 65-year-old female outpatient is suspected to have pulmonary hypertension. You have been asked to provide an estimation of systolic pulmonary artery pressure. Two-dimensional echocardiographic image of the inferior vena cava at rest and with sniffing are provided in
What is the estimated systolic pulmonary artery pressure?



1. **29mmHg.**
2. **35mmHg.**
3. **> 40mmHg.**
4. **15 mmHg.**

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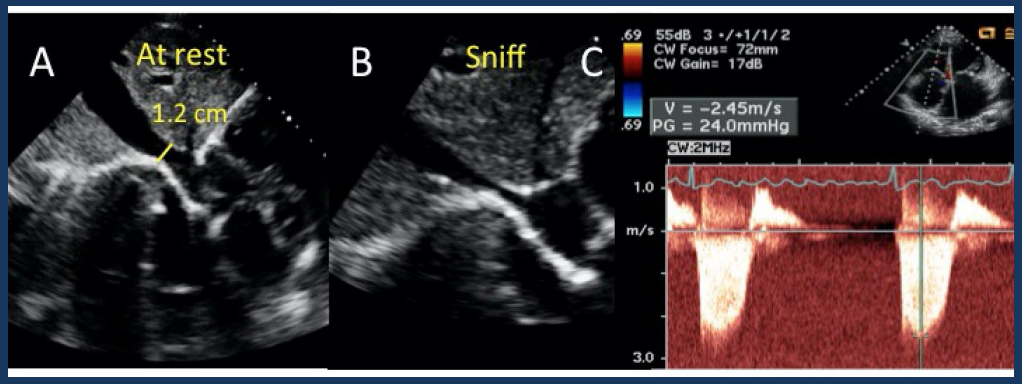

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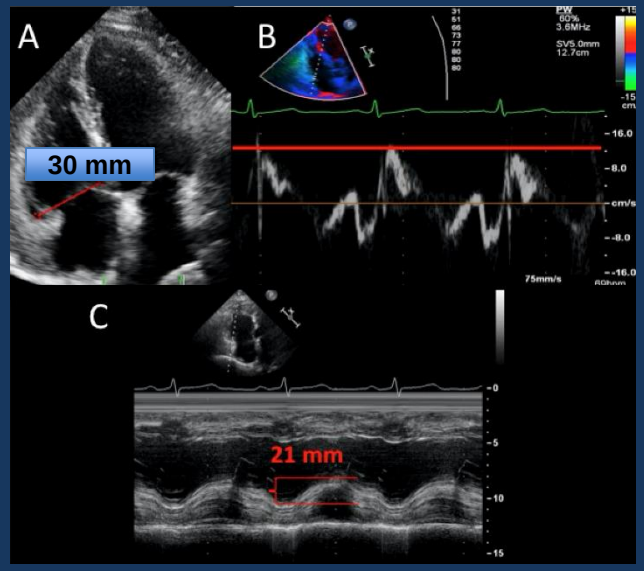
A 45-year-old female with a history of pulmonary embolism is referred for assessment of right ventricular size and systolic function. After evaluating the two-dimensional echocardiographic apical 4-chamber view, the tissue Doppler image of the lateral tricuspid annulus, what is her right ventricular size and systolic function?



a. **Normal right ventricular size and function.**
b. **Normal right ventricular size, abnormal systolic function.**
c. **Abnormal right ventricular size, abnormal systolic function.**
d. **Abnormal right ventricular size, normal systolic function.**

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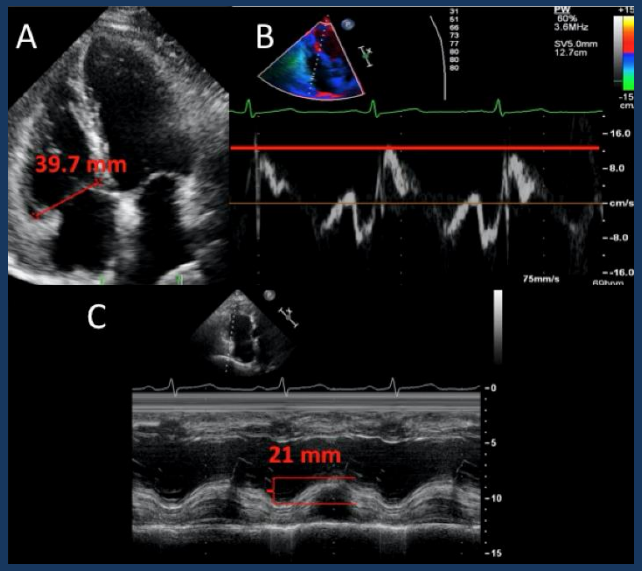

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Which of the following left ventricular segmentation methods is used to standardize left ventricular segmentation across cardiac imaging modalities?

1. **15-Segment Model.**
2. **16-Segment Model.**
3. **17-Segment Model.**
4. **18-Segment Model.**

Which Of The Following Left Ventricular Segmentation Methods Is Used To Standardize Left Ventricular Segmentation Across Cardiac Imaging Modalities?

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Which of the following is not a recommended view for assessing right ventricular function?

1. Apical 4-chamber view
2. Right ventricular focused apical 4-chamber view
3. Modified apical 4-chamber view
4. Modified apical 3-chamber view

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Which of the following is not included in the visual regional wall motion 4 grade scheme?

1. **Normal or hyperkinetic**
2. **Hypokinetic or reduced thickening**
3. **Akinetic or absent/negligible thickening**
4. **Dyskinetic or systolic thinning or stretching**
5. **Aneurysm or focal dilatation and thinning (remodeling) with either akinetic or dyskinetic systolic deformation**

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Evaluation of the Left Ventricle, Right Ventricle, and Left Atrium

Martin Keane, MD, FASE

Review Question #1

Measurement of end-diastolic LV internal diameter (LVIDD) made by properly-oriented m-mode techniques in the parasternal long axis view (PLAX):

1. Are identical to those made from 2D images
2. Are larger than those made from 2D images
3. Are less discrepant from 2D measures with advancing age
4. Are identical if trailing edge to leading edge convention is used
5. Are completely unreliable compared to 2D measurements

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Question 1: Choice Explanations

1. **Incorrect** - m-mode imaging and 2D imaging represent different modalities, and measurements derived will not be identical

2. **Correct** - due to angulation of the ventricle in the PLAX, subtle degrees of obliquity results in lvidd measurements that are between 6 and 12 mm larger than measured directly on 2D images.

3. **Incorrect** - the heart typically angulates to a more apex-upward orientation with age in the parasternal long axis view, m-mode derived measurements become MORE discrepant over time.

4. **Incorrect** – LEADING edge to leading edge measurements are conventional on m-mode. Even if trailing edge to leading edge measurement is made on m-mode, inherent differences in edge detection and technique result in non-identical measurements

5. **Incorrect** – m-mode imaging affords extremely accurate spacial resolution. Performed properly in correct orientation, m-mode measurements are extremely accurate and reliable.

Review Question #2

In males, the geometric pattern of left ventricular “concentric remodeling” is present when:

1. LVMI ≤115 G/M^2 AND RWT ≤0.42
2. LVMI >115 G/M^2 AND RWT >0.42
3. **LVMI ≤115 G/M^2 AND RWT >0.42**
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Question 2: Choice Explanations

1. **Incorrect** – this is normal LV mass index and normal relative wall thickness. This would be classified as ***normal LV anatomy***.

2. **Incorrect** – lv mass index is increased above threshold norms for males, indicating lv hypertrophy. Relative wall thickness is greater than threshold norm. This would be classified as ***concentric hypertrophy*** – a finding most common in cases of predominant pressure overload.

3. **Correct** – in the situation of normal lv mass index for males, but when relative wall thickness exceeds accepted norm values, is classified as ***concentric remodeling***. This is considered by some as a "pre-hypertrophic" state, and is common in hypertensive populations.

4. **Incorrect** – lv mass index is greater than established population norms for males, indicating left ventricular hypertrophy. Relative wall thickness is in normal range. This is classified as ***eccentric hypertrophy*** – a finding most common in cases of predominant volume overload.

5. **Incorrect** – this situation represents normal lv mass index and a relative wall thickness below the mean "normal" value of rwt. This would be classifies at ***normal LV anatomy***.

Review Question #3

"Volumetric" measurements of LV cavity size (simpson's method) are considered superior to strictly "linear" techniques (rotational ellipse) because:

1. Small errors in linear measurements are greatly magnified by squaring terms in linear techniques.
2. Complex mathematical modeling of volumetric techniques insures precision
3. Linear measurement techniques were developed for m-mode echocardiography and have decreased accuracy when applied to 2D echocardiography.
4. Volumetric techniques directly measure volumes, whereas linear techniques measure only length and width
5. Volumetric techniques correct for shape distortions better than linear techniques.

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Question #3: Choice Explanations

1. **Incorrect** – linear techniques and volumetric techniques utilize measurements raised to second or third power, resulting in magnification of measurement errors in both.

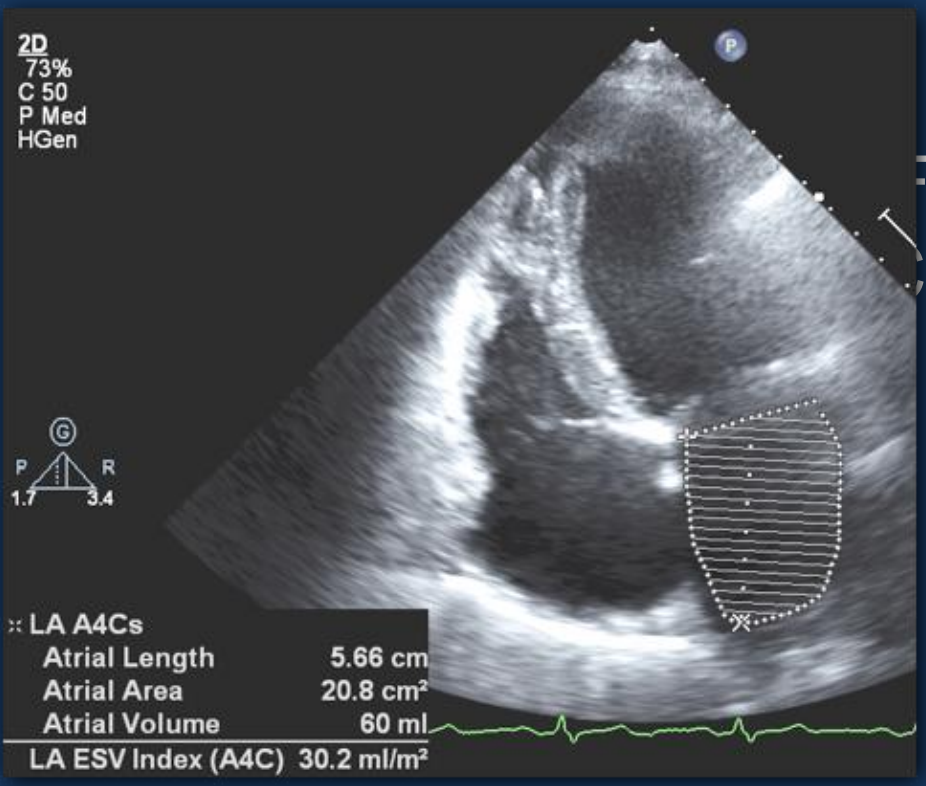
2. **Incorrect** - complex models of ventricular volume are still subject to significant lack of precision, particularly with poor endocardial definition and off-axis imaging.

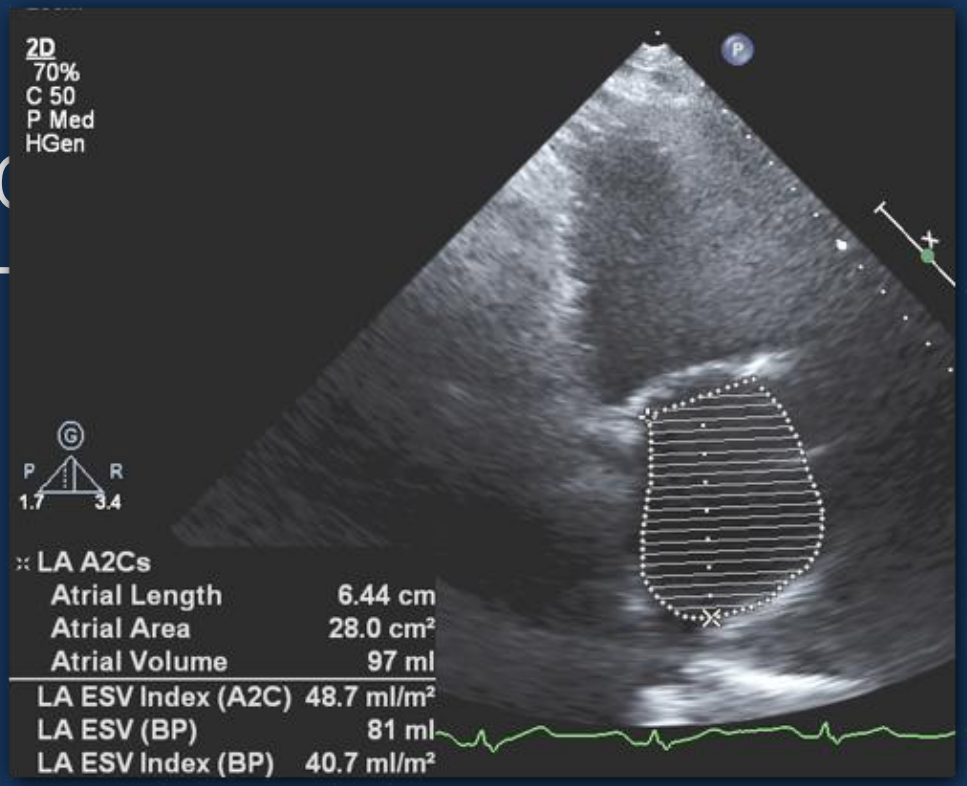
3. **Incorrect** – although developed for m-mode echo, linear techniques for lv volume can be accurately applied to 2-dimensional echo imaging. Frequently, measurement of LV lengths/diameters are MORE accurately performed on 2D imaging.

4. **Incorrect** – 2d volumetric techniques calculate overall lv volume using a compilation of smaller, measurable volumes. Linear measurements are still frequently a component in volumetric techniques. Thus volume is not "directly" measured

5. **Correct** – volumetric techniques, particularly when applied in a biplane fashion, can incorporate significant cavity shape abnormalities and focal wall motion abnormalities into estimation of diastolic and systolic ventricular volume. Linear techniques rely on broad assumptions of symmetry of cavity size and function. Depending on where abnormalities are located, linear technique assumptions of symmetry may result in significant OVER- or under-estimation of LV volumes

Review Question #4





Review Question #4

AFTER REVIEWING THIS DATA, YOU DECIDE:

1. Size of the LA should be determined by A4C imaging only. LA size in this patient is therefore normal.
2. The LA in this patient is mildly dilated, based on biplane volume measurements.
3. Diastolic function in this patient without mv disease is most likely NORMAL.
4. The technologist must be re-trained – biplane volume measurements should be performed in A4C and A3C only
5. LA size is most accurately measured by PLAX A-P diameter, which minimizes “squaring errors”

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Question #4: Choice Explanations

1. **Incorrect** – although single-plane volume measurement of the LA may be necessary in technically limited studies, whenever possible, volume measurement in biplane format (A4C and A2C) is preferred.

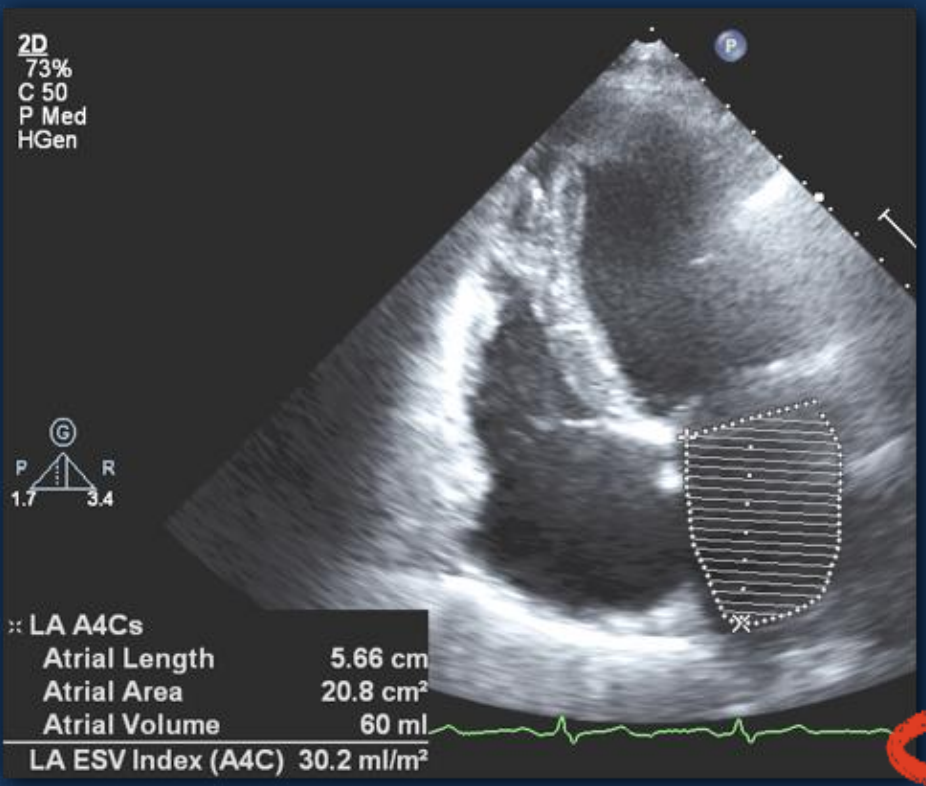
2. **Correct – in this case, good-quality la volume measurements have been made in A4C and A2C views. A biplane LA volume index of 40.7 ml/m^2 has been calculated from this. Current guidelines recognize this is consistent with mild LA dilatation.**

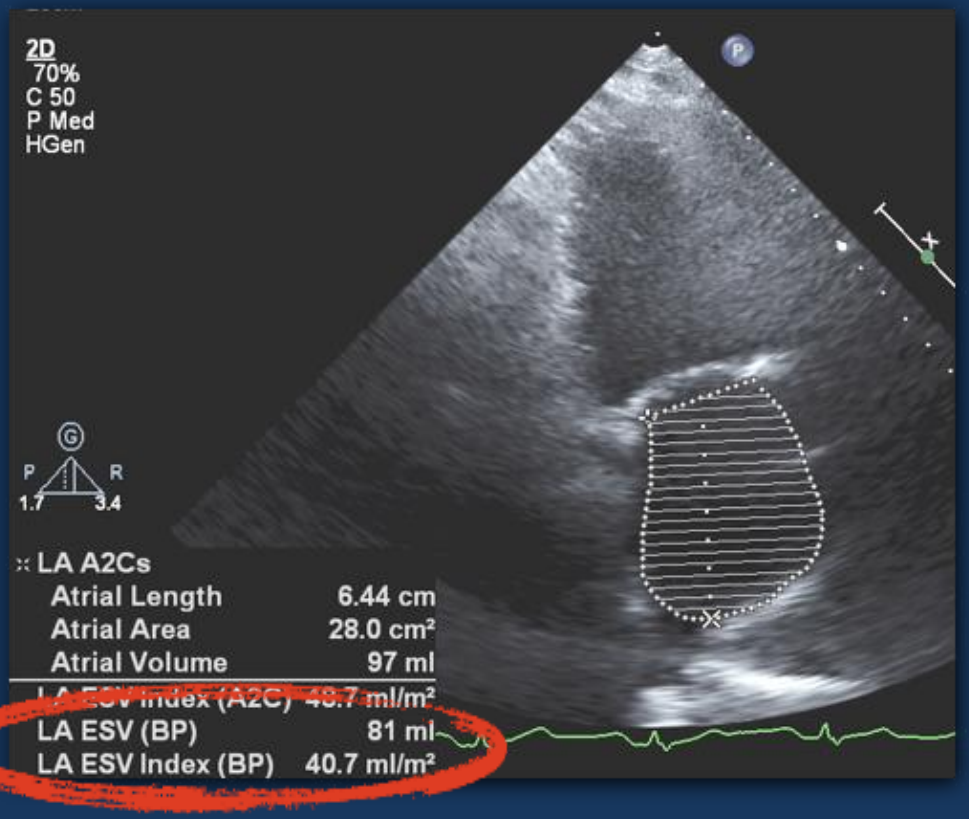
3. **Incorrect** – in a patient without mitral valve stenosis or regurgitation (and in NSR for the astute observers in the room), presence of mild to moderate la dilatation is most likely indicative of some degree of lv diastolic dysfunction. .

4. **Incorrect** – your new technologist has made an accurate measurement in correct views for biplane measurement. Apical 4 chamber and apical 2 chamber views provide orthogonal (90^o) vantage points for biplane calculations. This would NOT be the case for apical 4 chamber and apical 3 chamber views.

5. **Incorrect** – although previously a standard for measuring and sizing the la, the linear AP diameter of the PLAX view is a single-dimension measurement that is fraught with errors of under- and over-estimation. Biplane LA volume is more accurate.

Review Question #4





LA Volume Criteria

Indexed LA Volume (ml / m2)

Normal Range	Mildly Abnormal	Moderately Abnormal	Severely Abnormal
16 – 34	**35– 41**	**42– 48**	**>48**

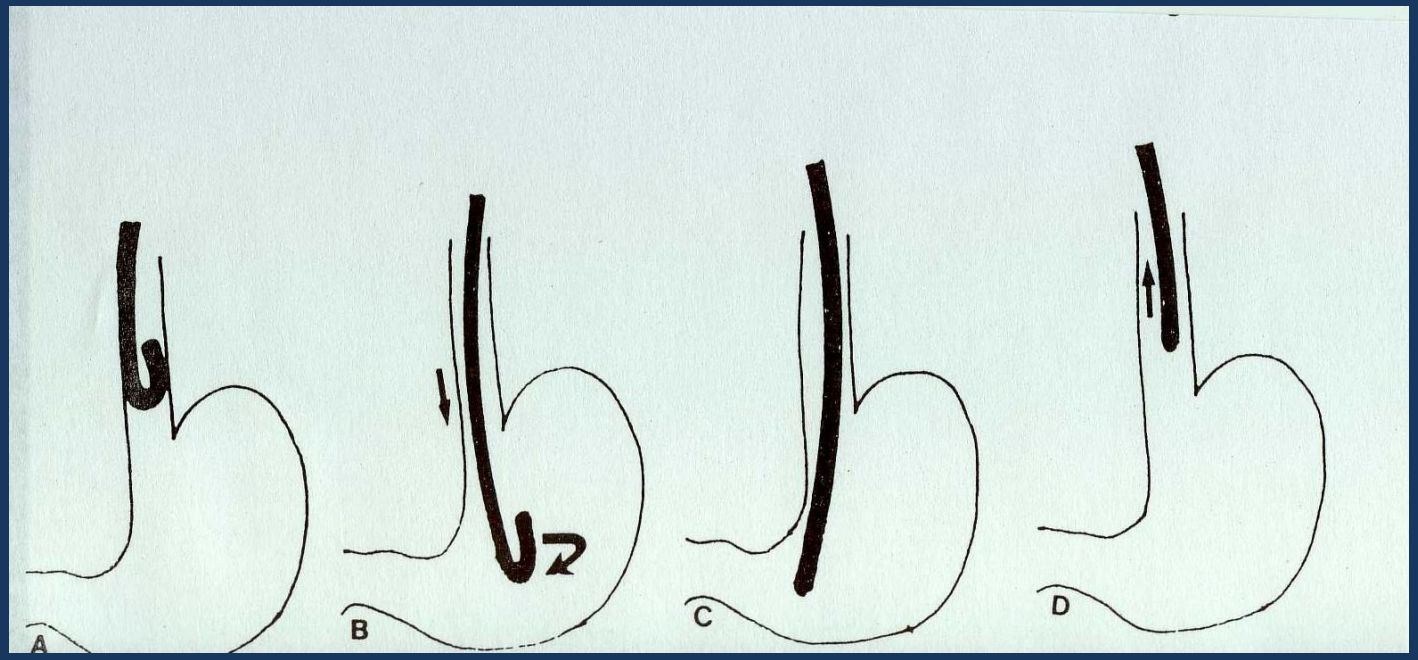
Echo-Doppler Assessment of Right and Left Ventricular Hemodynamics

Itzhak Kronzon, MD, FASE

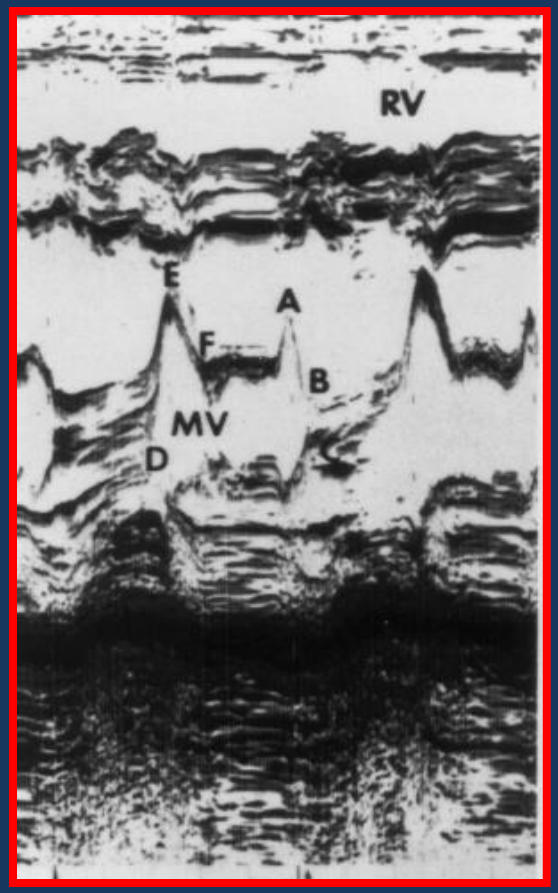
During TEE exam, the image of the heart Disappeared. The dial which controlled The flexion of the tip of the probe was stuck In a fully flexed position. Attempt to withdraw The probe met resistance.

You should

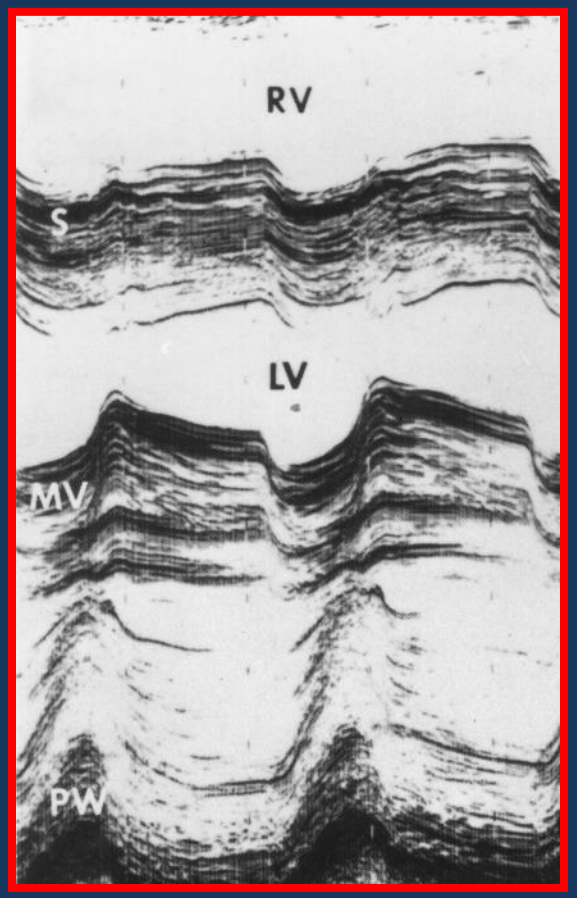
A. Turn the unit off and restart it
B. Advance the probe
C. Obtain emergency flouroscopy
D. Emergency surgical consultation


A
B
C
D

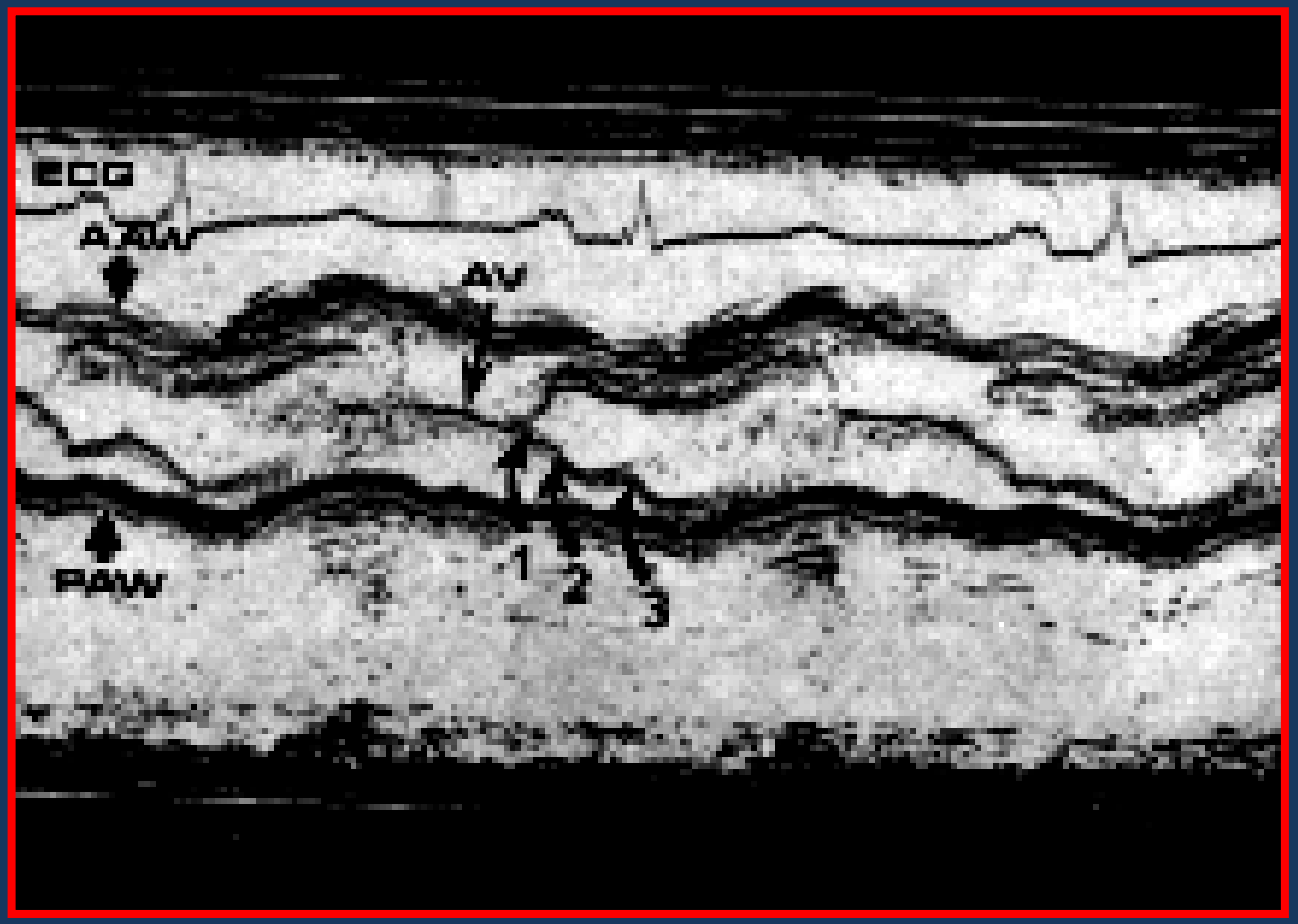
Normal MV



MS



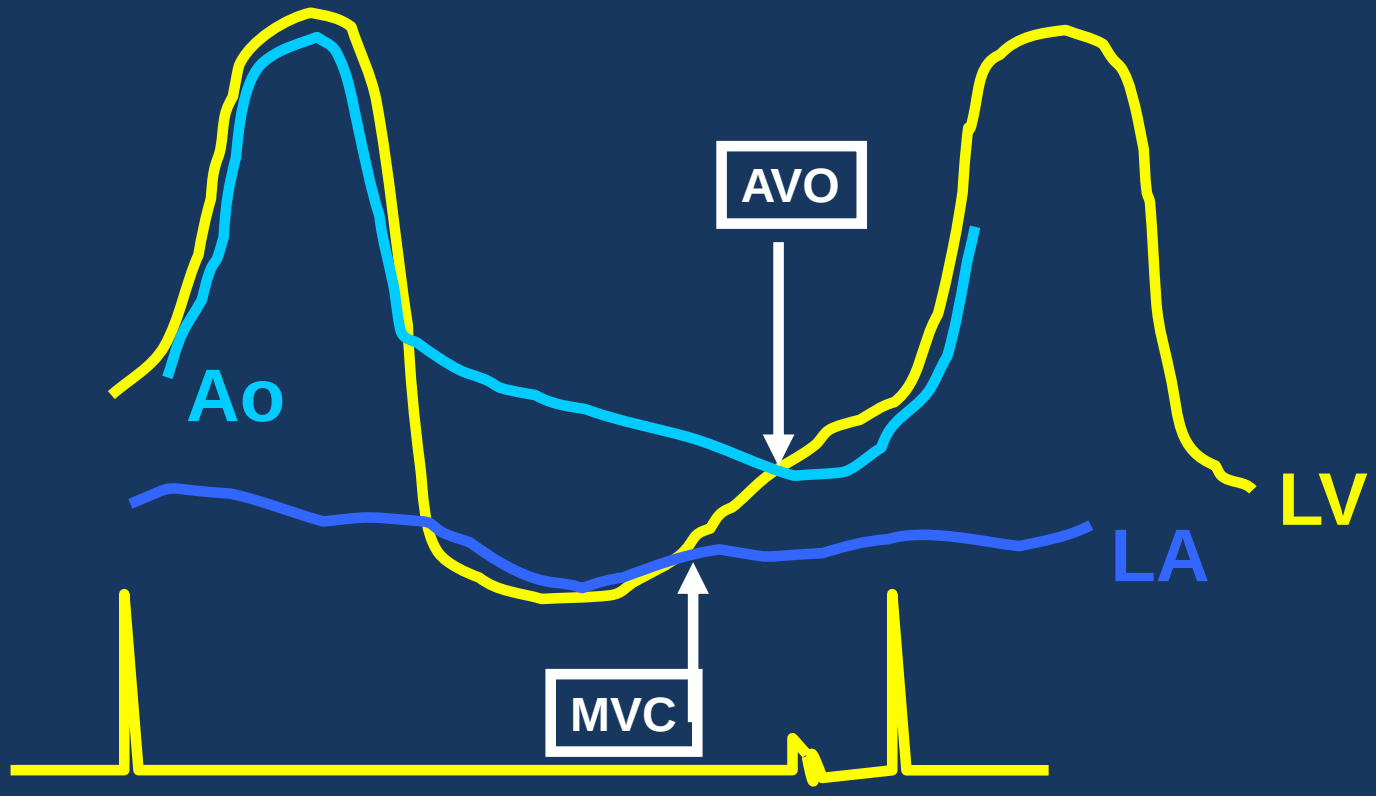
Patient with severe AI



Premature aortic valve opening?

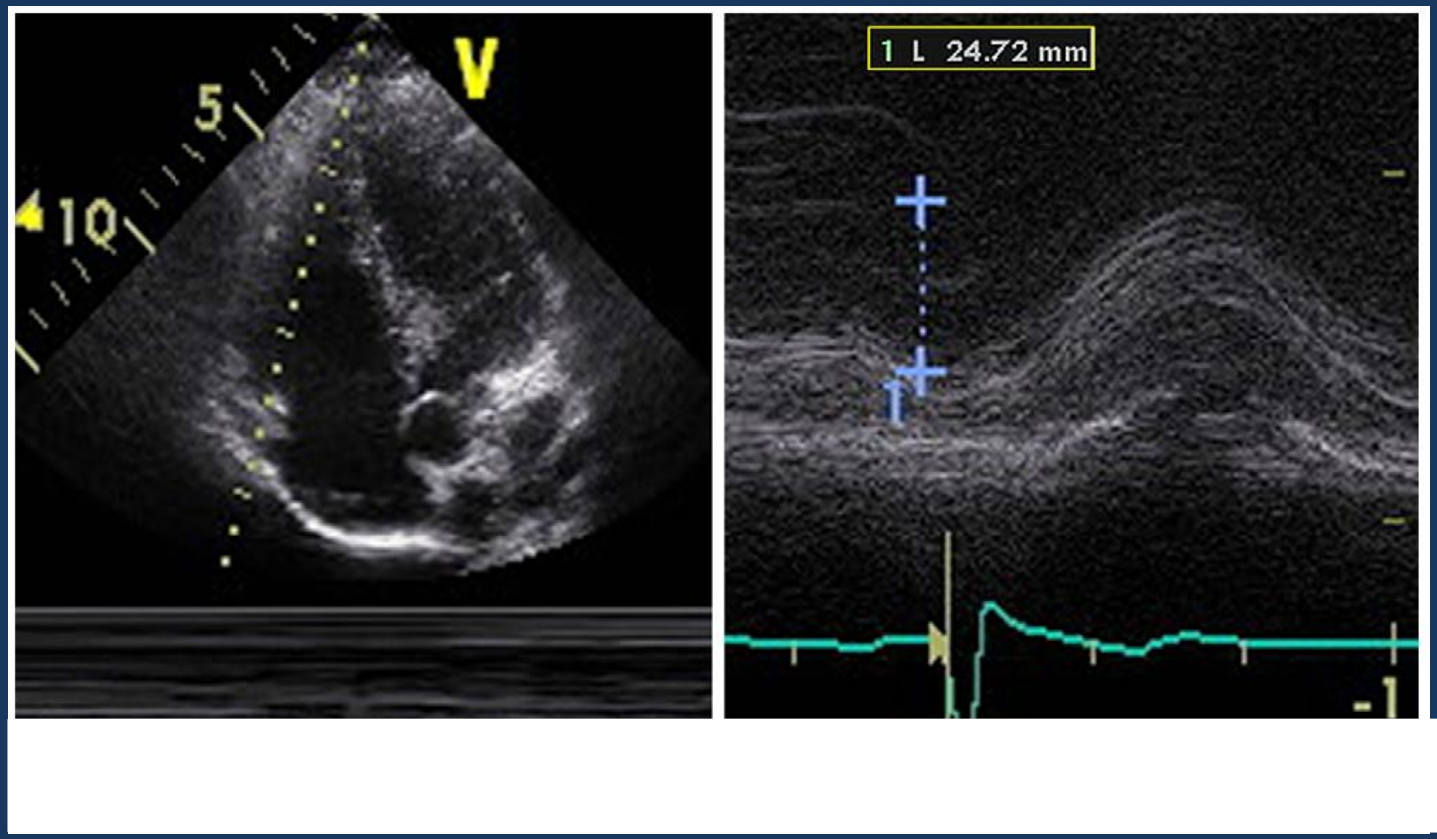
NYU Medical Center

Severe Aortic Regurgitation



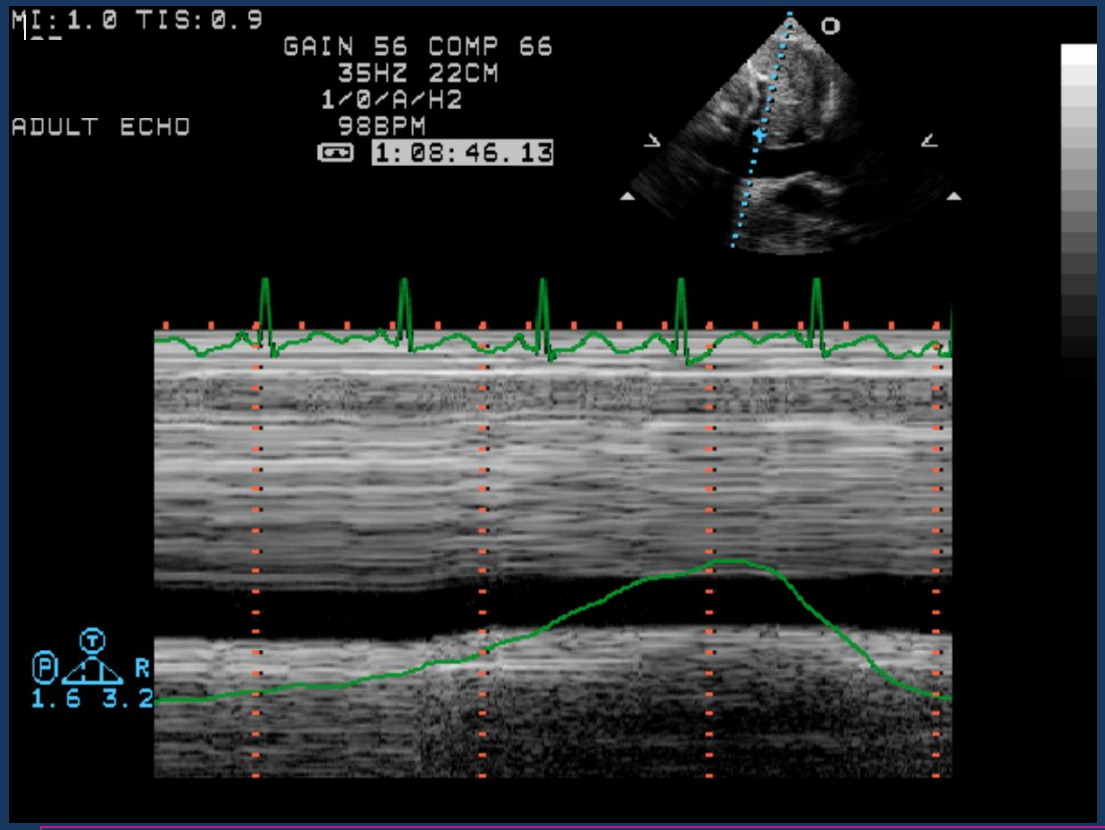
Tricuspid Annular Plane Systolic Excursion (TAPSE)

Mitral Annular Plane Systolic Excursion (MAPSE)



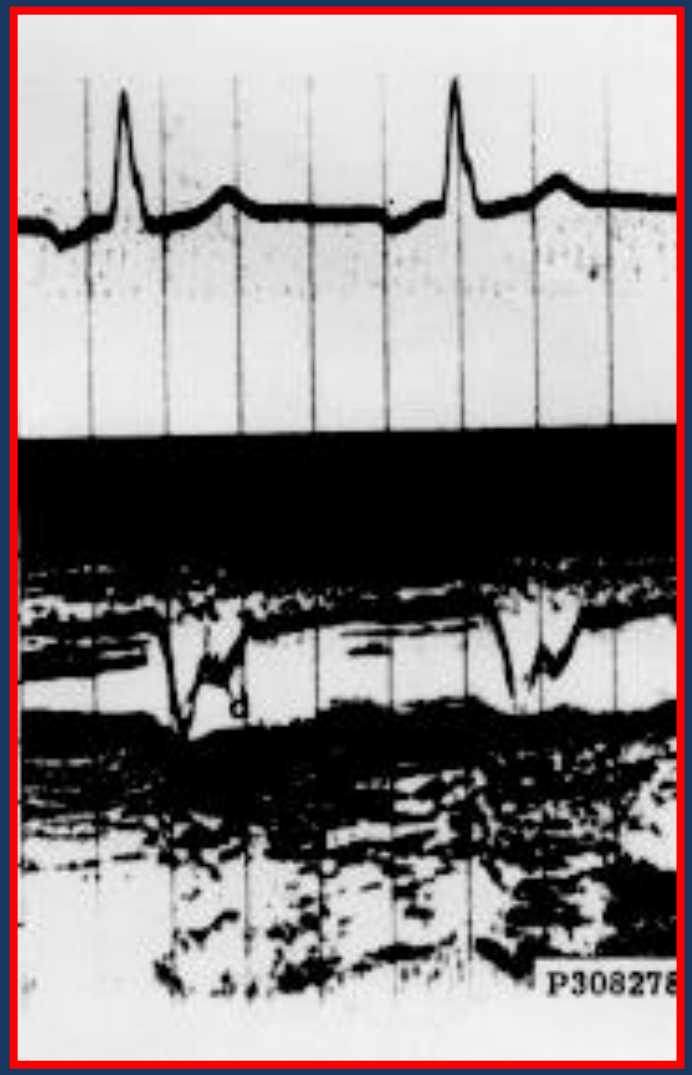
Markers of global ventricular systolic function

IVC plethora



Estimated IVC pressure 20mmHg

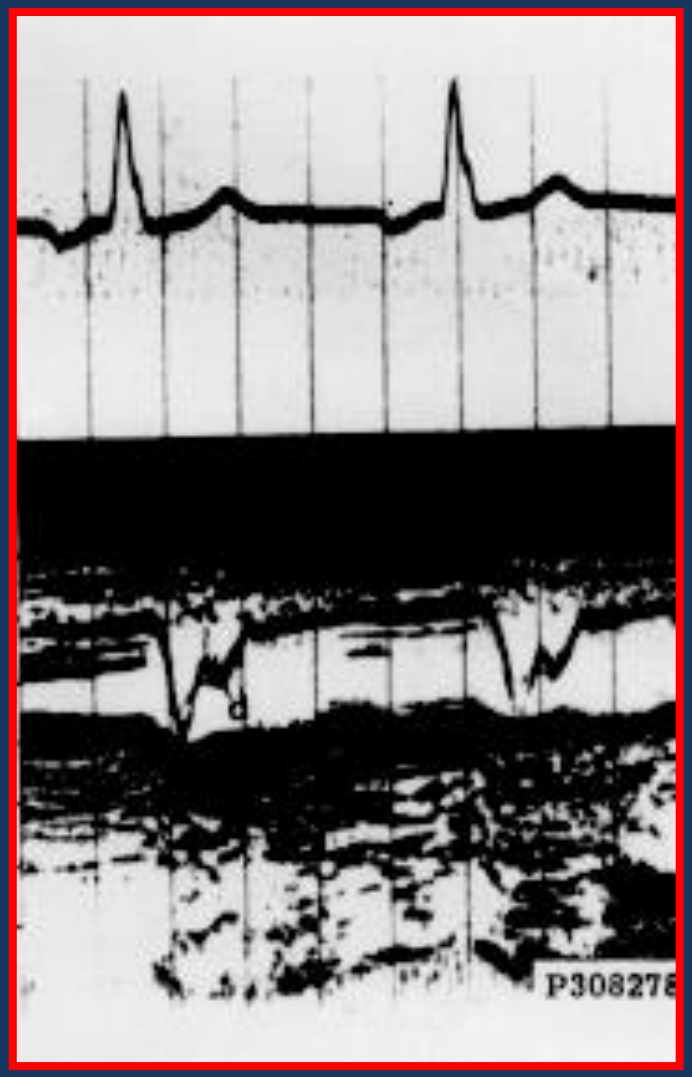
Pulmonic Valve M-Mode



37 year old woman with dyspnea and systolic murmur.

Diagnosis?:
A. Valvular PS
B. Pulmonary Htn
C. Constrictive pericarditis
D. Tetralogy of Fallot

Pulmonic Valve M-Mode



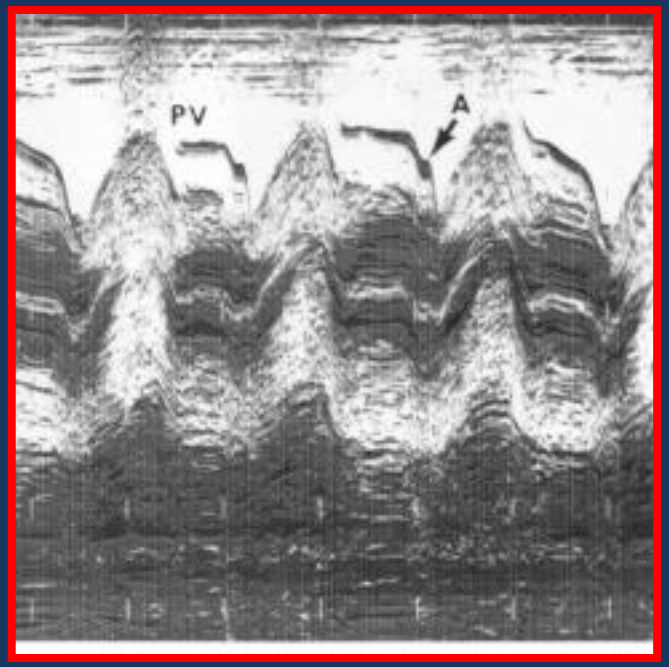
ANSWER:

B. Pulmonary Htn

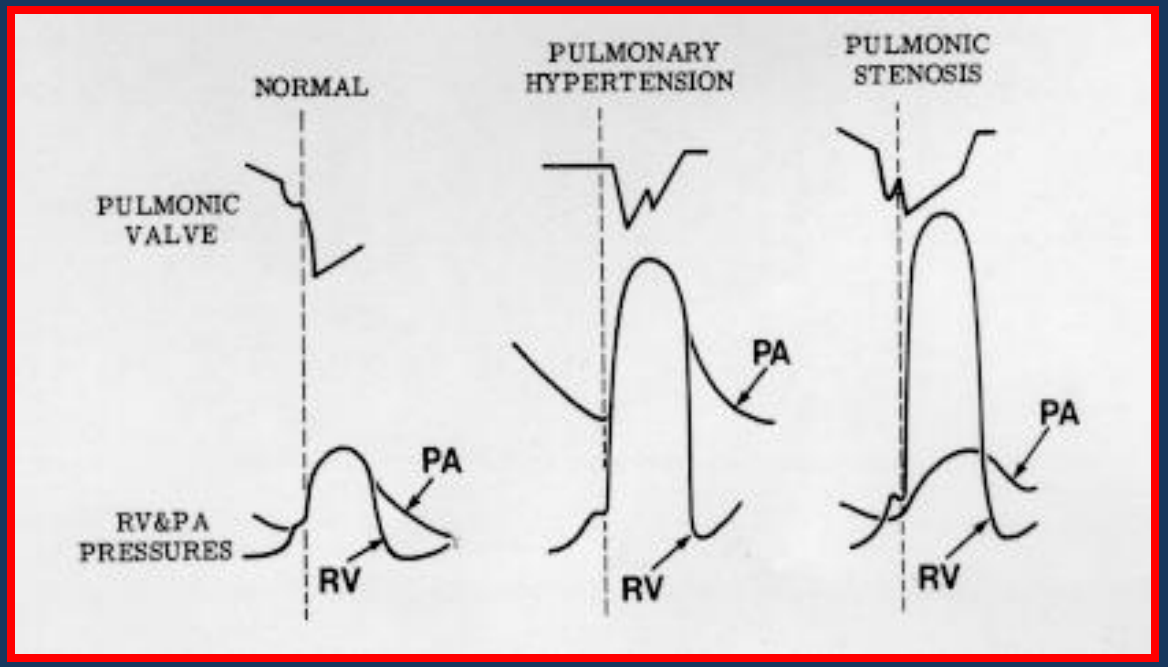
Note the absence of A-dip in spite of NSR

and also the “flying W” pattern

Pulmonic Valve M-Mode

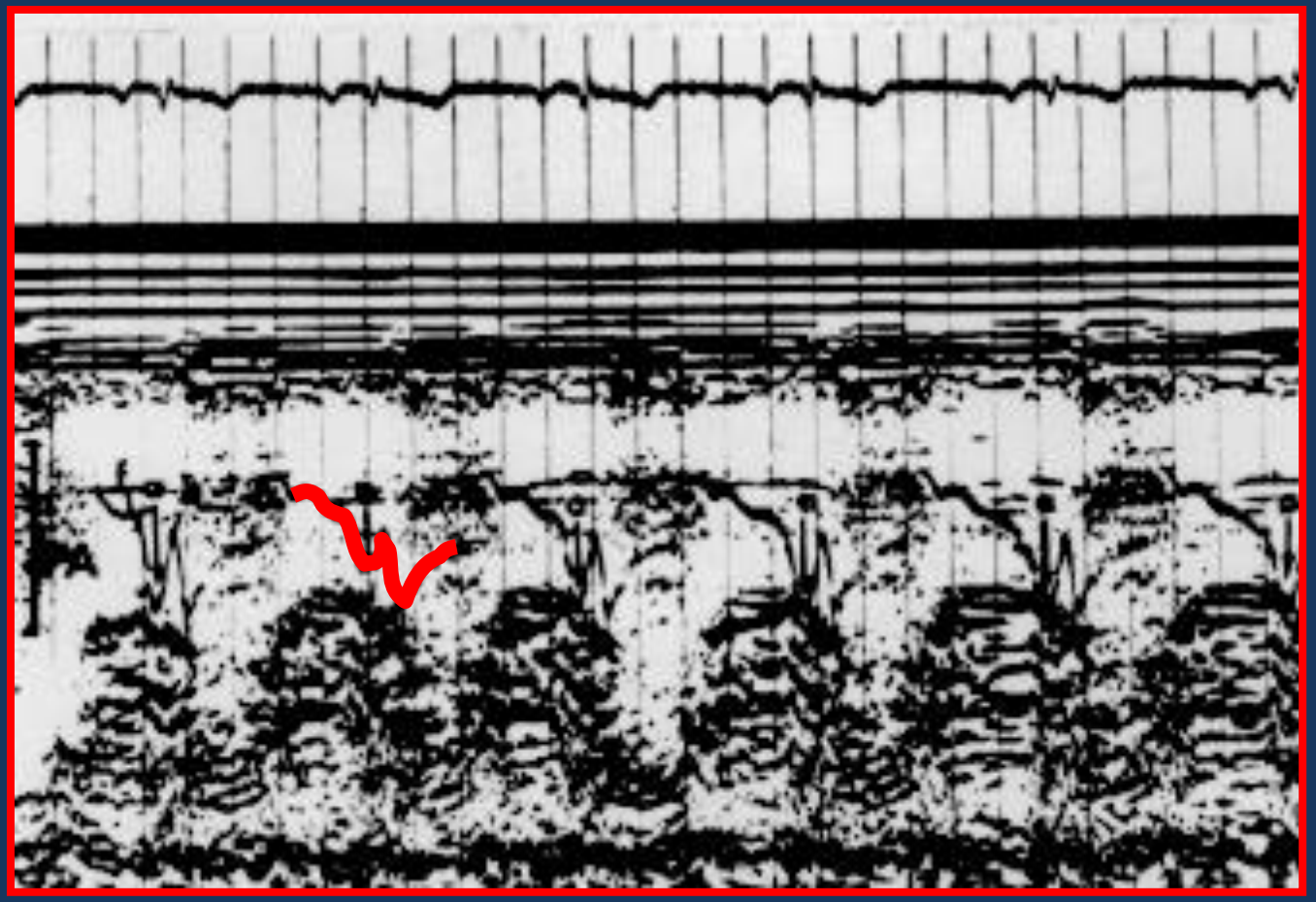


Normal PV

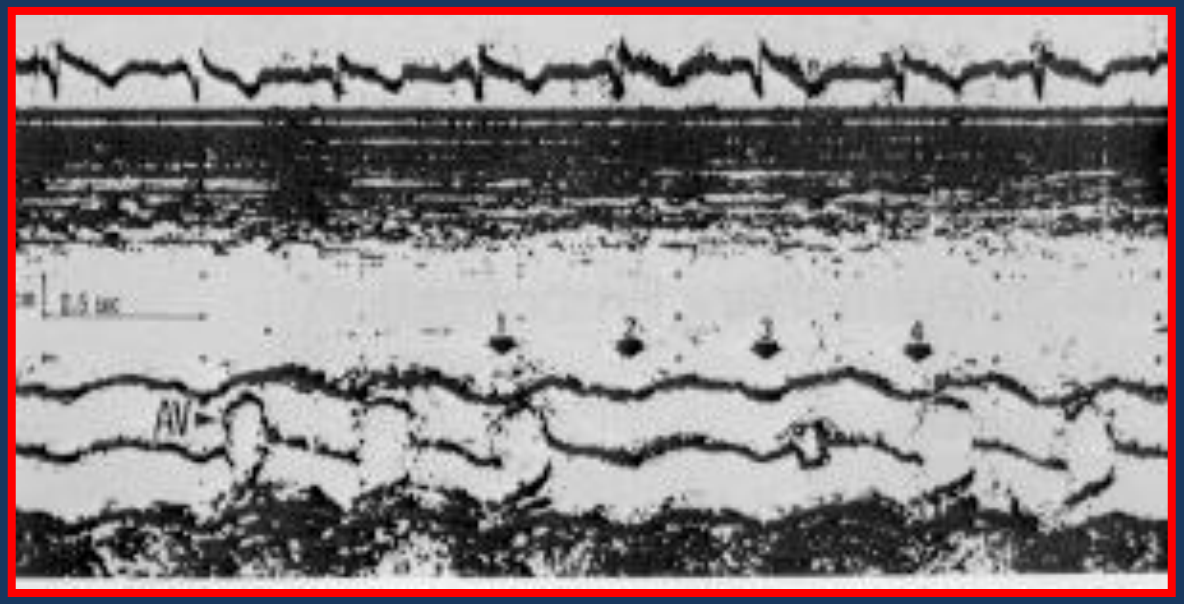


Feigenbaum, Echocardiography, 3rd ed.

Pulmonic Valve M-Mode in PS

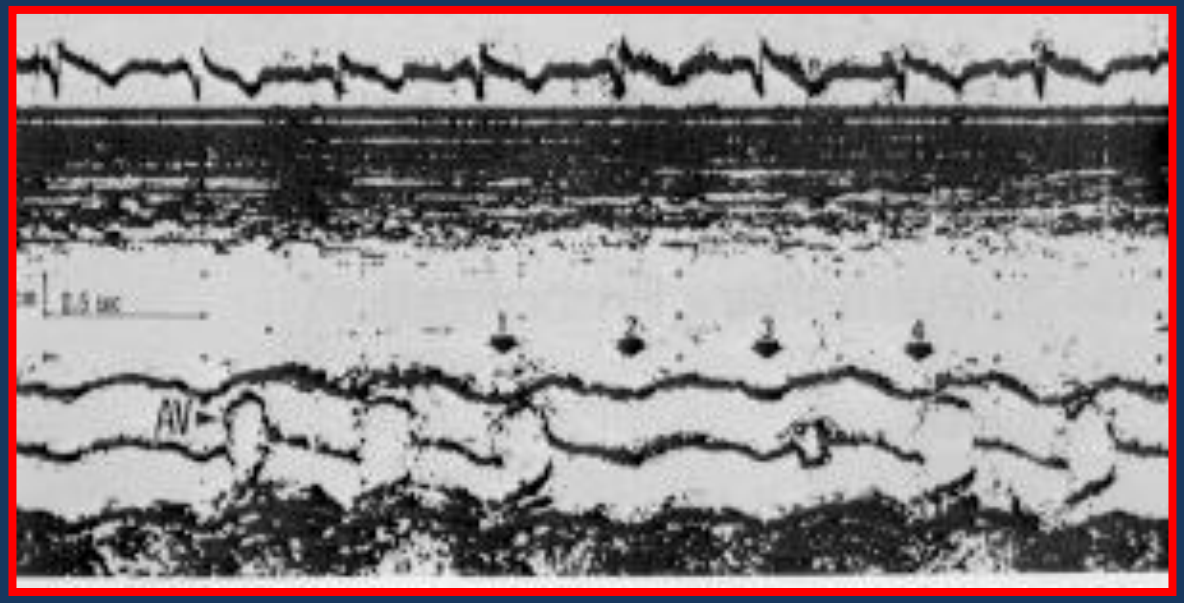


Most likely finding in this patient



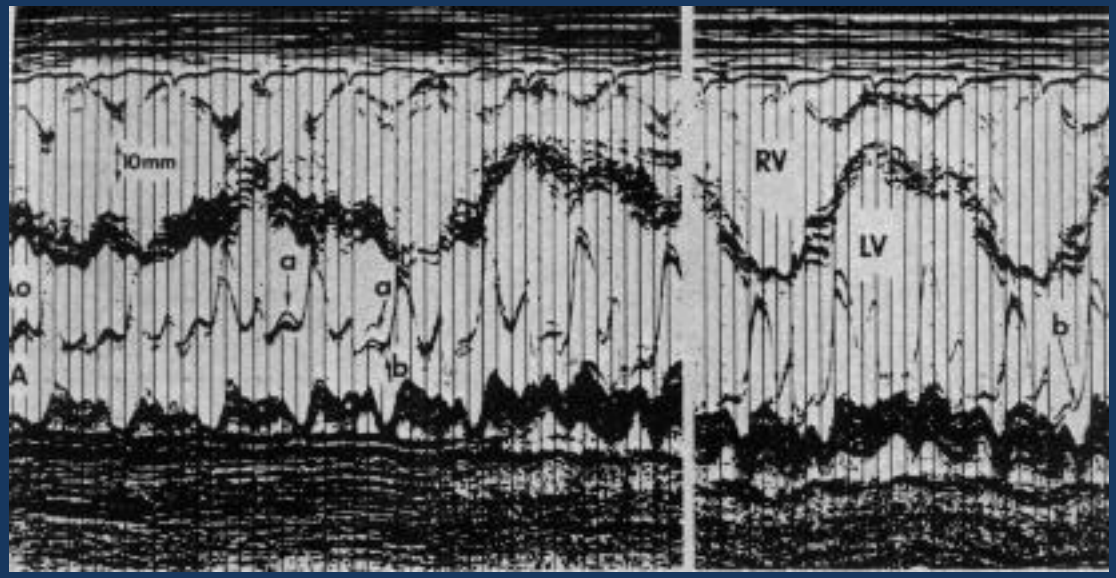
A. Pulsus paradoxus
B. Widely split second heart sound
C. Hypertension
D. Clubbing of fingers

M-Mode in Pulsus Paradoxus

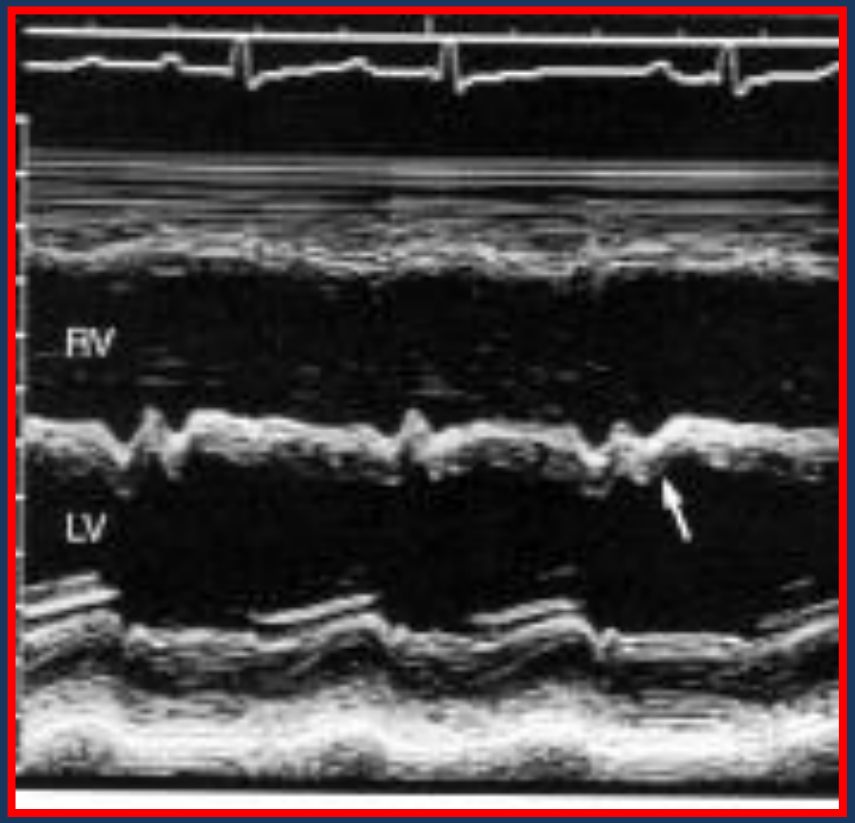


Marked respiratory variation in aortic valve opening

Respiratory Variation in Ventricular Sizes
Pulsus Paradoxus
Cardiac Tamponade

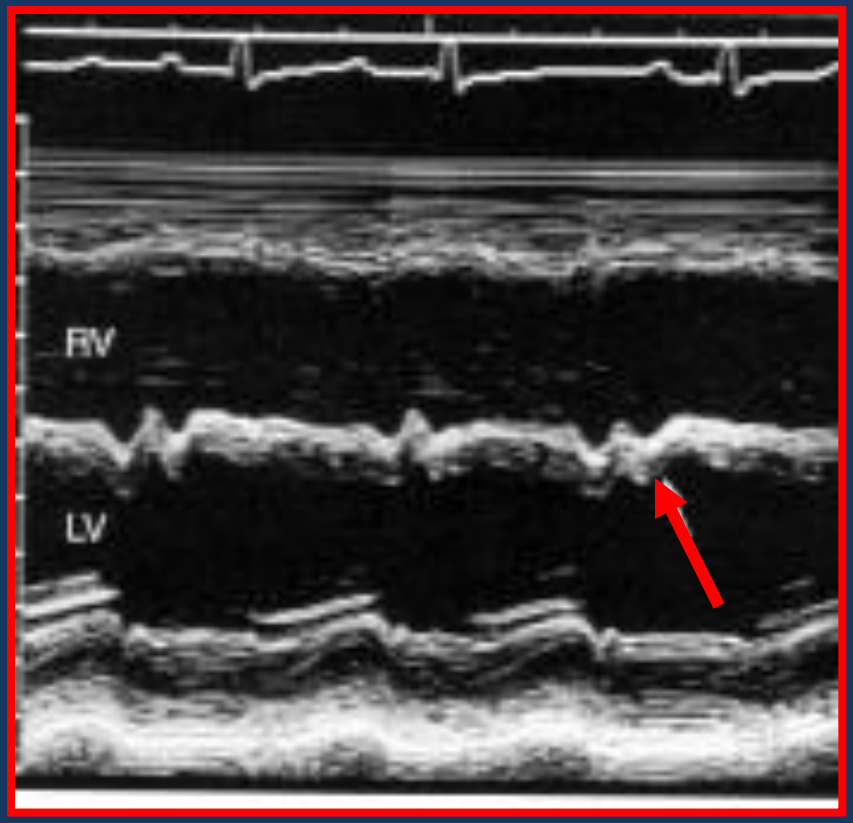


Patient with Ankle edema



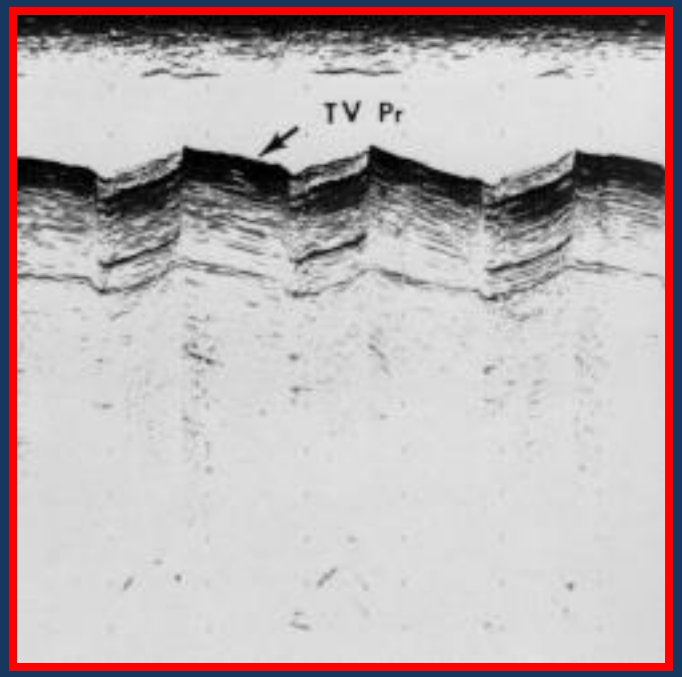
A. Constriction
B. LBBB
C. Atrial septal defect
D. Status post CABG

M-Mode in Constrictive Pericarditis

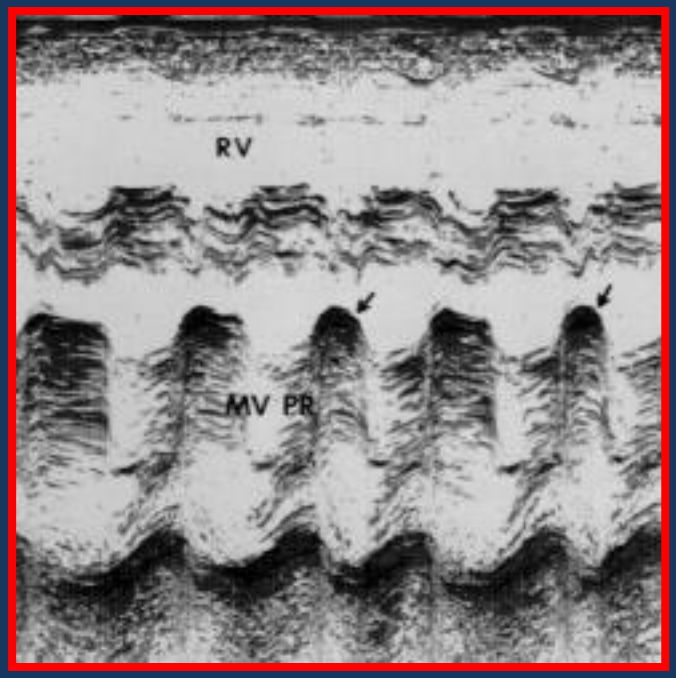


Note the diastolic Septal “bounce”

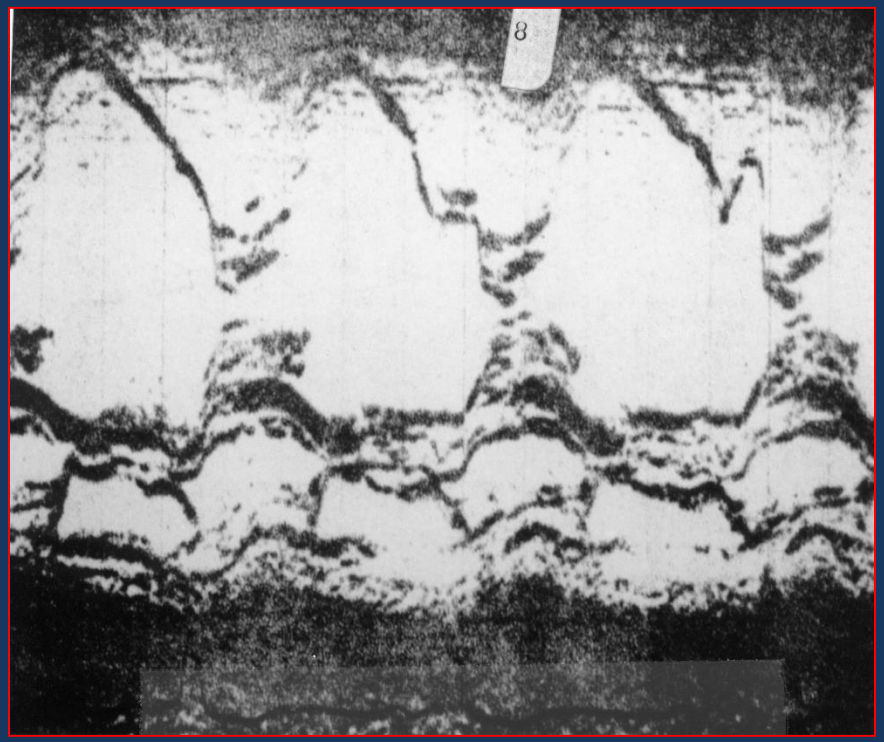
Nl Mechanical Valve



Stenotic Mechanical MV



Normally acceleration and decelaration are sharp And rapid. Note blunting of valve excursion on the right.

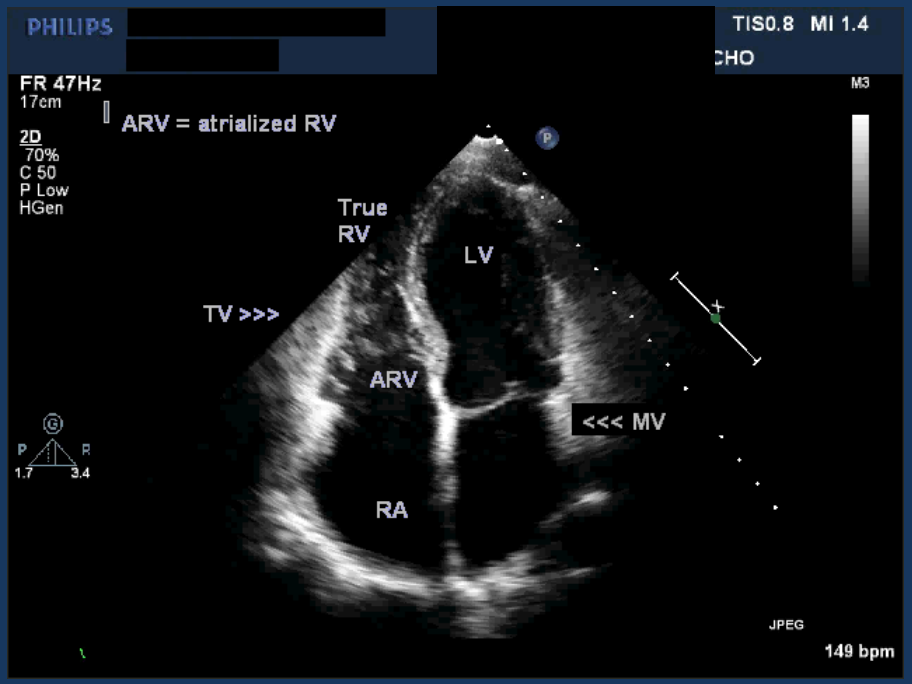


47 y.o. female with palpitations, Dx?

A. ASD (secundum)
B. Ebstein's
C. Intraaortic Balloon
D. Arrhythmogenic RV Dysplasia

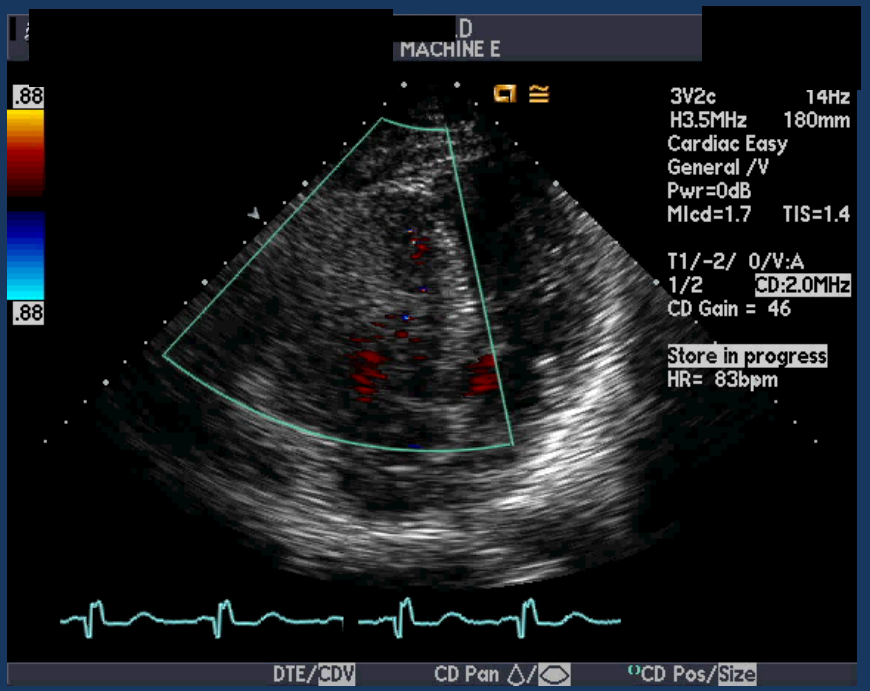
Ebstein's Anomaly

Congenital dysplasia of tricuspid valve that leads to apical displacement of posterior and septal leaflets. Often associated with WPW and atrial septal defect with right-to-left shunt.



Transthoracic Echocardiogram

ARV, atrialized portion of RV



Transthoracic Echocardiogram

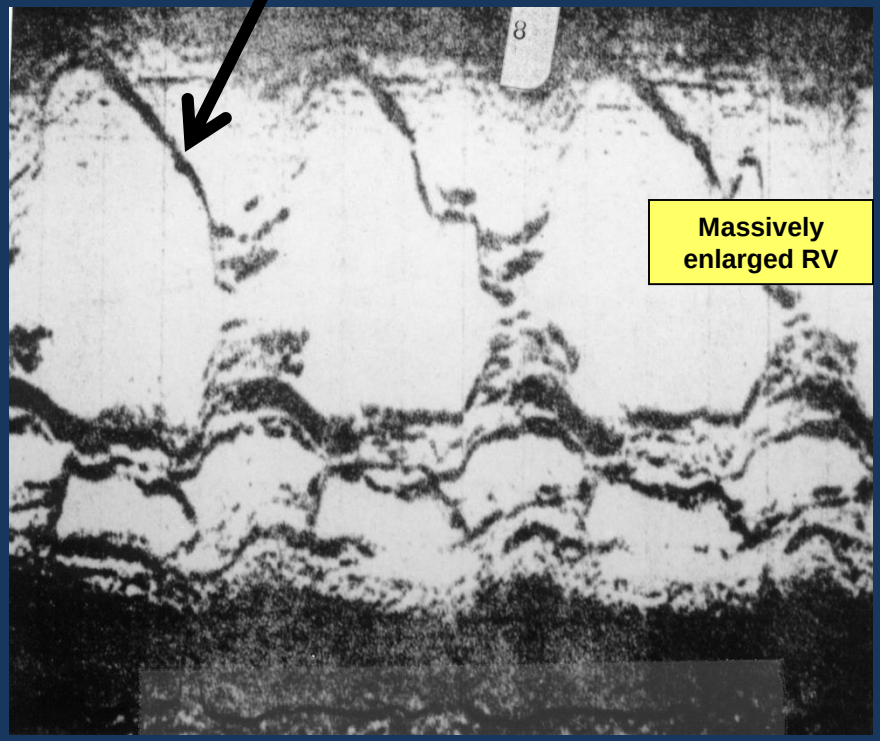
Note the apically displaced origin of TR jet.

NYU Leon H. Charney
Division of Cardiology

4/29/2017

Ebstein's Anomaly

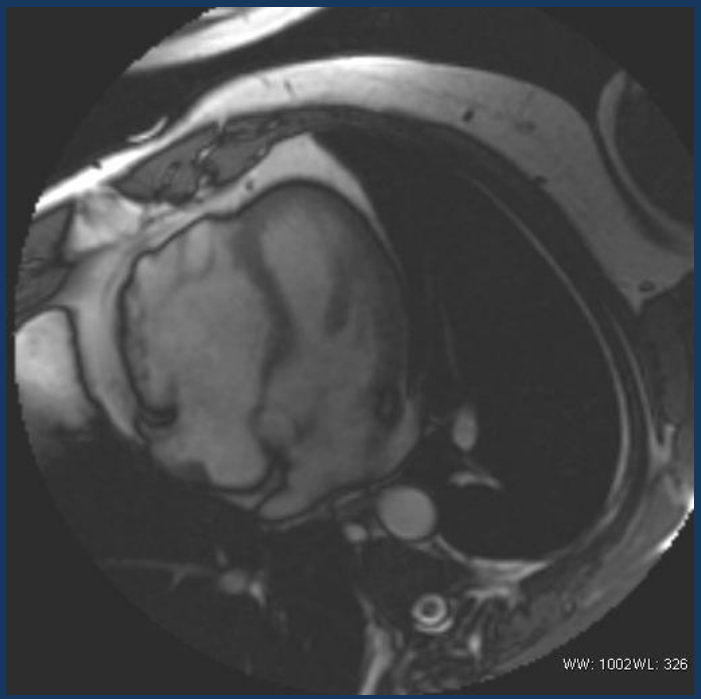
Large excursion of the anterior TV leaflet. Sail-sound on physical exam may be heard.



M Mode Echocardiogram

Note the large anterior tricuspid leaflet

NYU Leon H. Charney Division of Cardiology



Cardiac MRI

Note the large anterior tricuspid leaflet

4/29/2017

The followings were obtained in this pt with significant AR, AS and MR

BP =150/90
HR=100bpm
AoV peak Gradient=68mmHg
AoV mean gradient =40mmHg
VTI AoV= 85 cm
VTI LVOT=20cm
LVOT diameter=2cm

The Cardiac output is:

A. 2.4 lit/minute
B. 8.4 lit/minute
C. Cannot be accurately measured because of MR
D. Cannot be accurately measured because of AR

Patient has signifant AS, AR, and MR

BP =150/90
HR=100bpm
AoV peak Gradient=68mmHg
AoV mean gradient =40mmHg
VTI AoV= 85cm
VTI LVOT=20cm
LVOT diameter=2cm

C.O.=3.14x1x1x20x100=6280cc=

6,280 lit/min

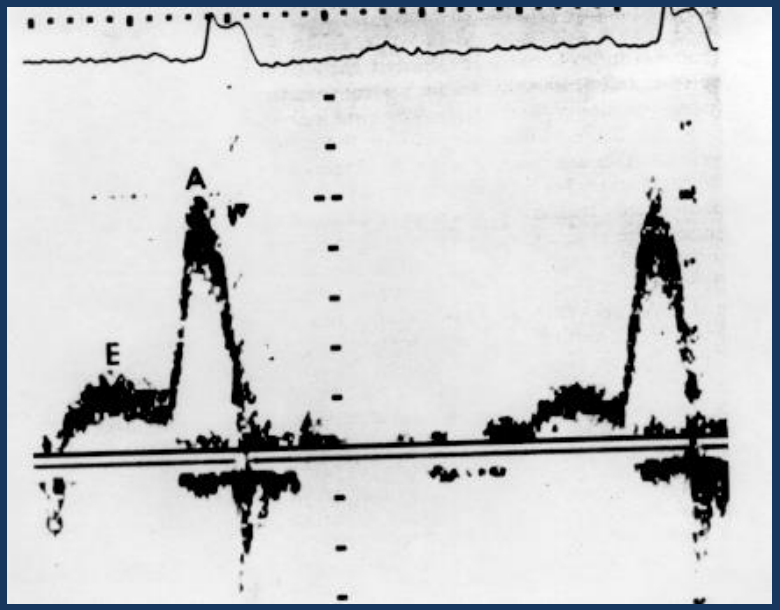
The Cardiac output is:

A. 2.4 lit/minute
B. 8.4 lit/minute
C. Cannot be accurately measured because of MR
D. Cannot be accurately measured because of AR

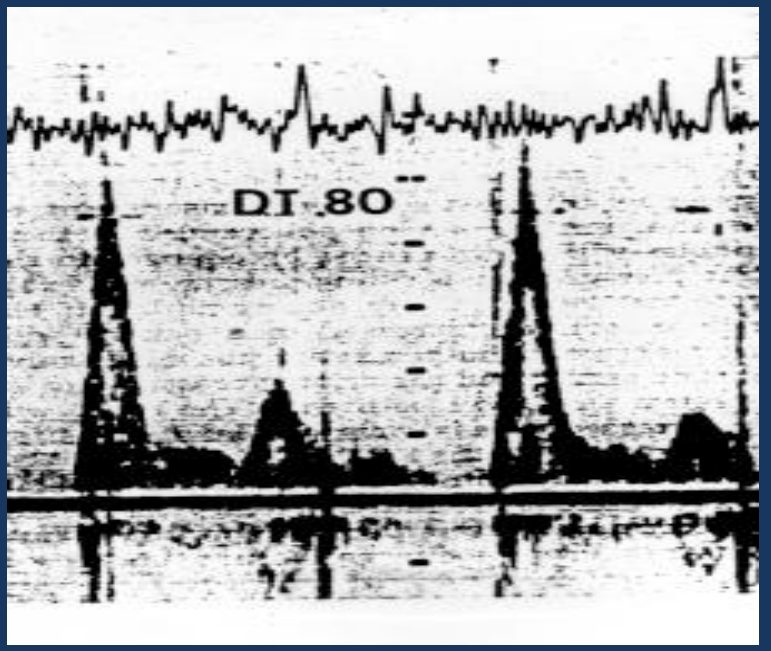
Match the following Strips

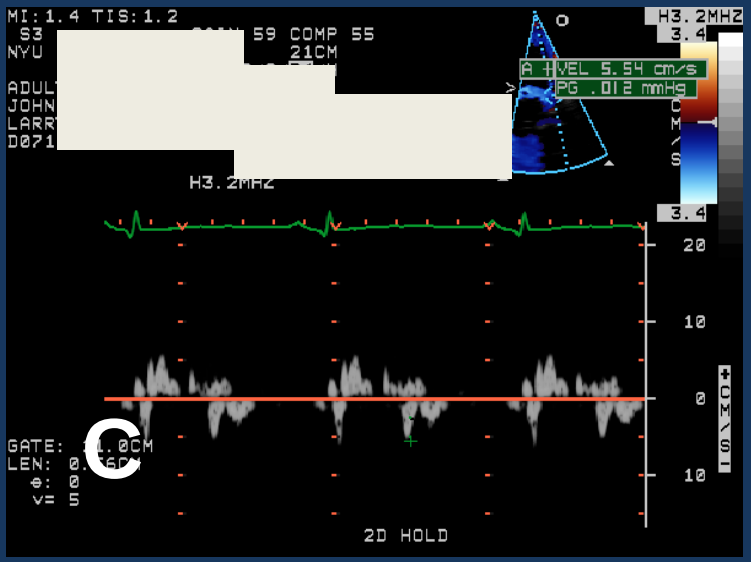
1. Constriction
2. Restriction
3. Both
4. Neither

A


A
E

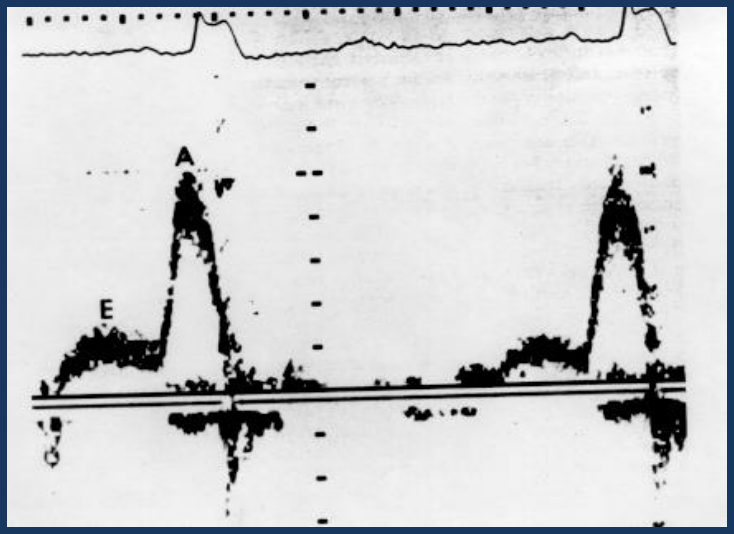
B


DT 80

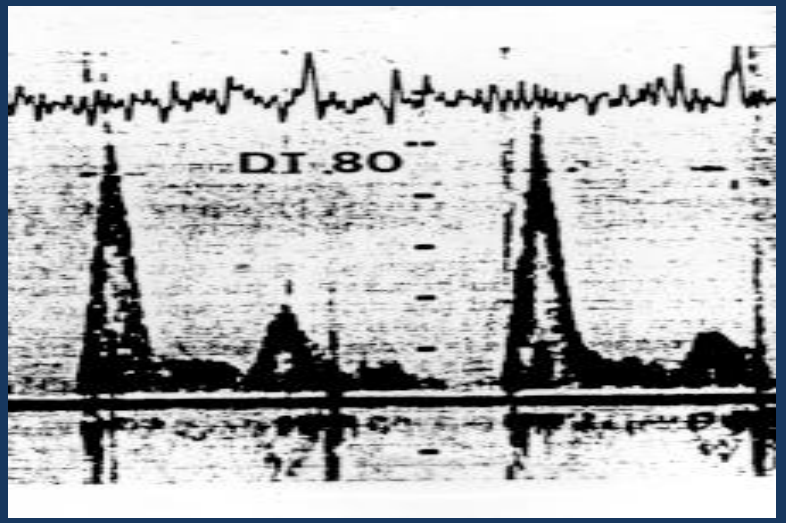

MI:1.4 TIS:1.2
59 COMP 55
21CM
NYU
H3.2MHZ
3.4
A VEL 5.54 cm/s
PG .012 mmHg
H3.2MHZ
3.4
20
10
0
10
GATE:
LEN:
e: 0
v= 5
2D HOLD
C


v 0.14 m/s
p 0.08 mmHg
Depth: 28.0 cm
Freq.: 2.4 MHz
Freq.: 2.6 MHz
SV: 5.9 mm
10
20
.16
-.16
5
[cm/s]
-5
-10
-15
-20
-2.0
-1.5
-1.0
-0.5
0.0
100 mm/s
99
HR
D

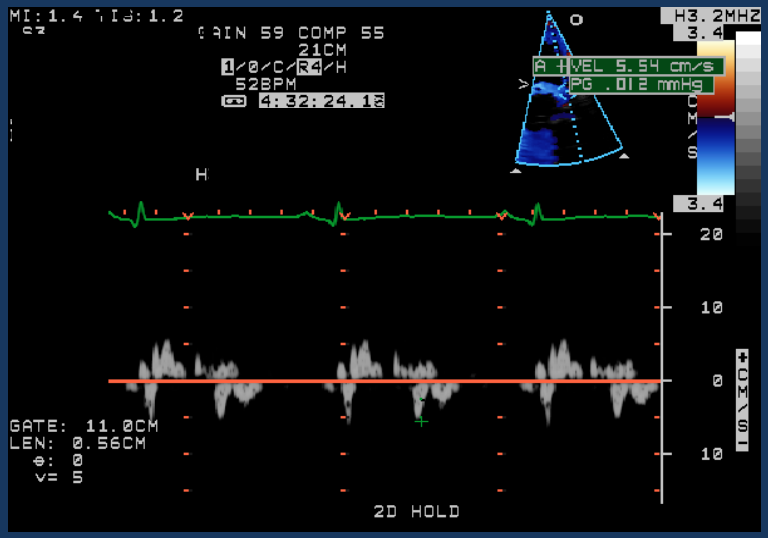
A=4 (Neither)



B=3 (Both)



C = 2 (restriction)



D=1 Constriction

A Case of Shortness of Breath

Case report

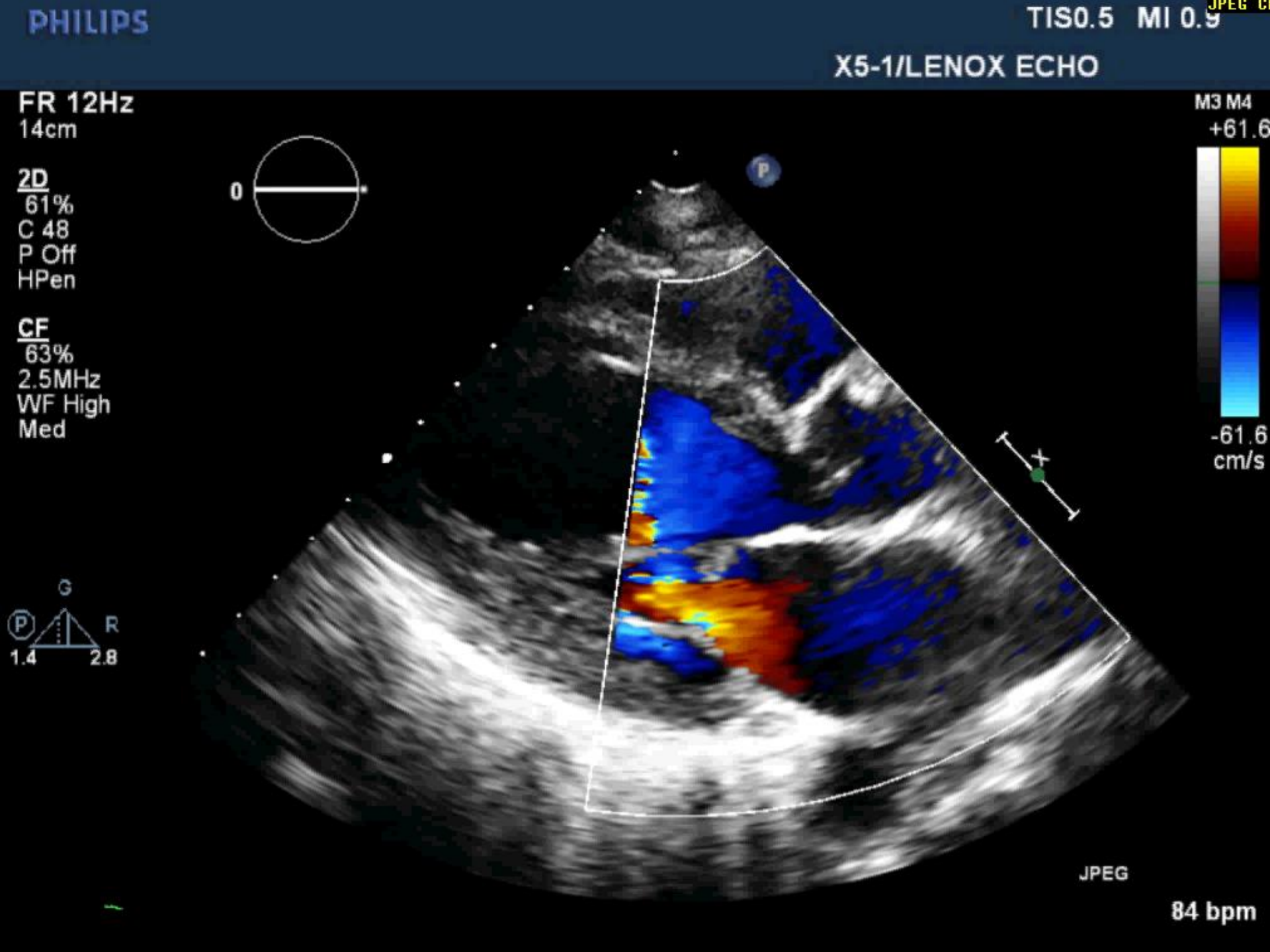
- **HPI**

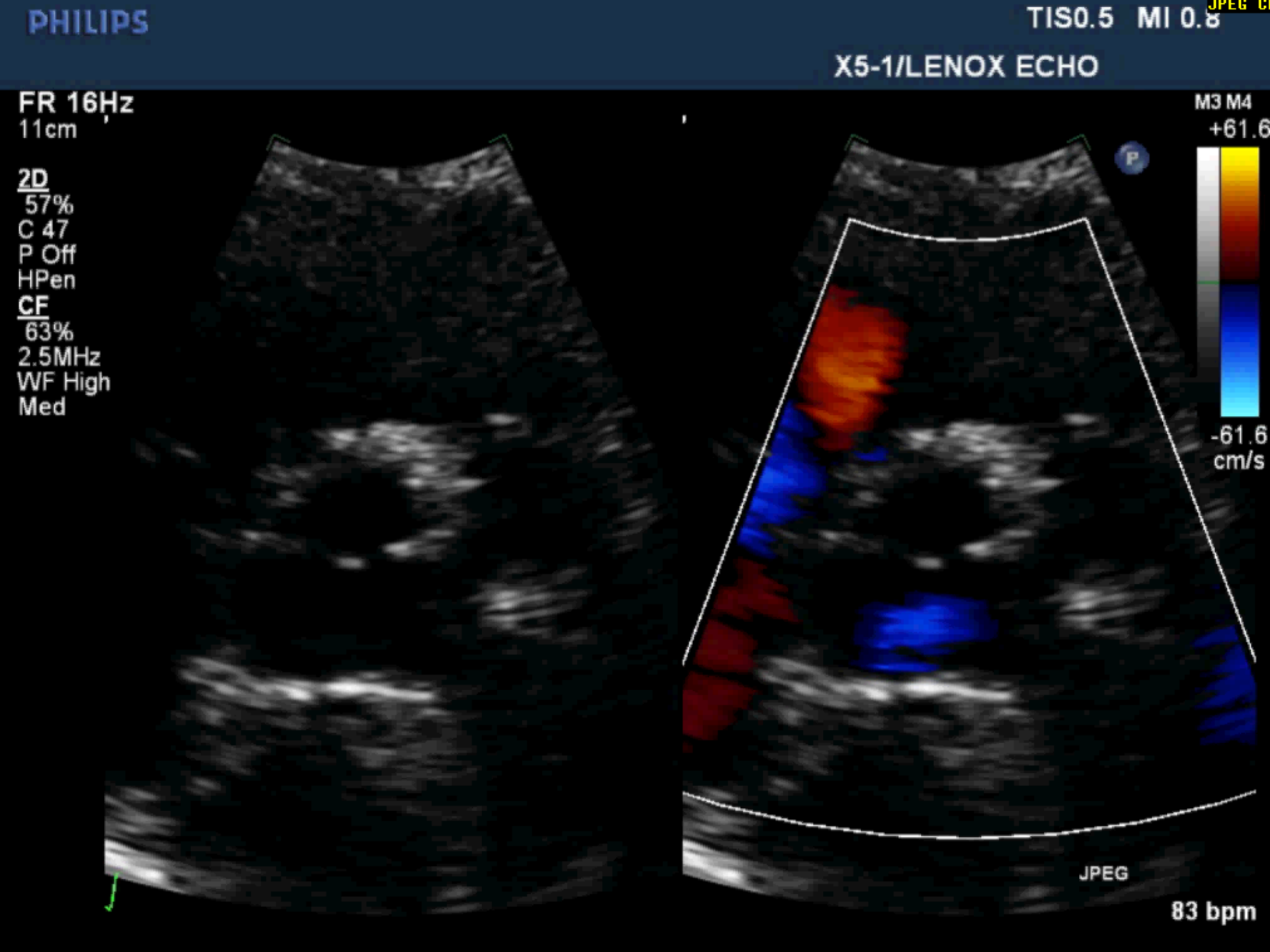
68 female with HTN, complained of SOB on exertion

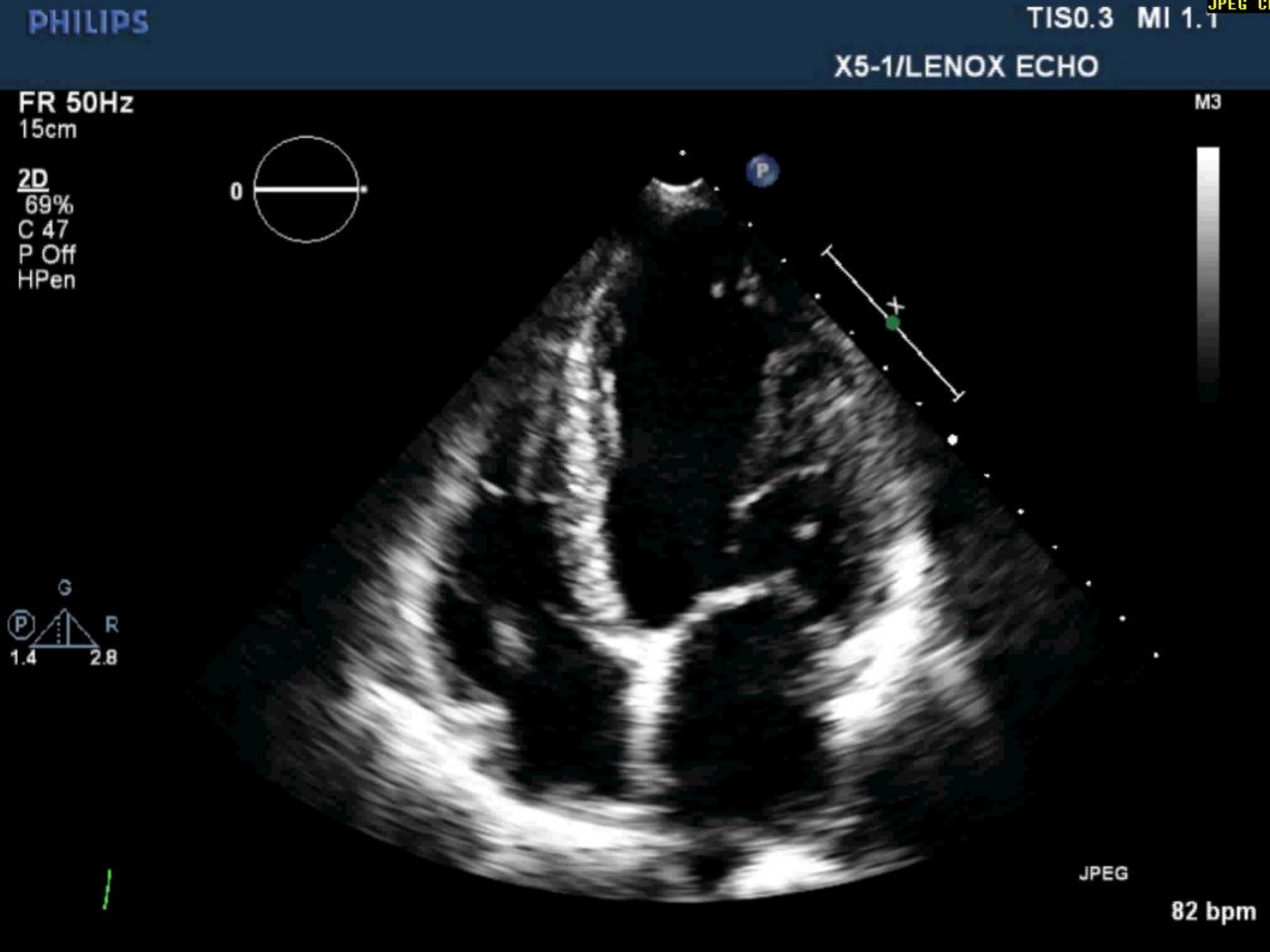
Had prior cardiac cath recently which showed non-obstructive cad

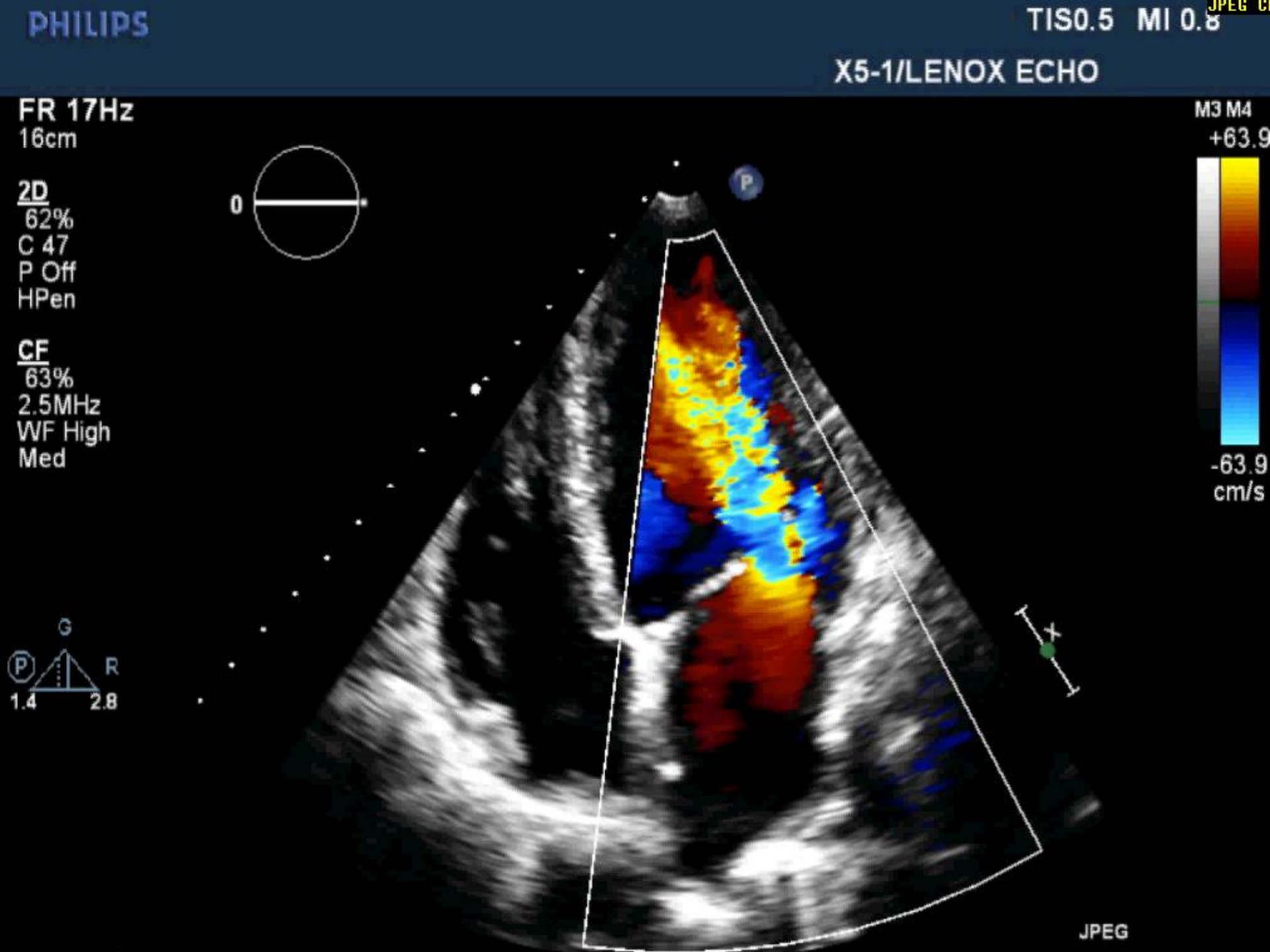
Pe: bp 155/95 mmhg, hr 67 bpm

Holosystolic murmur best heard at the apex


PHILIPS
TIS0.5 MI 0.9
X5-1/LENOX ECHO
FR 12Hz
14cm
2D
61%
C 48
P Off
HPen
CF
63%
2.5MHz
WF High
Med
M3 M4
+61.6
-61.6
cm/s
G
P
R
1.4
2.8
JPEG
84 bpm

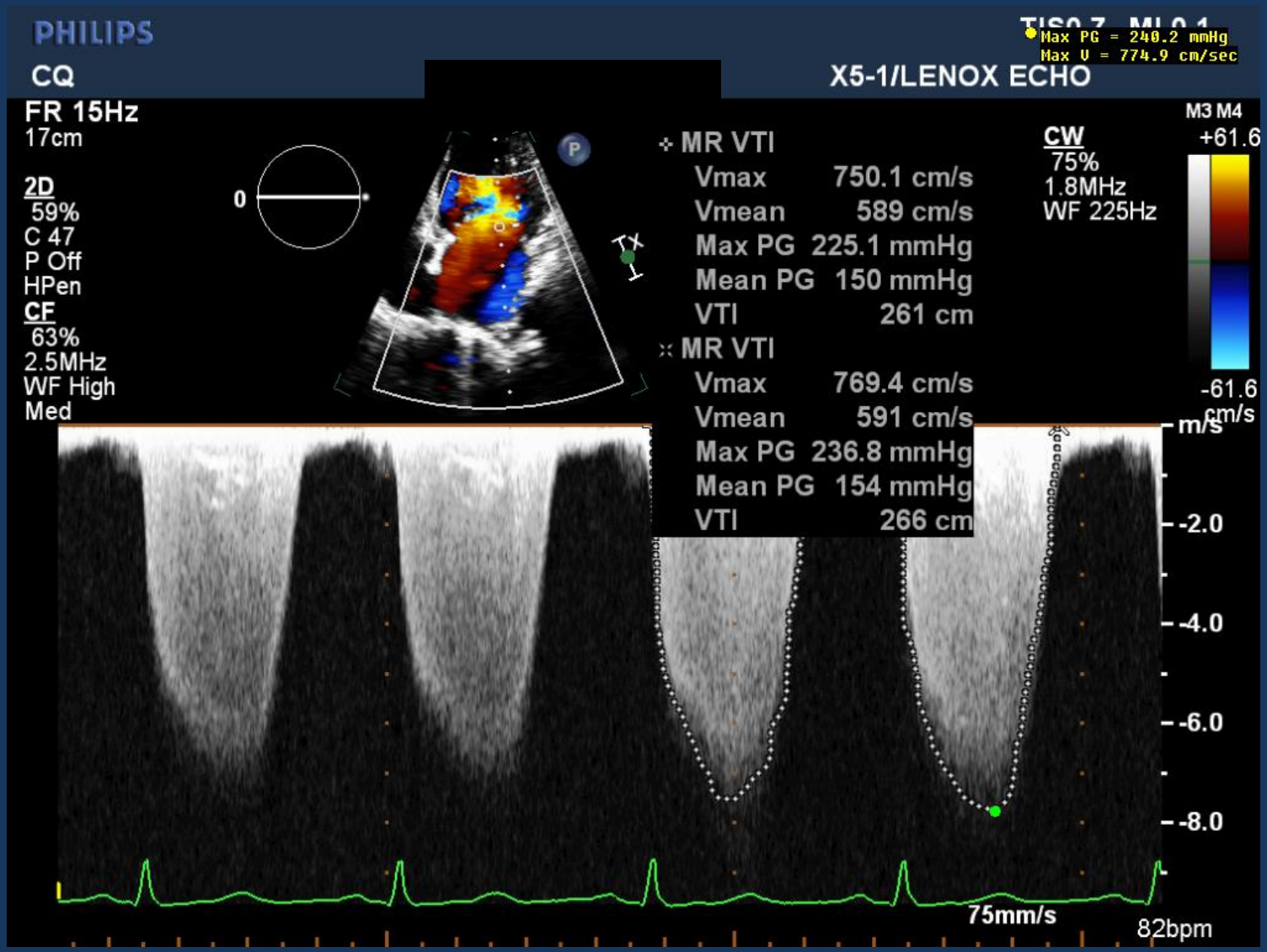

PHILIPS
TIS0.5 MI 0.8
X5-1/LENOX ECHO
FR 16Hz
11cm
2D
57%
C 47
P Off
HPen
CF
63%
2.5MHz
WF High
Med
M3 M4
+61.6
-61.6
cm/s
JPEG
83 bpm

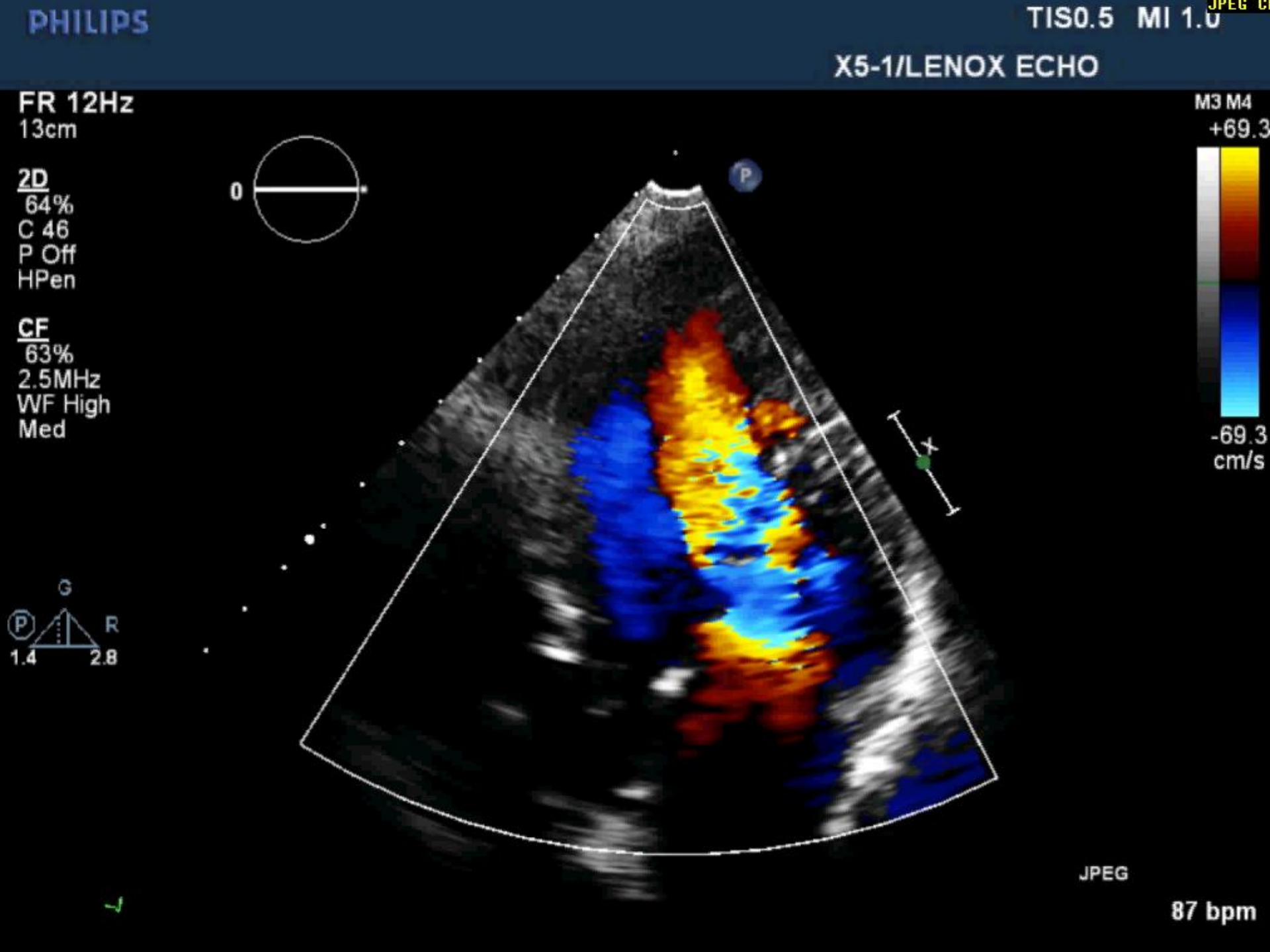

PHILIPS
TIS0.3 MI 1.1
X5-1/LENOX ECHO
FR 50Hz
15cm
2D
69%
C 47
P Off
HPen
M3
0
G
P
R
1.4
2.8
JPEG
82 bpm


PHILIPS
TIS0.5 MI 0.8
X5-1/LENOX ECHO
FR 17Hz
16cm
2D
62%
C 47
P Off
HPen
CF
63%
2.5MHz
WF High
Med
M3 M4
+63.9
-63.9
cm/s
G
P
R
1.4
2.8
JPEG

CW of the MR jet:

Peak velocity 7.5m/sec = 225 mmHg LV-LA gradient




PHILIPS
TIS0.5 MI 1.0
X5-1/LENOX ECHO
FR 12Hz
13cm
2D
64%
C 46
P Off
HPen
CF
63%
2.5MHz
WF High
Med
M3 M4
+69.3
-69.3
cm/s
G
R
1.4
2.8
JPEG
87 bpm

What will you do next to explain these findings?

A. Pisa

B. Diastolic function

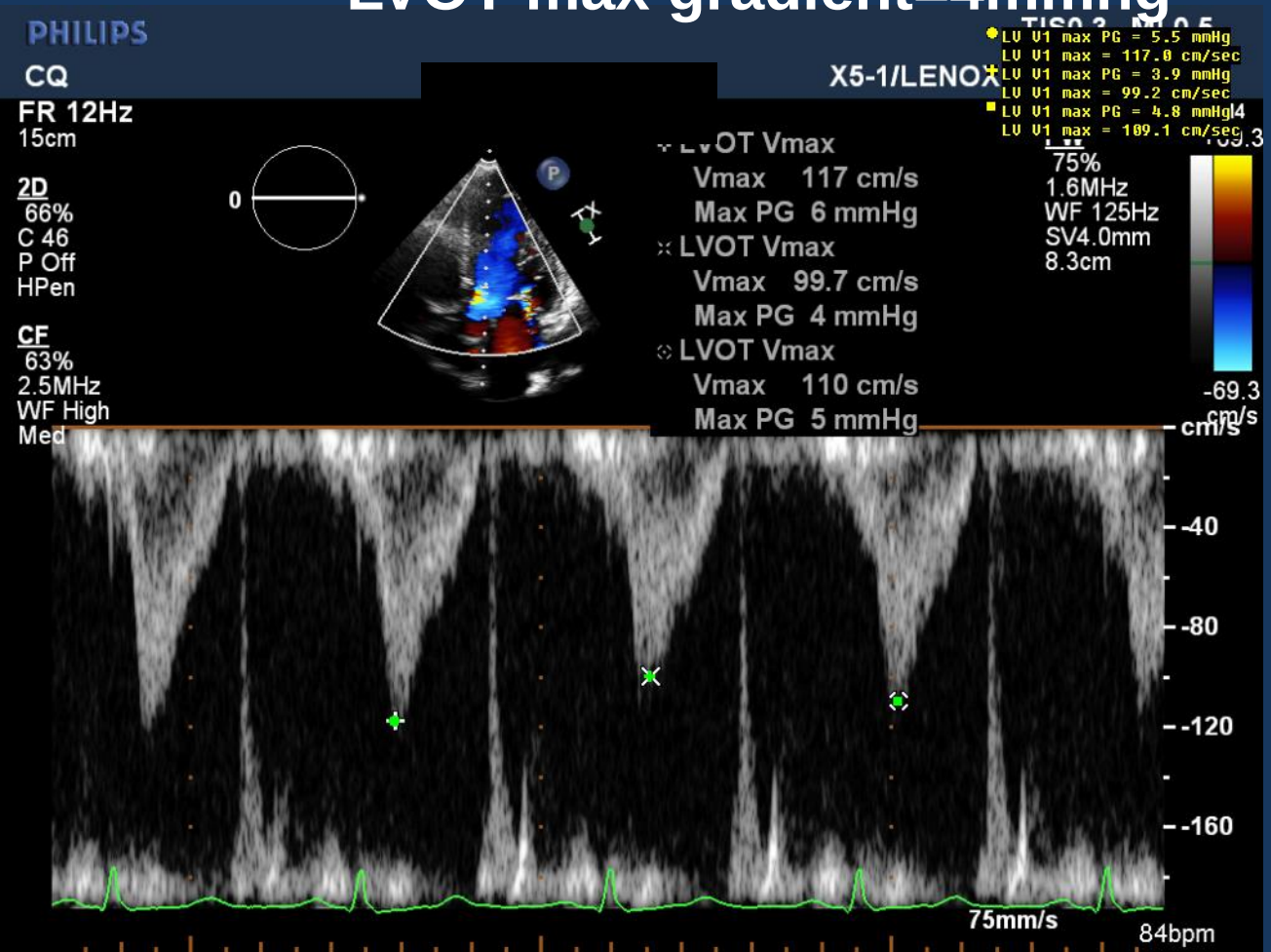
C. Assess aortic valve hemodynamics

D. Vena contracta of MR jet

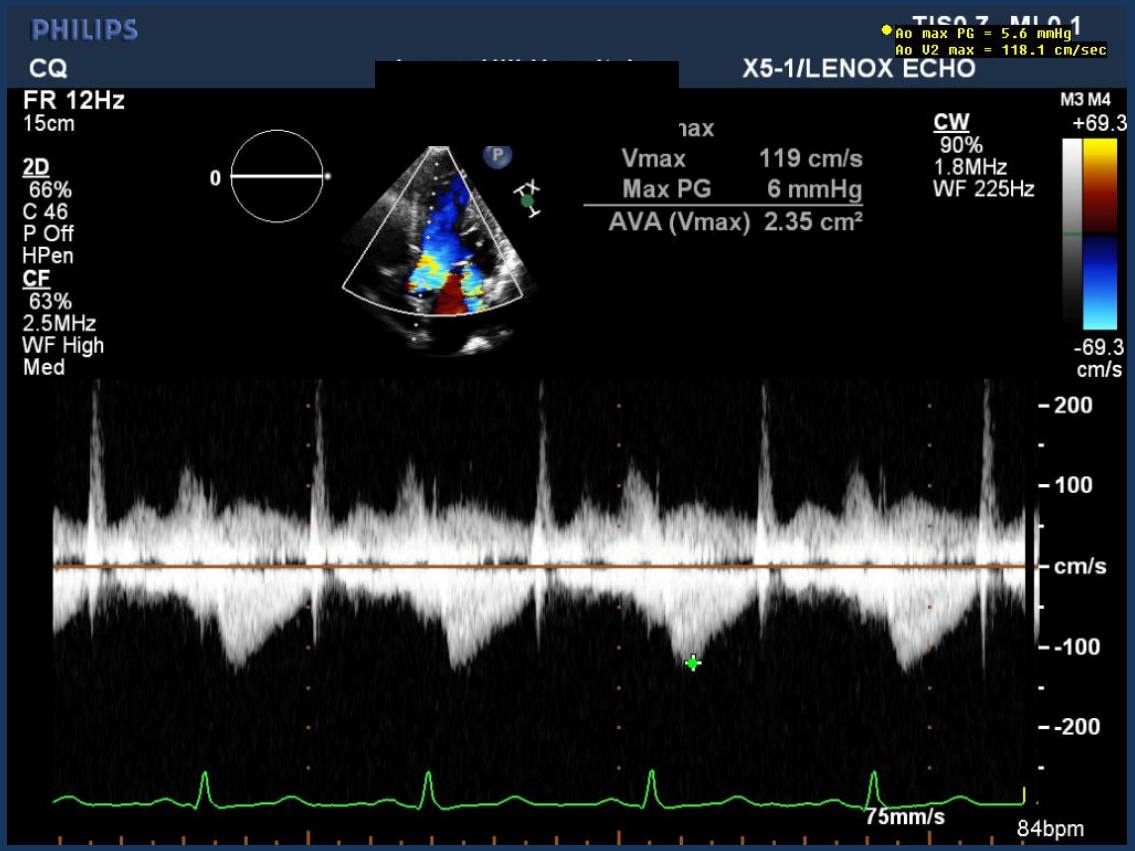
Aortic Valve Hemodynamics

LVOT max V=99 cm/sec

LVOT max gradient=4mmhg

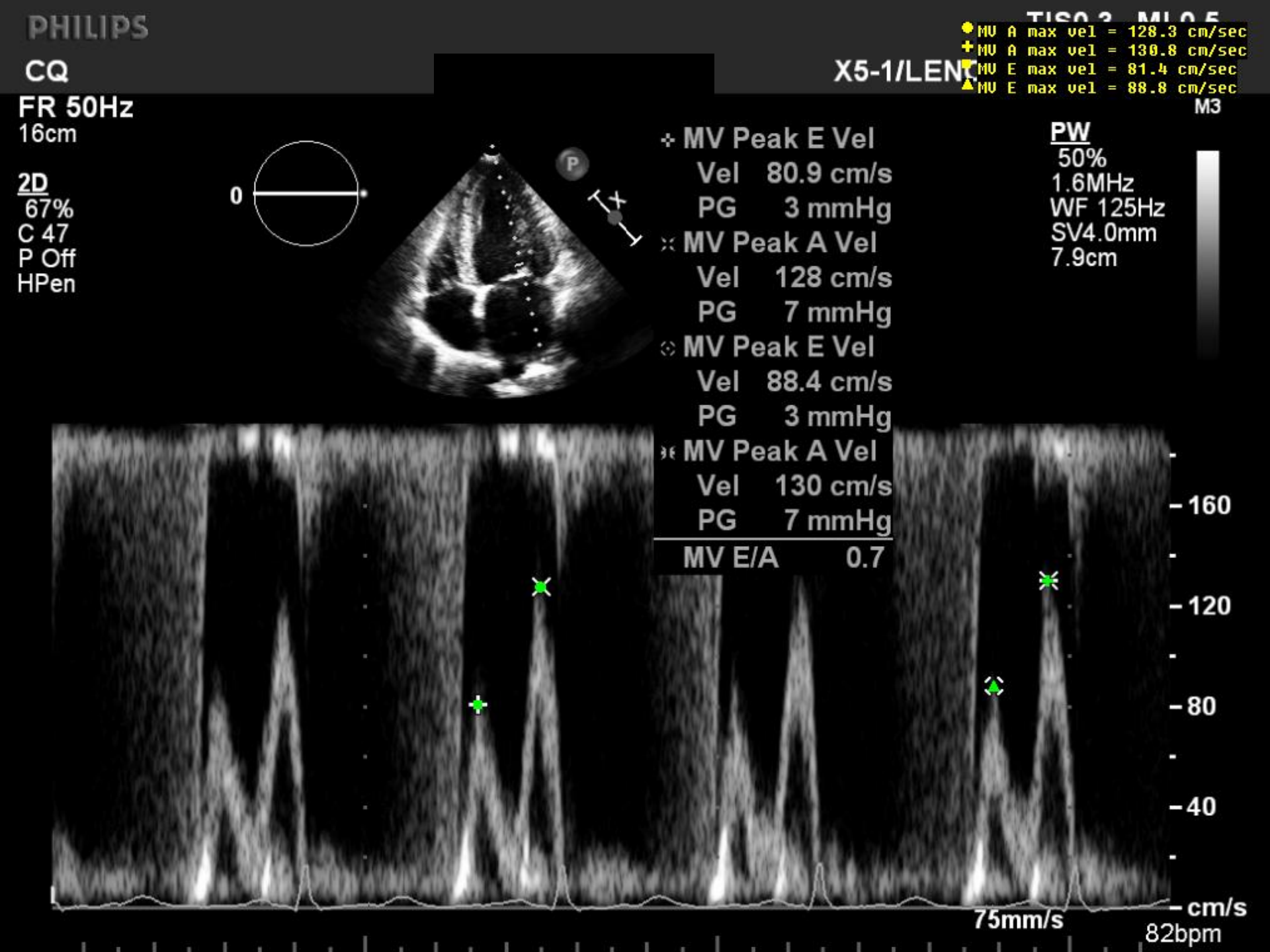


Aortic Valve Hemodynamics (CW)



Peak AV Gradient=6mmHg

AVA= 2.35 cm sq.


PHILIPS
CQ
X5-1/LEN
MV A max vel = 128.3 cm/sec
MV A max vel = 130.8 cm/sec
MV E max vel = 81.4 cm/sec
MV E max vel = 88.8 cm/sec
M3
FR 50Hz
16cm
2D
67%
C 47
P Off
HPen
0
P
MV Peak E Vel
Vel 80.9 cm/s
PG 3 mmHg
MV Peak A Vel
Vel 128 cm/s
PG 7 mmHg
MV Peak E Vel
Vel 88.4 cm/s
PG 3 mmHg
MV Peak A Vel
Vel 130 cm/s
PG 7 mmHg
MV E/A 0.7
PW
50%
1.6MHz
WF 125Hz
SV4.0mm
7.9cm
160
120
80
40
cm/s
75mm/s
82bpm

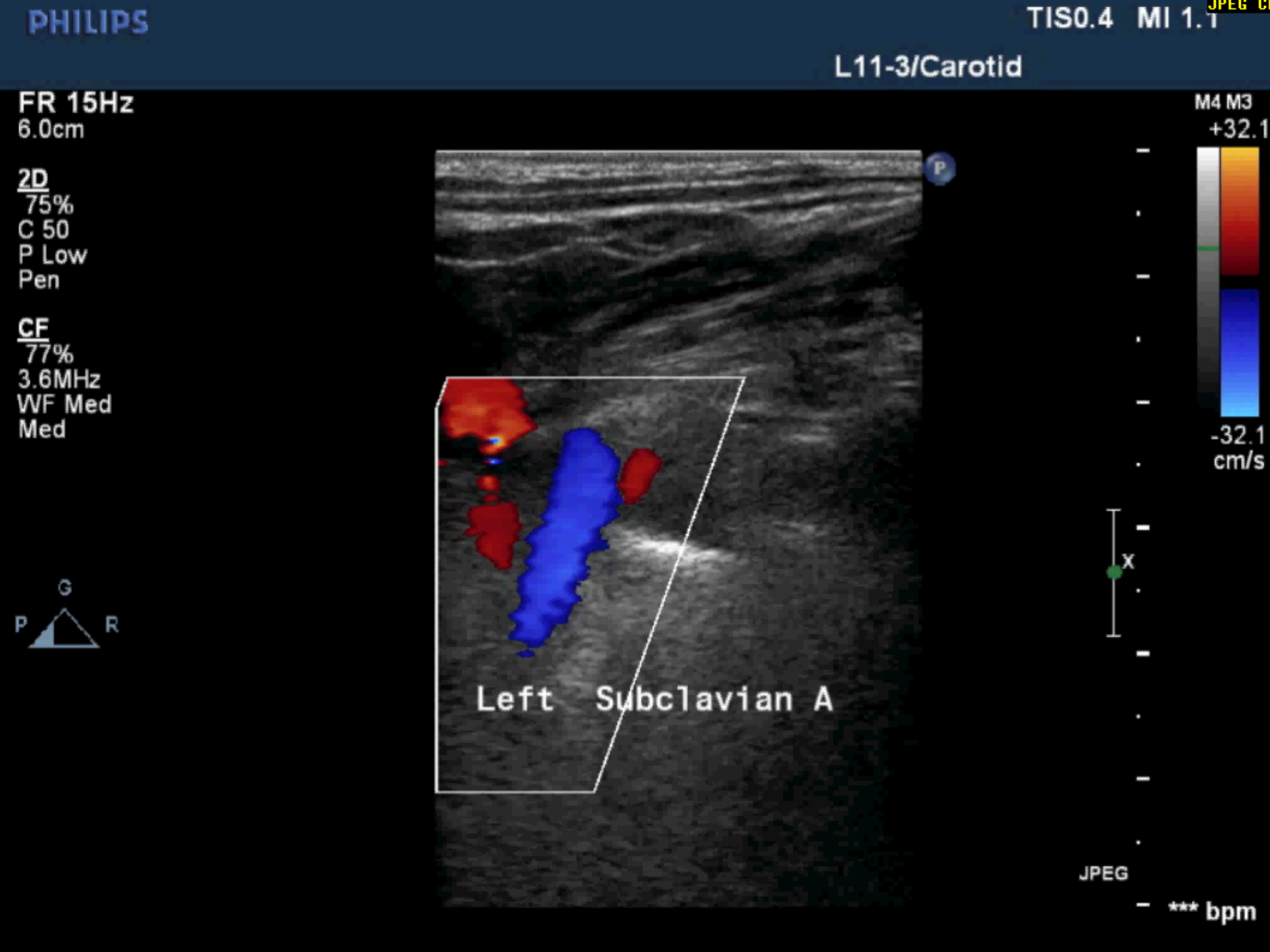
To further explore the diagnosis you should now:

A. Order dobutamine stress echo

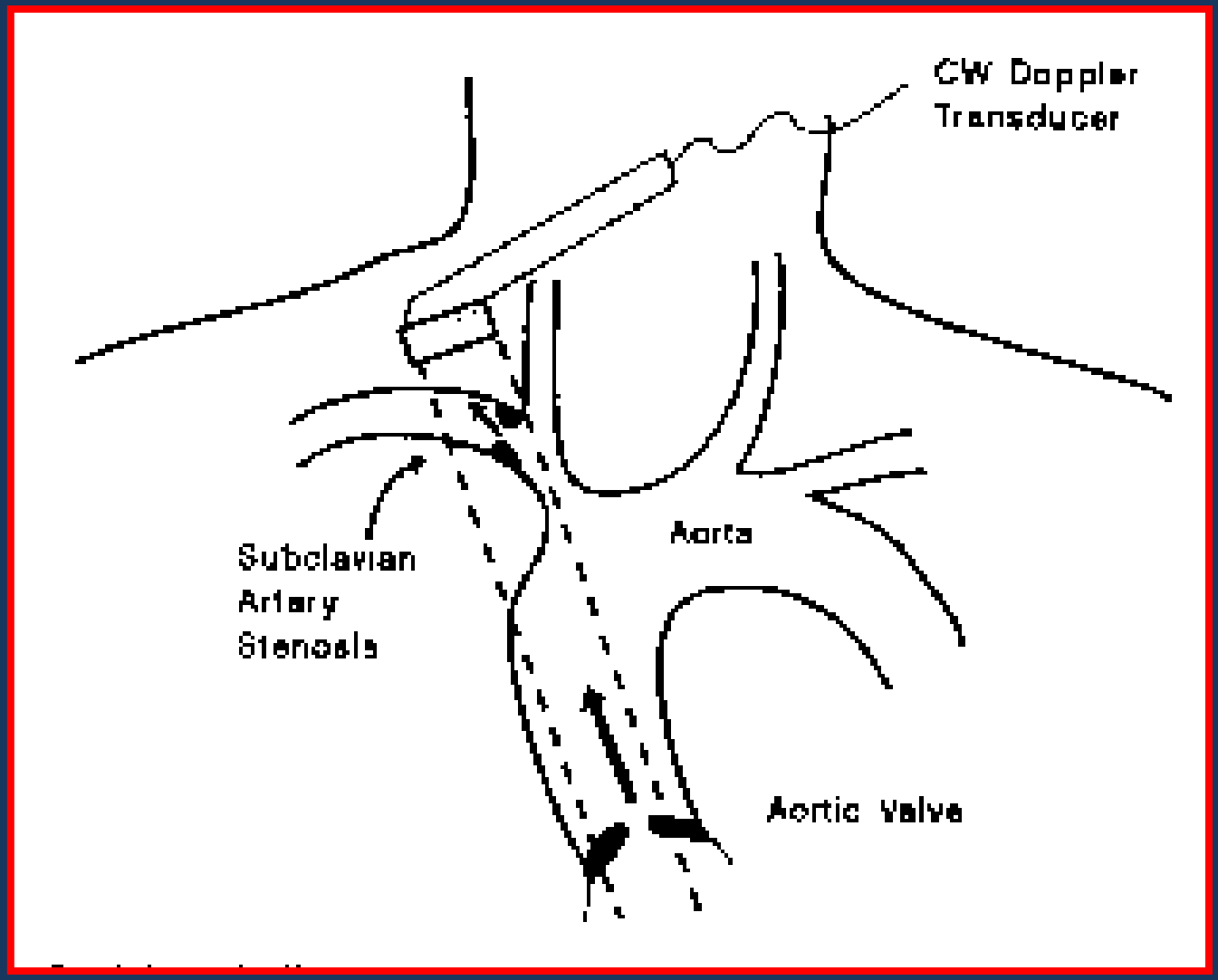
B. Order vascular ultrasonography

C. Calculate pq/ps

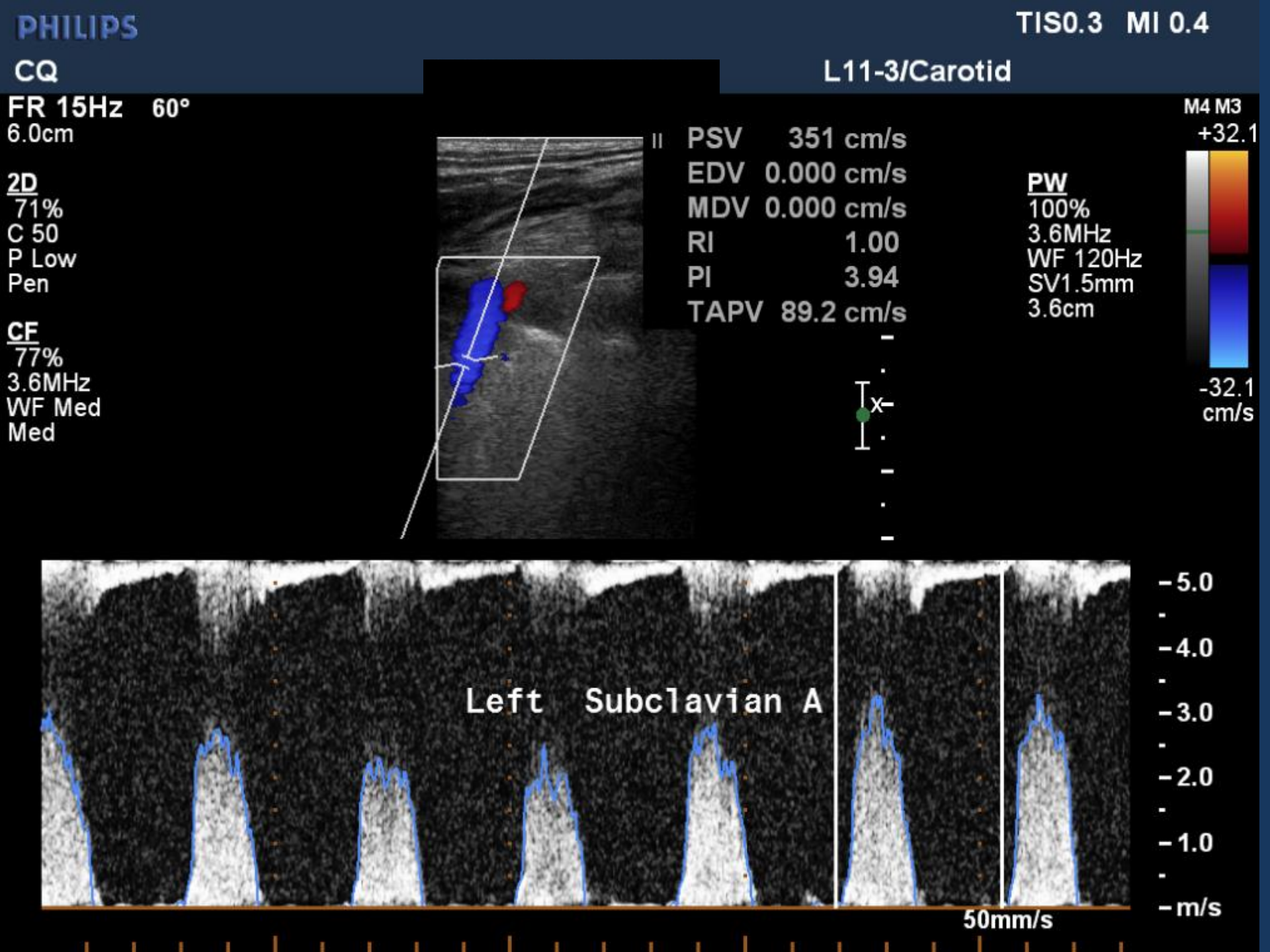
D. Order contrast echo


PHILIPS
TIS0.4 MI 1.1
L11-3/Carotid
FR 15Hz
6.0cm
2D
75%
C 50
P Low
Pen
CF
77%
3.6MHz
WF Med
Med
M4 M3
+32.1
-32.1
cm/s
G
P
R
Left Subclavian A
JPEG
*** bpm

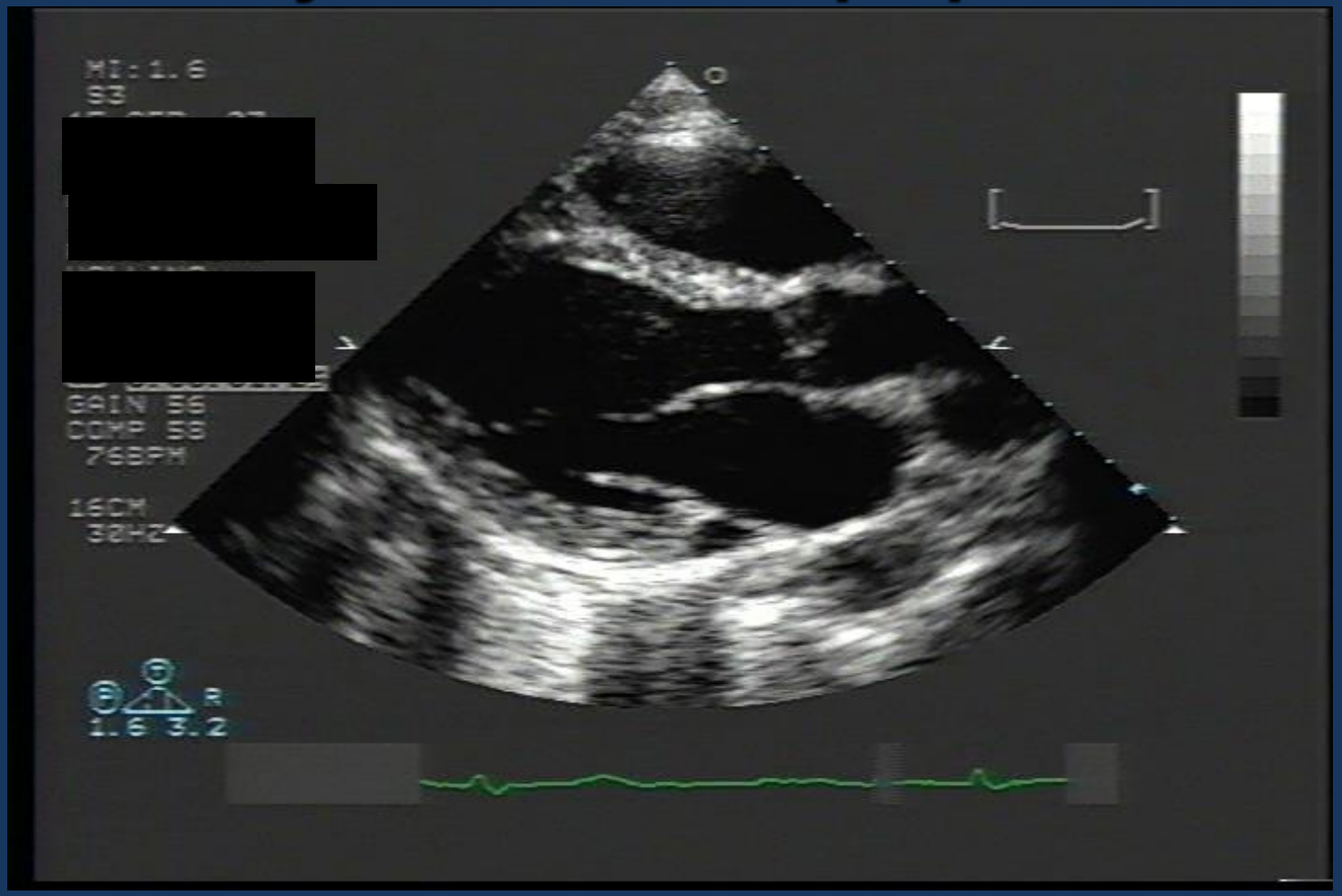
Subclavian Stenosis

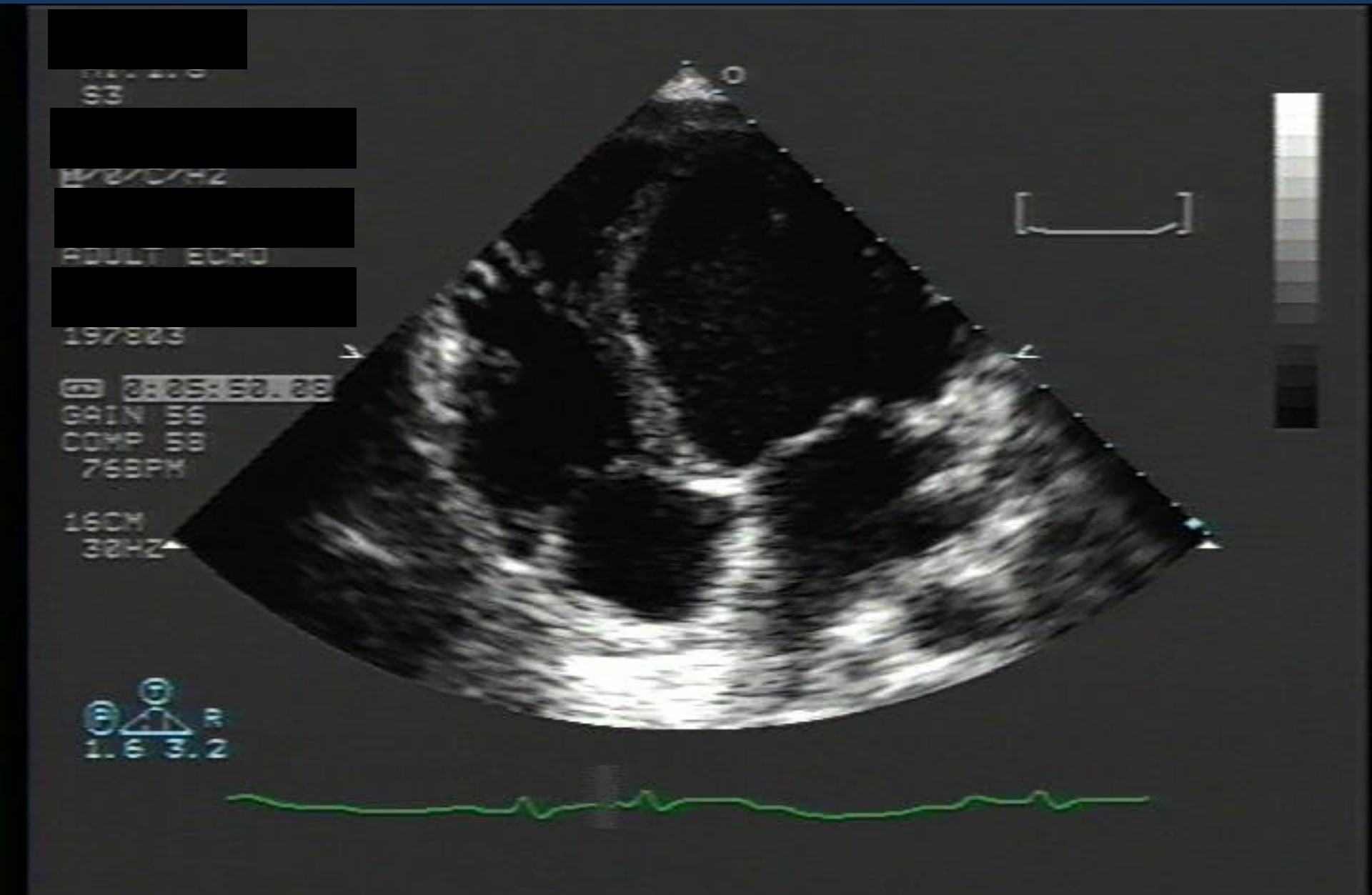


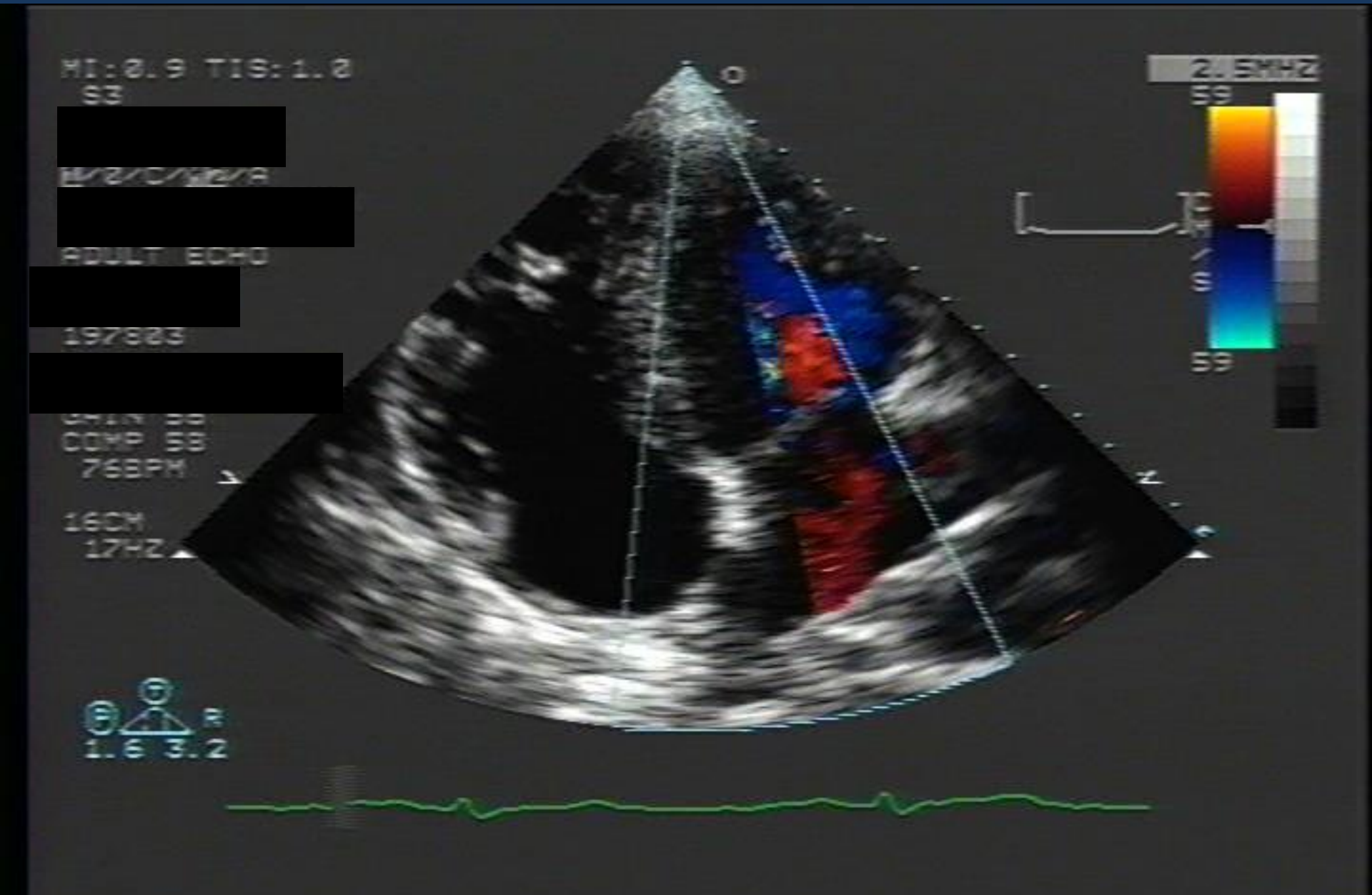
Otto, Jase 1992

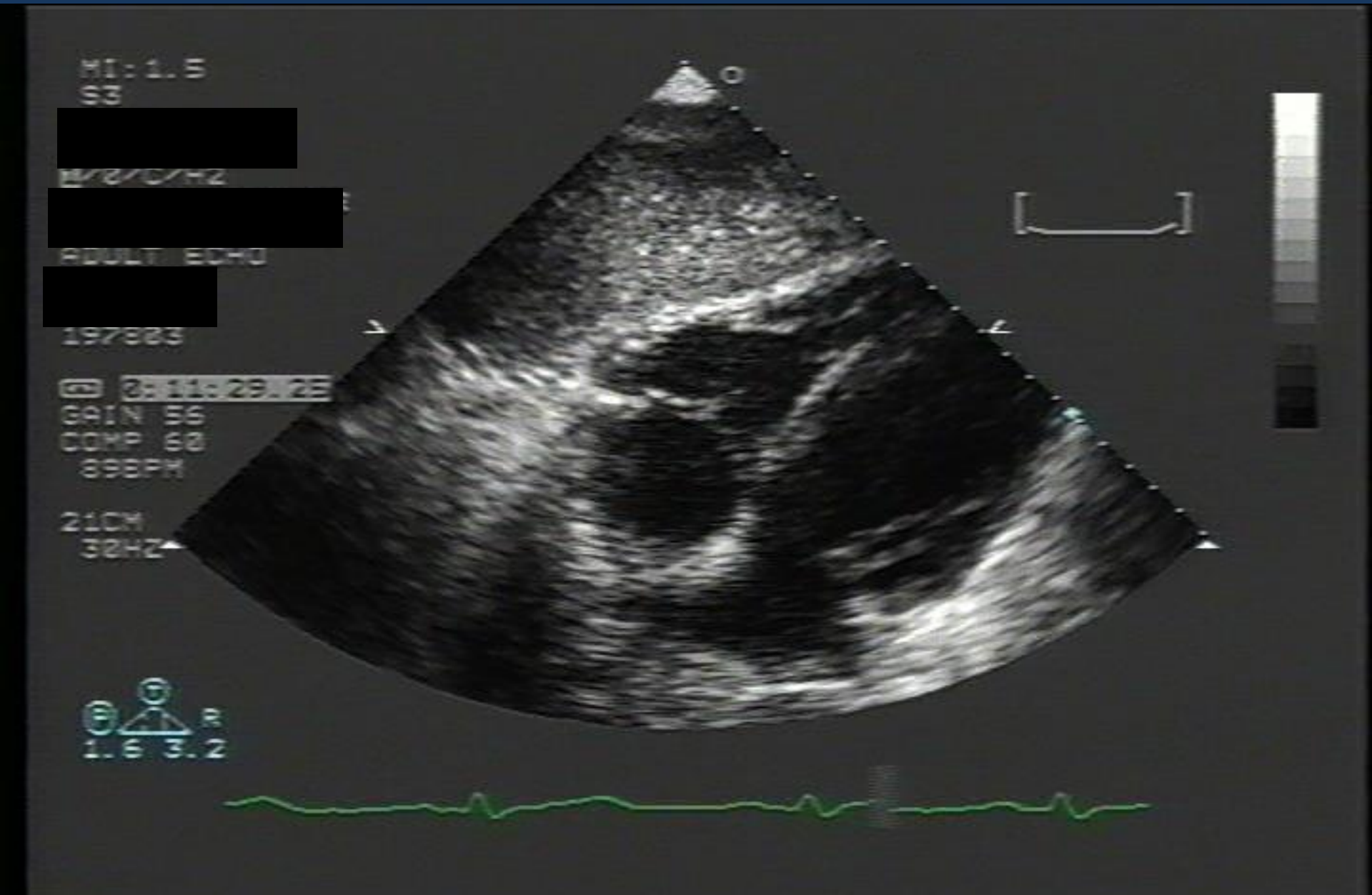

PHILIPS
TIS0.3 MI 0.4
CQ
L11-3/Carotid
FR 15Hz 60°
6.0cm
2D
71%
C 50
P Low
Pen
CF
77%
3.6MHz
WF Med
Med
PSV 351 cm/s
EDV 0.000 cm/s
MDV 0.000 cm/s
RI 1.00
PI 3.94
TAPV 89.2 cm/s
PW
100%
3.6MHz
WF 120Hz
SV1.5mm
3.6cm
M4 M3
+32.1
-32.1
cm/s
Left Subclavian A
5.0
4.0
3.0
2.0
1.0
m/s
50mm/s

27 years old with palpitations

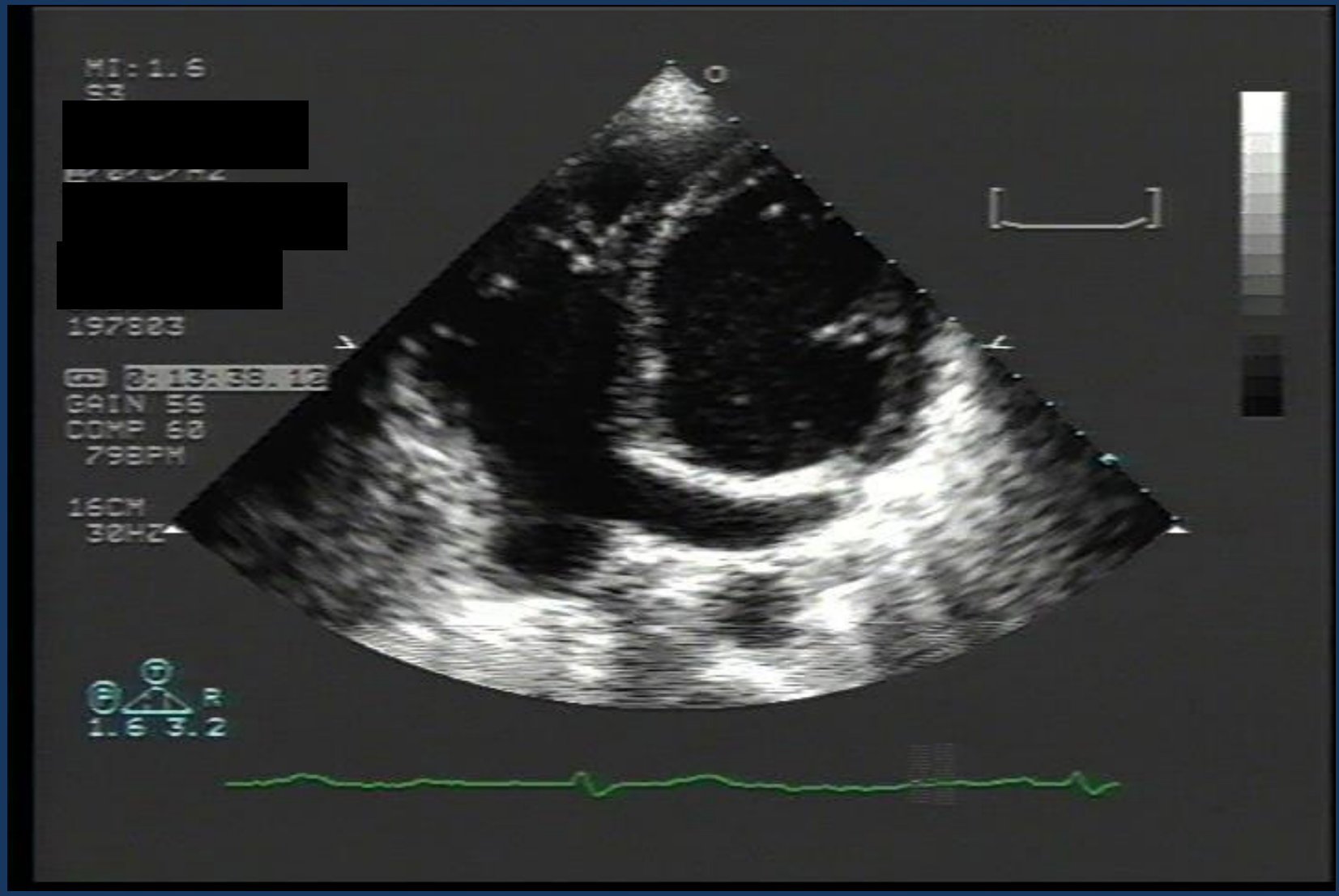


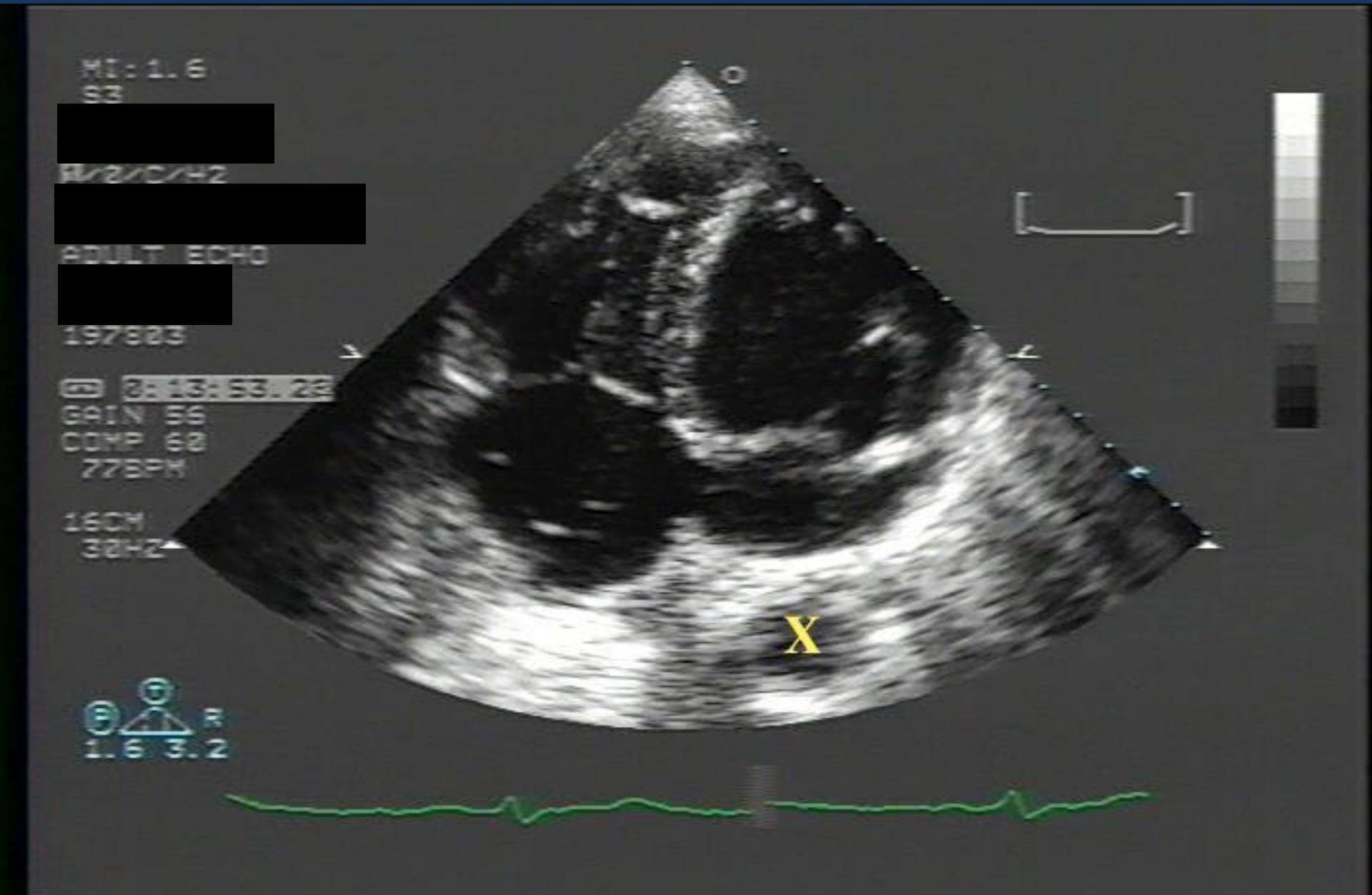

[redacted]
S3
[redacted]
[redacted]
ADULT ECHO
[redacted]
197803
3:05:50.08
GAIN 56
COMP 56
76BPM
16CM
32HZ
1.6 3.2


MI:0.9 TIS:1.0
S3
[redacted]
[redacted]
ADULT ECHO
[redacted]
197303
[redacted]
COMP 55
76BPM
16CM
17HZ
2.5MHZ
59
cm/s
59
1.6 3.2


MI:1.5
S3
[redacted]
[redacted]
ADULT ECHO
[redacted]
197883
2:11:29.25
GAIN 56
COMP 60
69BPM
21CM
32HZ
1.6 3.2

Agitated saline injection




MI:1.6
S3
[redacted]
M/2/C/42
[redacted]
ADULT ECHO
[redacted]
197603
3A:13:53.28
GAIN 56
COMP 68
77BPM
16CM
32HZ
X
1.6 3.2

Case 1, Question 1

The contrast injection demonstrates

1. Left to right shunt
2. Right to left shunt
3. Both 1 and 2 are incorrect
4. Both 1 and 2 are correct

Case 1, Question 2

The agitated saline was most likely injected

1. To the right antecubital vein
2. To the left antecubital vein
3. To the pulmonary artery
4. To the left atrium

Case 1, Question 3

The lucency marked X on the still frame is

1. The descending thoracic aorta
2. The superior vena cava
3. The coronary sinus
4. The main pulmonary artery

Either you know it or you don’t

Question: The left ventricular dP/dT is measured from which Doppler tracing?

A. Mitral regurgitation
B. Left ventricular outflow
C. Either A or B.
D. Mitral inflow

Either you know it or you don’t

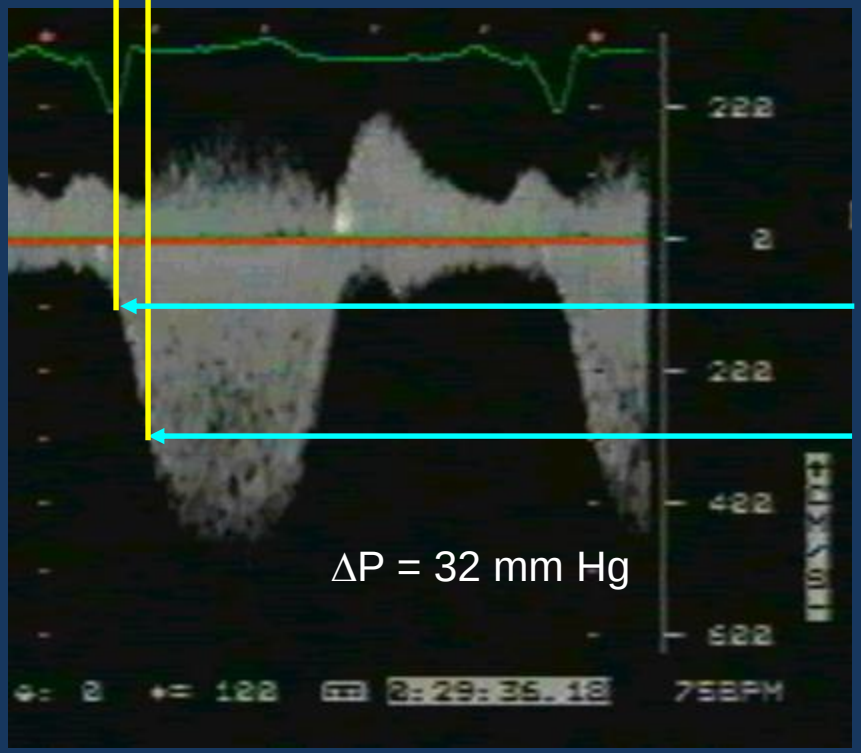
Question: The left ventricular dP/dT is measured from which Doppler tracing?

A. Mitral regurgitation
B. Left ventricular outflow
C. Either A or B.
D. Mitral inflow

***Answer* : A**

Either you know it or you don't

Time interval (sec)



4 mm Hg

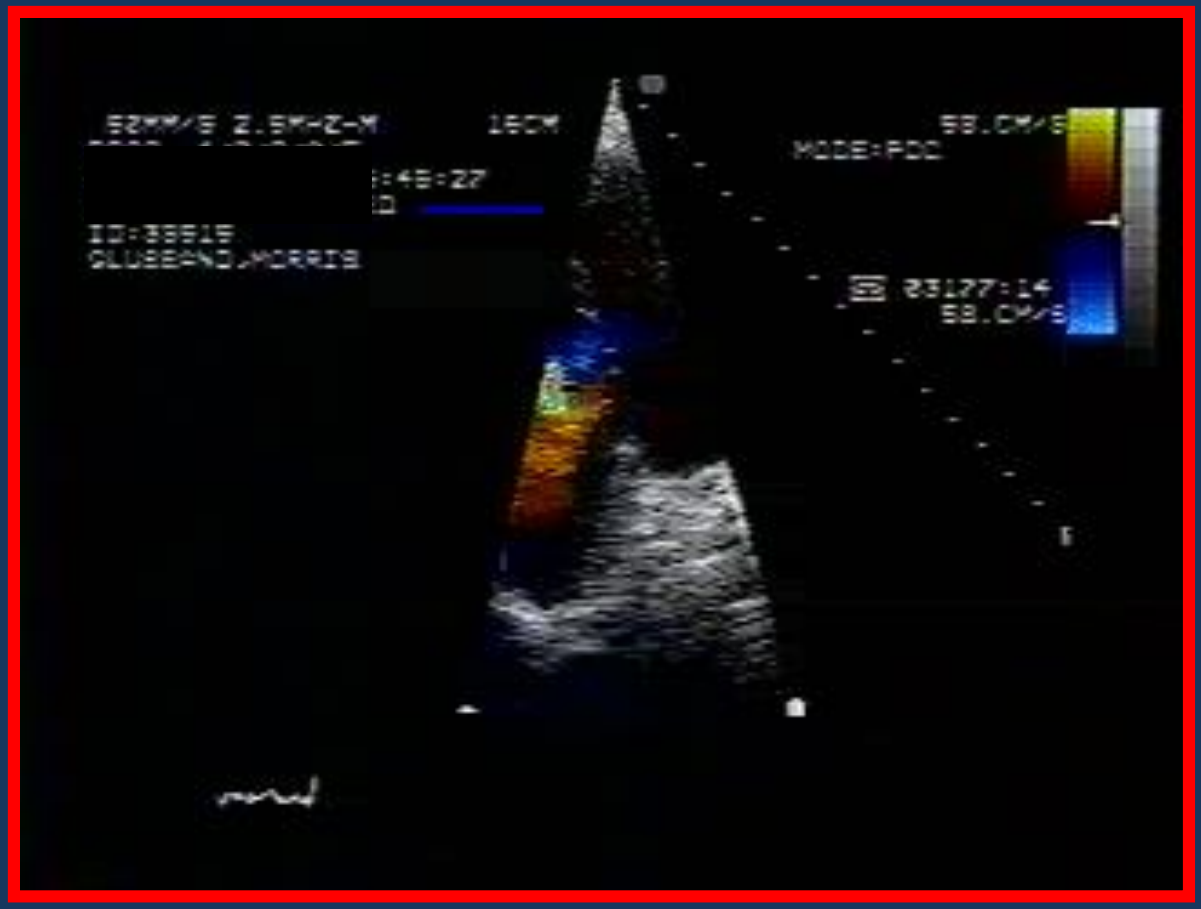
36 mm Hg

$$\frac{dP}{dT} = \frac{\Delta P}{\text{Time interval (sec)}}$$

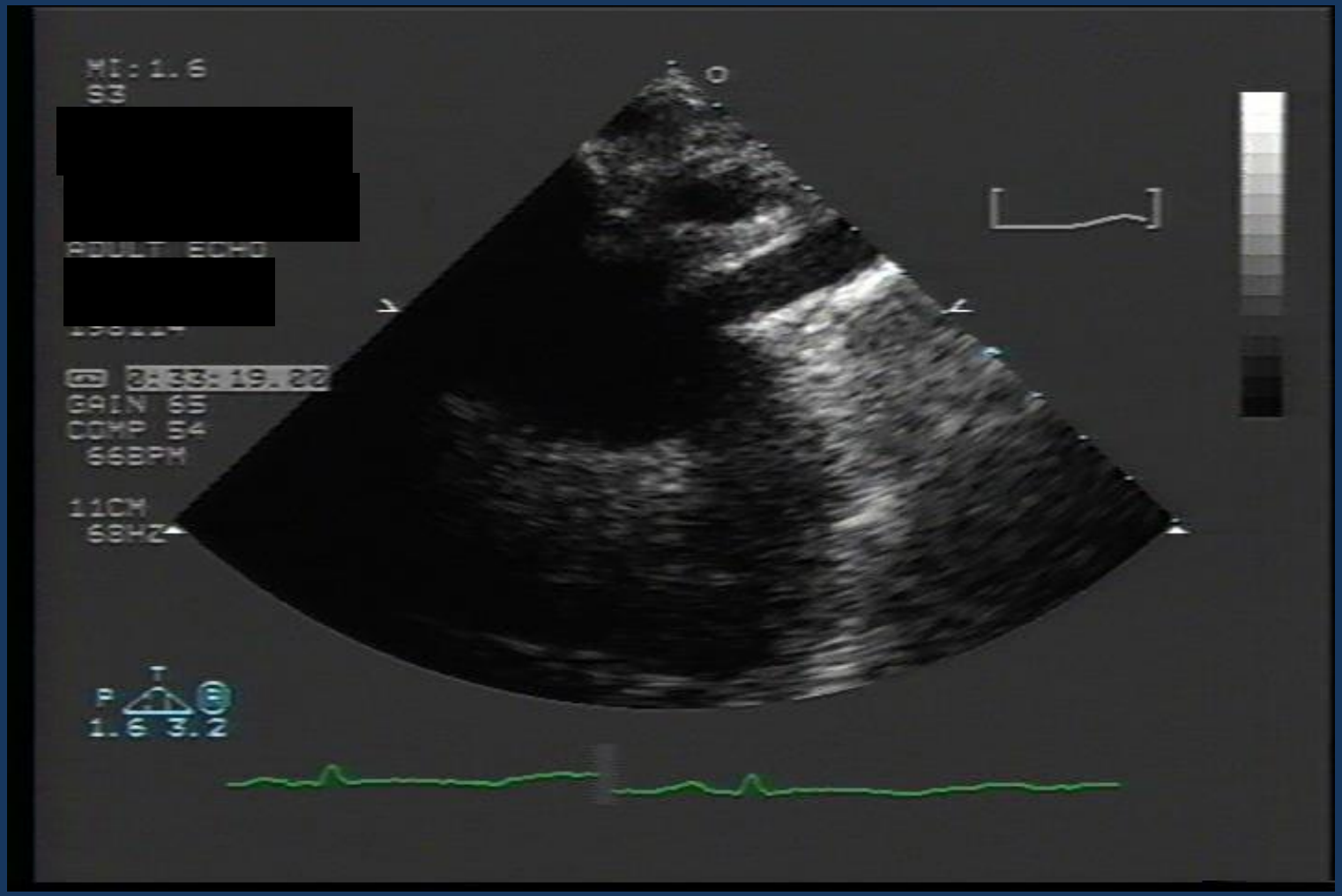
If time interval = 50 msec = 0.05 sec

$$\frac{dP}{dT} = \frac{32}{0.05} = 640 \text{ mm Hg/sec}$$

Normal $\frac{dP}{dT}$ > 1200 mm Hg/sec

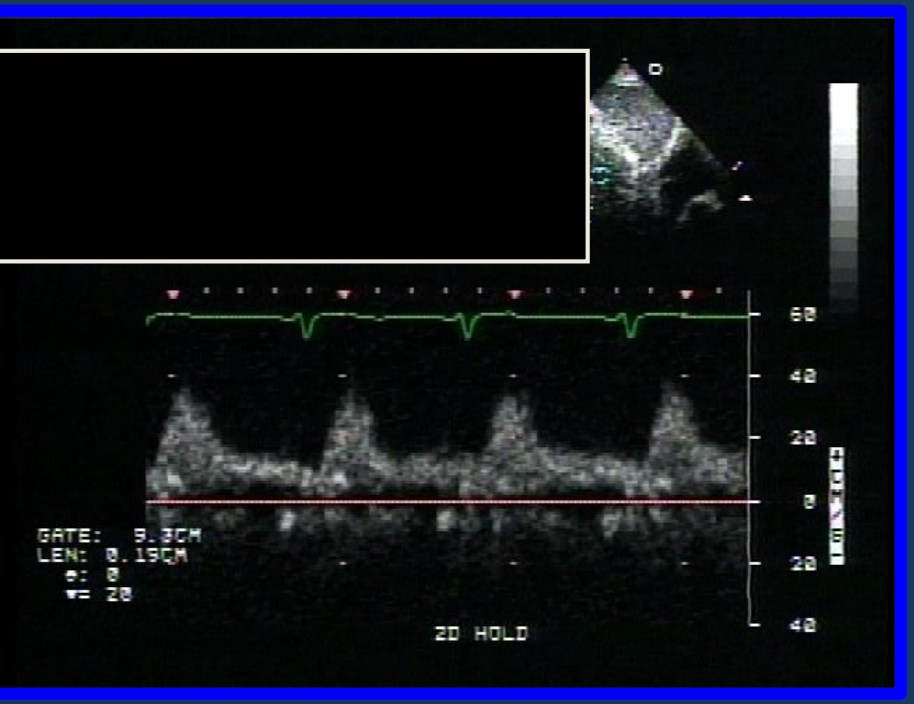


Color Doppler shows an LV Pseudoaneurysm



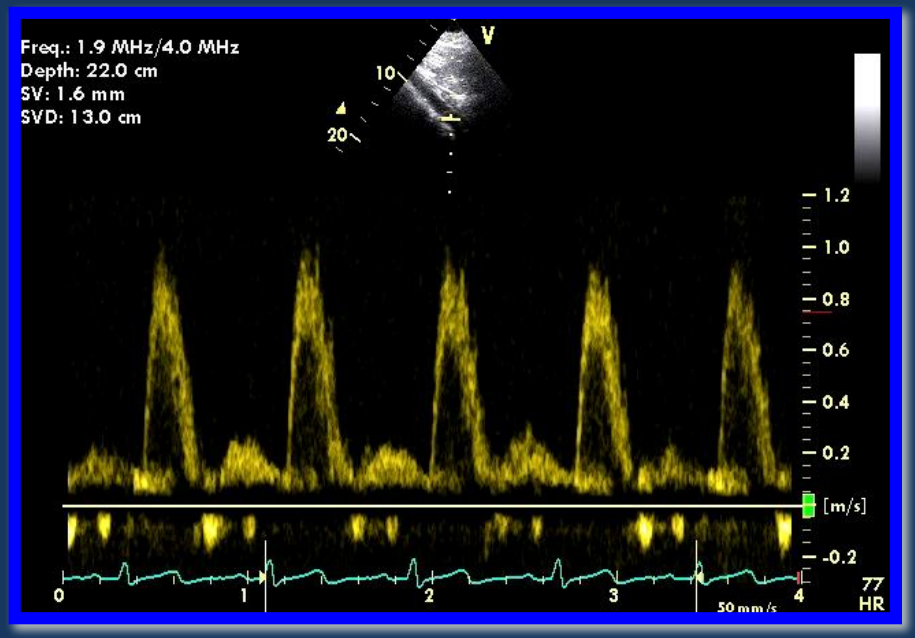
Subclavian Dissection

PW Doppler Abdominal Aorta

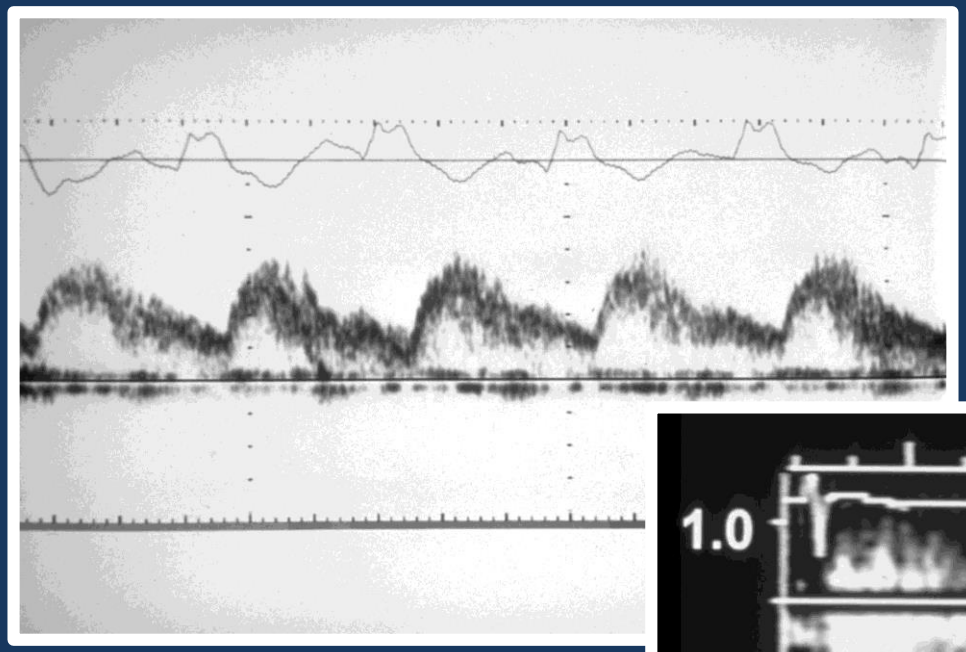


Not normal

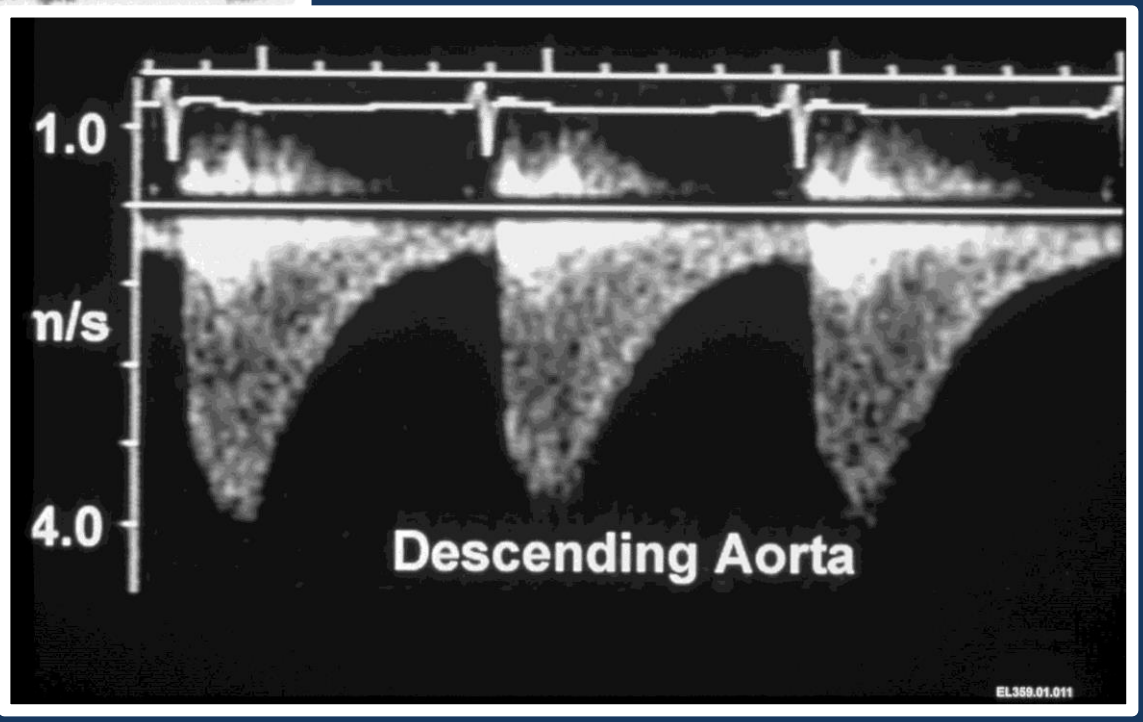
Normal



Coarctation of the Aorta



PW Doppler Abd Aorta



CW Doppler
Desc Aorta

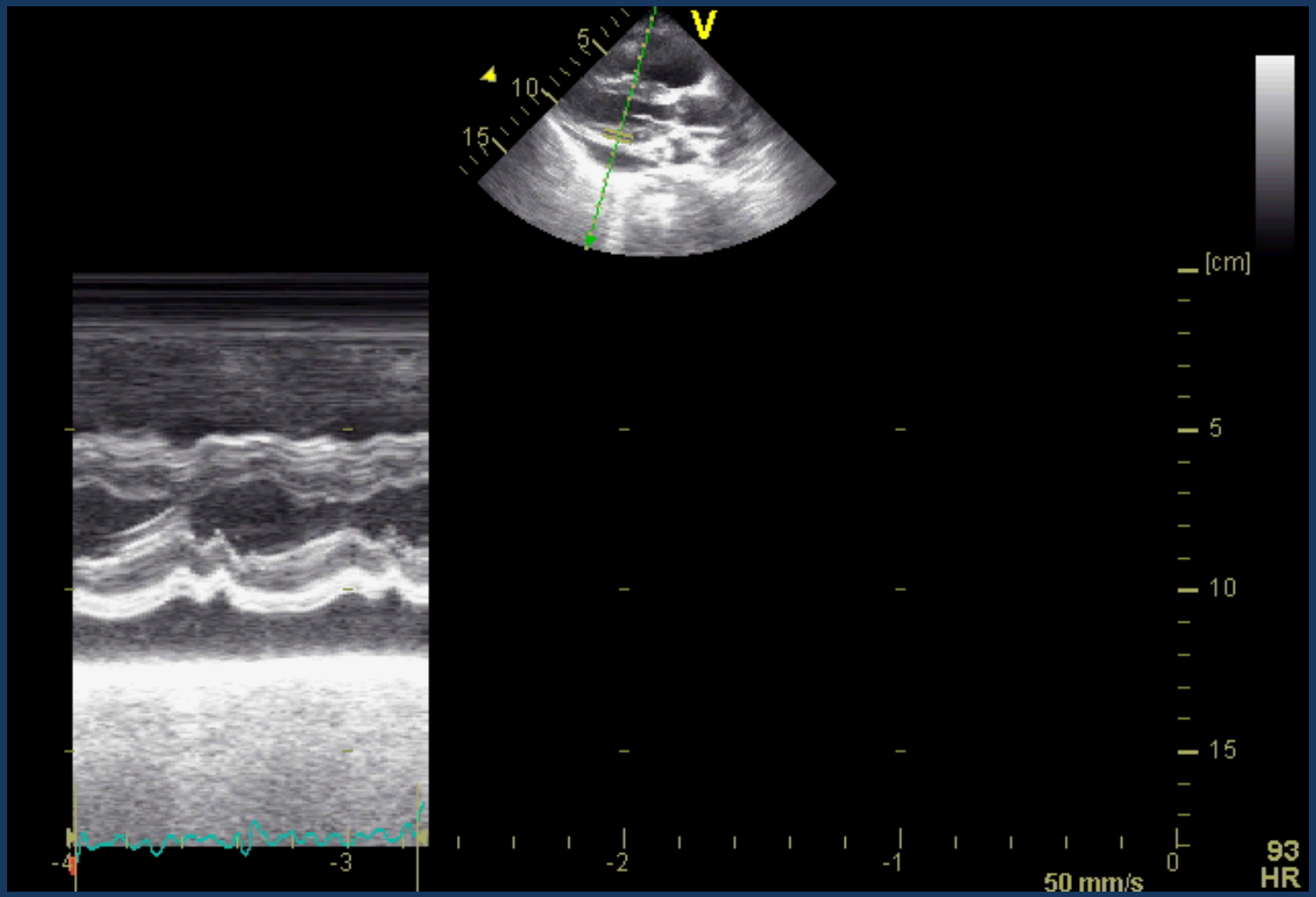
Evaluation of Left Ventricular Function and Hypertrophy

Gerard Aurigemma, MD, FASE

What condition is almost certainly present in this patient?

1. Pulmonary embolism
2. Inferior wall ischemia
3. Pulmonary hypertension
4. None of the above


5
10
15

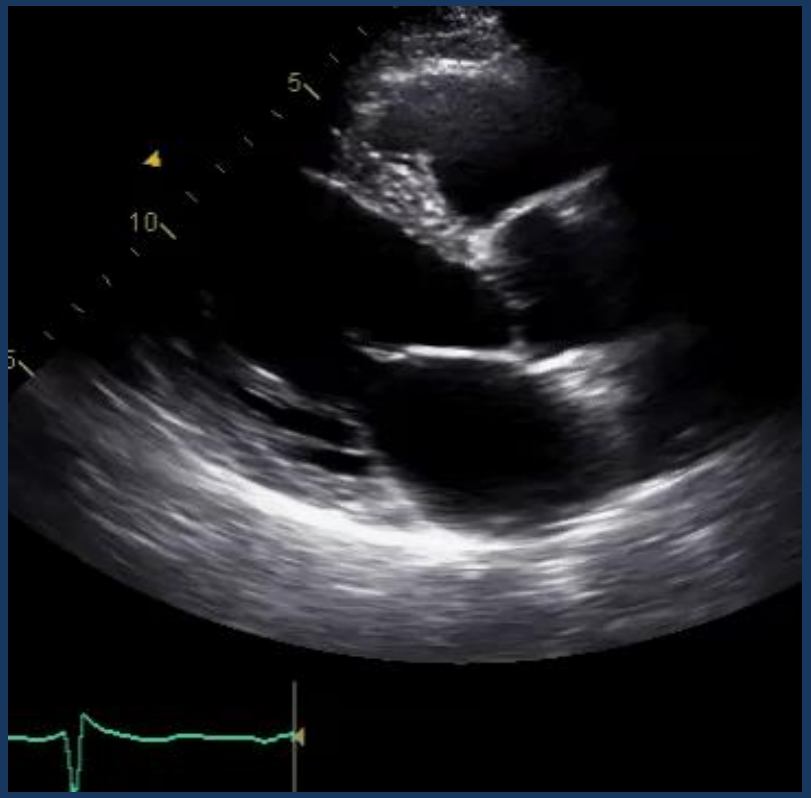

V
5
10
15
[cm]
5
10
15
-4
-3
-2
-1
0
50 mm/s
93
HR

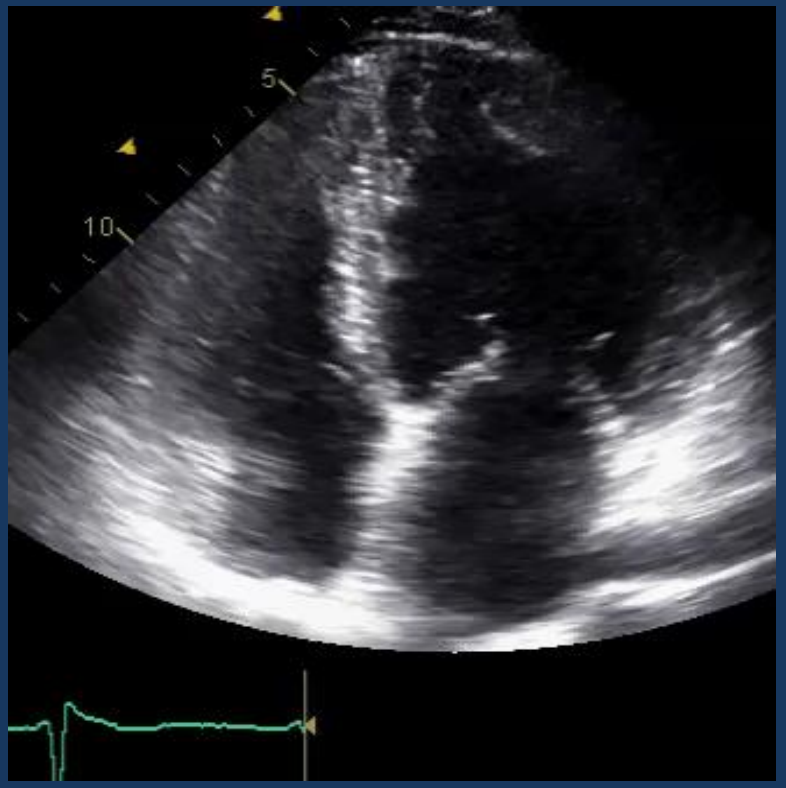
What condition is almost certainly present in this patient?

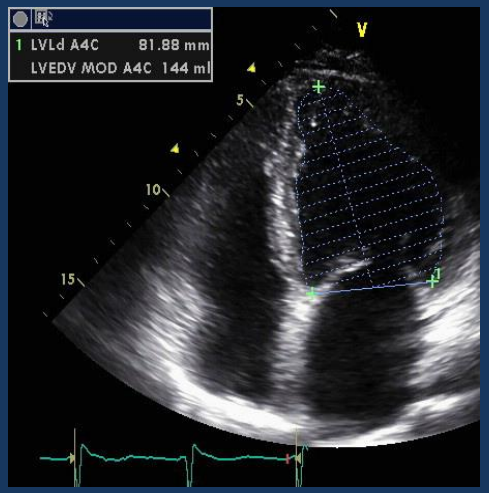
1. Pulmonary embolism
2. Inferior wall ischemia
3. Pulmonary hypertension
4. None of the above

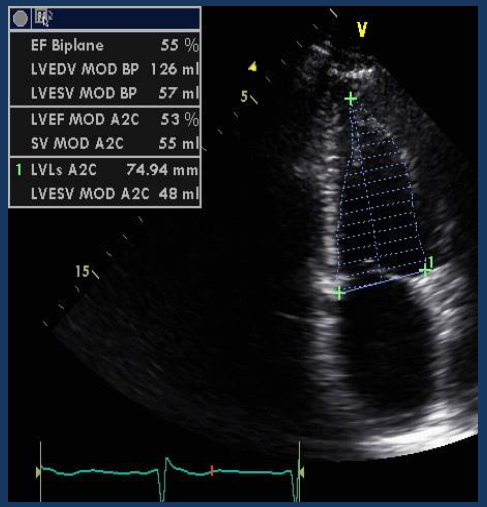
42 year old woman, recently immigrated from Iraq

History of Murmur









LVVd= 126 cc
LVVs=55 cc
SV =71 cc

LVVdi=74 cc/M2

ULN (ASE)

Table 2 Normal values for 2D echocording to gender

Parameter	Female	
	Mean ± SD	2-SD range
LV internal dimension		
Diastolic dimension (mm)	45.0 ± 3.6	37.8–52.2
Systolic dimension (mm)	28.2 ± 3.3	21.6–34.8
LV volumes (biplane)		
LV EDV (mL)	76 ± 15	46–106
LV ESV (mL)	28 ± 7	14–42
LV volumes normalized by BSA		
LV EDV (mL/m^2)	45 ± 8	29–61
LV ESV (mL/m^2)	16 ± 4	8–24
LV EF (biplane)	64 ± 5	54–74

BSA, body surface area; *EDV,* end-dias *LV,* left ventricular; *SD,* standard deviation.

42 year old woman with a murmur

Which diagnosis is suggested by the data shown?

1. Anemia
2. AV fistula
3. Severe AR
4. None of the above
5. All of the above

42 year old woman with a murmur

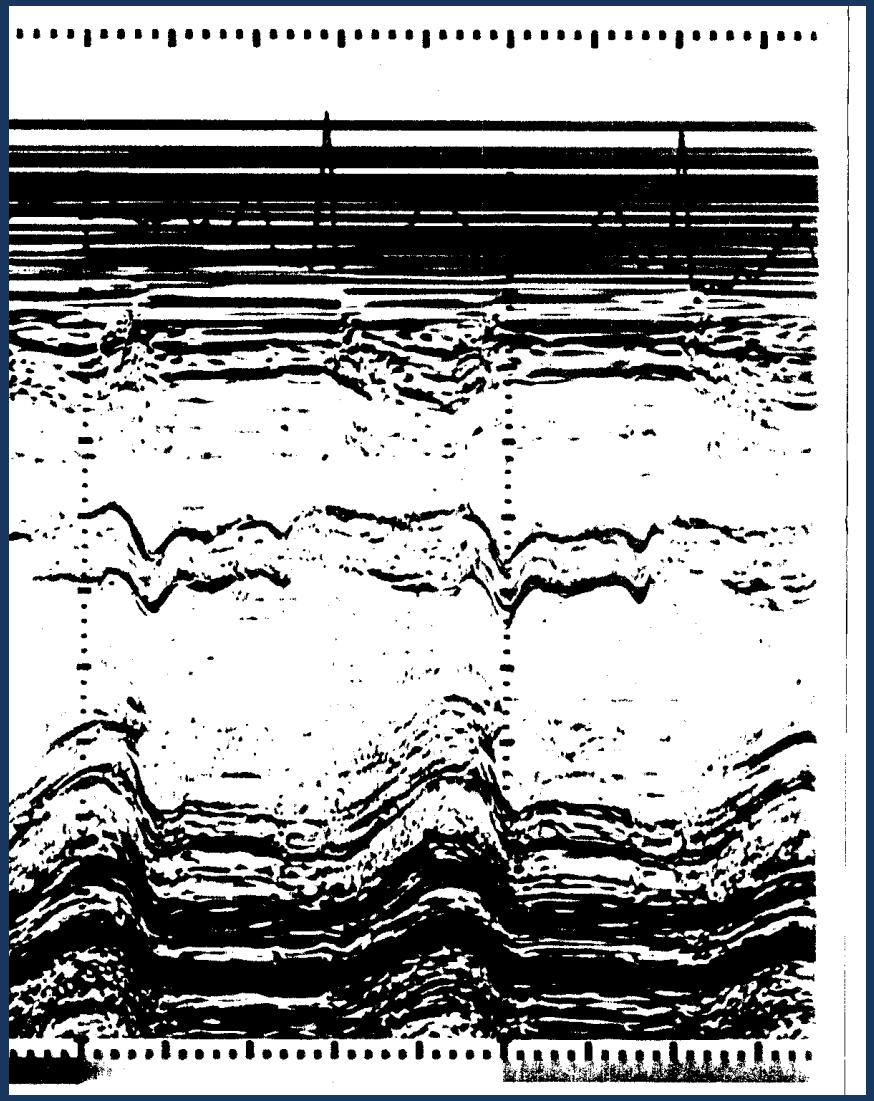
Which diagnosis is suggested by the data shown?

1. Anemia
2. AV fistula
3. Severe AR
4. None of the above
5. All of the above

The M-mode echo shown was obtained from a 58 year old man who underwent CABG ten years ago and now presents with fatigue, dyspnea, and edema

Physical examination would likely show:

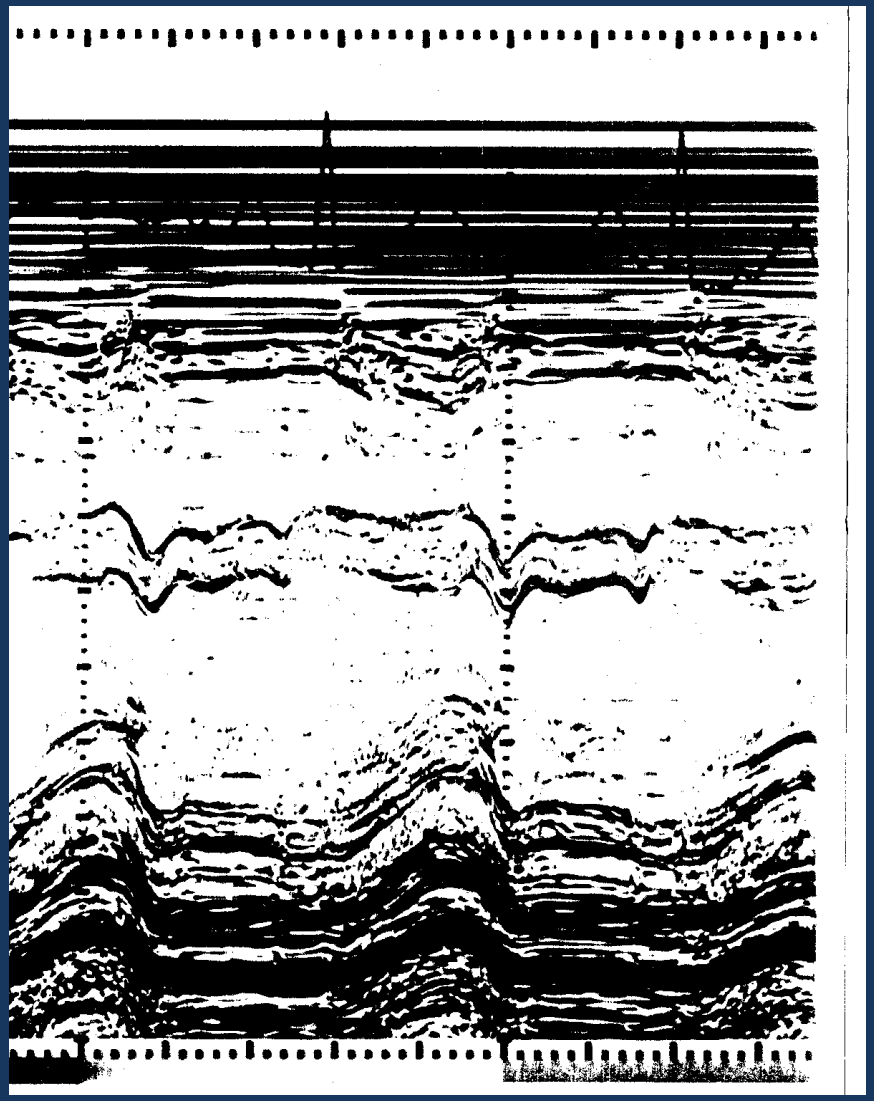
1. **Fixed splitting of s2**
2. **A soft S3**
3. **A pericardial knock**
4. **A loud S4**
5. **Paradoxical splitting of S2**

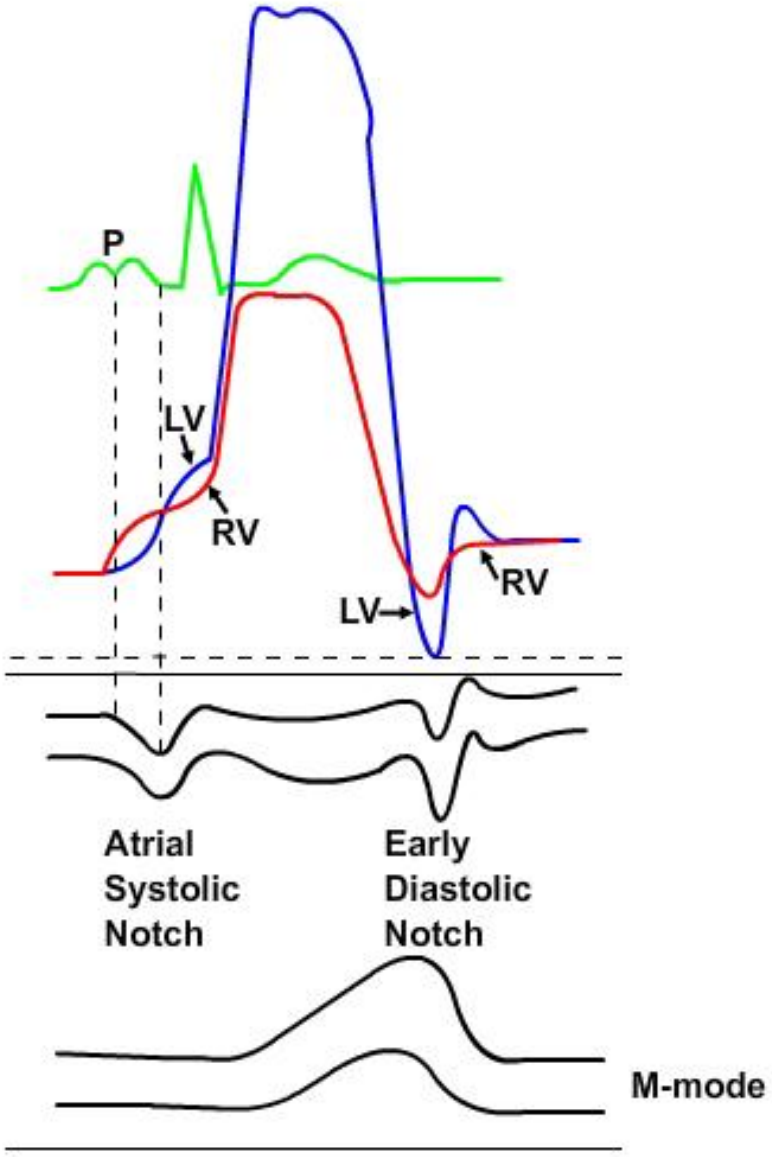


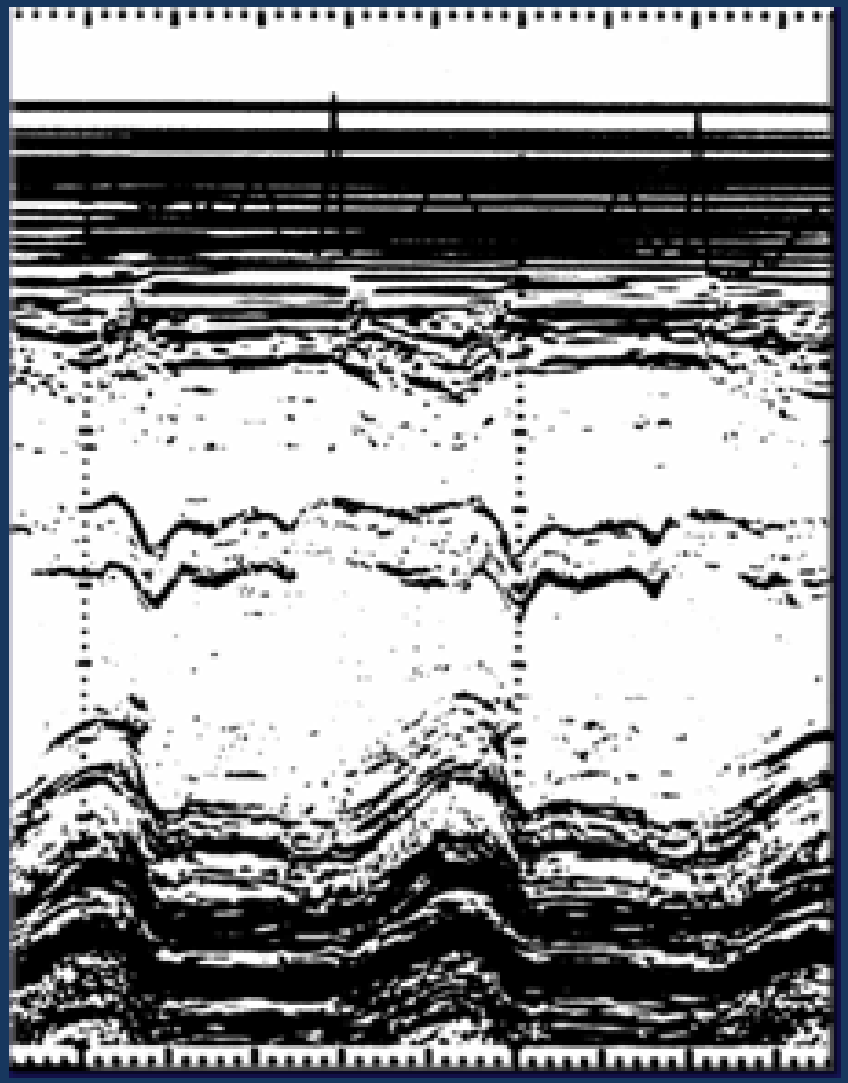
The M-mode echo shown was obtained from a 58 year old man who underwent CABG ten years ago and now presents with fatigue, dyspnea, and edema

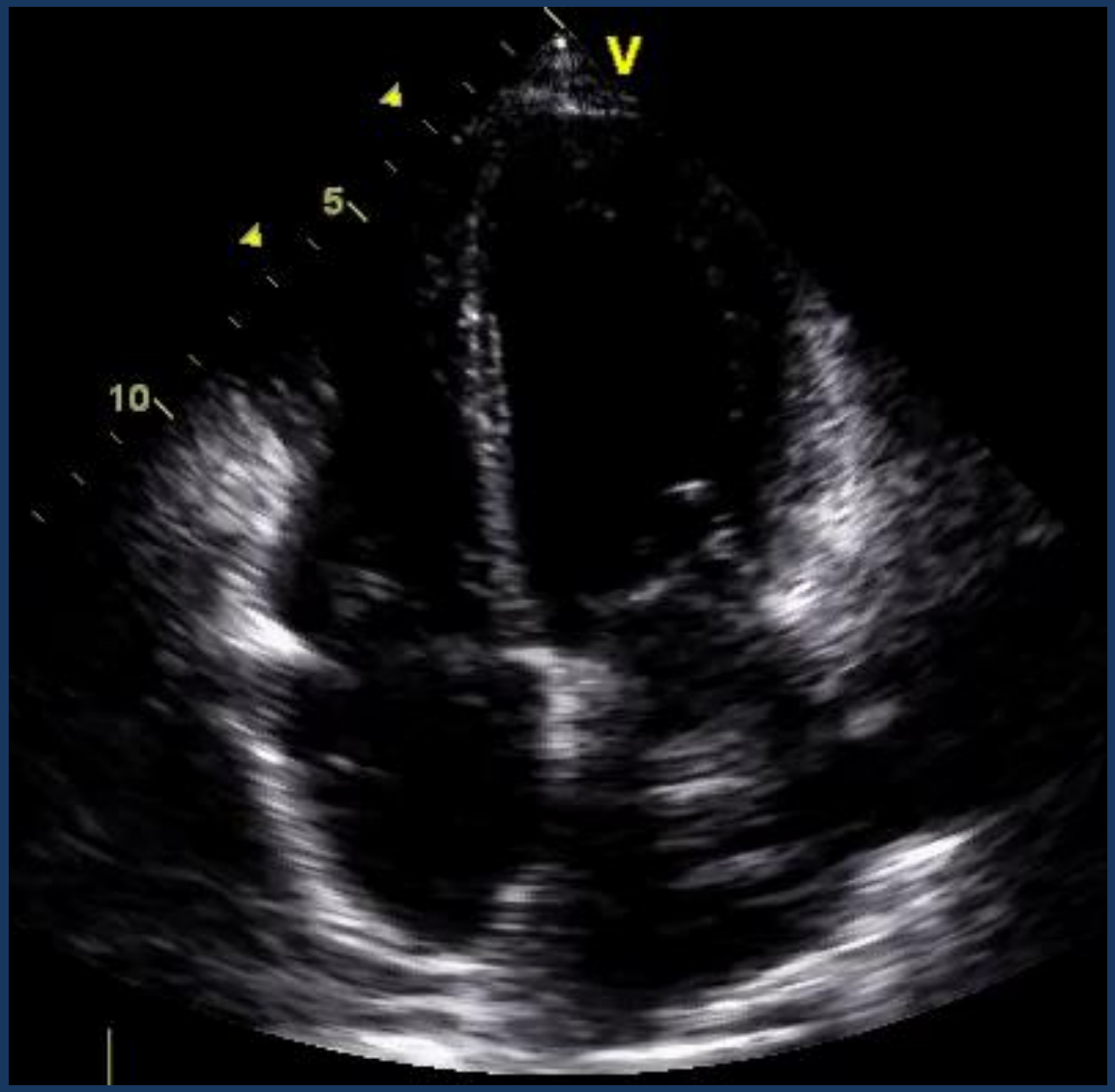
Physical examination would likely show:

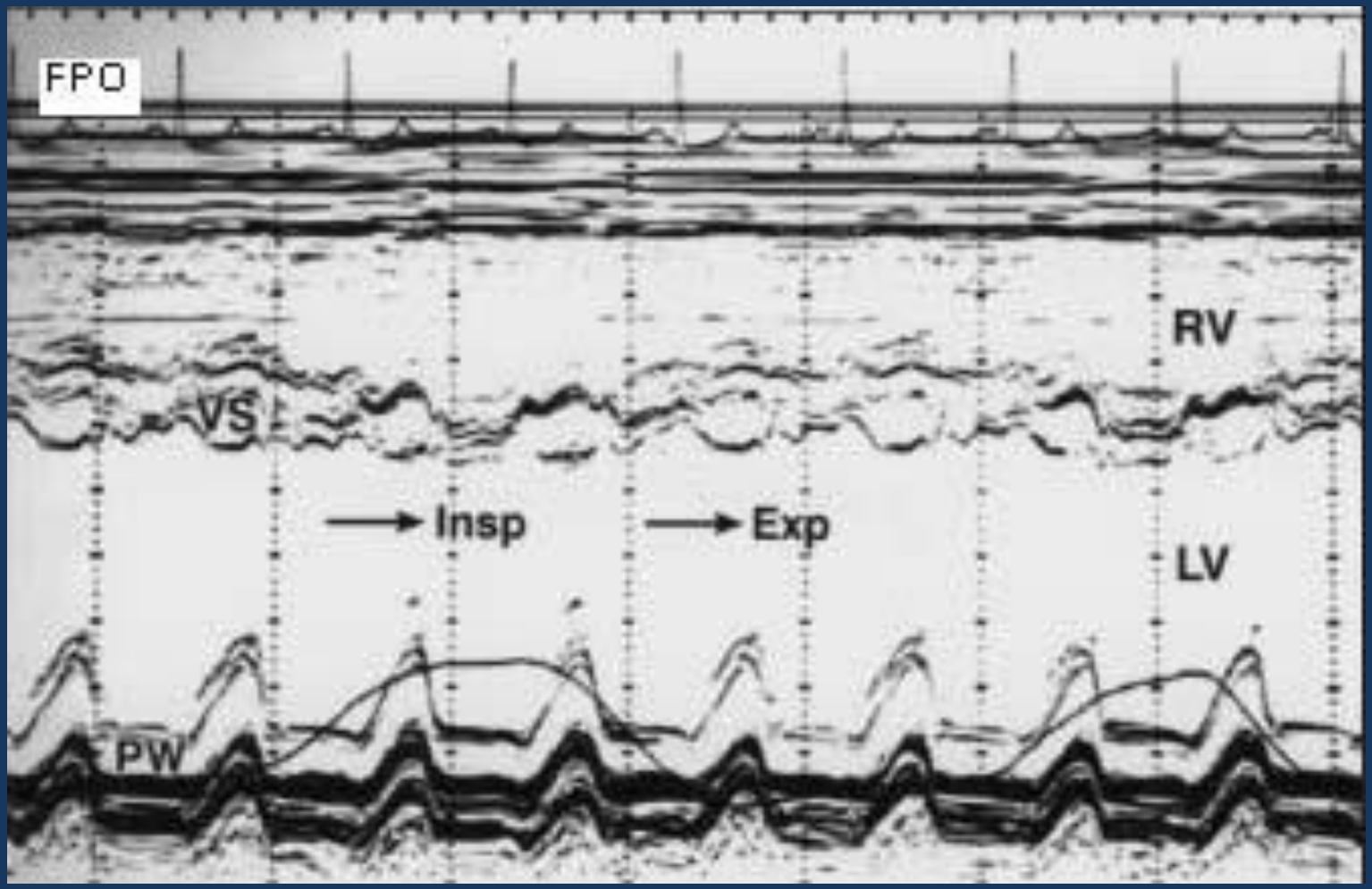
1. **Fixed splitting of s2**
2. **A soft S3**
3. **A pericardial knock**
4. **A loud S4**
5. **Paradoxical splitting of S2**

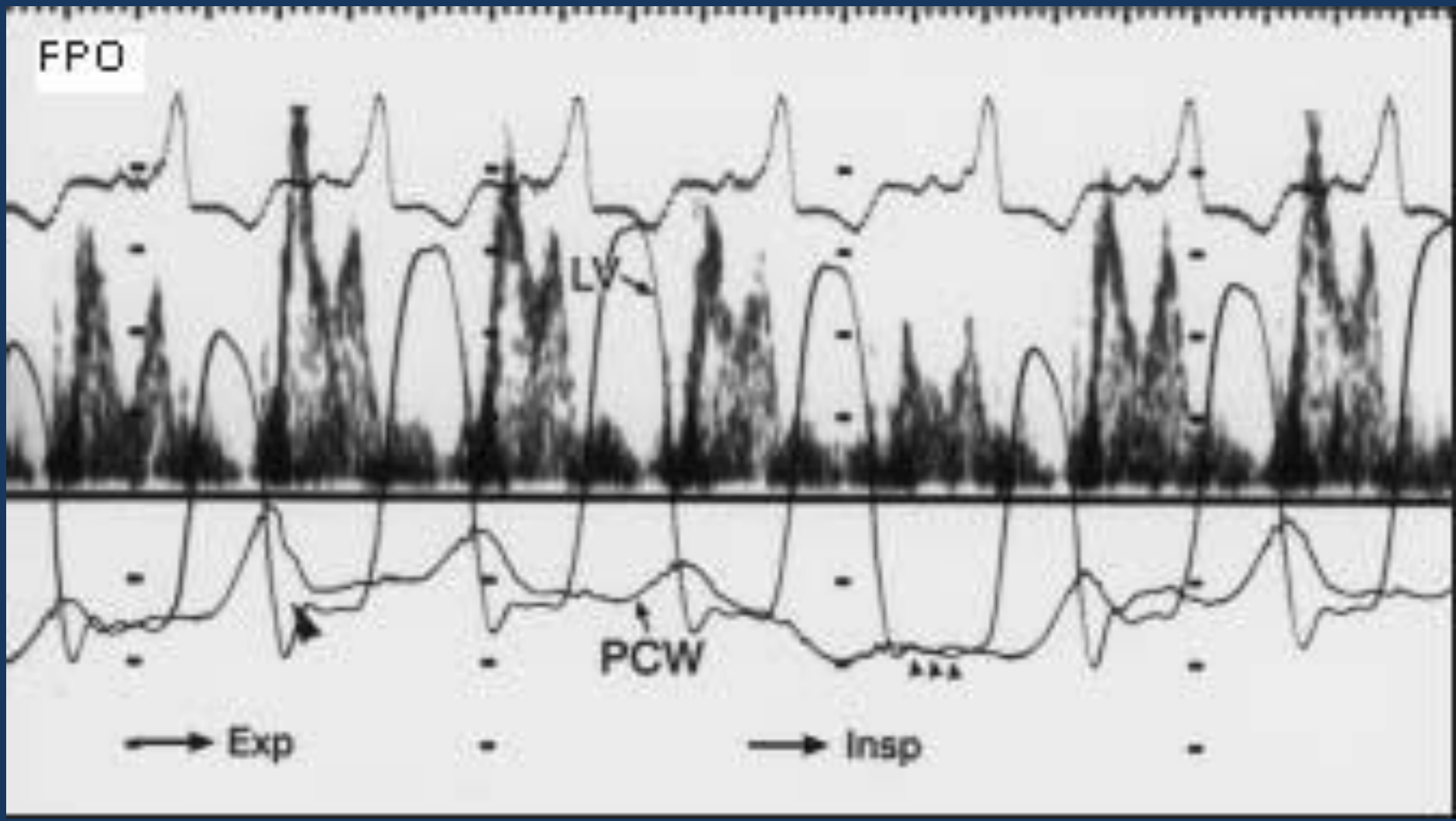



P
LV
RV
RV
LV
Atrial
Systolic
Notch
Early
Diastolic
Notch
M-mode



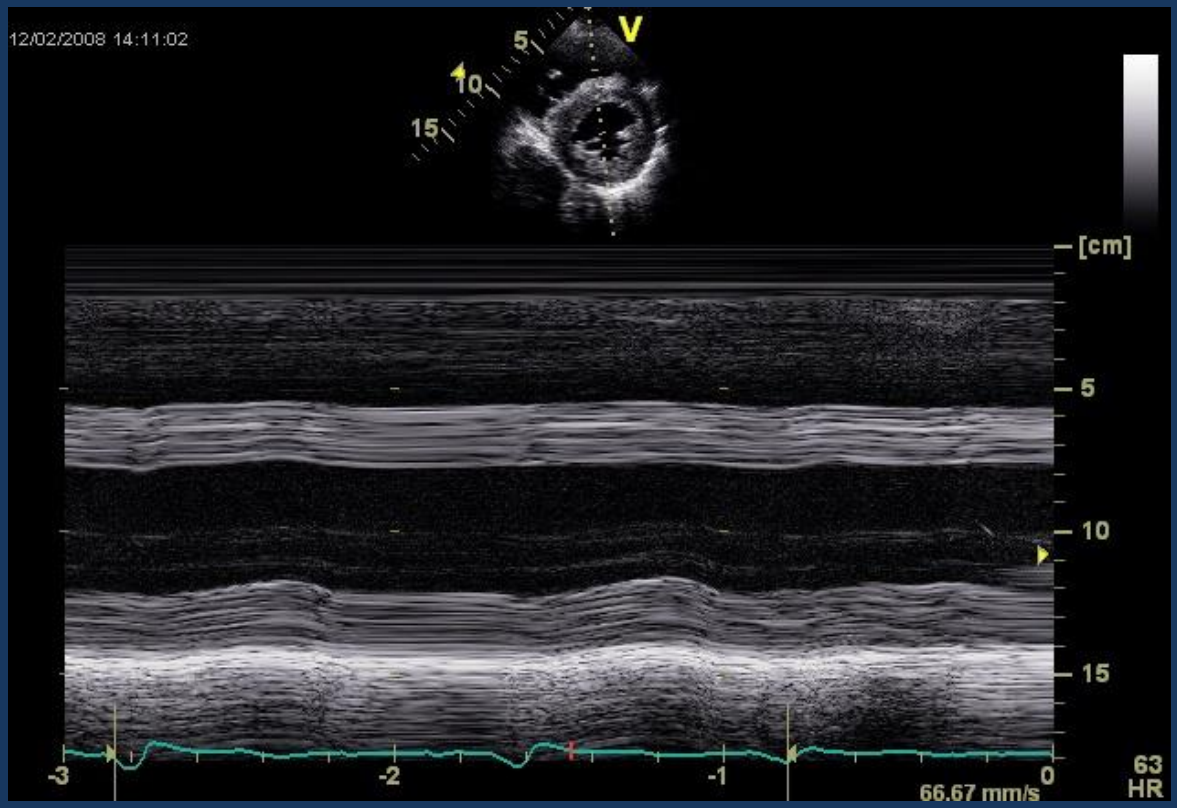

V
5
10

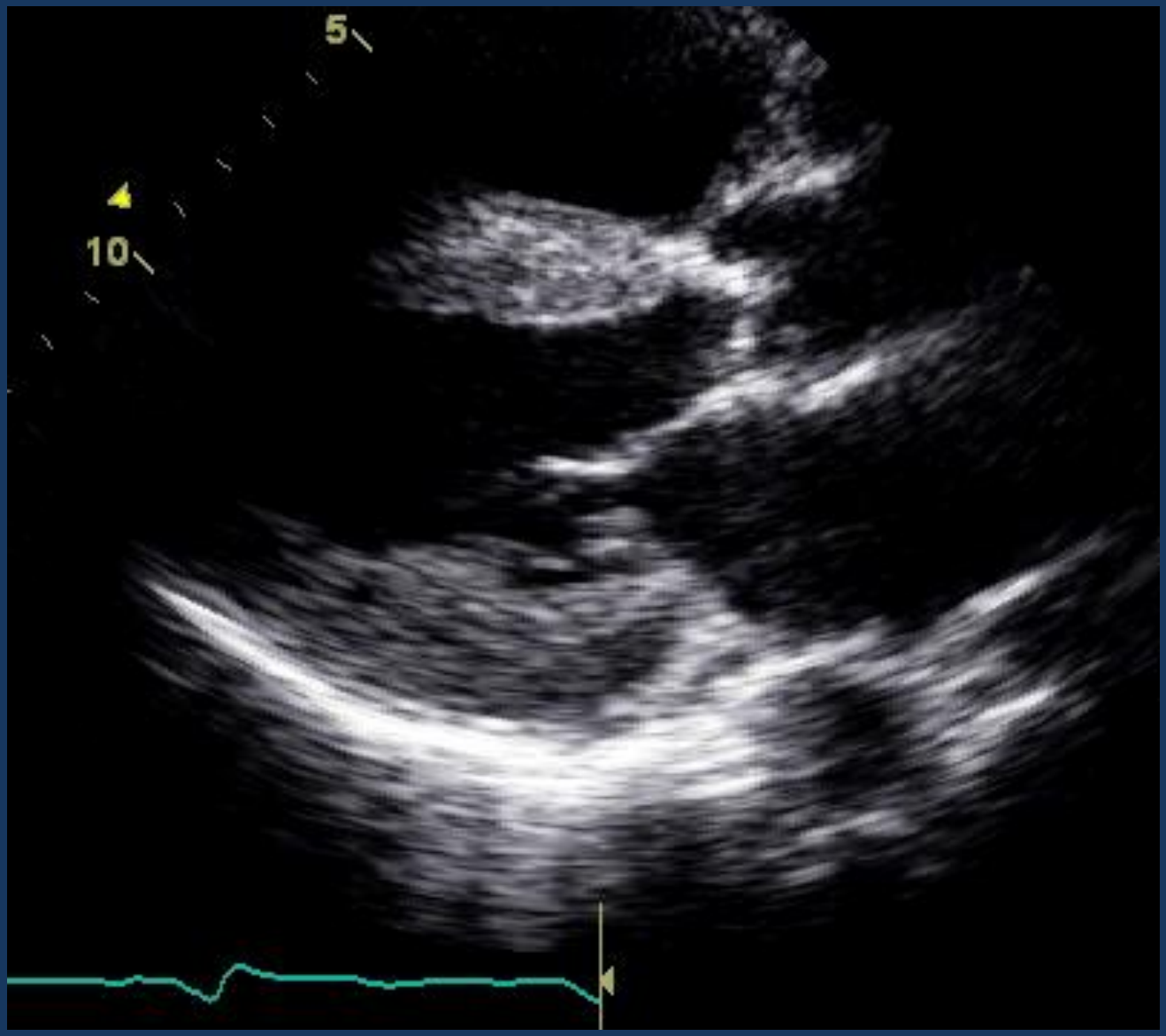

FPO
RV
VS
Insp
Exp
LV
PW

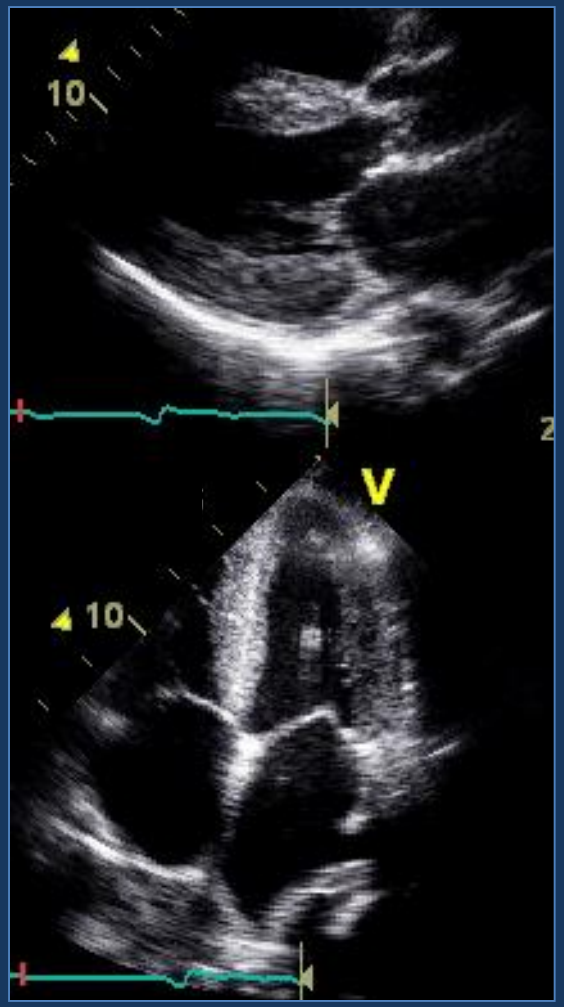

FPO
LV
PCW
Exp
Insp

This M-mode would be most consistent with which Dx?

1. HOCM
2. Constrictive pericarditis
3. Sarcoidosis
4. Infiltrative CM




5
10


10
V
10


10
V
10

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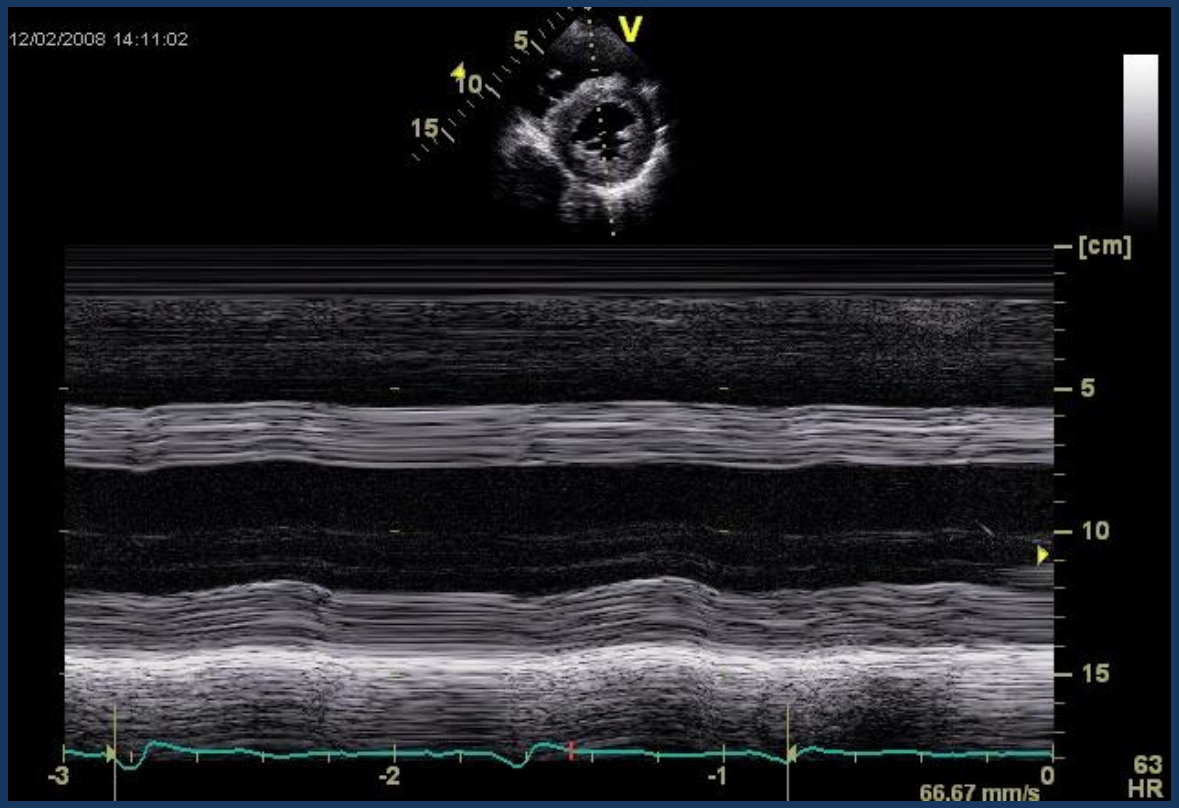
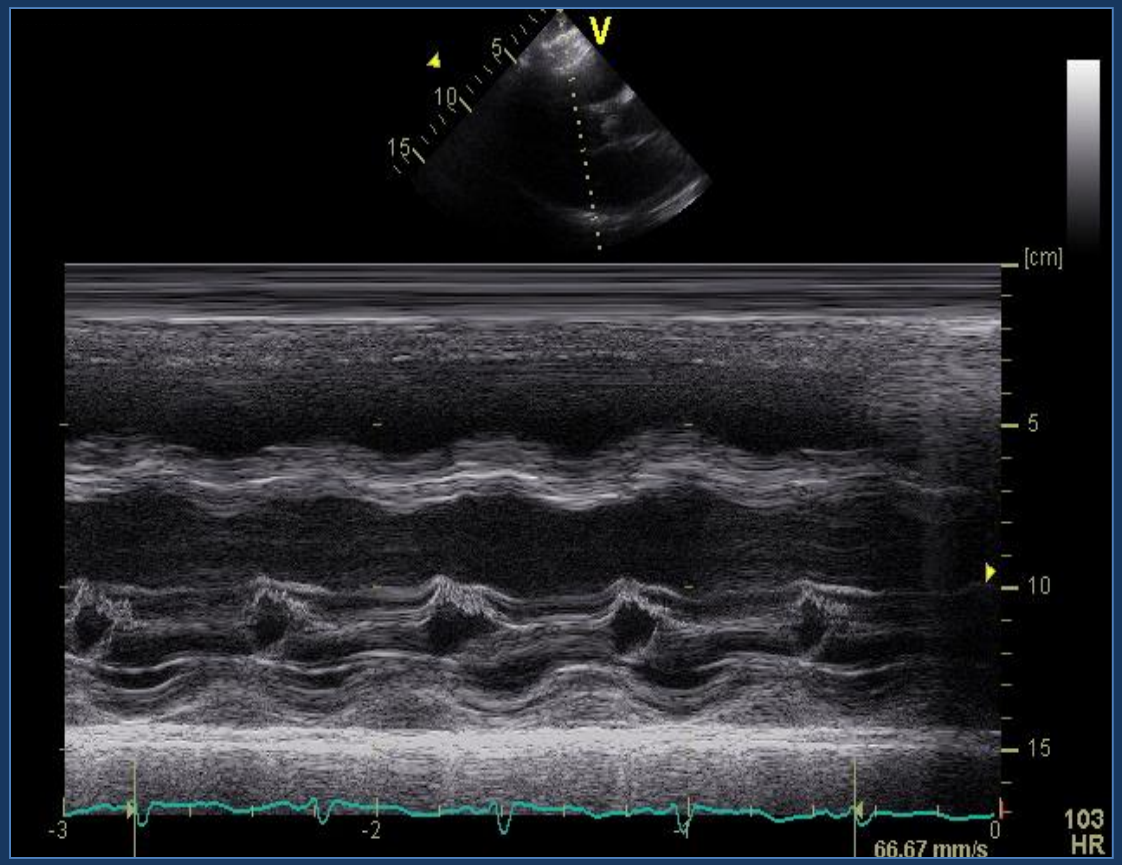


What are the most likely diagnoses?

1. AR and normal EF
2. MR and reduced EF
3. AR and reduced EF
4. MVP and reduced EF



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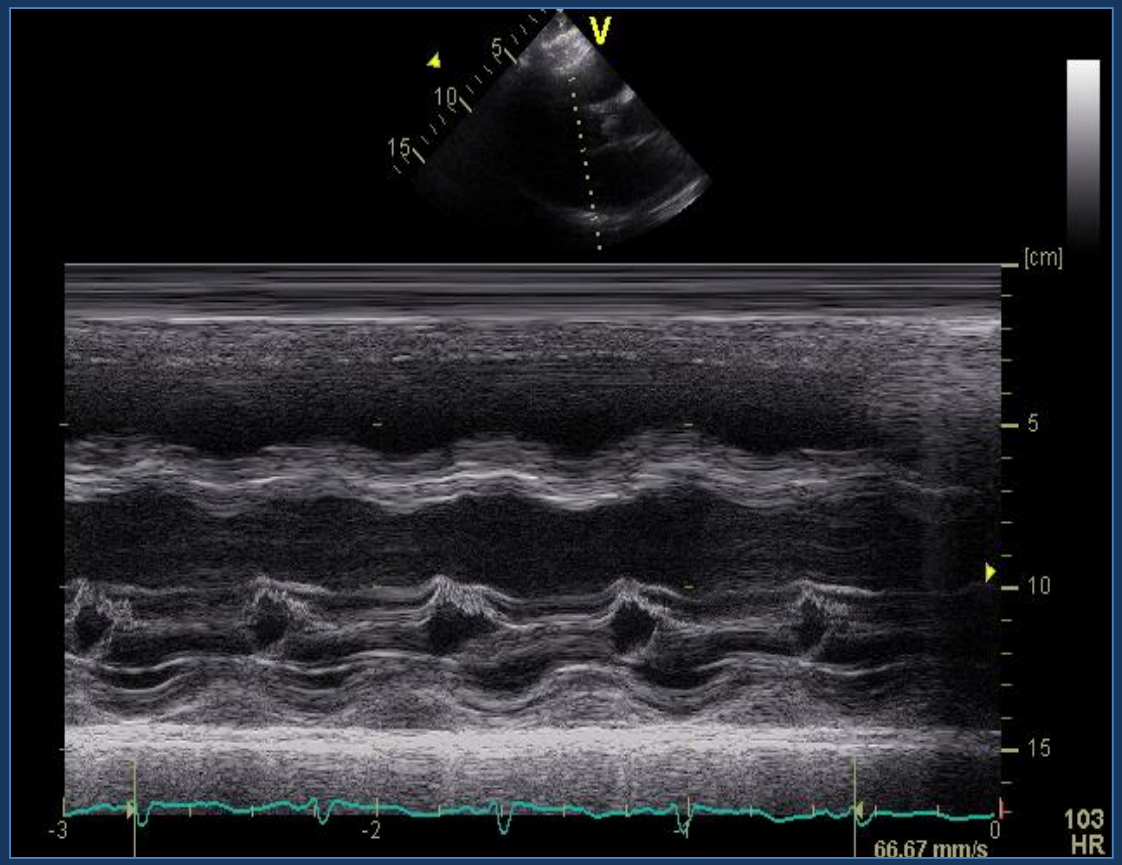
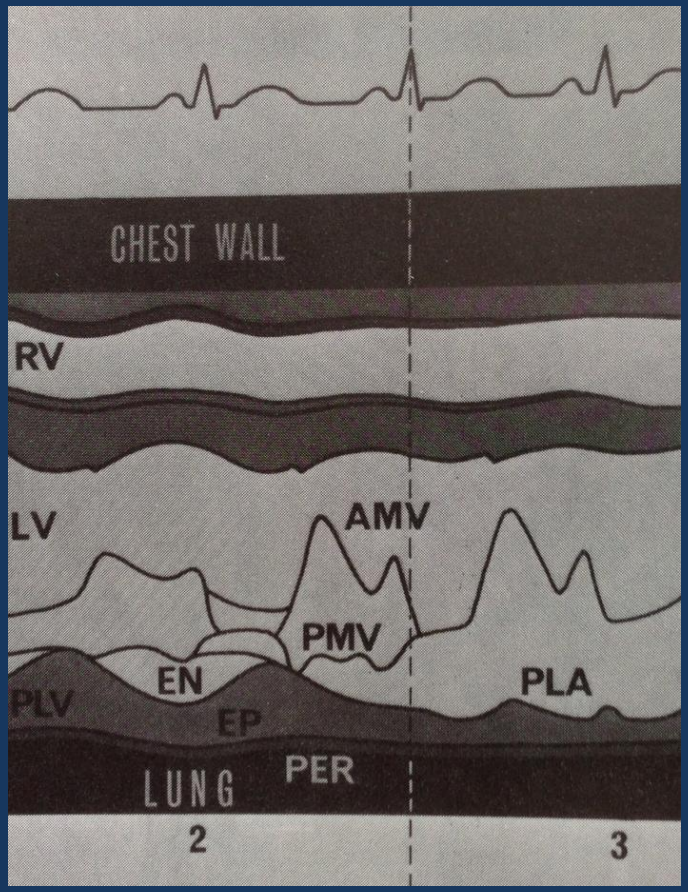
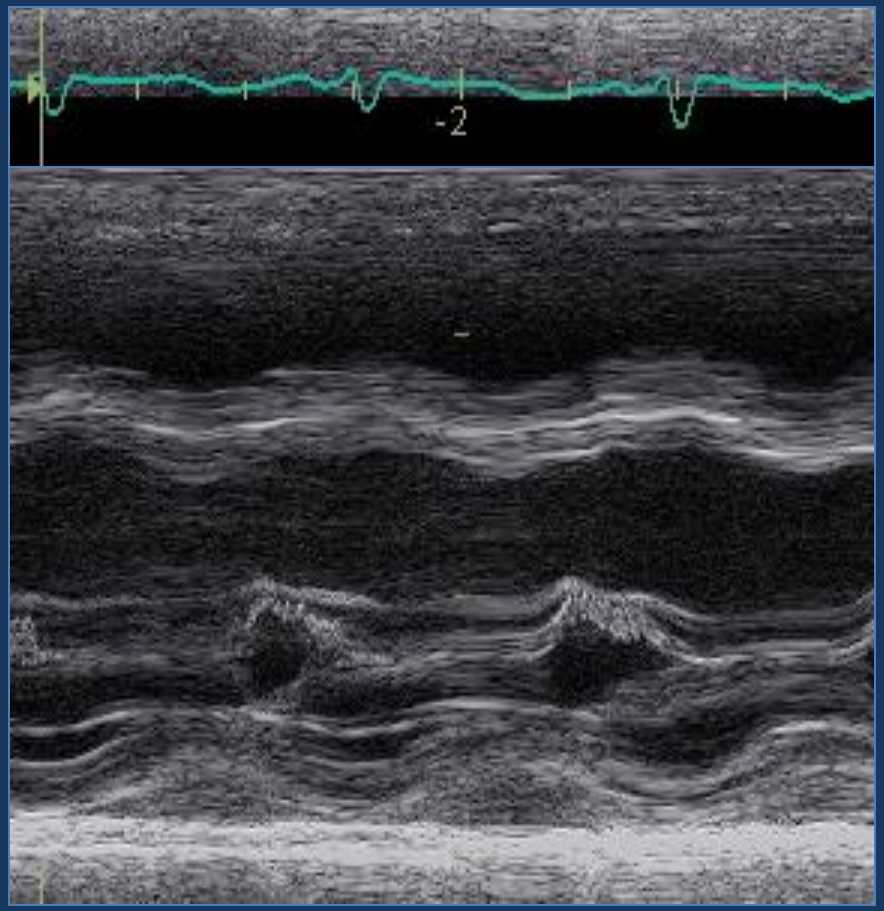


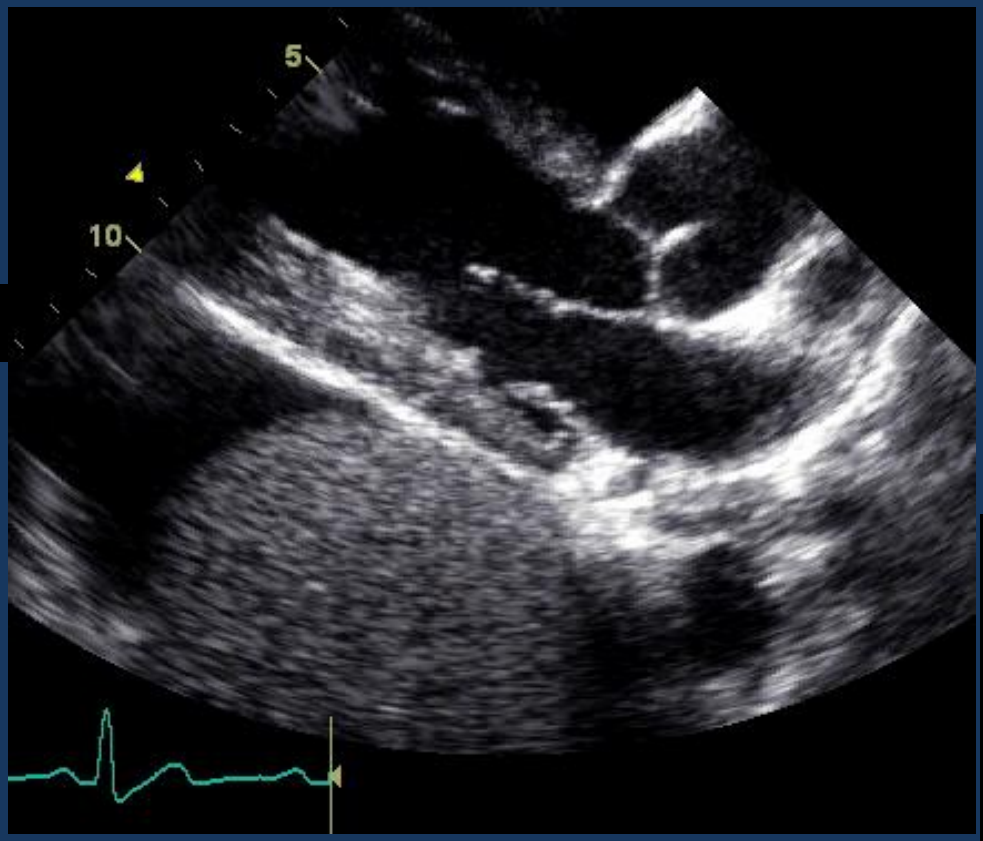




Feigenbaum:
Echocardiography
4th Edition 1986

What is the most likely diagnosis?

1. Inferior wall infarction
2. Inferior wall aneursym with dyskinesis
3. LBBB
4. None of the above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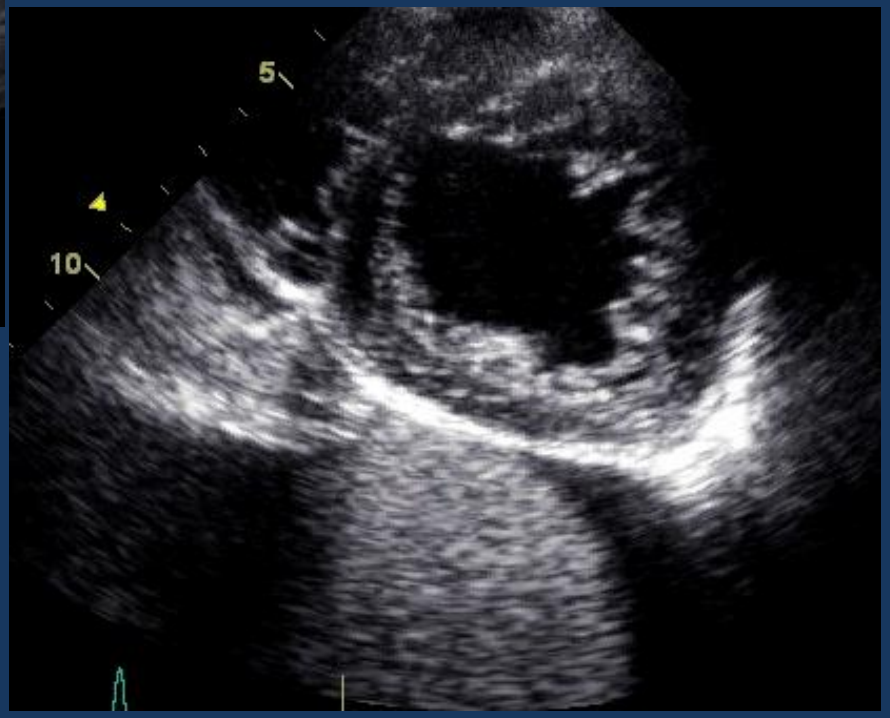
5
10

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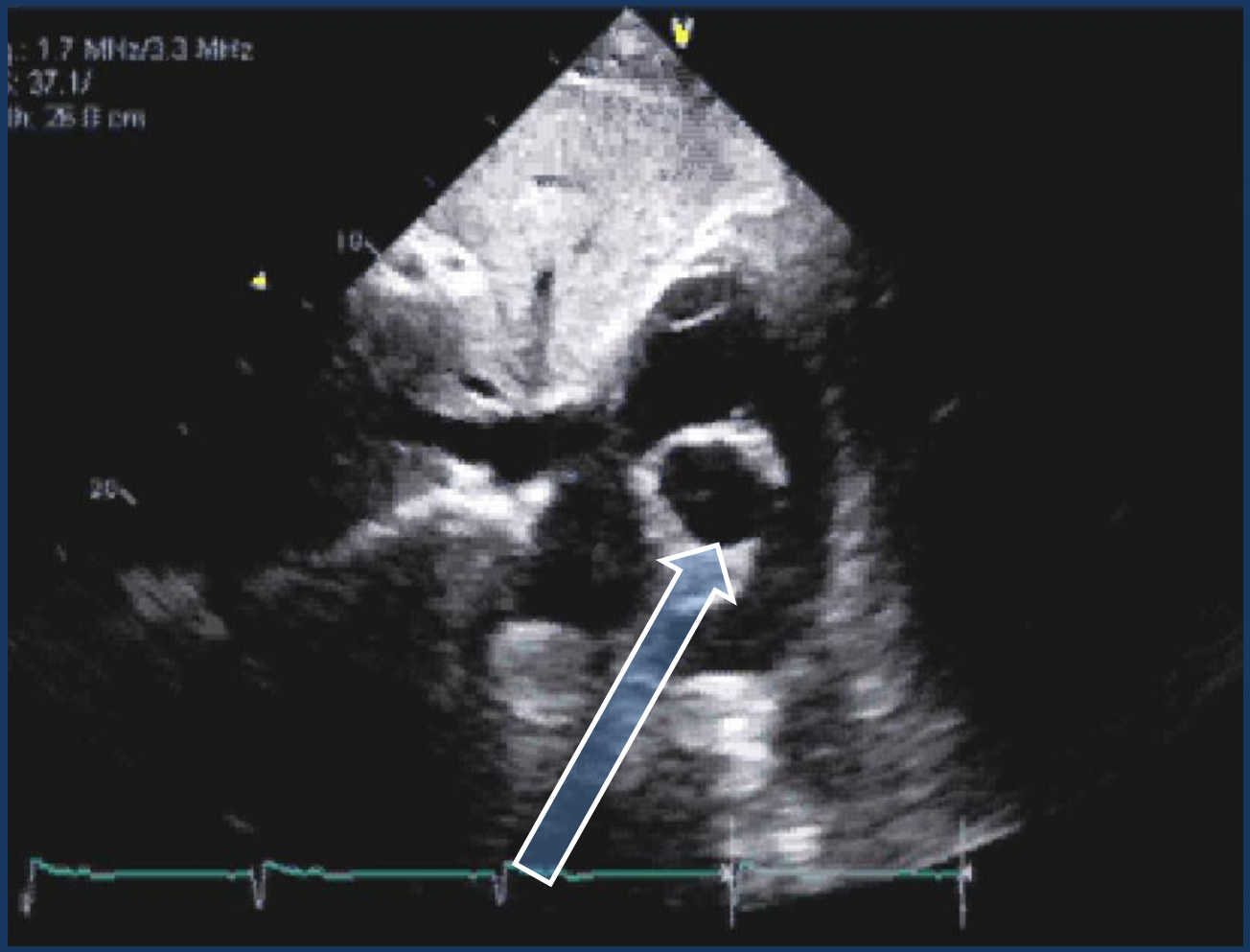
1. Inferior wall infarction
2. Inferior wall aneursym with dyskinesis
3. LBBB
4. None of the above

Normal Transthoracic/Transesophageal Examination and Endocarditis

Pravin Patil, MD, FASE

Question 1

WHICH AORTIC CUSP IS NOTED BY THE ARROW?



A. Right

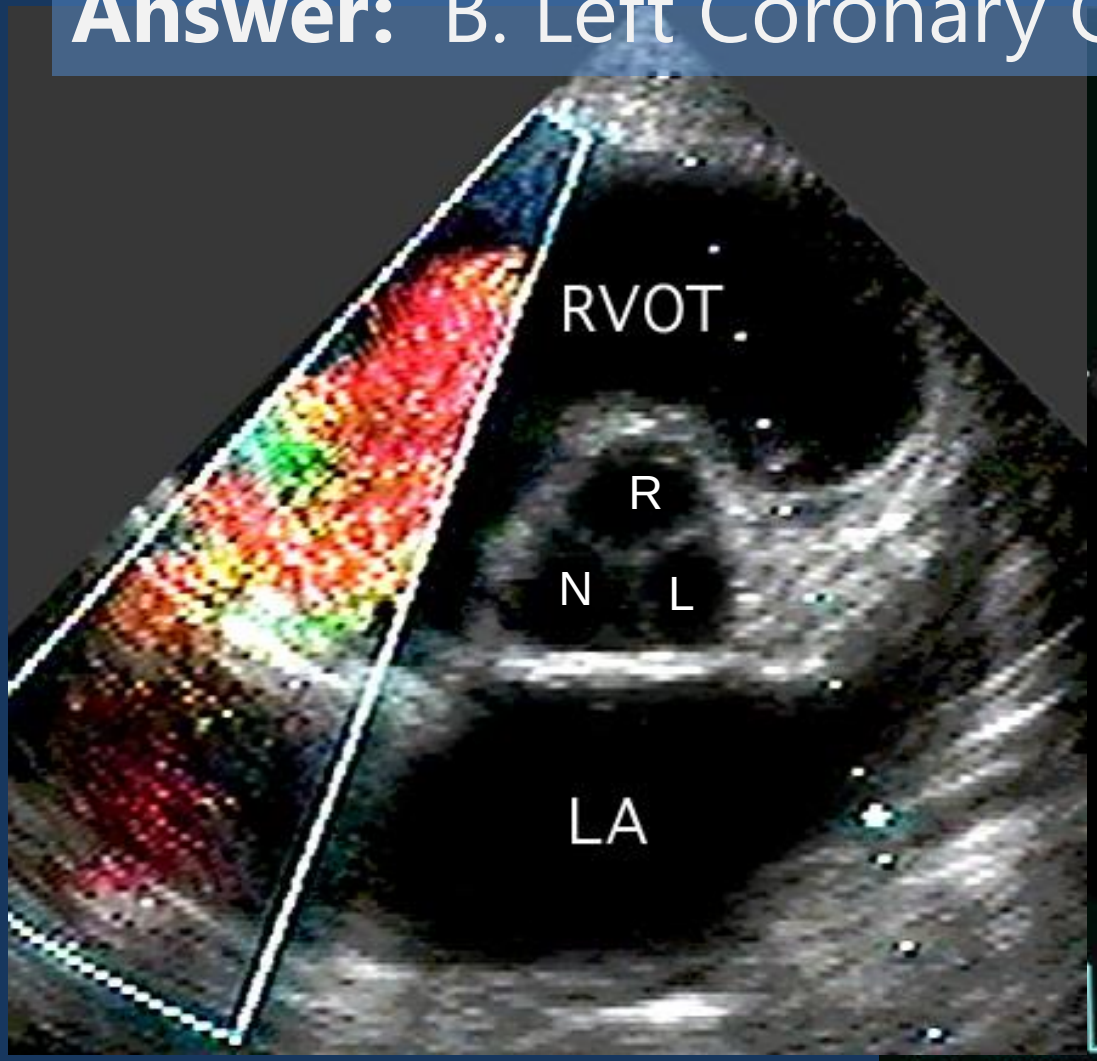
B. Left

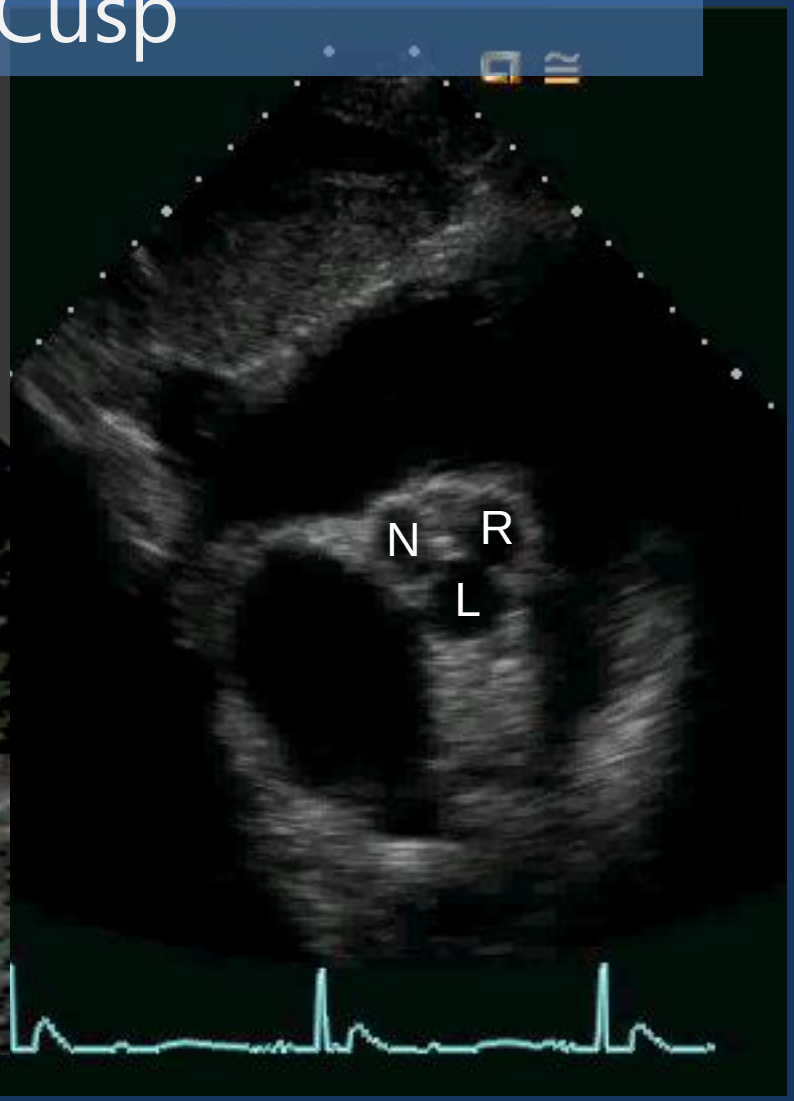
C. Non-Coronary

D. Can’t tell

Question 1 - Followup

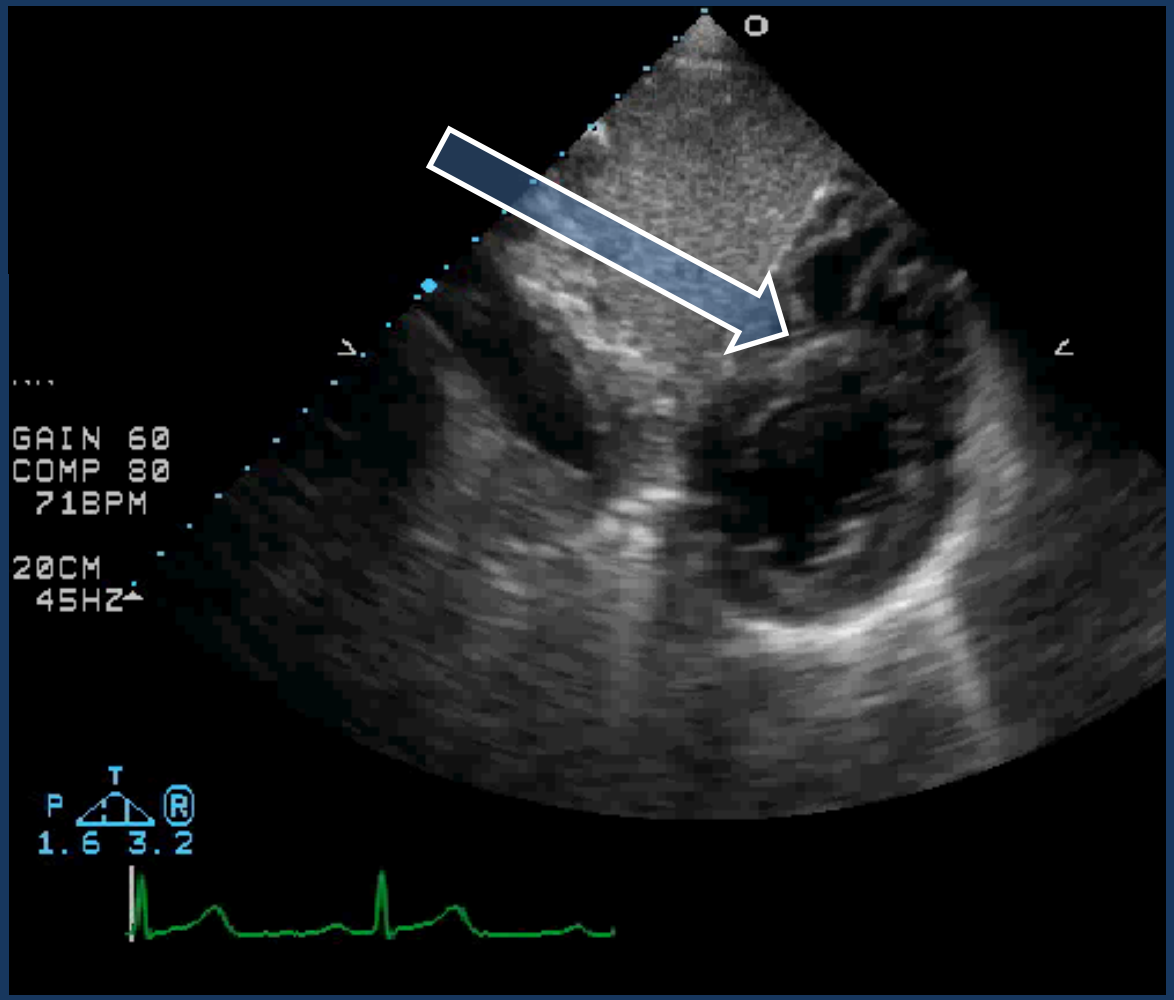
Answer: B. Left Coronary Cusp





Question 2

WHICH MYOCARDIAL SEGMENT IS DENOTED BY THE ARROW?



A. Mid Anterior

B. Mid Anteroseptum

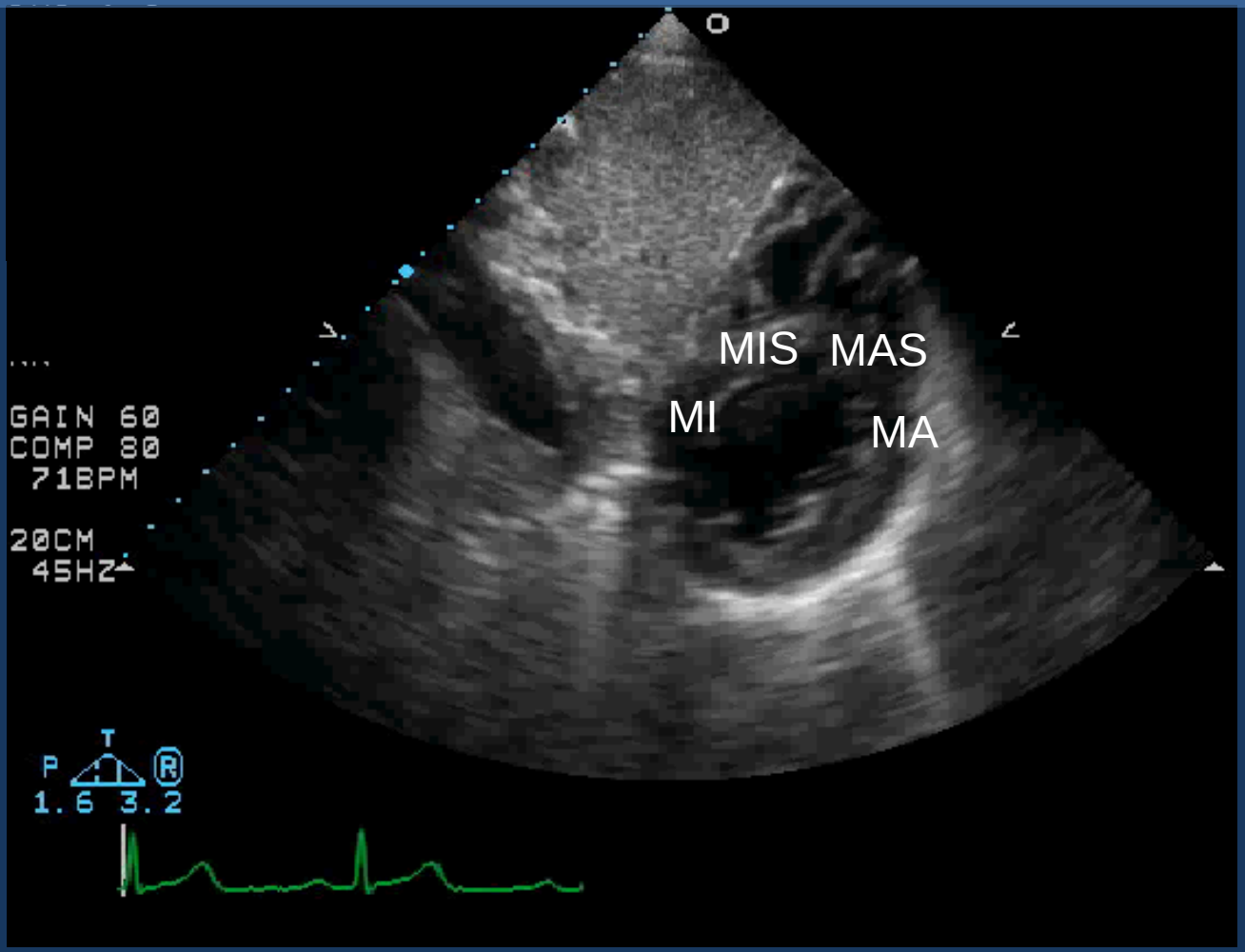
C. Mid Inferoseptum

D. Basal Anteroseptum

E. Mid Inferolateral

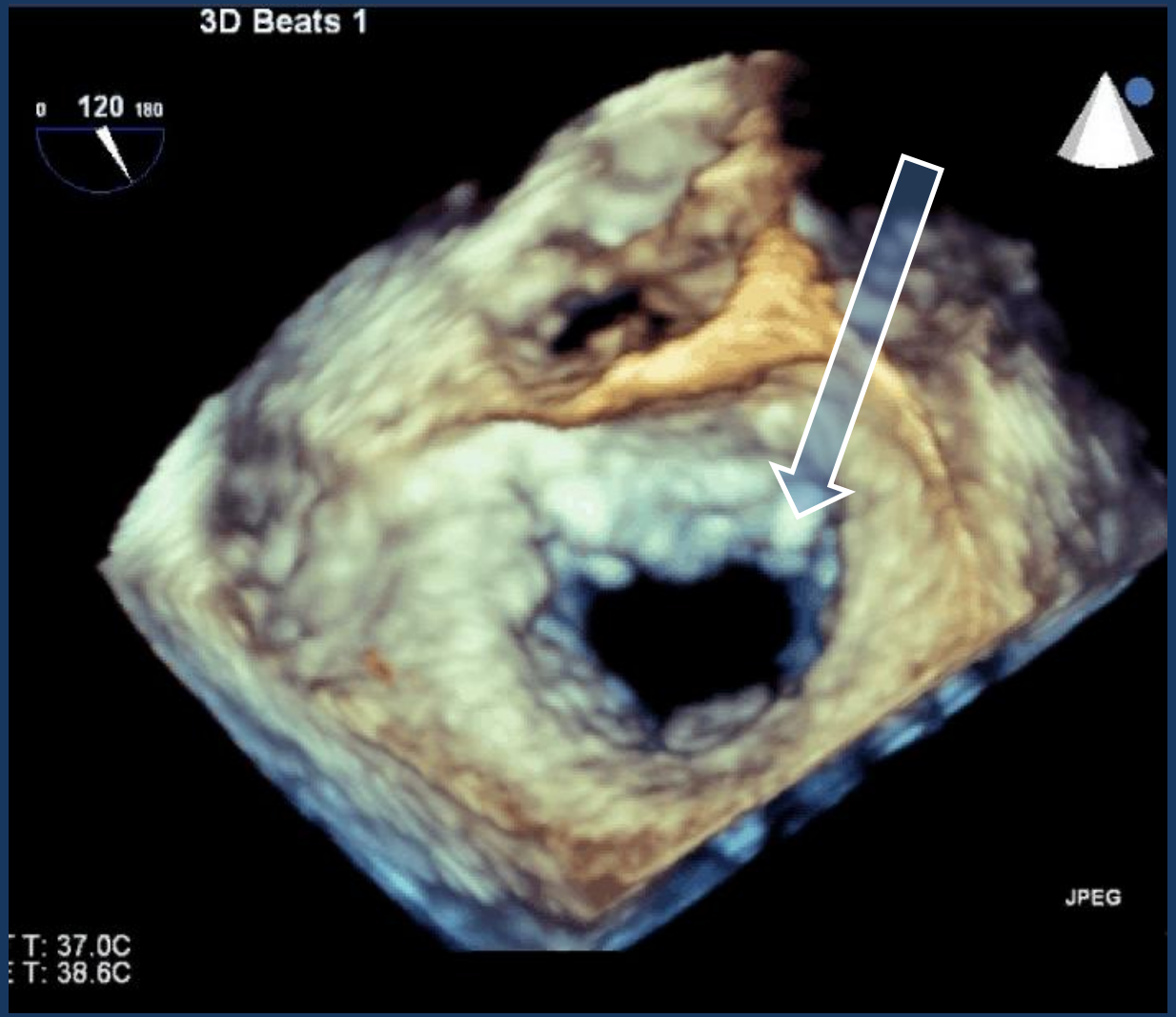
Question 2 - Followup

Answer: C. Mid Inferoseptum



Question 3

WHICH SCALLOP IS NOTED BY THE ARROW?



A. Non-coronary

B. A2

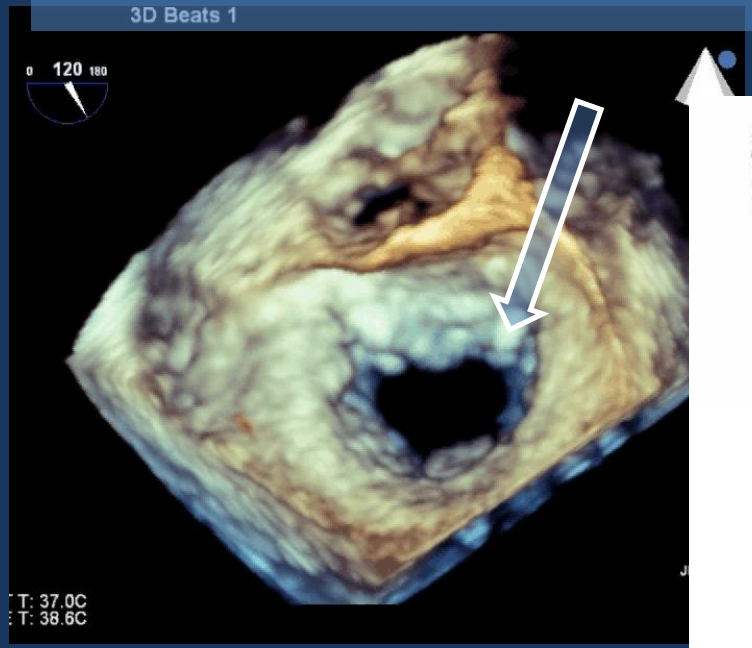
C. P1

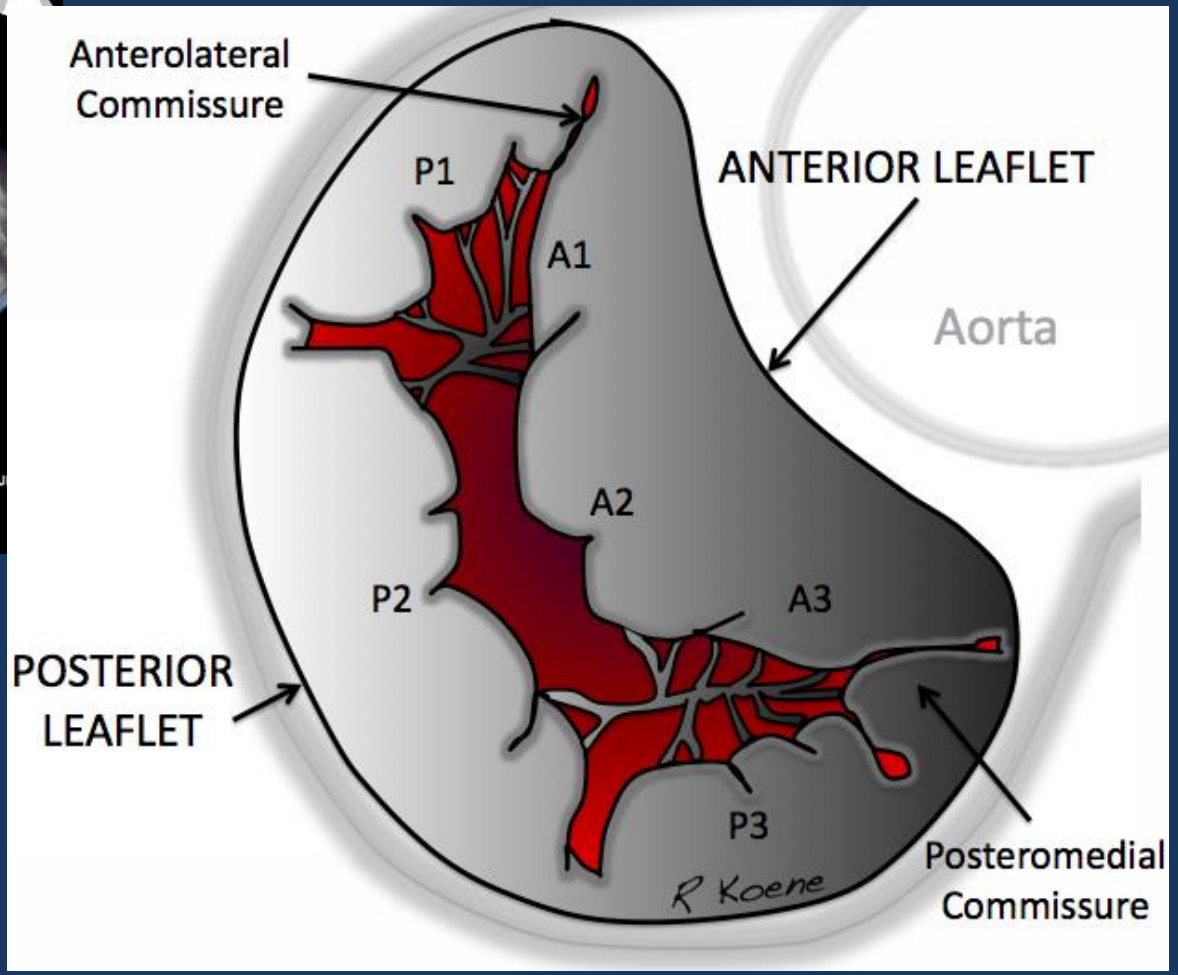
D. A1

E. A3

Question 3 - Followup

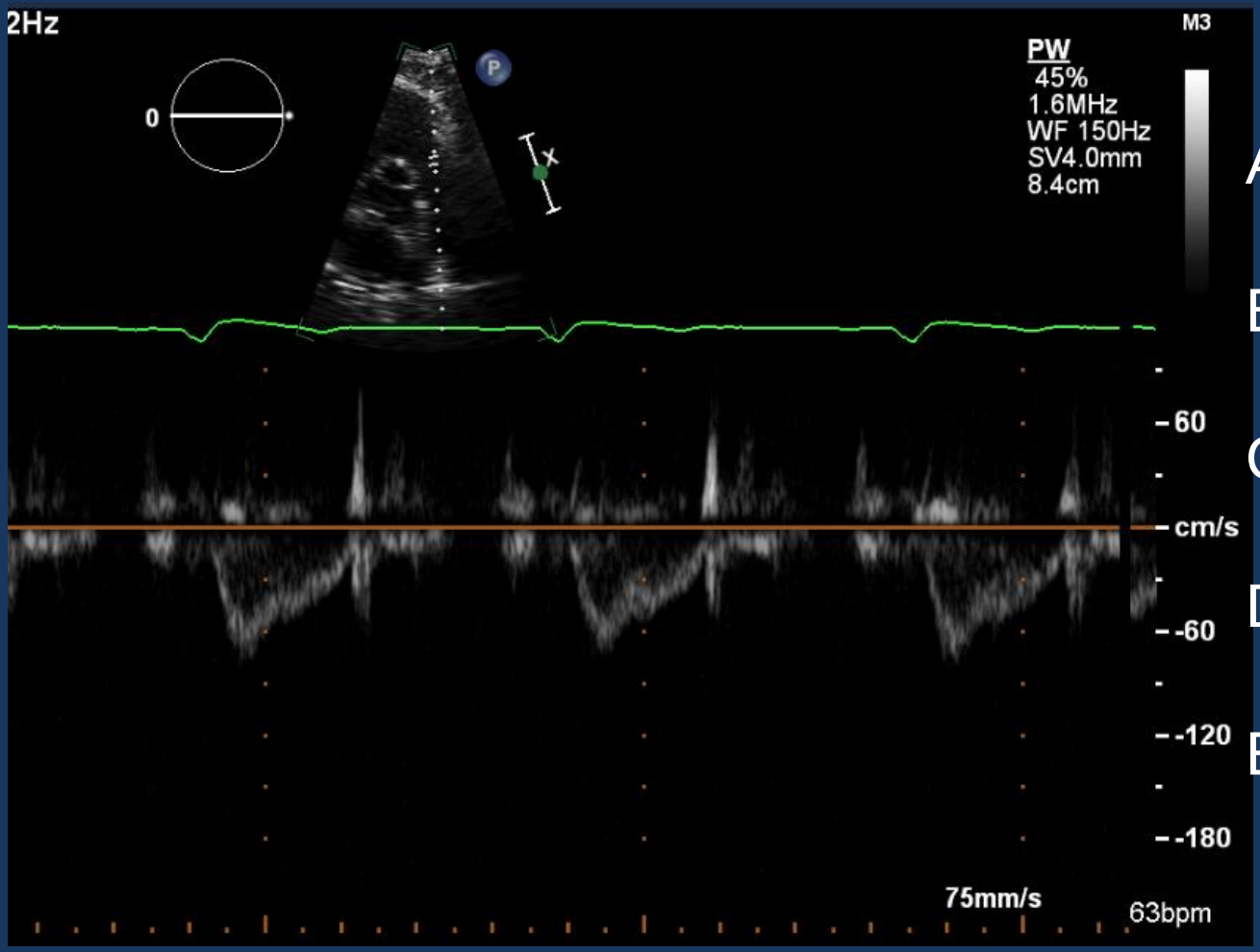
Answer: E. A3 Scallop





Question 4

HOW DO YOU OPTIMIZE THIS ACQUISITION?



A. Raise baseline

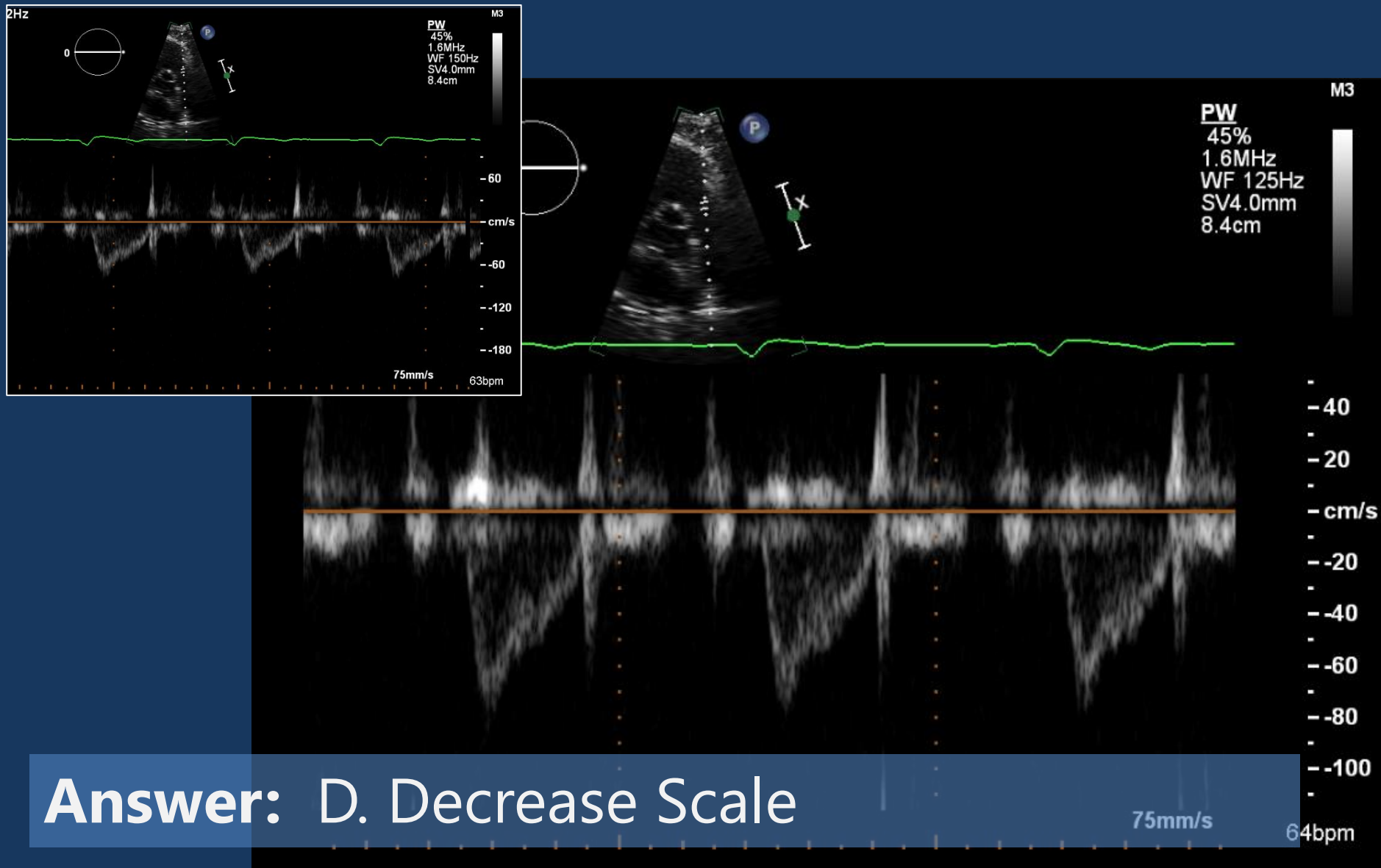
B. Lower baseline

C. Increase scale

D. Decrease scale

E. Pedoff transducer

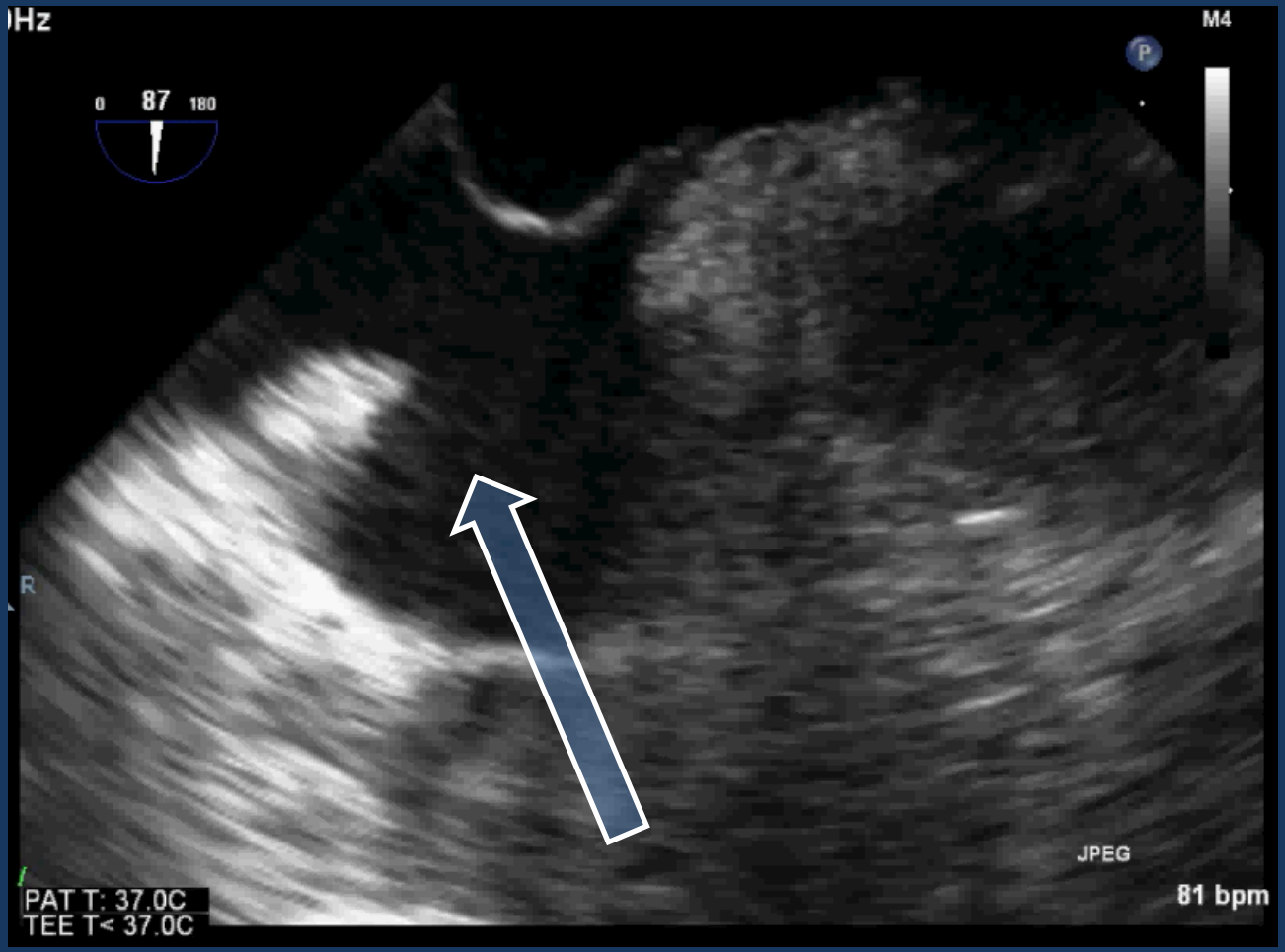
Question 4 - Followup



Answer: D. Decrease Scale

Question 5

WHAT DOES THE ARROW INDICATE?



A. Eustachian Valve

B. RA thrombus

C. Chiari Network

D. Catheter in RA

Question 5 - Followup

Answer: C. Chiari Network

Chiari Network

- **No known function**
- **Not present in every patient**
- **Netlike structure that is highly mobile**
- **Usually arises from the vicinity of the ivc not attached to the septum**

Eustachian Valve

- **Directs IVC flow across fossa in fetus**
- **Present in every fetus**
- **Ridge of tissue - rarely mobile at all**
- **Arises from the IVC and runs to the fossa**

Question 6

WHICH OF THE FOLLOWING REPRESENTS THE SPECIFICITY OF TRANSTHORACIC ECHO FOR IE?

A. 60-70%

B. 30-40%

C. 90-100%

D. <10%

Question 6 - Followup

Answer: 90-100%

TRANSTHORACIC

- RESOLUTION ~ 3-4 MM
- SENSITIVITY: 62-82%
- SPECIFICITY: 91-100%
- READILY AVAILABLE, USUAL INITIAL TEST OF CHOICE

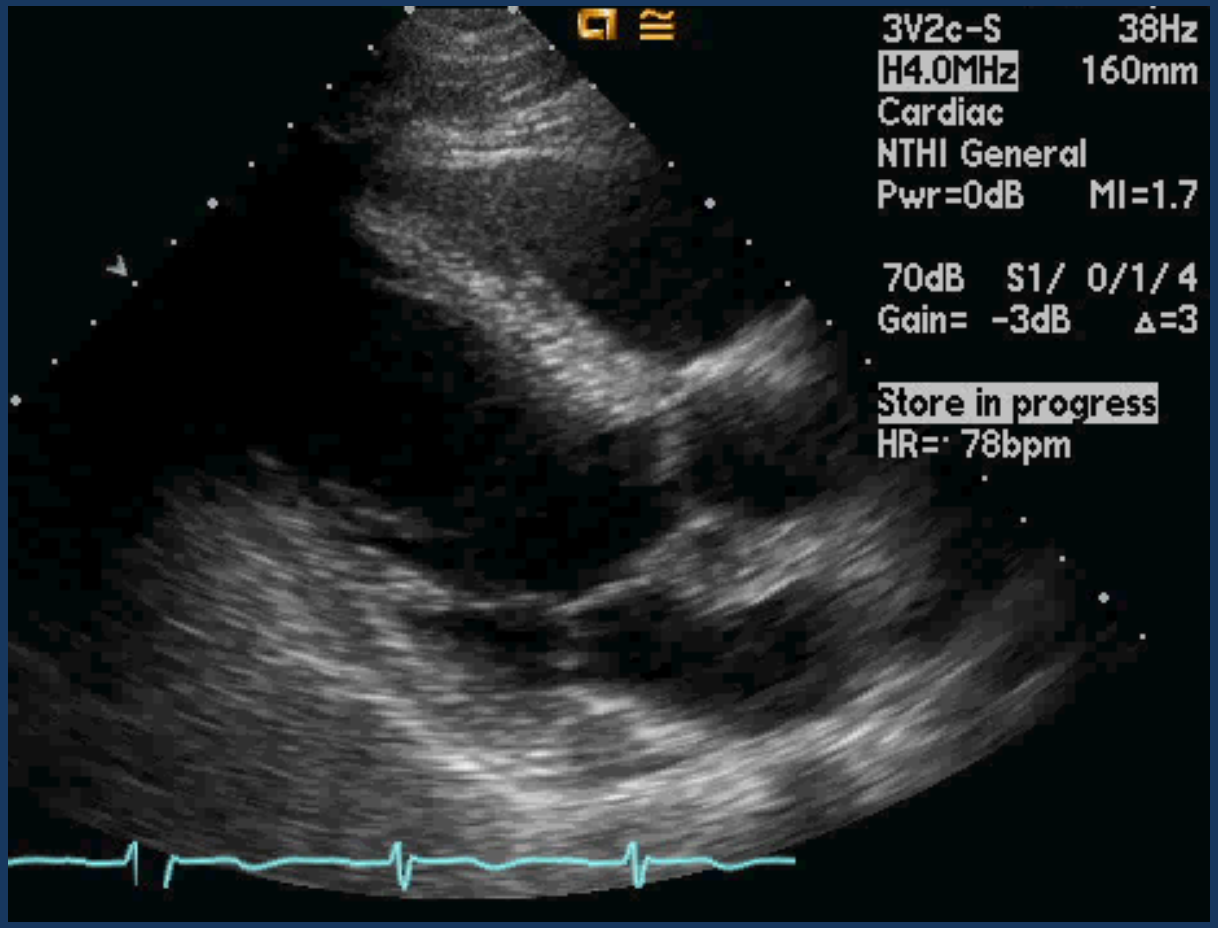
TRANSESOPHAGEAL

- RESOLUTION ~ 1-2 MM
- SENSITIVITY: 87-100%
- SPECIFICITY: 91-100%
- GREATER (3-4X) SENSITIVITY FOR PROSTHETIC VALVES

Jacob S et al. Curr Opin Cardiol 2002;
Kini V et al. JASE 2010; Pederson WR et al. Chest 1991

Question 7

WHAT IS THE FOLLOWING MOST SUGGESTIVE OF?



A. Bicuspid Aortic valve

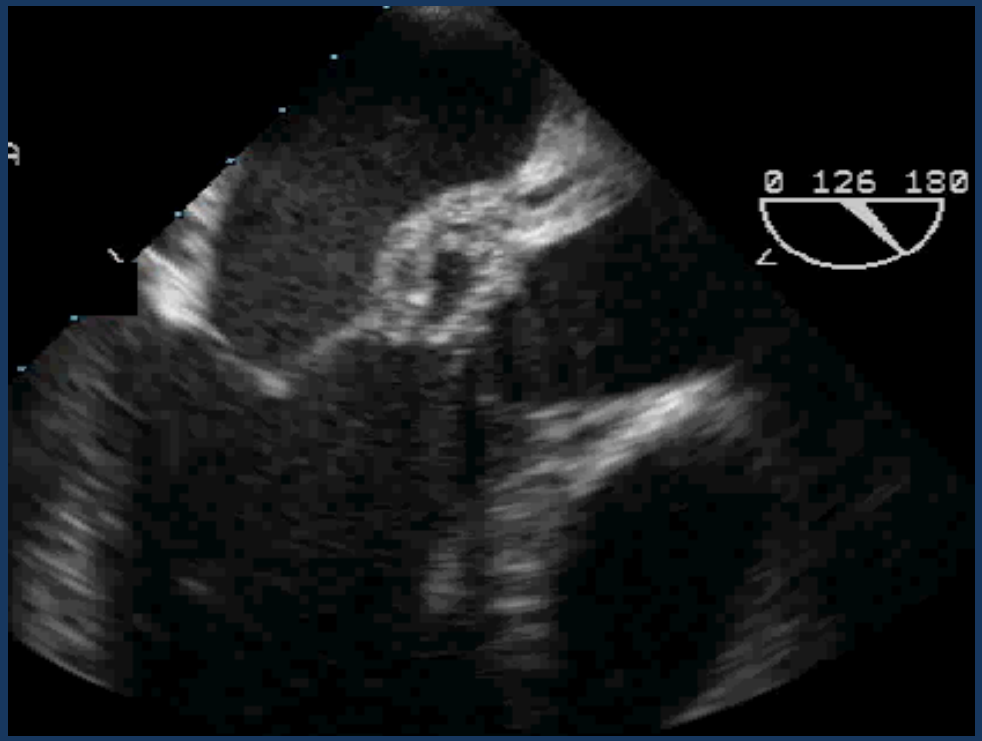
B. Aortic root abscess

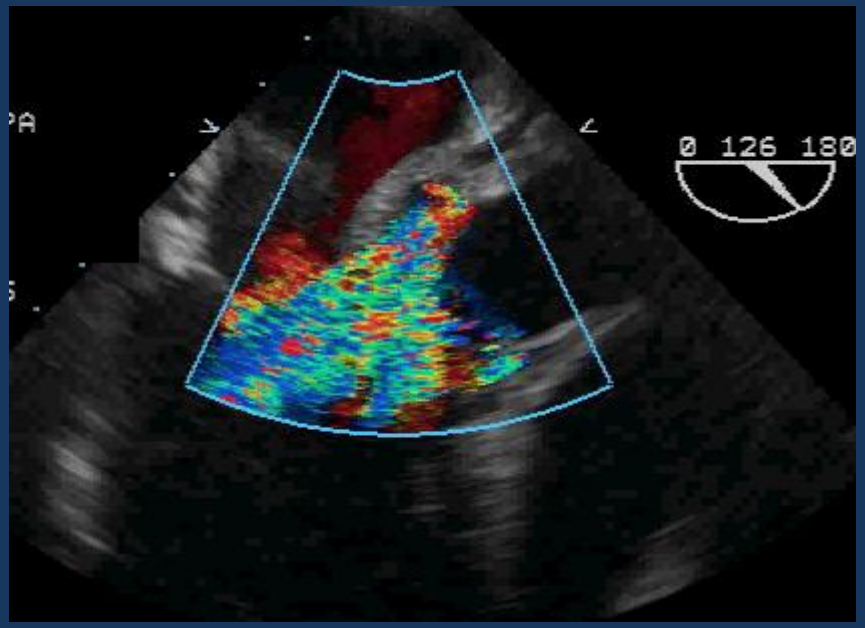
C. Coronary aneurysm

D. Mitral perforation

Question 7 - Followup

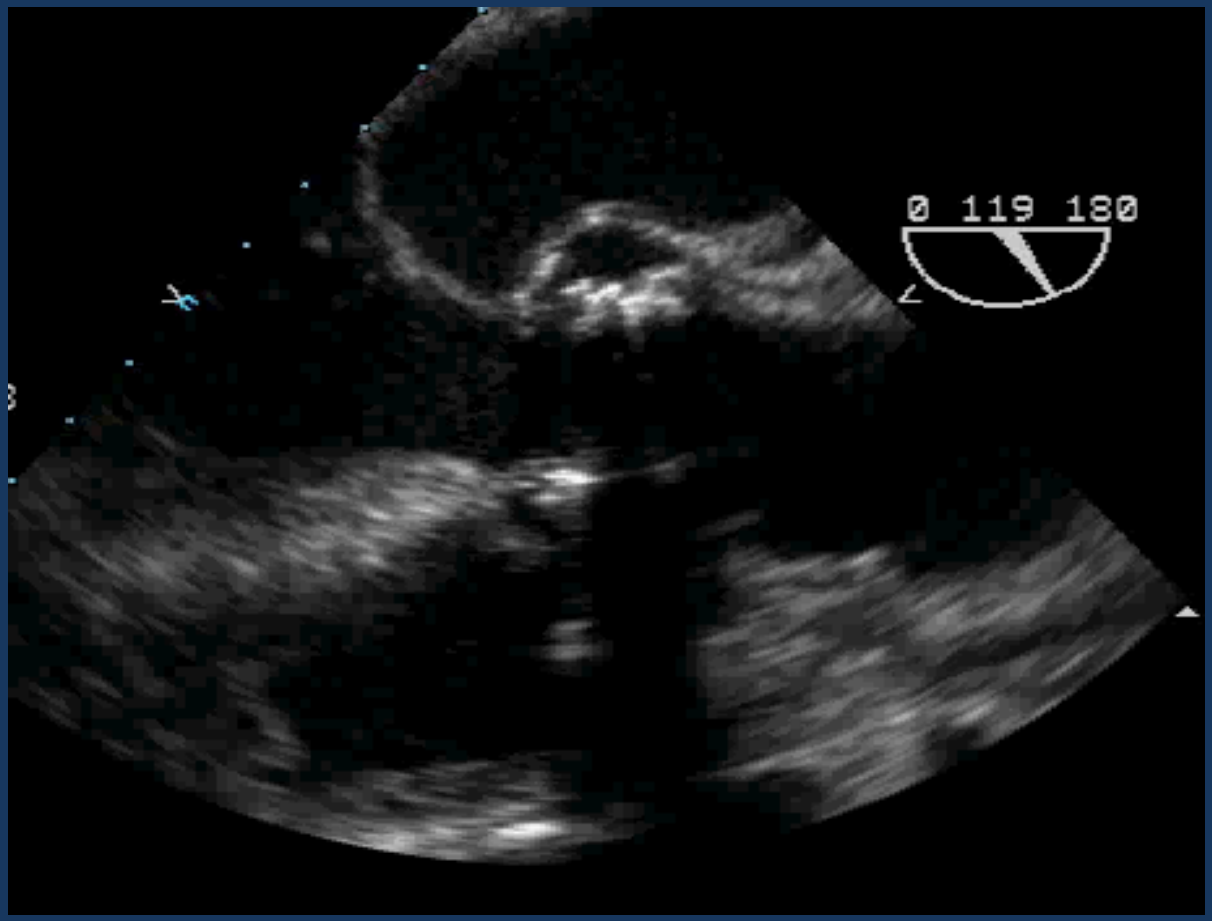
Answer: B. Aortic Root Abscess





Question 8

WHAT DOES THIS CLIP DEMONSTRATE?



A. Prosthetic valve stenosis

B. Prosthetic valve endocarditis

C. Mitral valve endocarditis

D. Aortic dissection

Question 8 - Followup

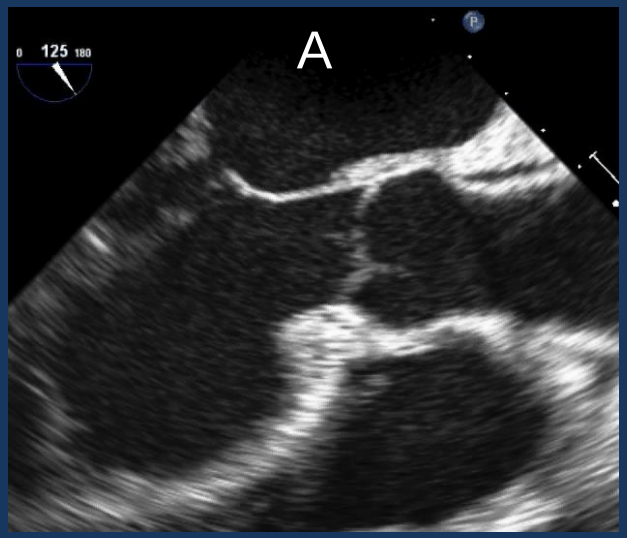
Answer: B

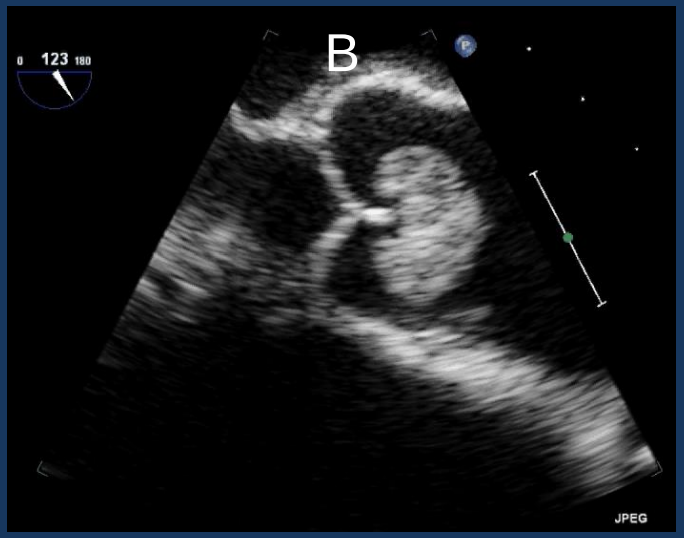
New prosthetic valve dehiscence or rocking motion is endocarditis until proven otherwise

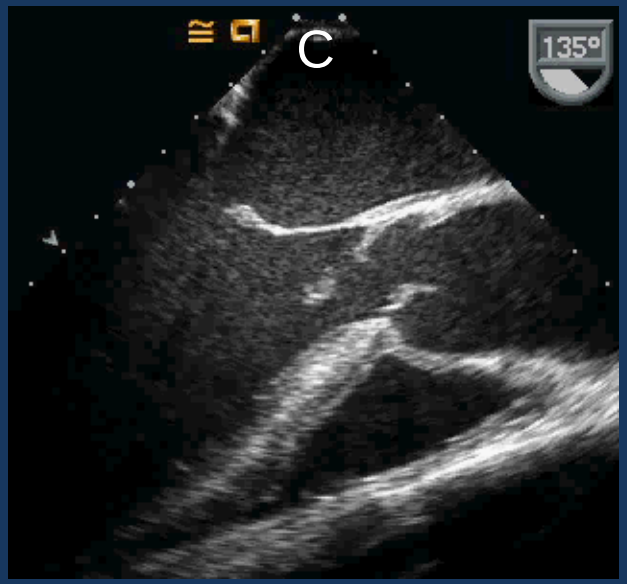
Attention to surrounding structures for evidence of extension of infection

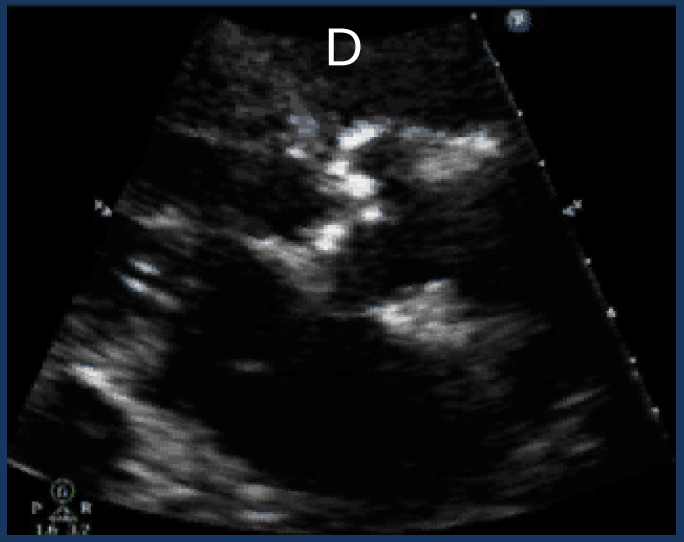
Question 9

WHICH IS MOST LIKELY ENDOCARDITIS?









A.

B.

C.

D.

Question 9 - Followup

Answer: C