


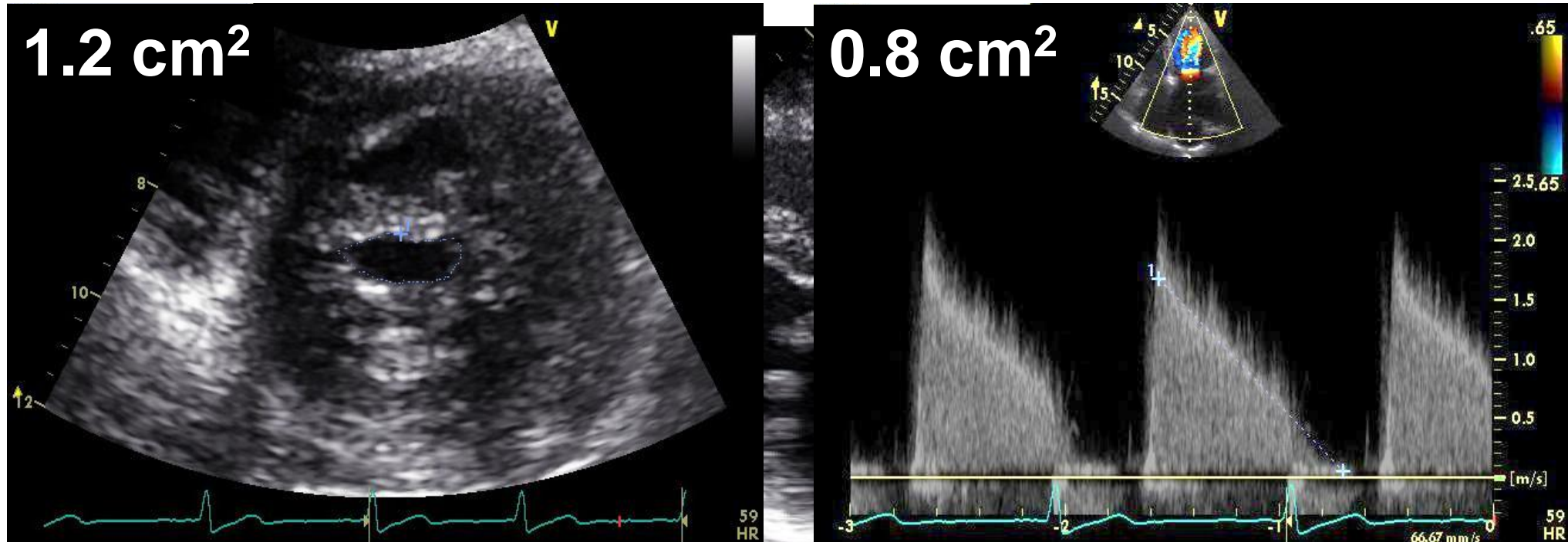


Valvular Heart Disease Case Study



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Department of Internal Medicine,
Seoul National University College of Medicine

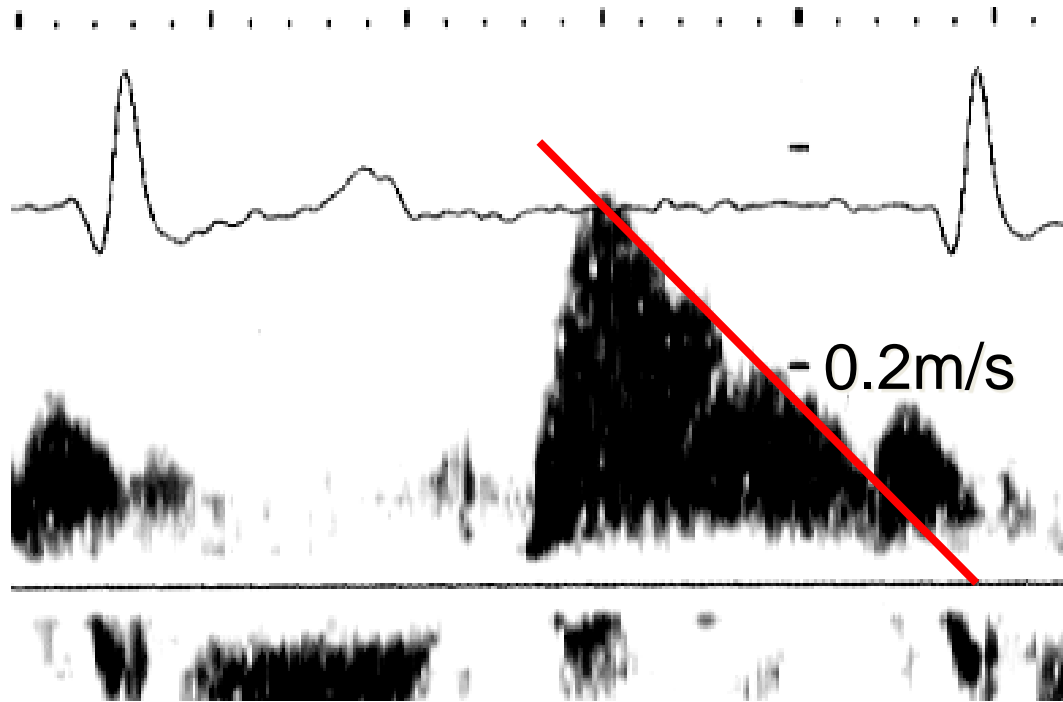
CASE 1: 62 YO Female with DOE



Moderate vs Severe MR

Orifice area

Pressure half time in MS



MVA 1.8cm²

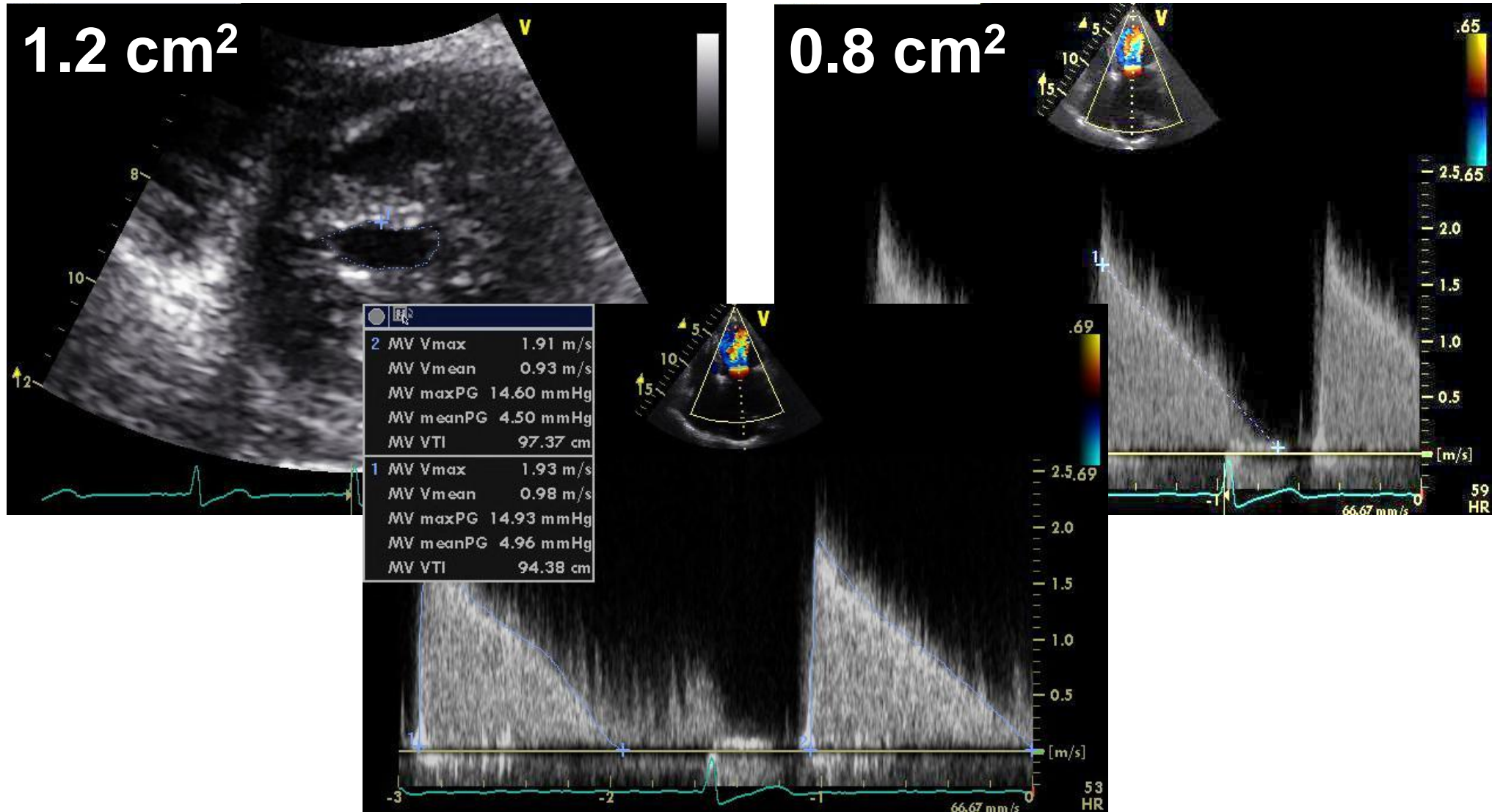
$$\text{PHT} = D \times 0.29$$

PHT : 120ms

DT : 414ms

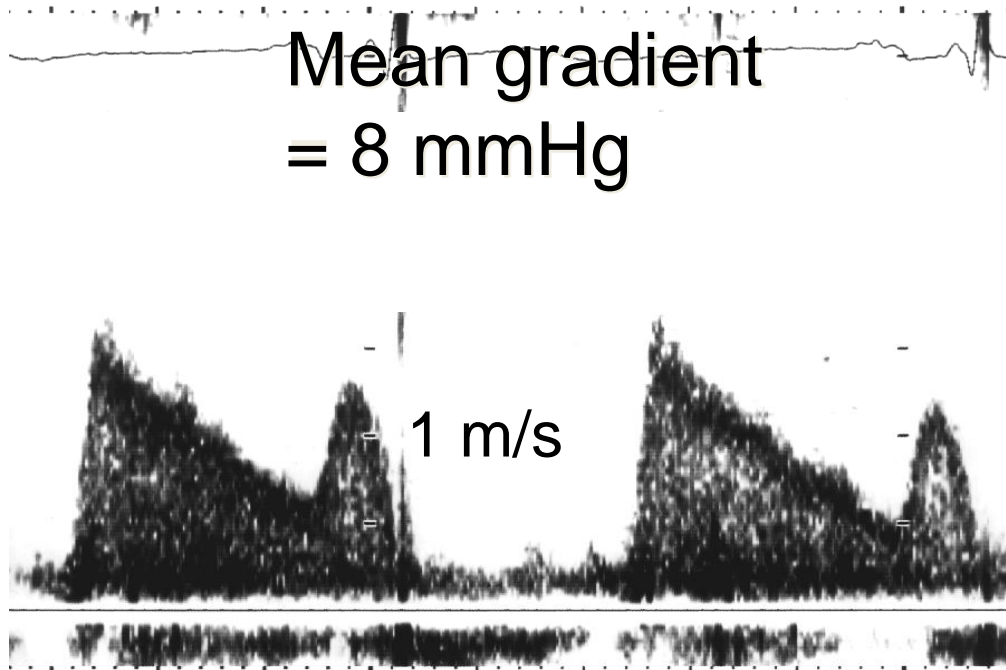
**Relaxation
abnormality**

CASE 1: 62 YO Female with DOE

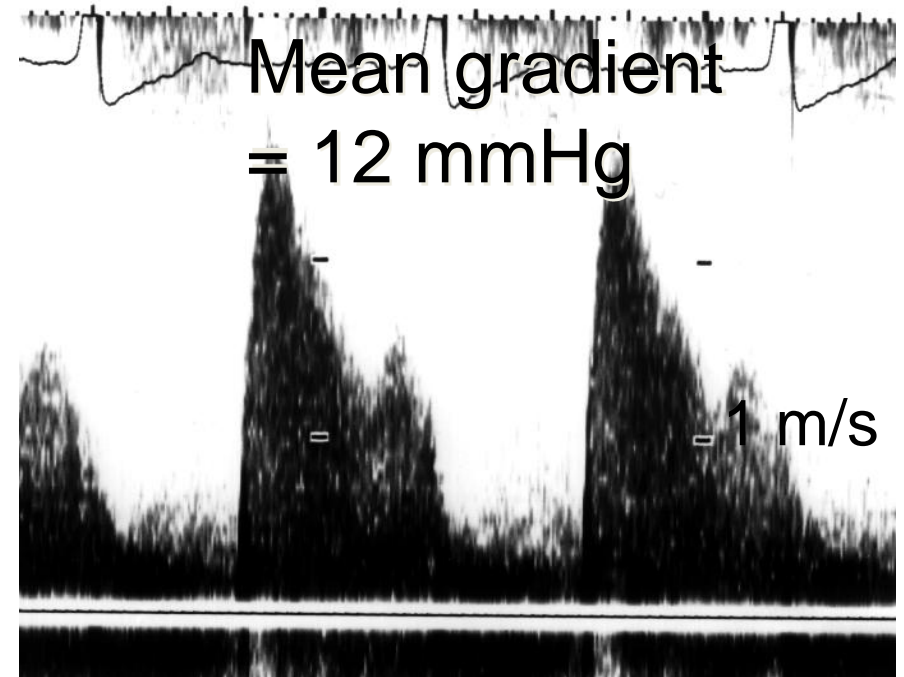


Pressure gradient : MV

MS



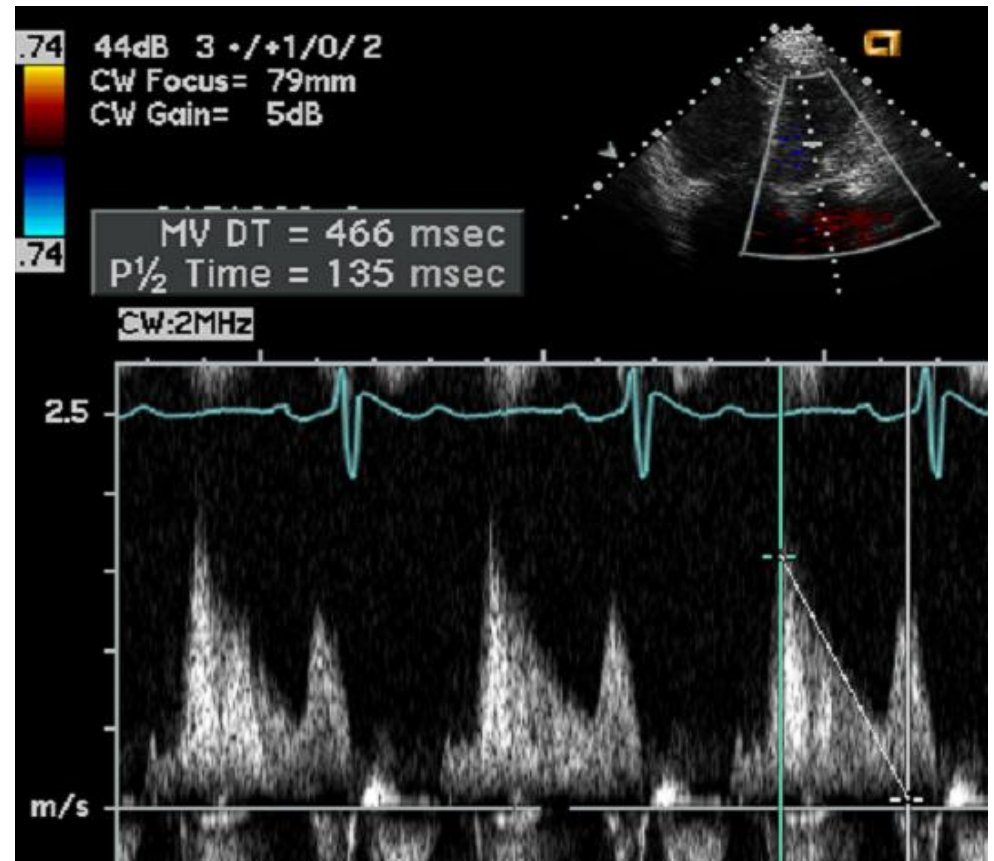
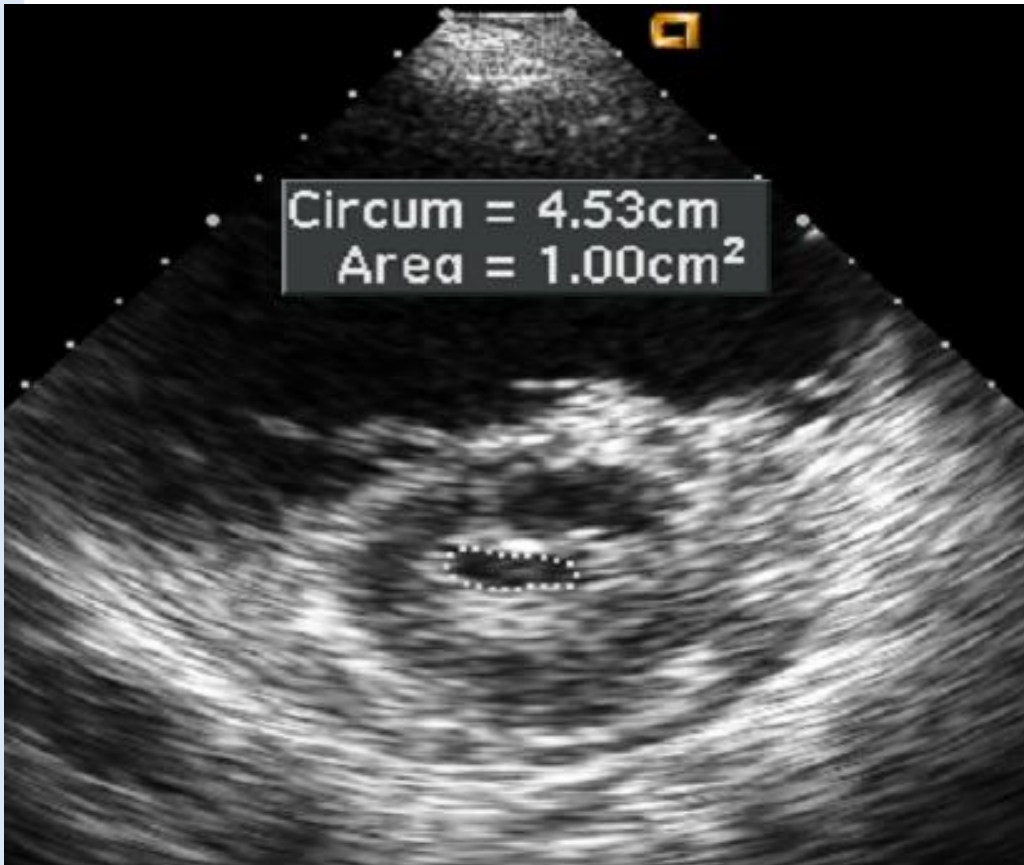
Severe MR



“ Pressure gradient dependent on the amount of flow ”

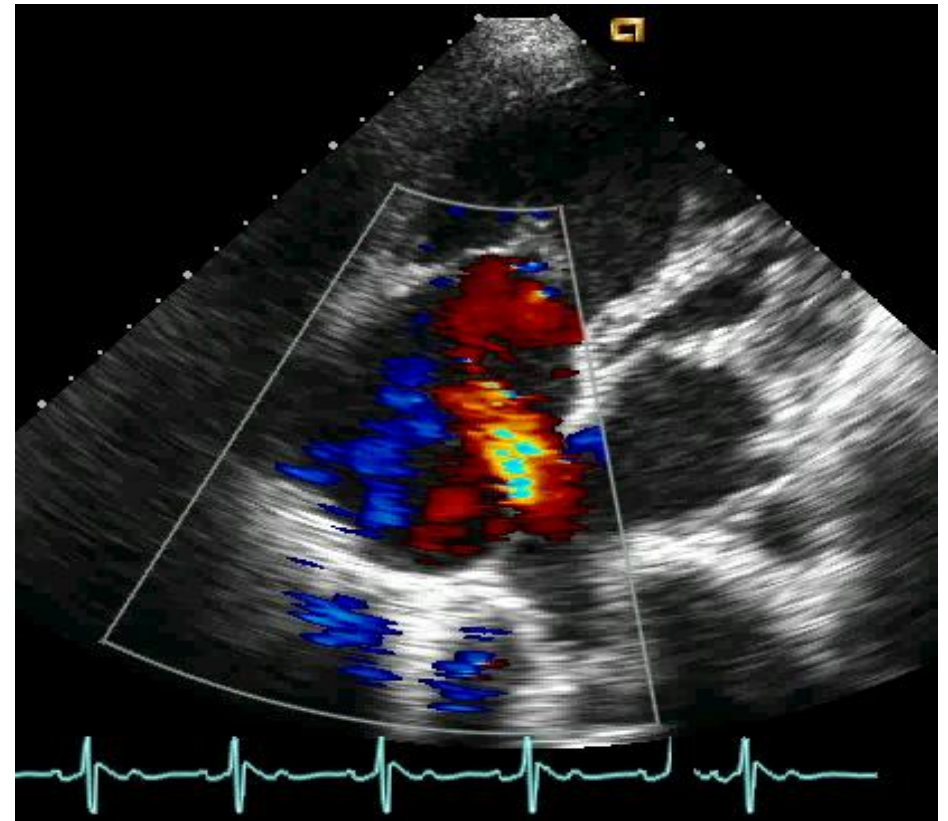
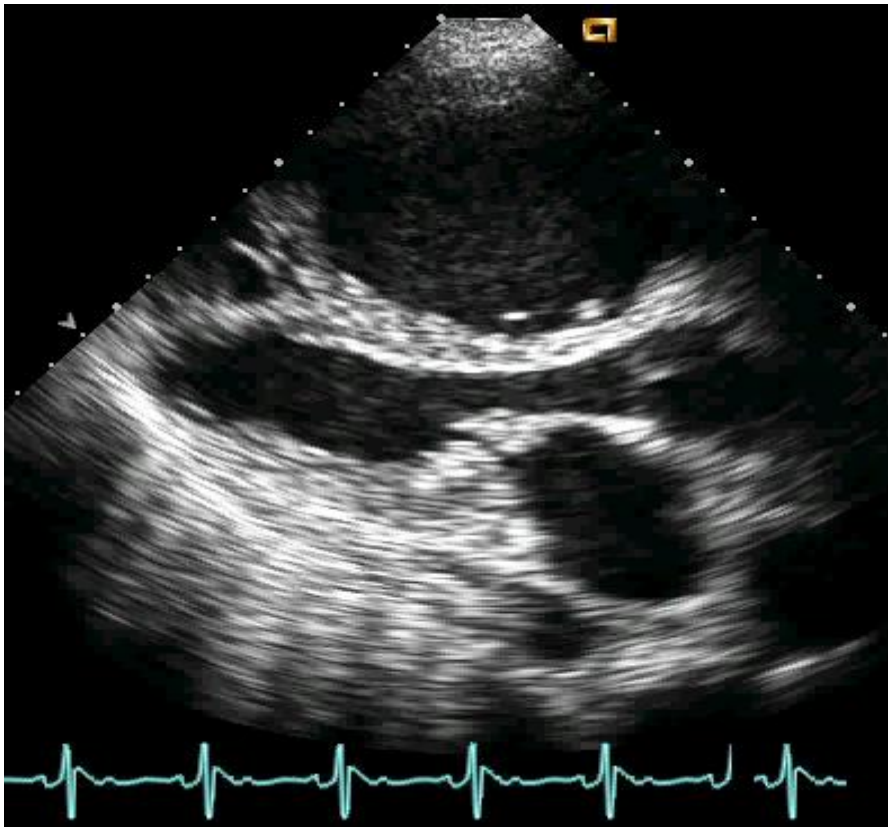
Orifice area

Pressure half time in MS

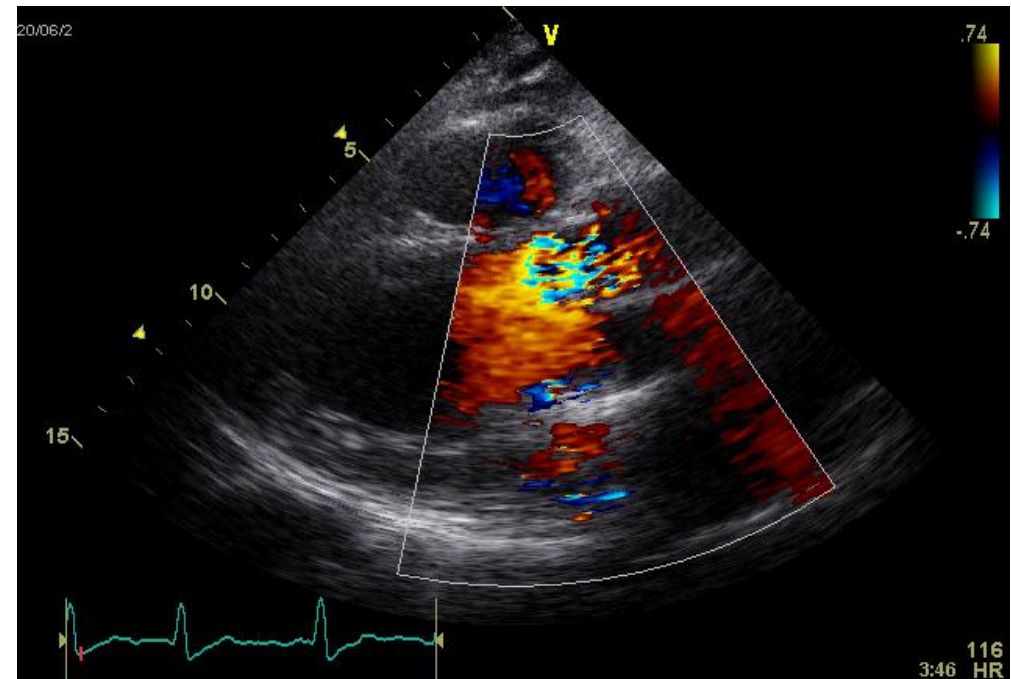
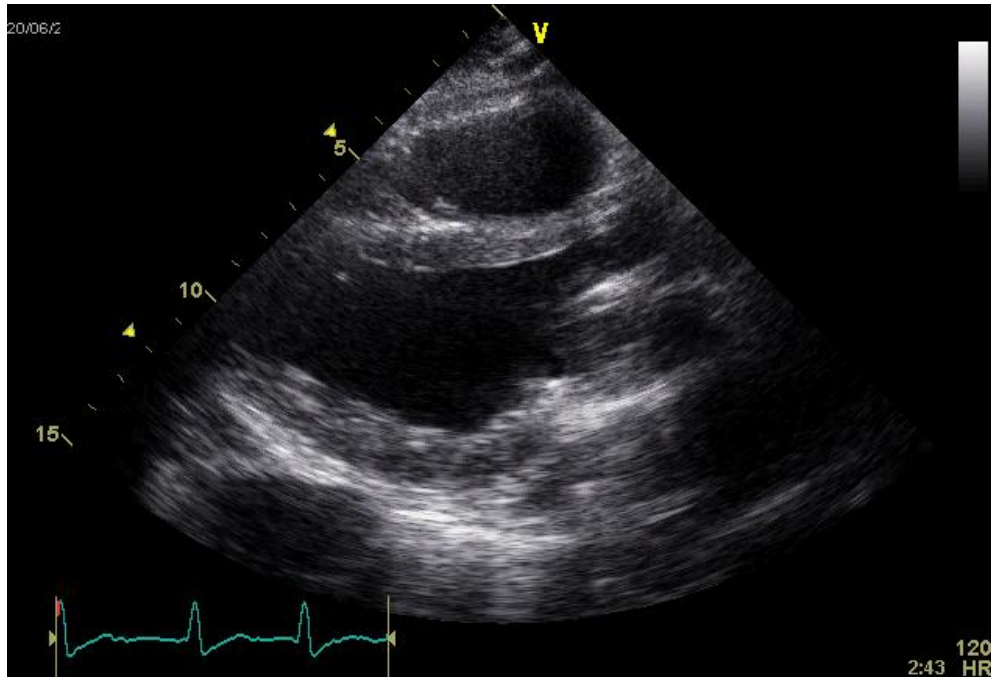


Orifice area

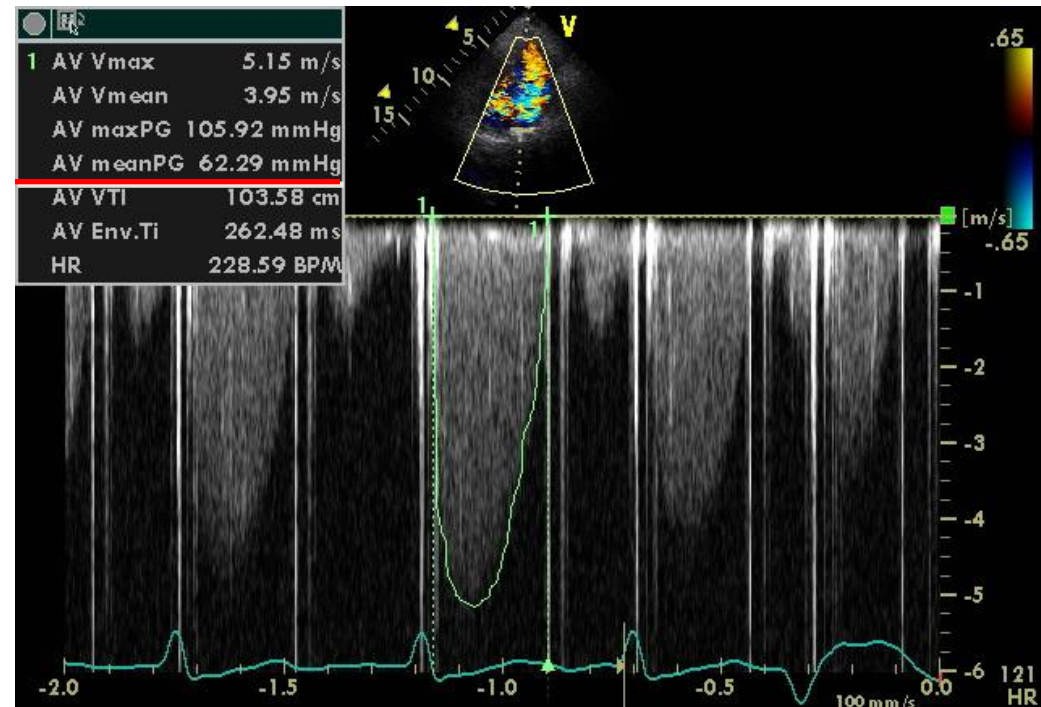
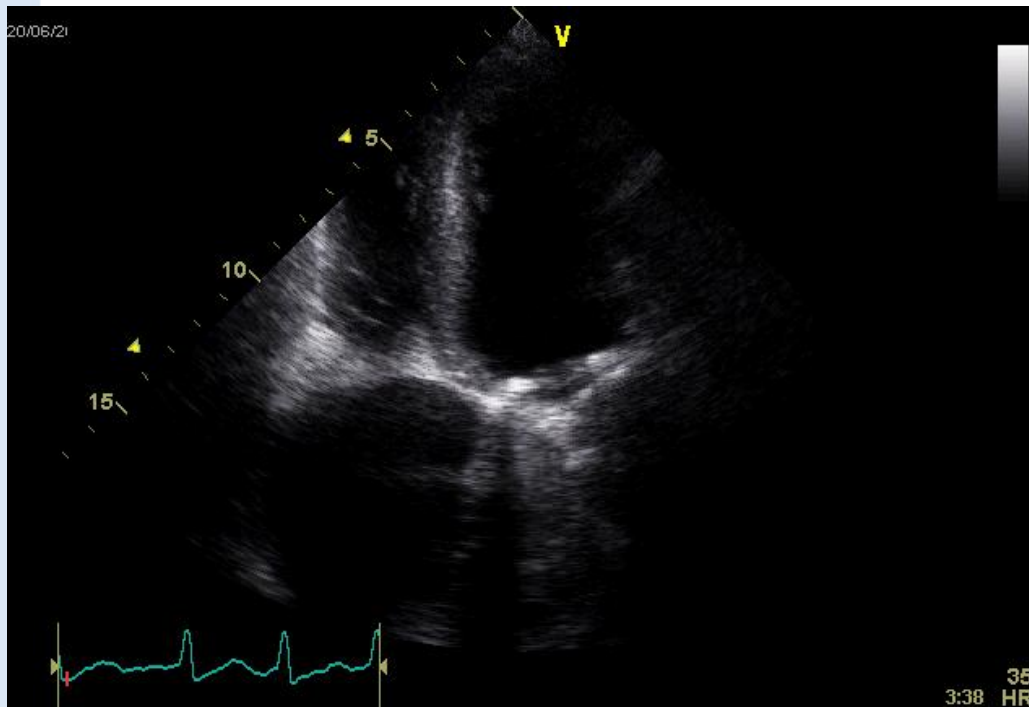
Pressure half time in MS

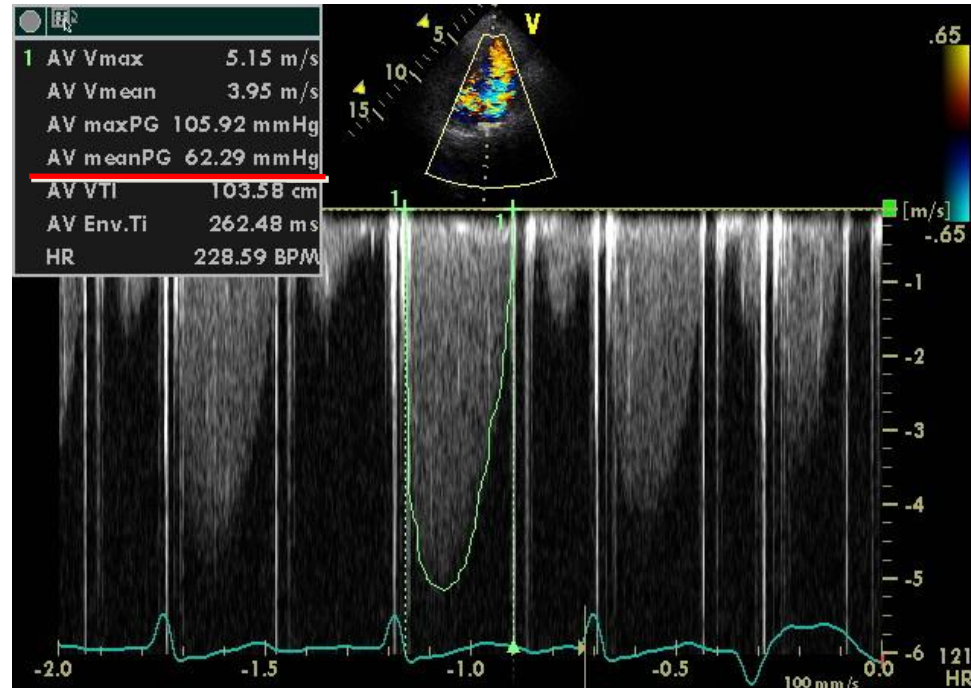


CASE 2: 65 YO Female s/p MVR and AVR



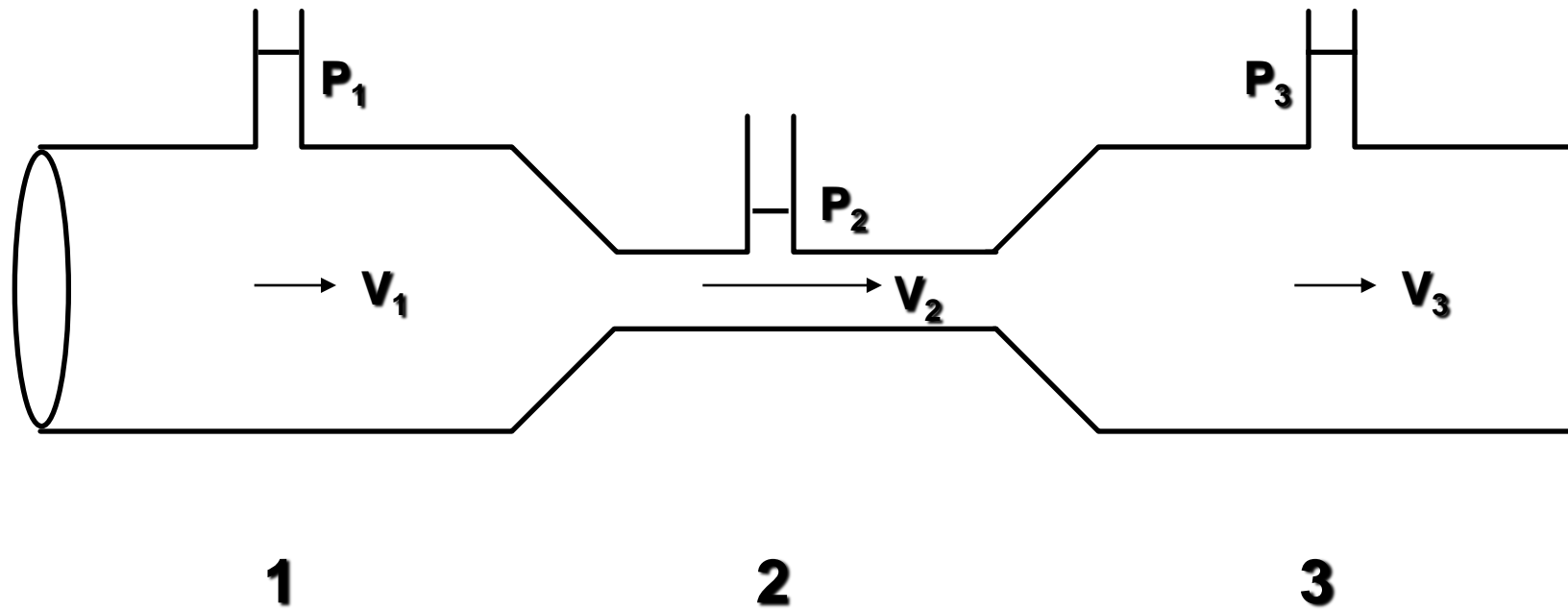
CASE 2: 65 YO Female s/p MVR and AVR





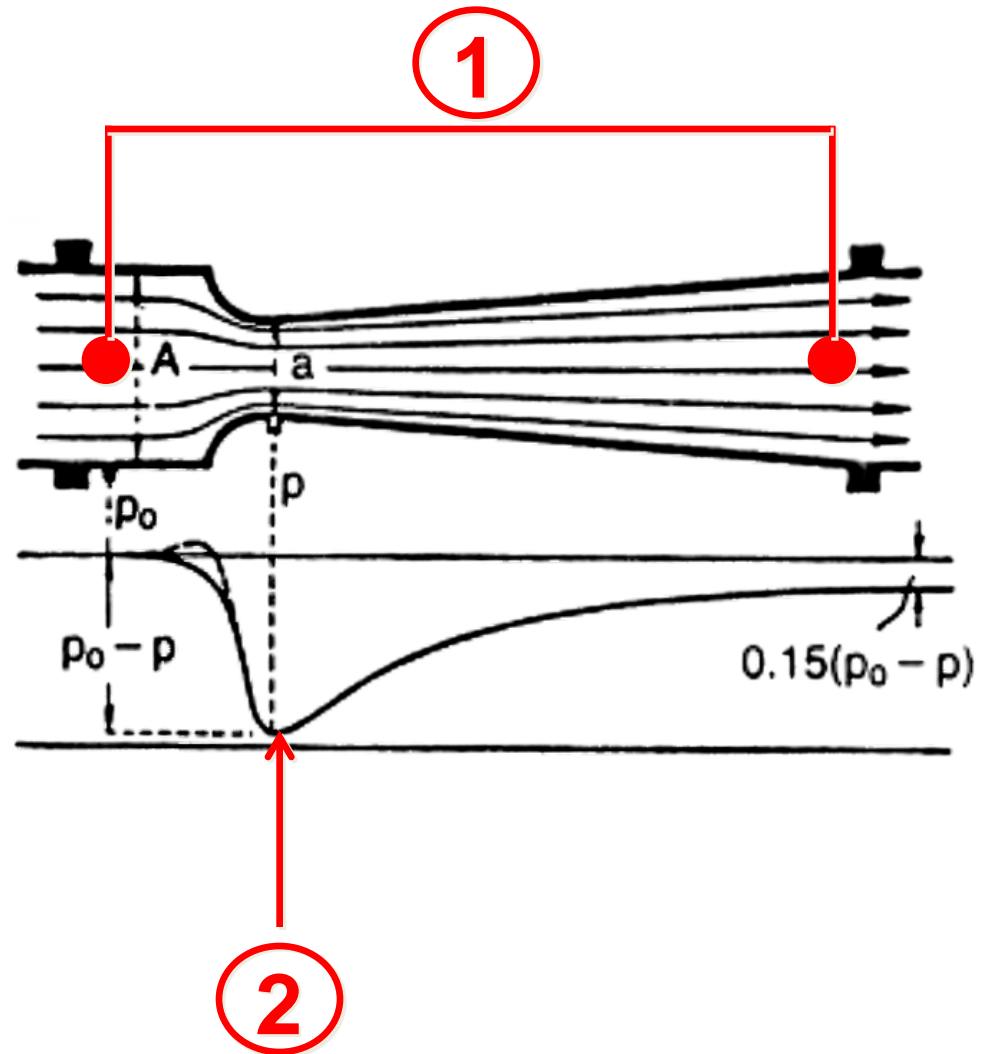
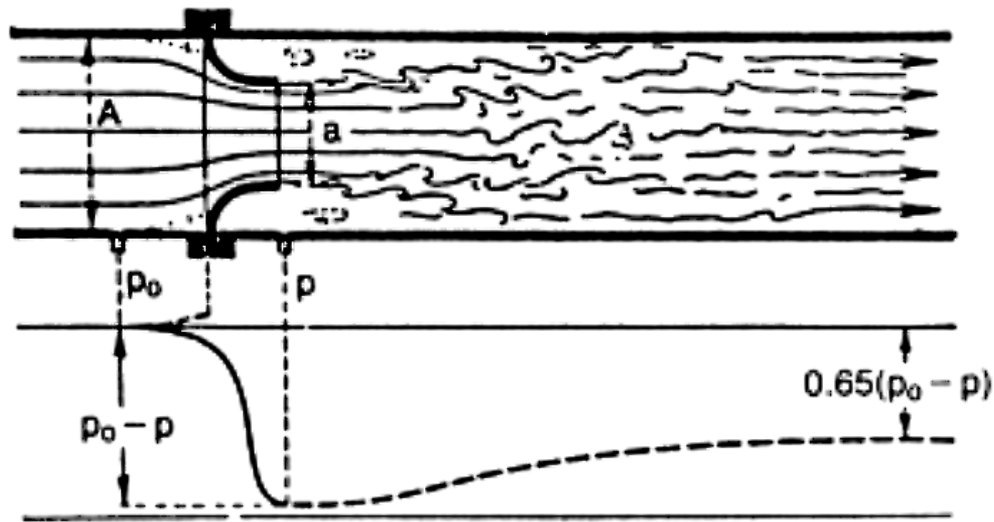
- 1) Beat to beat variation in Af
- 2) Valve size : CM 21mm

Pressure gradient

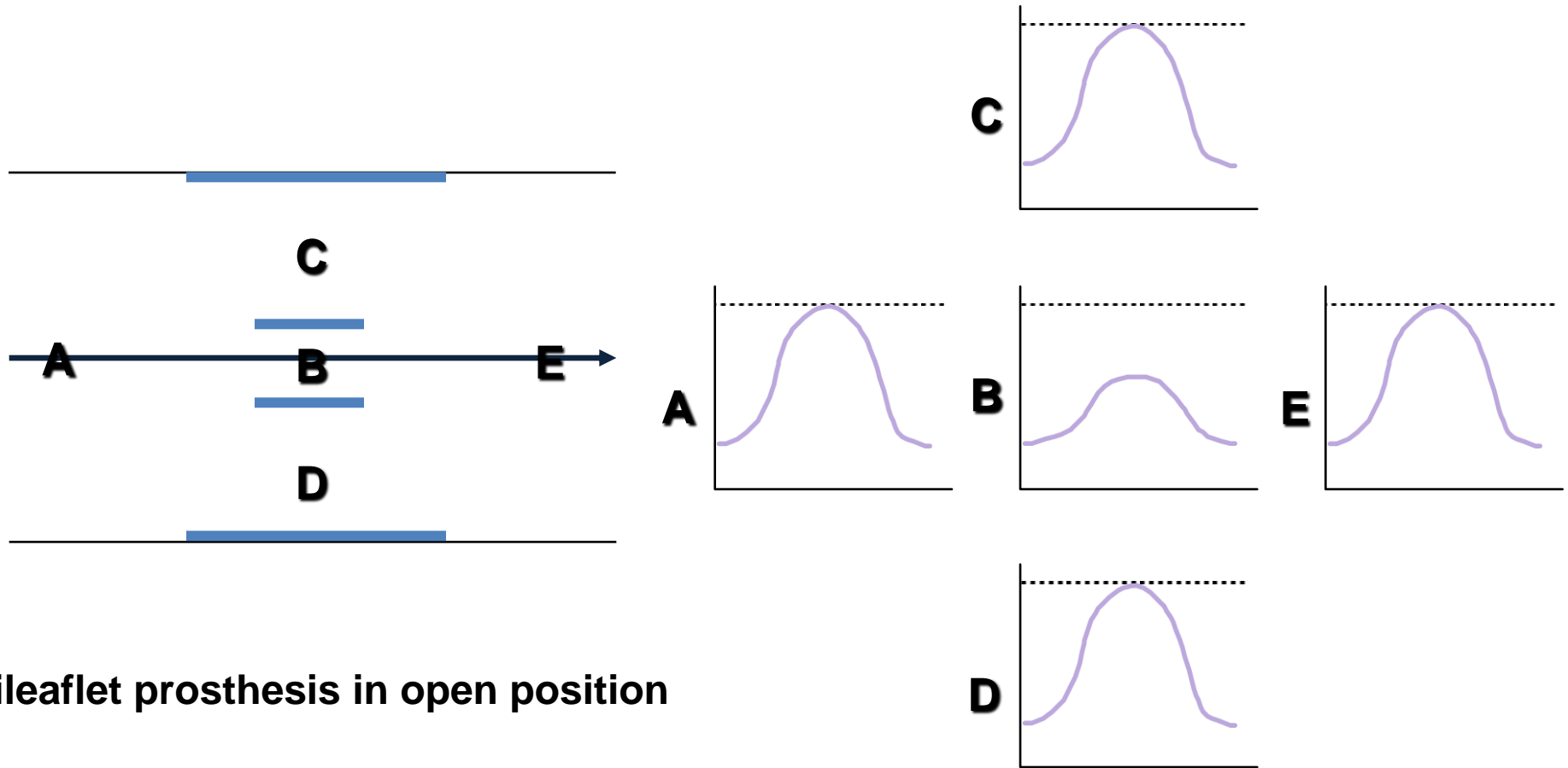


“ Pressure Recovery ”

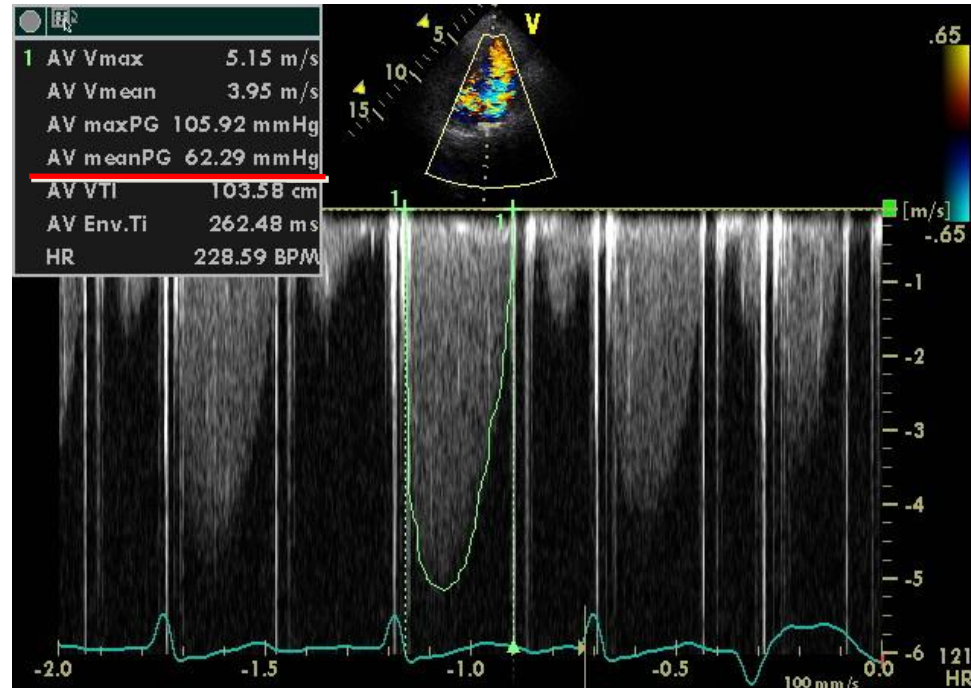
Pressure gradient



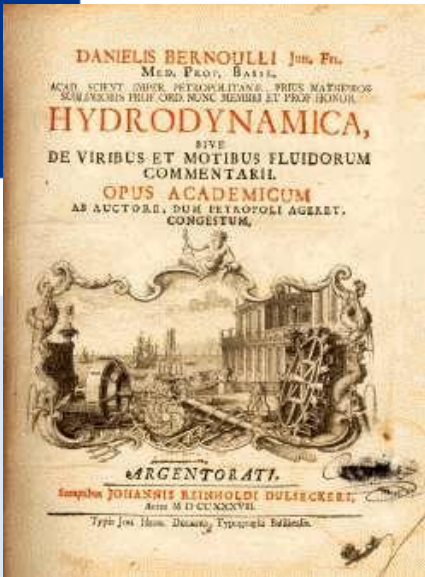
Pressure gradient



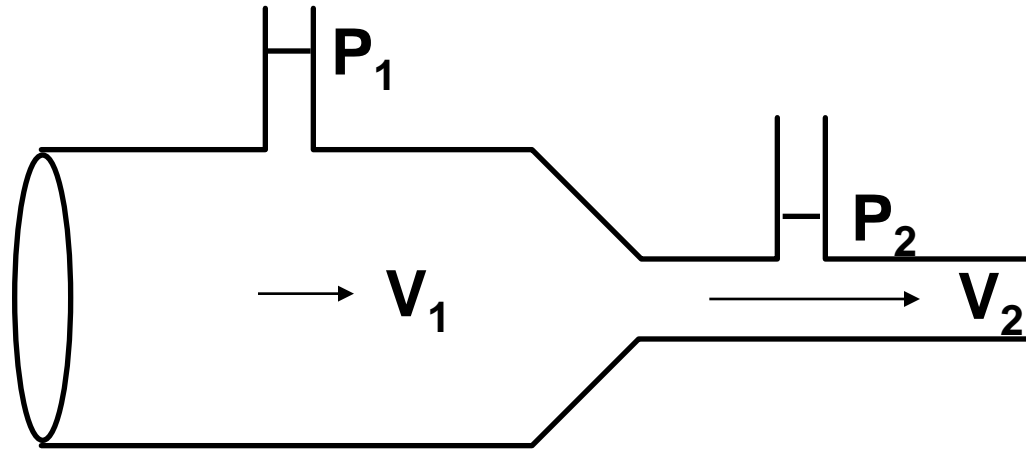
Bileaflet prosthesis in open position



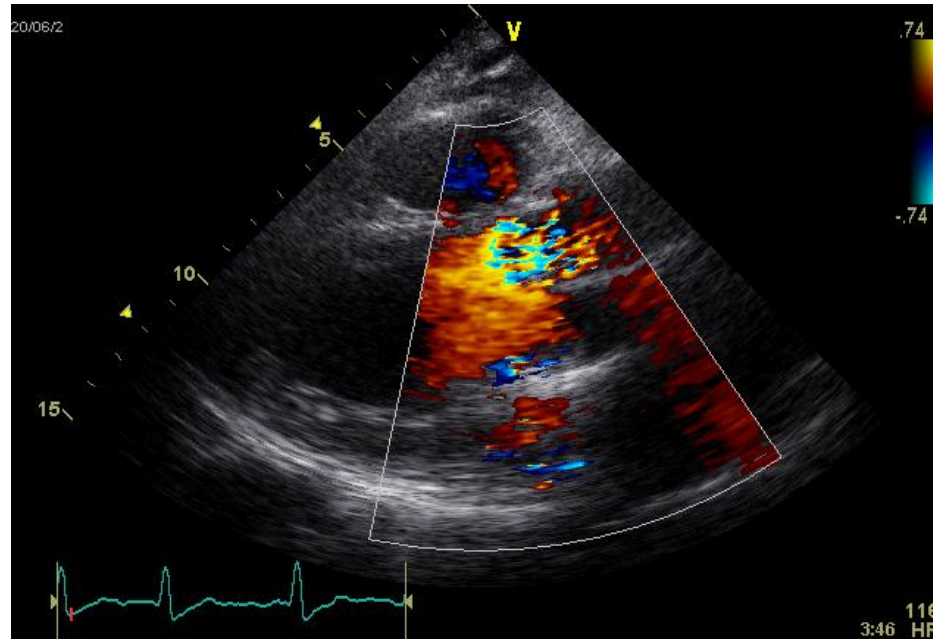
- 1) Beat to beat variation in Af
- 2) Valve size : CM 21mm
- 3) Local pressure drop in bileaflet prosthetic AV



Bernoulli Equation

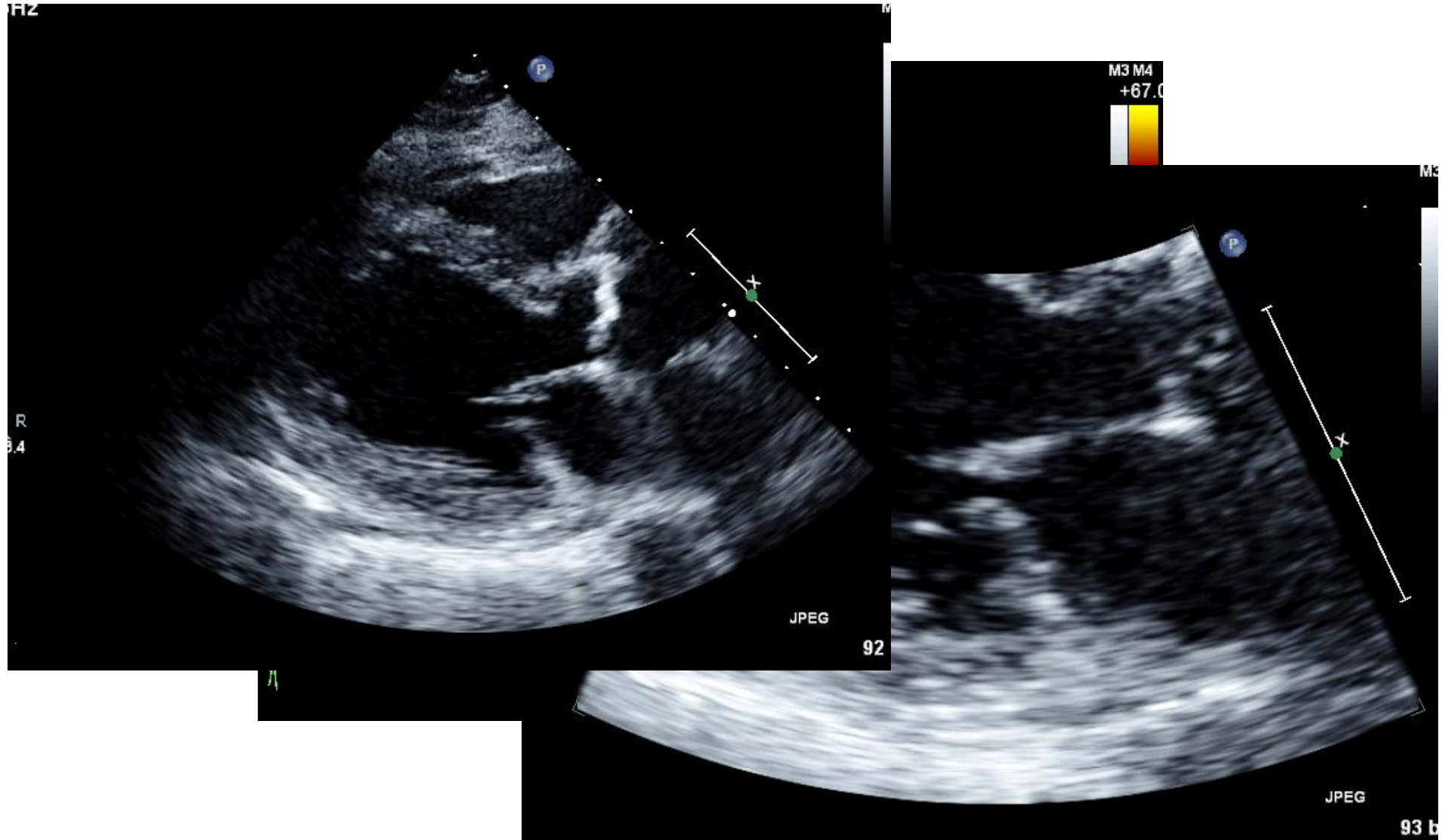


- $P_1 + \frac{1}{2} \rho V_1^2 = P_2 + \frac{1}{2} \rho V_2^2$
- $P_1 - P_2 = \frac{1}{2} \rho (V_2^2 - V_1^2)$!!
- $\frac{1}{2} \rho \approx 4 \rightarrow P_1 - P_2 = 4(V_2^2 - V_1^2) \approx 4 V_2^2$
 $\Delta p \approx 4v^2$

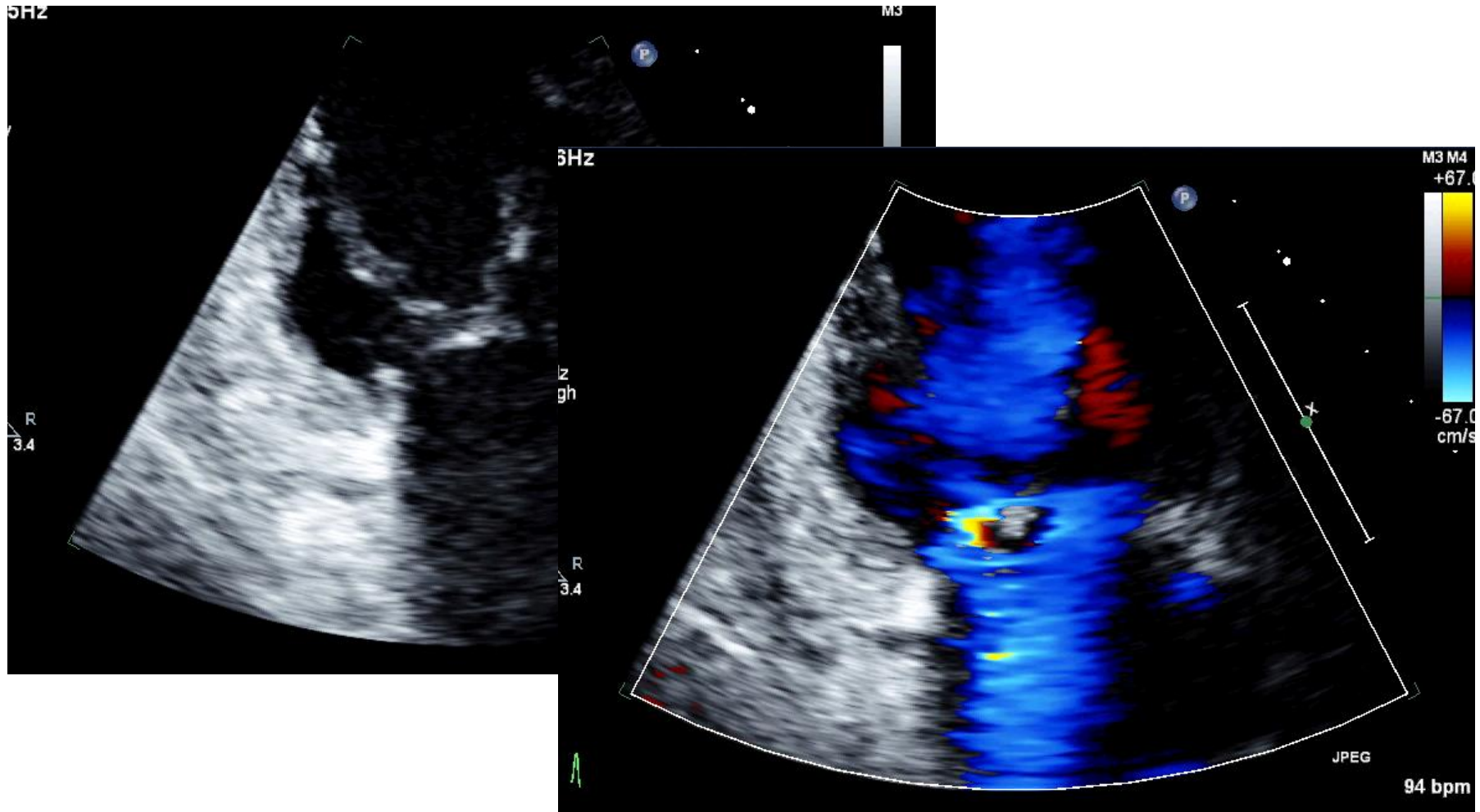


- 1) Beat to beat variation in Af
- 2) Valve size : CM 21mm
- 3) Local pressure drop in bileaflet prosthetic AV
- 4) V1 ? : Hb 7.2 g/dL

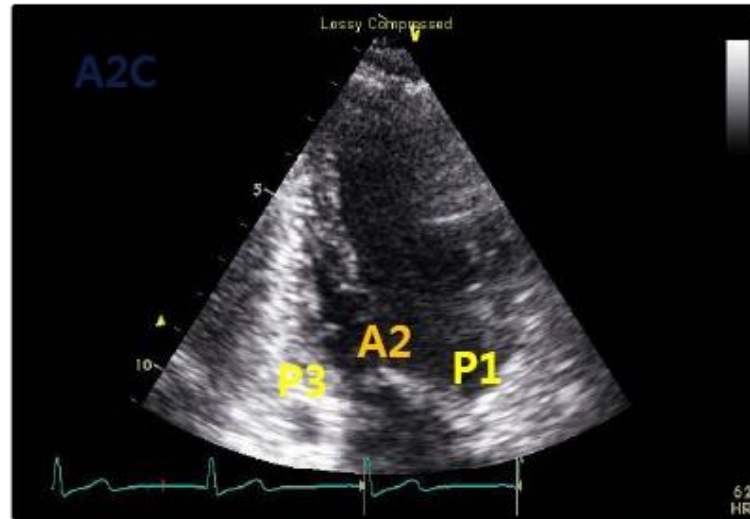
CASE 3: 69 YO Female with sudden dyspnea



CASE 3: 69 YO Female with sudden dyspnea



MR localization



A1



P1



A1&P1



A3



P3

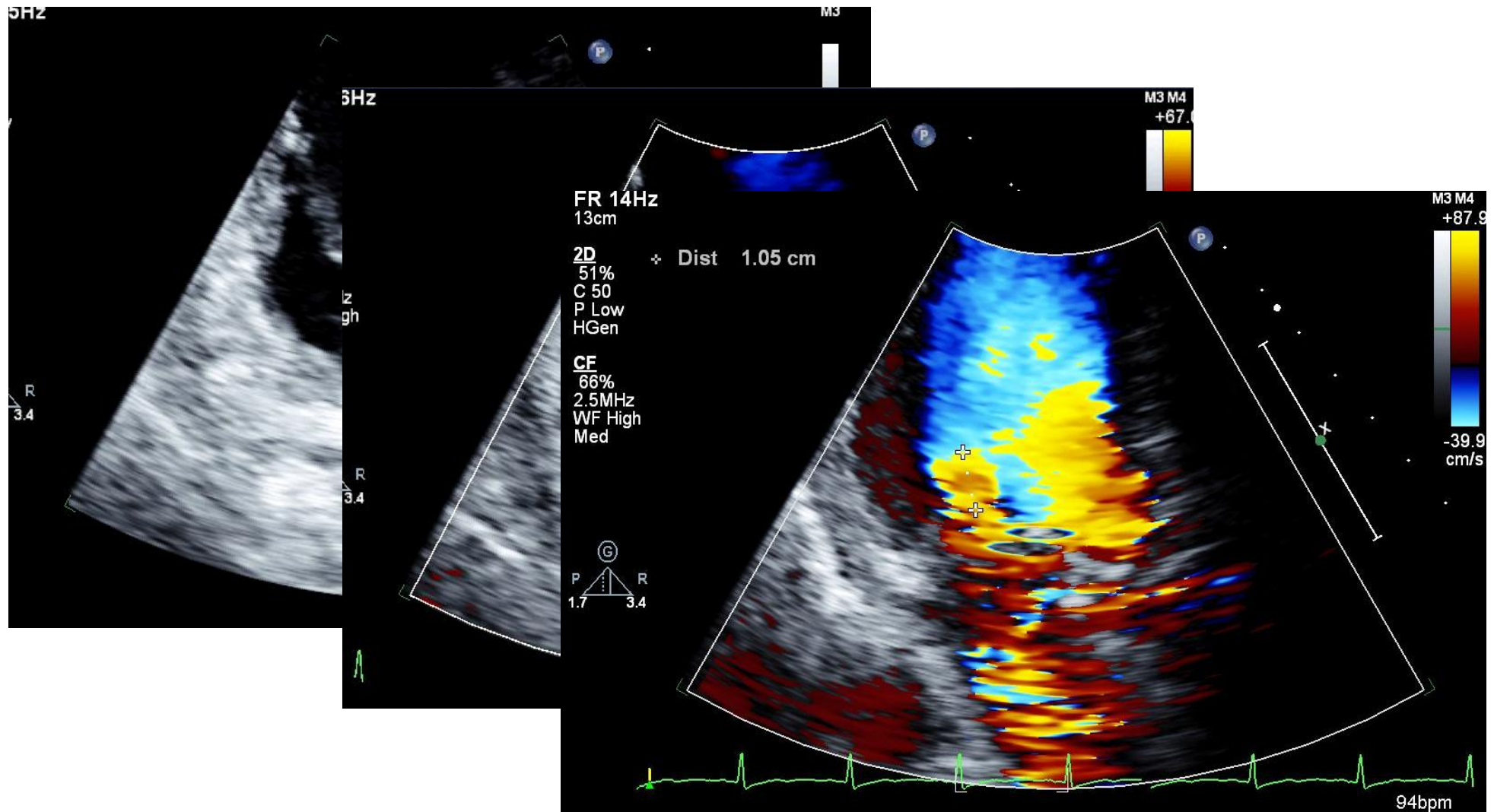


A3&P3

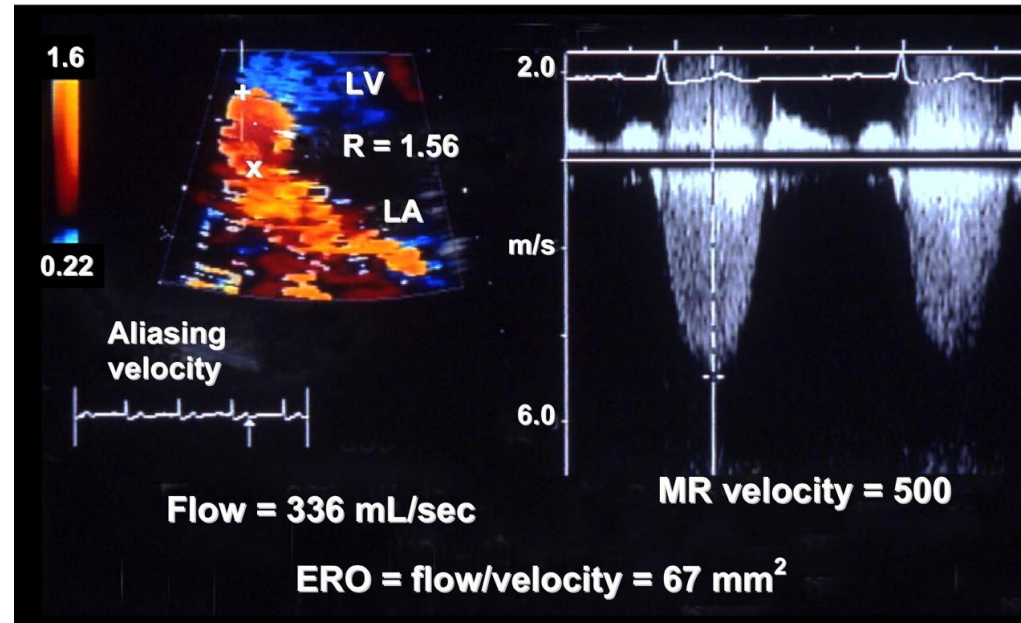


A2&P2

CASE 3: 69 YO Female with sudden dyspnea



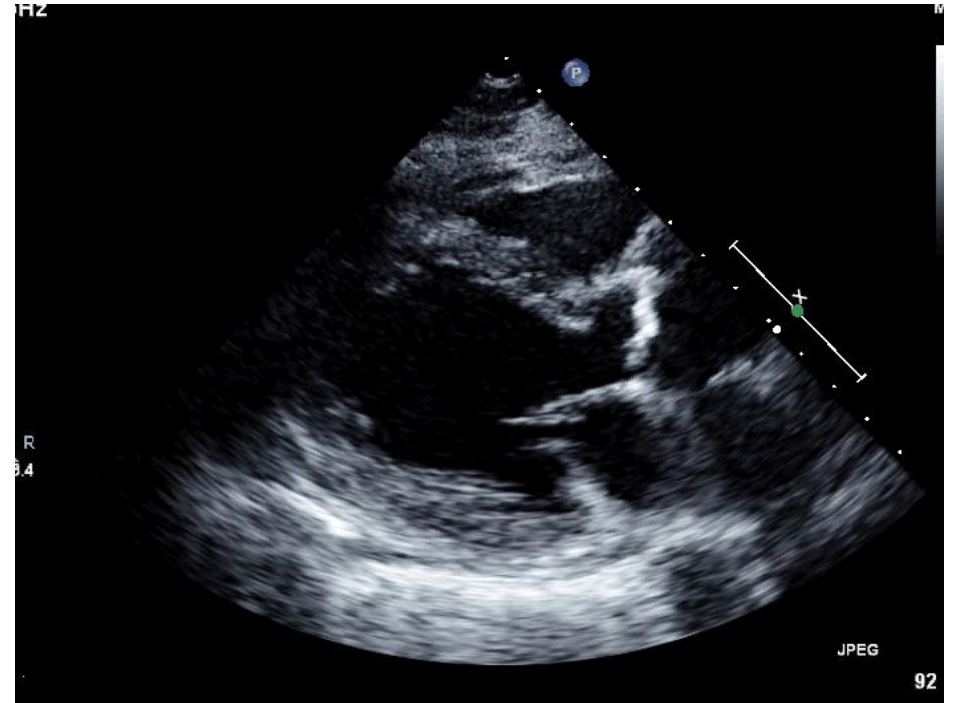
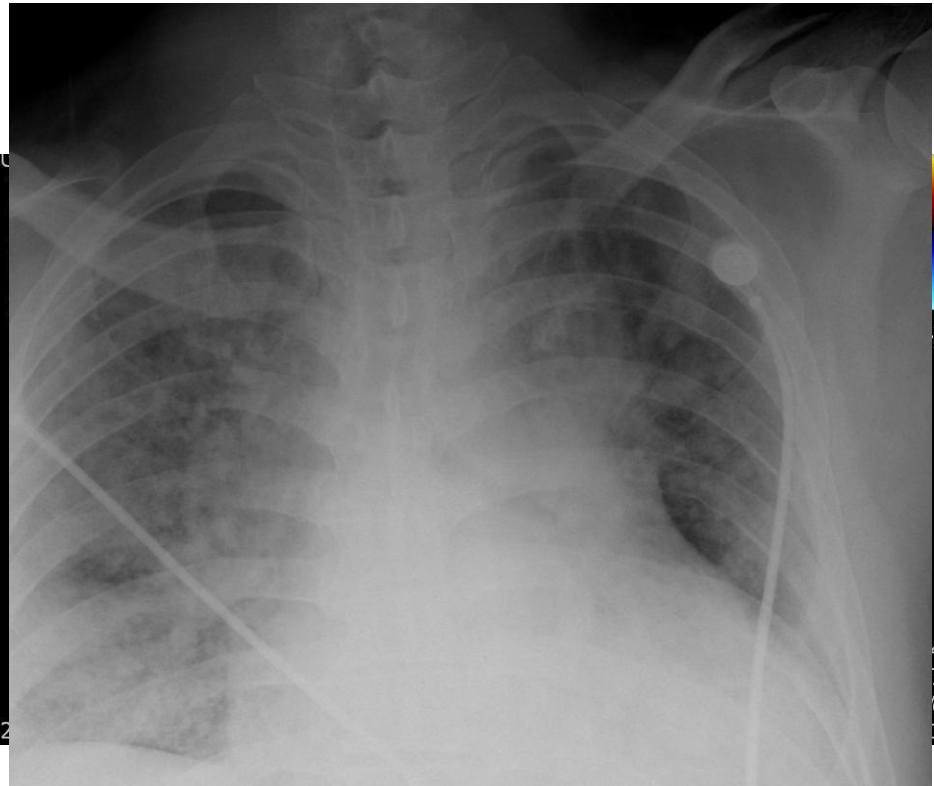
PISA: MR quantitation



Simplified PISA:

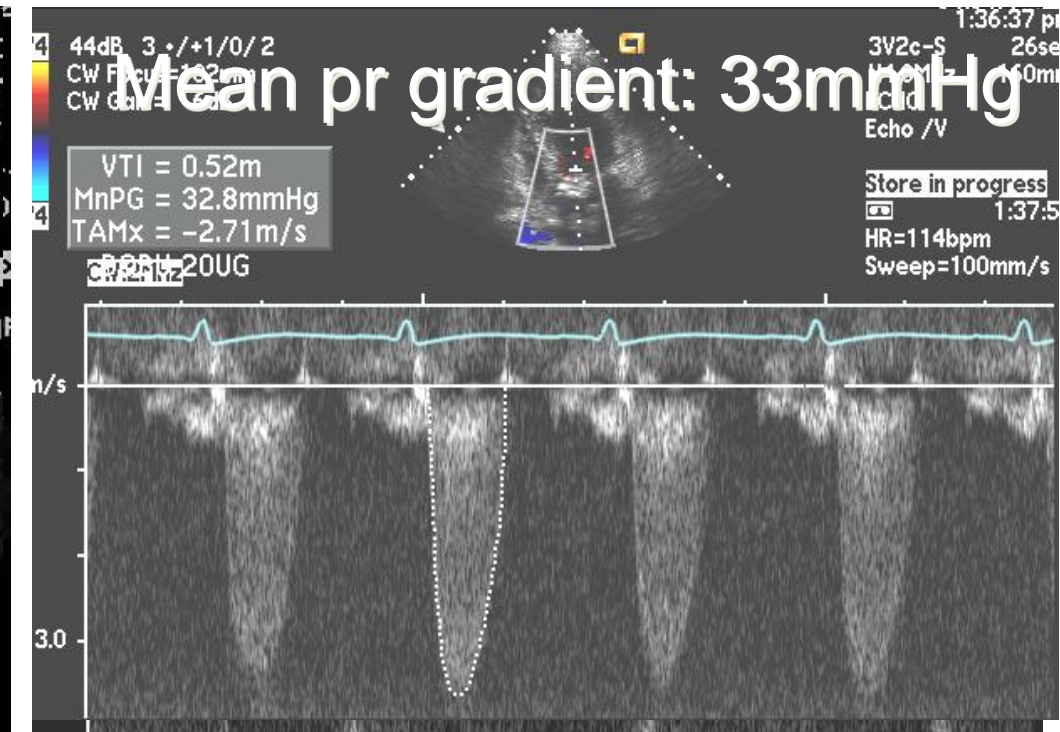
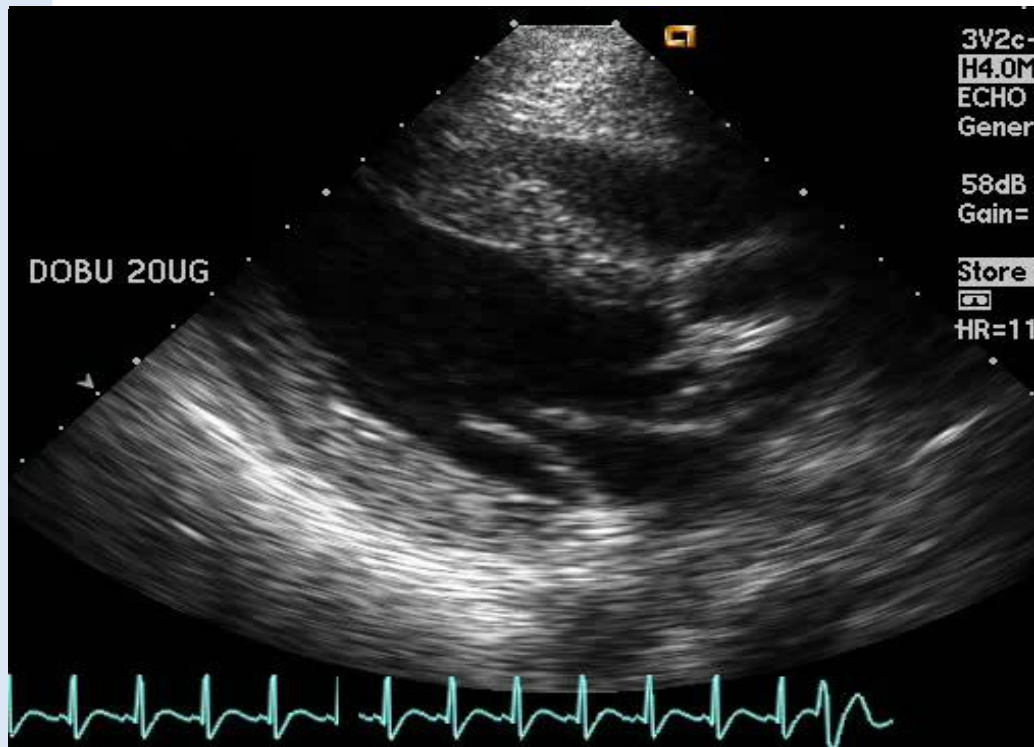
- Set the aliasing velocity at 40cm/s
- Assuming LA/LV pr difference of 100mmHg
- **ERO = $r^2/2$**

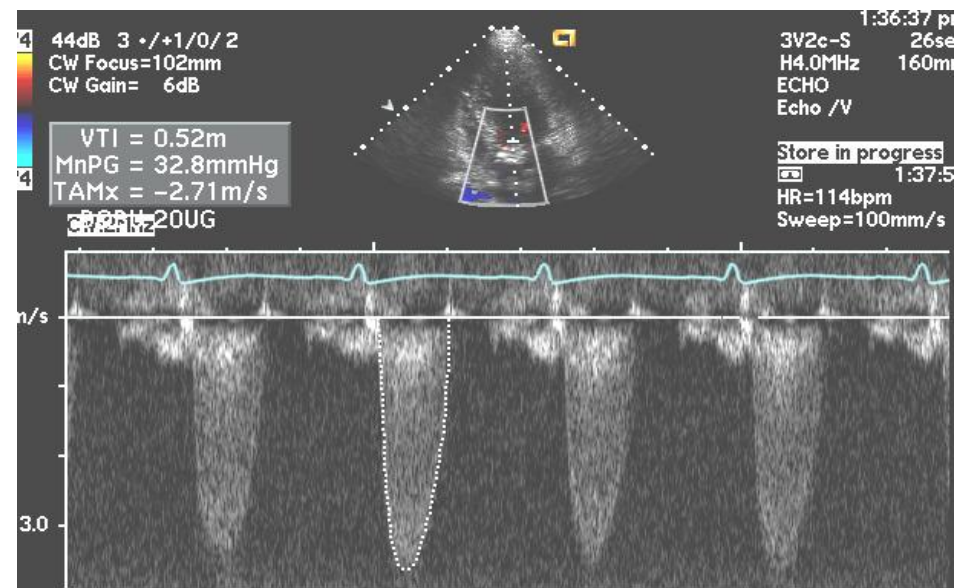
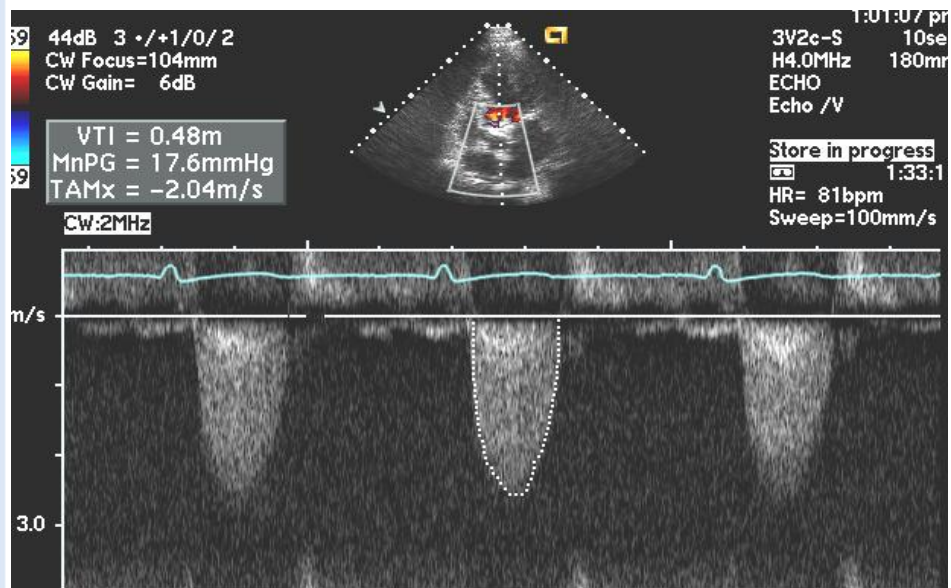
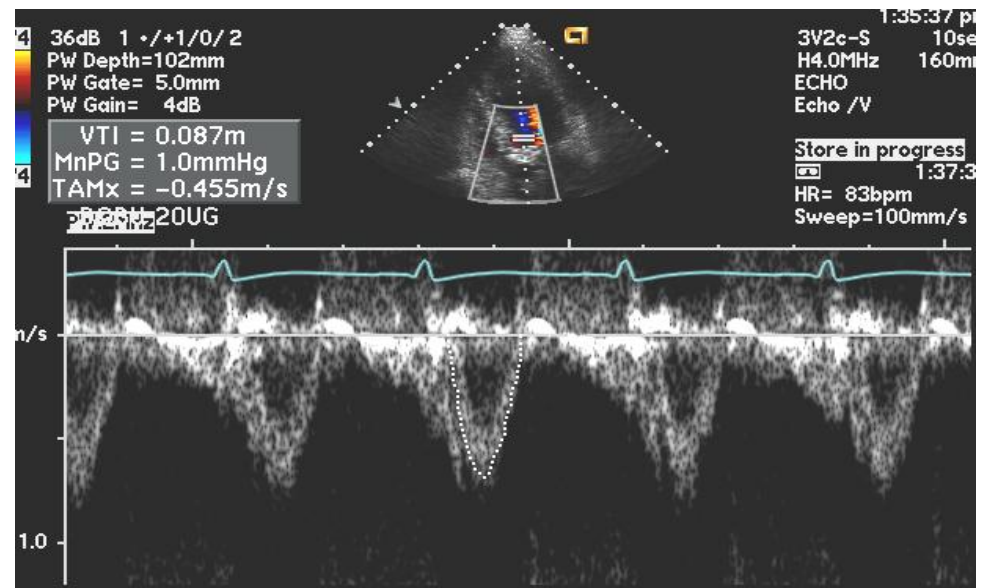
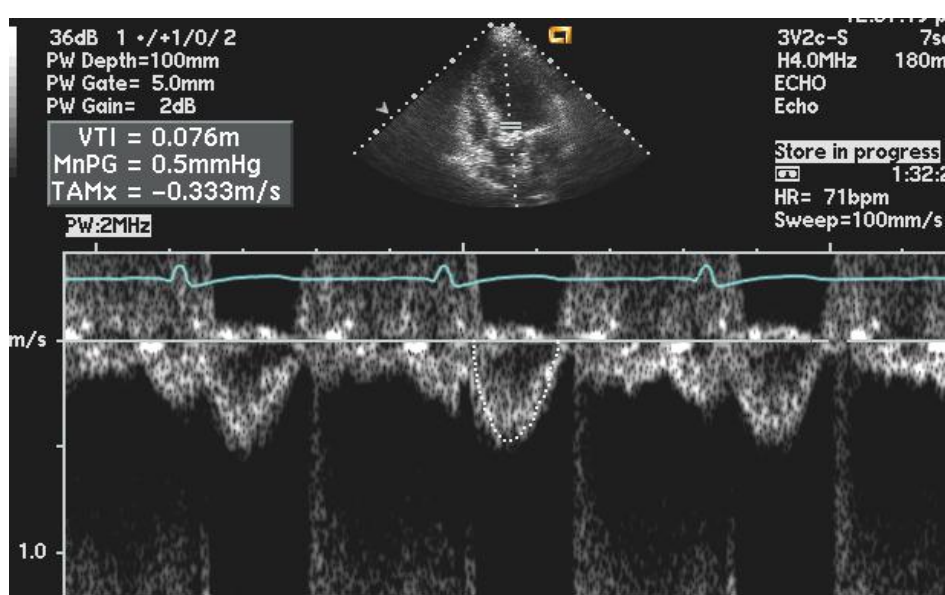
CASE 3: 69 YO Female with sudden dyspnea



“ P₃ prolapse with severe MR ”

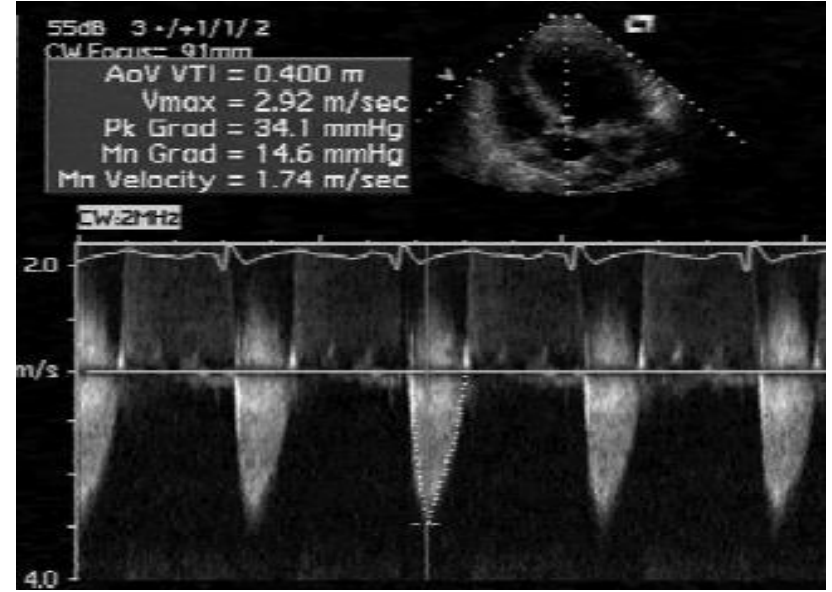
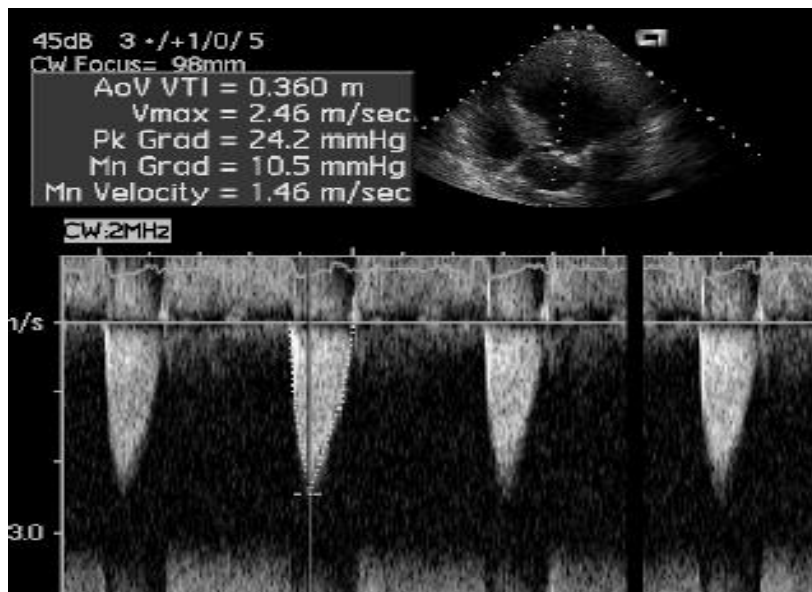
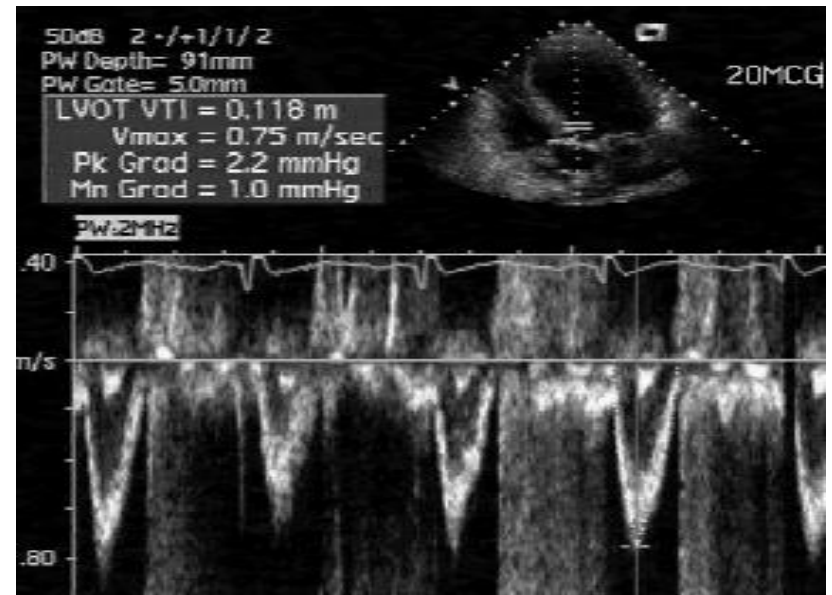
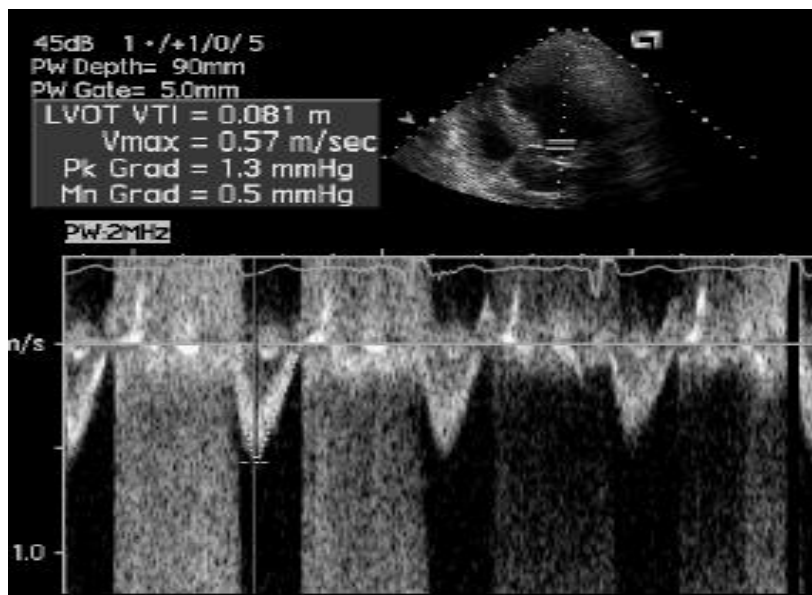
CASE 4: 88 YO Male with dysnea





$$AVA = 3.14 * 8/48 = 0.52\text{cm}^2$$

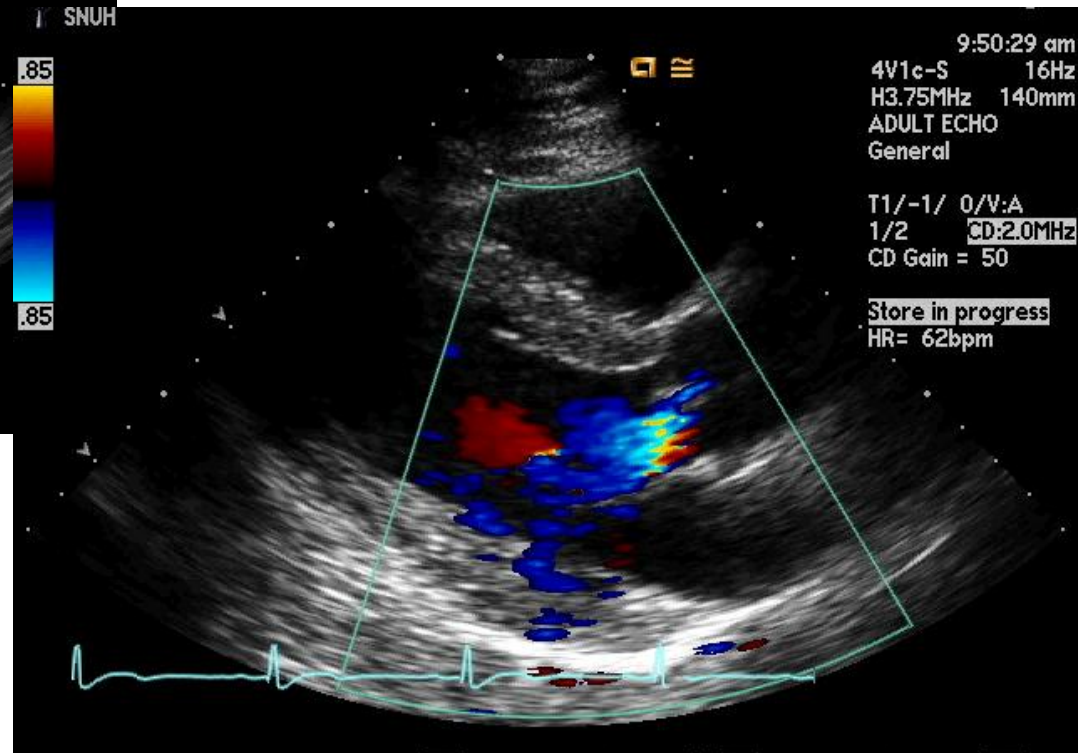
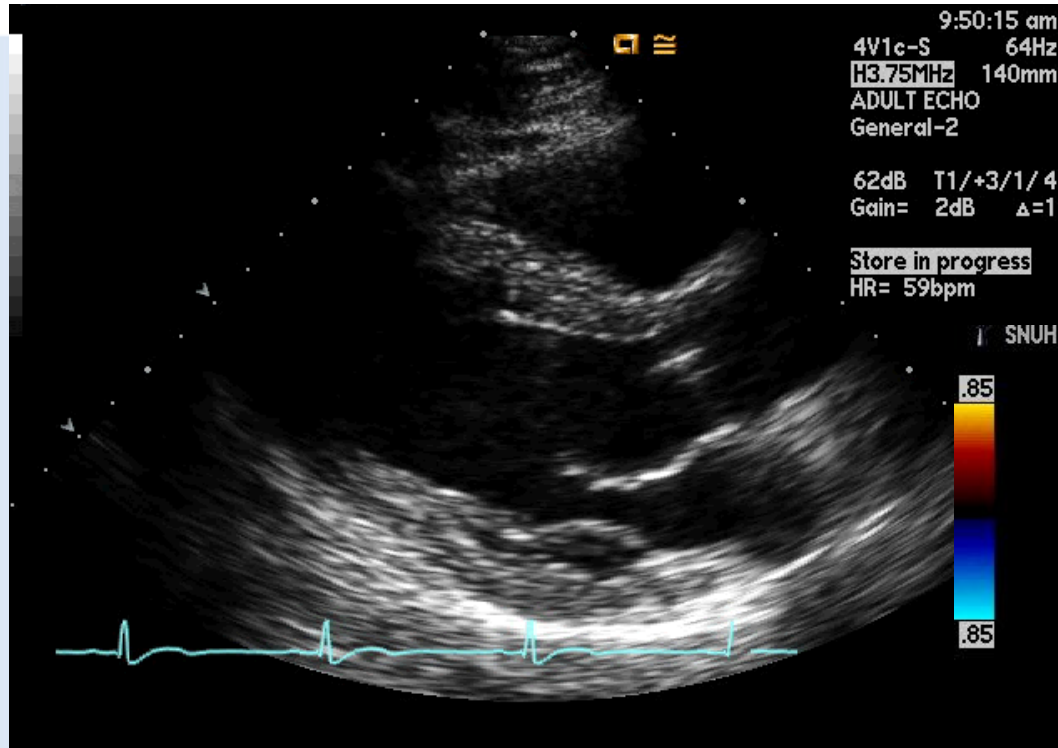
$$AVA = 3.14 * 9/52 = 0.54\text{cm}^2$$



$$AVA = 3.14 * 8/36 = 0.7 \text{ cm}^2$$

$$AVA = 3.14 * 12/40 = 0.94 \text{ cm}^2$$

CASE 5: 34 YO Male with murmur



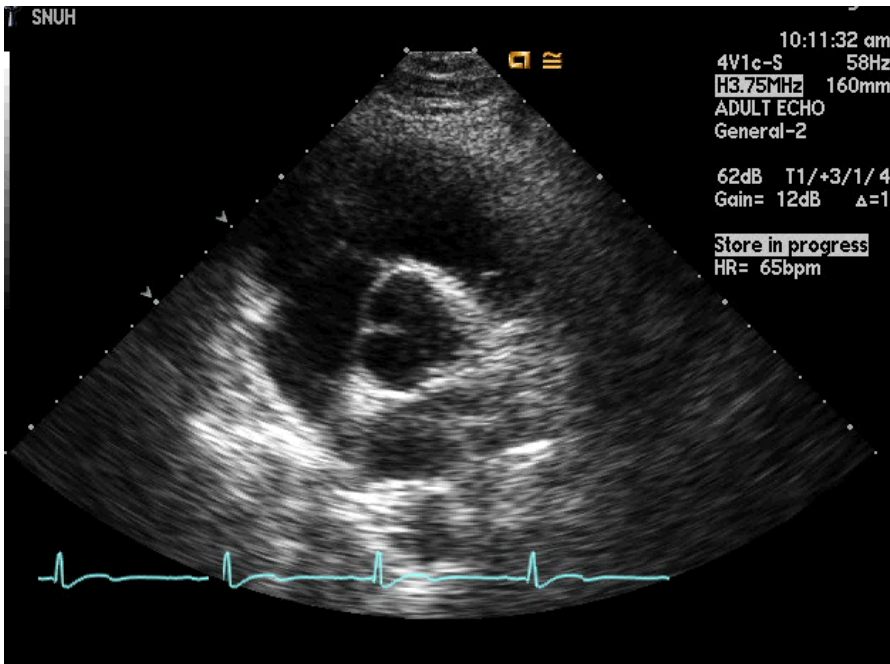
CASE 5: 34 YO Male with murmur

- Normal LV cavity size and systolic function: EF 65%
- Moderate AR

Mechanism of AV thickening and AR

- ✓ Rheumatic
- ✓ Degenerative
- ✓ Congenital
- ✓ Others

CASE 5: 34 YO Male with murmur



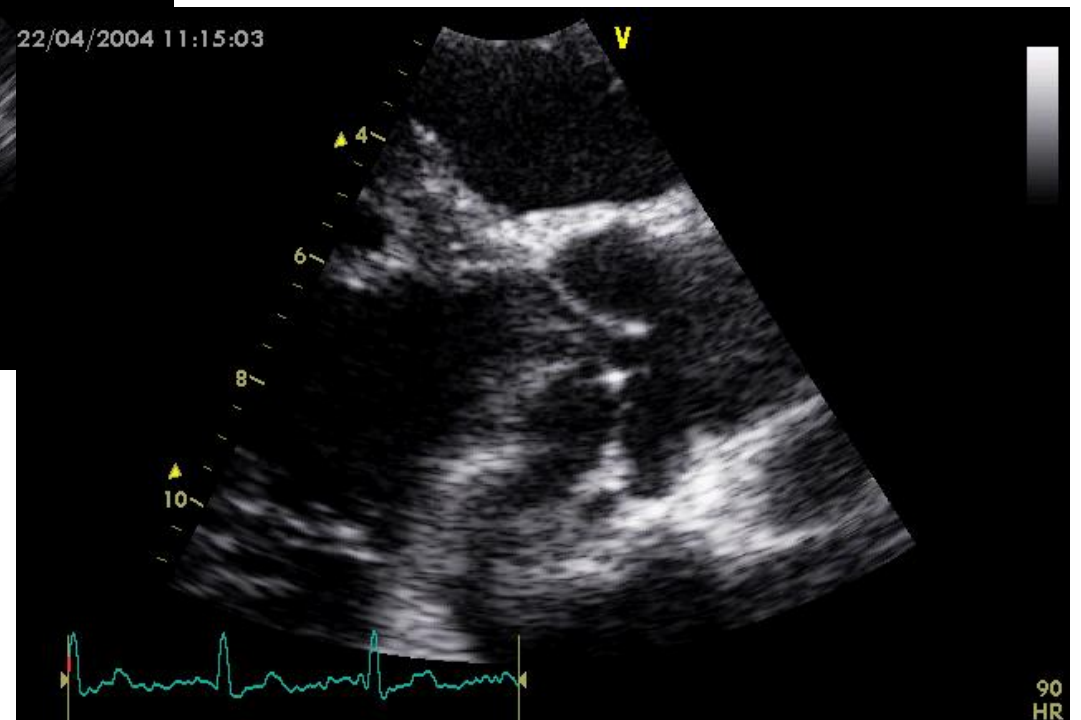
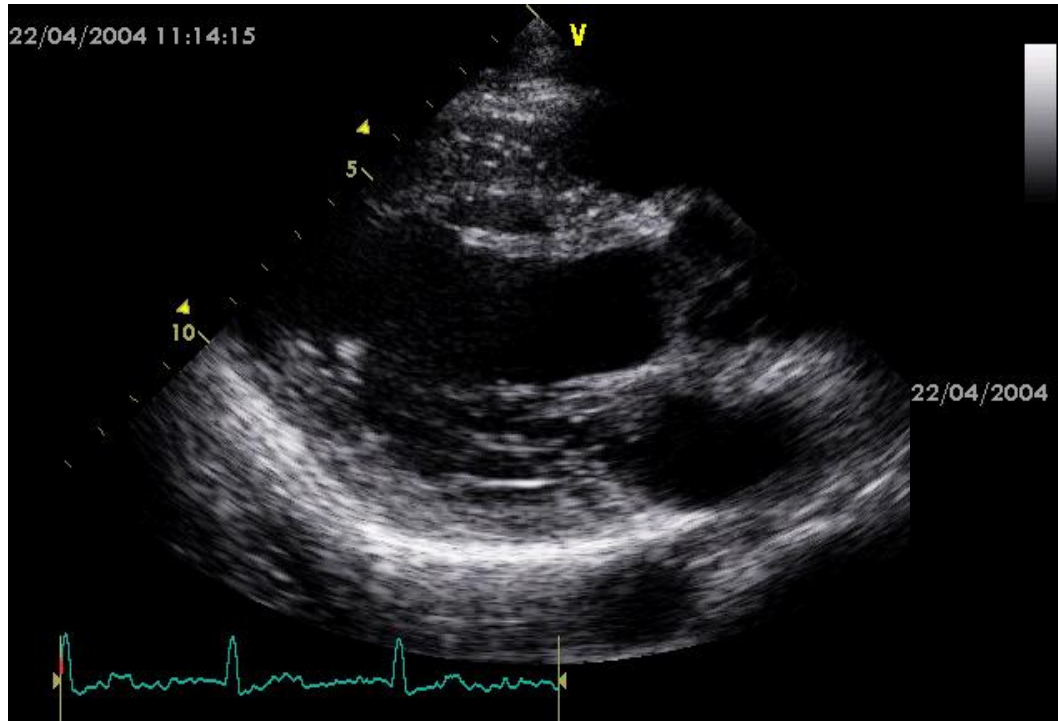
Effect on the Tx strategy

- ✓ Aortic root size ...
op timing, betablocker
- ✓ Chest pain...
aortic dissection
- ✓ Combined anomaly

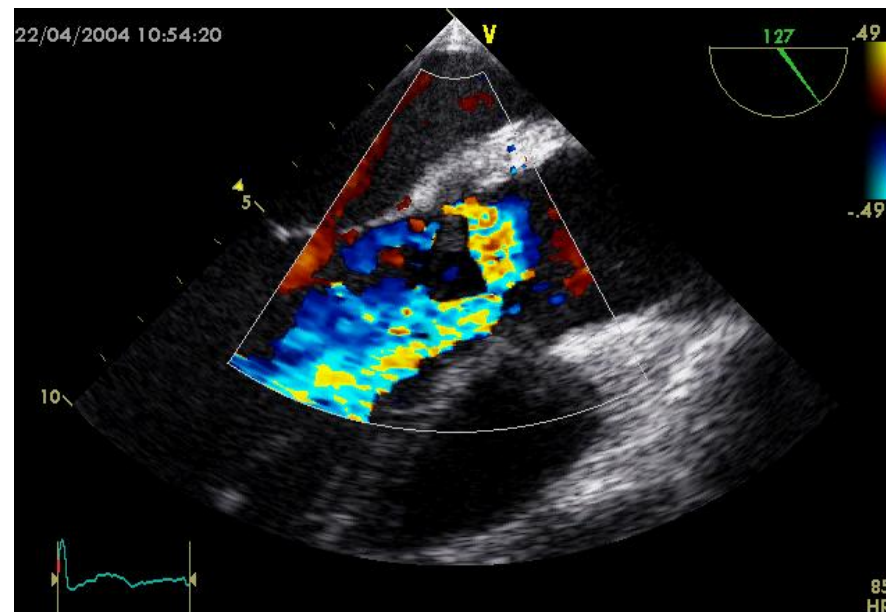
CASE 6: 43 YO Male with syncope

- **PMHx: Incidentally detected AR (Mar. 2004)**
Echo: 48/68, EF 53%, severe AR
- **Syncope (Apr. 2004)**
- **Normothermia ~ 38.5⁰C**
- **WBC: 8300, ESR: 93, hs-CRP: 6.29**

CASE 6: 43 YO Male with syncope



CASE 6: 43 YO Male with syncope



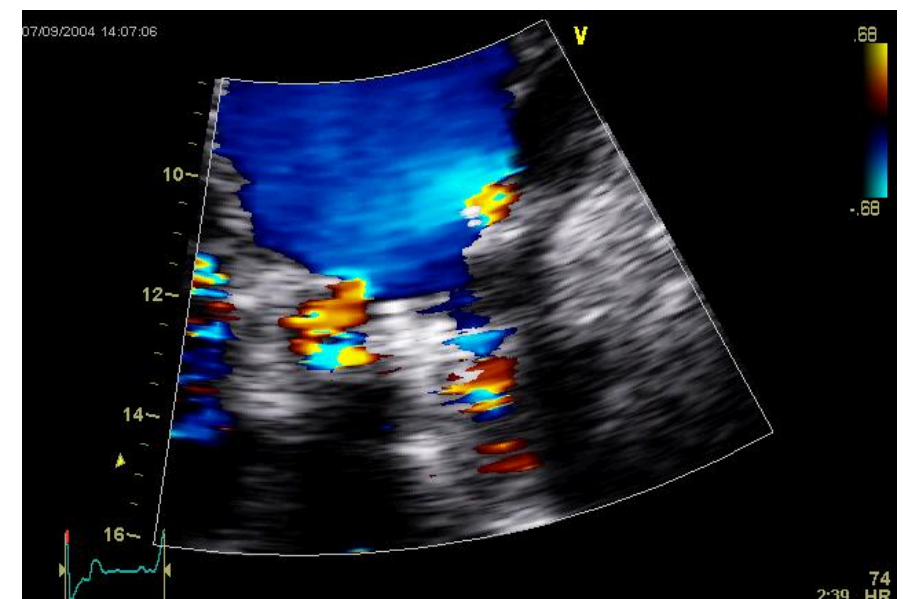
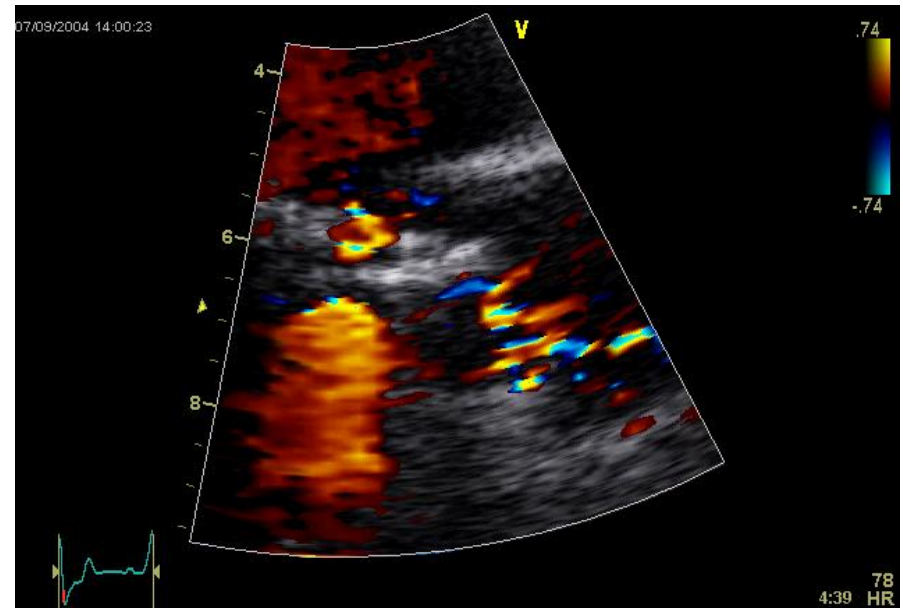
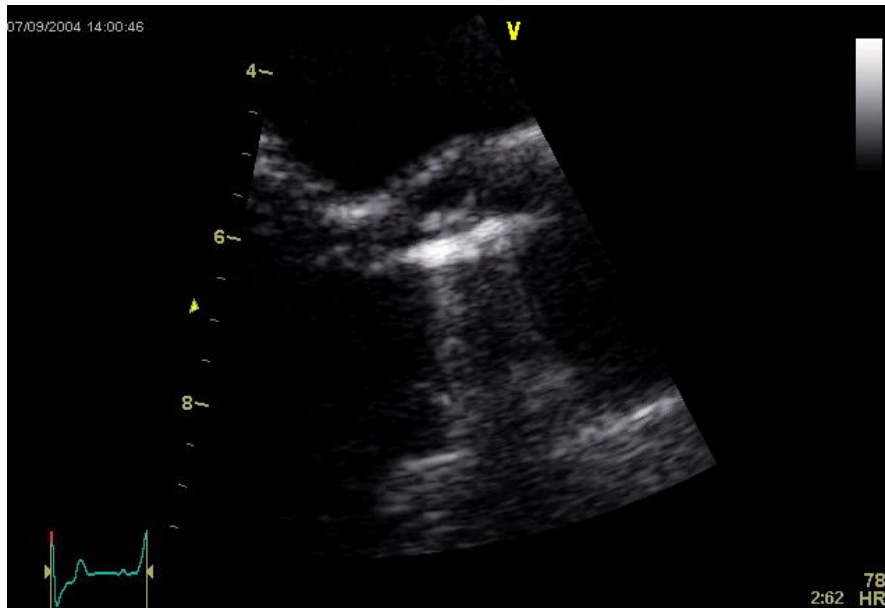
CASE 6: 43 YO Male with syncope

- **Blood culture: negative**
- **Clinical diagnosis: Infective endocarditis
with annular abscess**
- **Emperical antibiotics: Cefa + AMP**
- **MVR / AVR, epicardial pacemaker**
- **Post-op Echo: Normal prosthetic valves**

CASE 6: 43 YO Male with syncope

- **Dyspnea (Sep. 2004) (← Apr. 2004)**
- **Normothermia**
- **WBC: 5960, ESR: 37, hs-CRP: 1.35**
- **Blood culture: negative**

CASE 6: 43 YO Male with syncope

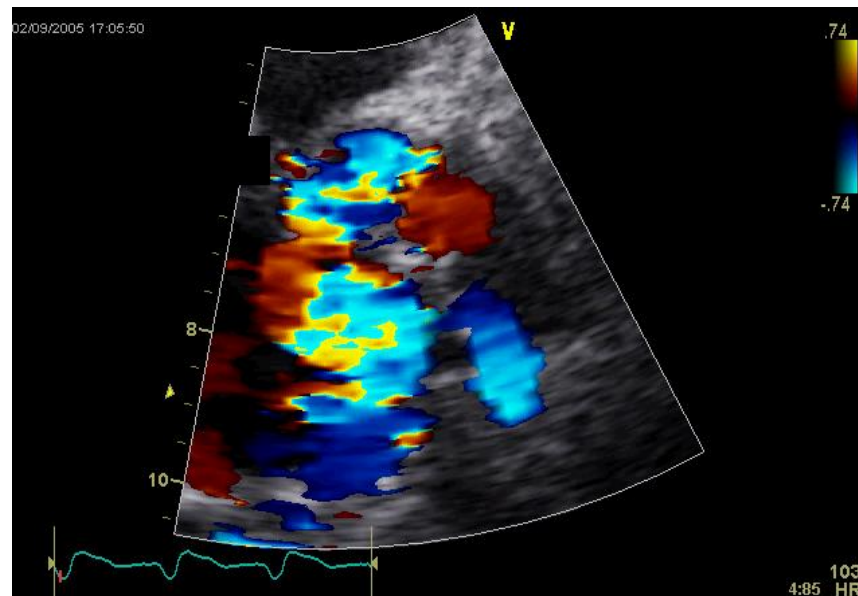
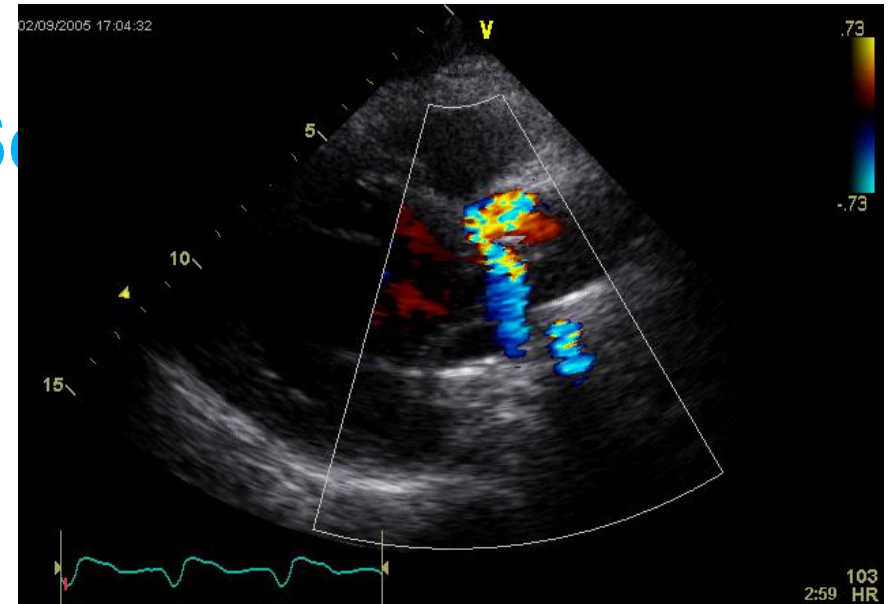
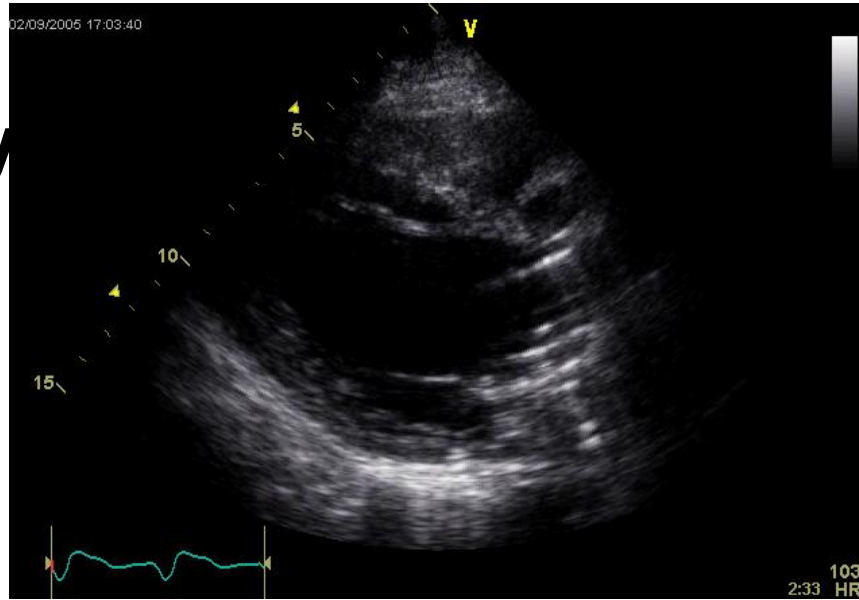


CASE 6: 43 YO Male with syncope

- **Dyspnea (Sep. 2004)**
- **Normothermia**
- **WBC: 5960, ESR: 37, hs-CRP: 1.35**
- **Blood culture: negative**
- **Redo MVR / AVR,**
Vanco + GM + rifampin for 6 wks post-op

CASE 6: 43 YO Male with syncope

- Dy

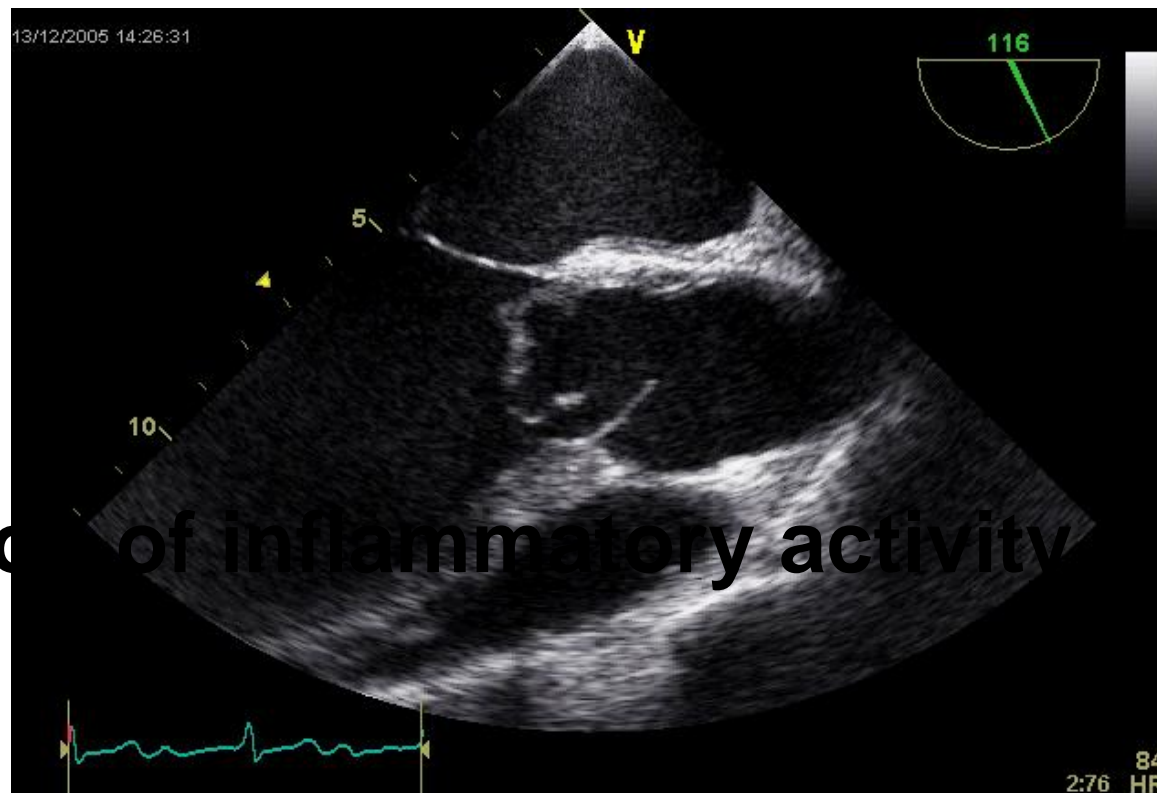


CASE 6: 43 YO Male with syncope

- Hx of oral ulcer, folliculitis, tendinitis

Biopsy – 1st OP

Biopsy – 2nd OP



- Suppression of inflammatory activity before OP

THANK YOU FOR YOUR ATTENTION

