Erasmus MC
University Medical Center Rotterdam

Partial Atrioventricular Defect in the Adult

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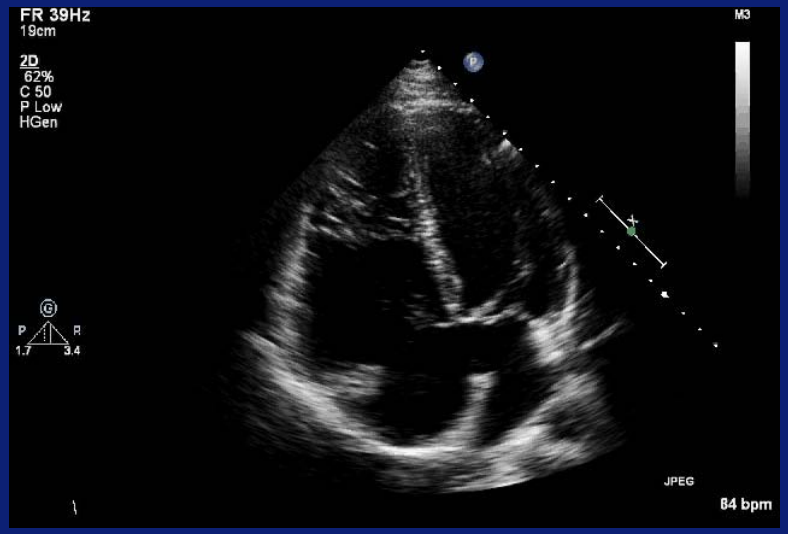
No disclosures

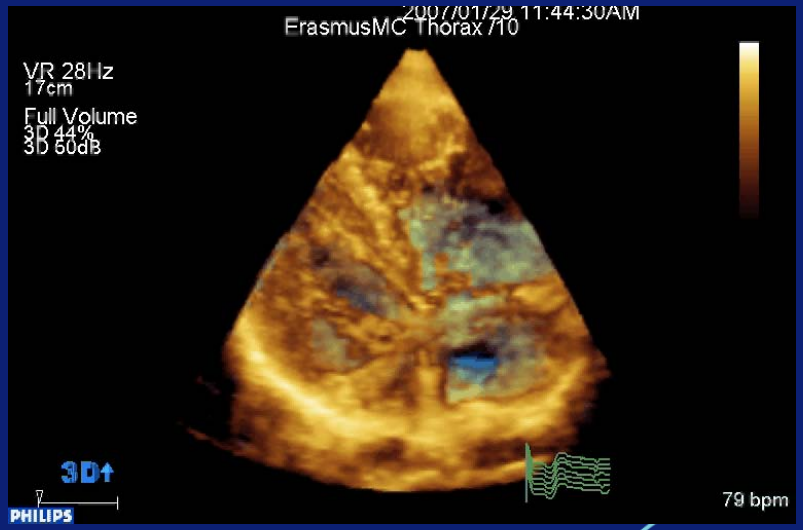
Partial Atrioventricular Defect (PAVSD) in the adult

Clinical Presentation

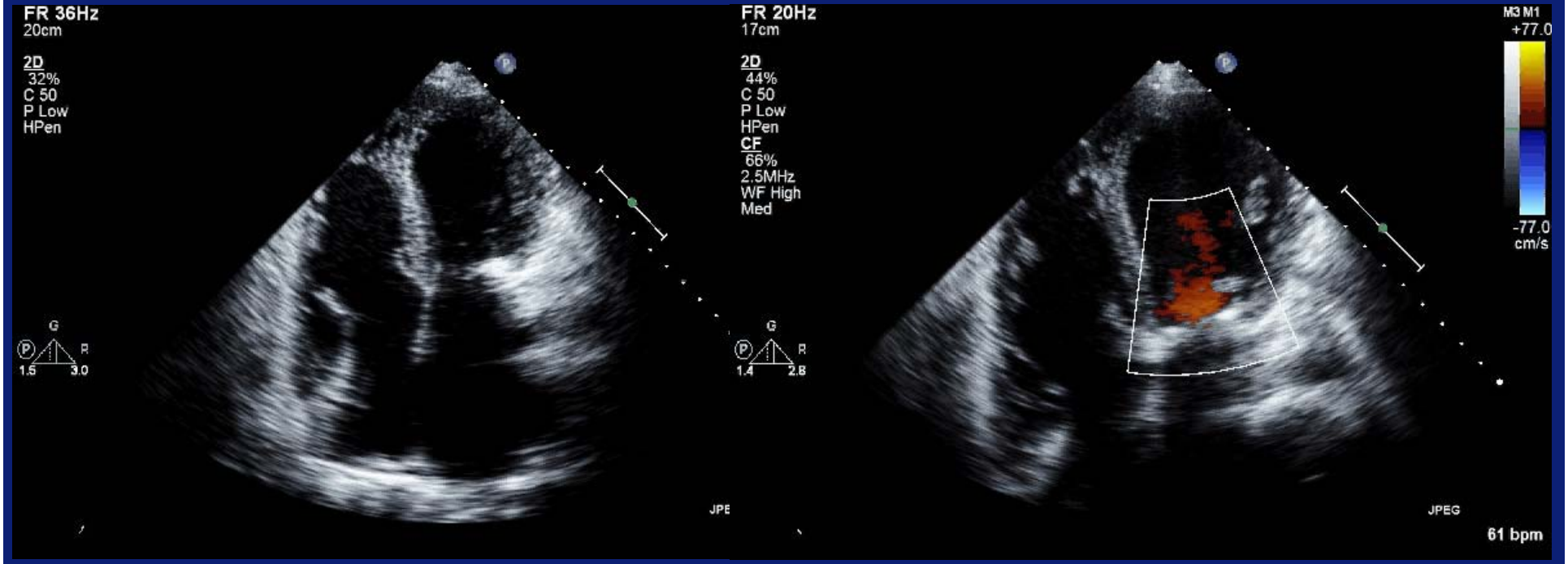
- Atrial Fibrillation
- Mitral Regurgitation
- Exercise intolerance
- Screening or detection by chance

(PAVSD continues to present in adulthood as symptoms may not occur until the 3rd or 4th decade)





Mitral valve regurgitation: severity?



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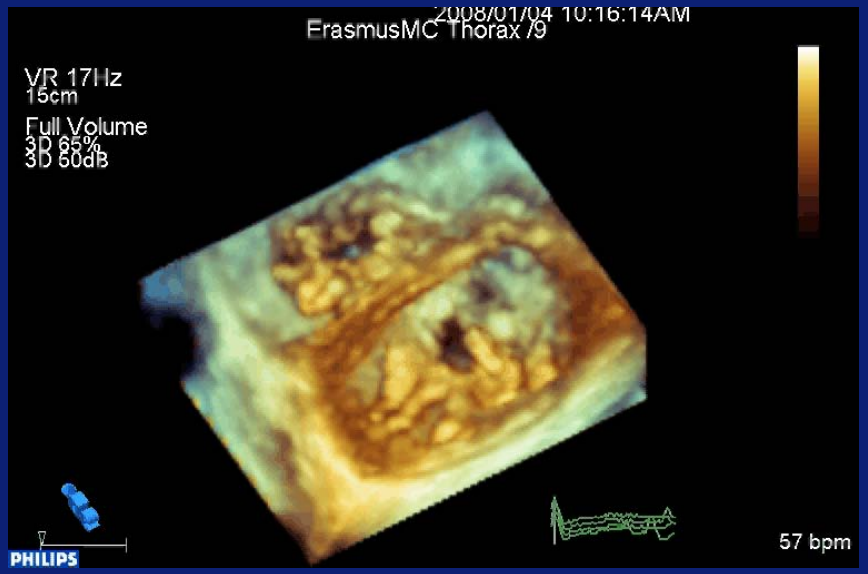
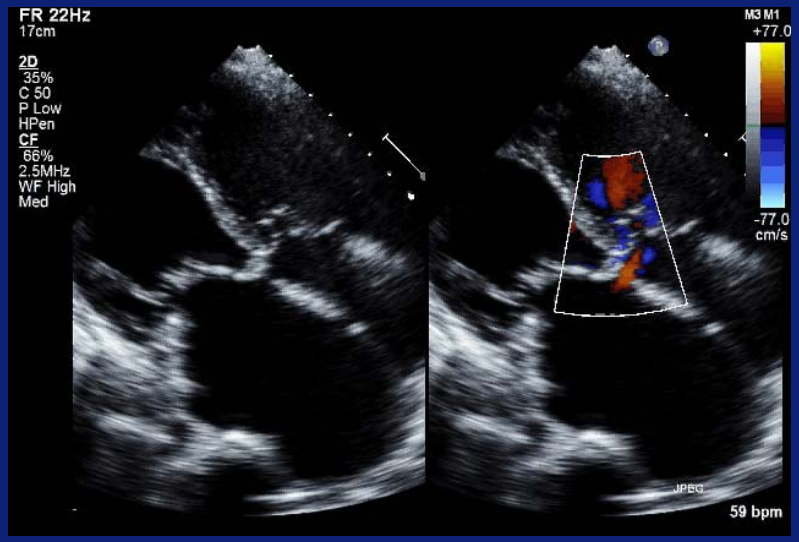
Mitral valve regurgitation



Abnormal mitral valve?



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PAVSD: Goals of the echo examination

- Size of the atrial commincation
- Assessment of the severity of AV valve regurgitation
- Assesment of LVOT obstruction
- Assessement of the heamodynamic load to the left and rightside
- Estimation of righsided pressures
- Dectection of assosciated lesions

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CASE

50 year old male known with Downs syndroom

Complaints: atypical chest pain

Admitted to a community hospital with chest pain, no ischemia found

Clinical History:

Reguarly visits to the Childrens hospital up to the age of 16 in relation to a possible VSD.

Physical examination:

Blood pressure : 93/57 mmHg; CVP normal; O_2 saturation 100%

Heart: normal 1st en 2nd sound, holisystolic murmer II/VI max apex. ejection murmer II/VI op 2^{e} R. Diastolic mumer II/VI 3^{e} L

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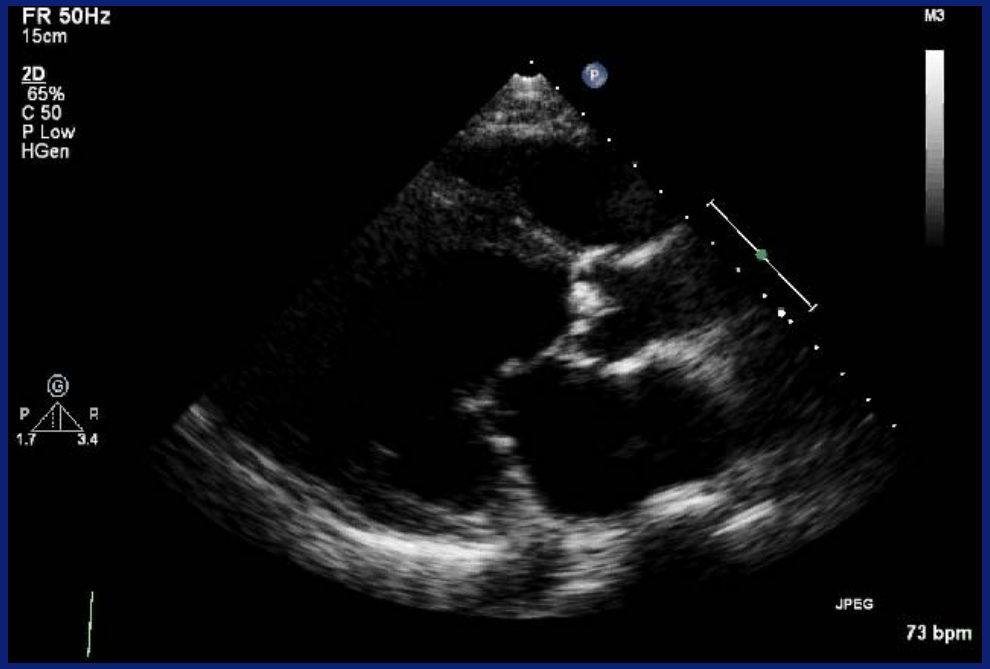
Parasternal Long Axis View



2D measurements:

LVEDD: 74mm
LVESD: 52mm
LA dim. 4CH: 82mm
2CH: 90mm

LA volume 178ml
(normal value 18-58ml)

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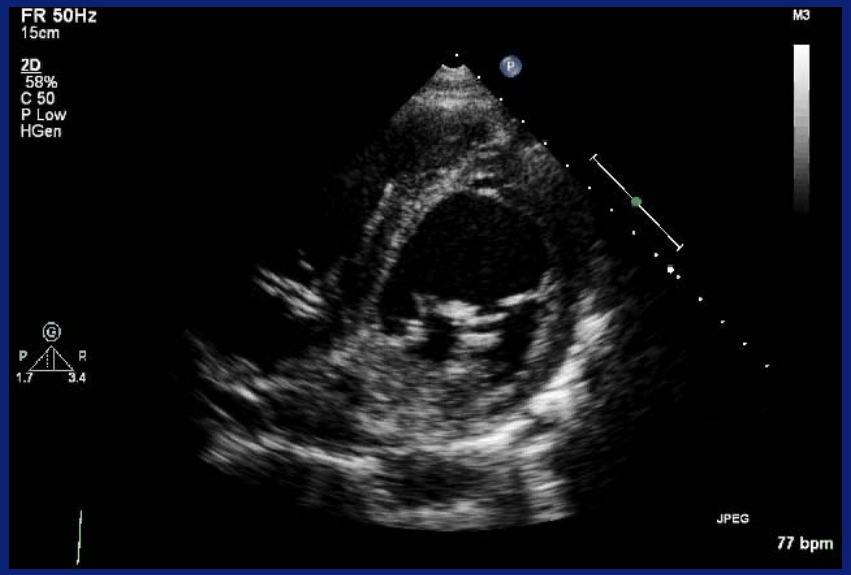
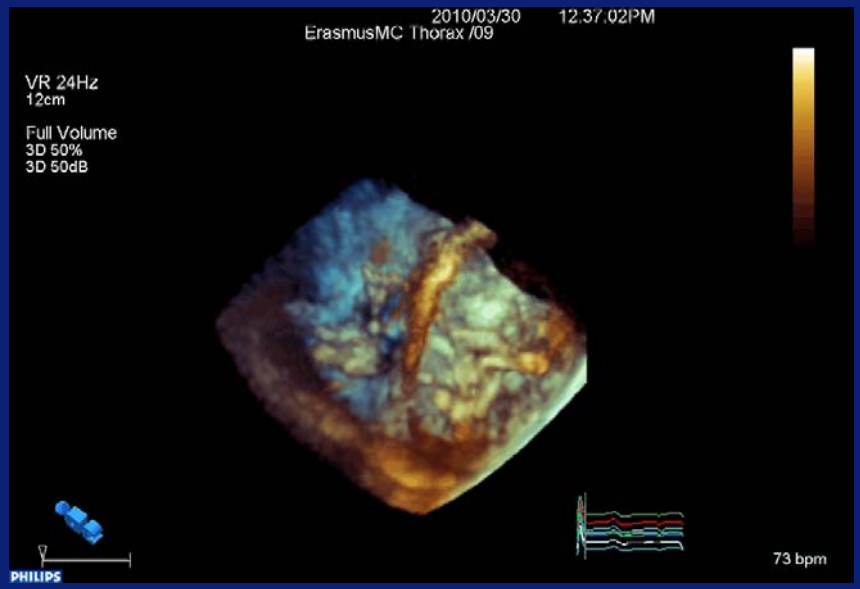
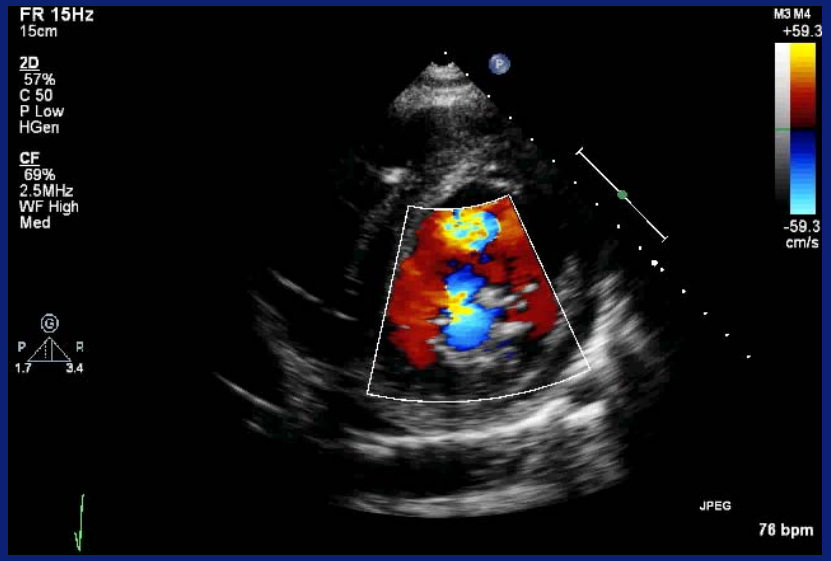
Left AV valve regurgitation







Enface view: left AV valve

Length/ width/ extent of cleft.

Cleft points medially towards the RV

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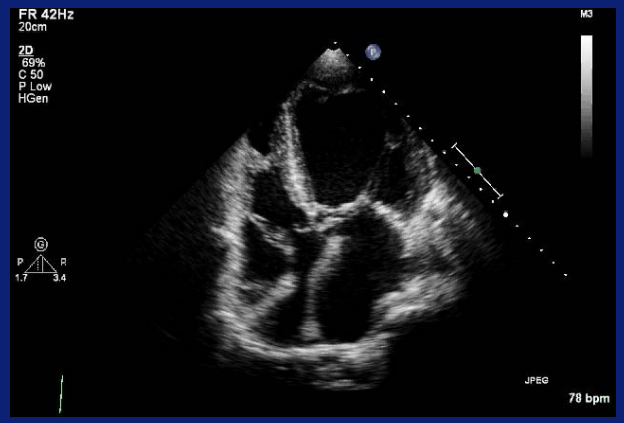
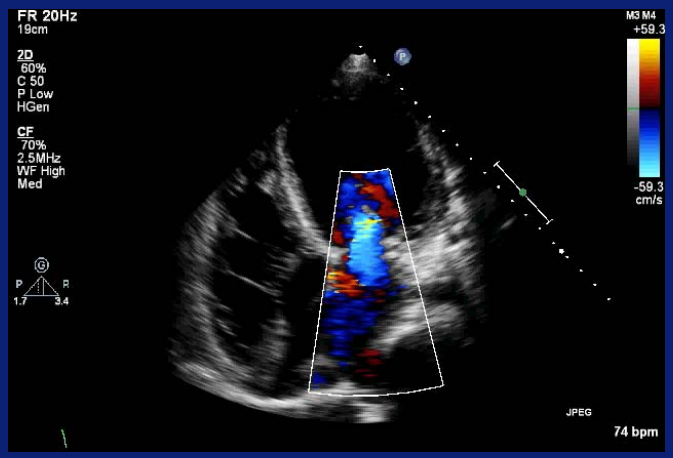
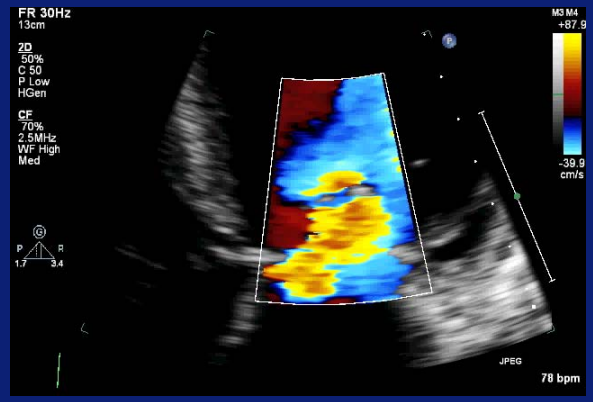
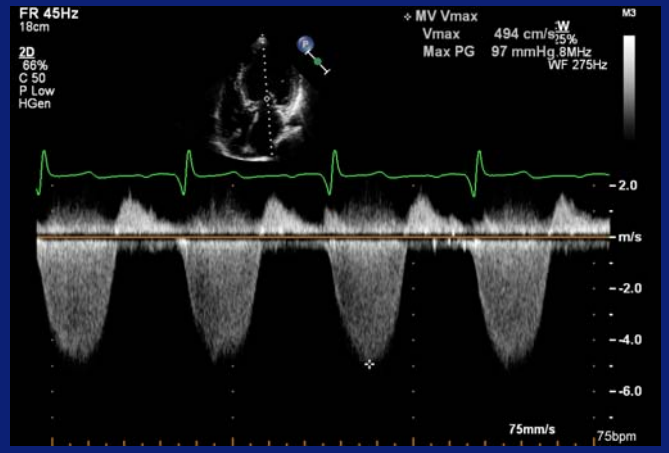
Left AV valve regurgitation









Many quatitative and qualitative tecniques have been developed to assess left AV valve regurgitation. They all have limitations

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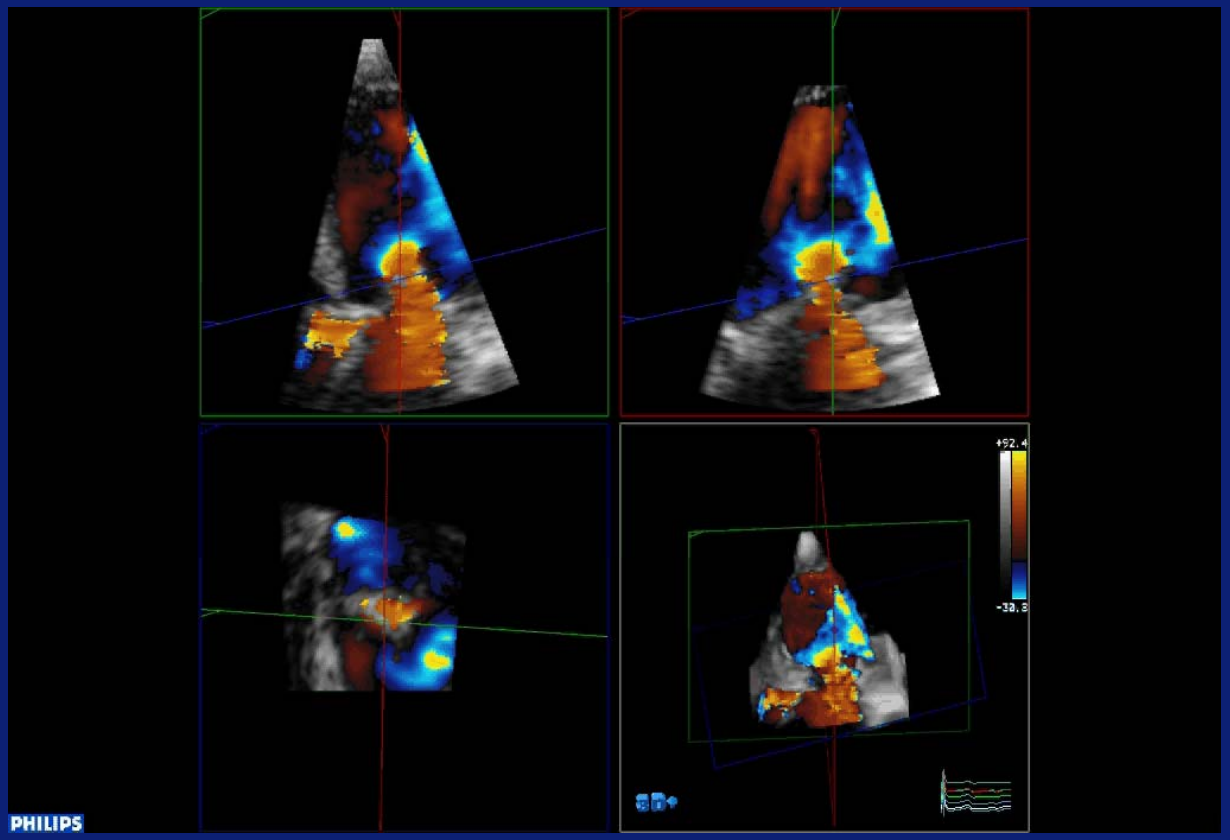
Left AV valve regurgitation



3D colour doppler Can it be of help?

Research

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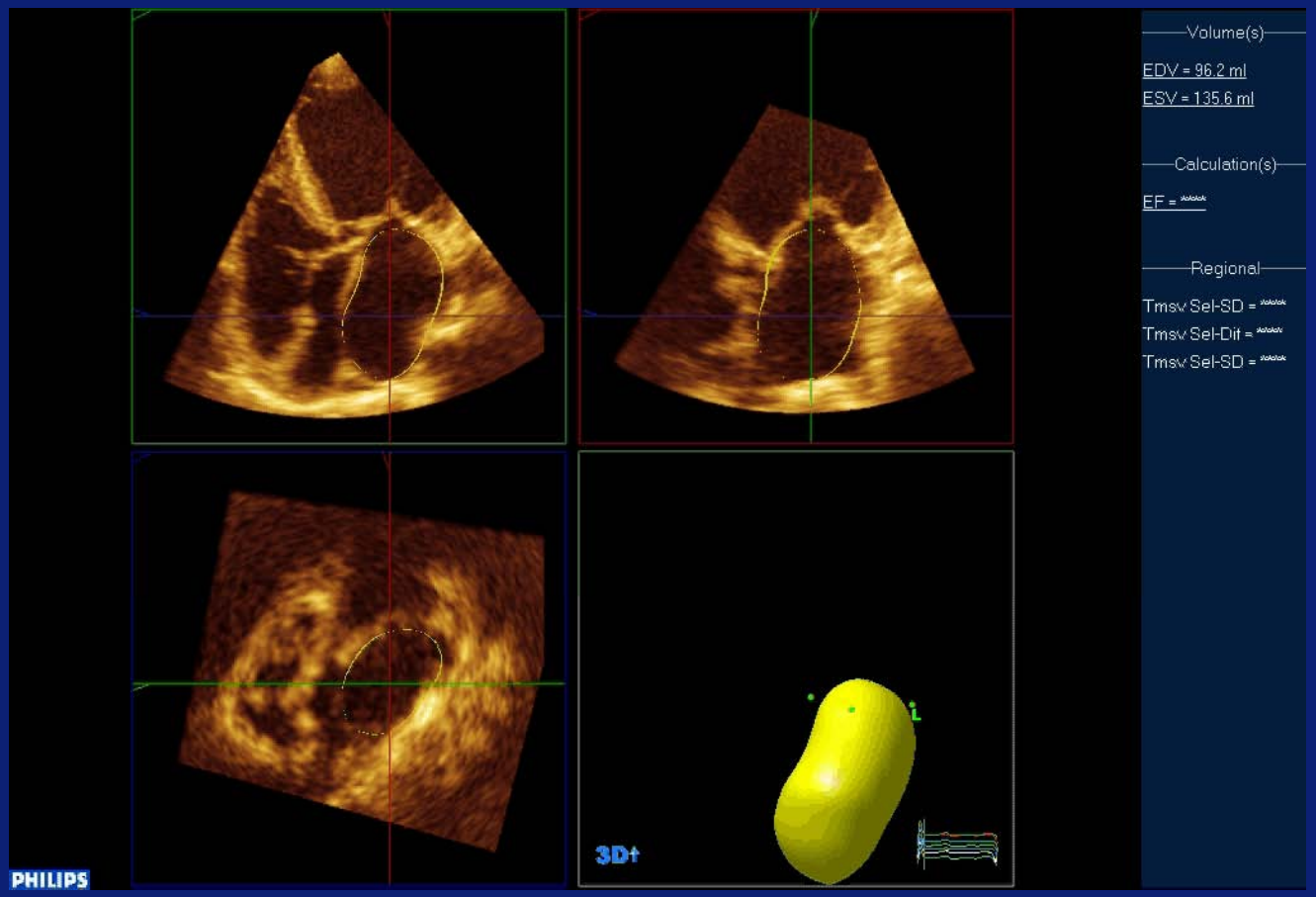
Hemodynamic impact of left AV valve regurgitation



3D LA volume 135.6ml

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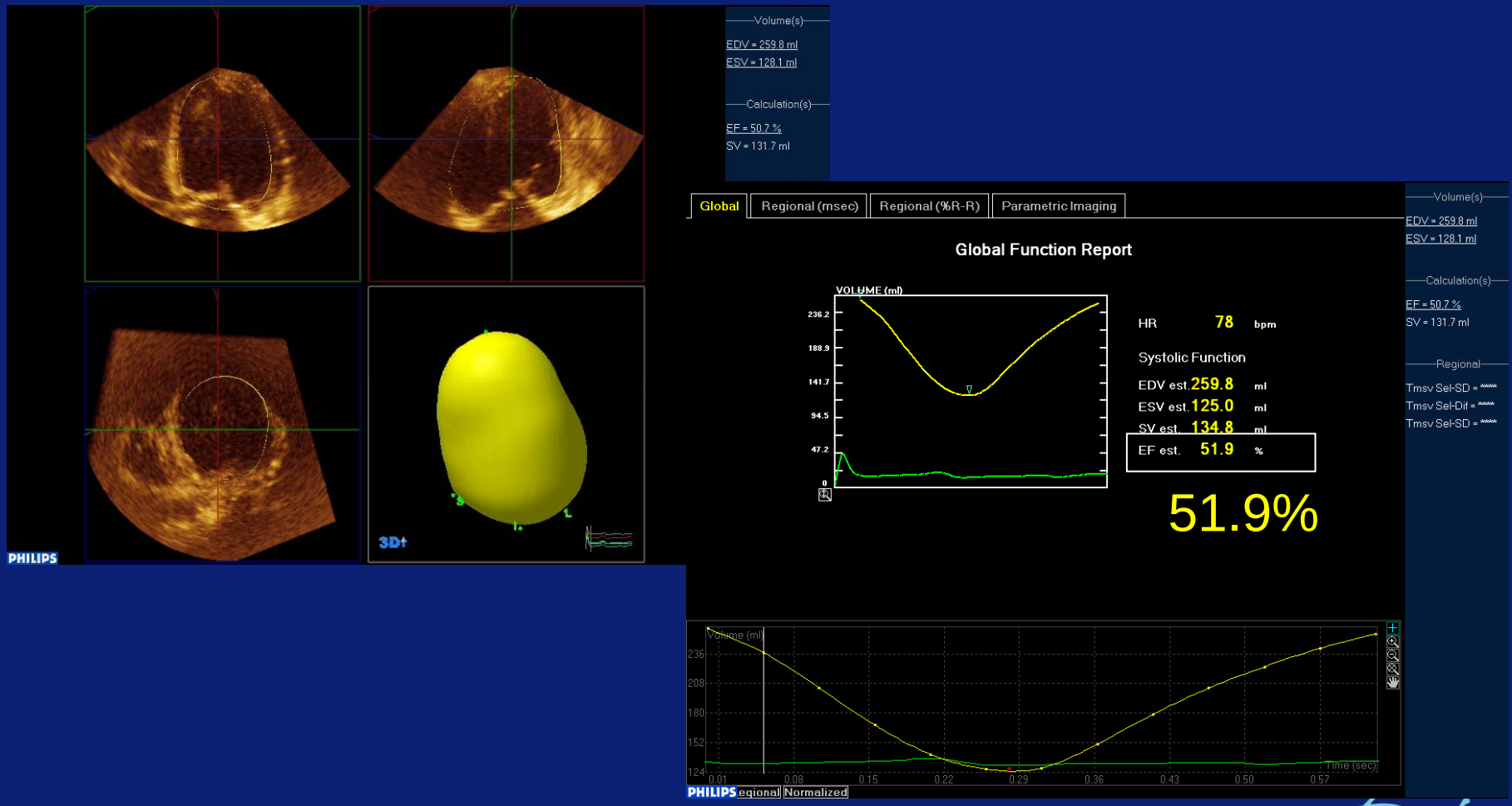
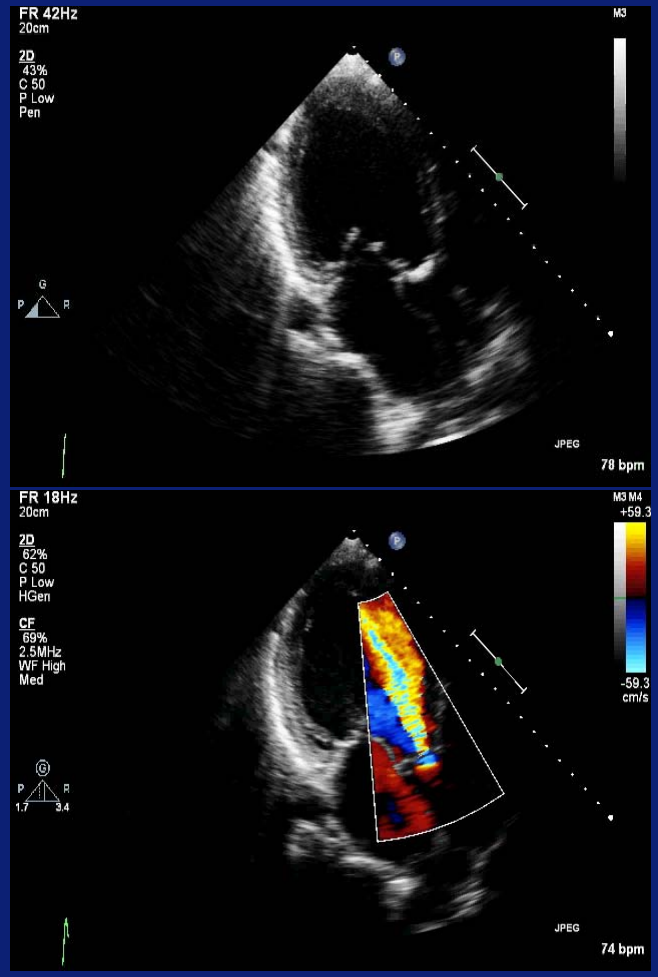
Hemodynamic impact of left AV valve regurgitation

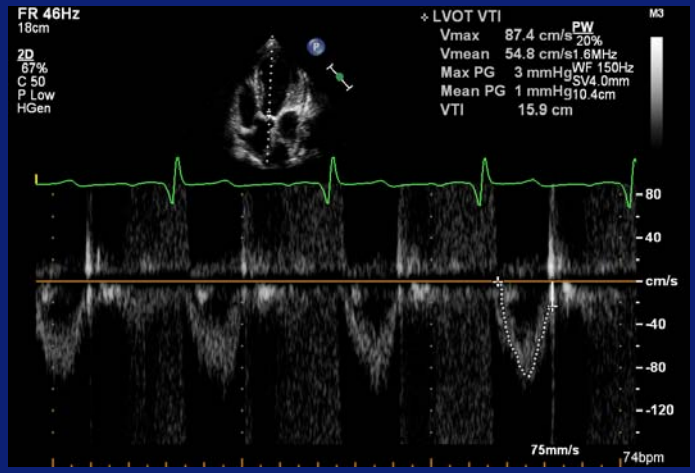
3D LV volume and ejection fraction

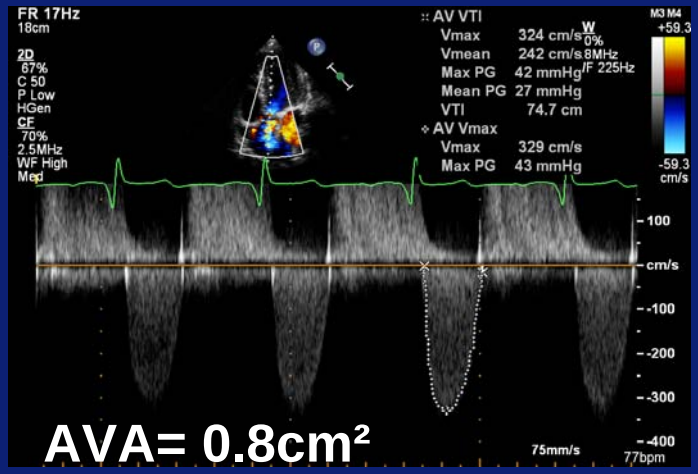


Normal value: EF = 60%

Aortic valve







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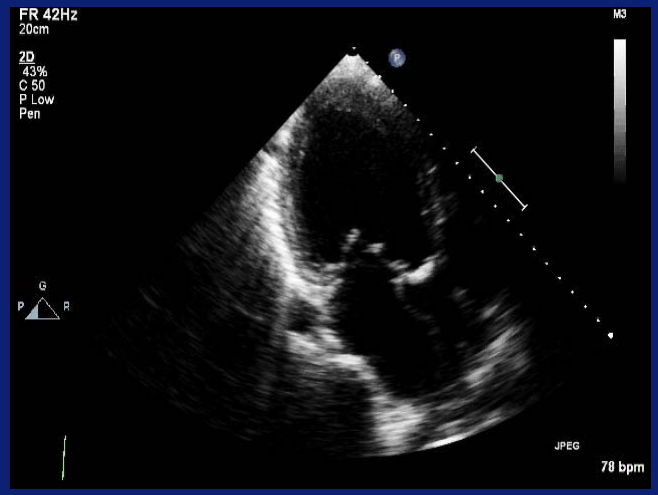
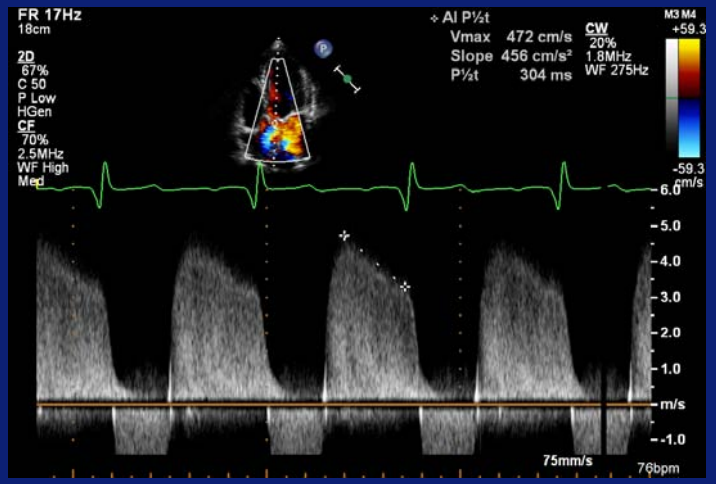
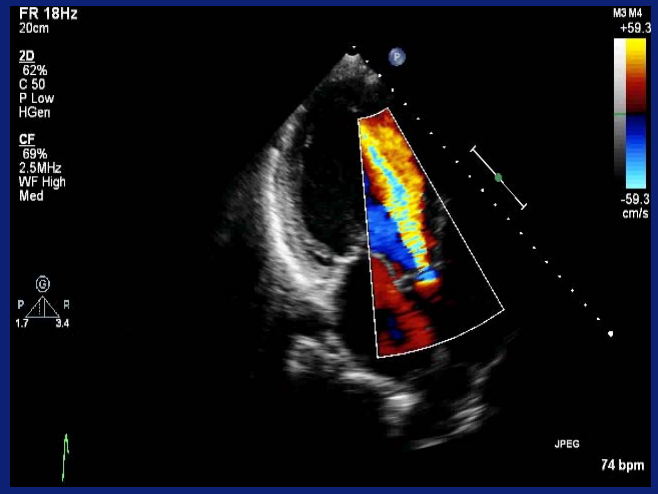
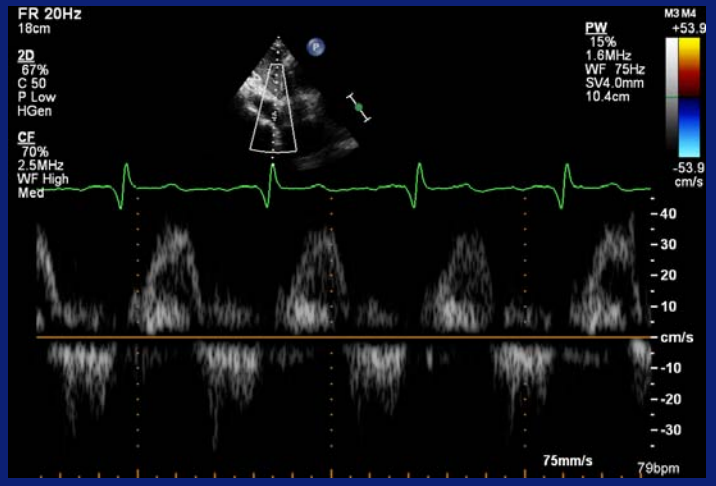
Aortic valve regurgitation





P½t 304ms





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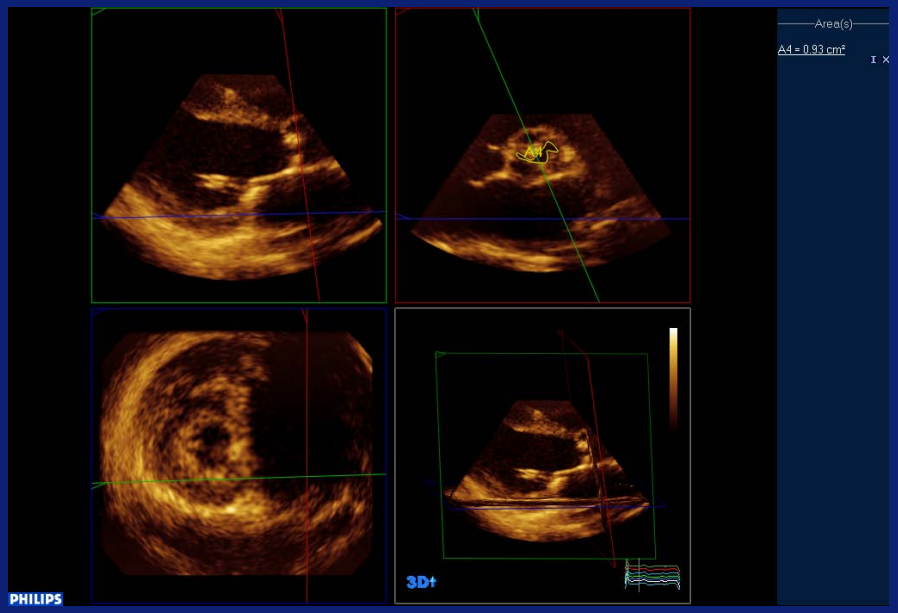
3D evaluation of the Aortic Stenoses



Aotic valve area 0.93cm²

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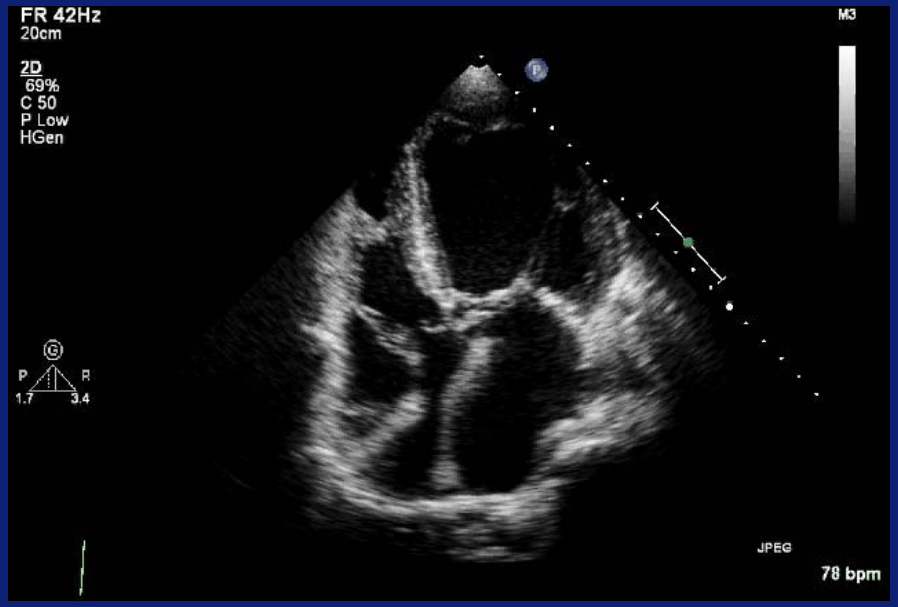
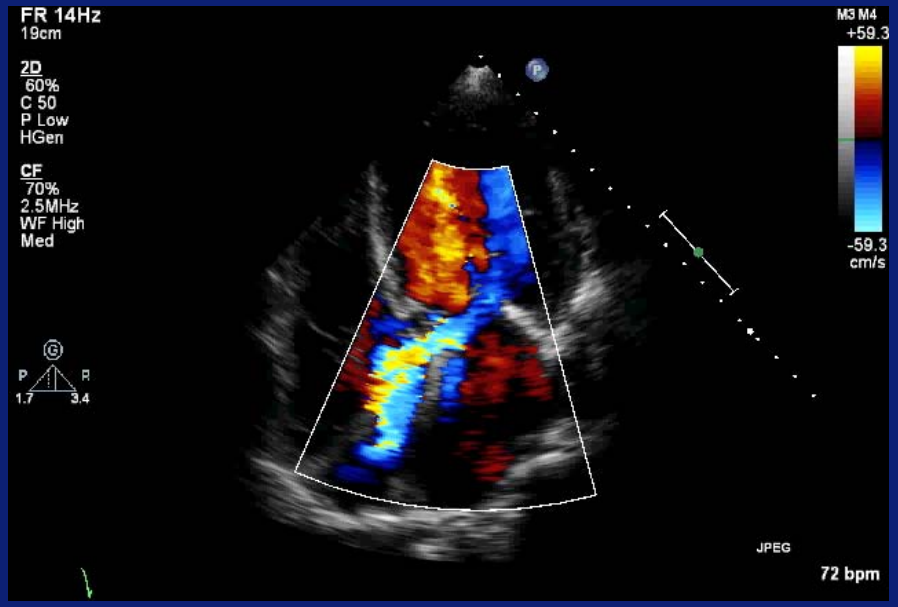
Intra atrial comunication: Left to right shunting





No VSD found

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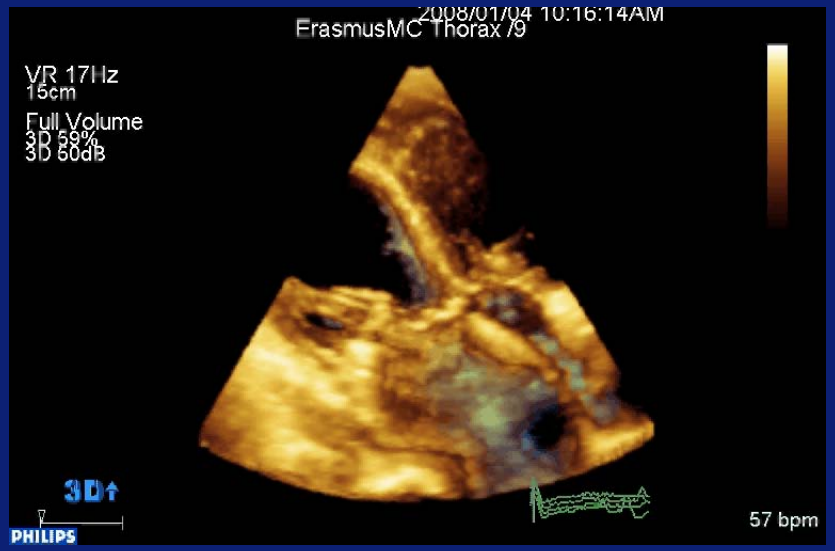
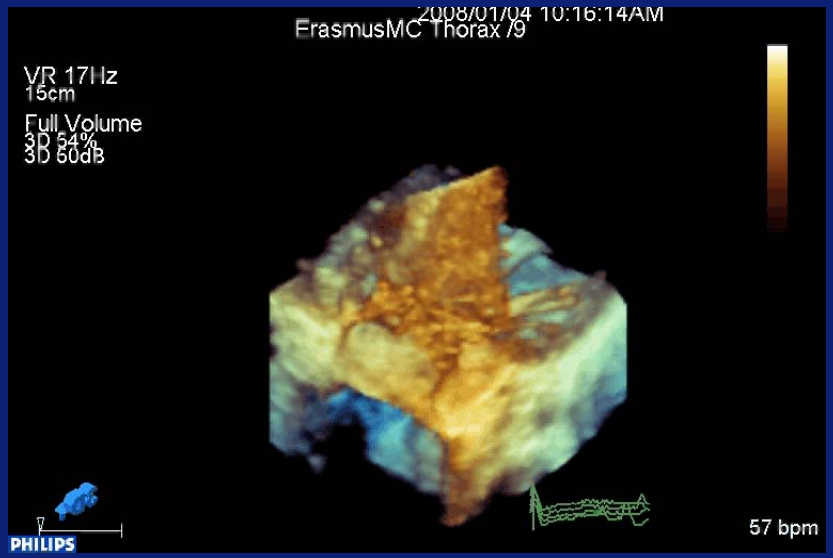
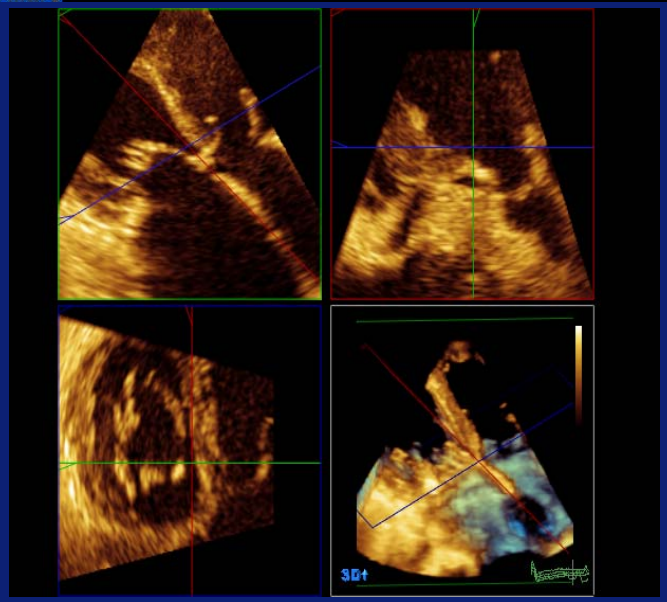
3D evaluation of the atrial communication







Calculated area:
0.29 cm2

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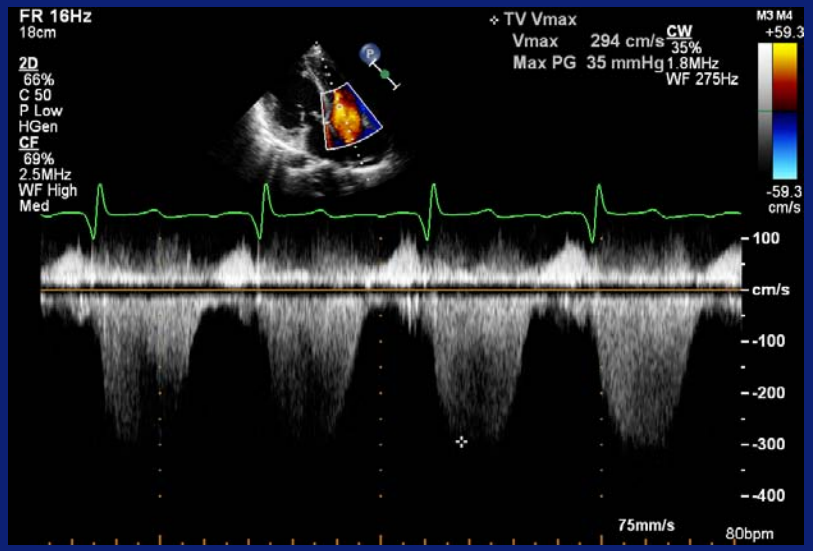
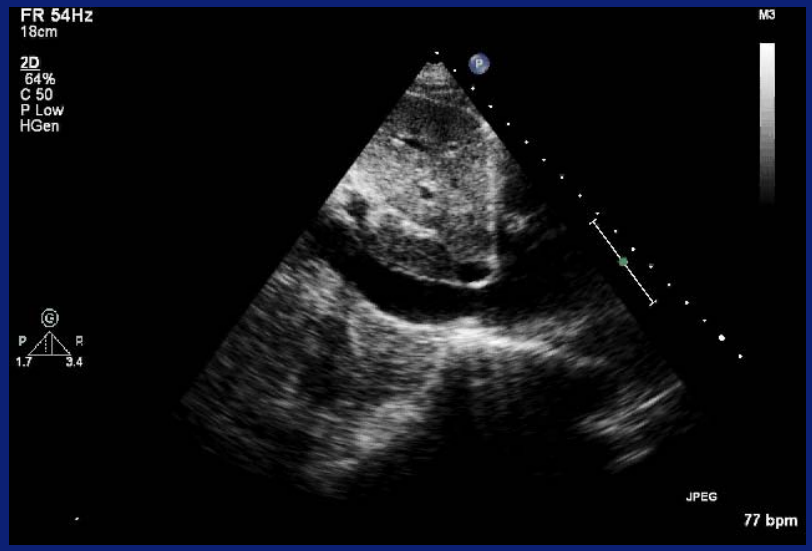
Right AV valve Regurgitation





IVC

RA pressure 5mmHg
RV pressure 39mmHg

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Conclusion

Incremental value of 3D TTE for the pre operative evaluation of PAVSD:

- Defect: calculate the area,relationship to all the surrounding structures
- Left AV valve: accurate assessment of the cleft; length / width / extent.
- Severity of left AV regurgitaion: area of research
- Papillary muscles: abnormal orientation or arrangement
- LV volume and EF%
- LA volume

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Postoperative evaluation of PAVSD and CAVSD

Goals of the echo examination

Assessment for residual atrial and ventricular communications

- residual VSD(high velocity)
- residual ASD(low velocity)
- difficult to see, multiple colour jets in atrium

Valvular regurgitation

- mainly leftsided AV valve
- mechanism of AV regurgitation

(typically occurs at the interface of the superior and inferior bridging leaflet)

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Postoperative evaluation of PAVSD and CAVSD

Goals of the echo examination

Assesment of valvular stenoses

LVOT obstructie (pre or post operative)

- elongated outflow tract

  subaortic obstruction: membrane,

  abnormal chordal attachment

Pulmonary Hypertension

- operated too late

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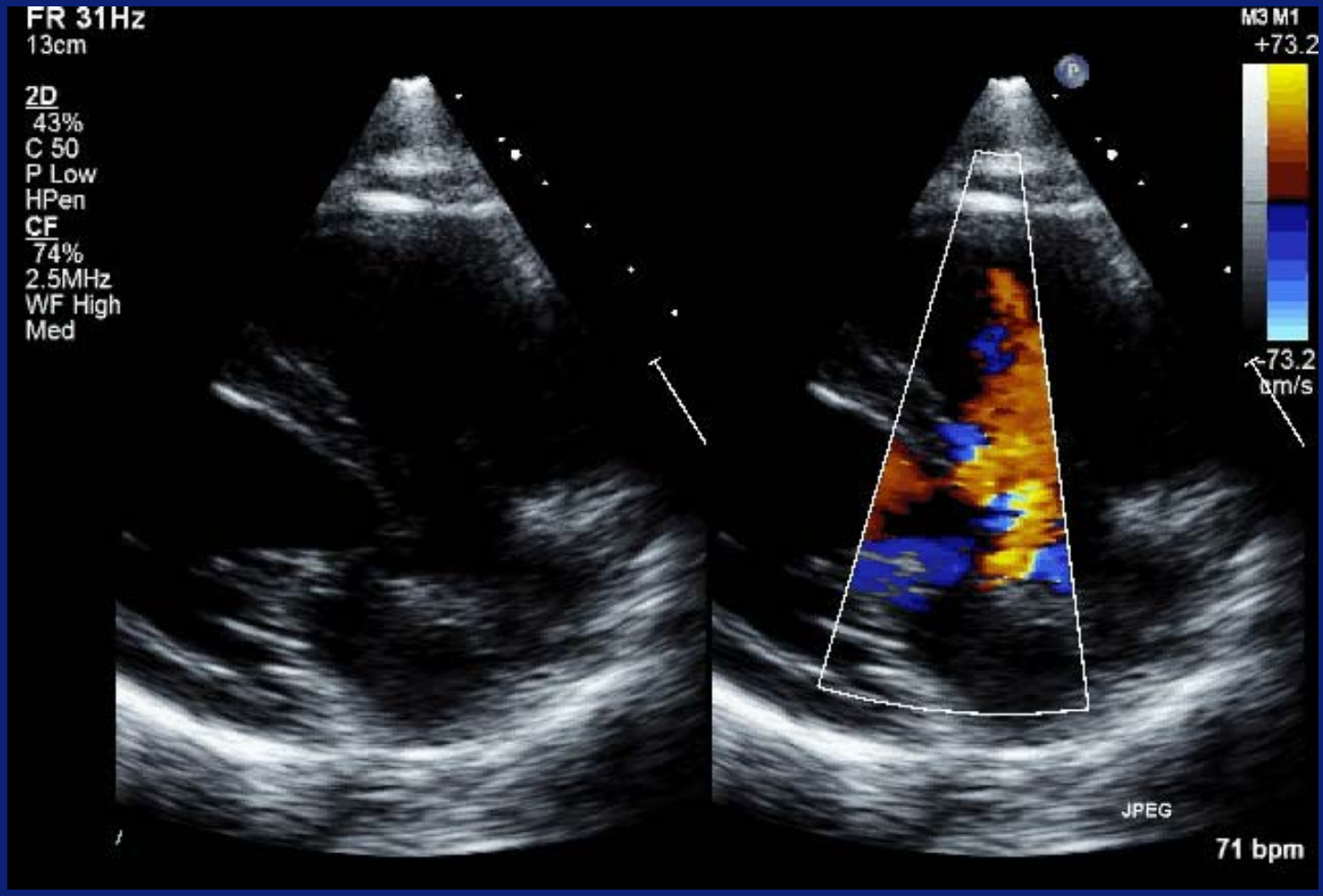
Postoperative evaluation CAVSD: Rest shunts



RV inflow

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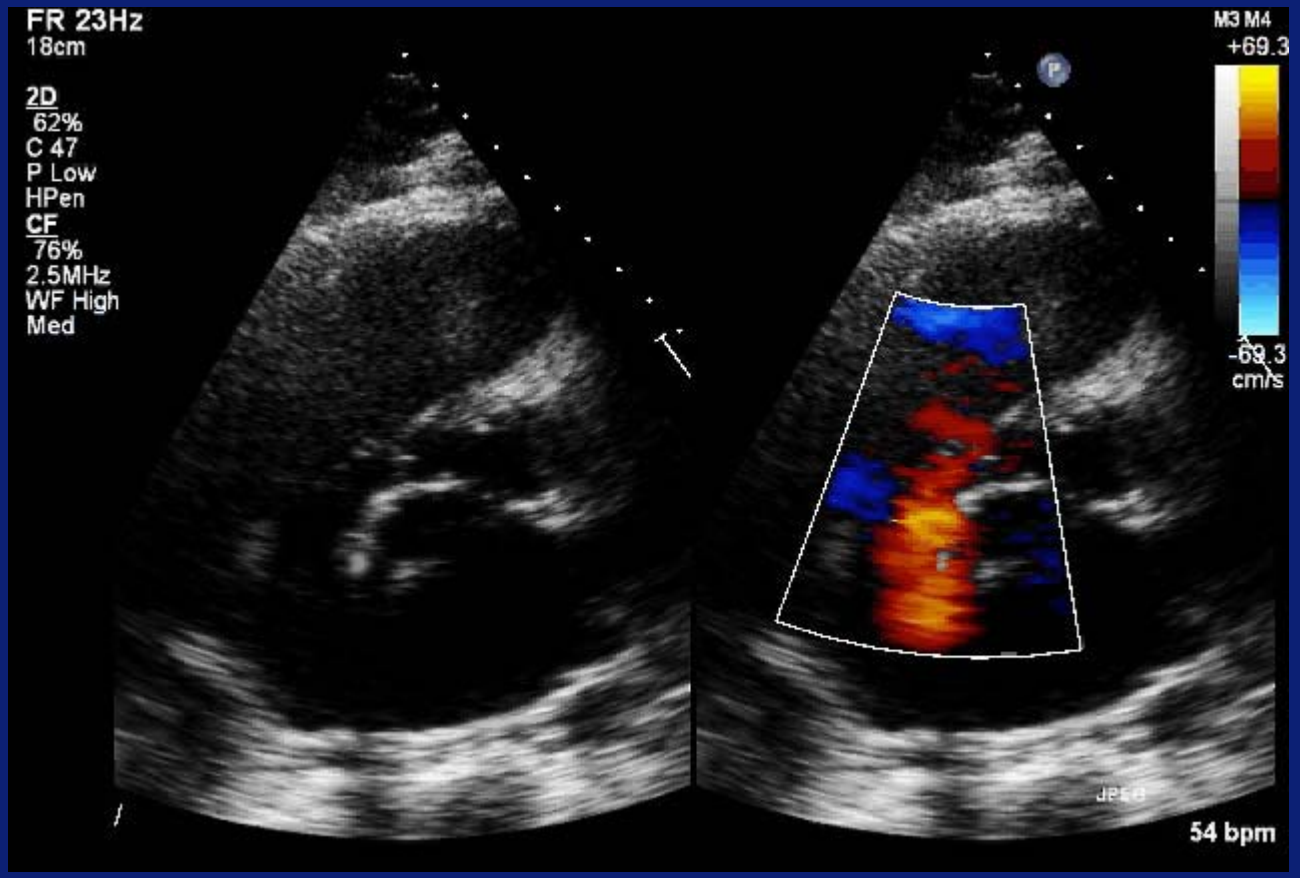
Postoperative evaluation PAVSD: Rest shunt



Defect connecting the LV to the RA through the AV junction

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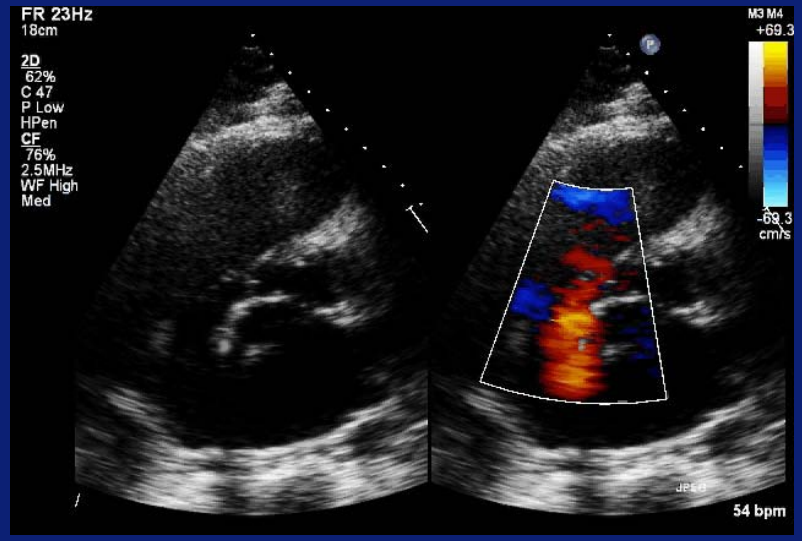
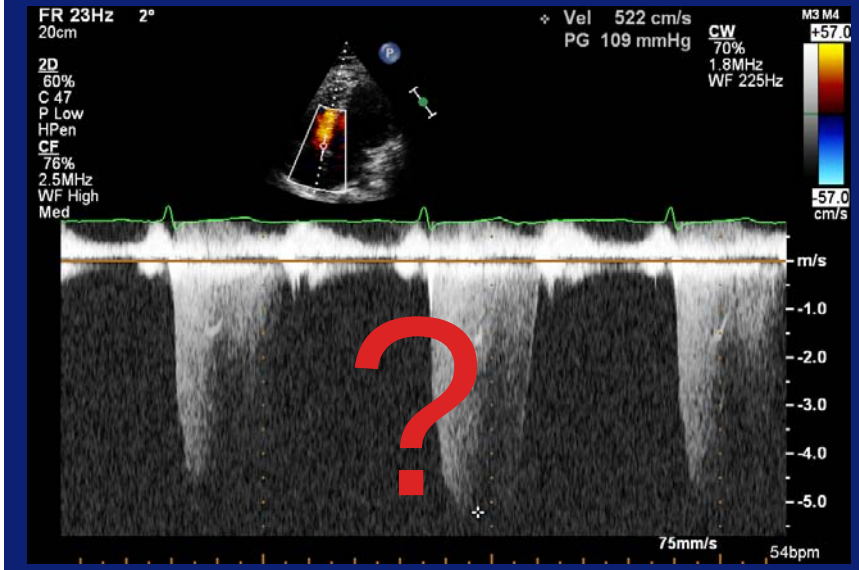
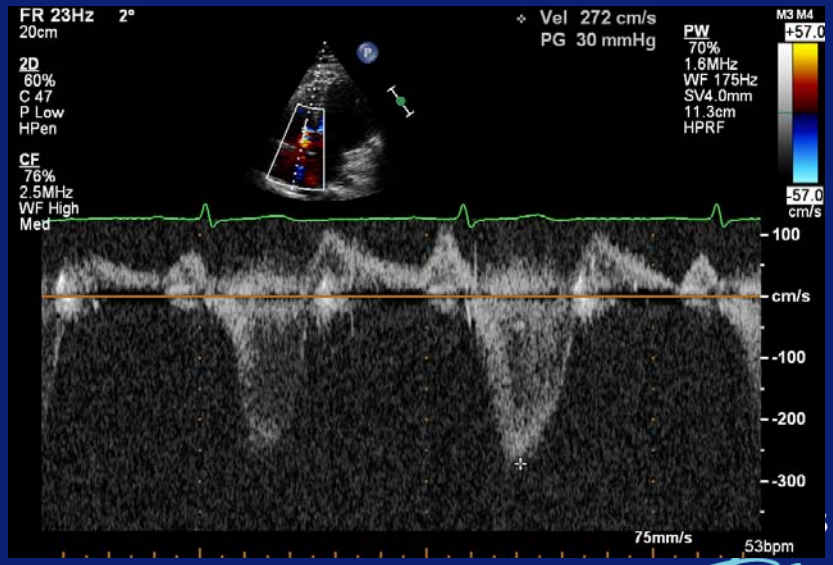
Postoperative evaluation PAVSD: Rest shunt



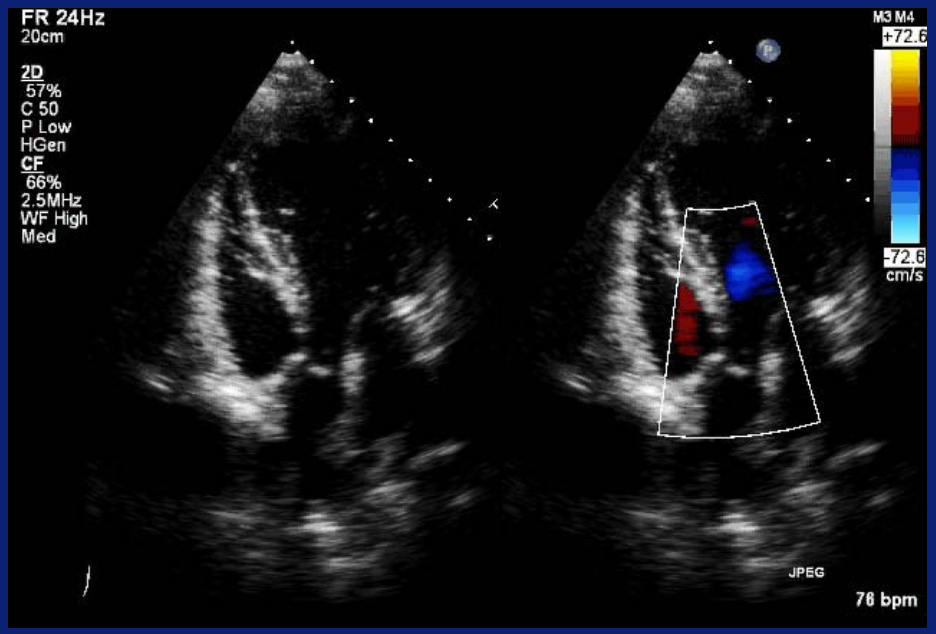


CW: Right AV valve Vmax 5.2 m/s

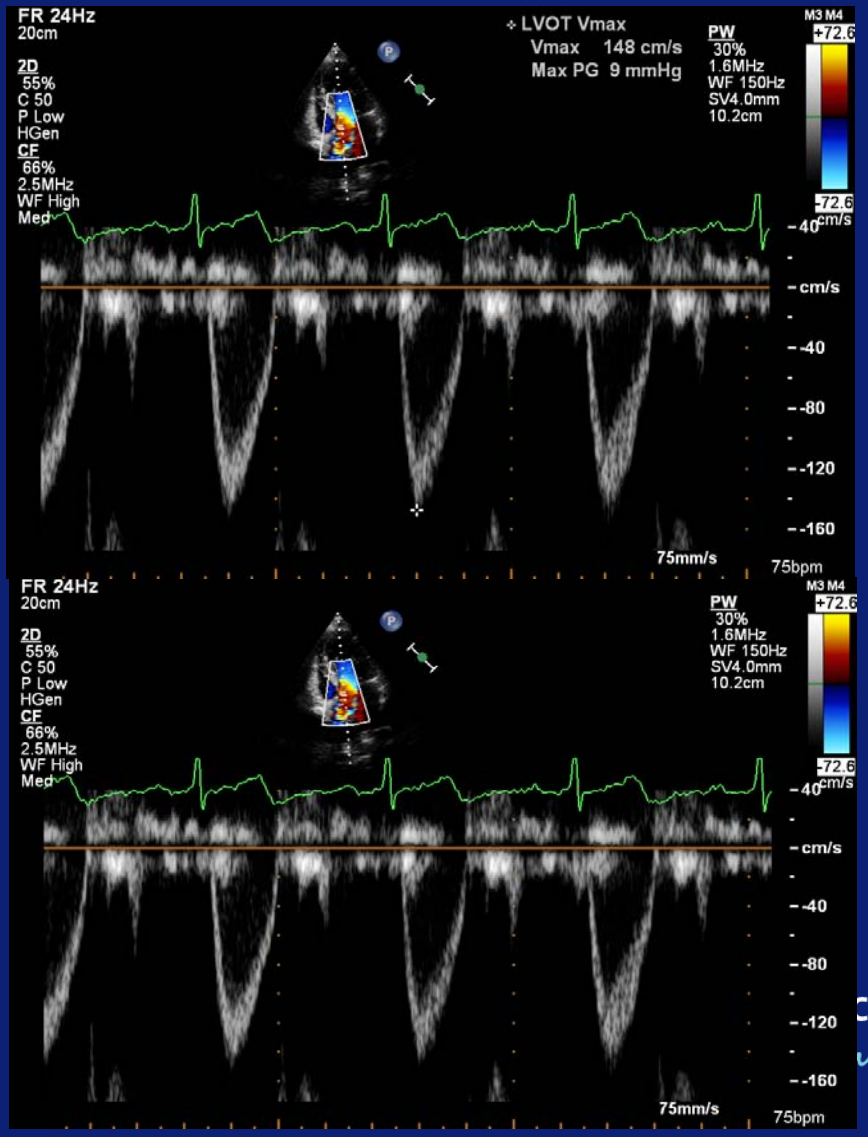


PW: Right AV valve Vmax 2.7 m/s

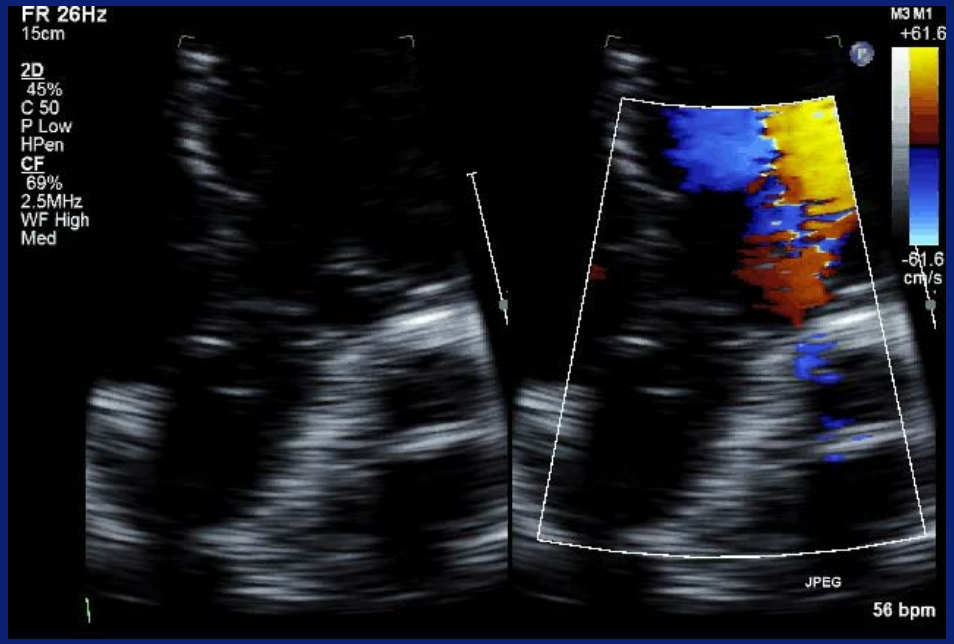
Postoperative evaluation PAVSD: Elongated LVOT



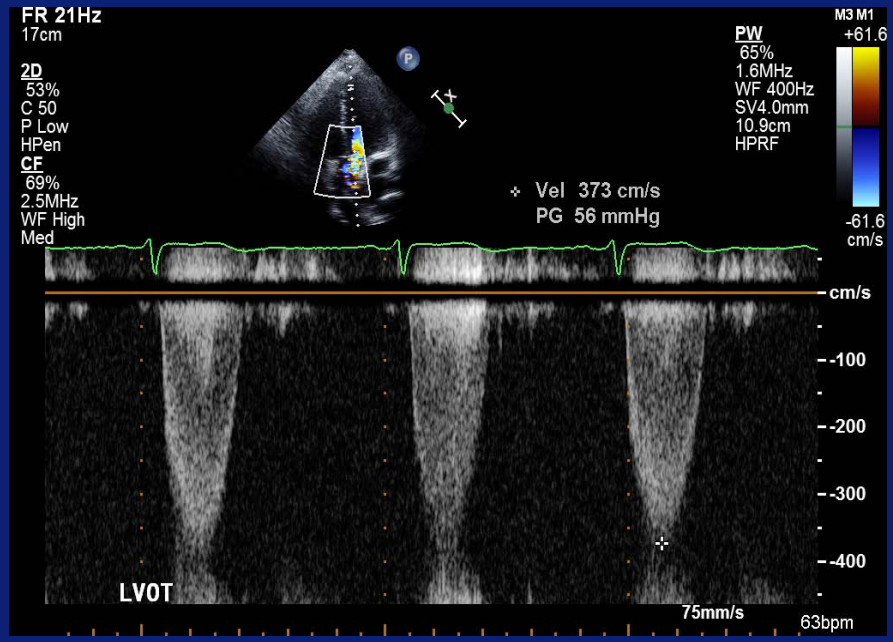
AP5CH



Postoperative evaluation PAVSD: LVOT obstruction



AP5CH zoom



Vmax LVOT 3.7 m/s

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Conclusion

Post operative follow up:

- First out patient echo:
  - Full work-up and where possible 3D
  - Exclude residual shunts at the AV junction / LVOT obstruction / AV valve regurgitation / PH
- Consecutive follow up echo's in cases of LAVV regurgitation
- Short echo protocol:
  - LV dimensions and function with 3D where possible
  - LA volume
  - RA / RV pressures

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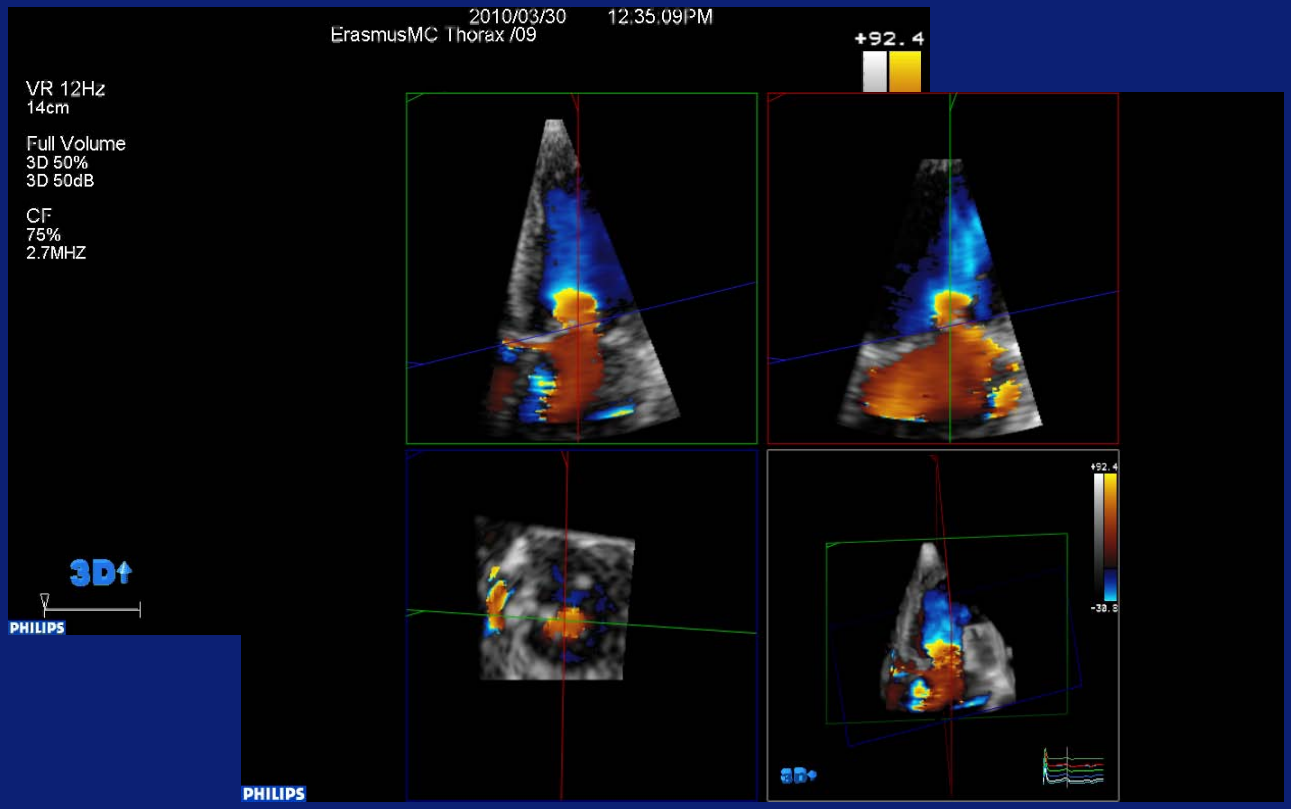
Left AV valve regurgitation: Severity?



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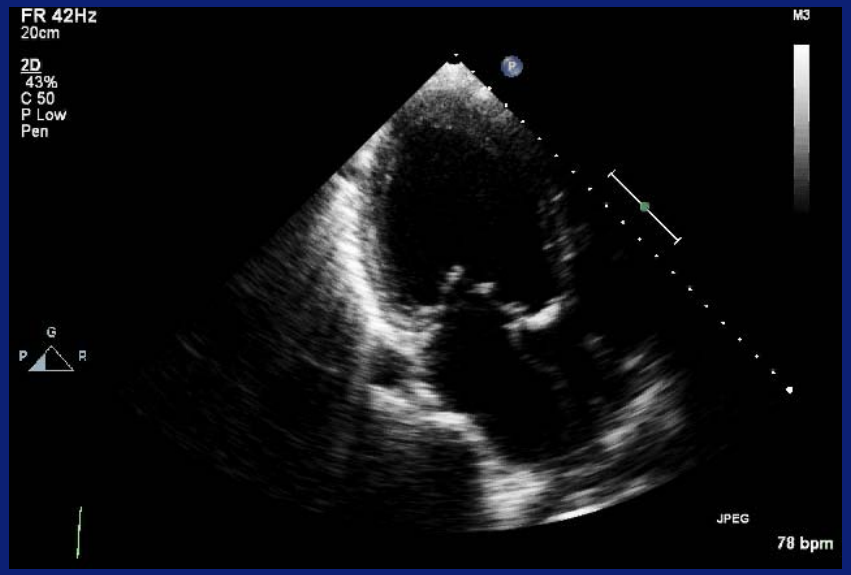
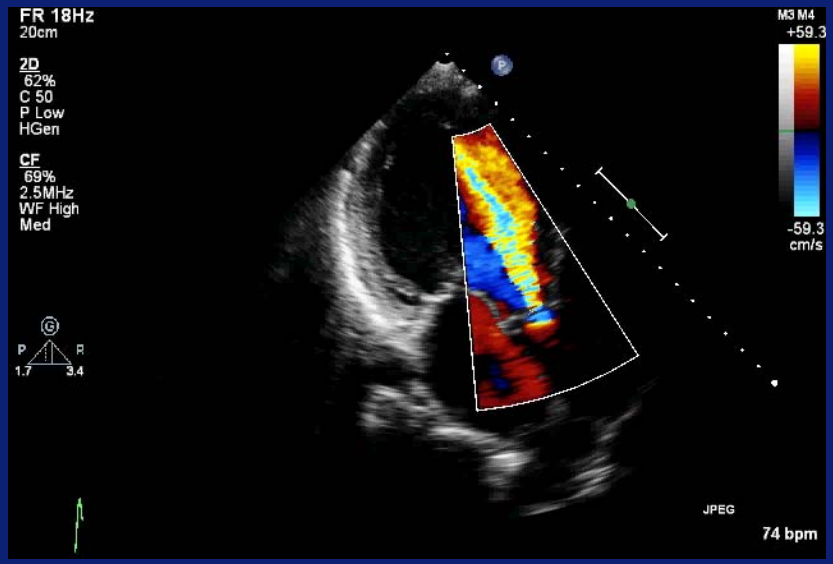
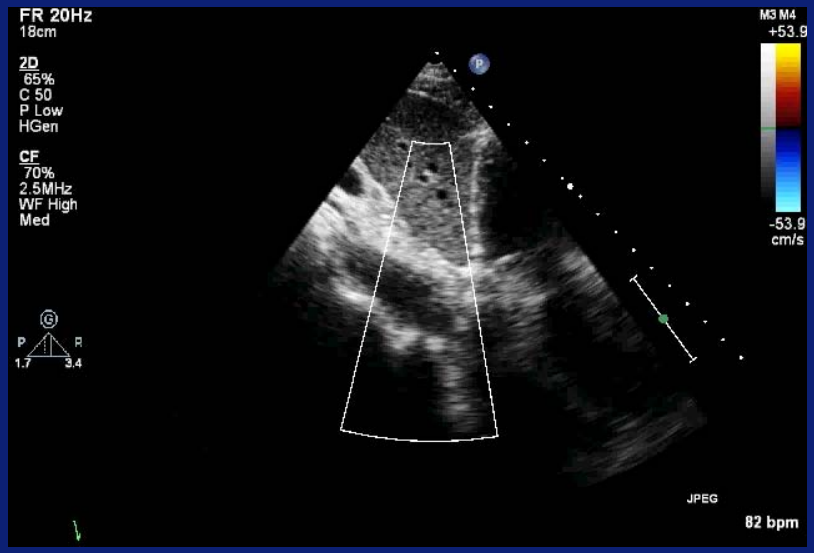
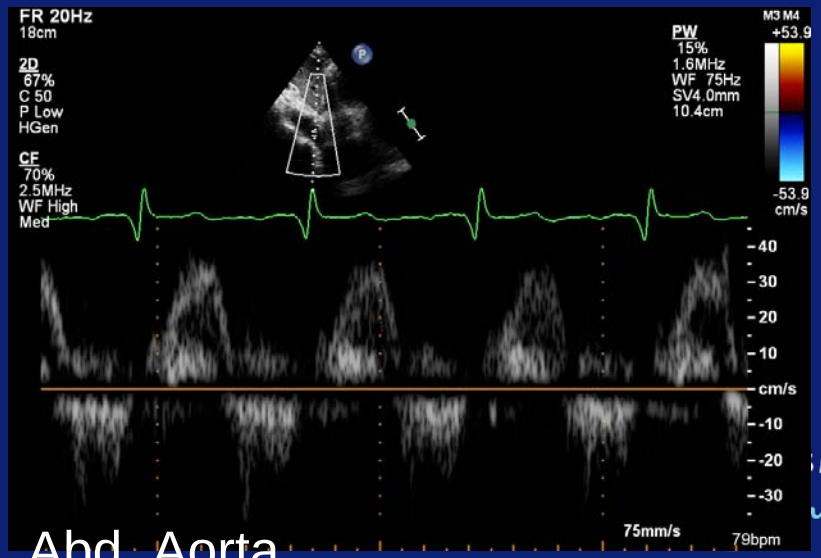
Aortic valve stenoses and regurgitation



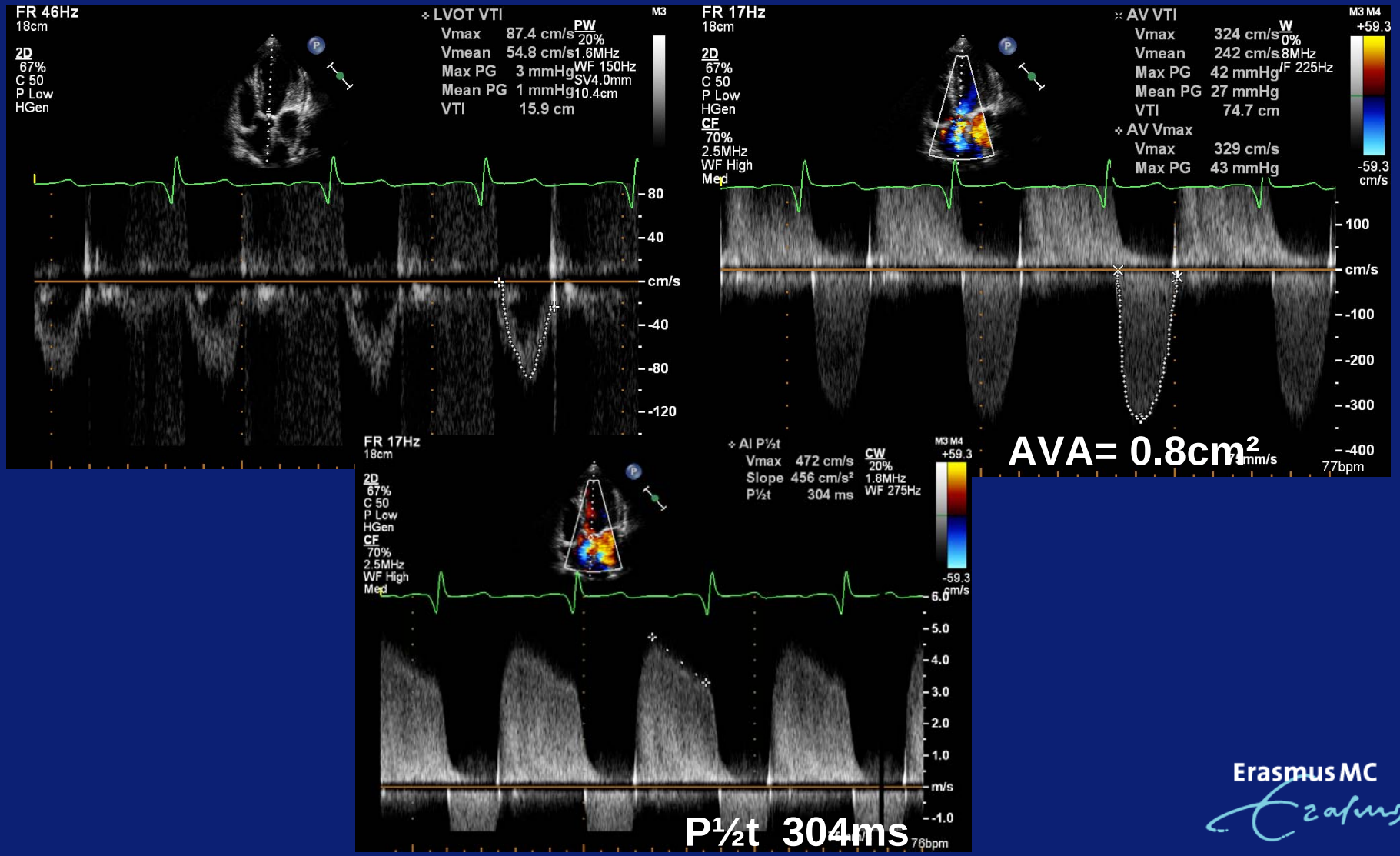






Abd. Aorta

Doppler evaluation of the AS and AR



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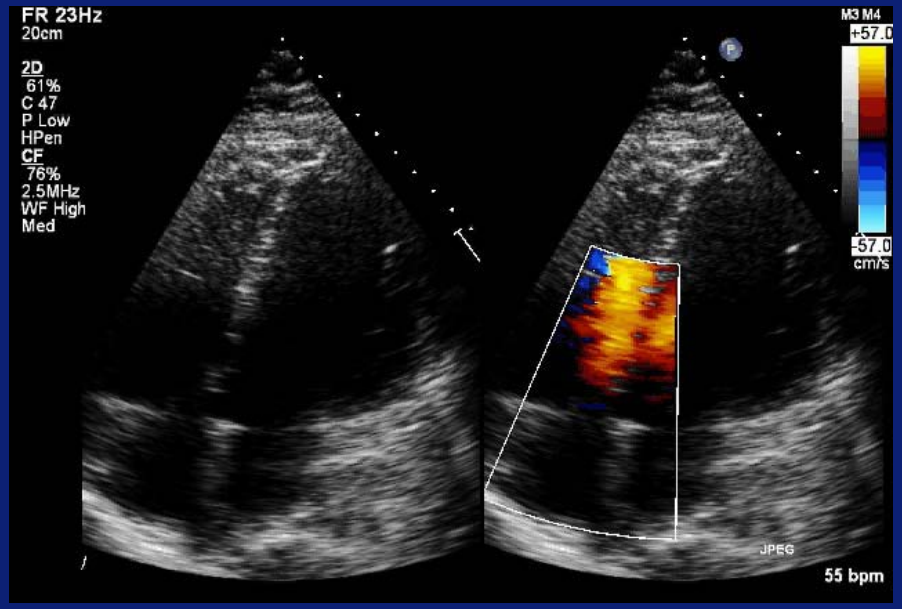
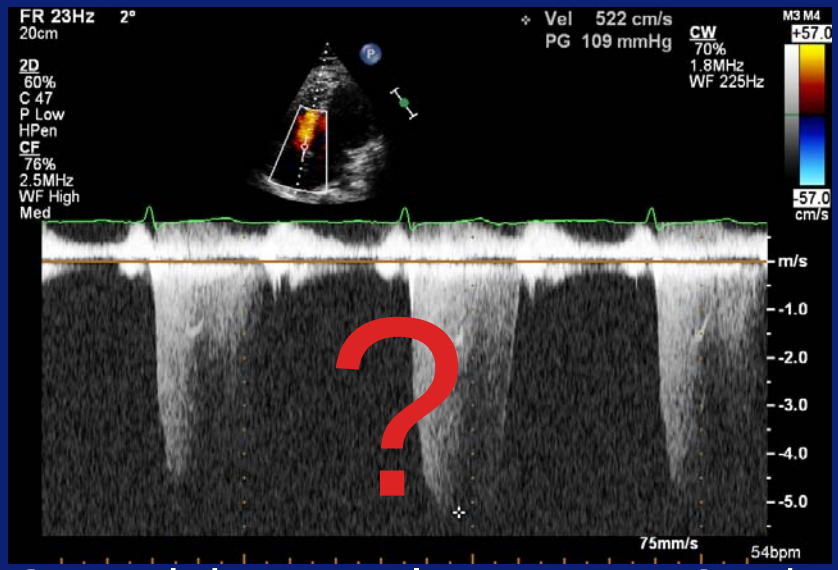
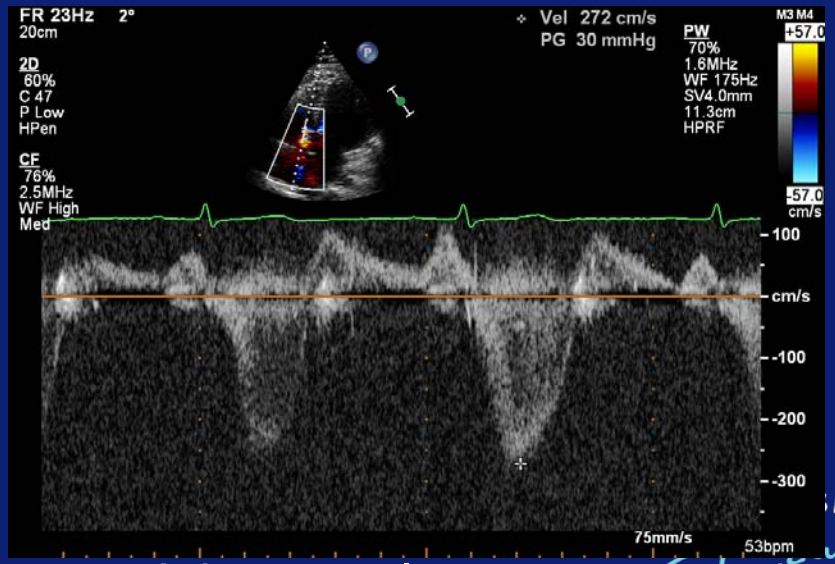
Postoperative evaluation: PAVSD



AP4CH

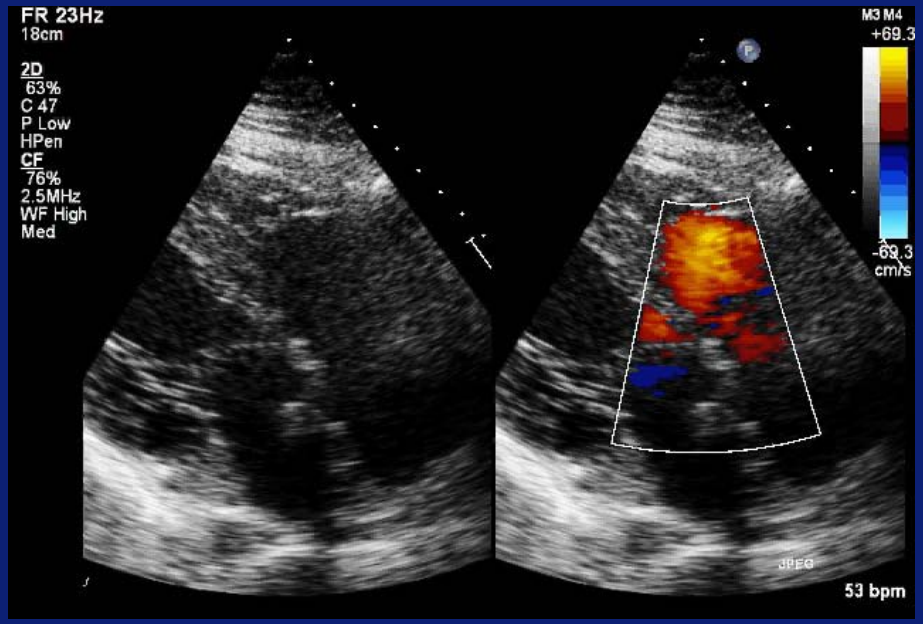


CW: Right AV valve Vmax 5.2 m/s



PW: Right AV valve Vmax 2.7 m/s

Postoperative evaluation: PAVSD



RV inflow

PSSAX

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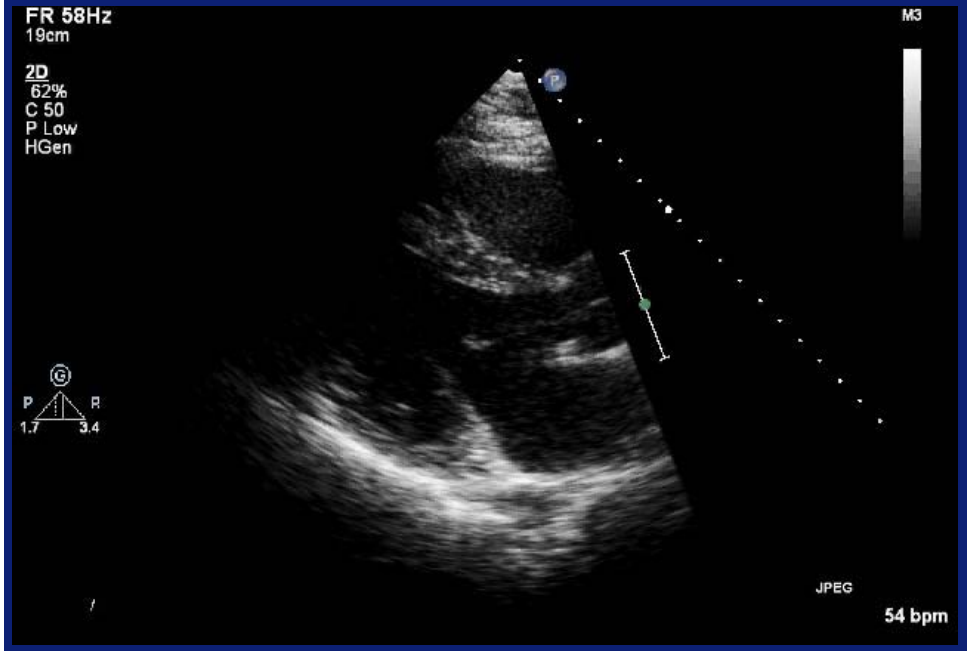
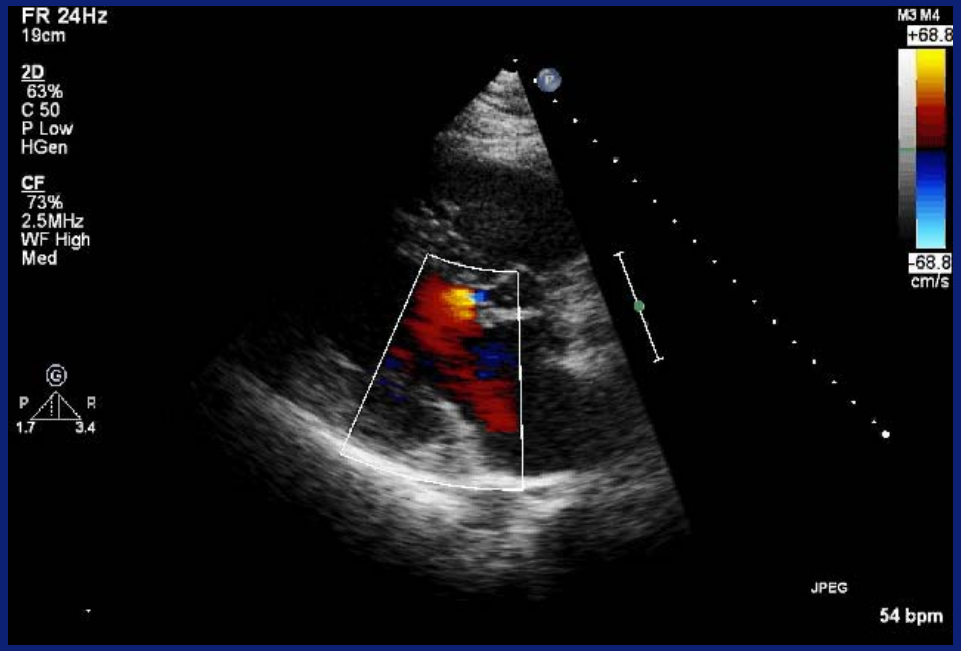
Postoperative evaluation: PAVSD

Case: 41y female corrected in 1984 for a PAVSD and ASDII



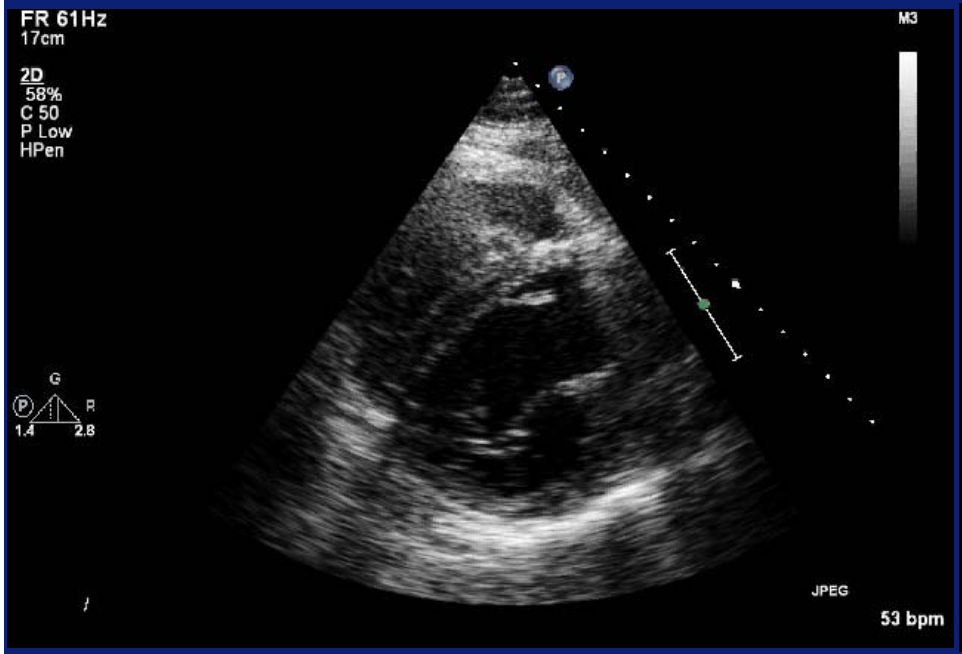


Left sided AV valve regurgitation

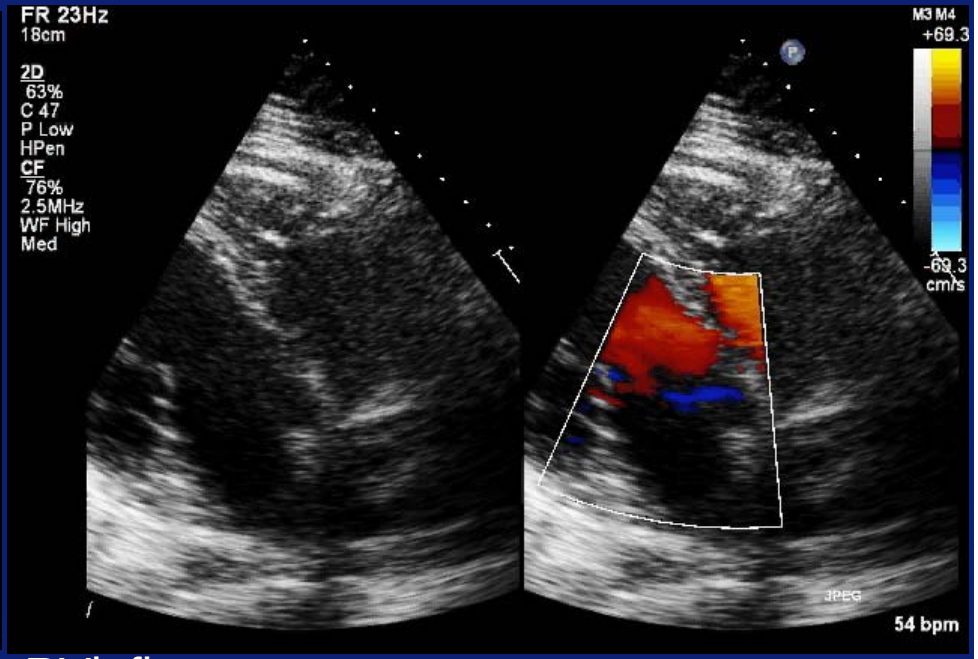
Patients lenght: 1.68 m
weight: 120 kg!

Erasmus MC

Postoperative evaluation: PAVSD



PSSAX

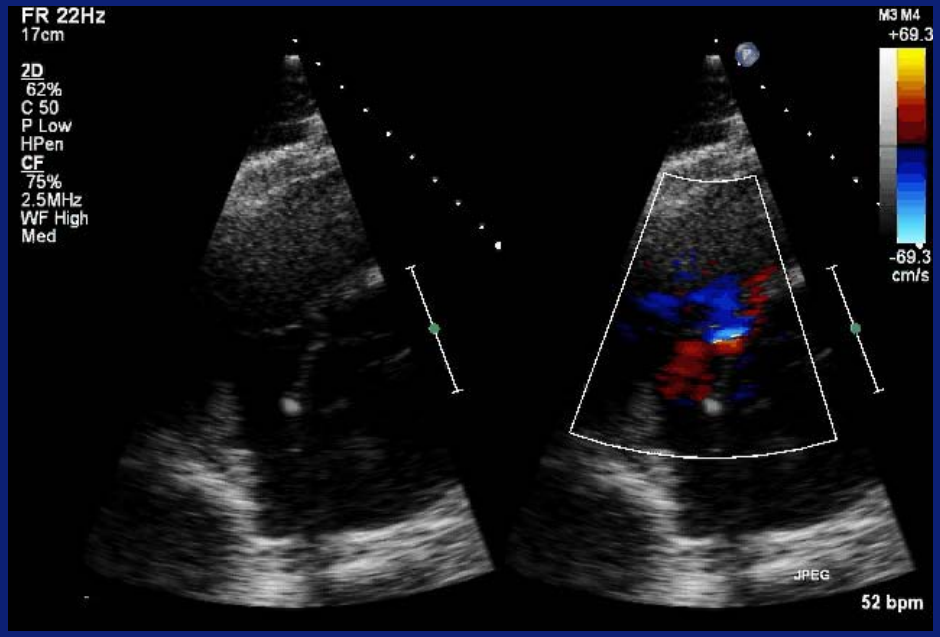


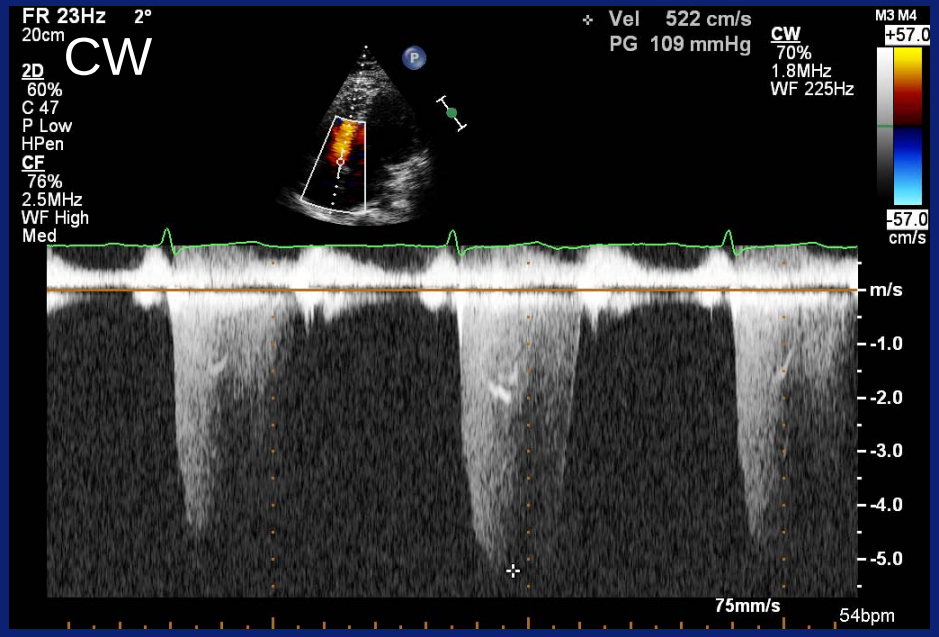
RVinflow

Mechanism of left sided AV regugitation?

Erasmus MC

Postoperative evaluation: PAVSD





PSSAX

Right sided AV valve regurgitation with Vmax 5.2m/s!

Erasmus MC

Postoperative evaluation of PAVSD and CAVSD

Vavular regurgitation:

- mainly leftsided AV valve
- mechanism of AV regurgitation

Residual septal defects:

- residual VSD (high velocity)
- residual ASD(low velocity)
  - difficult to see!
  - multiple colour jets in atrium

LVOT obstructie:

- elongated outflow tract, abnormal chordal attachment
- subaortic obstruction

Pulmonary Hypertension:

- operated too late

Erasmus MC