2011 APCDE
Case Studies

Abnormal Flows
From and To the Heart

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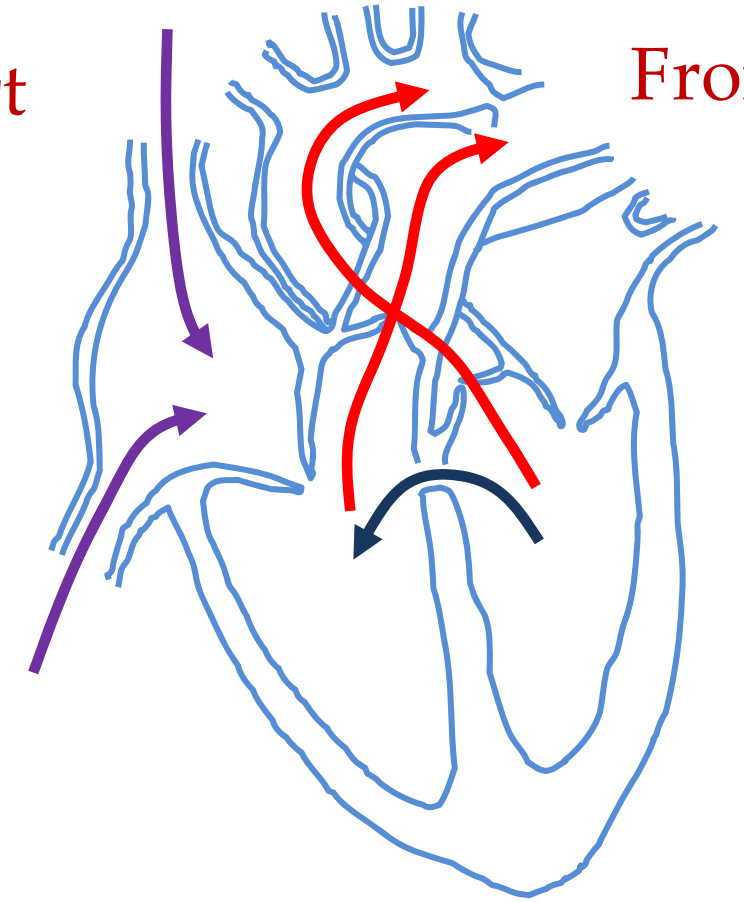
Abnormal Flows

Within Heart

To Heart

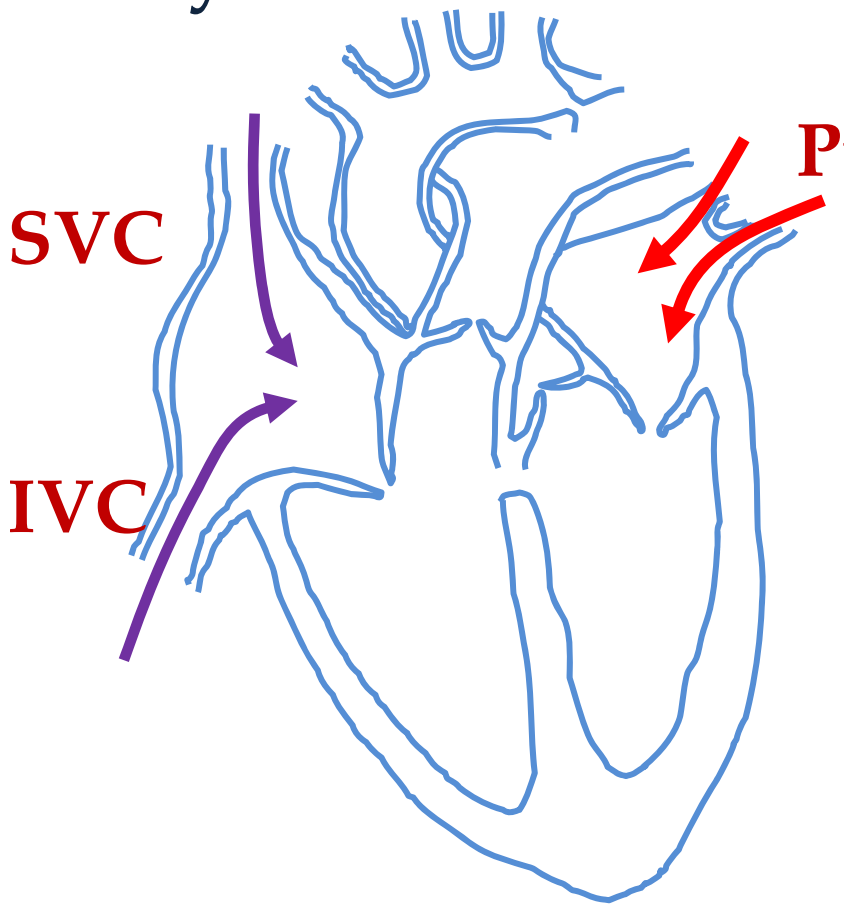
From Heart



Flows TO the heart

From the Body

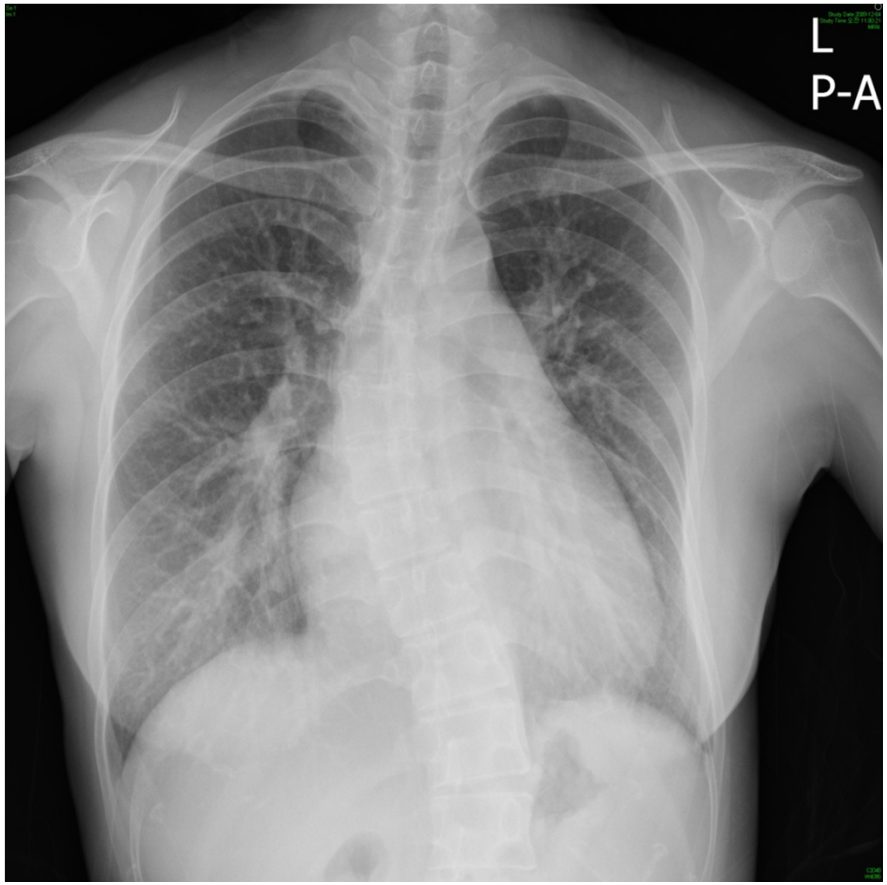
From the Lung

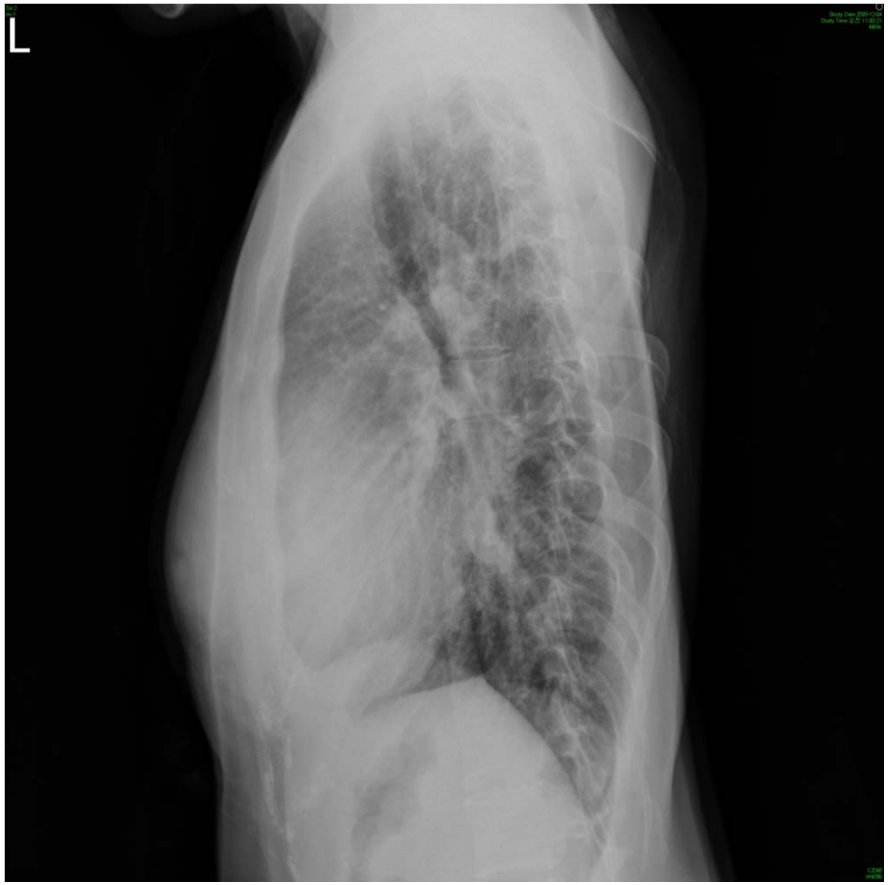


Case 1 (28-YO-Female)

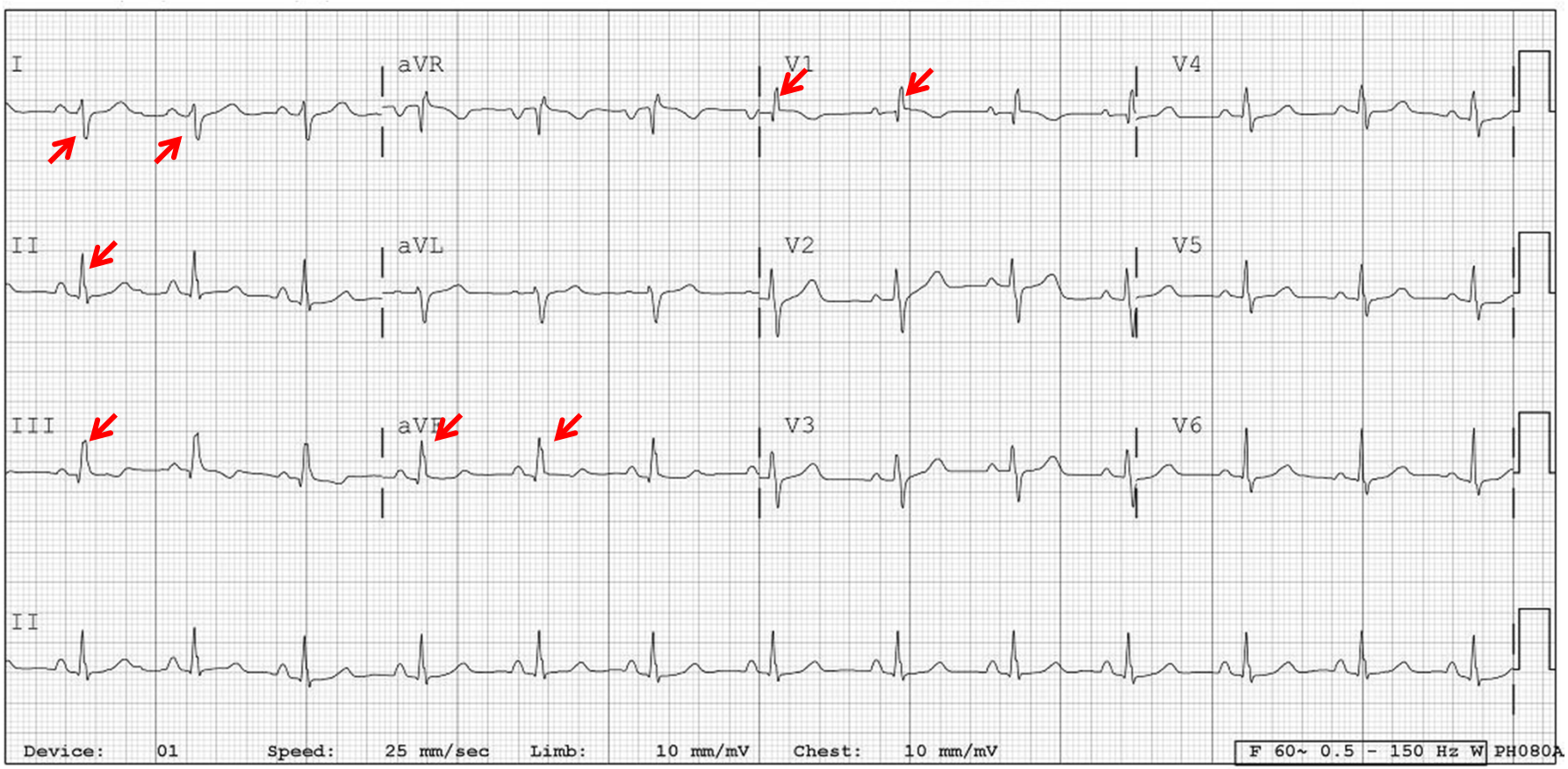
- Dyspnea
- Diagnosed as valvular heart disease (TR?) with RV dilatation
- Gr 3 systolic murmur at pulmonic area

Chest X-ray

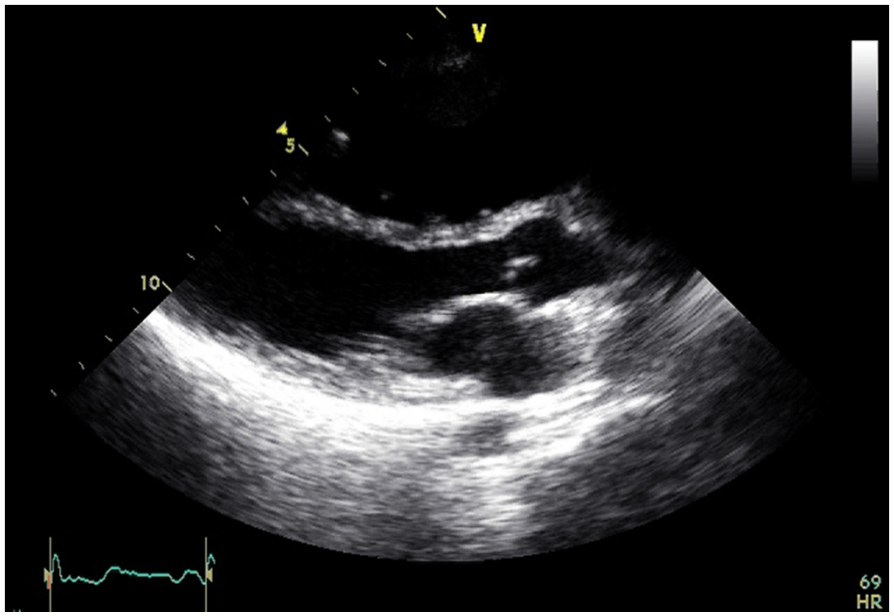


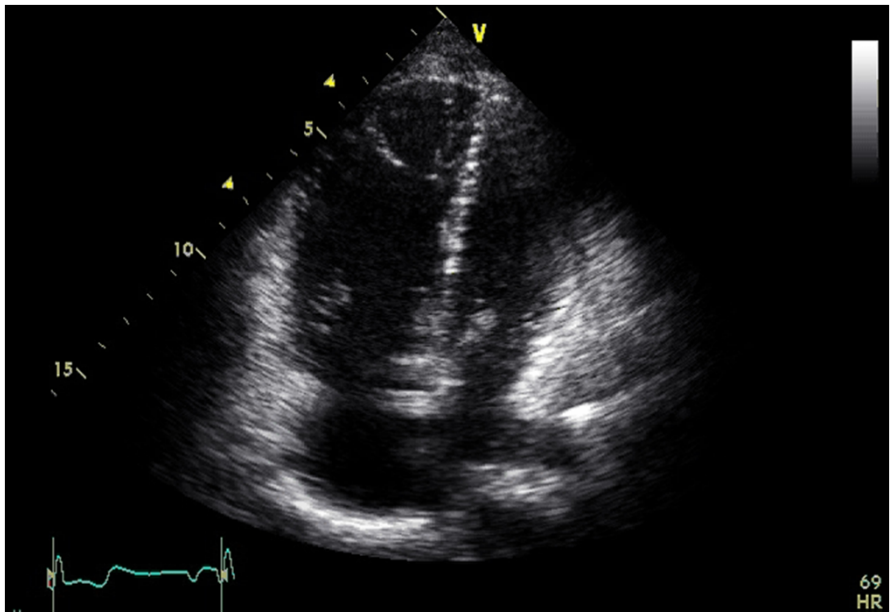


ECG

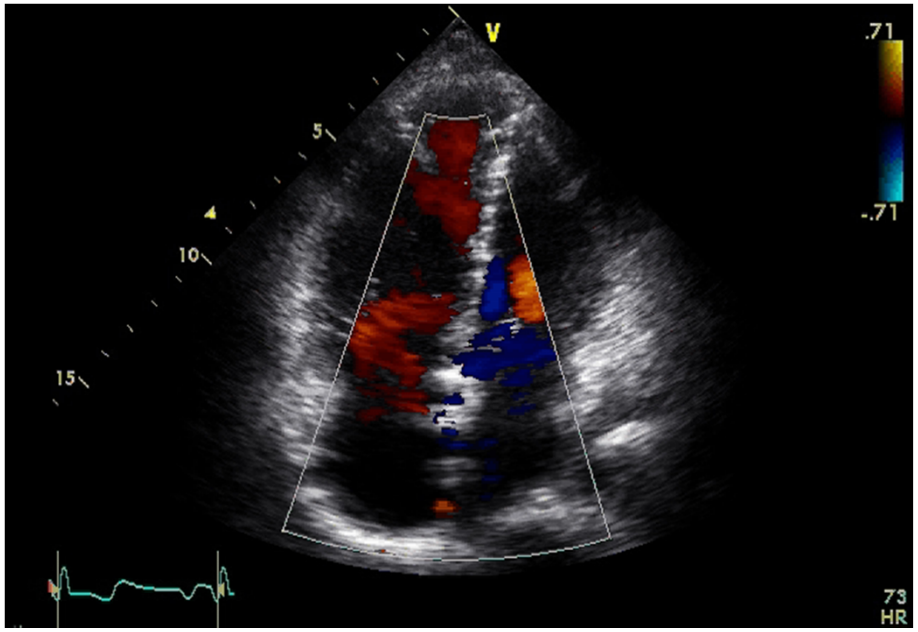

I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
Device: 01 Speed: 25 mm/sec Limb: 10 mm/mV Chest: 10 mm/mV
F 60~ 0.5 - 150 Hz W PH080A

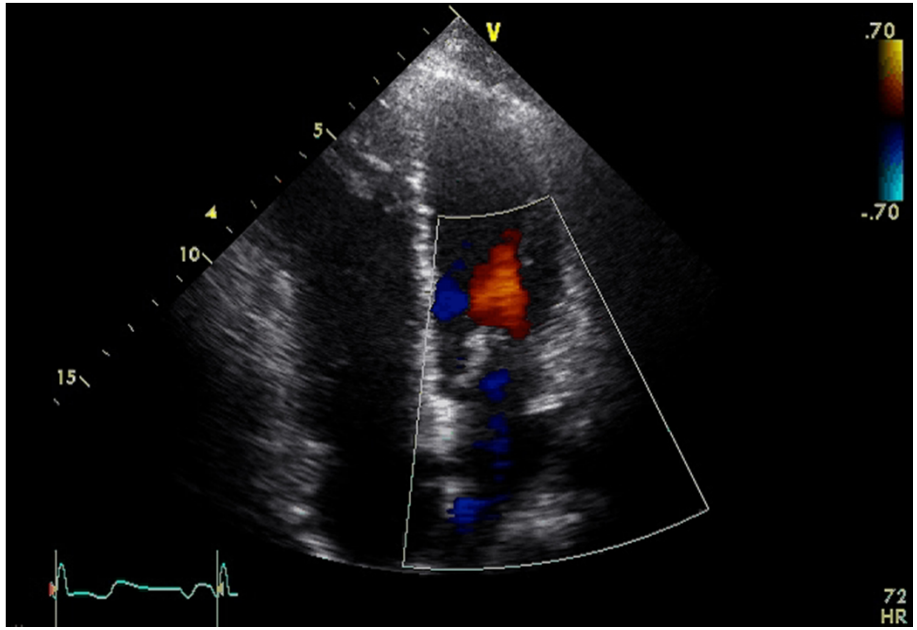
2D Parasternal & apical view



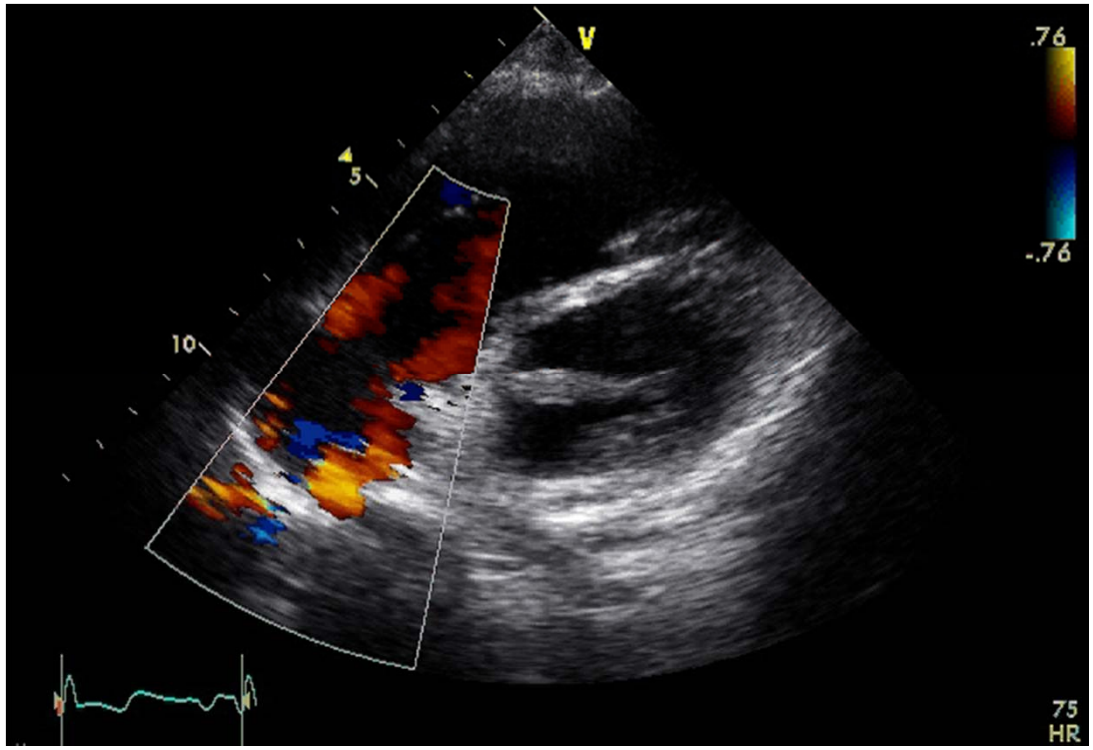


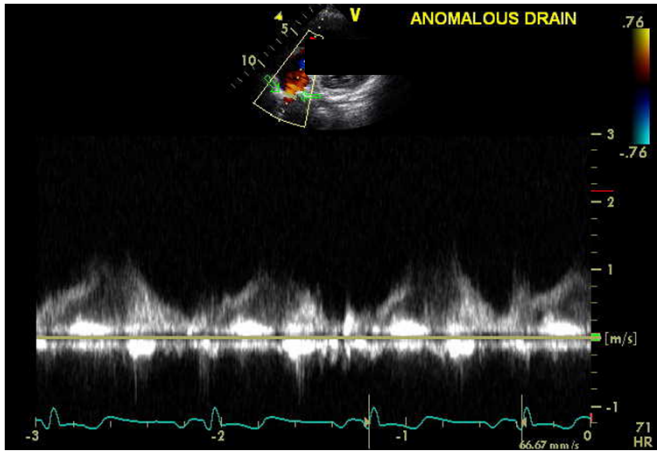
Apical view (color Doppler)



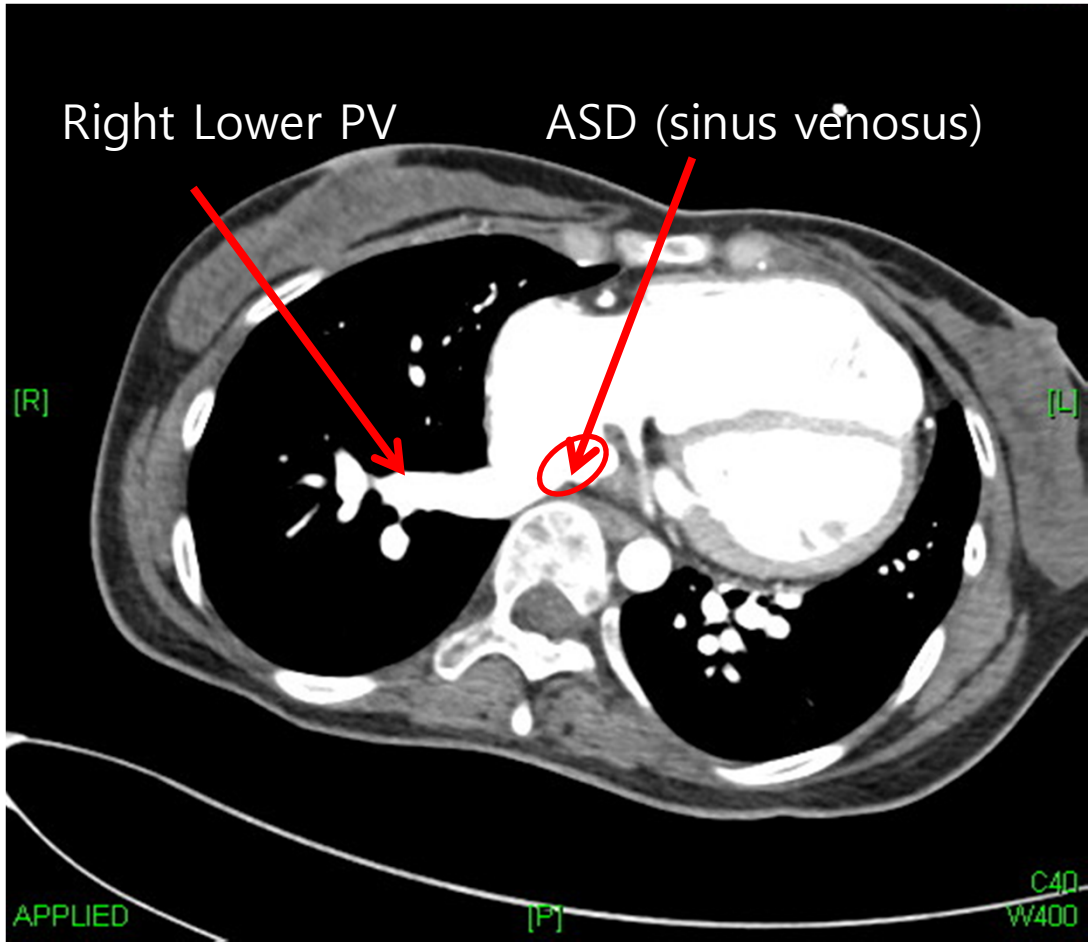


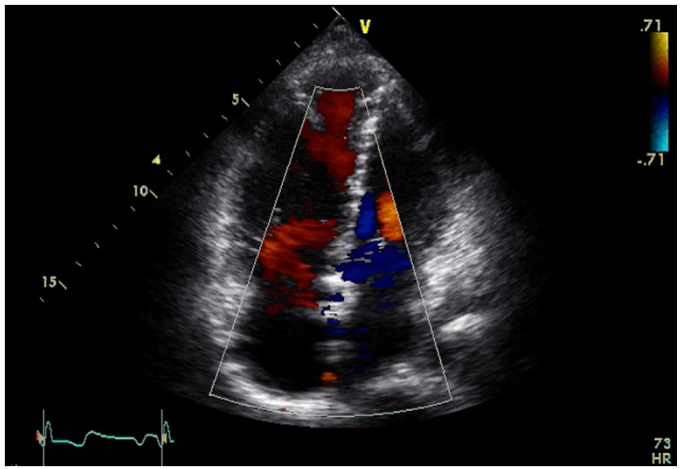
IVC or SVC ?

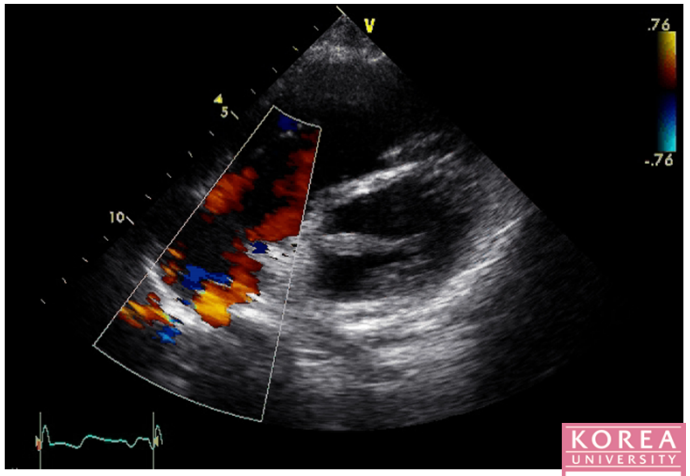




Abnormally returned PV







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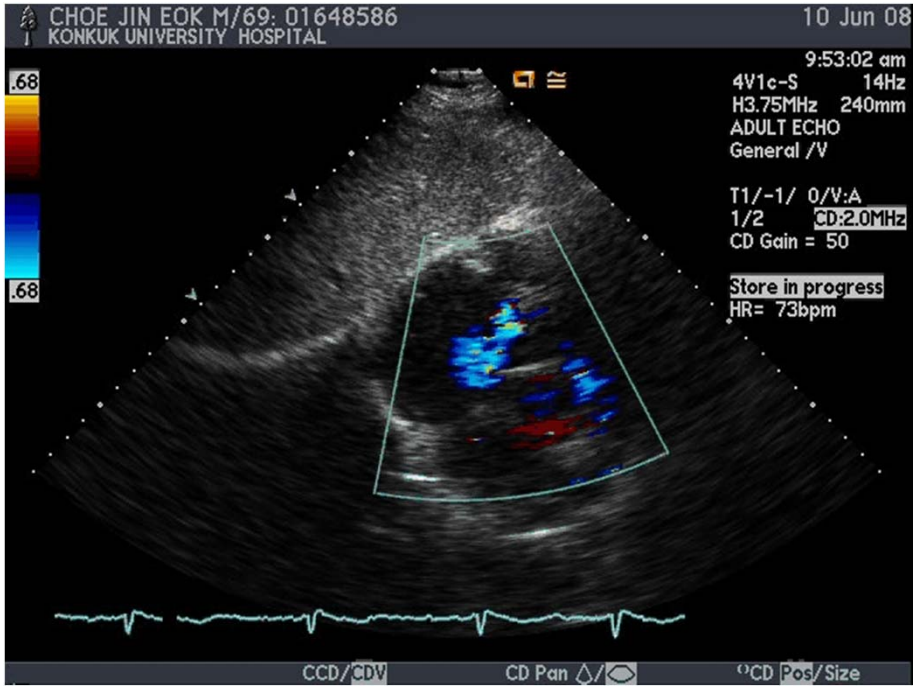
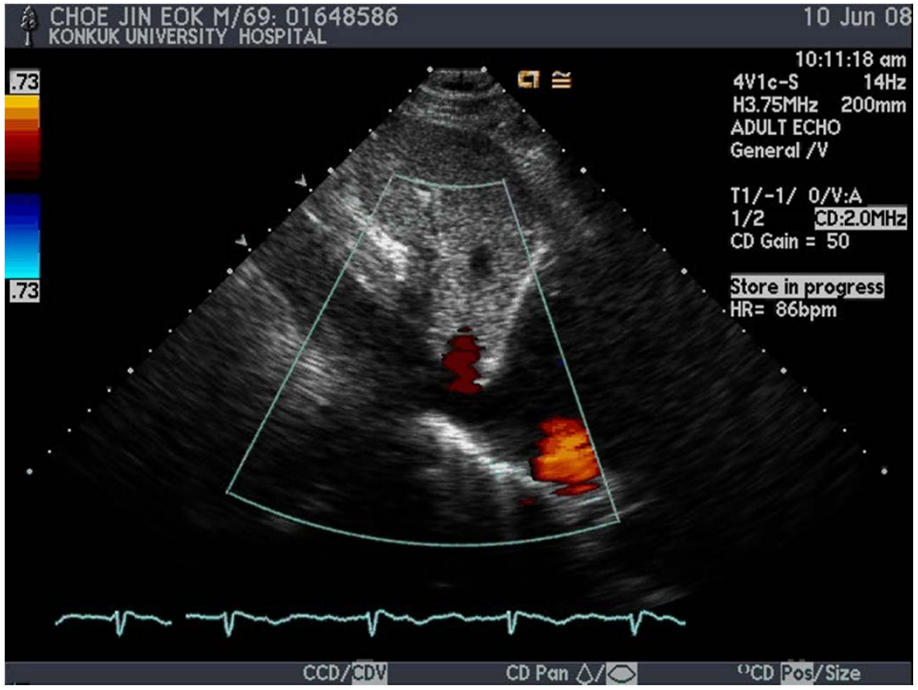
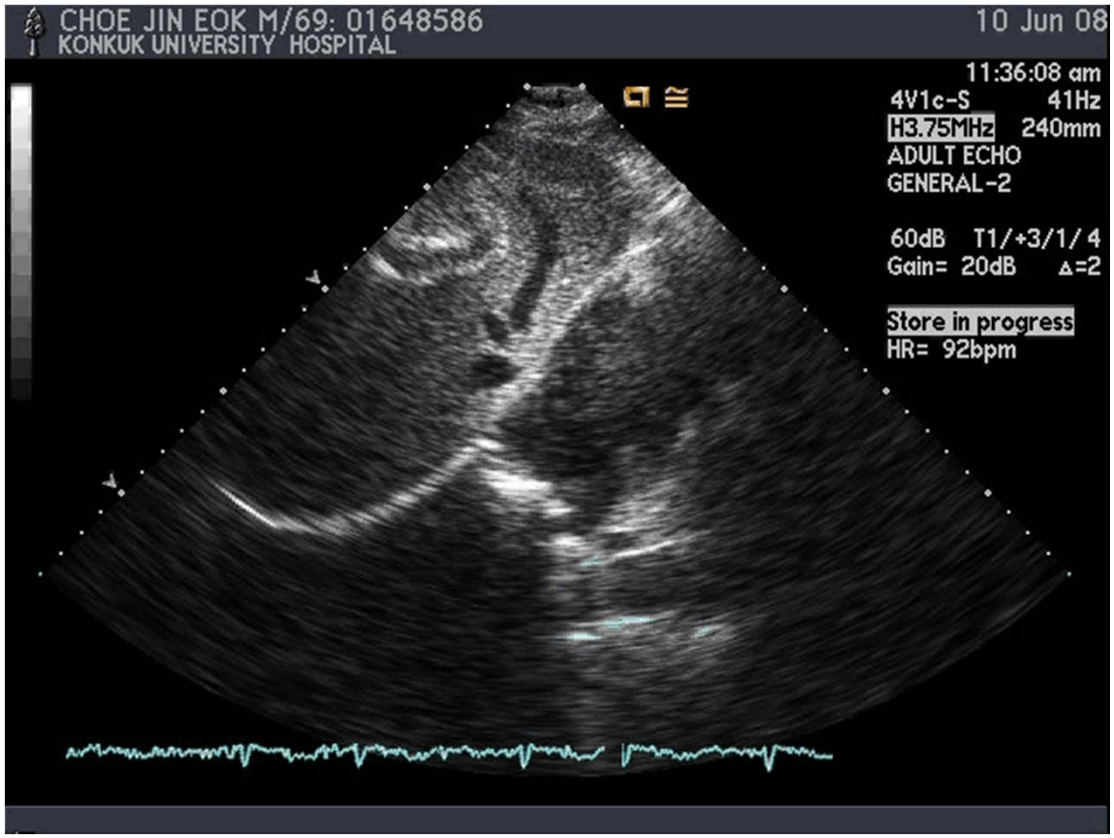
Case 1-2 IVC or SVC ?

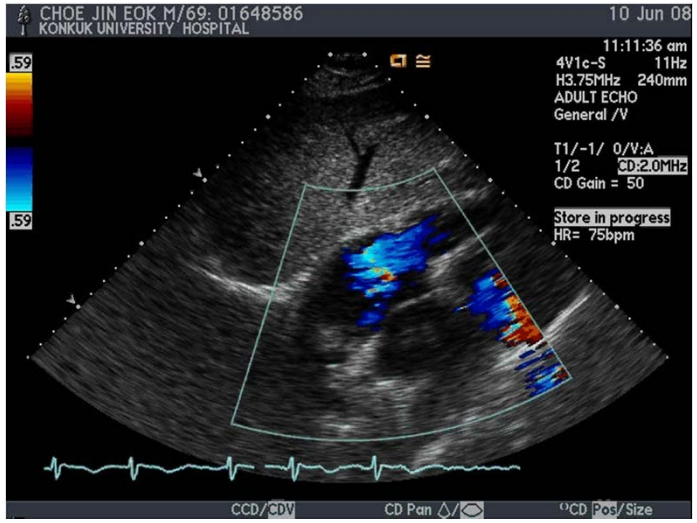
69-Y-Male with dyspnea
Referred as RV dilatation without visible cause





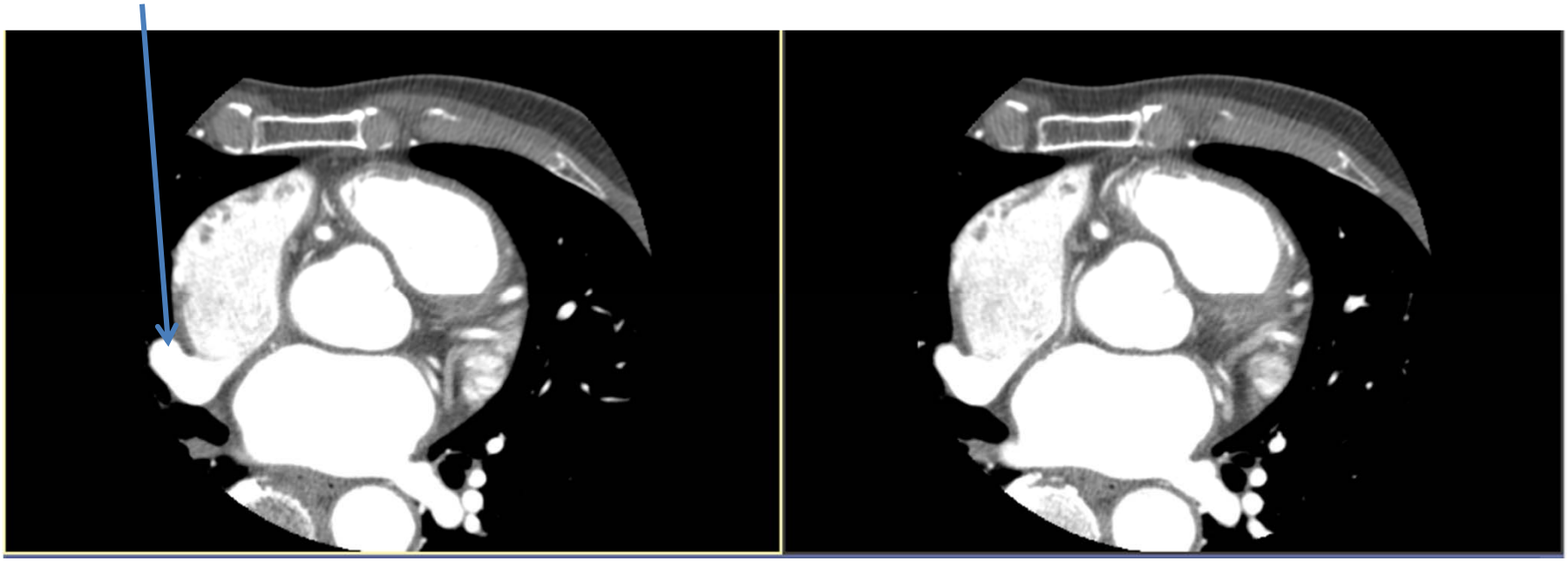
Agitated saline at right upper arm





CT scan

Right lower PV to RA
No ASD



Diagnosis

- Partial anormalous pulmonary venous return (PAPVR) with/without ASD

Case 2 (25-Yr-Female)

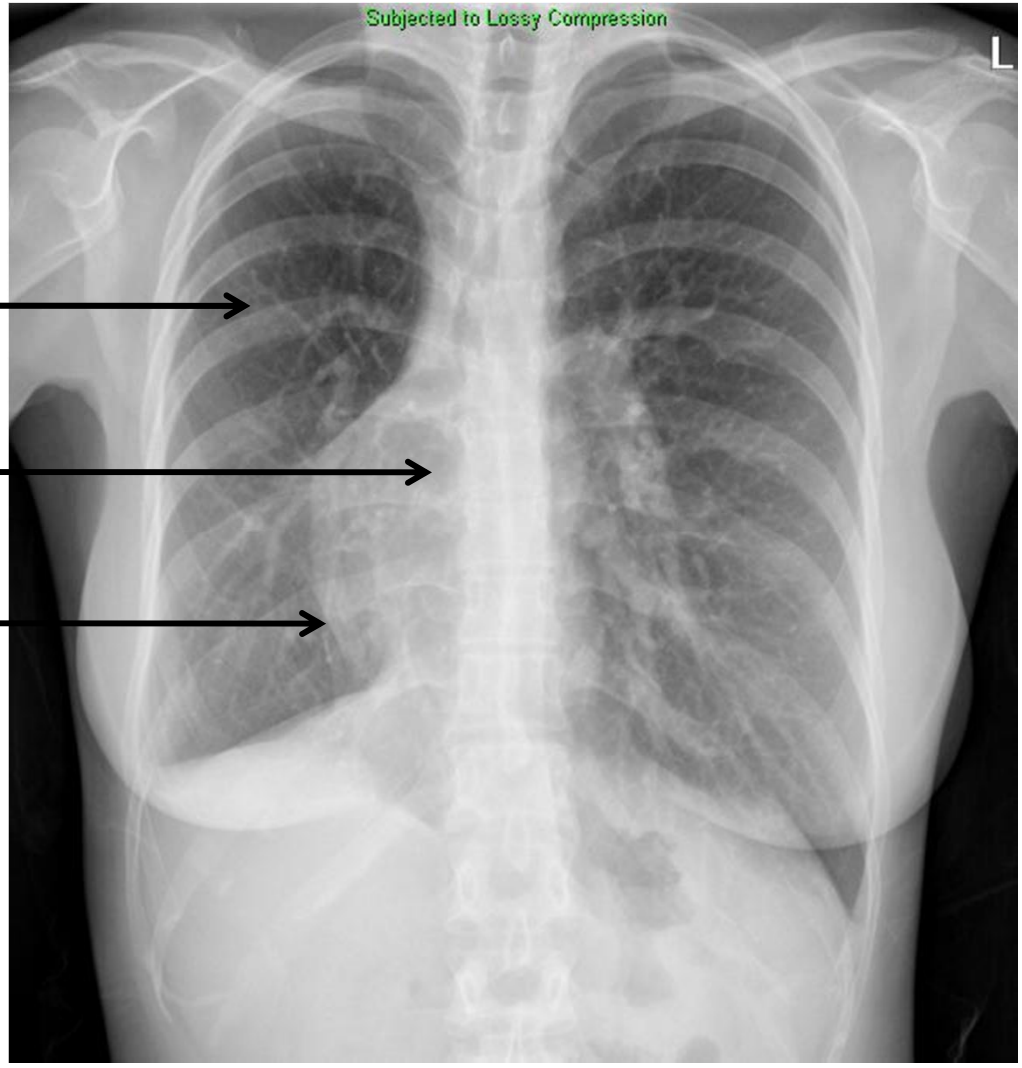
- Dyspnea & dizzy spell
- P/Ex : unremarkable

Chest X ray

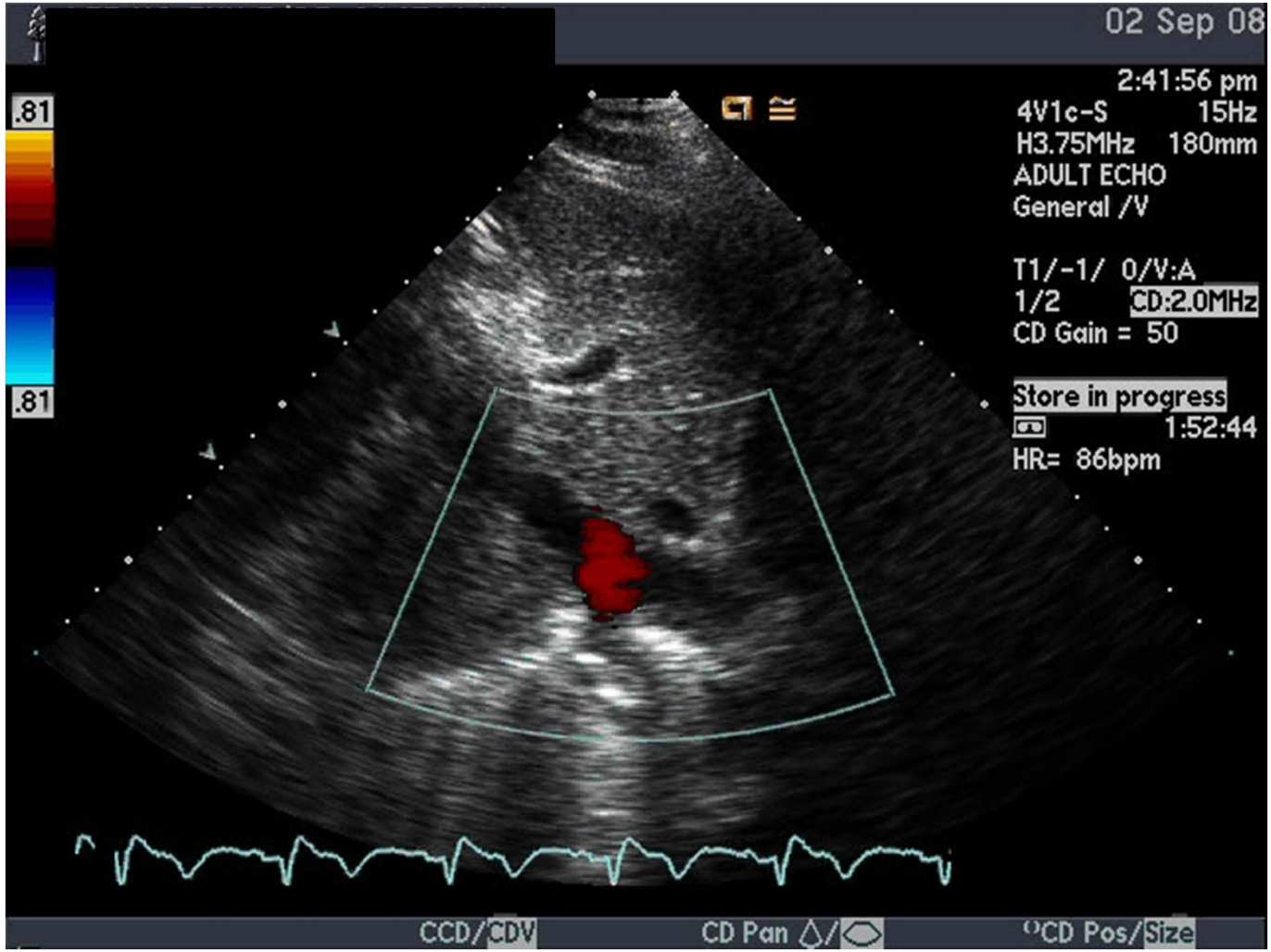
Hypoplastic right lung

Displaced heart to right side

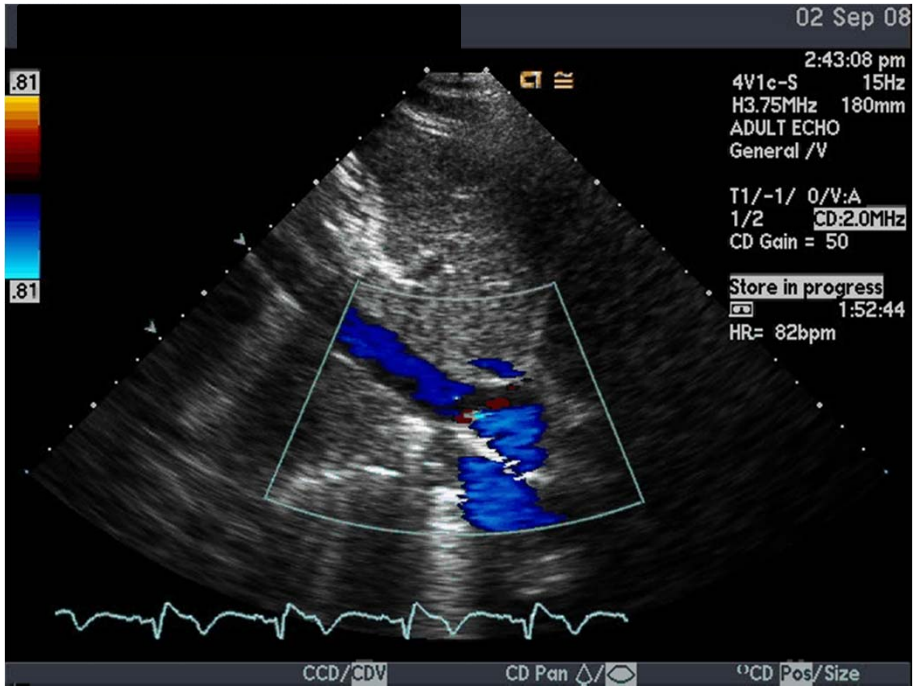
Abnormal shadow

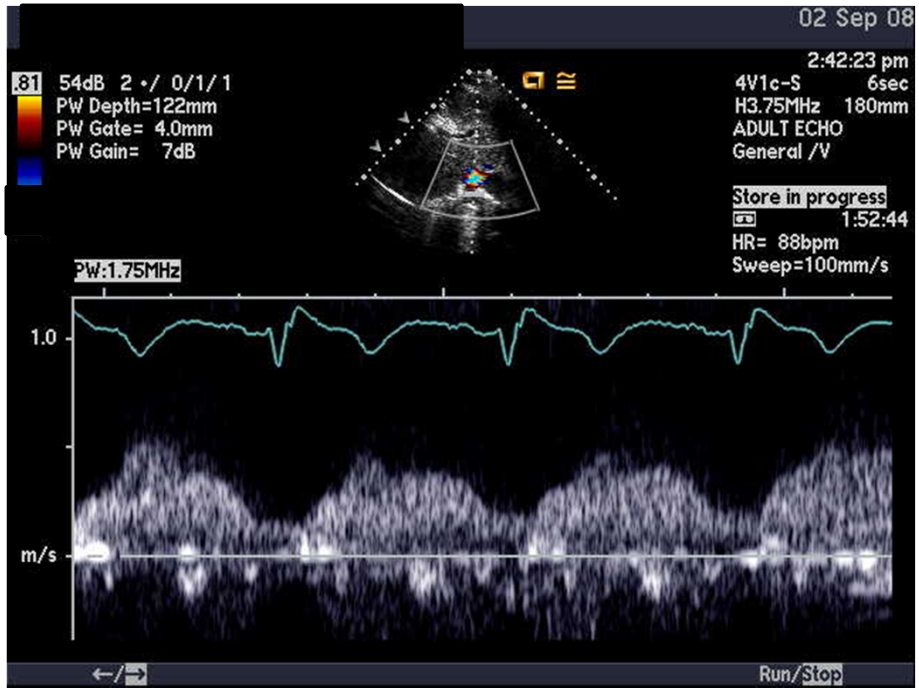


Subcostal view (flow in IVC)



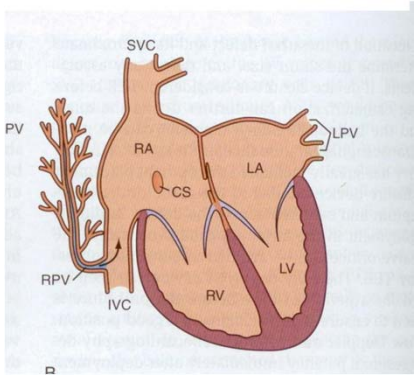
Similar Doppler pattern with PV





Scimitar Syndrome

- Subtype of PAPVR
- PV drained to IVC



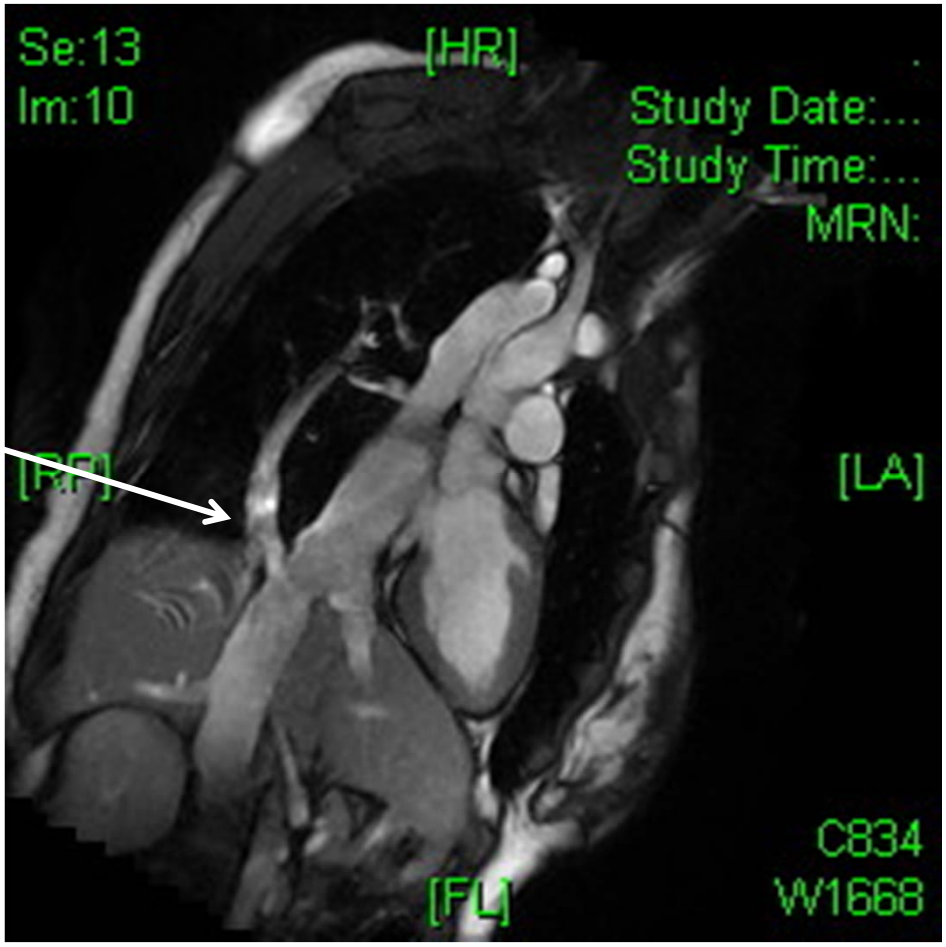
- Pulmonary sequestration (abnormal CXR)
- Surgery required when 2 PV abnormally drained

MRI

Both upper &

Lower right PV

Drained to IVC

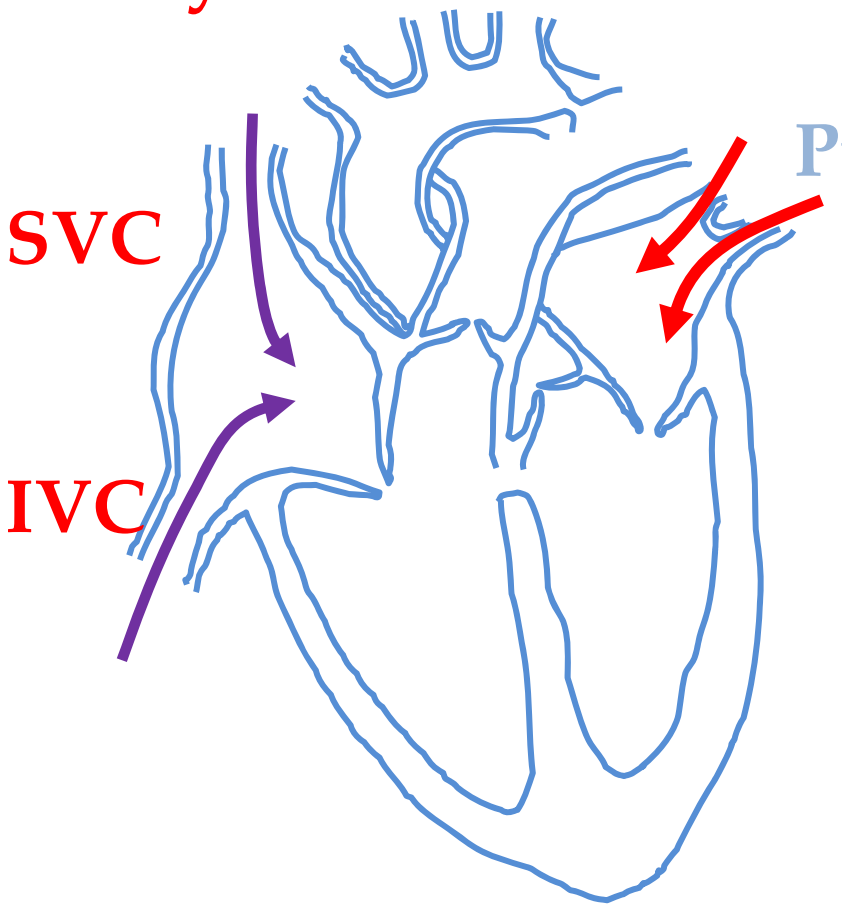


Flows TO the heart

From the Body

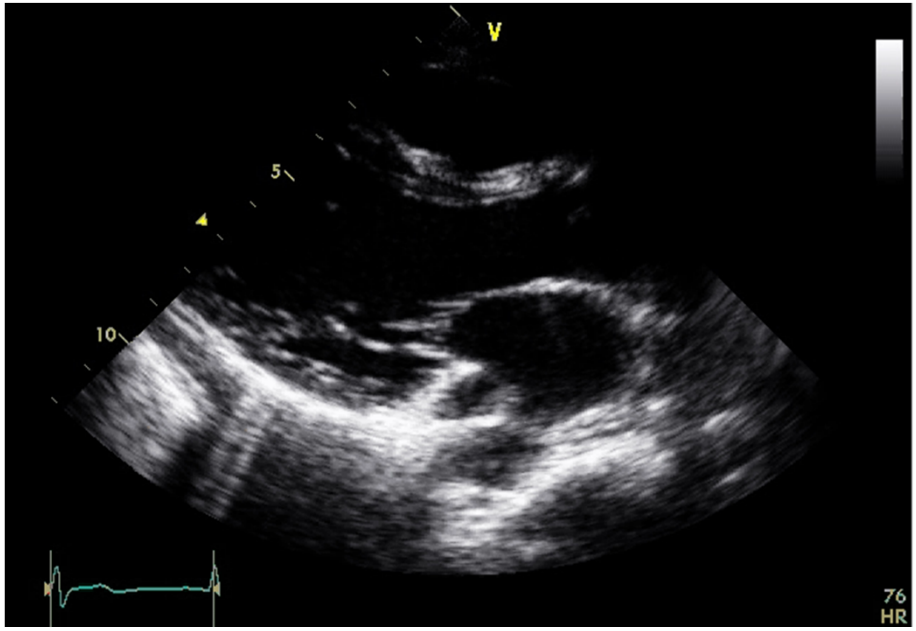
From the Lung

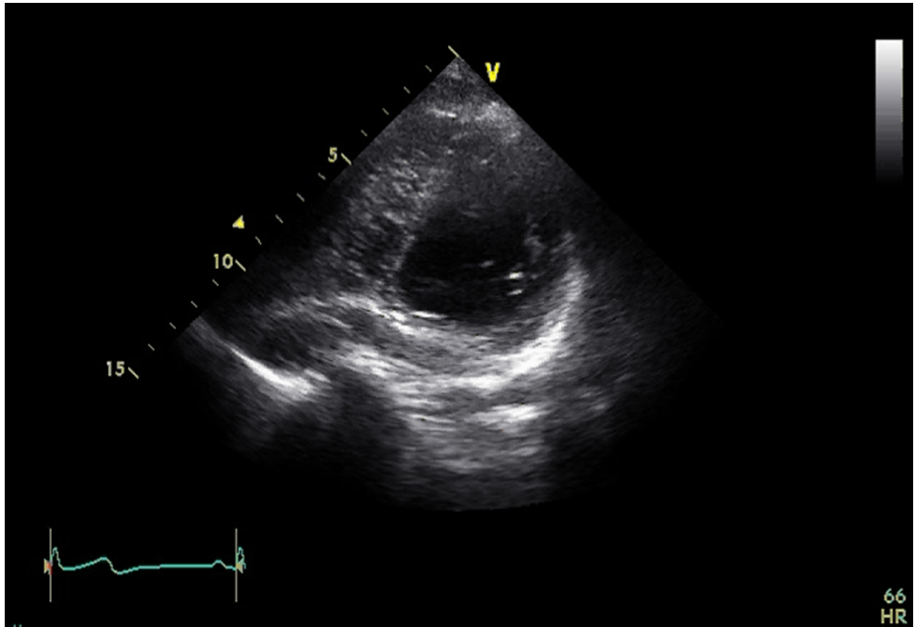
Pulmonic vein



Case 3 (49-Yr-Male)

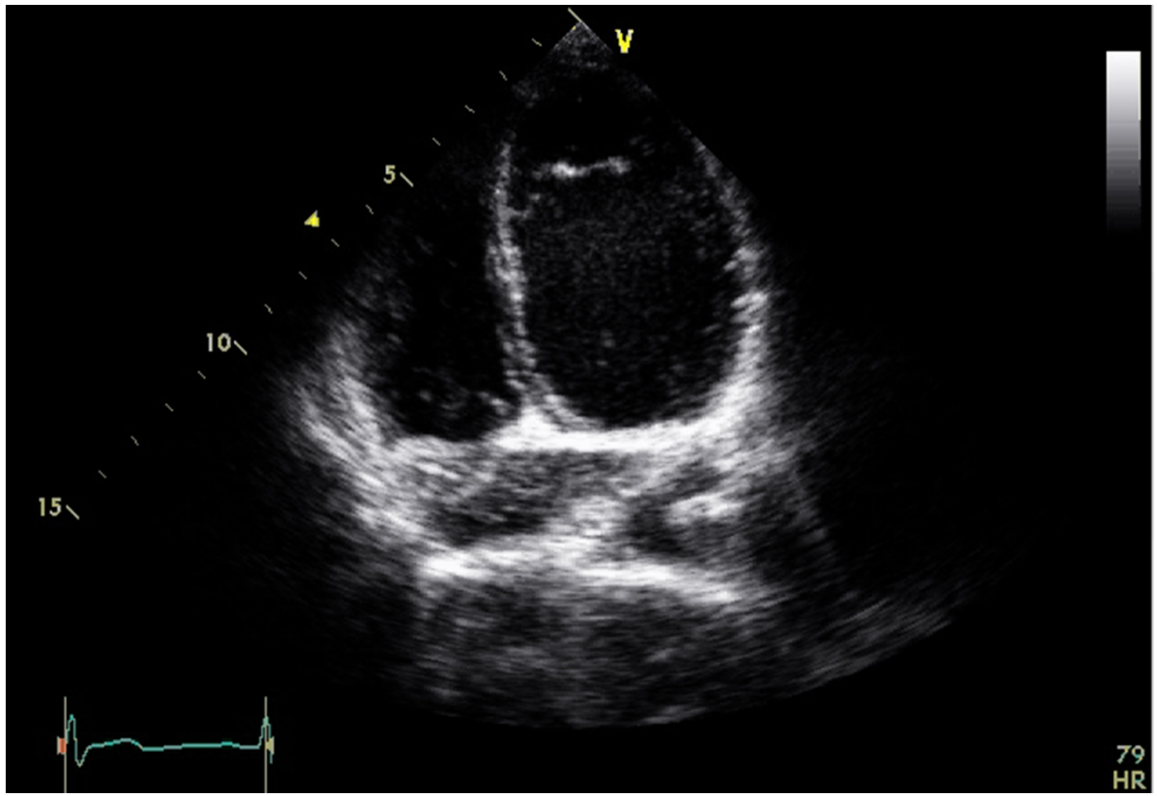
Referred for AF ablation





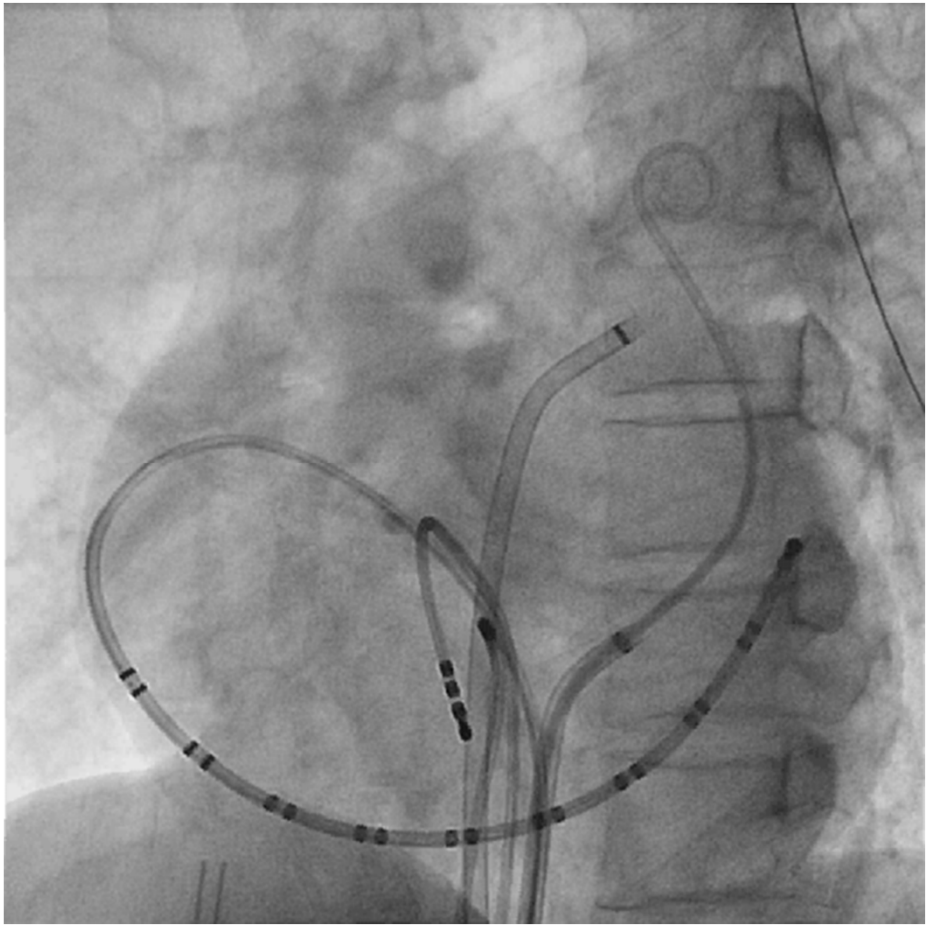
The coronary sinus

Agitated saline
at left arm



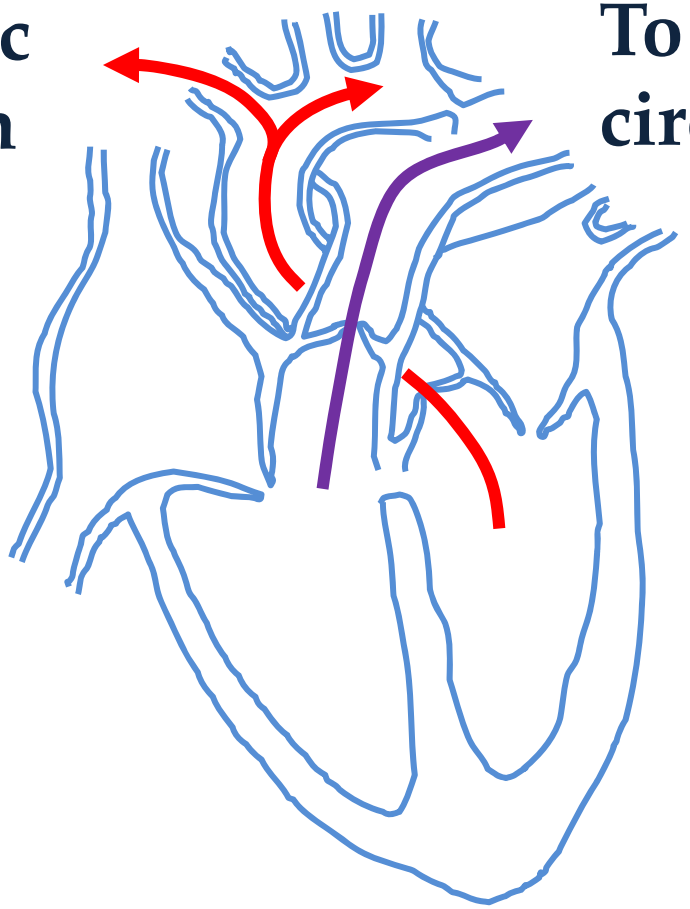
Persistent left SVC (PLSVC)

Important ! when EPS or device implantation



Flows FROM the heart

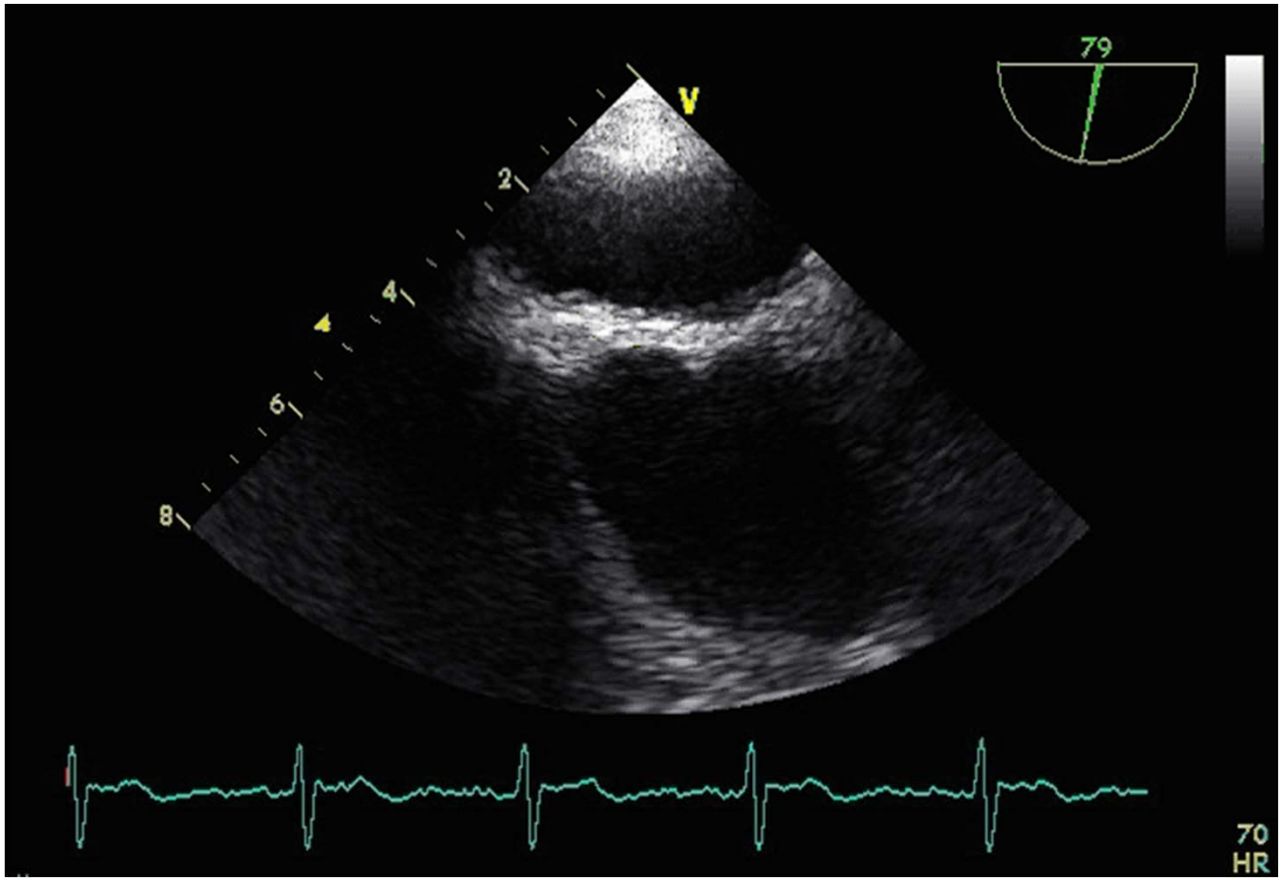
To systemic circulation



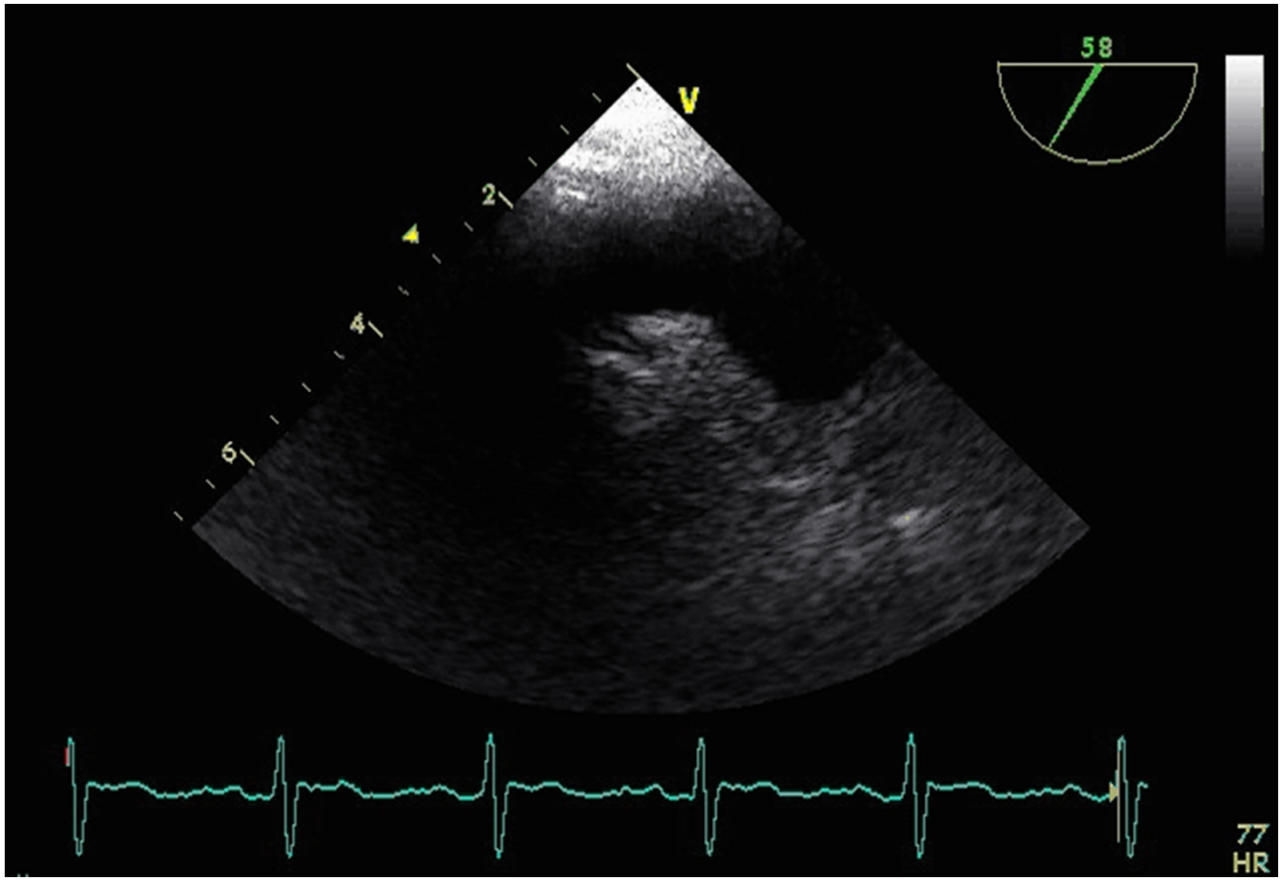
To pulmonic circulation

Case 4 (69-Yr-Female)

Evaluation for Cardiac source of embolism
Many air bubble to LA but delayed appearance (> 5 beat)



From right upper PV



Diagnosis

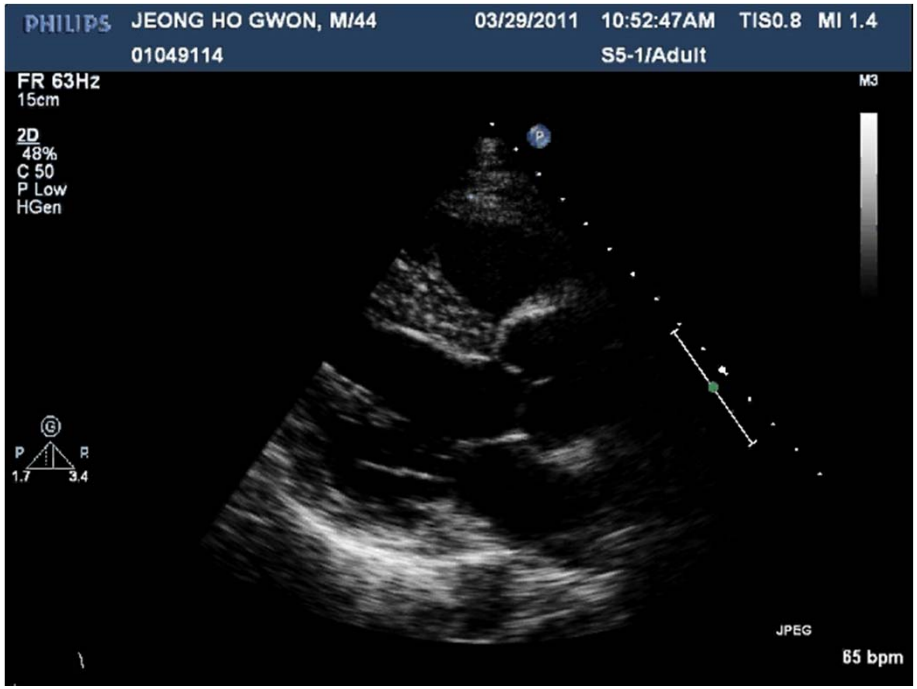
- Pulmonary Artery to PV fistula
- AV malformation at Right middle lobe (CT)

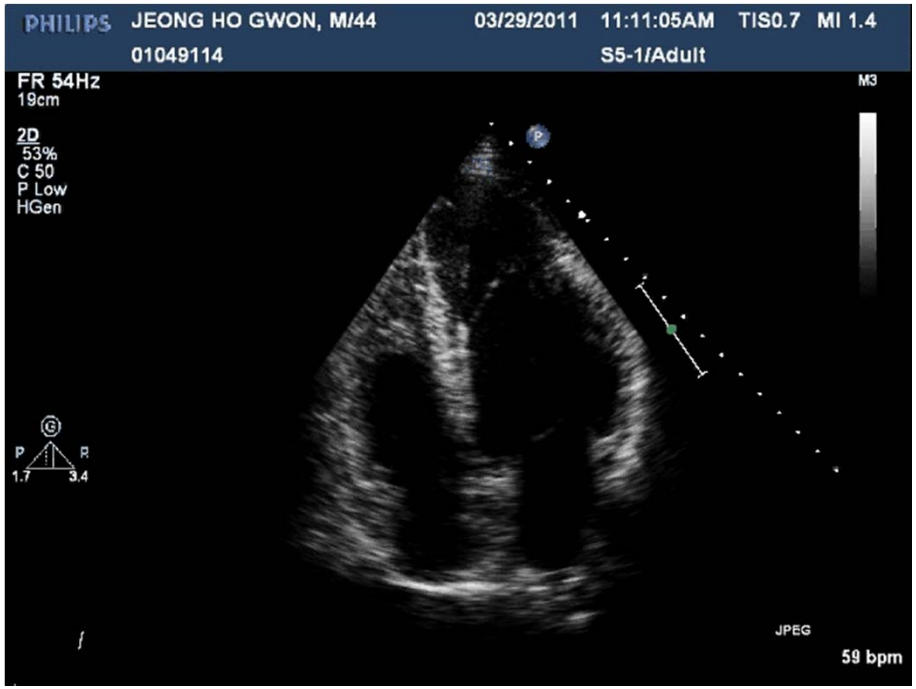
Case 5 (44-Yr-Male)

- Exertional chest pain
- Family history of SCD
- Faint continuous murmur at pulmonic area

Hypertrophic Cardiomyopathy

Is the ONLY cause of chest pain?





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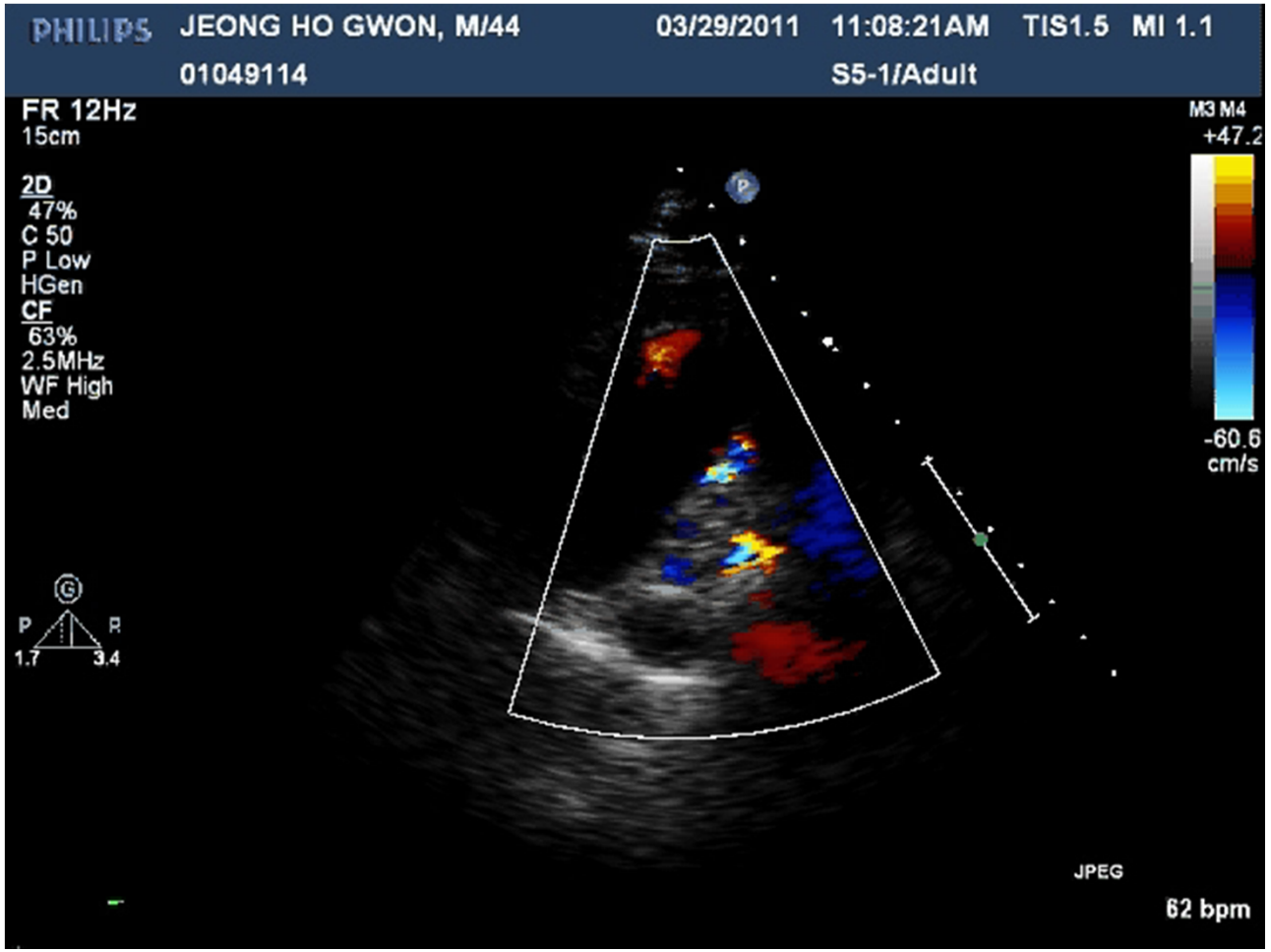
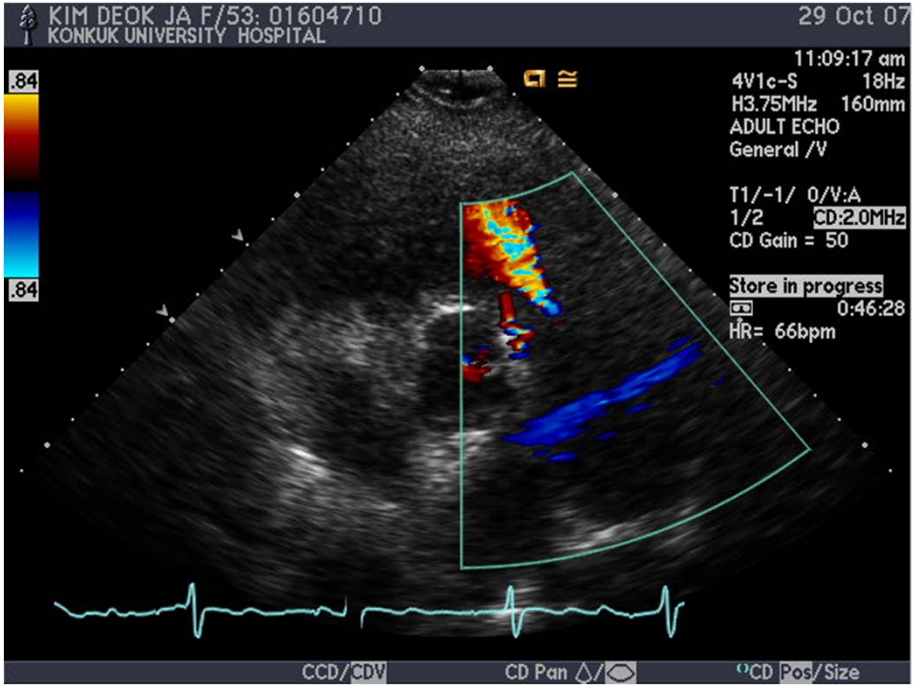
Abnormal flow at pulmonary artery



PR? PDA?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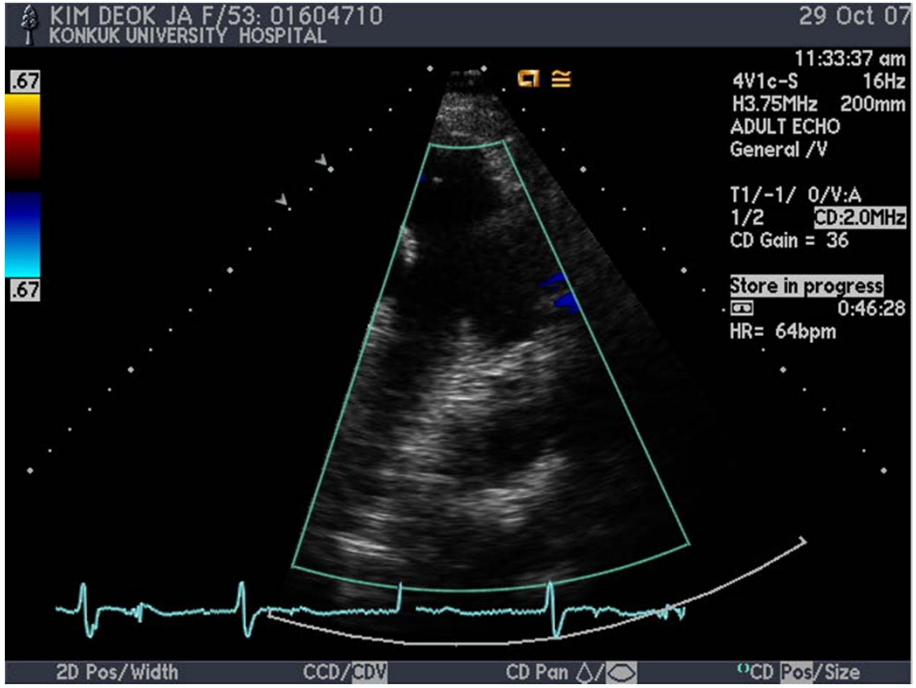
KONKUK UNIVERSITY HOSPITAL
29 Oct 07
11:09:17 am
4V1c-S 18Hz
H3.75MHz 160mm
ADULT ECHO
General /V
T1/-1/ 0/V:A
1/2 CD:2.0MHz
CD Gain = 50
Store in progress
0:46:28
HR= 66bpm
.84
.84
CCD/CDV
CD Pan
CD Pos/Size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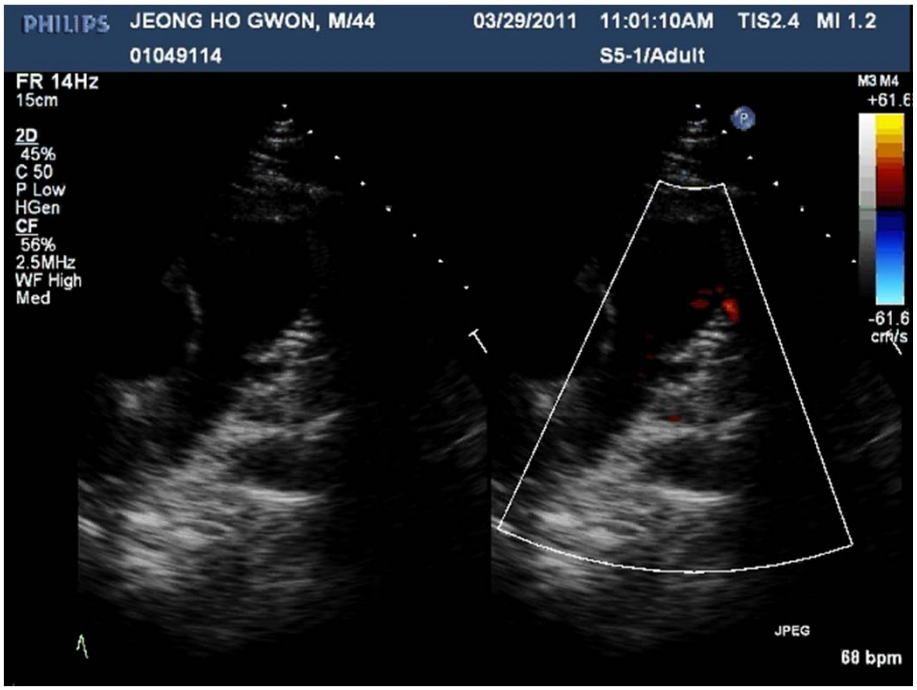
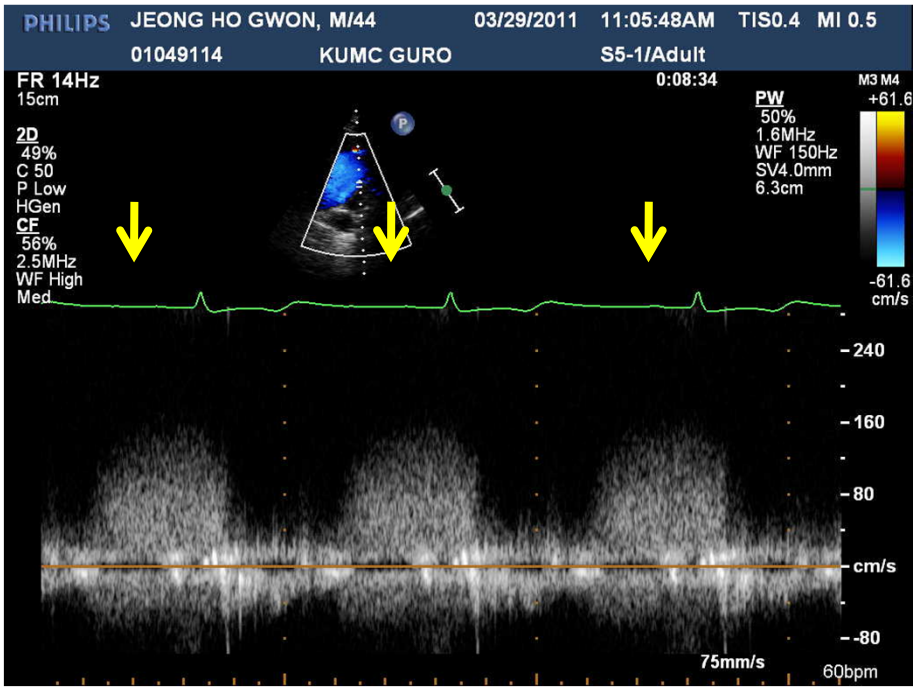
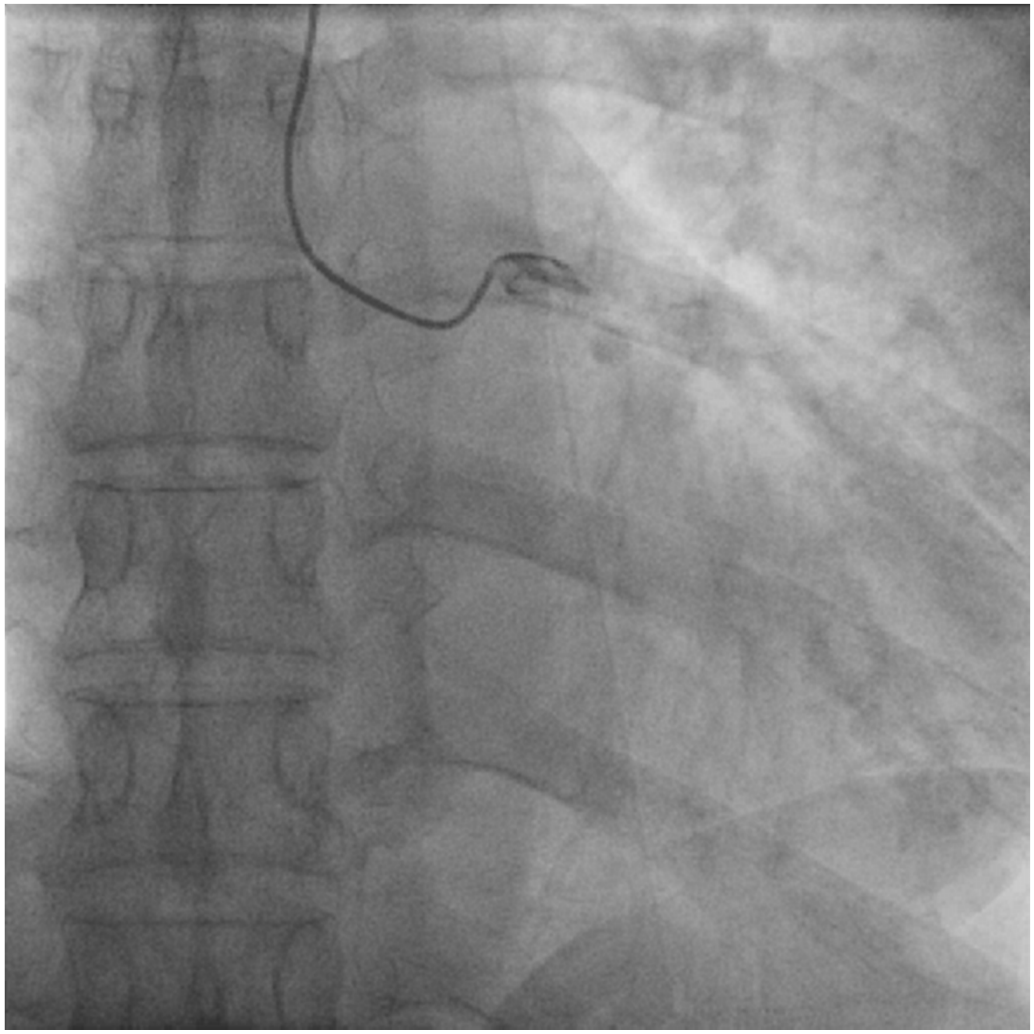
KONKUK UNIVERSITY HOSPITAL
29 Oct 07
11:33:37 am
4V1c-S 16Hz
H3.75MHz 200mm
ADULT ECHO
General /V
T1/-1/ 0/V:A
1/2 CD:2.0MHz
CD Gain = 36
Store in progress
0:46:28
HR= 64bpm
.67
.67
2D Pos/Width
CCD/CDV
CD Pan
CD Pos/Size

Diastolic Flow (3mm sized)



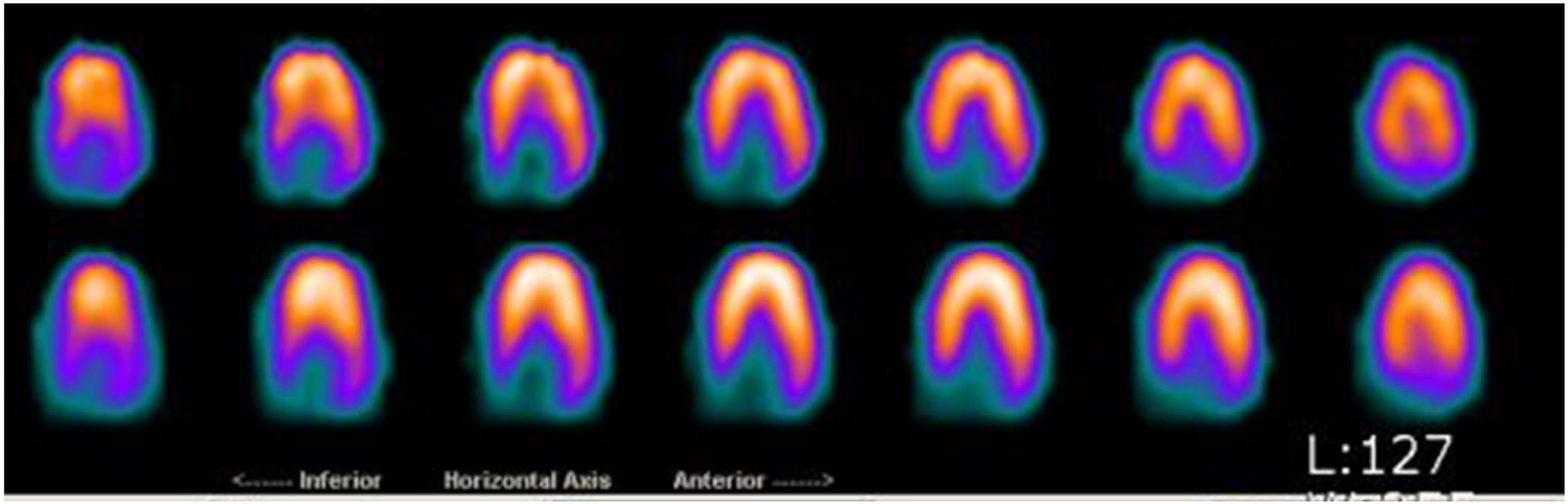


Coronary to PA fistula

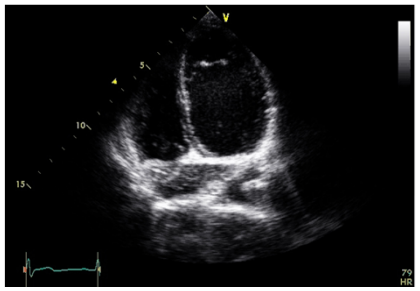


Is there steal phenomenon?

Medical follow up or coil embolization should be weighted

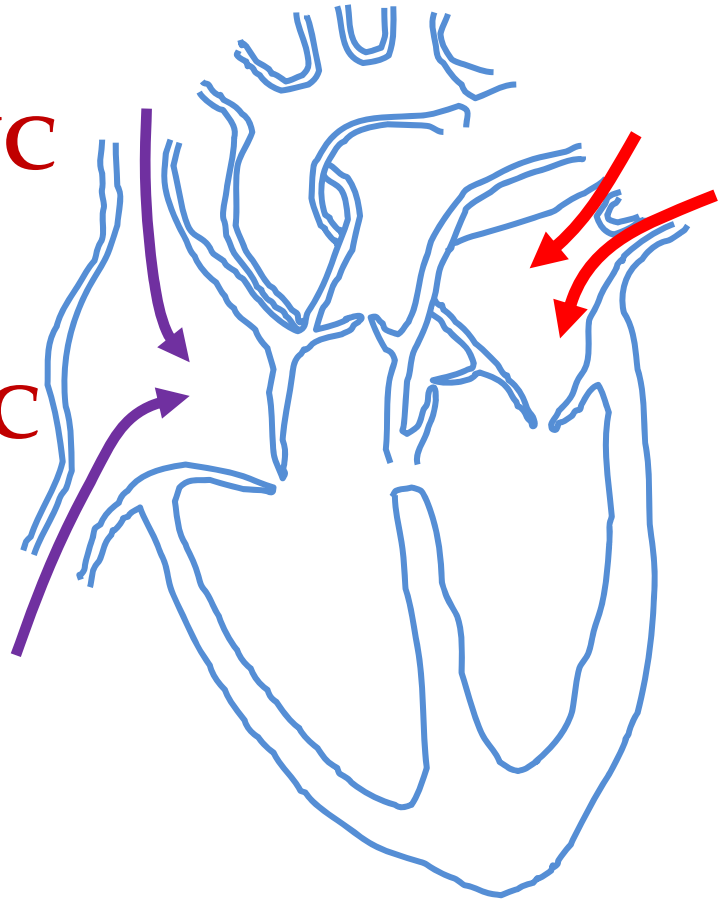


Summary (Flows TO the Heart)

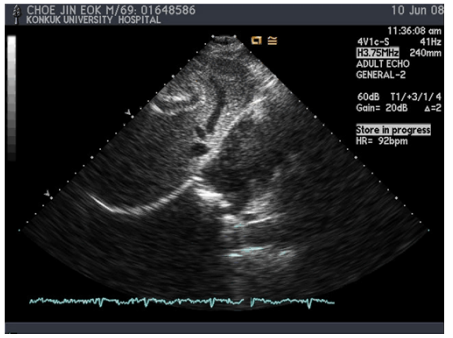


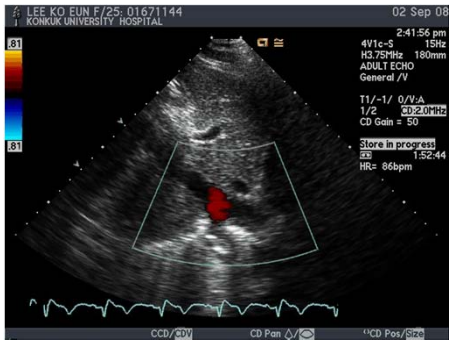
SVC

IVC



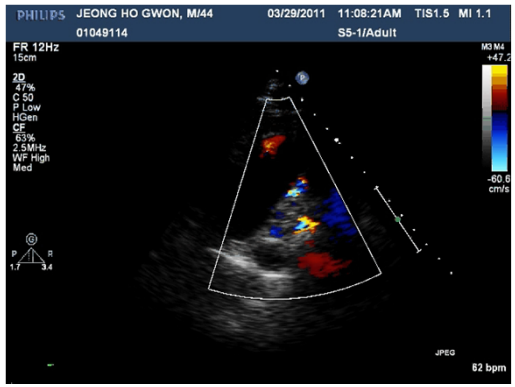
Pulmonic vein

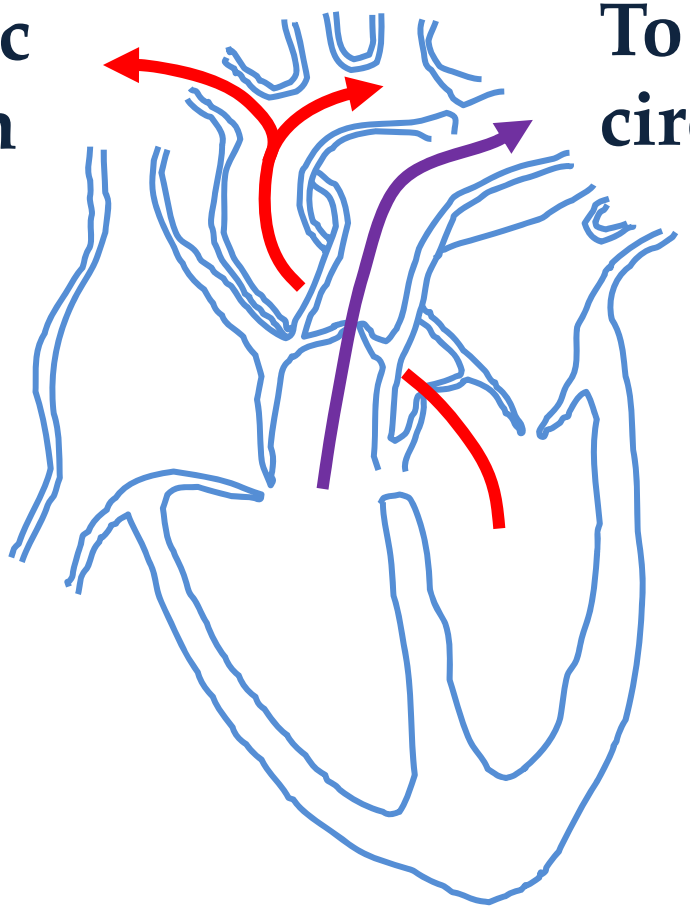




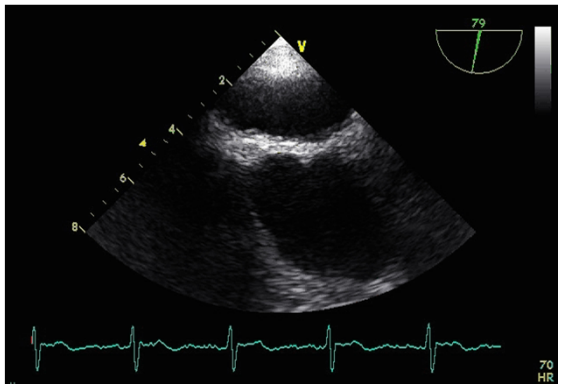
Flows FROM the heart

To systemic circulation





To pulmonic circulation



Take home message

- Do not miss the not easily visible abnormal flow (“not visible “is not “not presence”)
- Always search for the another problem
- Consider helpful adjuvant tools (air bubble, TEE, CT, MRI)


Thank you for your attention!