

Coarctation of the Aorta (COA)



B O S S 1980 - 1996

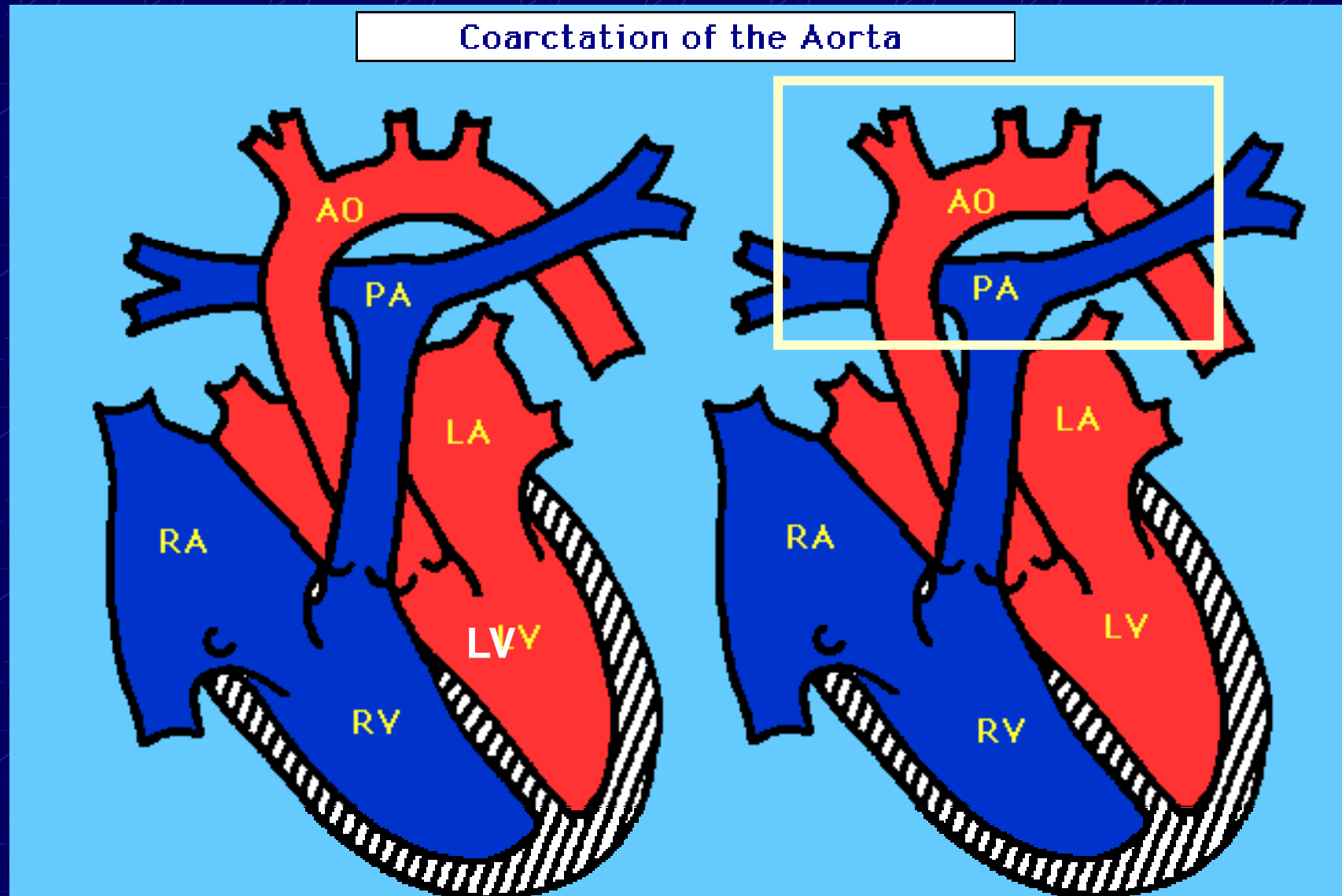
CHD prevalence rate at birth 6.16 per 1 000 live births

Relative frequency of congenital heart defect forms



COA – coarctation of the Aorta

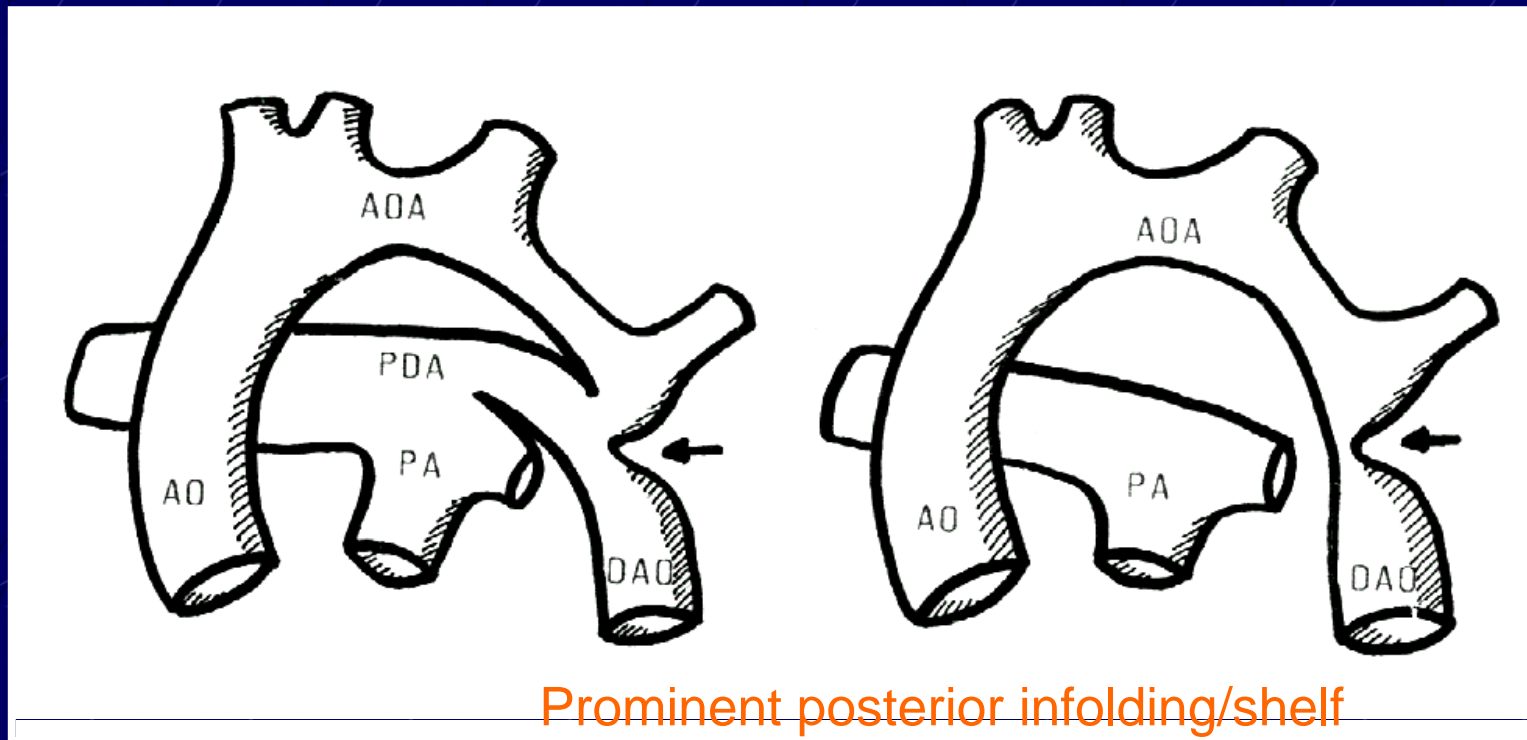
Coarctation of the Aorta



Coarctation of the Aorta

with PDA

without PDA



Simple

Complex: + VSD, AS, MS, CTA sin.

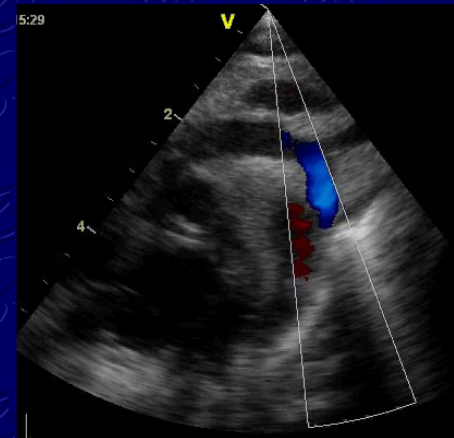
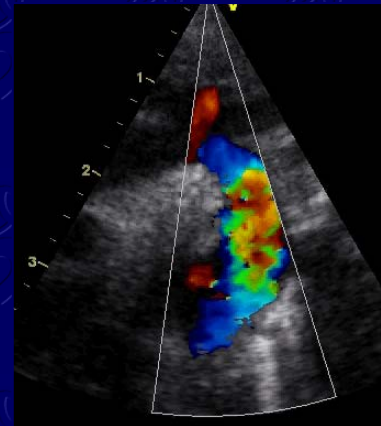
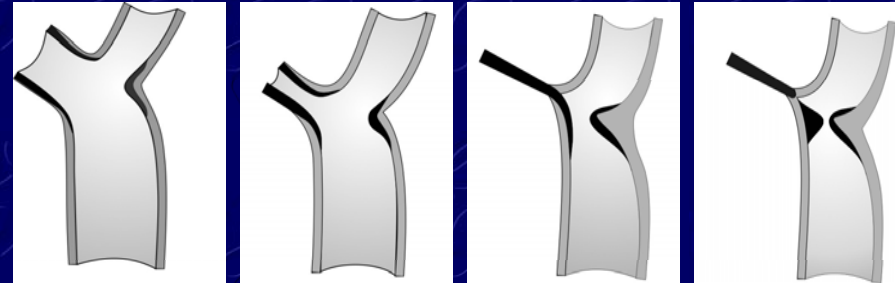


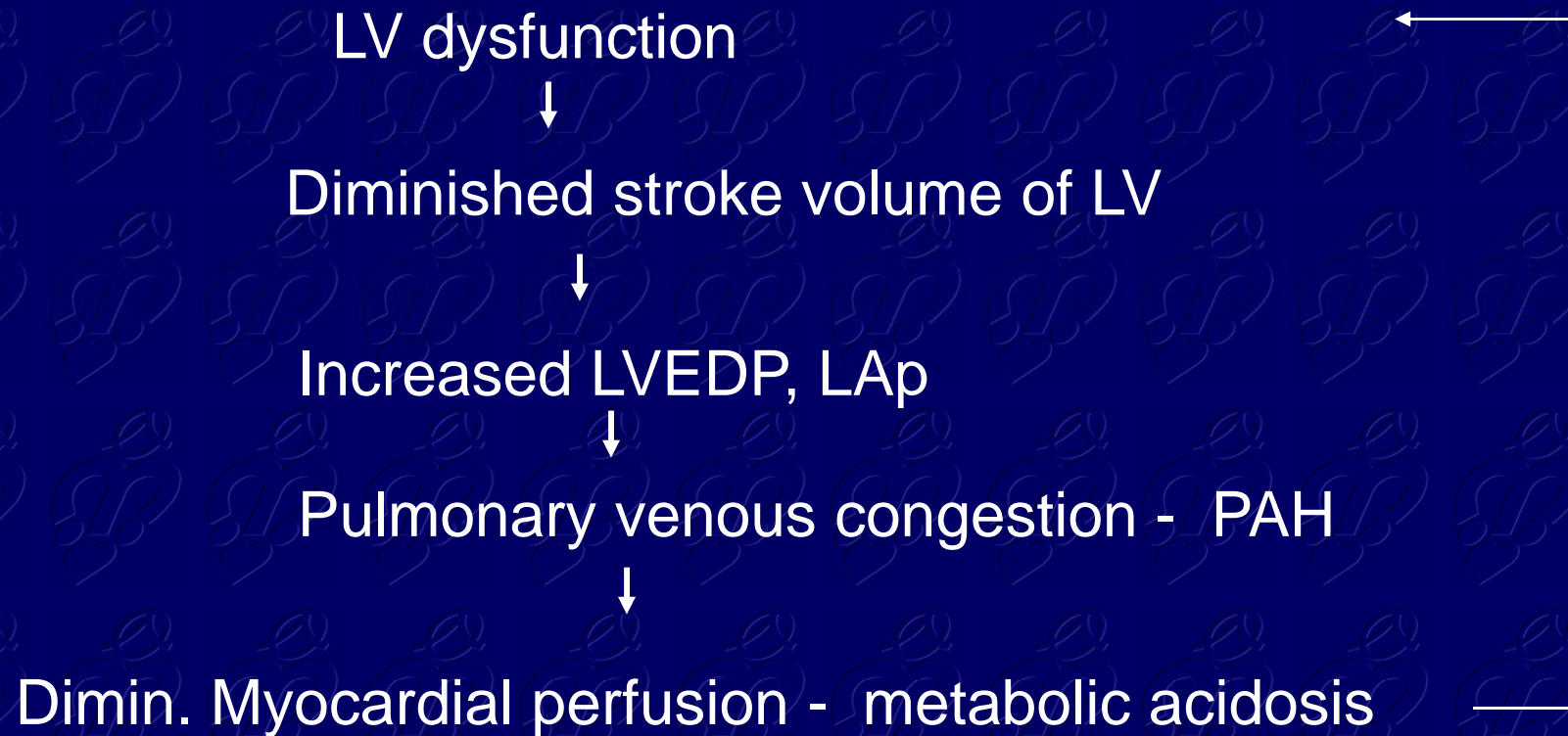
Coarctation of the Aorta

Diagnosis may be difficult
If PDA opened

- no discrepant pulses
- no murmur
- heart is „normal“
- COA is hidden by PDA

PGE



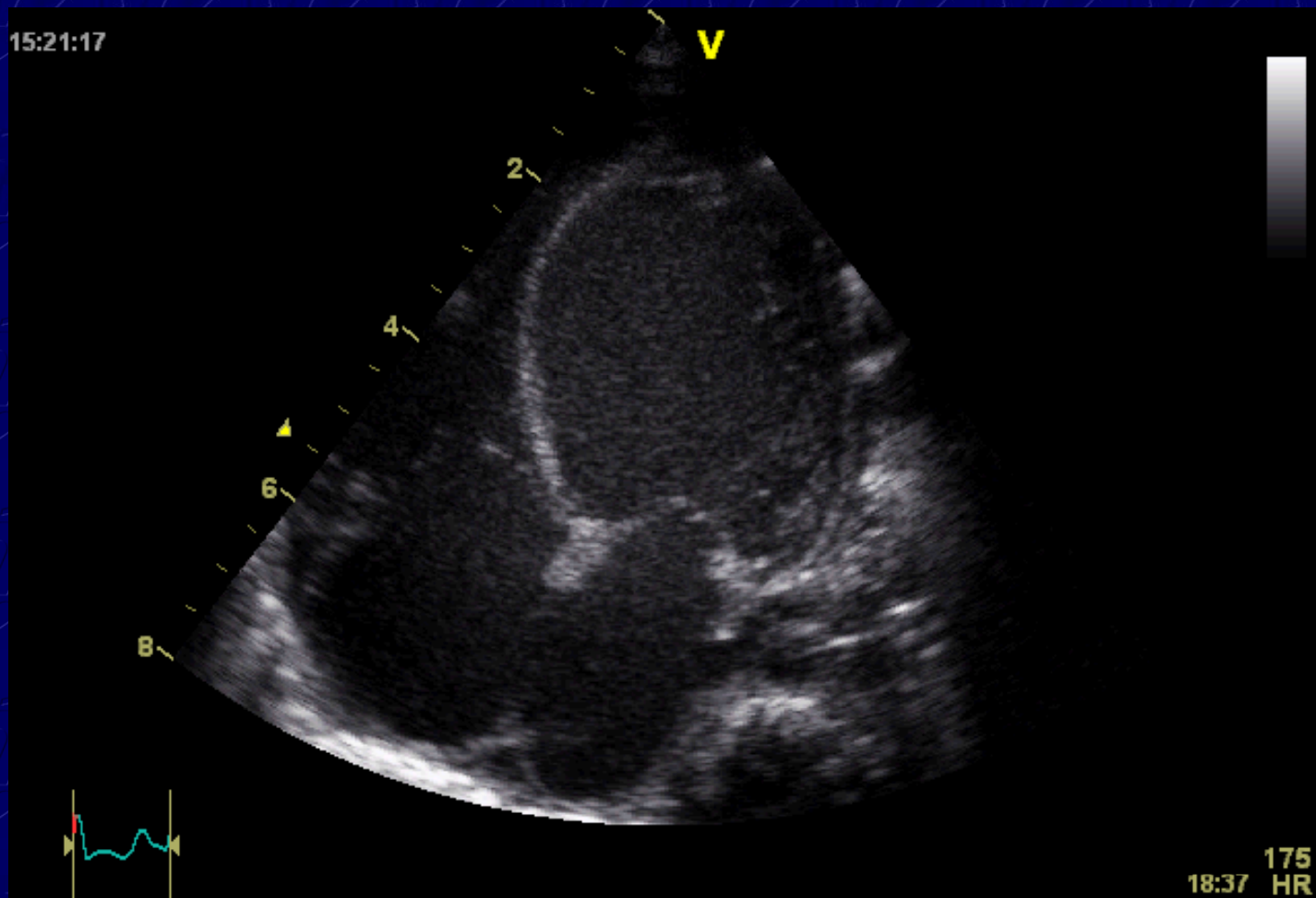


Compensatory mech.: LVEDV/Frank-Starling m, HR, MYO contr

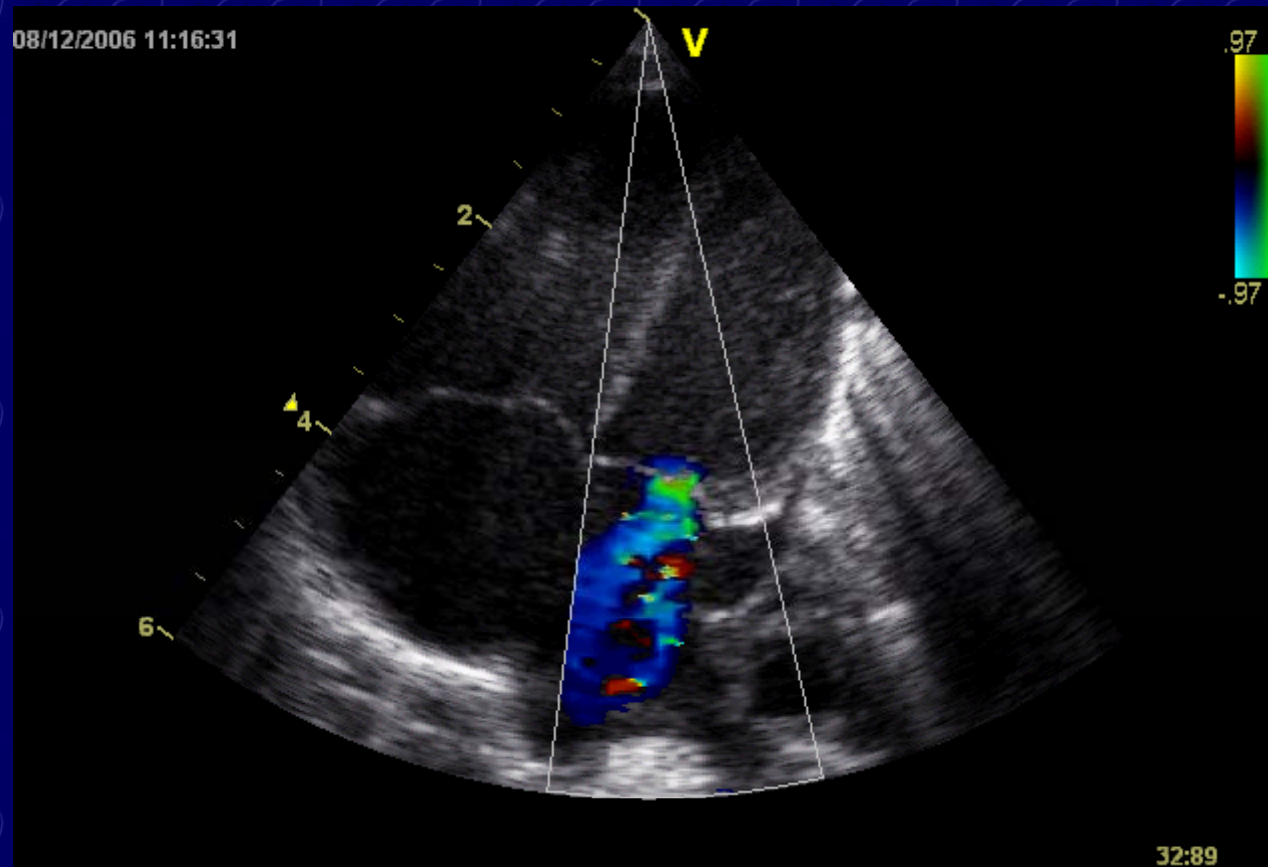
Coarctation of the Aorta

	Neonatal	Adult
Symptoms	Heart failure	Hypertension UE
Murmur	-	+
Discrepant pulses	+ / - (PDA)	+
Differential cyan.	+ / - (PDA, VSD)	-
RTG	cardiomegaly	Rib notching
ECG	dominant RV	Hypertr. LV
Imaging	ECHO	ACG, MRI

Critical COA, newborn



Critical COA



Critical COA, newborn

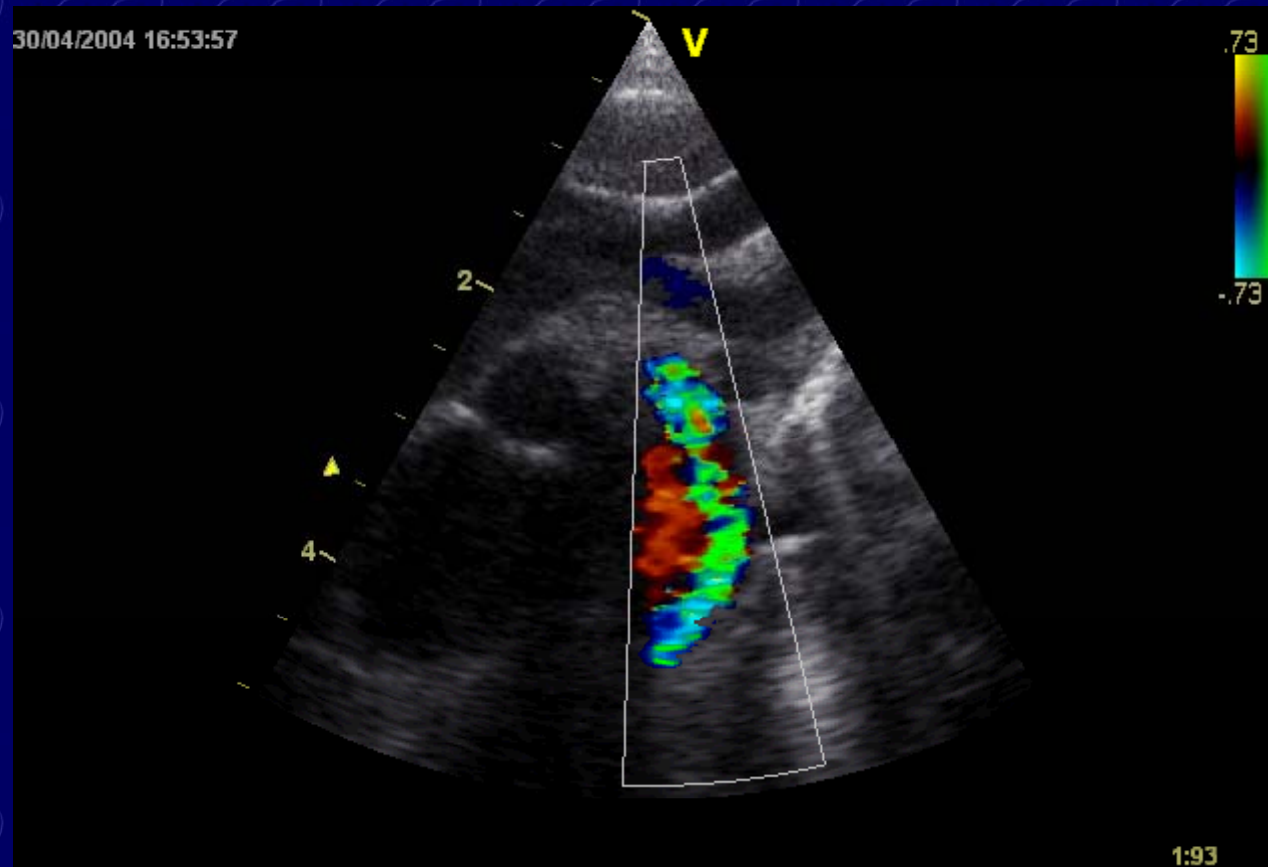


Pharmacological promote of PDA patency

- Prostaglandin E1 (*Alprostan*)
in continual i.v. infusion
 - Initial dose 0,025 $\mu\text{g/kg/min.}$,
 - maintaining 0,010 $\mu\text{g/kg/min.}$

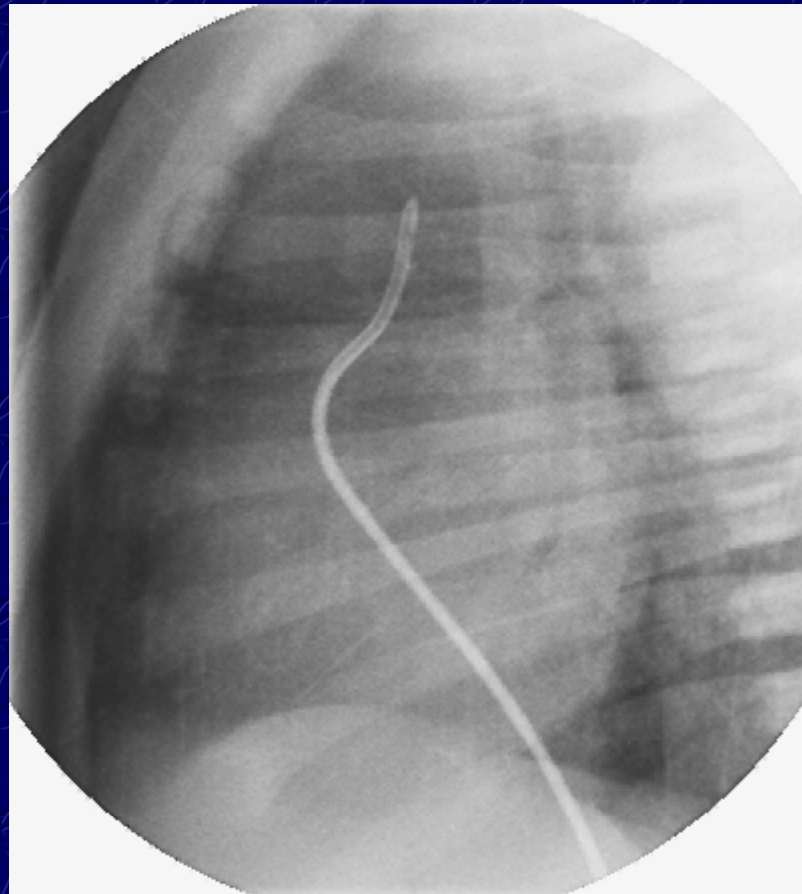
CAVE: apnoic pause, hyperpyrexia

Critical newborn, PDA - prostaglandin



Angiocardiografi

Neonatal COA + hypoplastic aortic arch
+ patent PDA

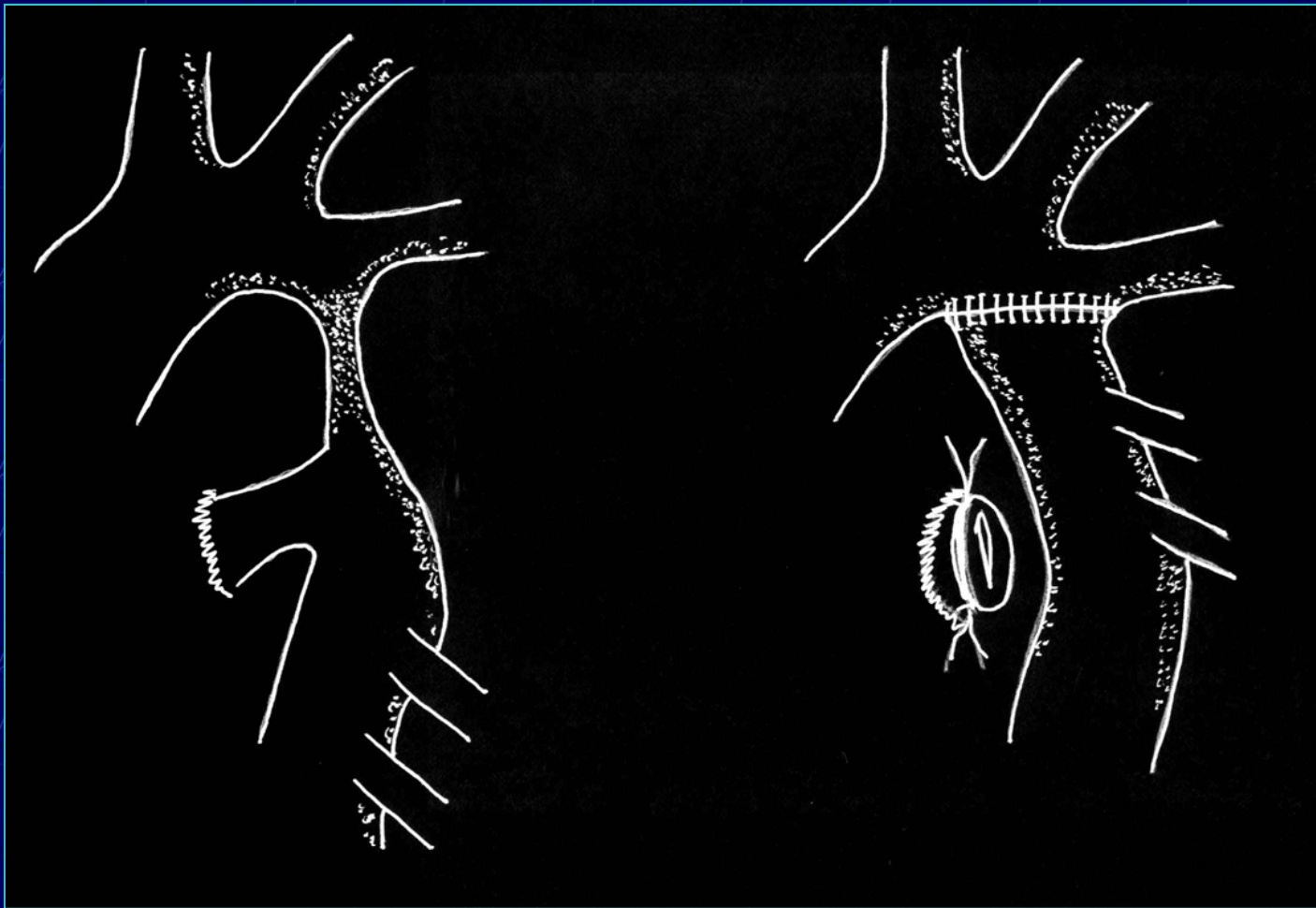


Treatment/COA

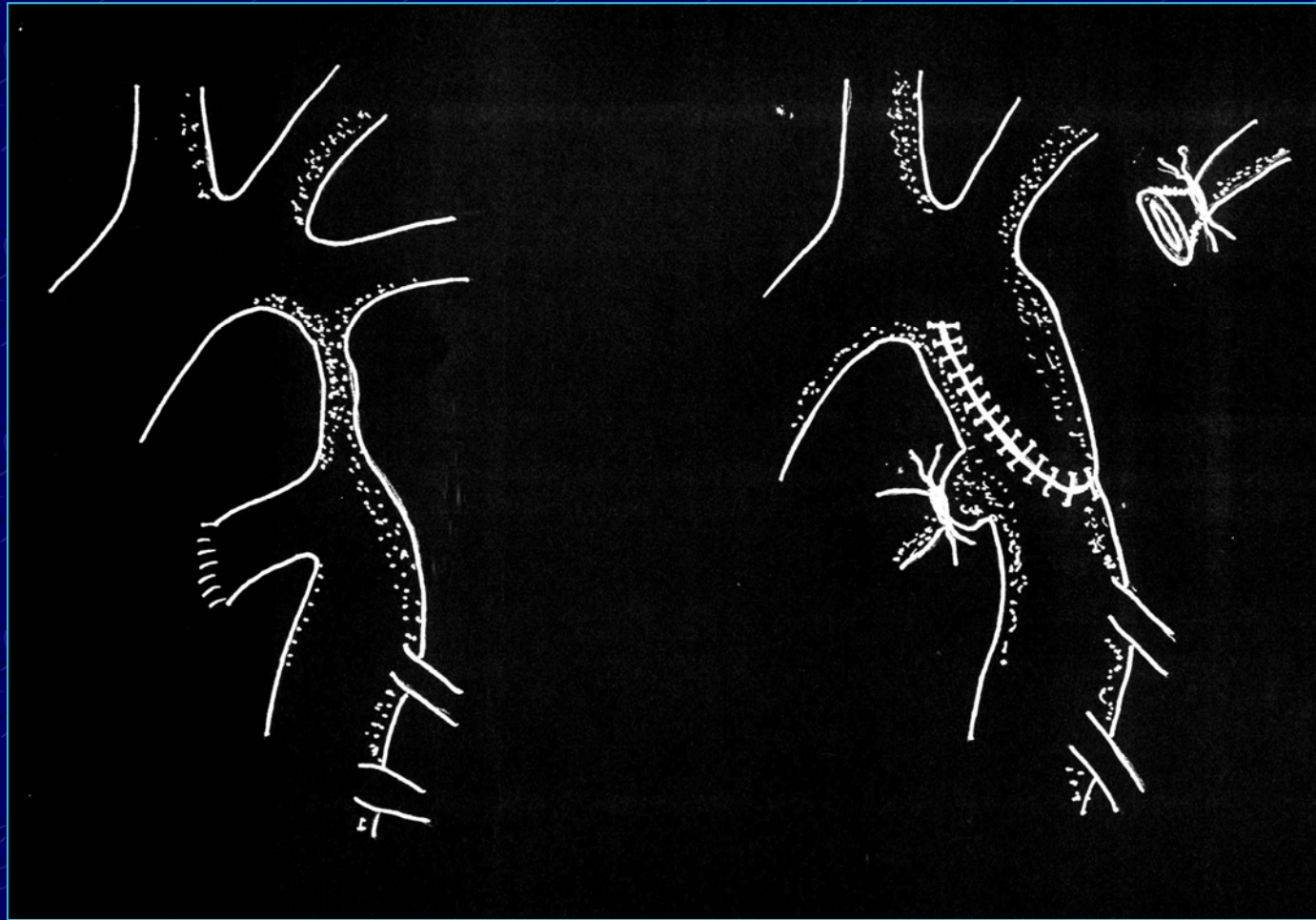
- Resection/COA + anastomosis end-to-end
- Subclavian flap aortoplasty - *Waldhausen's technique*
- Resection/COA + *reversal Waldhausen* aortoplasty.
- Aortic arch aortoplasty using a homograft
- Extraanatomical by-pass

Pulmonary banding at 1/3 operated newborns
(complex coarctations with a large left-to-right shunt)

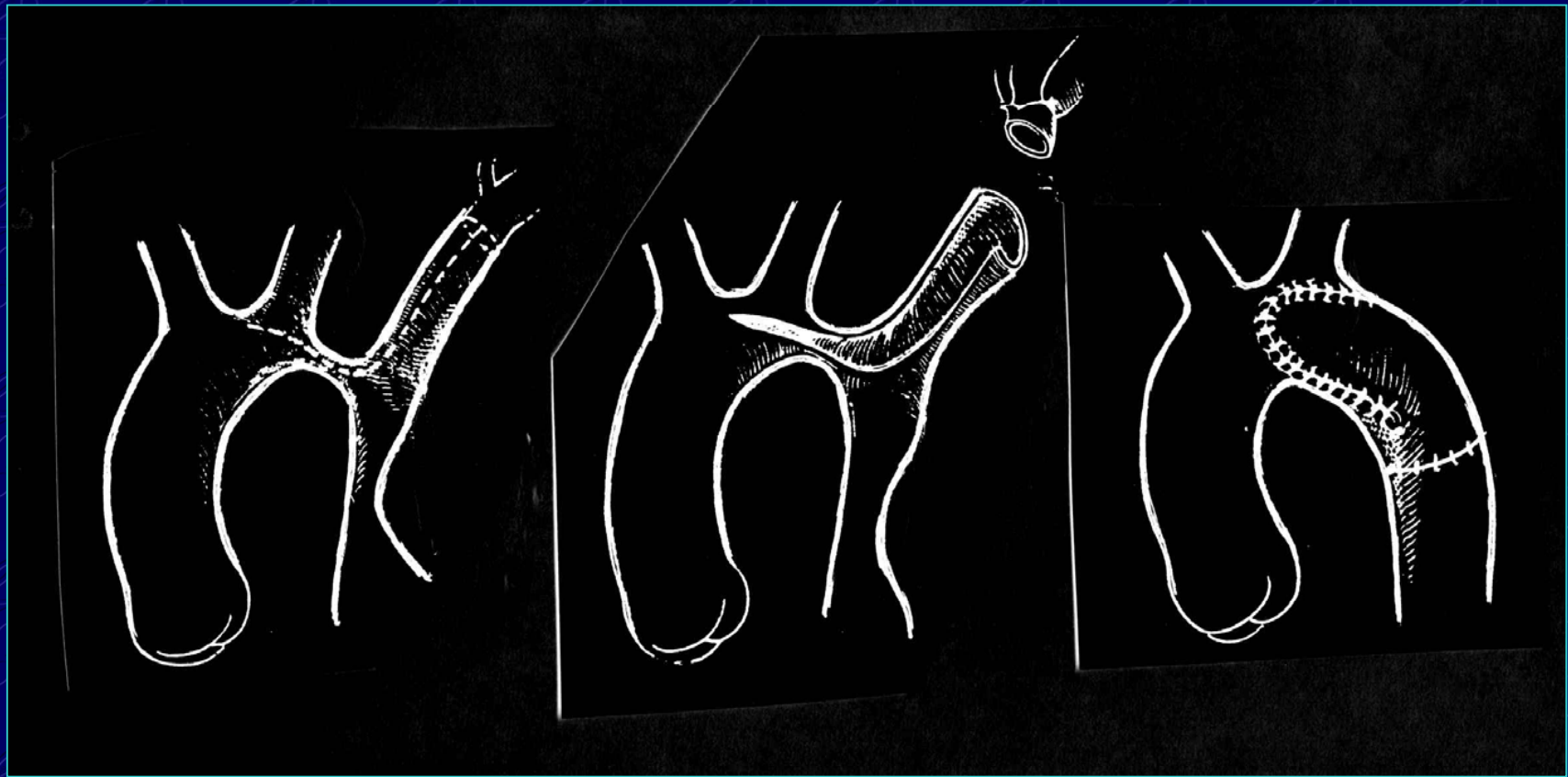
COA resection and anastomosis end-to-end



Waldhausen's aortoplasty of the aortic isthmus

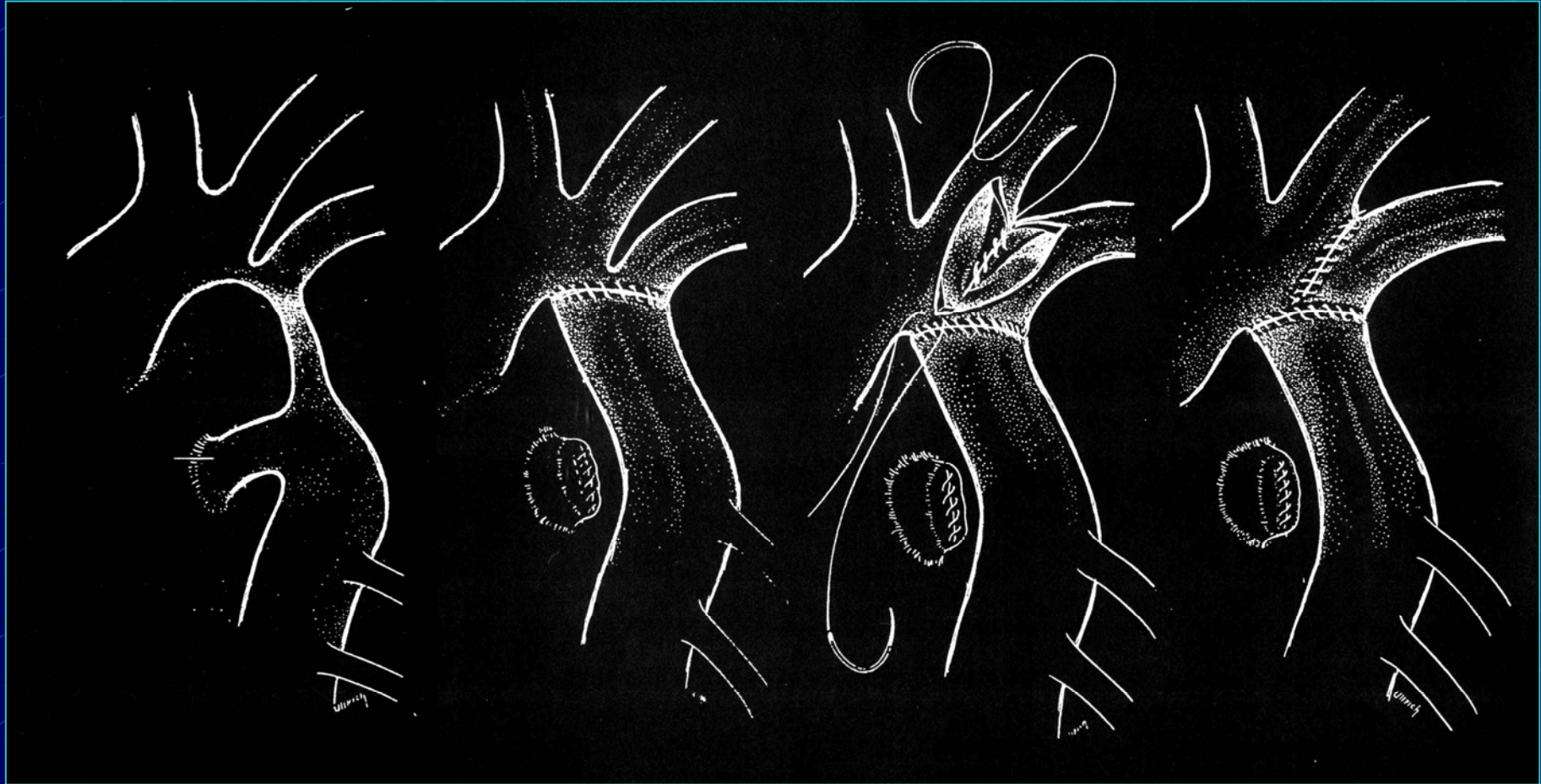


COA resection and reversal Waldhausen's aortoplasty

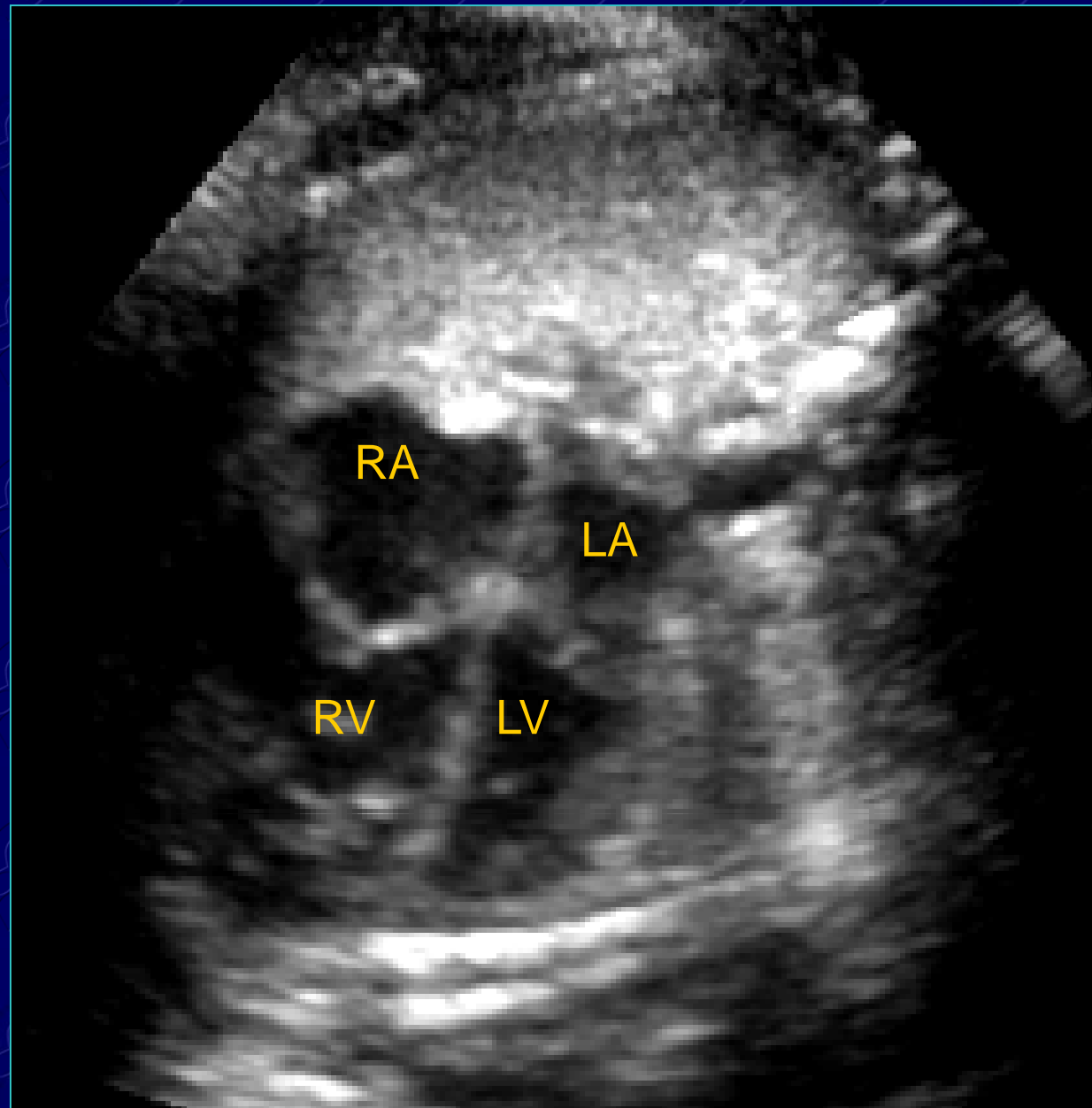


COA resection and aortic arch aortoplasty

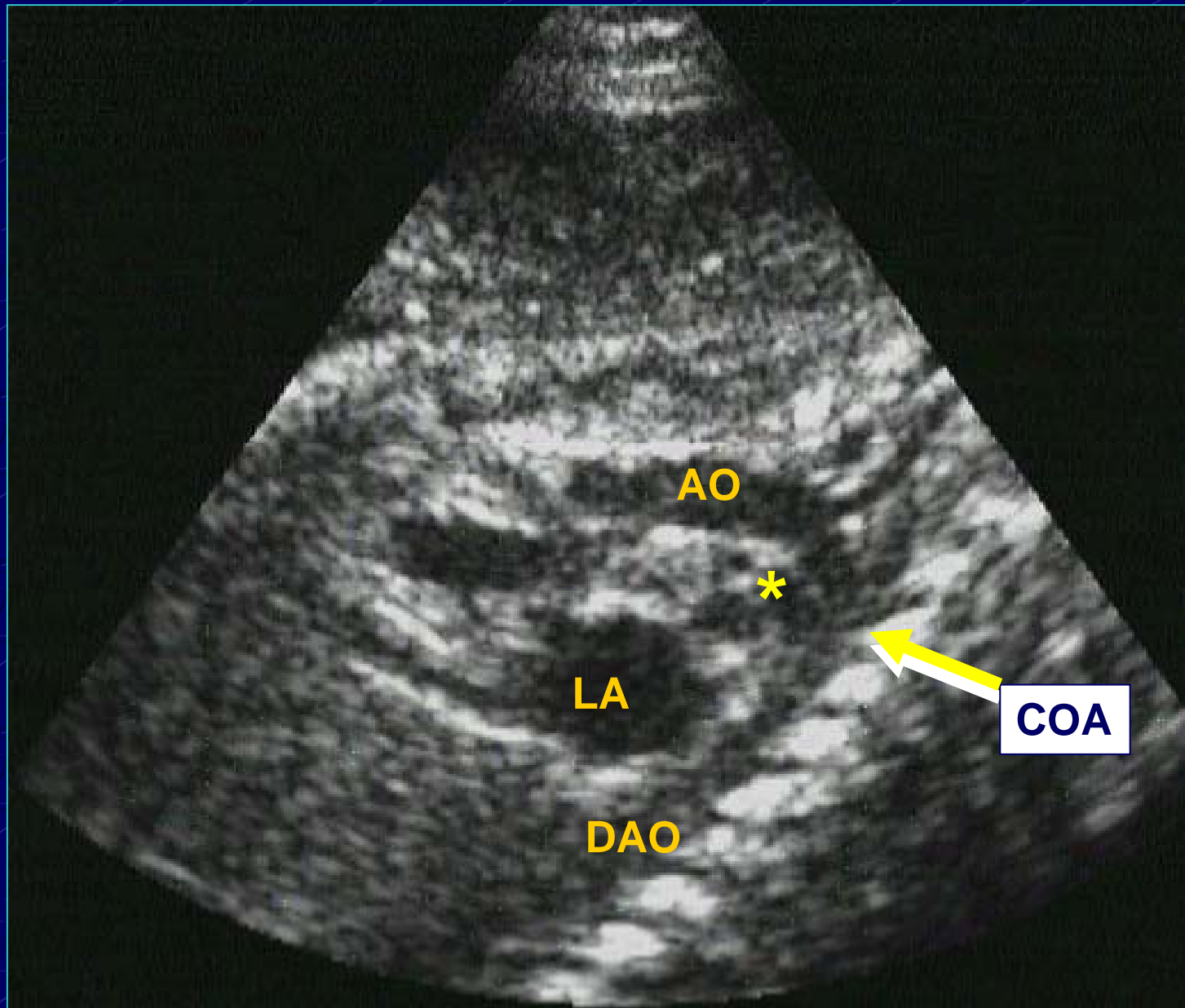
Amato's technique



Asymmetric 4CH view, foetus /COA 26th W.



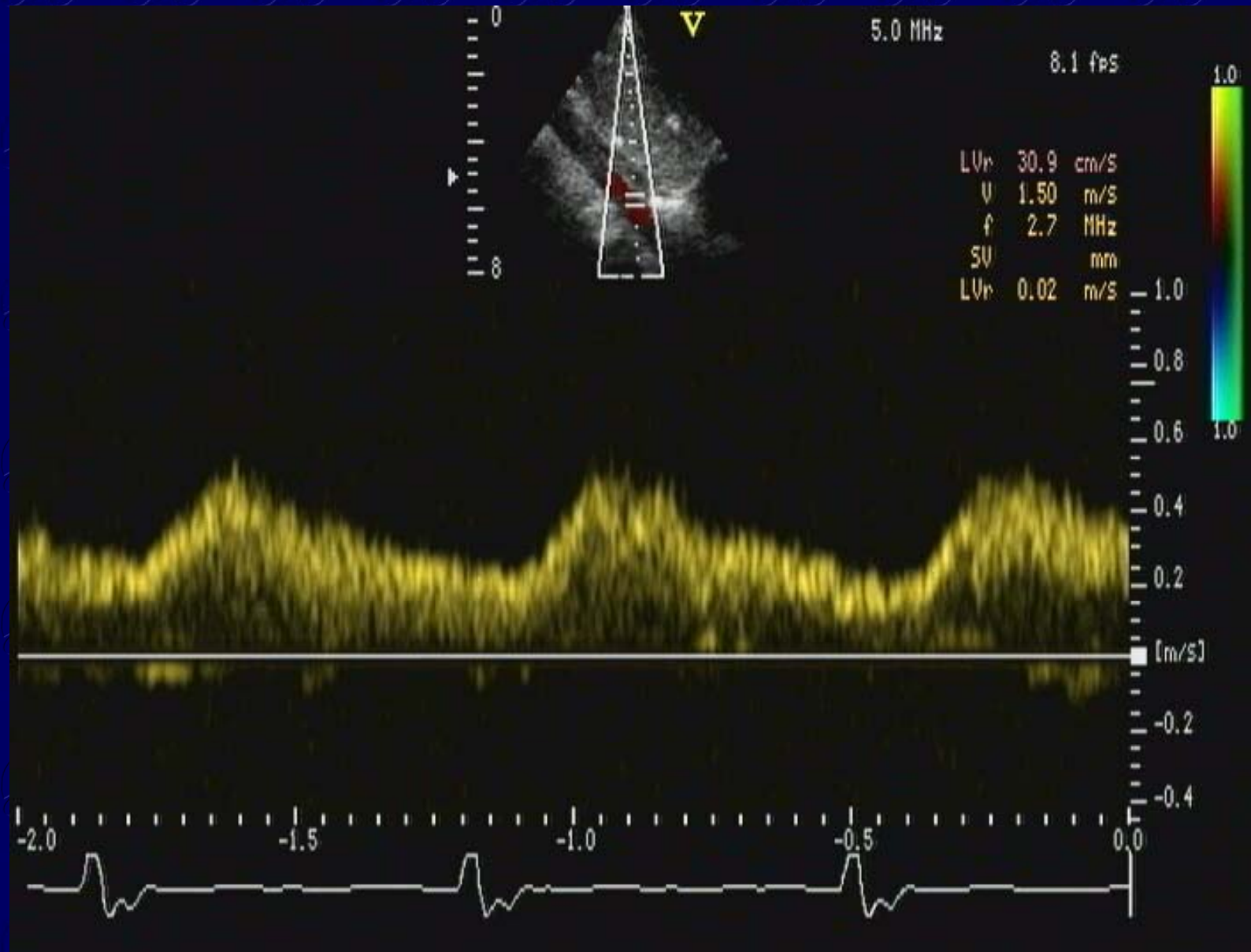
Stenosis of aortic isthm – COA/ foetus 26.th W

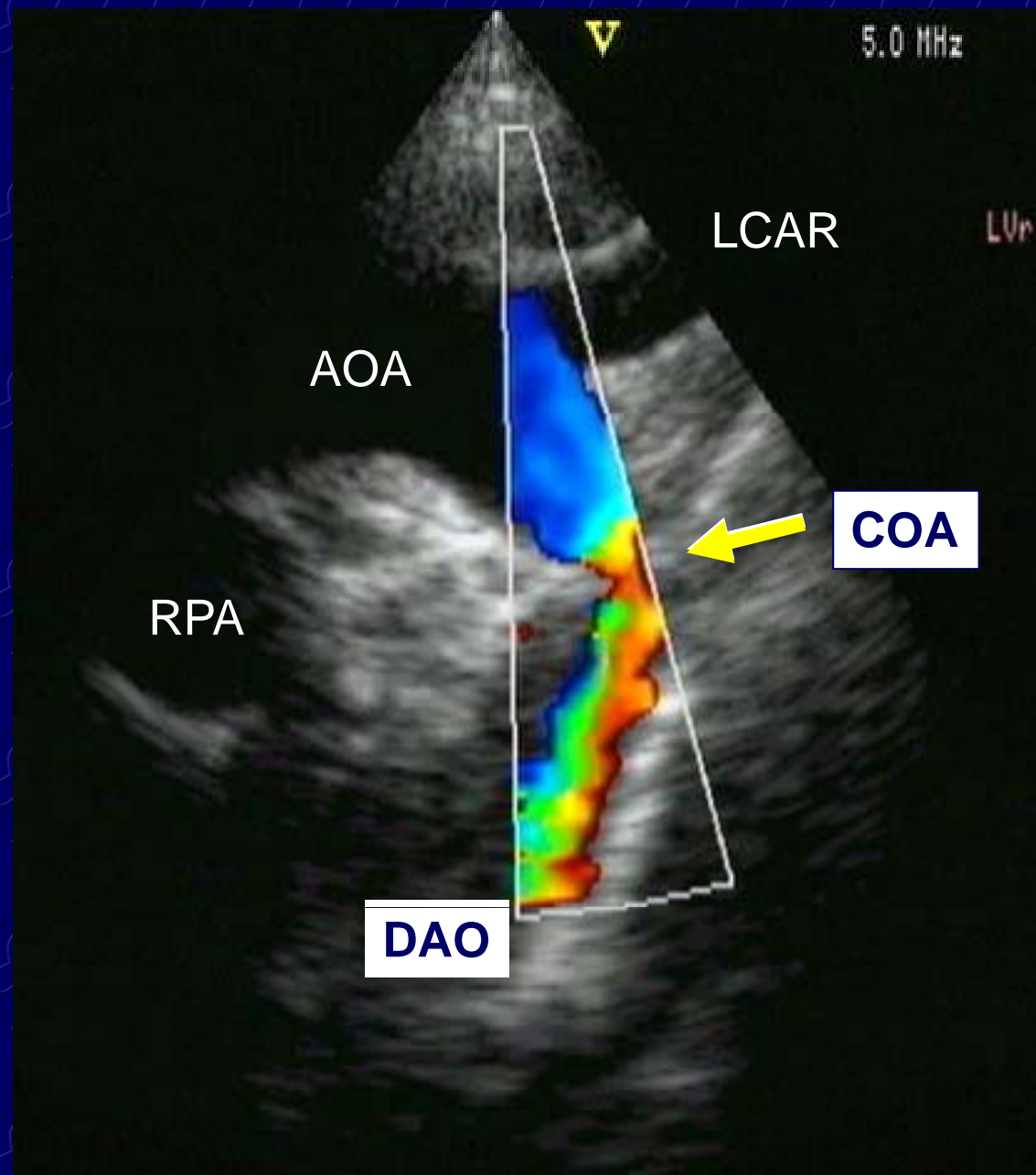


Coarctation of the Aorta

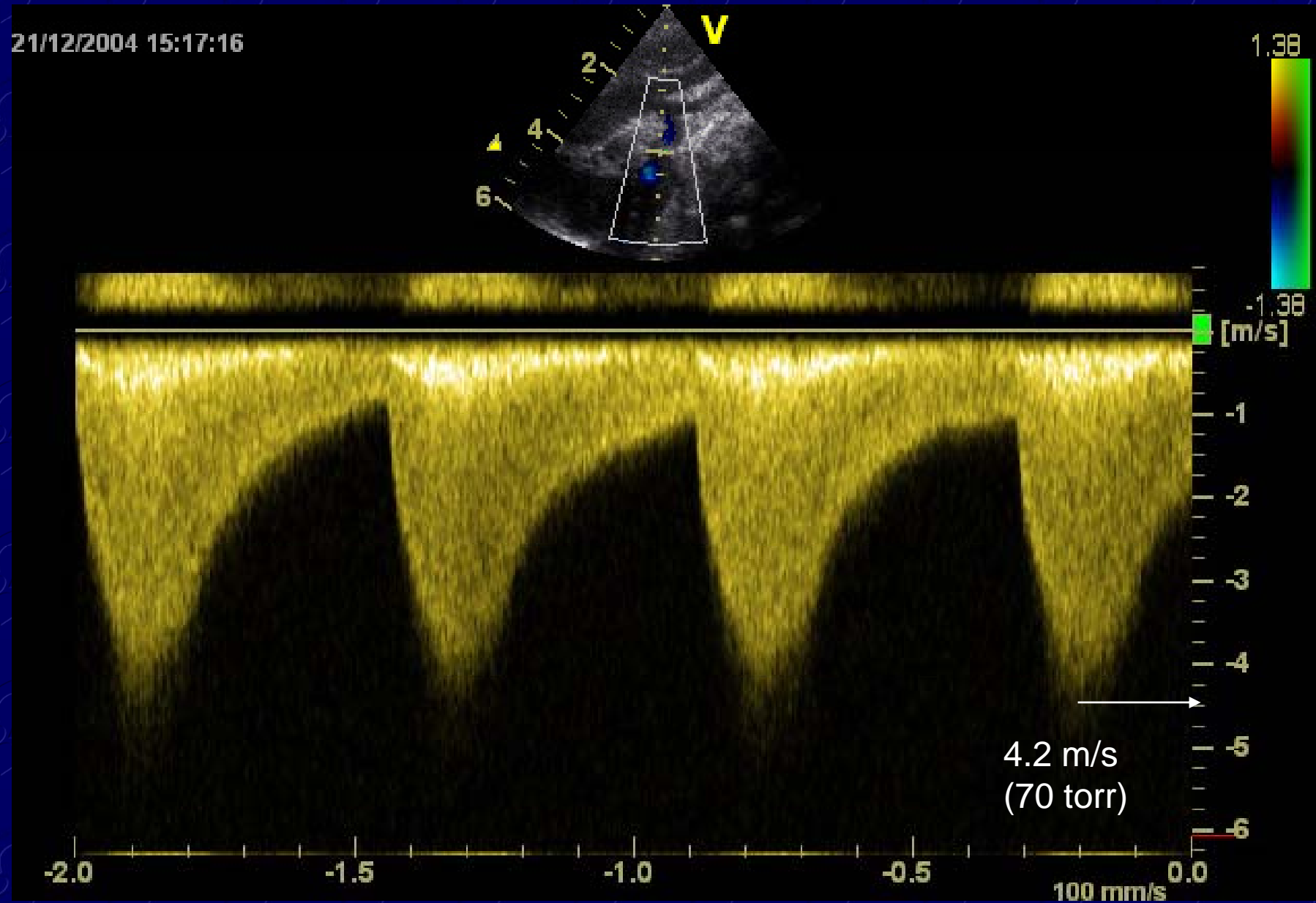
	Neonatal	Adult
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Diastolic runoff pattern - DAO





Diastolic runoff pattern - COA



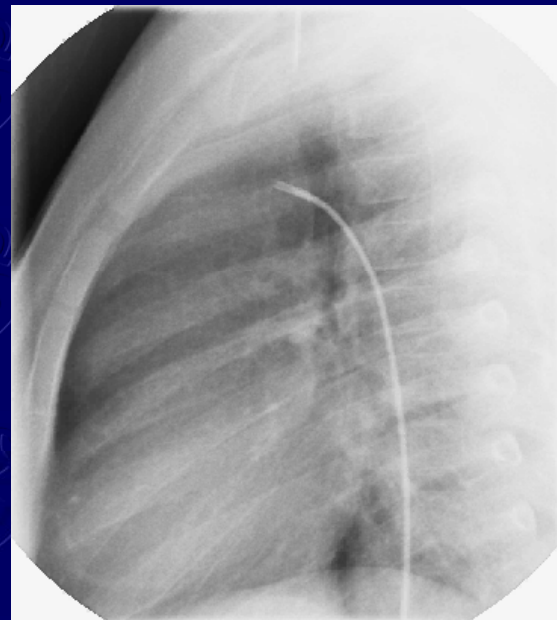
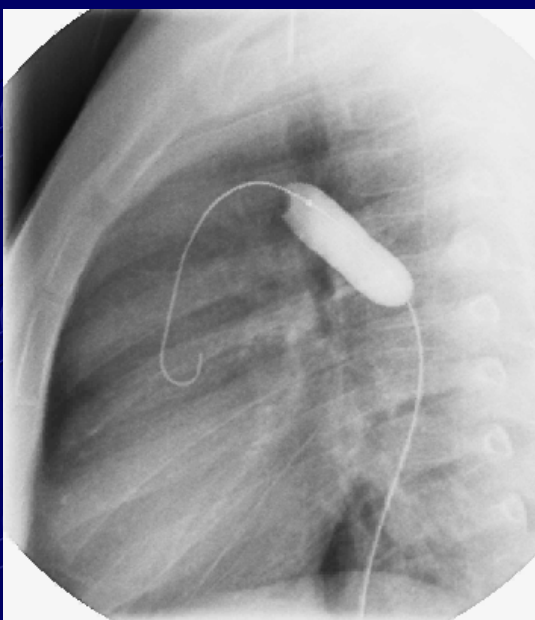
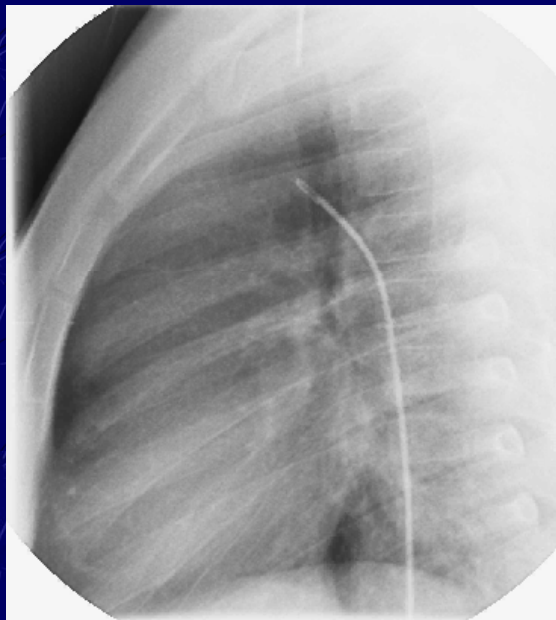
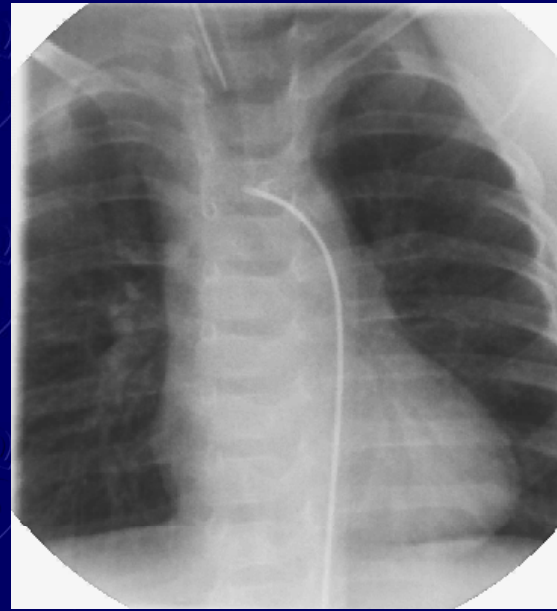
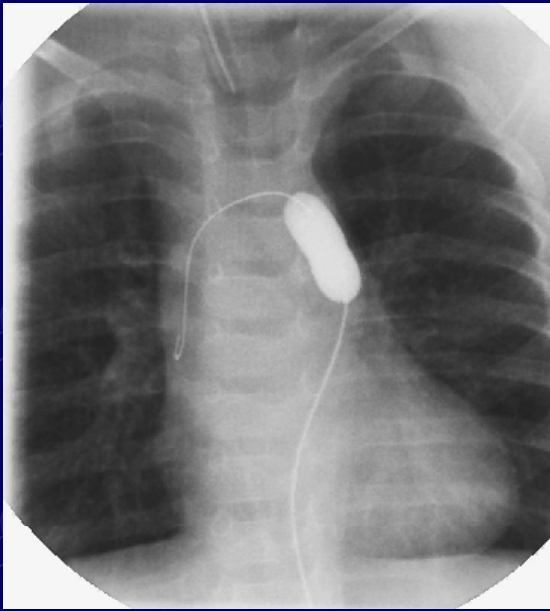
Severe „adult “ coarctation of the aorta

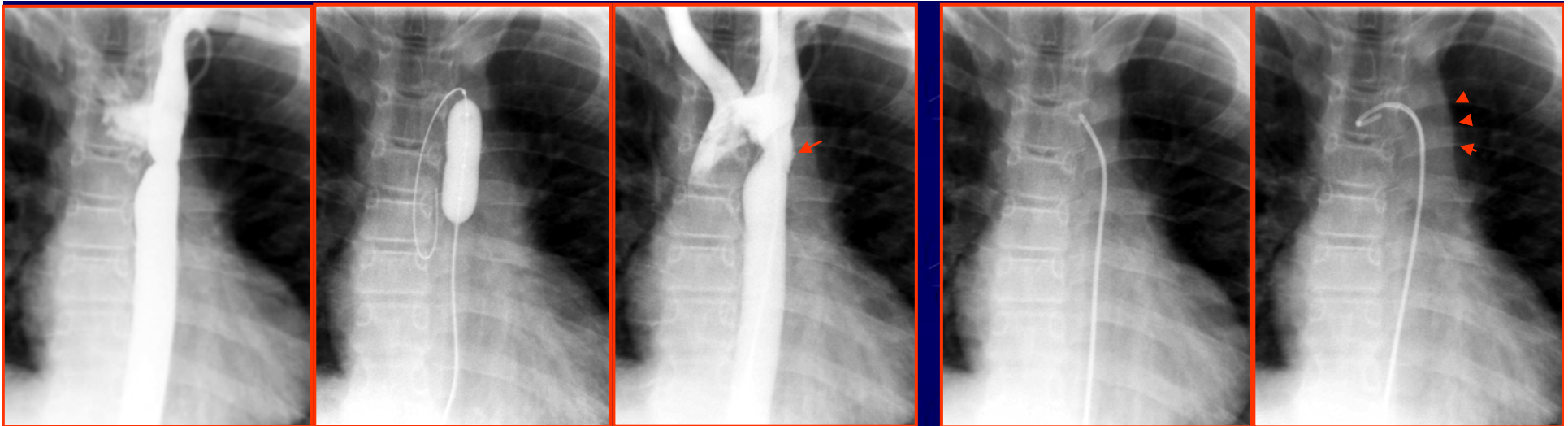


Extraanatomical by-pass



Balloon Angioplasty/ RECOA





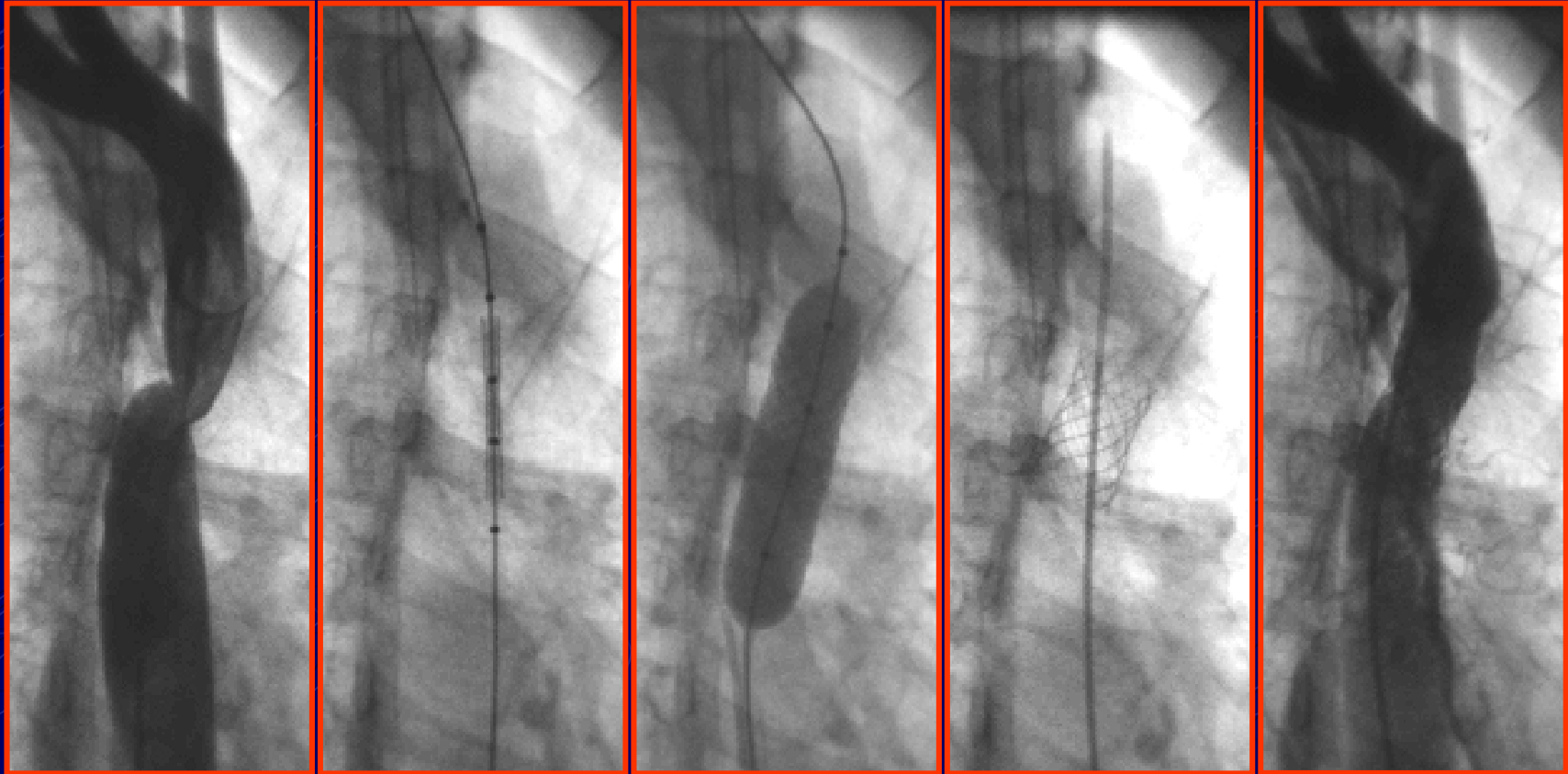
1999

APL RECOA: aneurysm

2004



Stenting RECOA

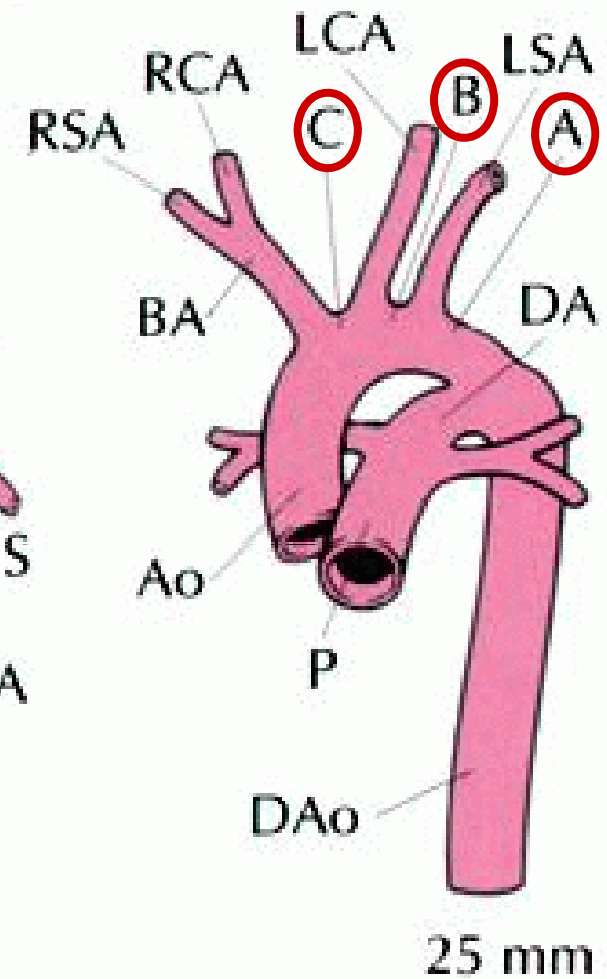
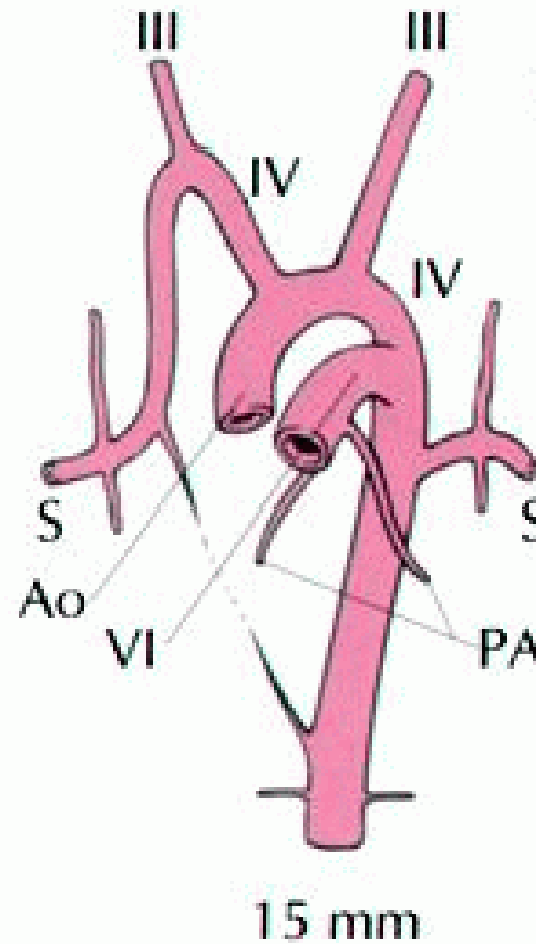
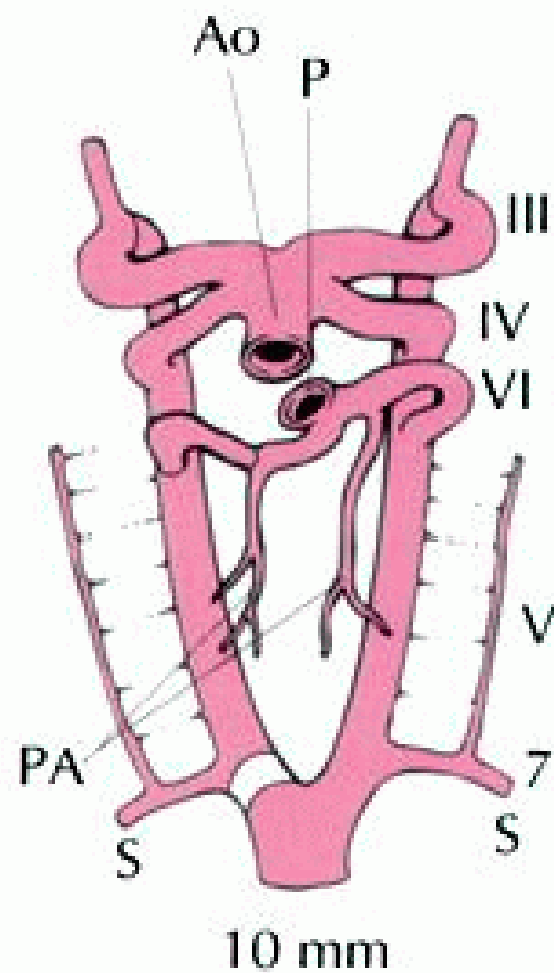


30° RAO, 20° CAUD.

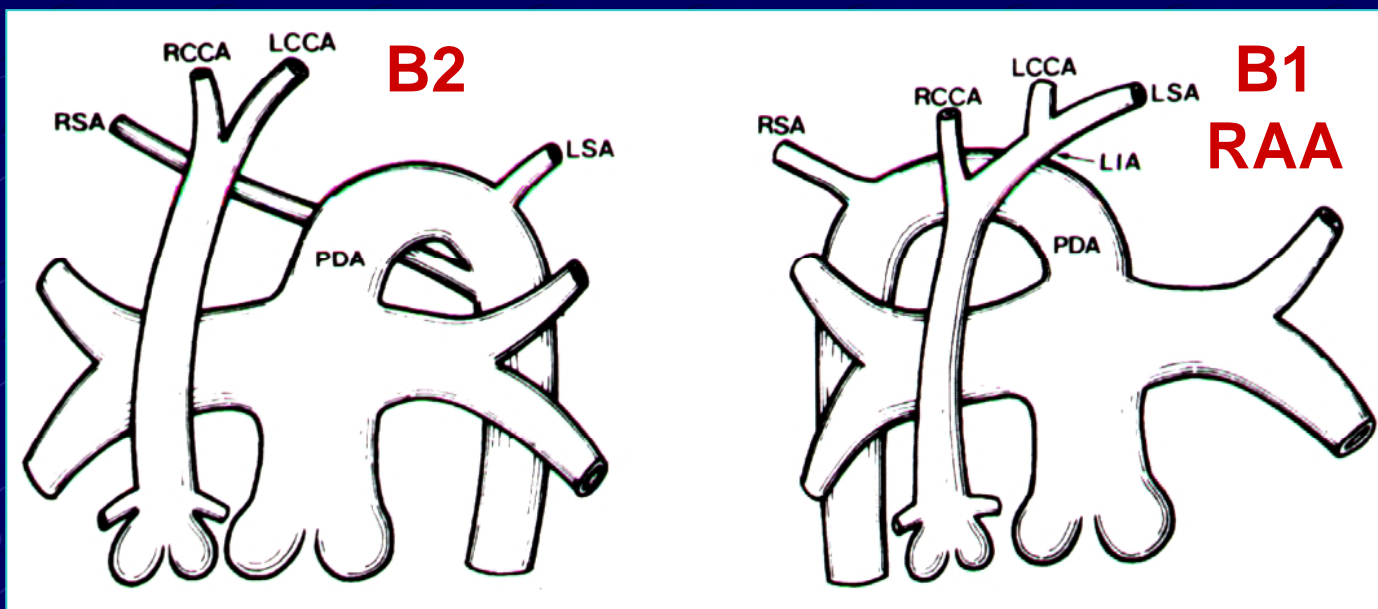
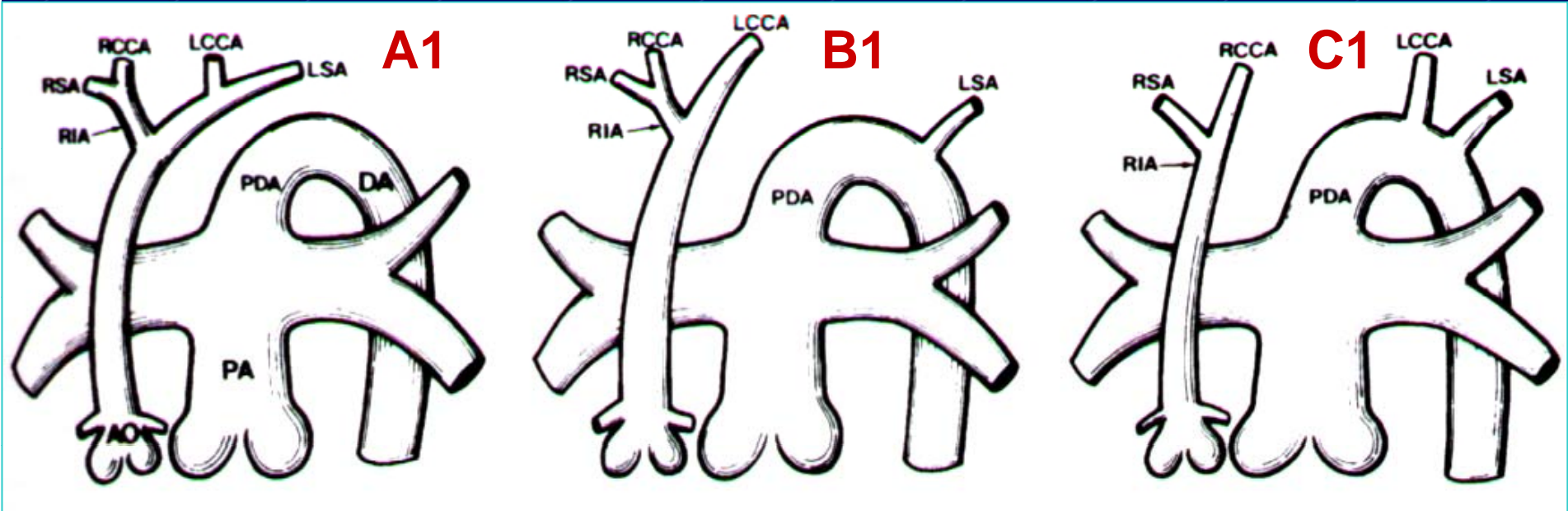


Interrupted aortic arch (IAA)

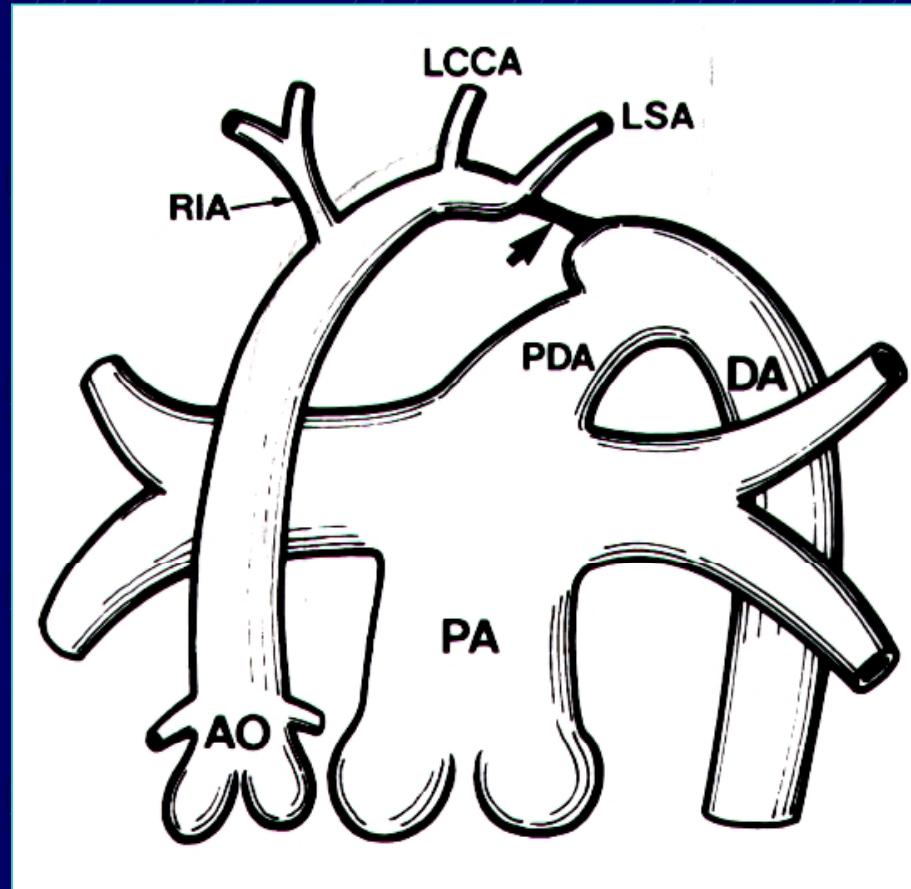
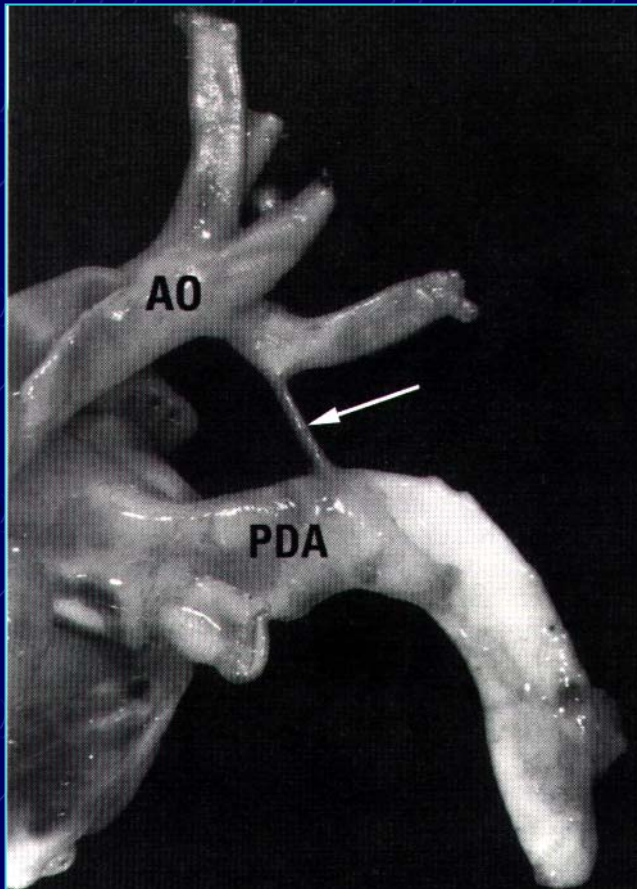
Embryonic arch diagram



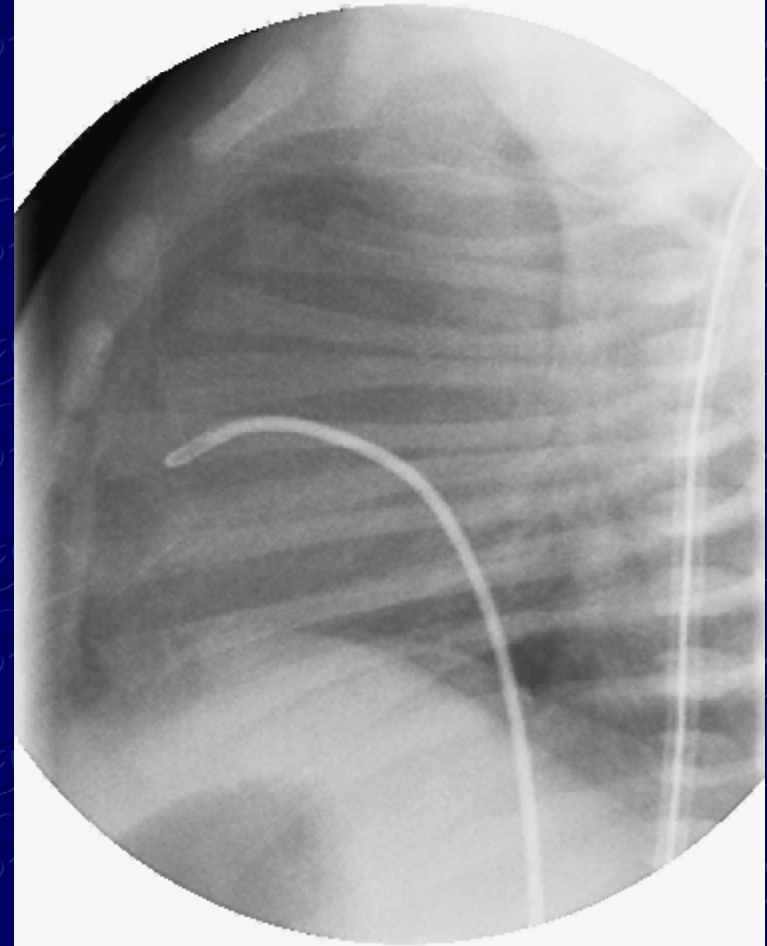
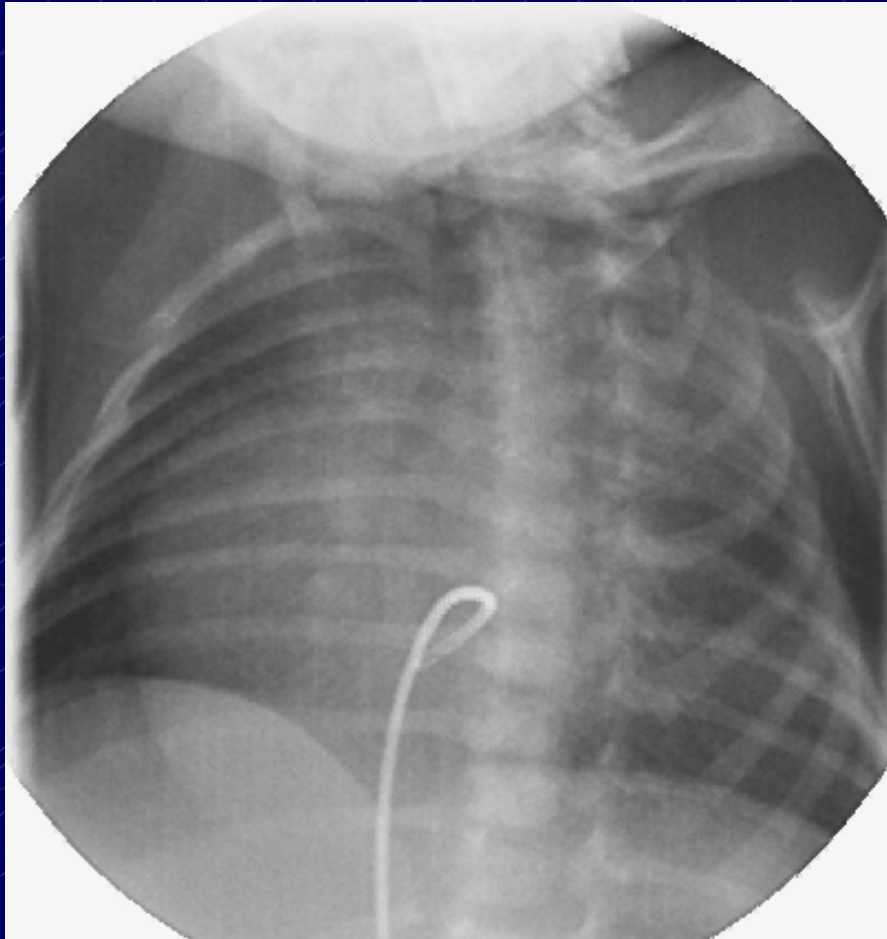
Interrupted aortic arch



Interrupted aortic arch

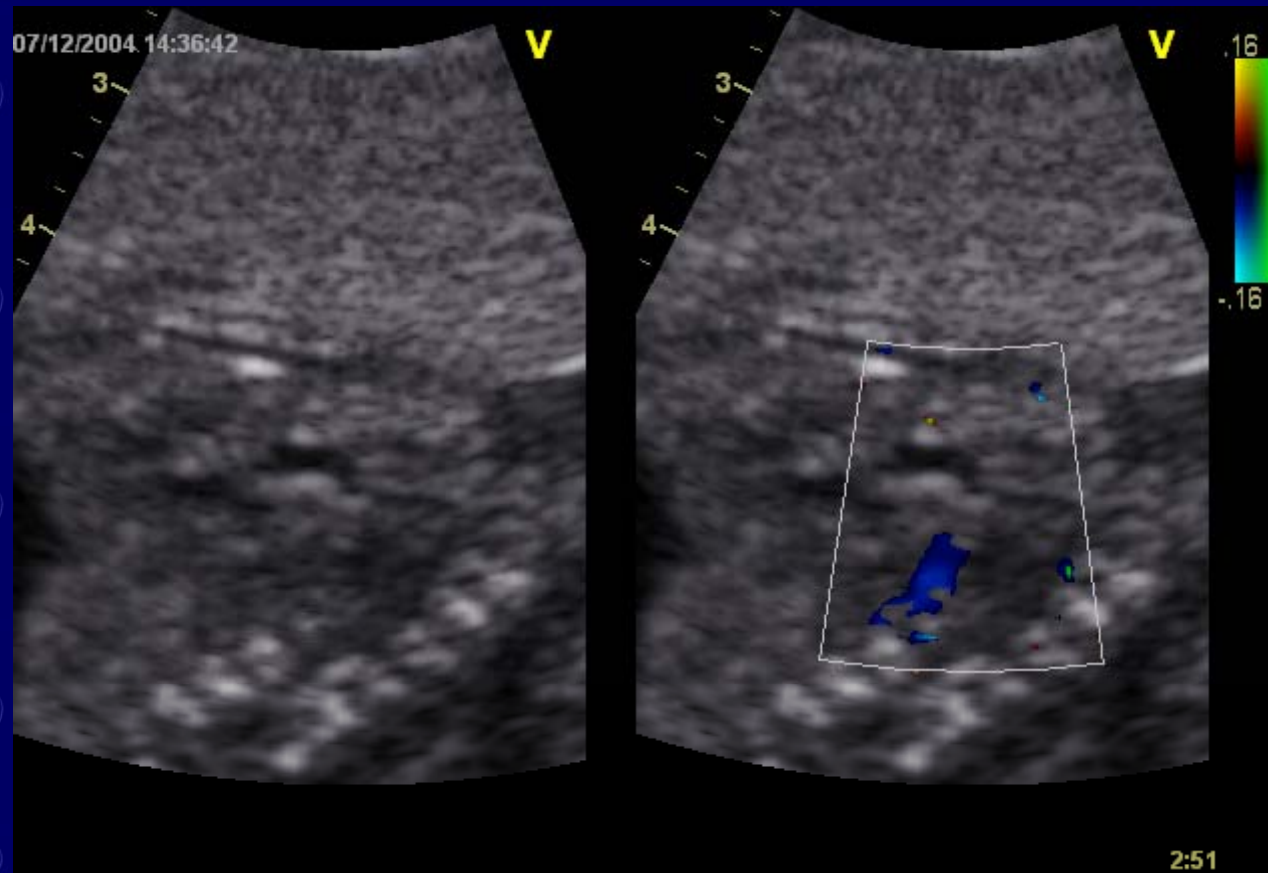


Interrupted aortic arch



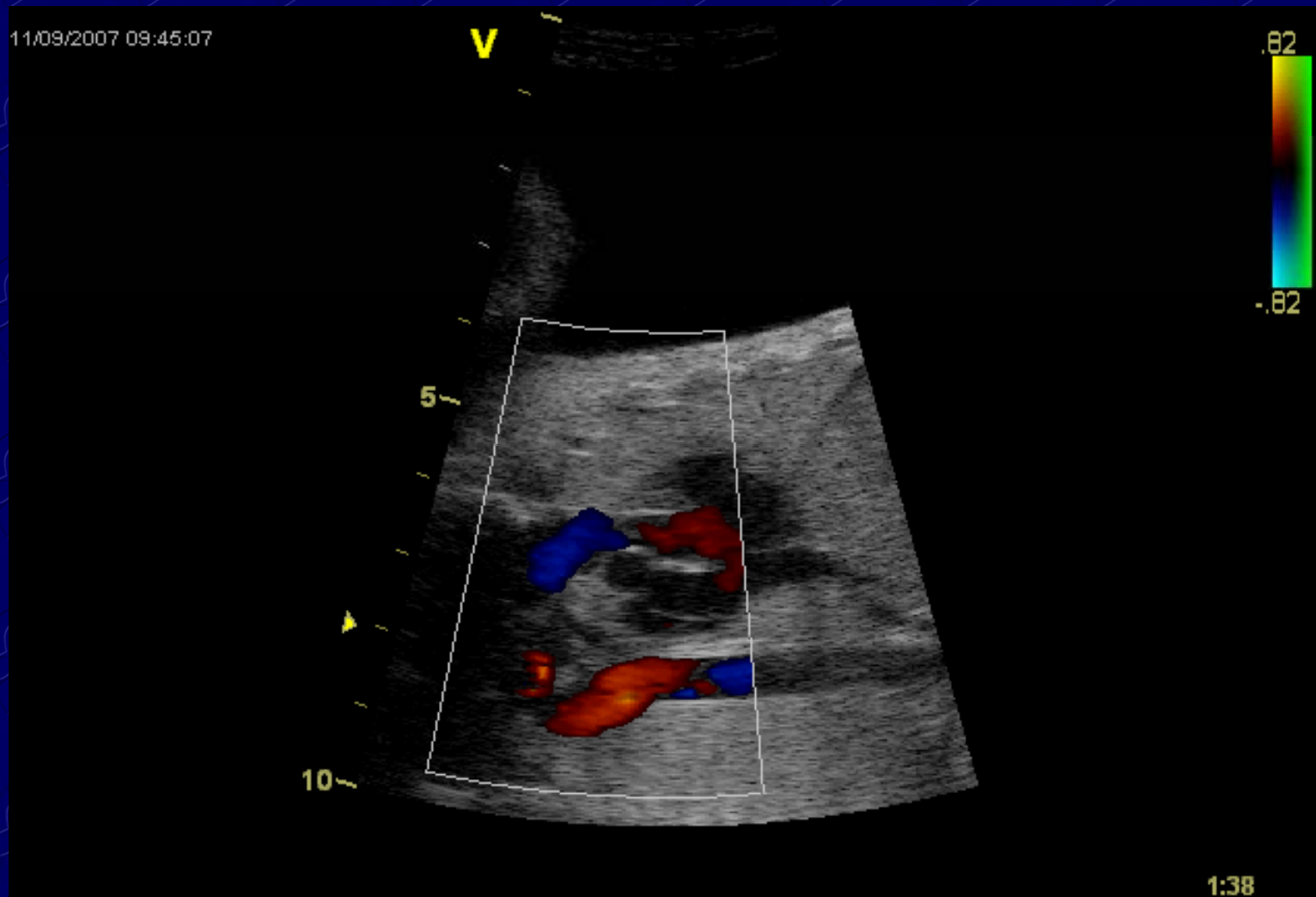
Interrupted aortic arch

Fetal dg.

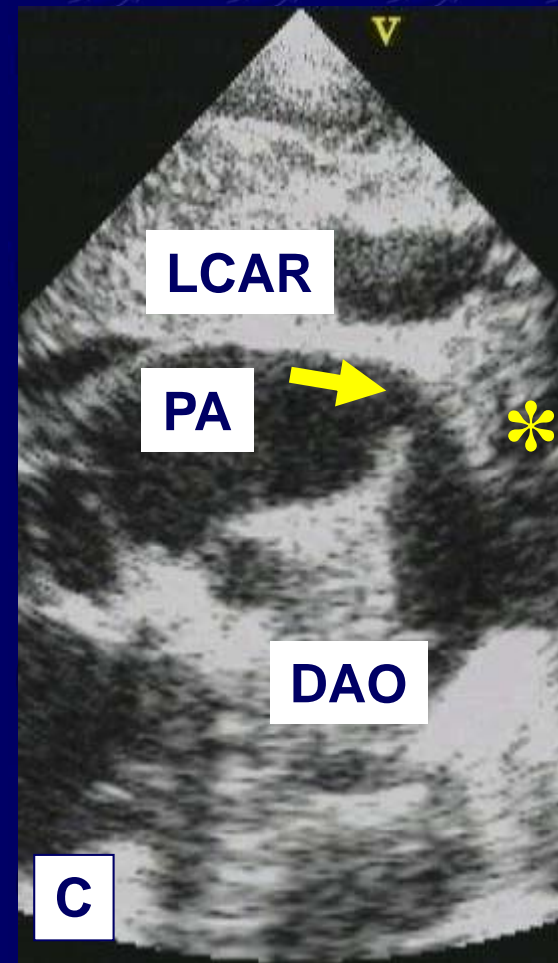


Interrupted aortic arch

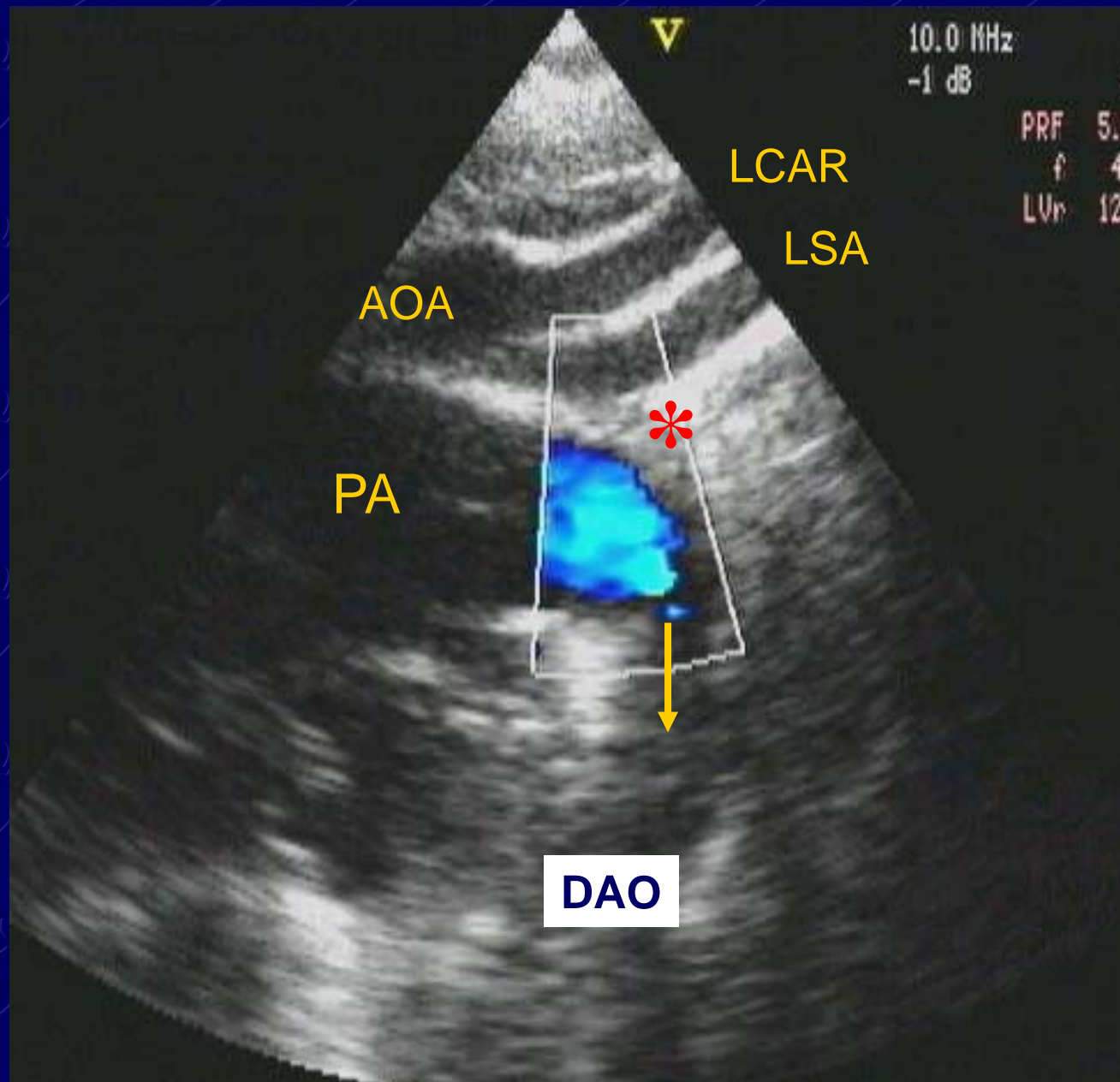
Fetal dg.

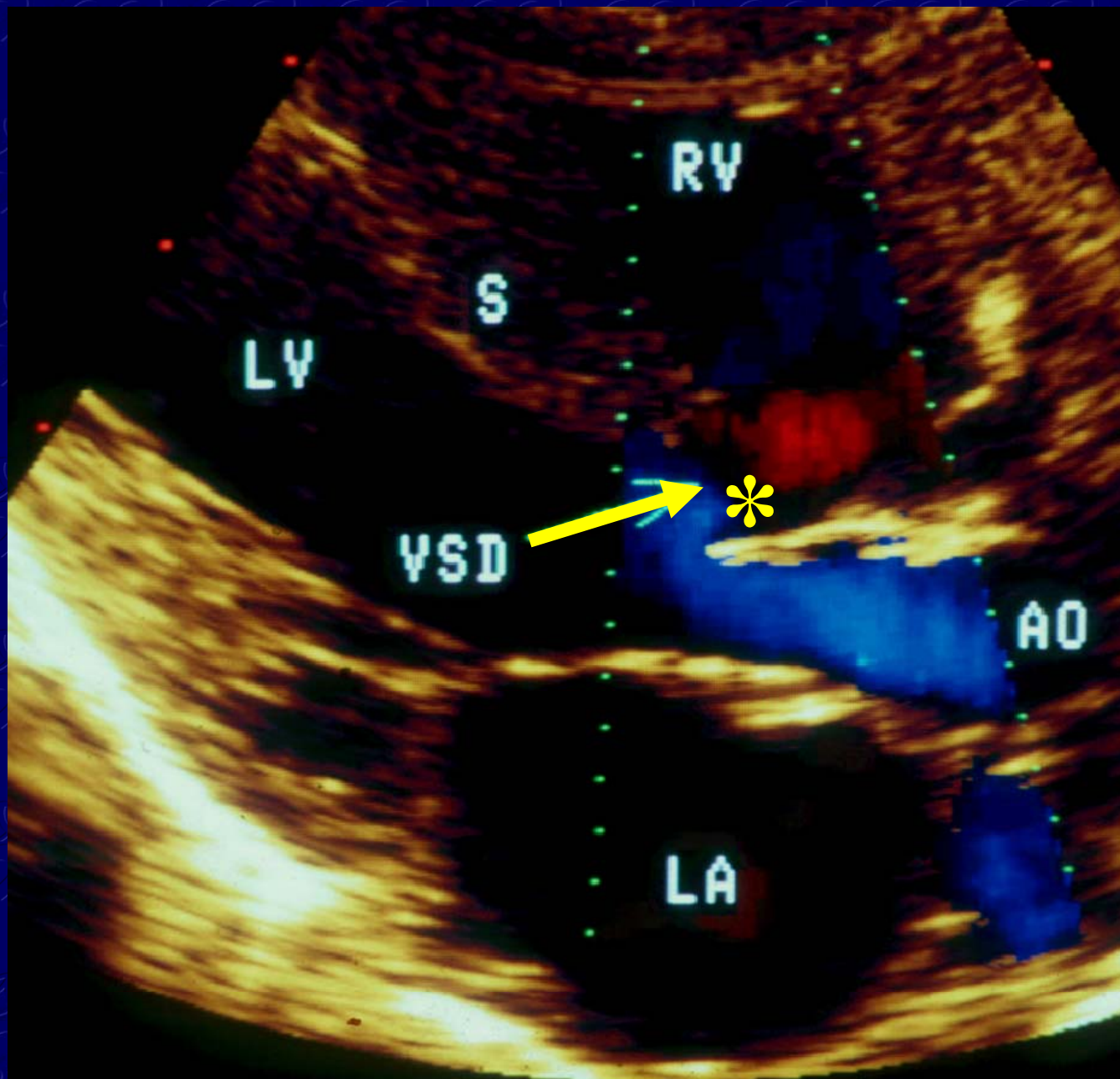


Interrupted aortic arch B1



Interrupted aortic arch A1





Interrupted aortic arch

Symptoms and treatment = neonatal COA

- **Diagnosis**

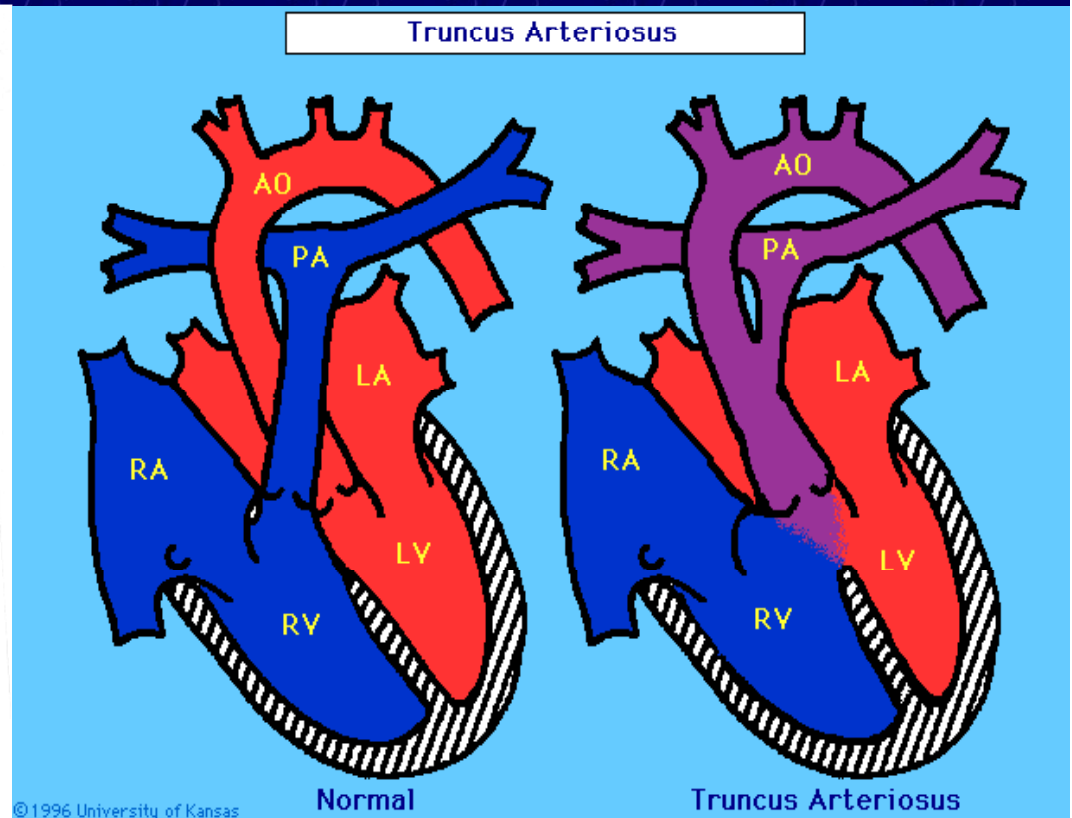
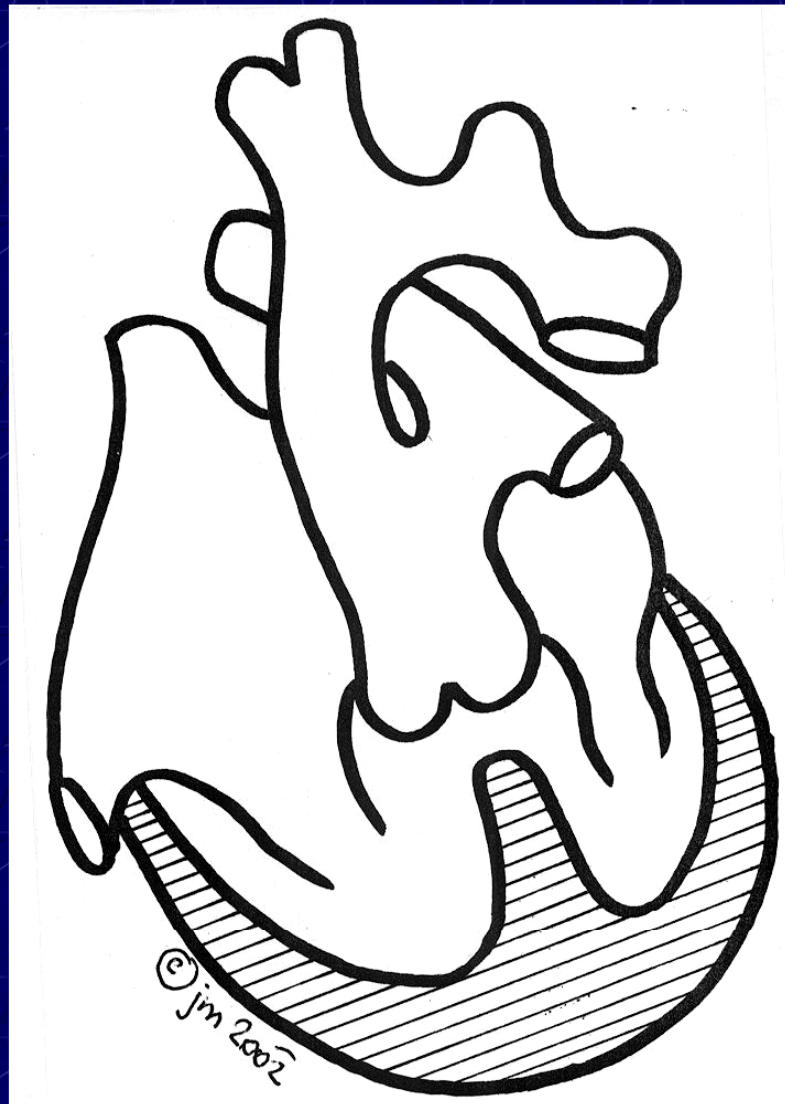
- heart failure
- ECG: dominant RV
- RTG: kardiomegaly, ↑ pulmonary vascularity
- Differential cyanosis (not in a large VSD)

- **Treatment**

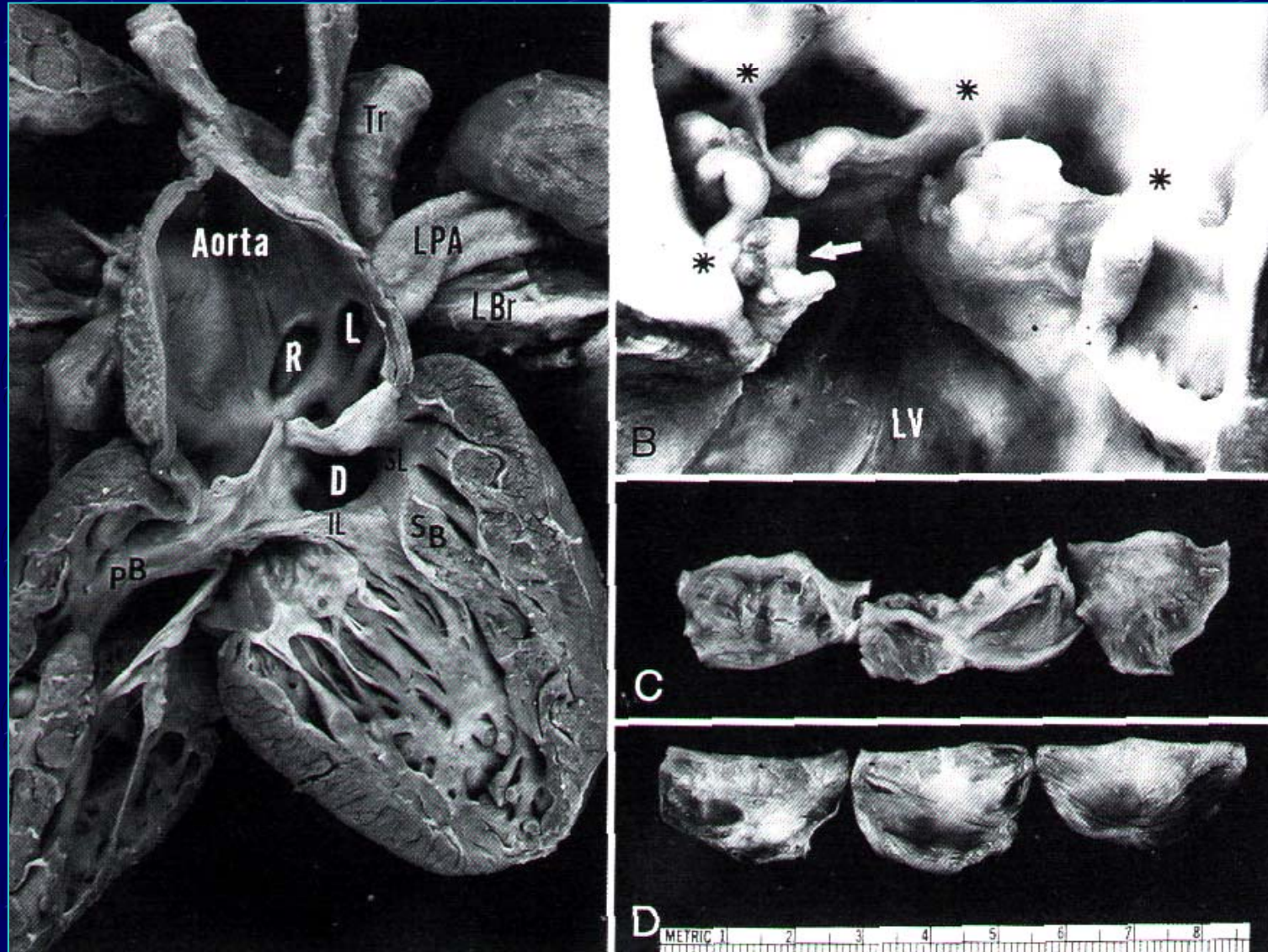
- anastomosis DAO and AOA
- VSD closure

Persistent Truncus Arteriosus (PTA)

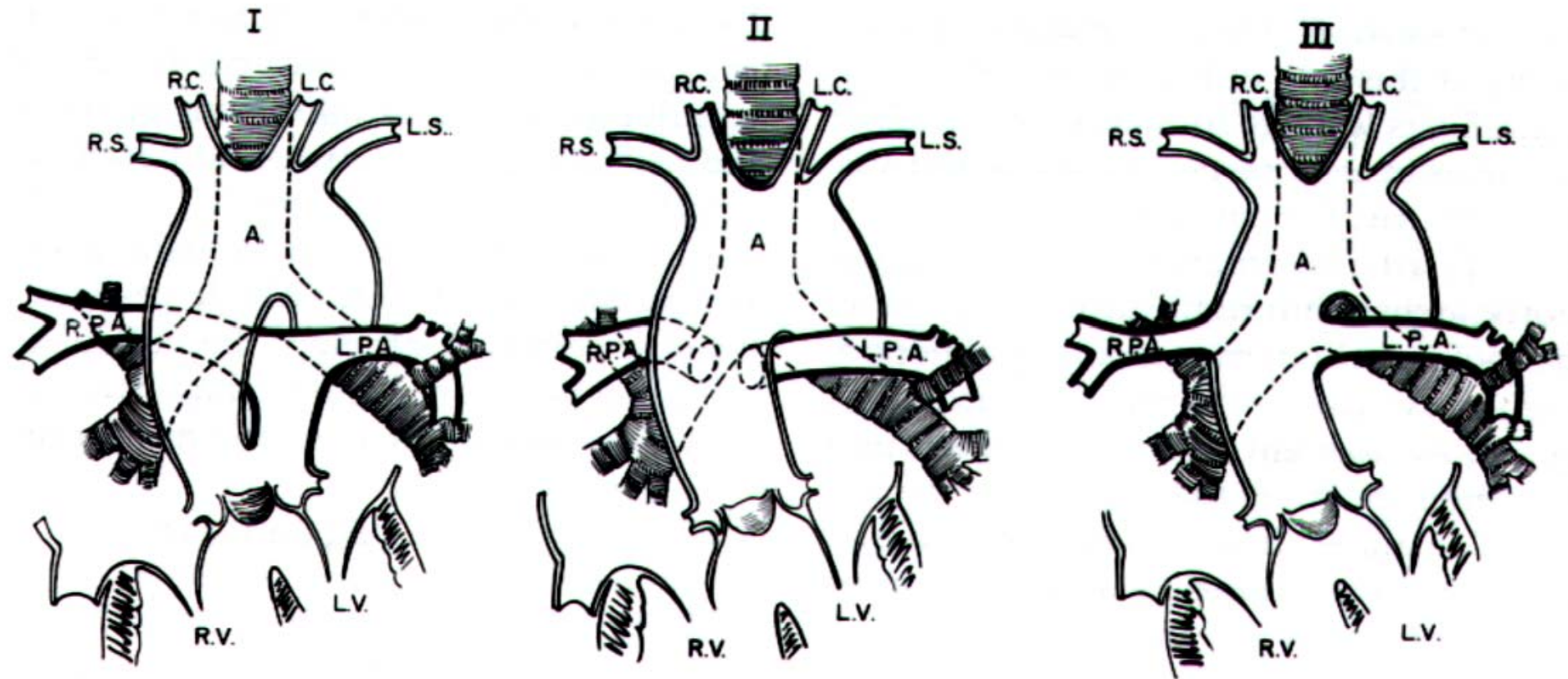
PTA - persistent truncus arteriosus



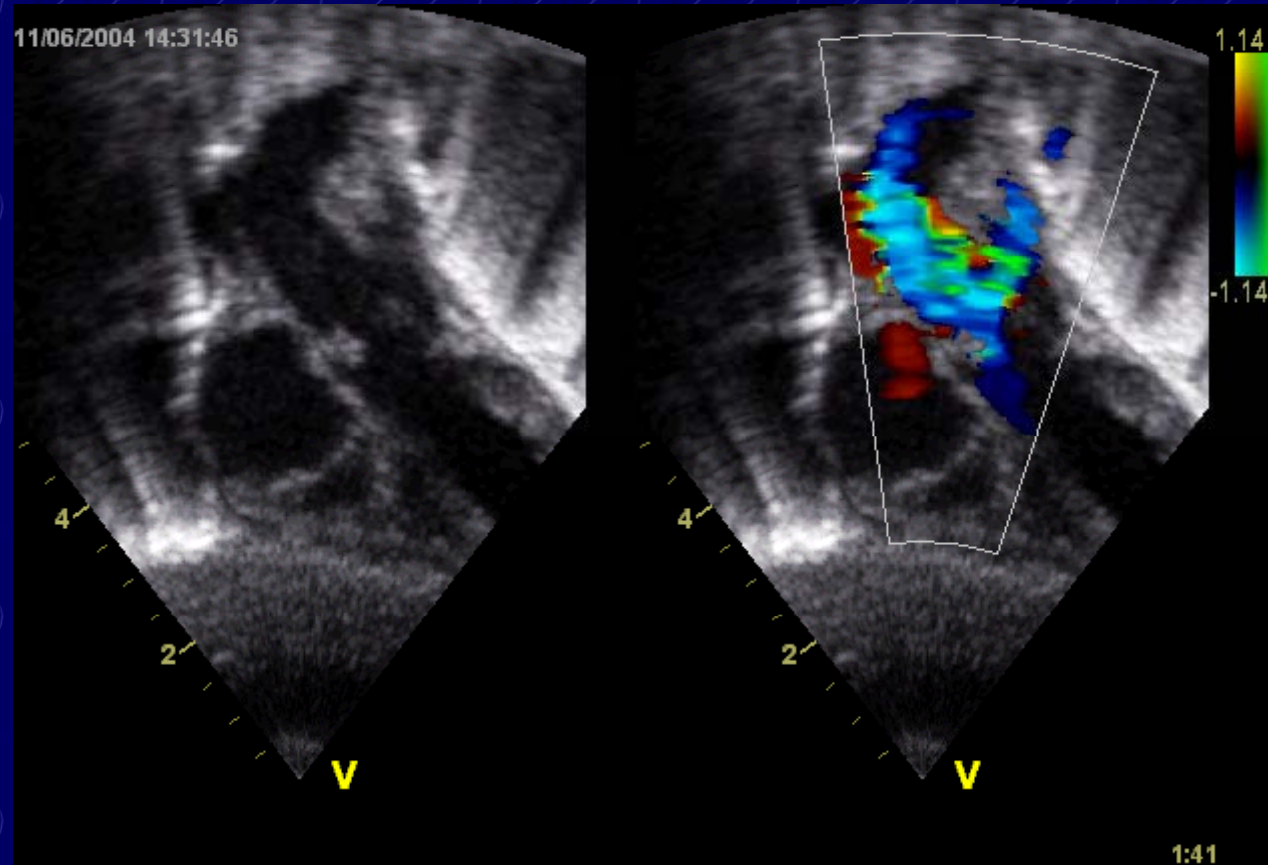
Persistent truncus arteriosus



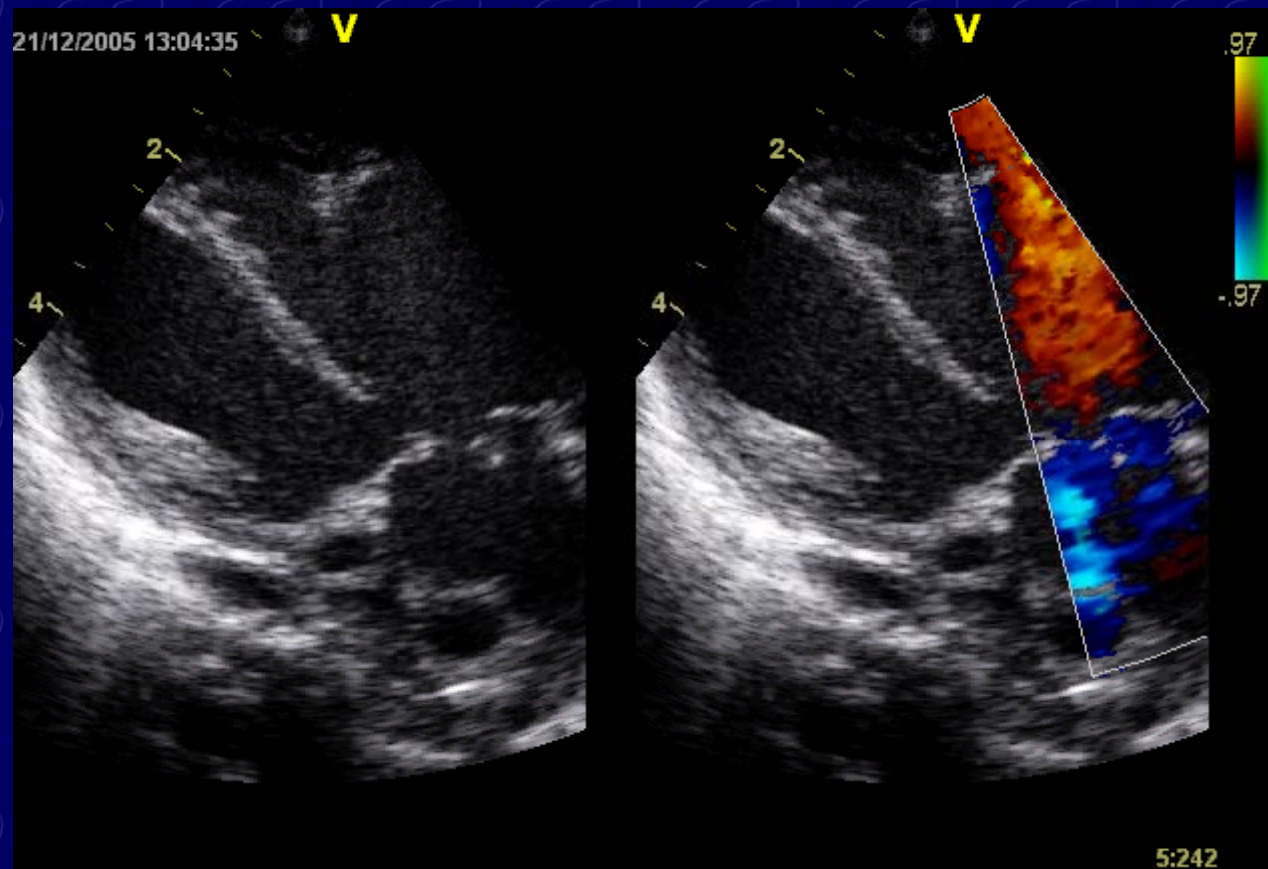
Persistent truncus arteriosus



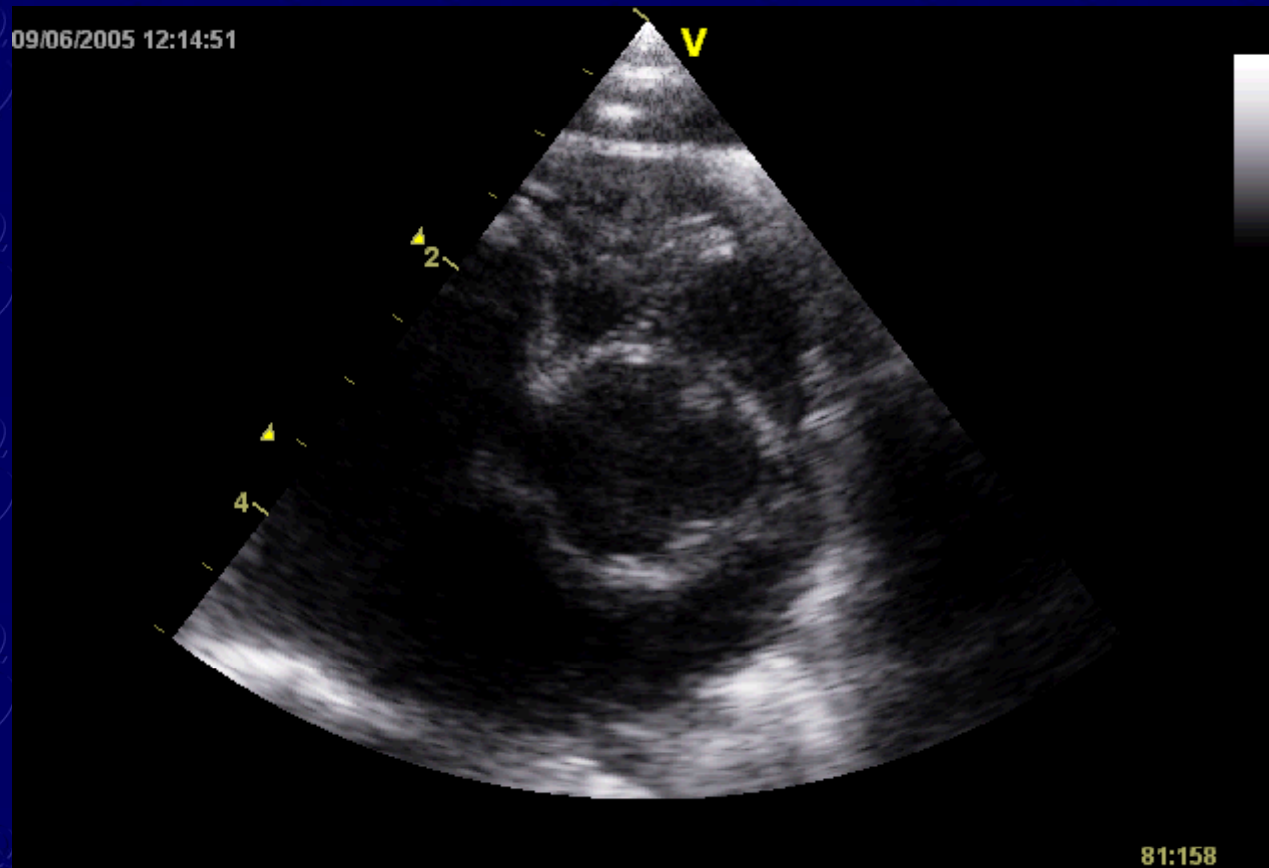
Persistent truncus arteriosus



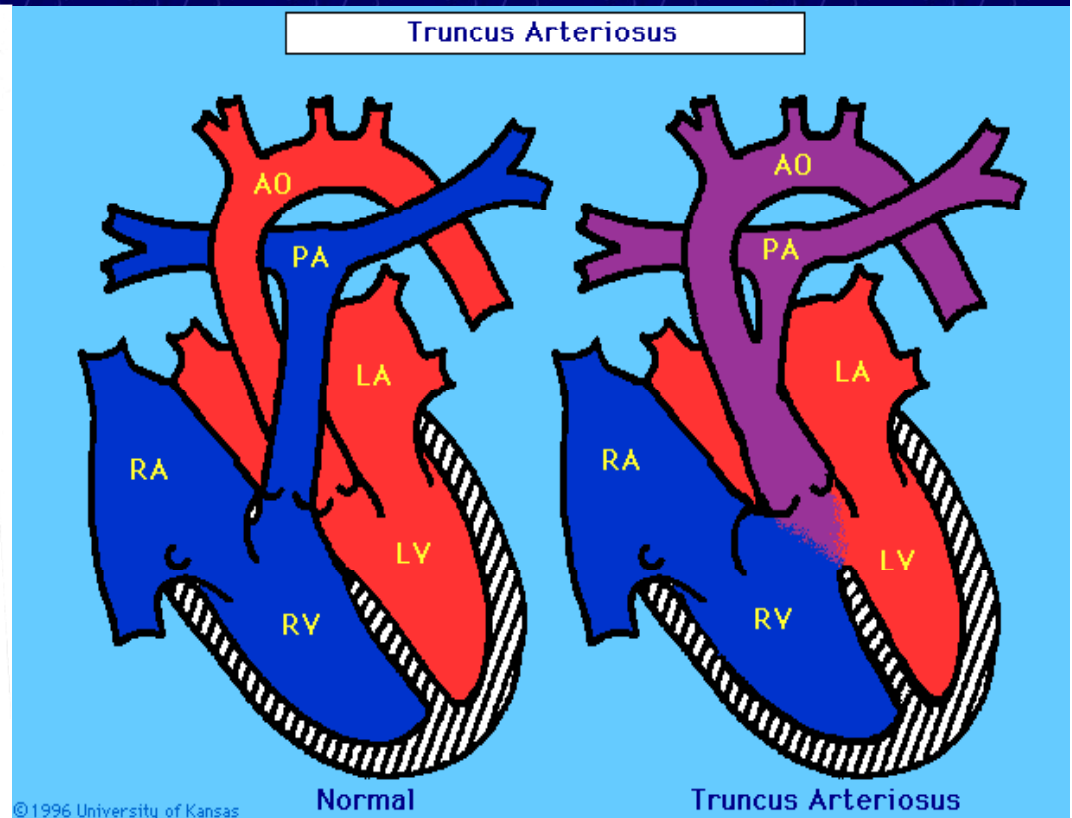
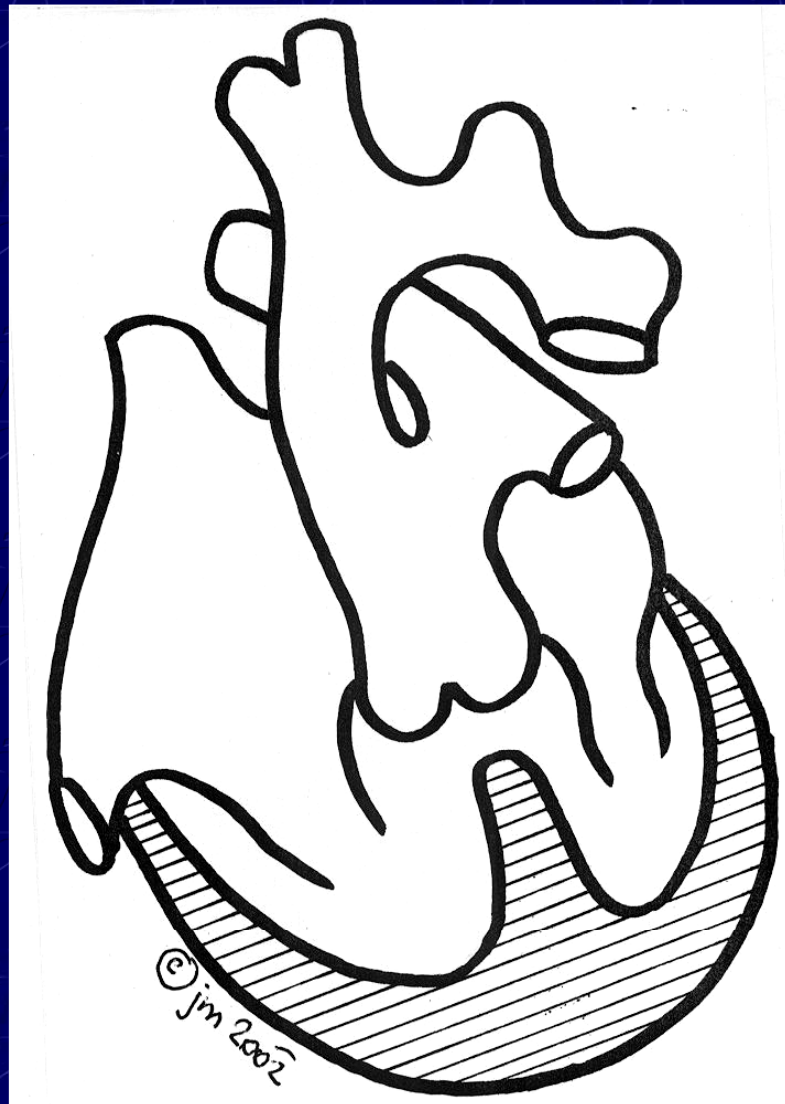
Persistent truncus arteriosus



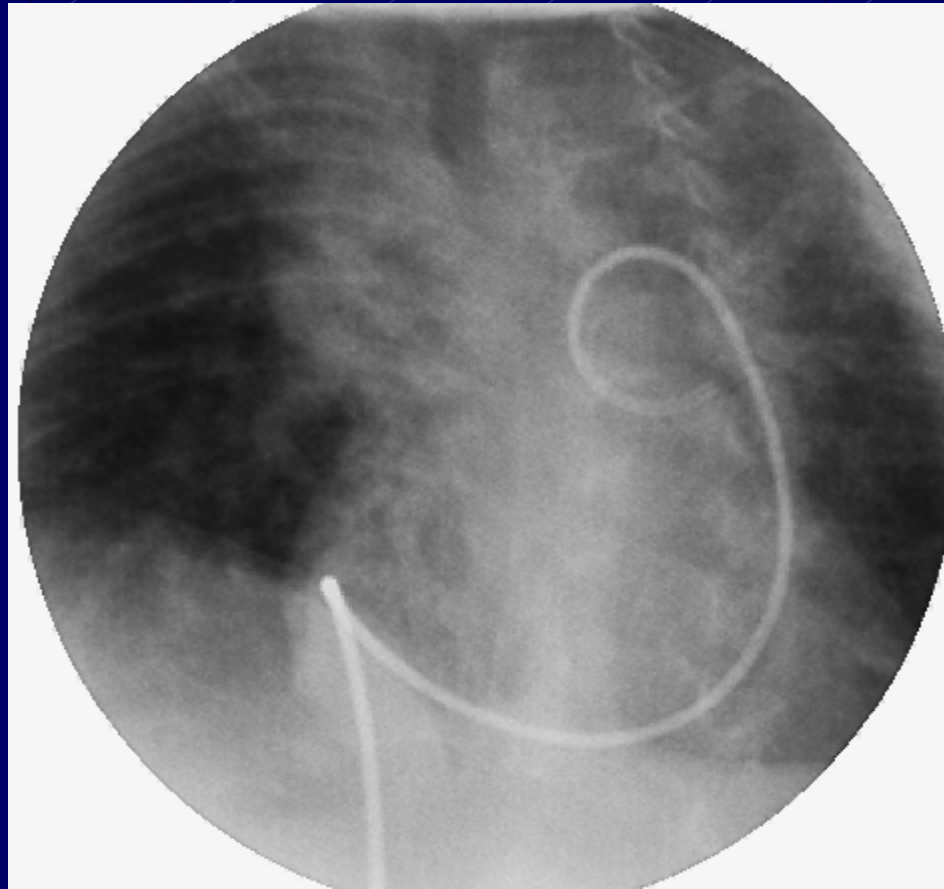
Persistent truncus arteriosus



PTA - persistent truncus arteriosus



Persistent truncus arteriosus



Persistent truncus arteriosus

- Clinical features

- cyanosis → heart failure
- Accentuated periph.pulses (↓ diastole!)
- click, murmur, “continuous” AS, „AI“
- ECG: biventricular hypertrophy, dominant RV
- RTG: cardiomegaly, pulmonary congestion
- Treatment
- VSD closure, truncal valve - LV
- Conduit RV – pulmonary arteries

Anomalous pulmonary venous connection

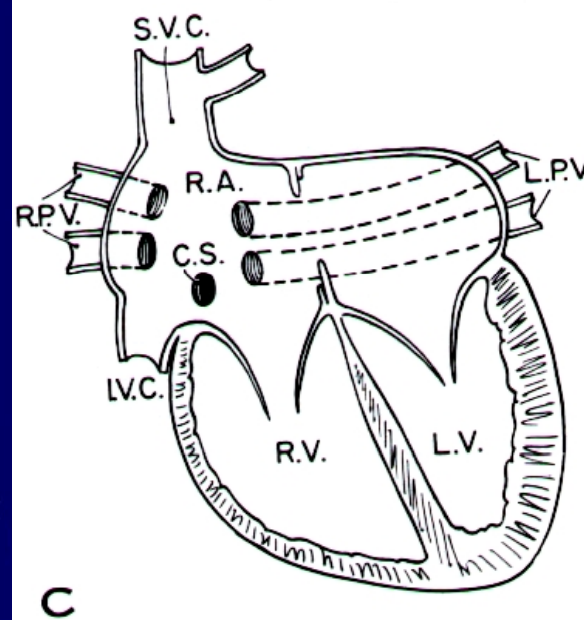
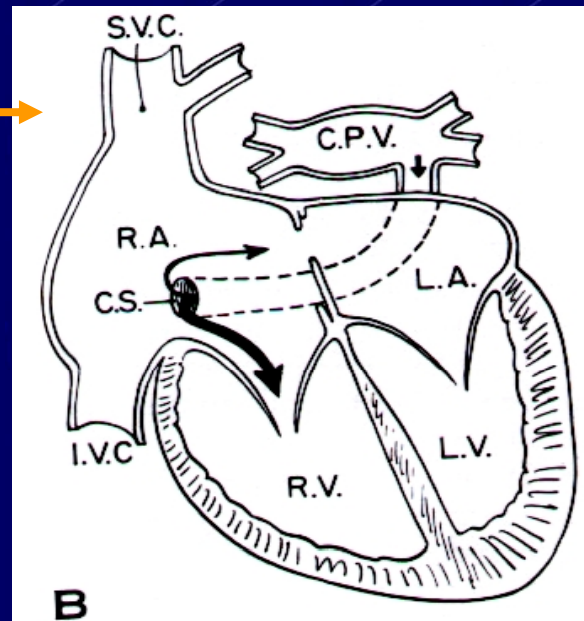
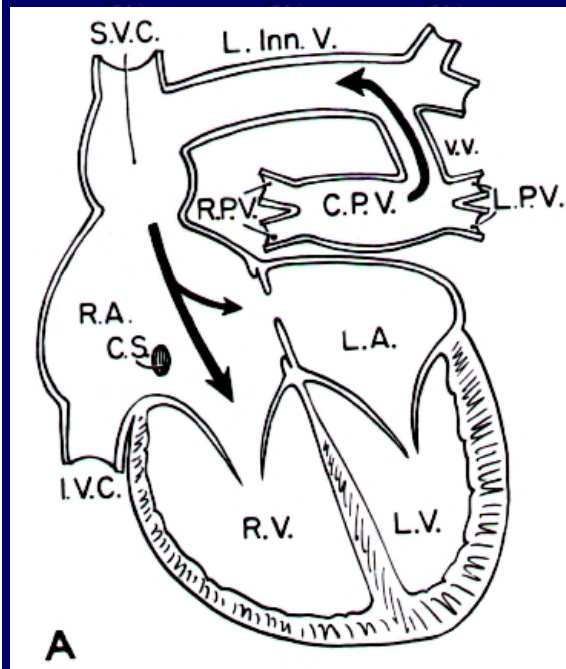
(Total: TAPVC)

(Partial: PAPVC)

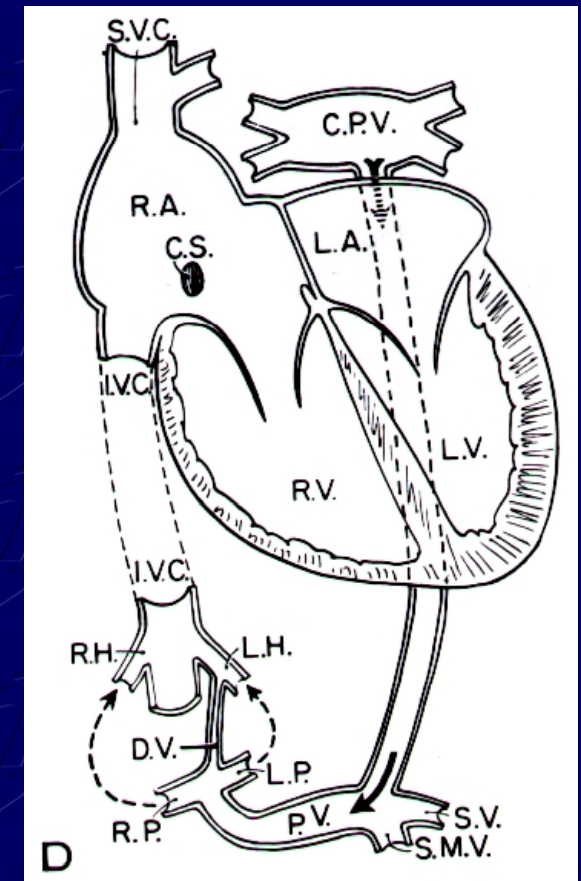
Total anomalous pulmonary venous connection

Intracardiac

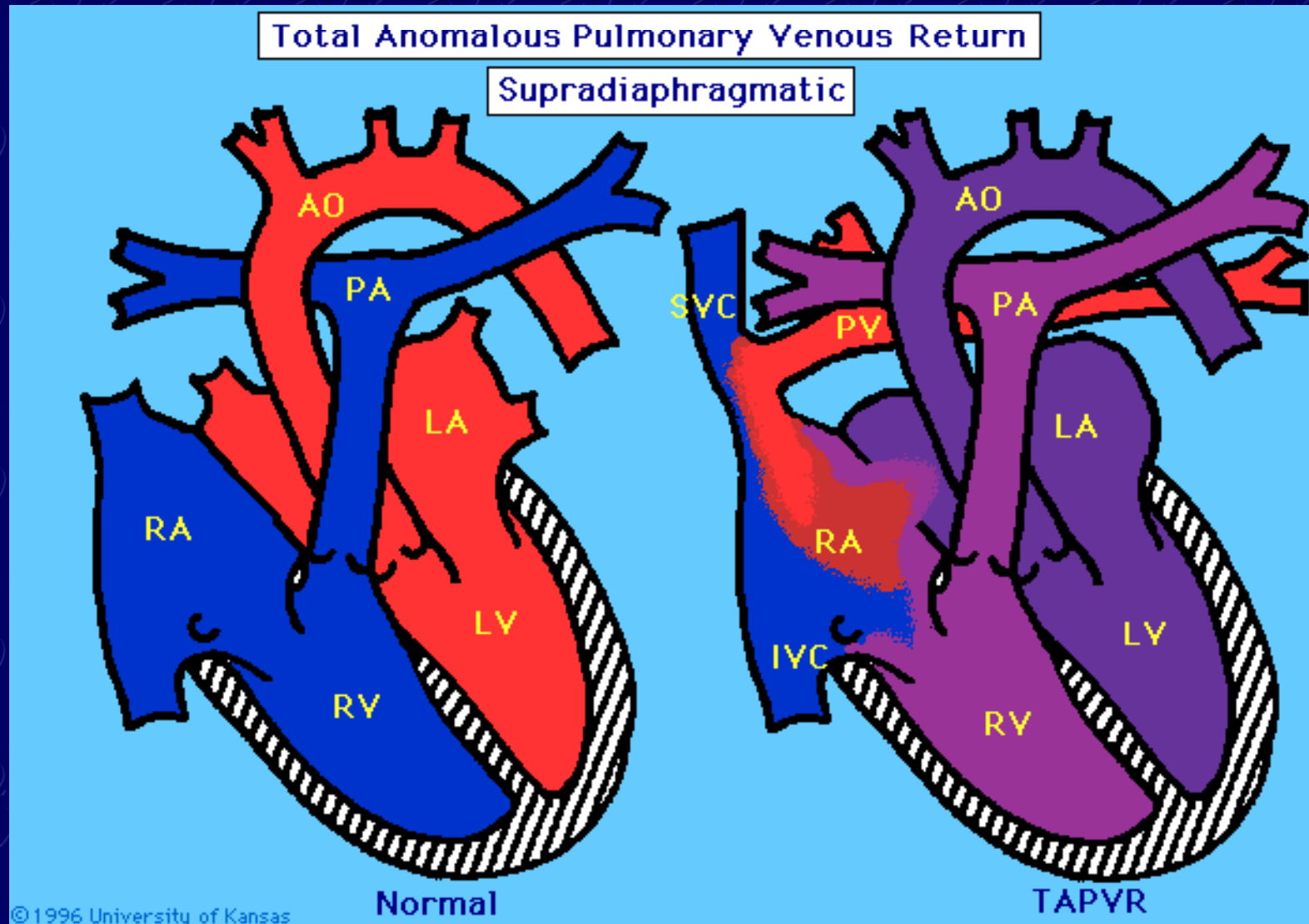
supracardiac



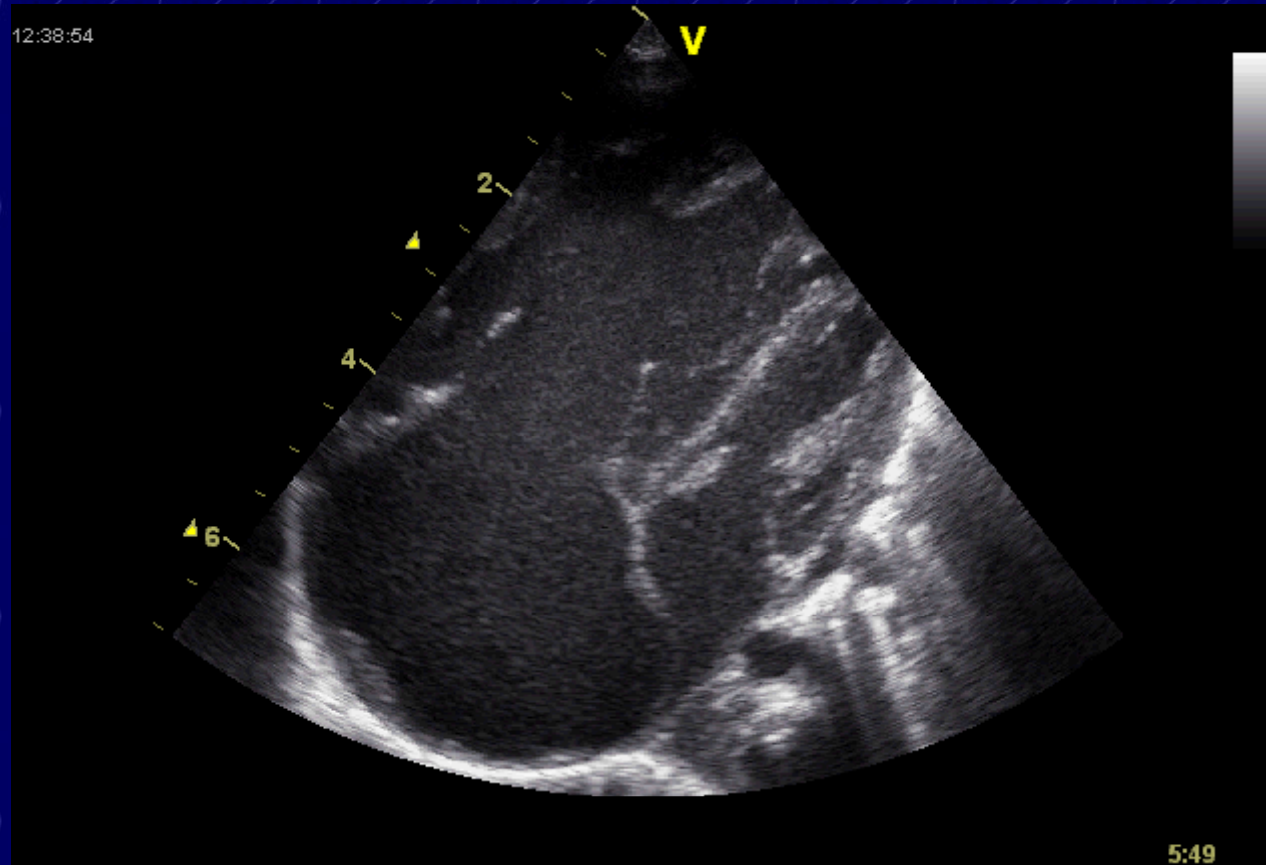
infracardiac
(infradiaphragm.)



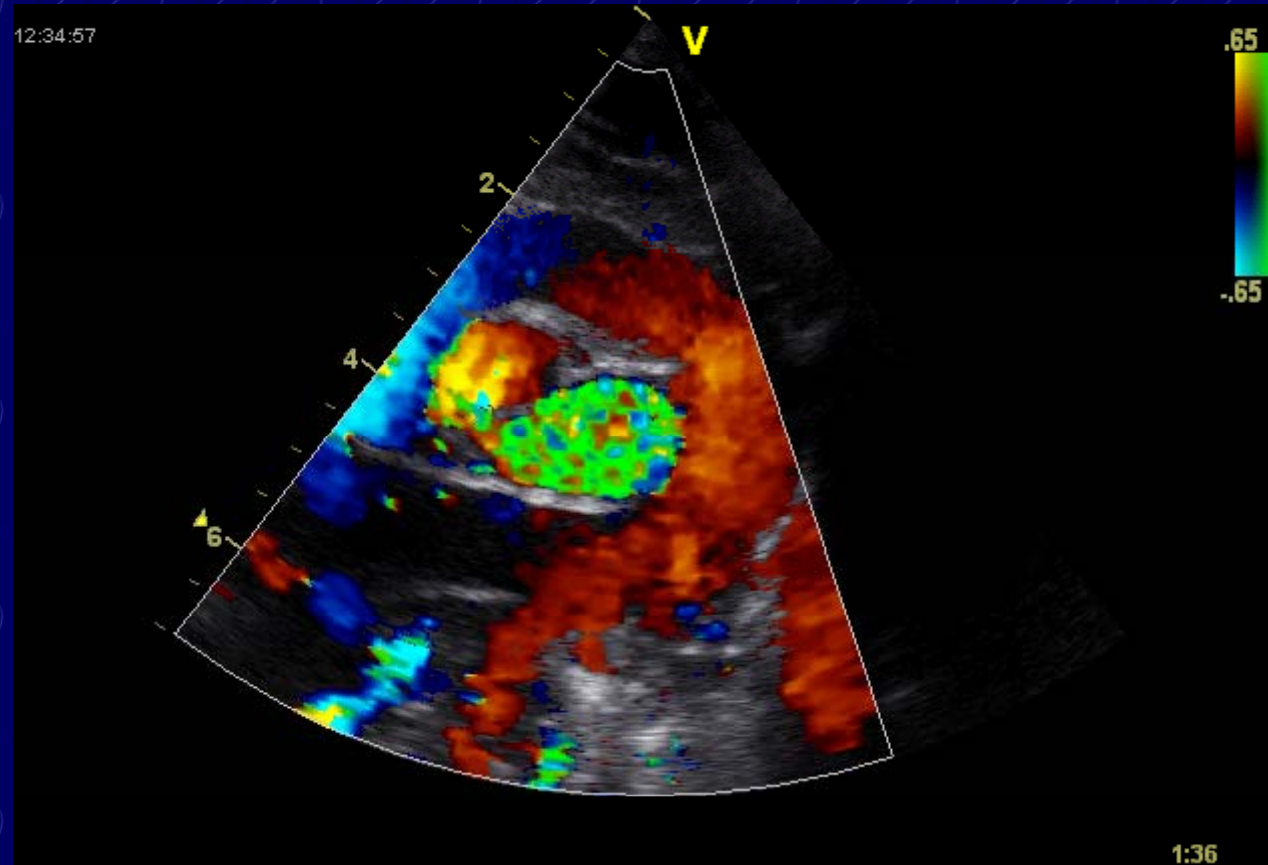
TAPVC - totální anomální návrat plicních žil



Supracardiac TAPVC (LVV)



Supracardiac TAPVC (LVV)



Supracardiac TAPVC (LVV)