

RADIOLOGISKE UNDERSØGELSER VED MEDFØDTE HJERTEFEJL

A-Kursus 2014 Pædiatrisk radiologi

Aalborg den 10. November 2014

**Gratien Andersen
Overlæge
Billeddiagnostisk Afdeling
Århus Universitetshospital i Skejby**

Incidens og fordeling

8 medfødte hjertesygdomme per 1000 levendefødte

Hvert år fødes omkring 600 børn med hjertefejl i Danmark.
En sygdom der vil følge dem resten af livet.

Kongenit hjertesygdom - Fordeling

▪ Ventrikelseptumdefekt	31%
▪ Atrioseptumdefekt	8%
▪ Ductus arteriosus persistens	7%
▪ Pulmonalstenose	7%
▪ Coarctatio aortae	6%
▪ Tetralogia Steno-Fallot	6%
▪ Aortastenose	5%
▪ Transposition	5%
▪ Atrioventrikulærseptumdefekt	4%
▪ Hypoplastisk venstre hjerte	3%
▪ Hypoplastisk højre hjerte	2%
▪ Cor univentriculare	2%
▪ Tricuspidalatresi	1%
▪ Total abnormt mundende lungevener	1%
▪ Double outlet right ventricle	1%
▪ Øvrige	11%

Kongenit hjertesygdom

22 days

28 days

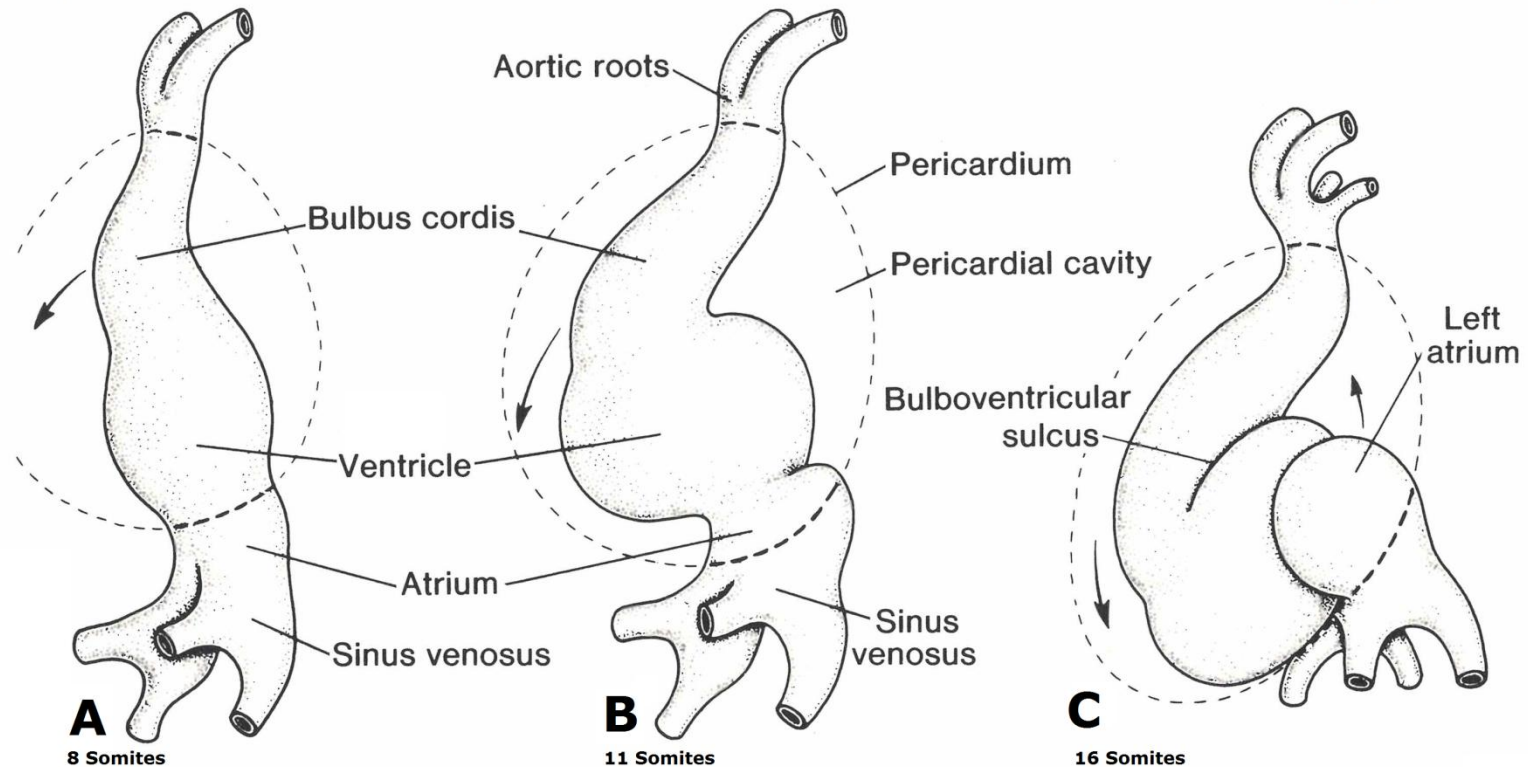
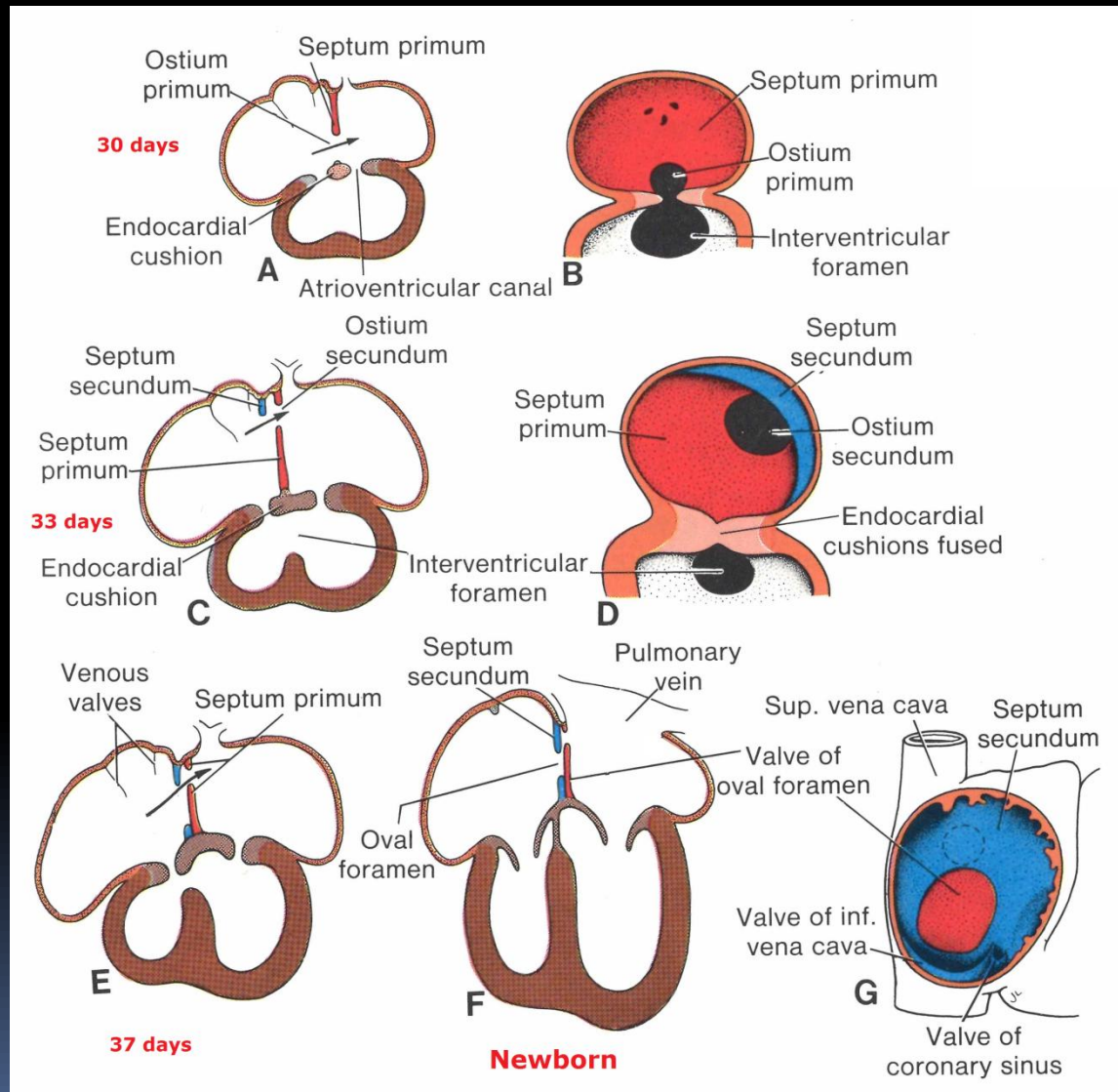


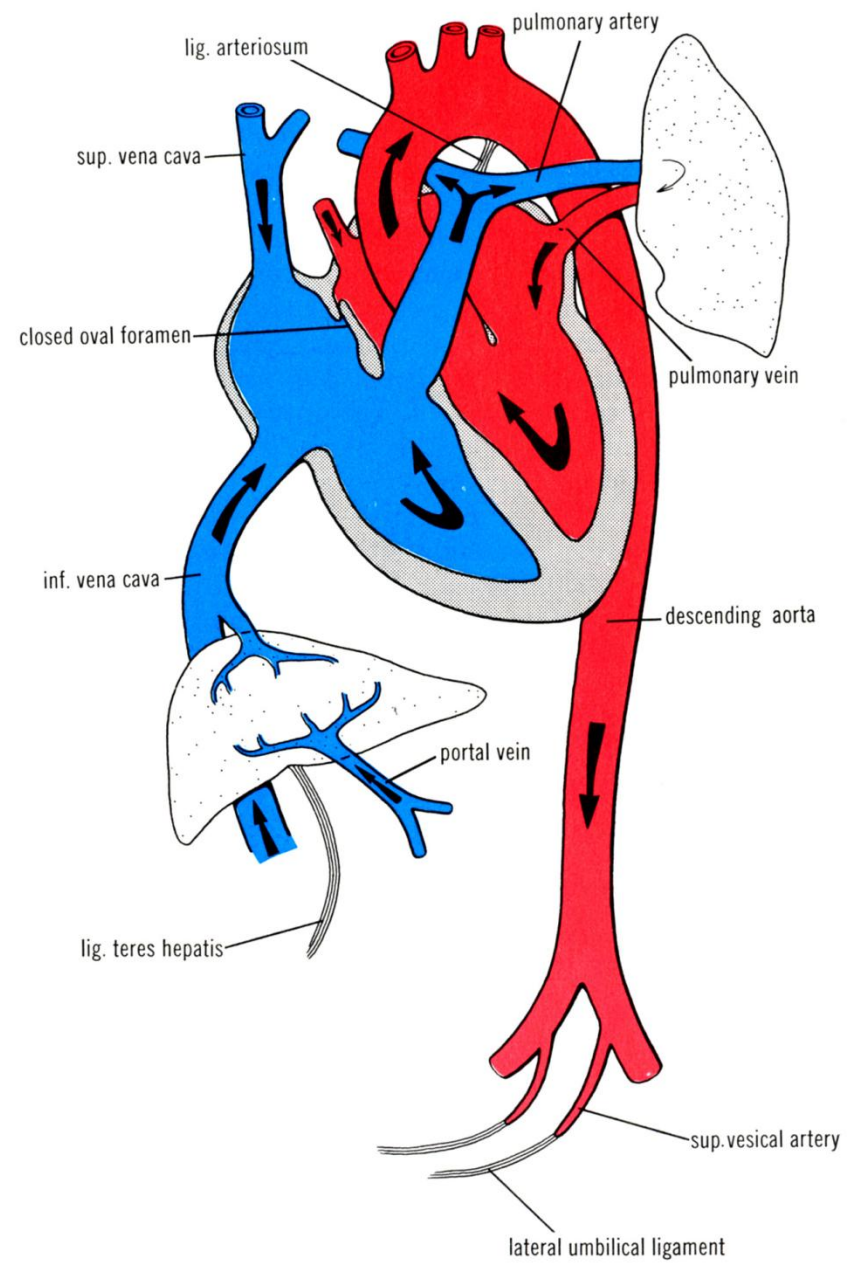
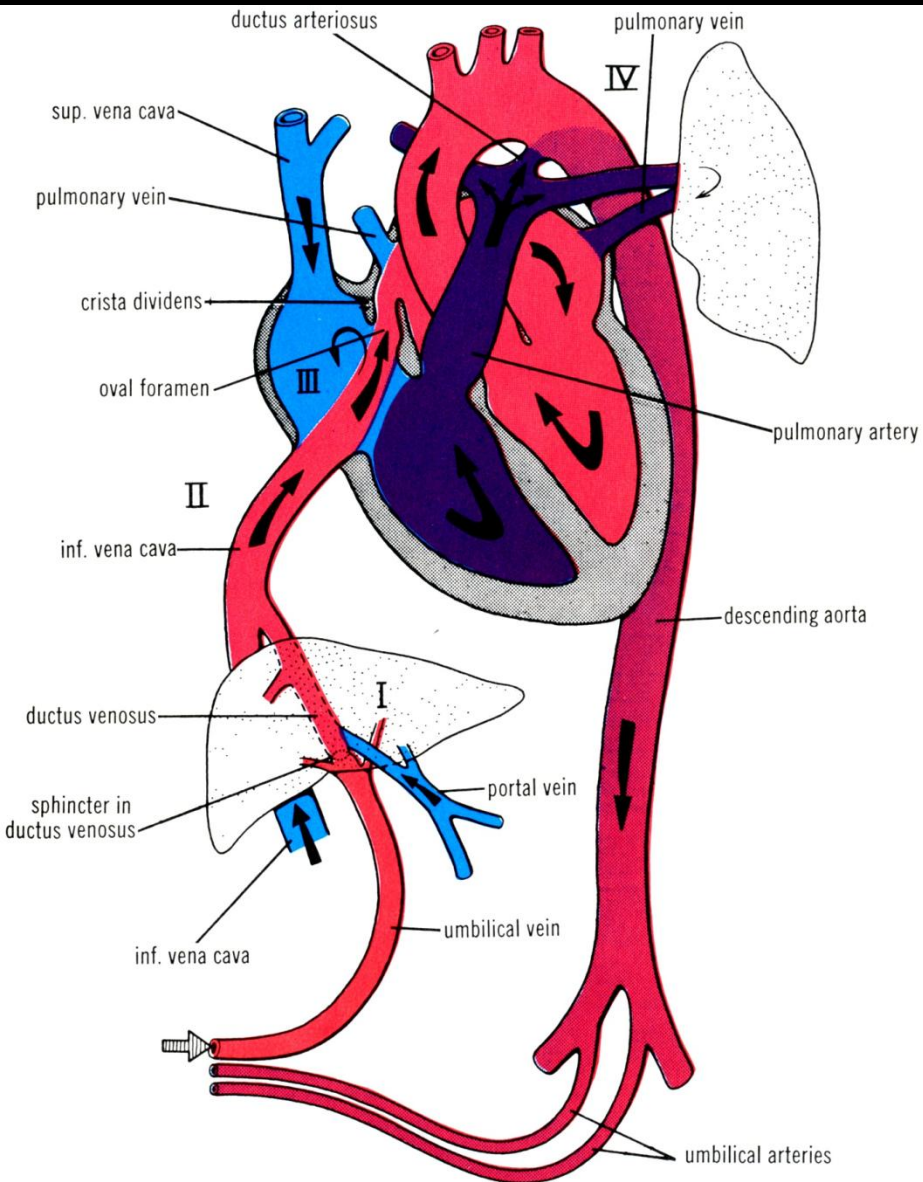
Figure 12-6. Formation of the cardiac loop. A, At 8 somites; B, 11 somites; C, 16 somites. Broken line indicates pericardium. Note how the atrium gradually assumes an intra-pericardial position (modified from Kramer).

The tubular heart

Kongenit hjertesygdom



Septation and valve formation



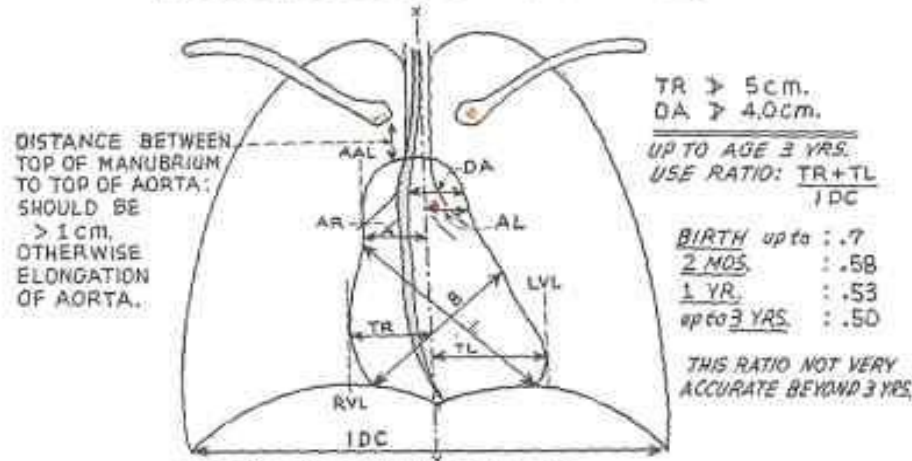
Kongenit hjertesygdom: Udredning - Undersøgelsesmetoder

- Klinisk undersøgelse
- EKG
- Røntgen af thorax
- Ekkokardiografi med farve-Doppler (TTE og TEE)
- CT-skanning
- MR-skanning
- Hjertekateterisation

Kongenit hjertesygdom

Cardiac measurement

1. UNGERLEIDER AND GUBNER NOMOGRAM METHOD (FOR INDIVIDUALS 56-90" HT; 95-300# WT.)



AAL: DOES NOT EXTEND BEYOND RVL.
RVL: DOES NOT EXTEND BEYOND MEDIAL 1/3 OF DIAPHRAGM.
LVL: DOES NOT EXTEND BEYOND MEDIAL 1/2 OF DIAPHRAGM.

1. $A = \sqrt[1/4]{L \times B} = .7854 \times L \times B$
2. GREATEST TRANSVERSE DIAMETER (GTD) OF HEART: TR+TL
3. COMPARE MEASURED AND CALCULATED VALUES FOR A and GTD WITH VALUES ANTICIPATED FROM BODY HEIGHT AND WEIGHT. NORMAL RANGE IS VALUE ANTICIPATED $\pm 10\%$
4. MEASURED AORTIC VALUE: AR+AL

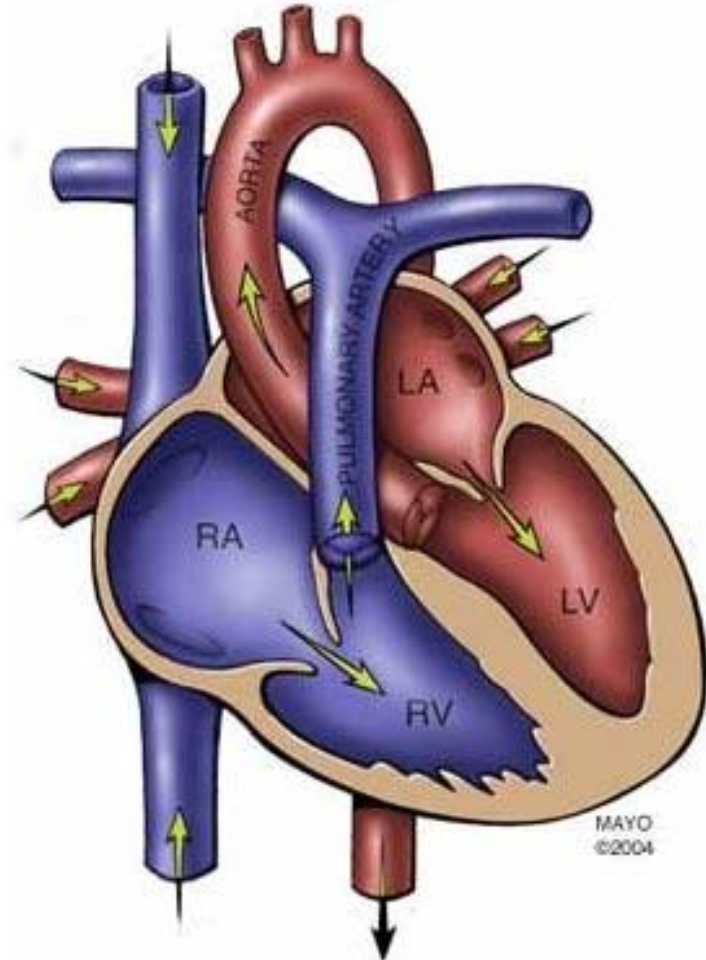
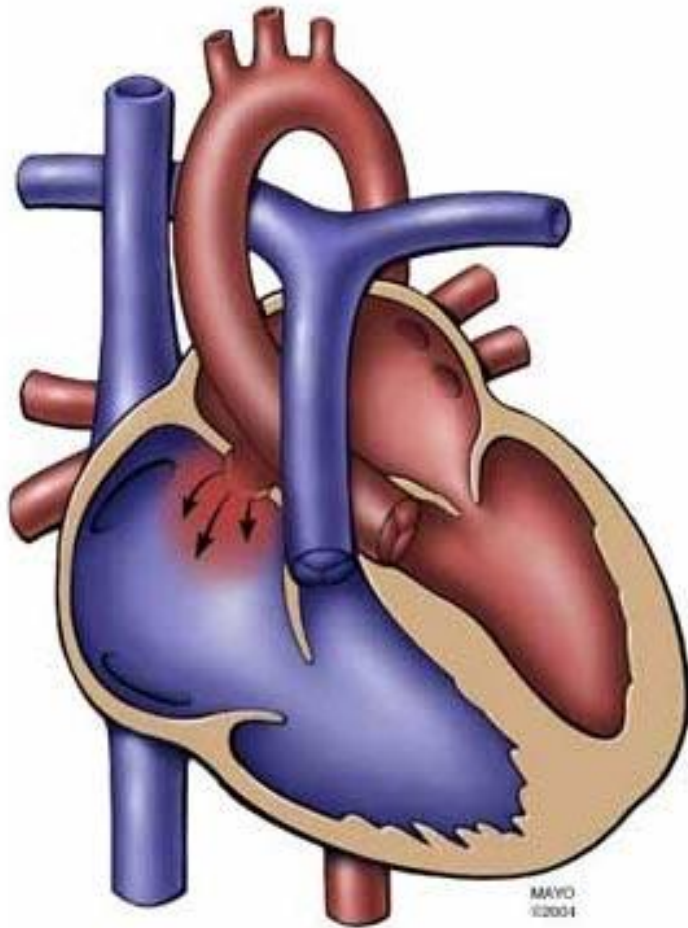
ANTICIPATED AORTIC VALUE: CHART VALUE

-1mm. For each 3 Yrs. < 43 Yrs.	+1mm. For each 3 Yrs. > 43 Yrs.
---------------------------------------	---------------------------------------

2. USE SIMILAR MEYER'S TABLES FOR CHILDREN 3-16 YRS OF AGE

$A = \sqrt[1/4]{L \times B}$

ASD



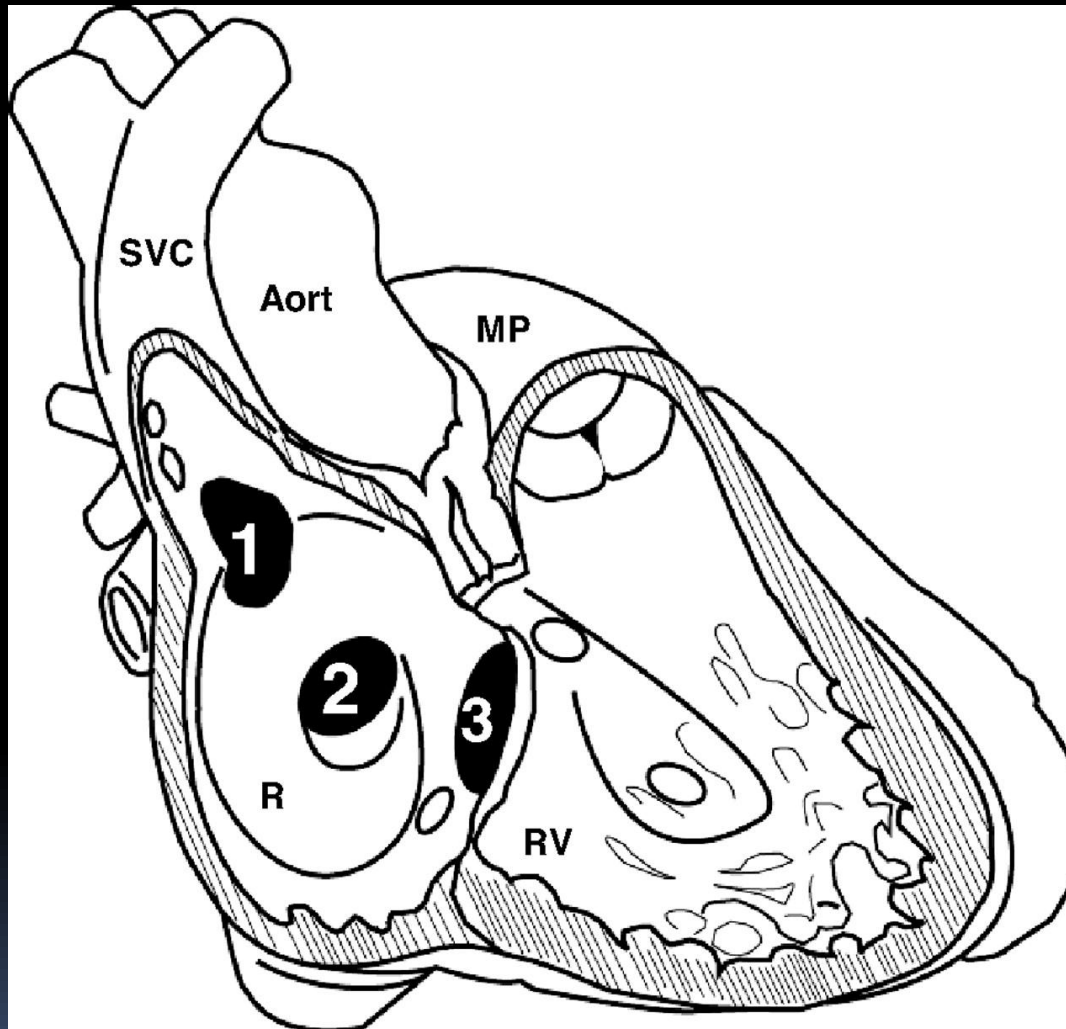
ASD



ASD



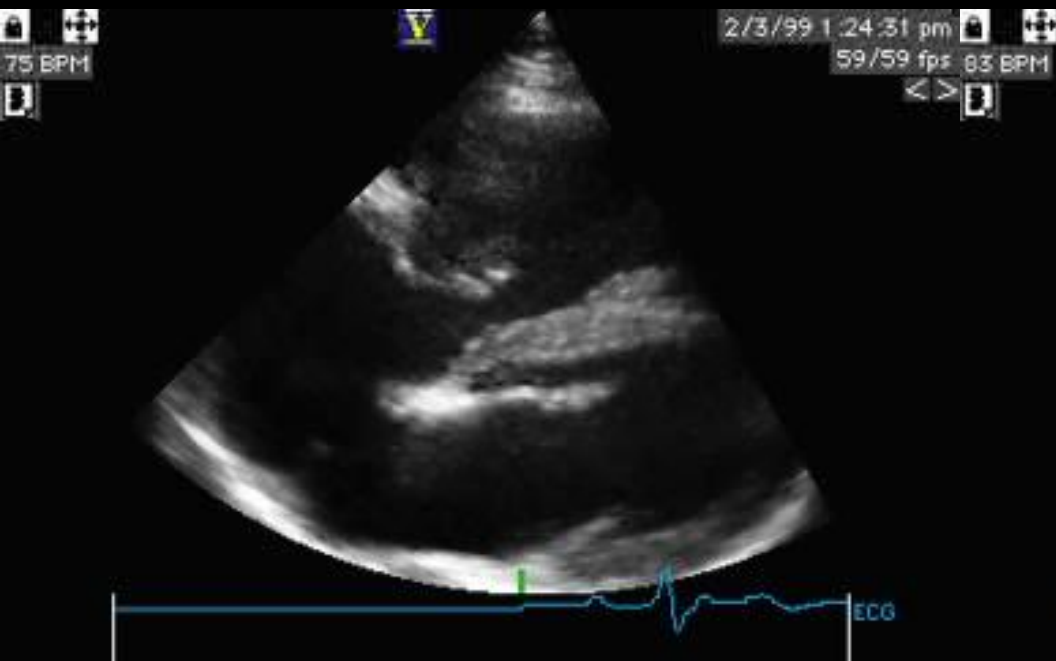
Figure 1. Types and typical locations of ASDs. In this view, the free walls of the RA and RV have been removed, looking leftward toward the septal surface.



Sommer R J et al. *Circulation* 2008;117:1090-1099

- 1- Sinus venosus
- 2- Ostium secundum
- 3- Ostium primum/AV canal type ASD

ASD (secundum type) 30-årig F

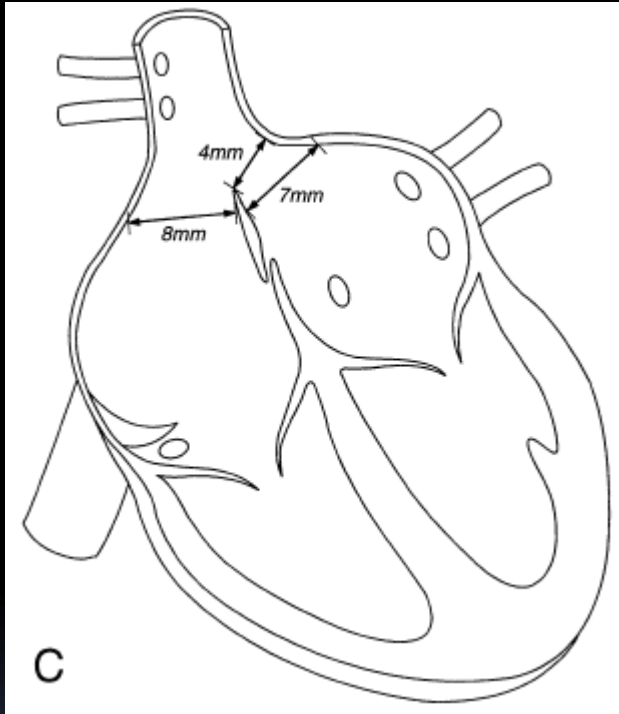


ASD

MR skanning



ASD (sinus venosus) 16 mdr. F



4 Omnipaque 350mg 136 bpm, 7

15 Nov, 2010 11:52:16.77

C

80 kV

FOV 91.0 mm

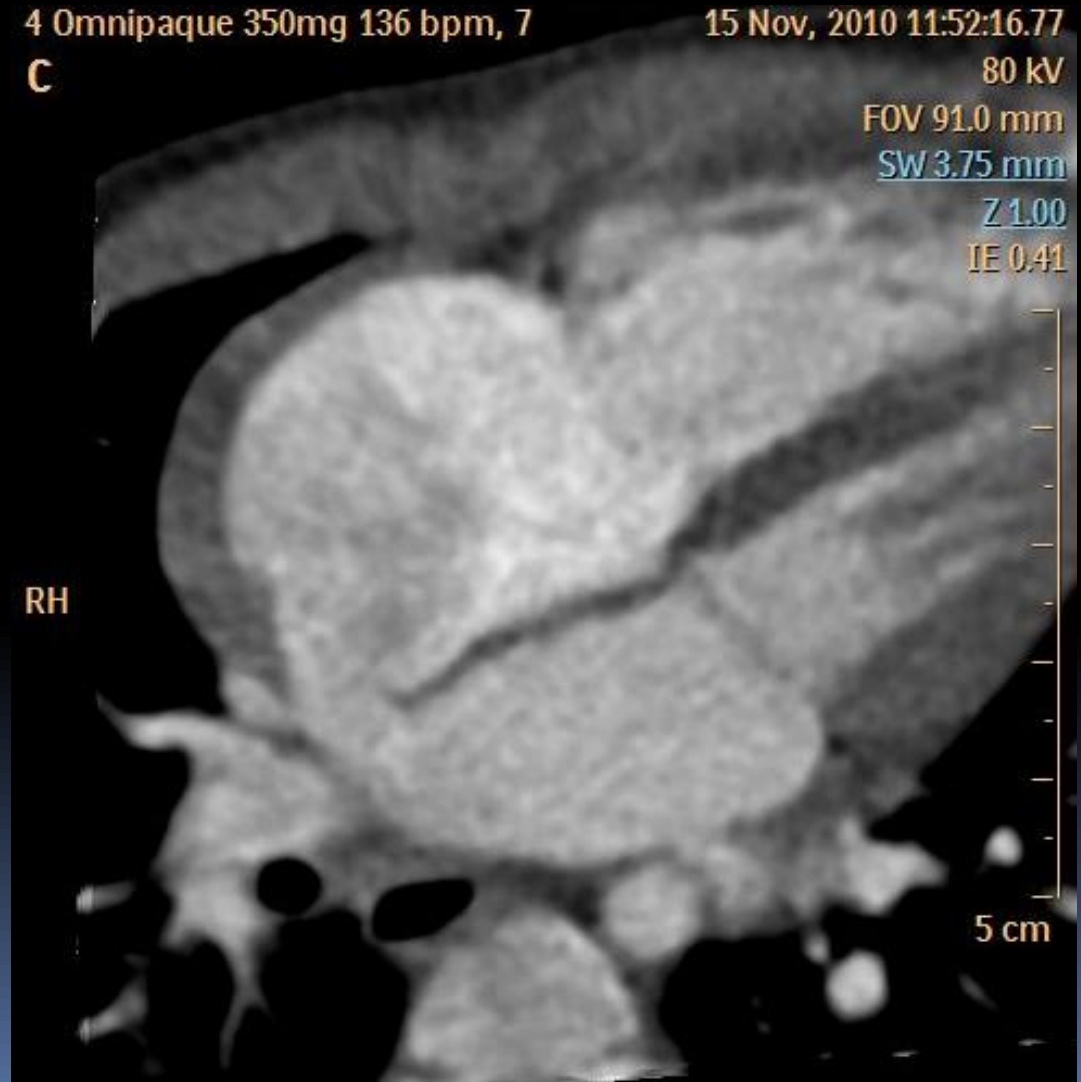
SW 3.75 mm

Z 1.00

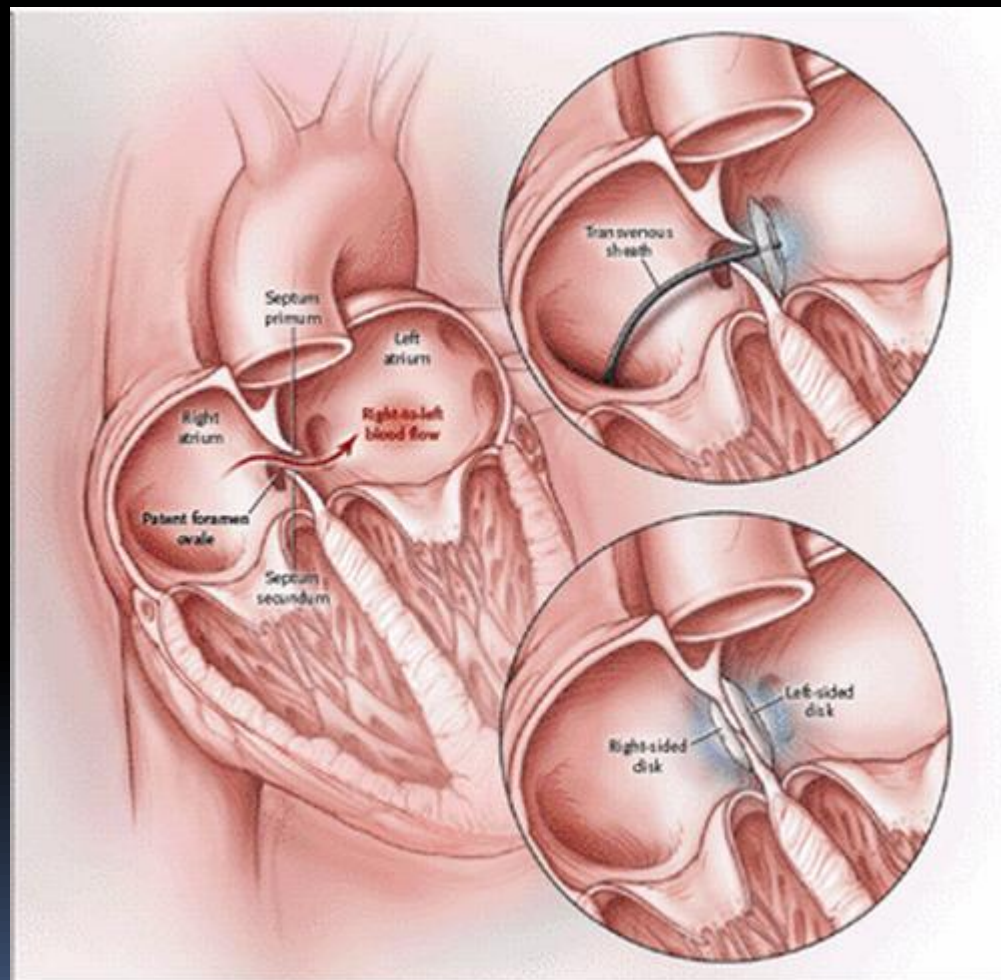
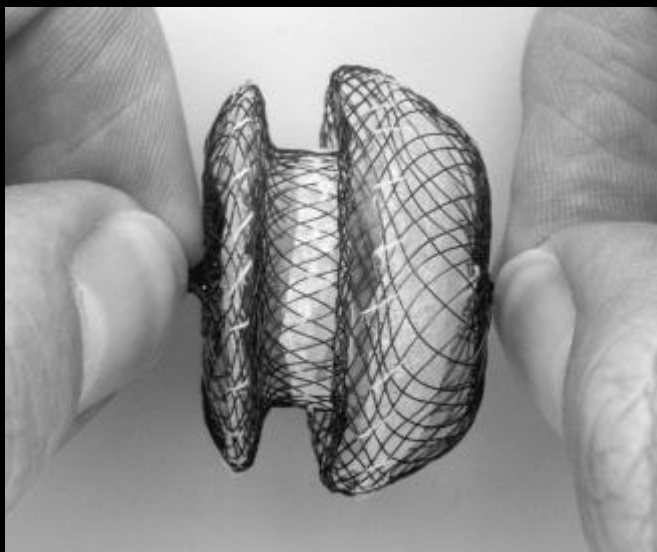
IE 0.41

RH

5 cm

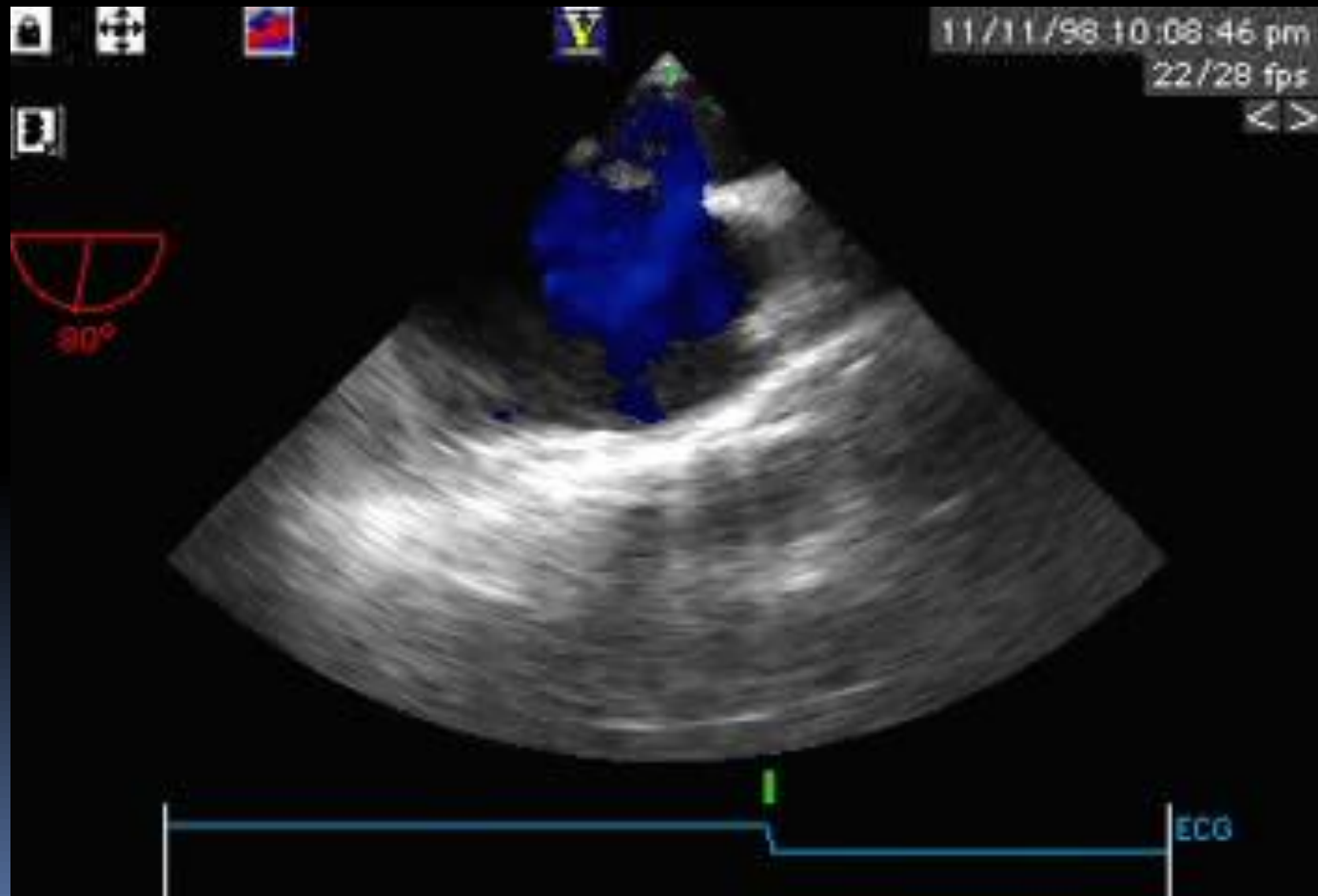


ASD

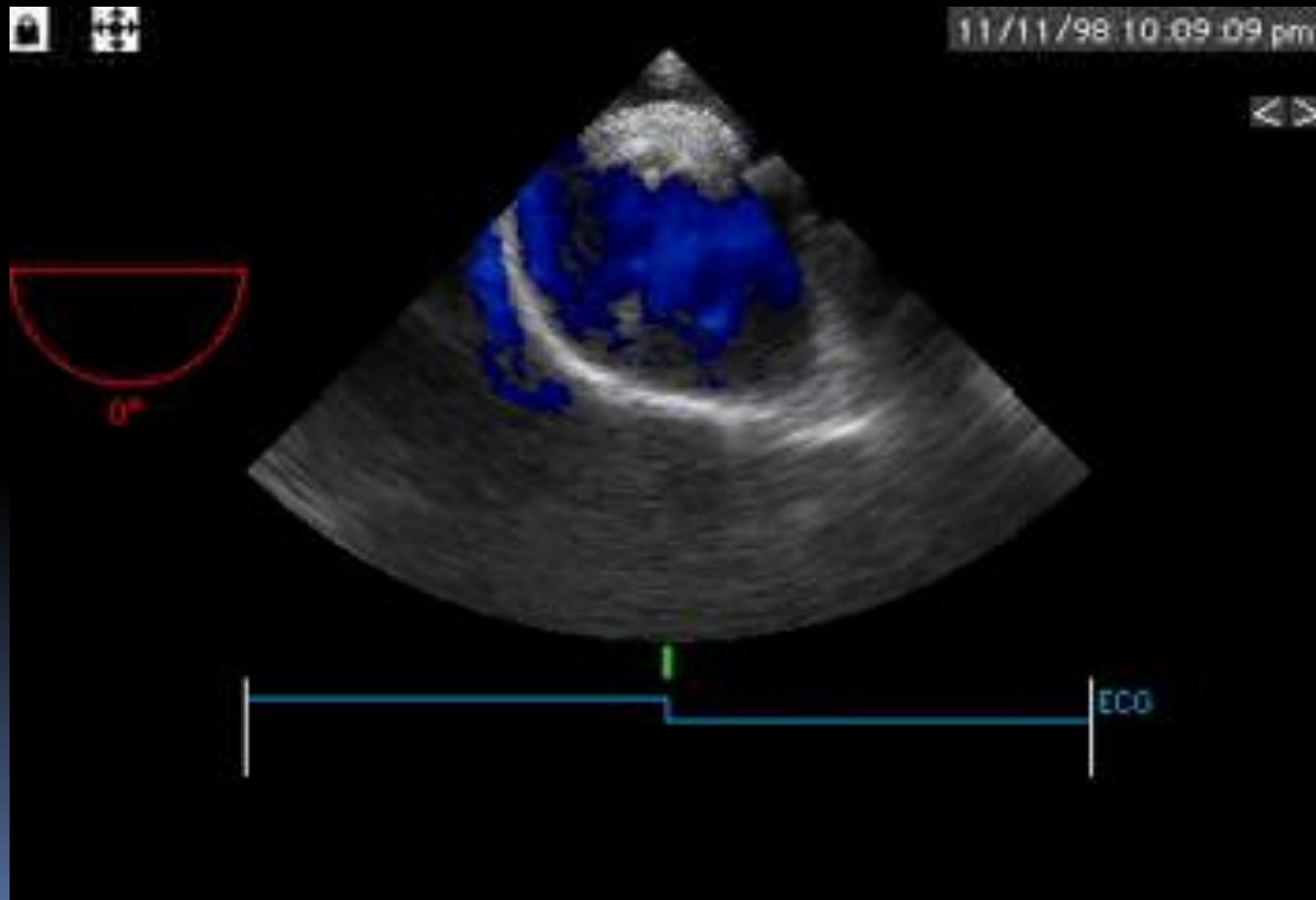


Kateterbaseret behandling

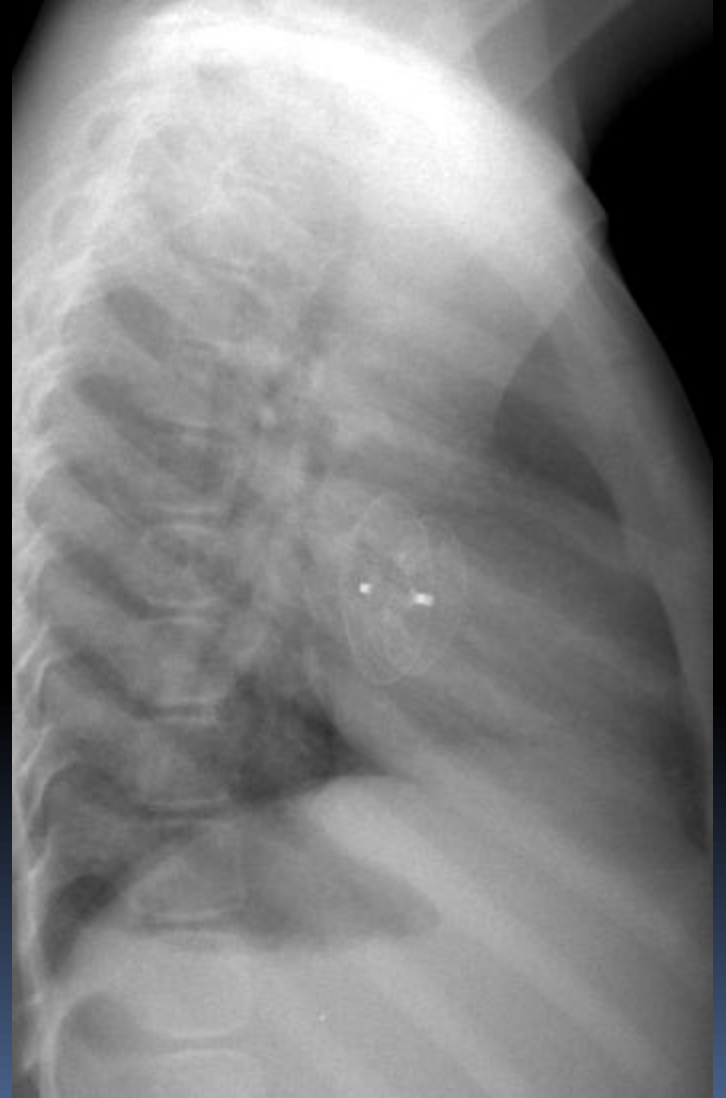
ASD (secundum type - TEE) 11-årig M

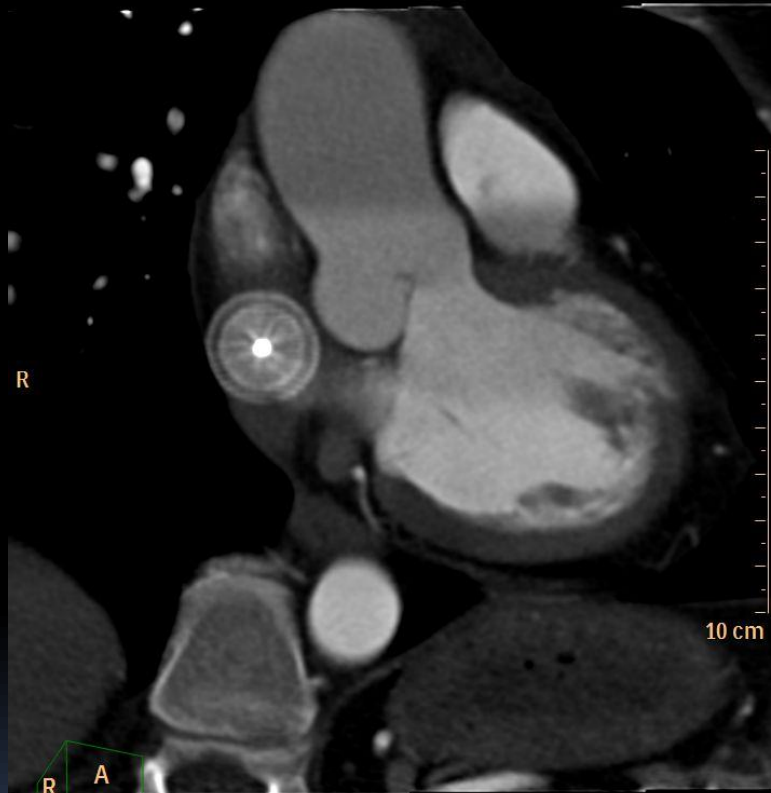


ASD (secundum type - TEE) 11-årig M



ASD



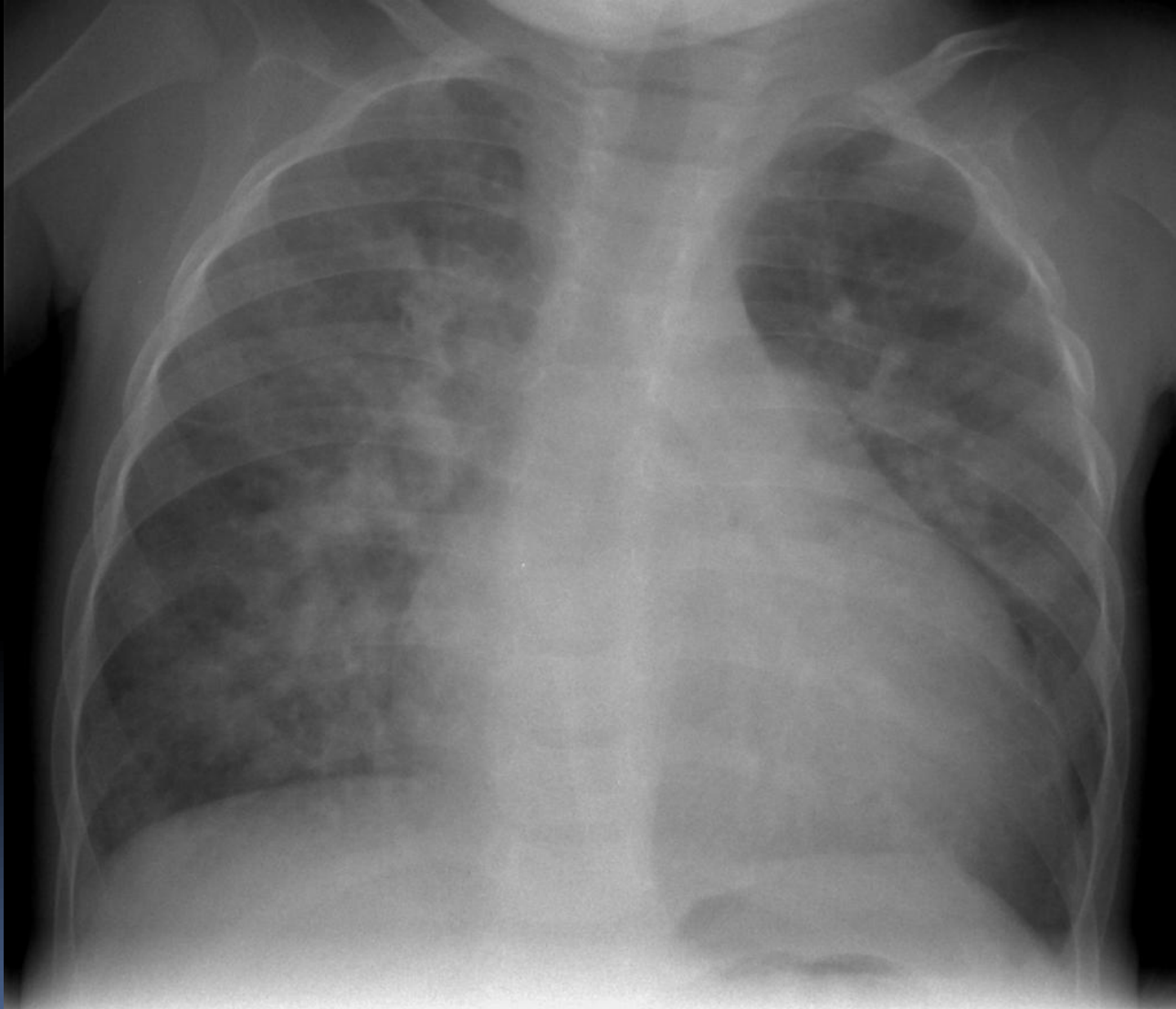


FP

F

- 5 uger gl. dreng
- Ukompl. grav. og fødsel (GA 40+1, FV 3500g)
- Sveder og er "forpustet"
- Mor henvender sig til e.læge, der indlægger

Thorax



VSD (stor)

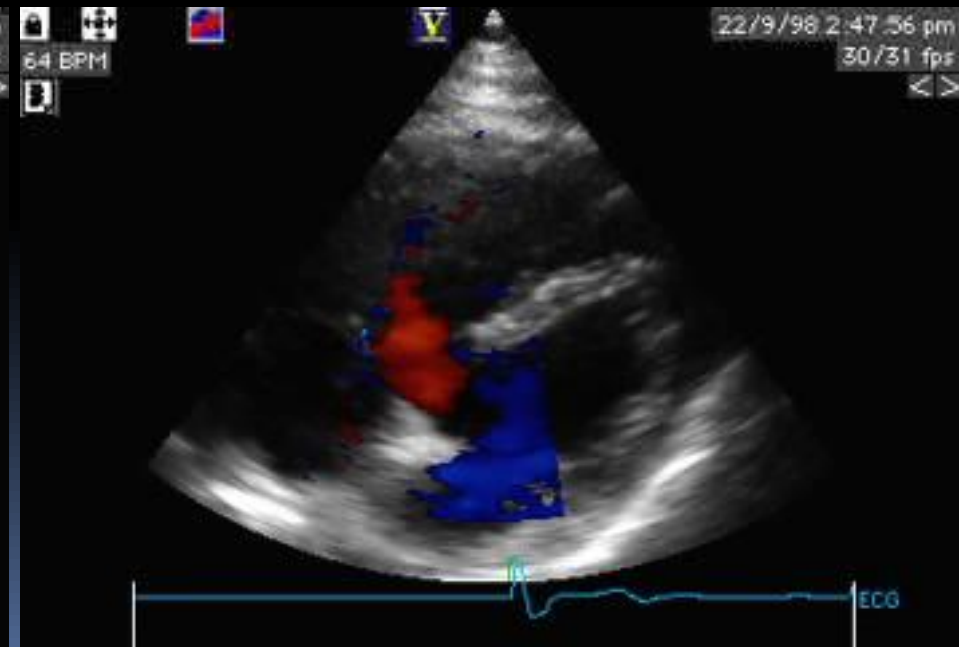
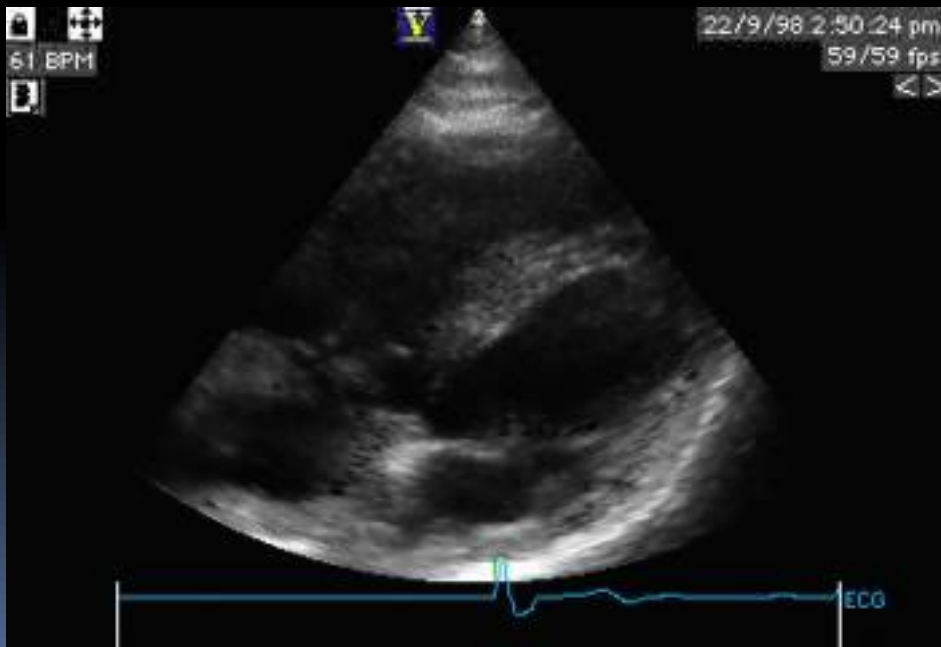
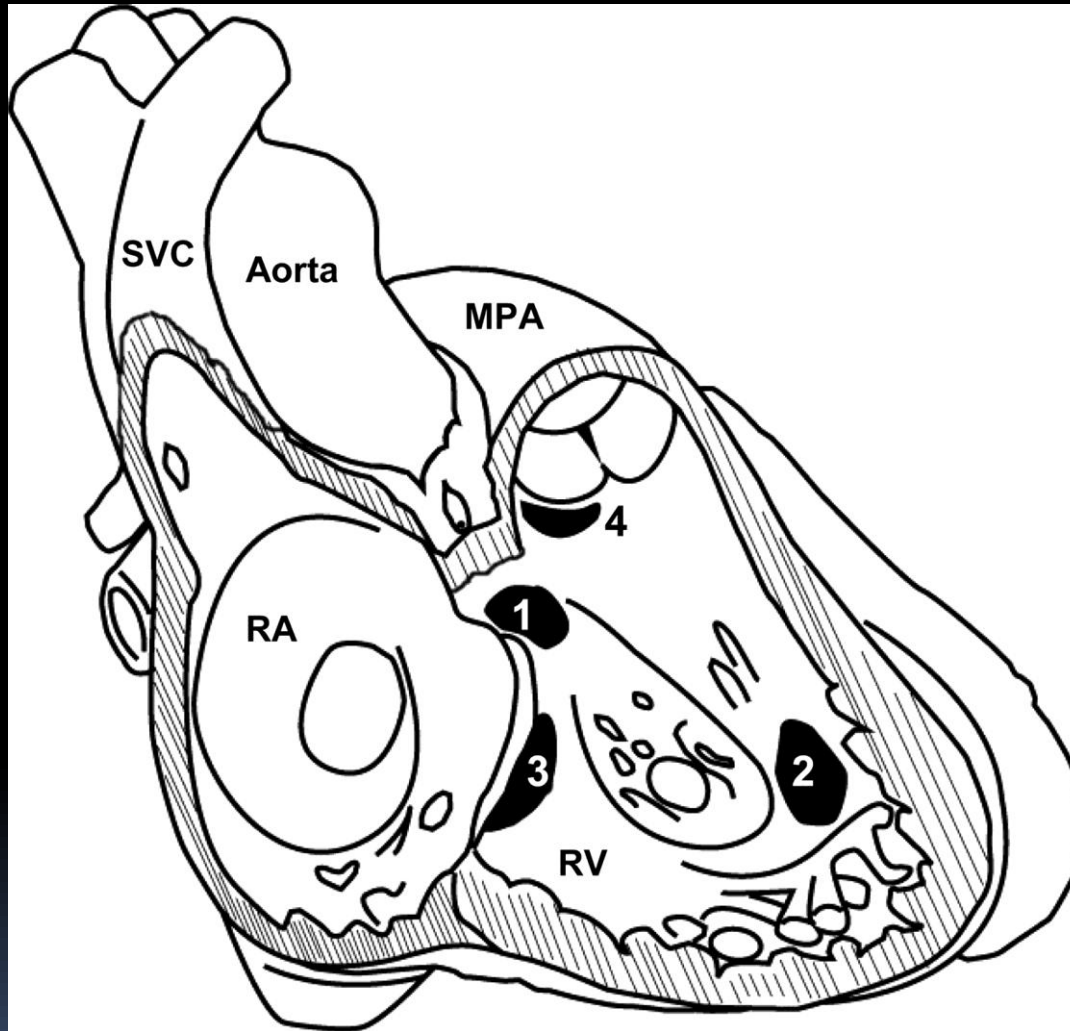


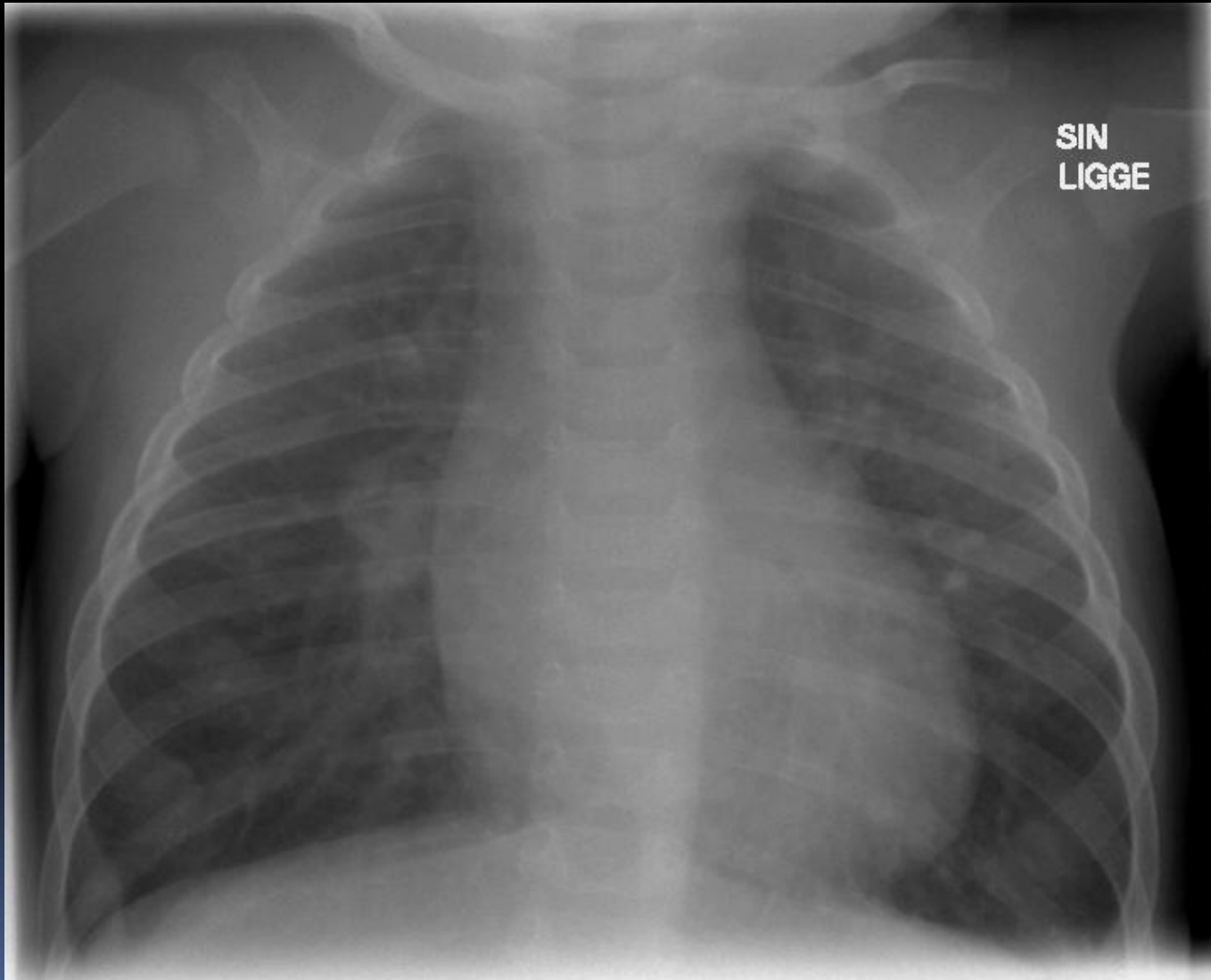
Figure 2. Types and typical locations of VSDs. In this view, the free walls of the RA and RV have been removed, looking leftward toward the septal surface.



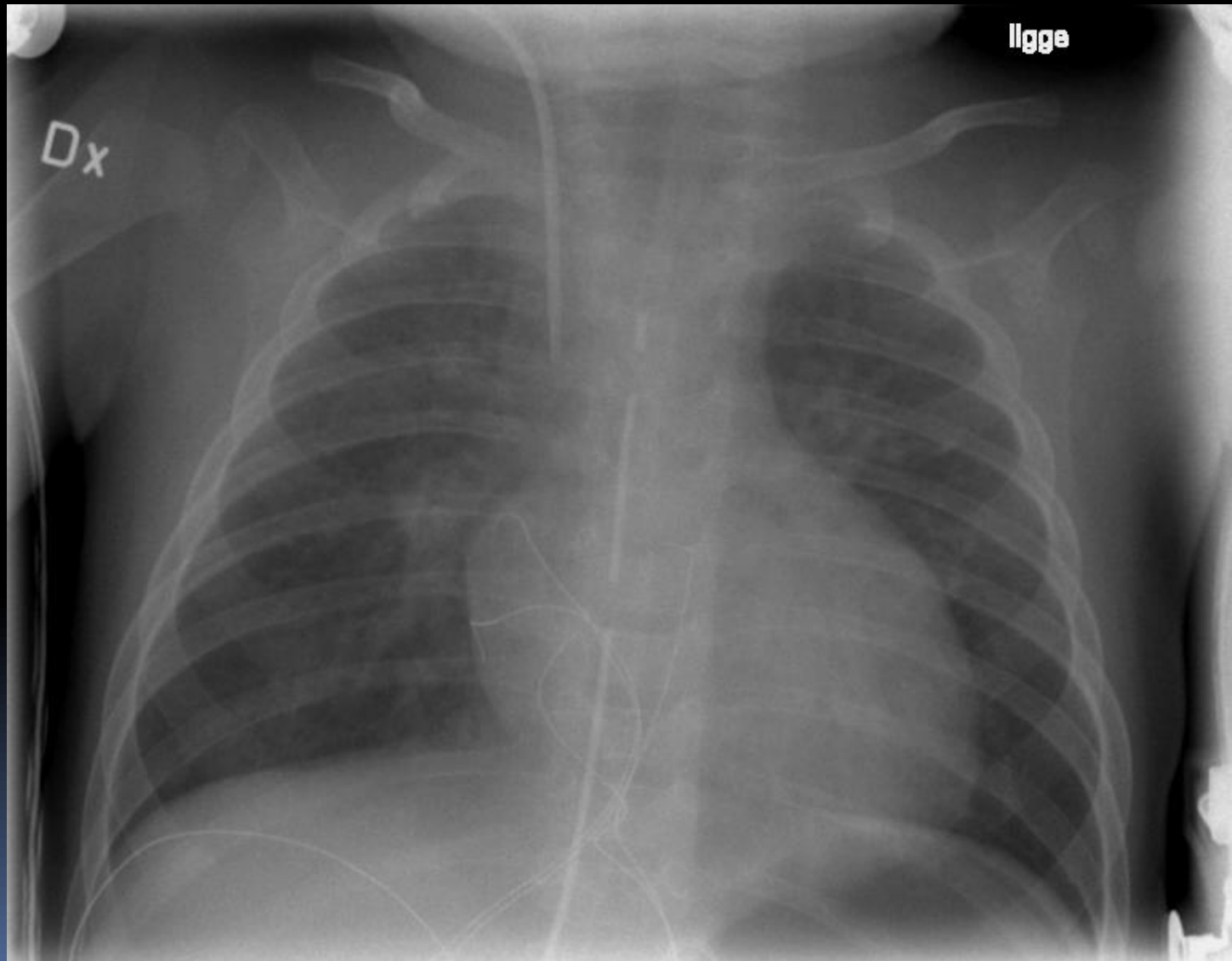
Sommer R J et al. *Circulation* 2008;117:1090-1099

- 1- Perimembranous VSD
- 2- Muscular VSD
- 3- Inlet/AV canal type VSD
- 4- Subpulmonary VSD.

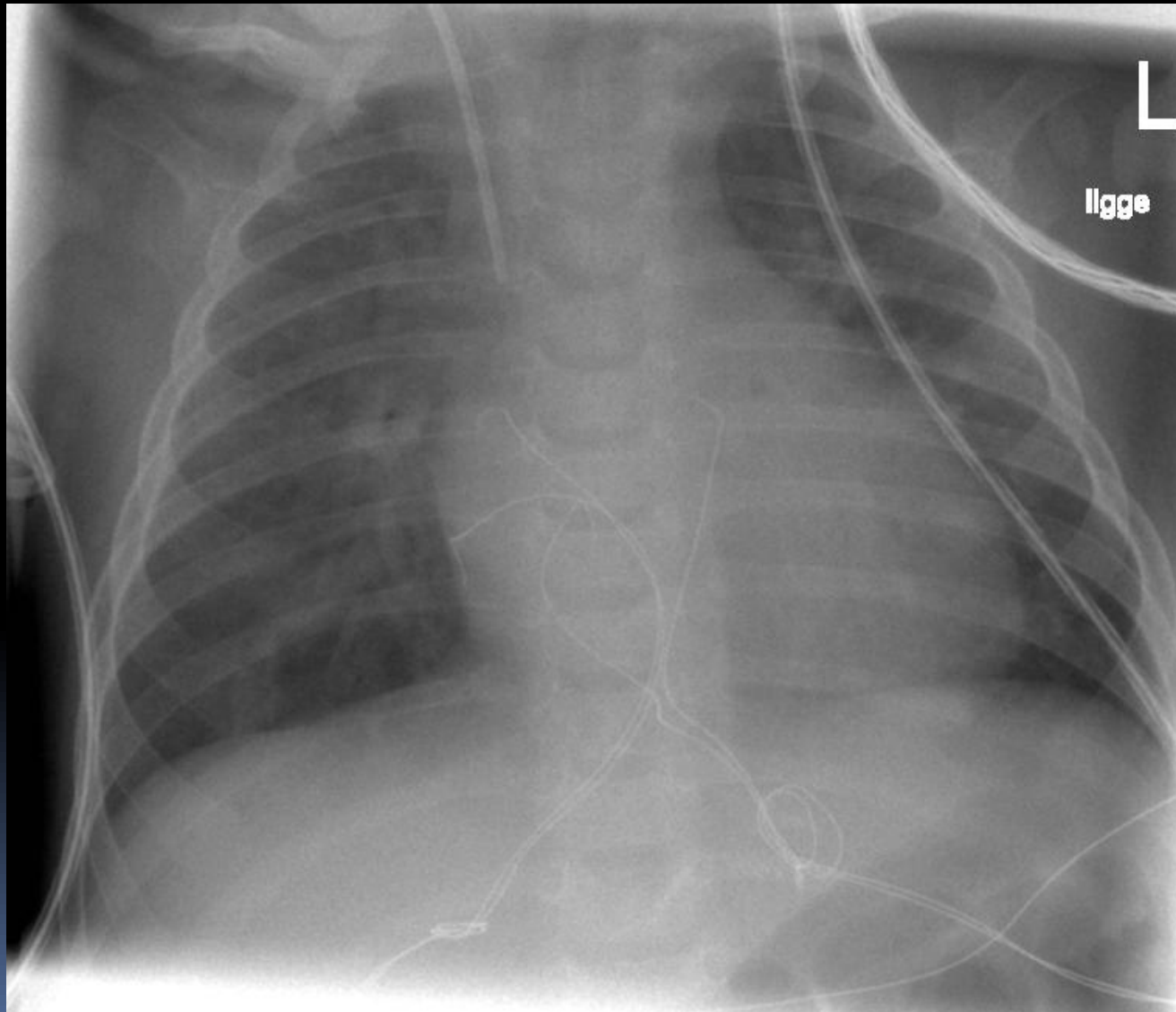
VSD



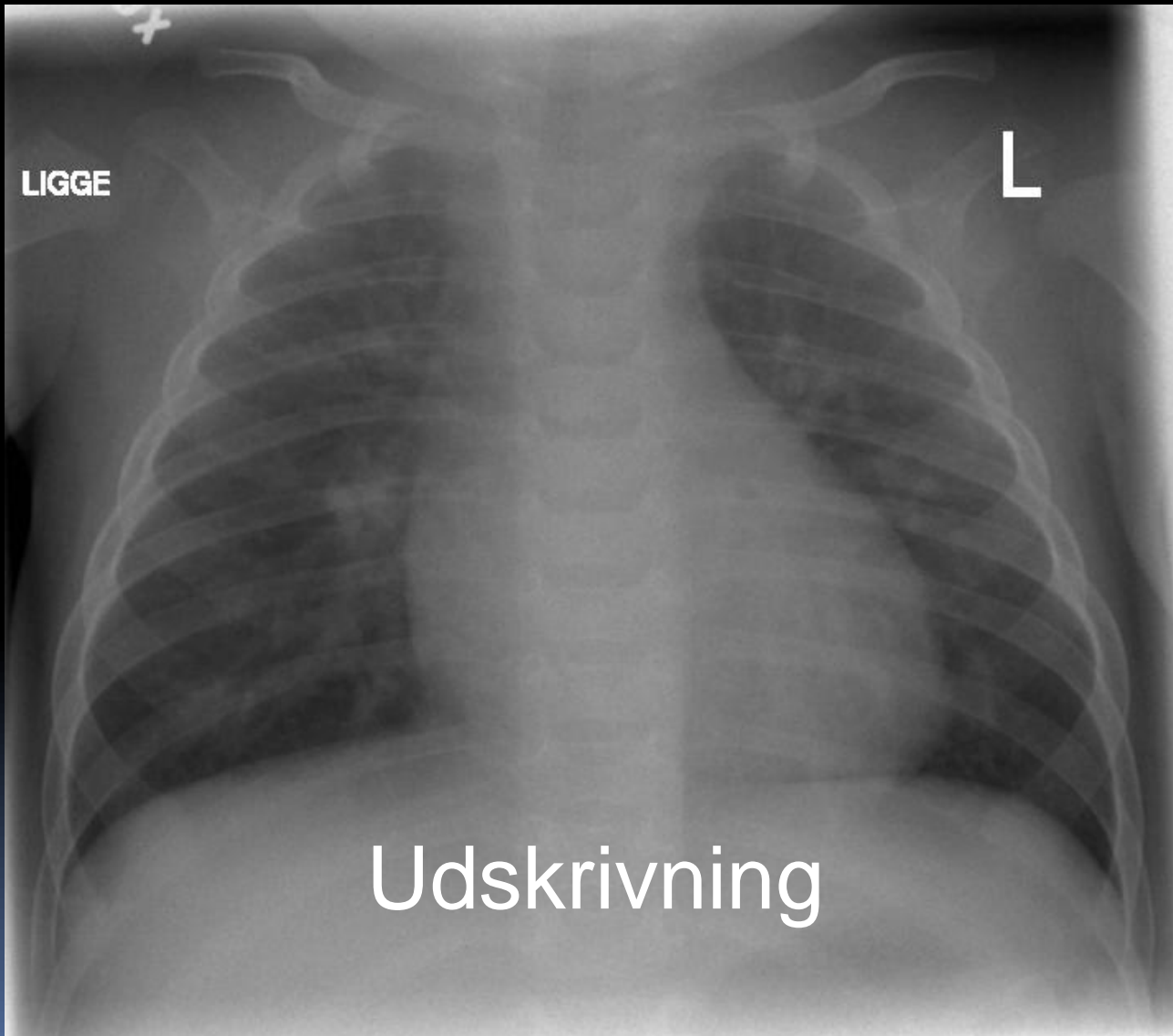
VSD

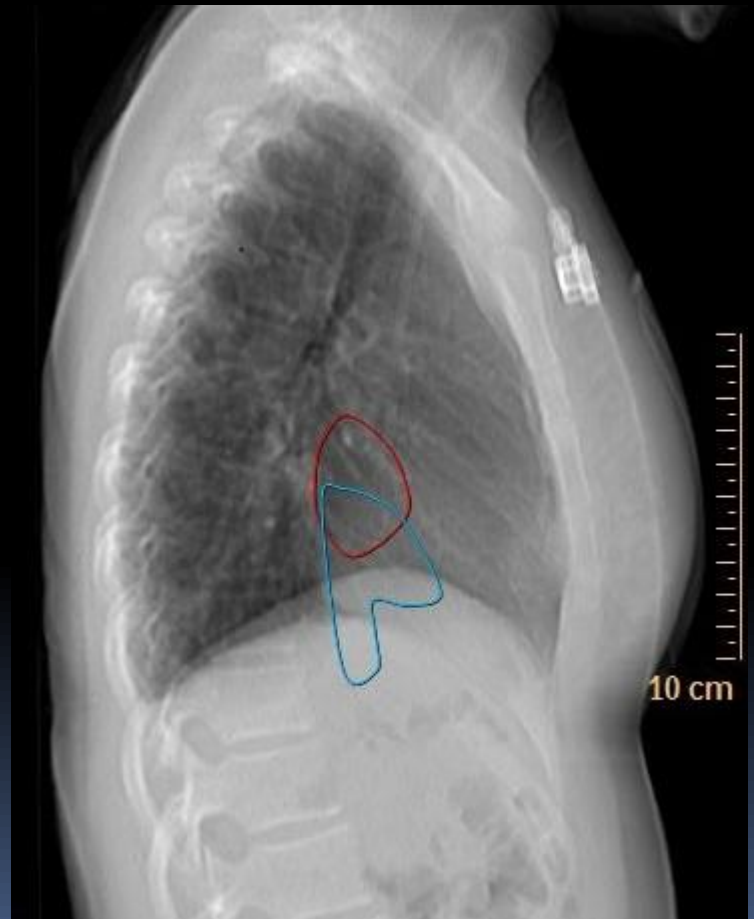
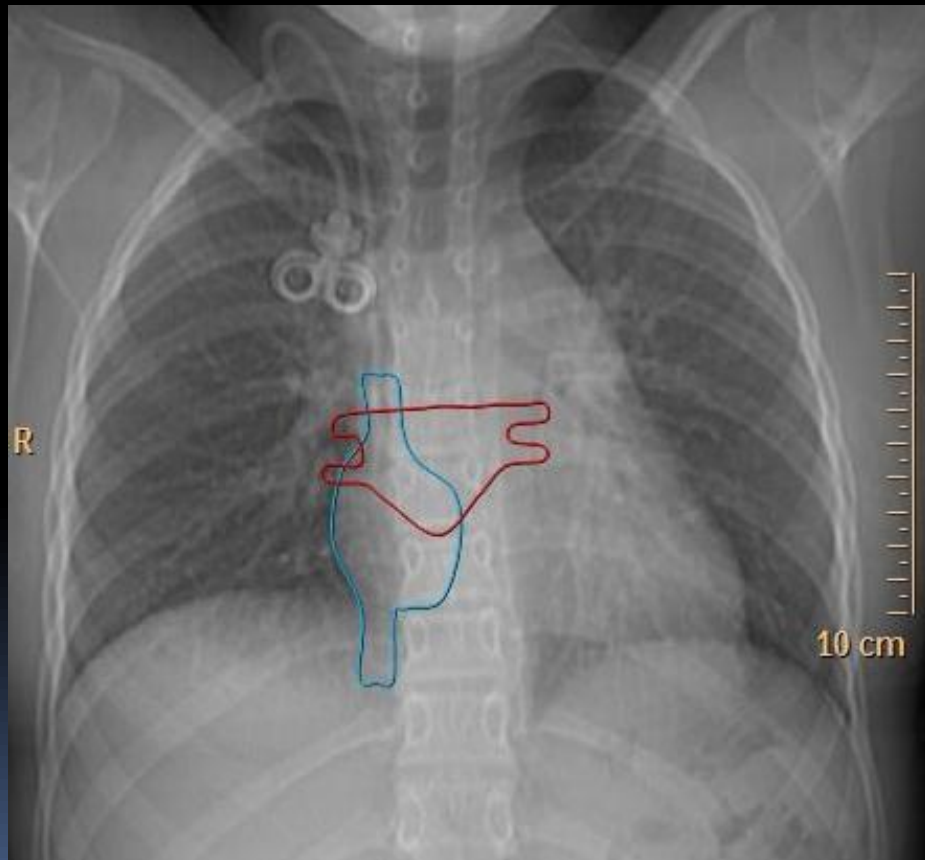


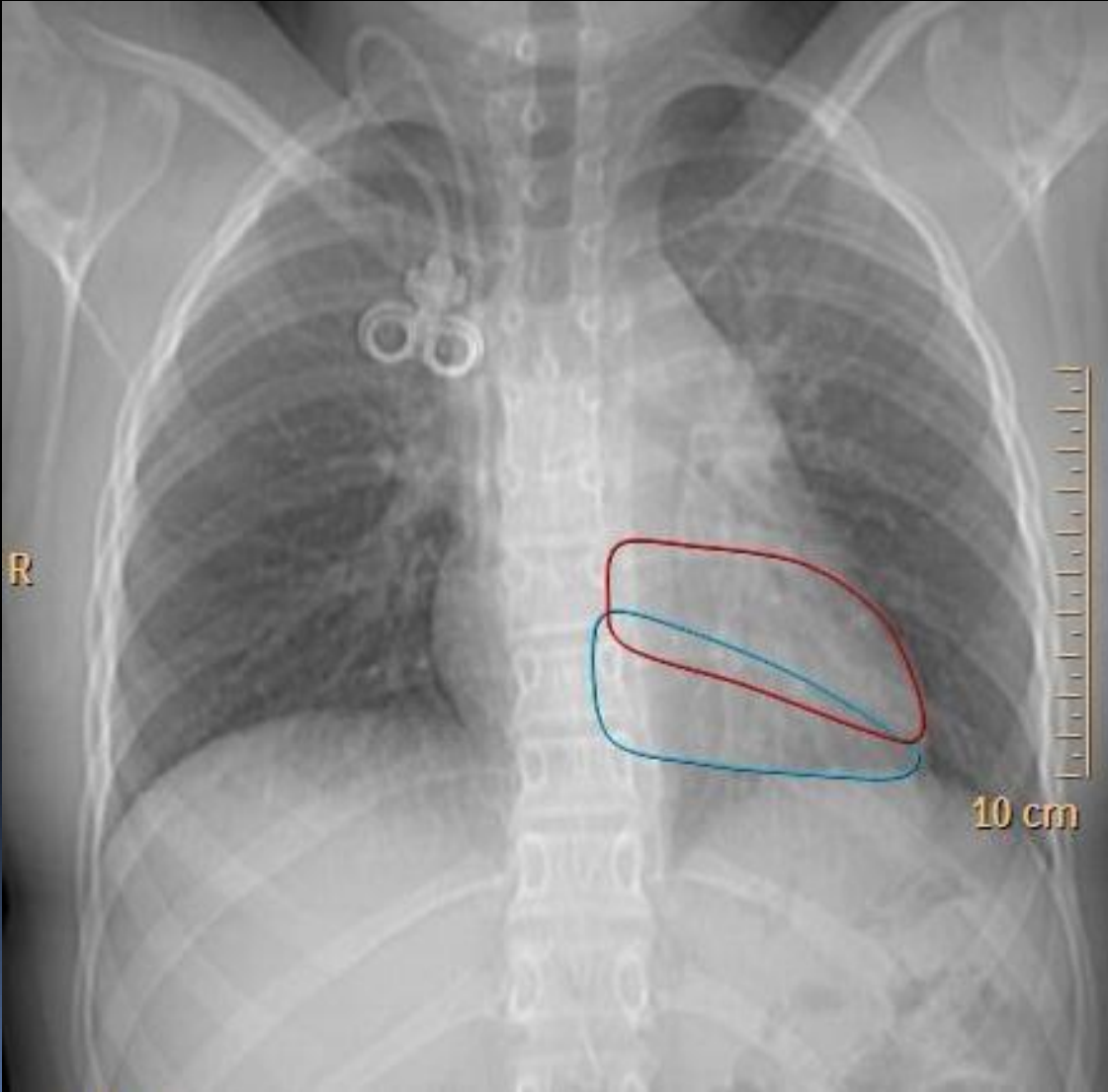
VSD



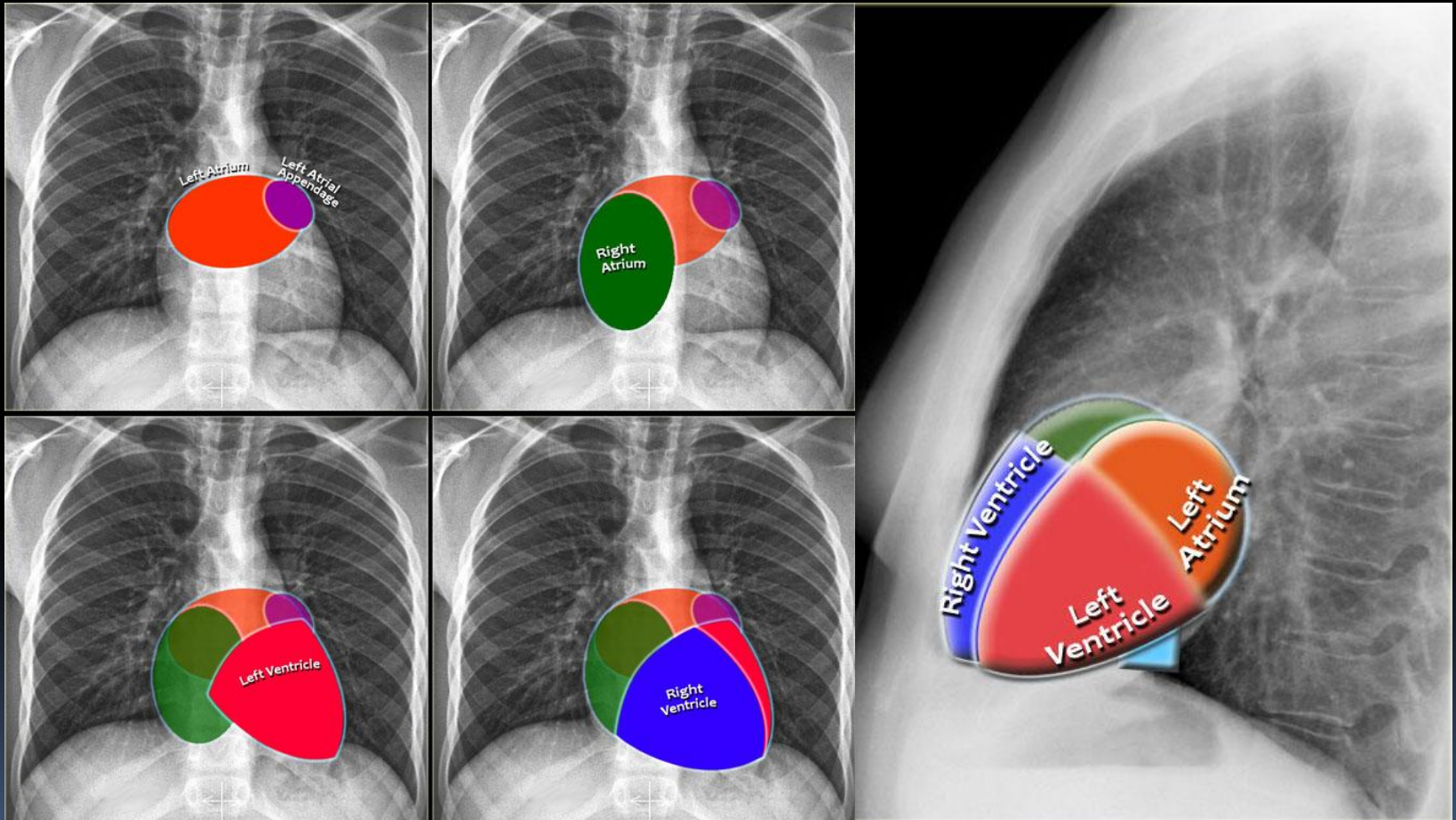
VSD



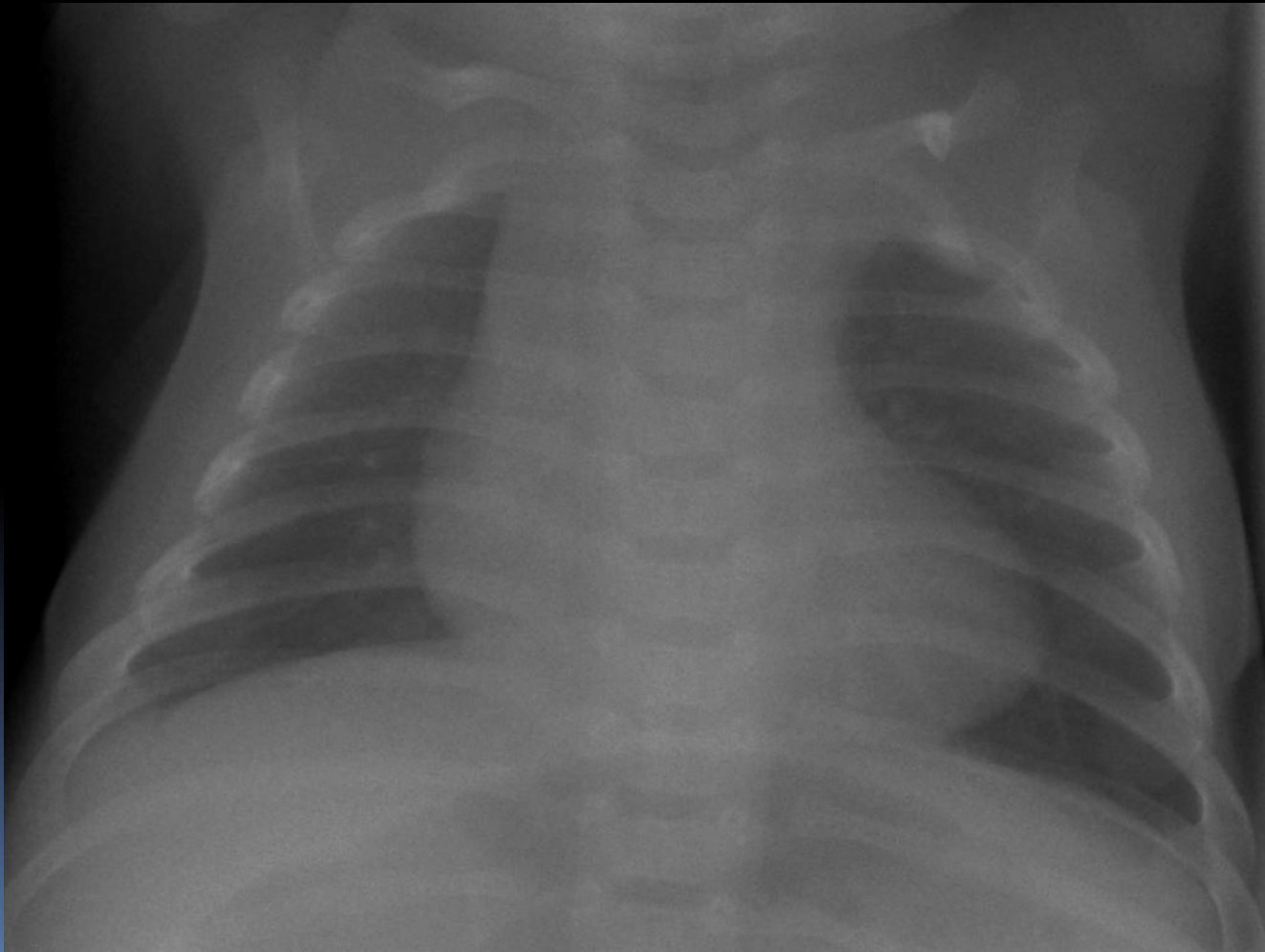




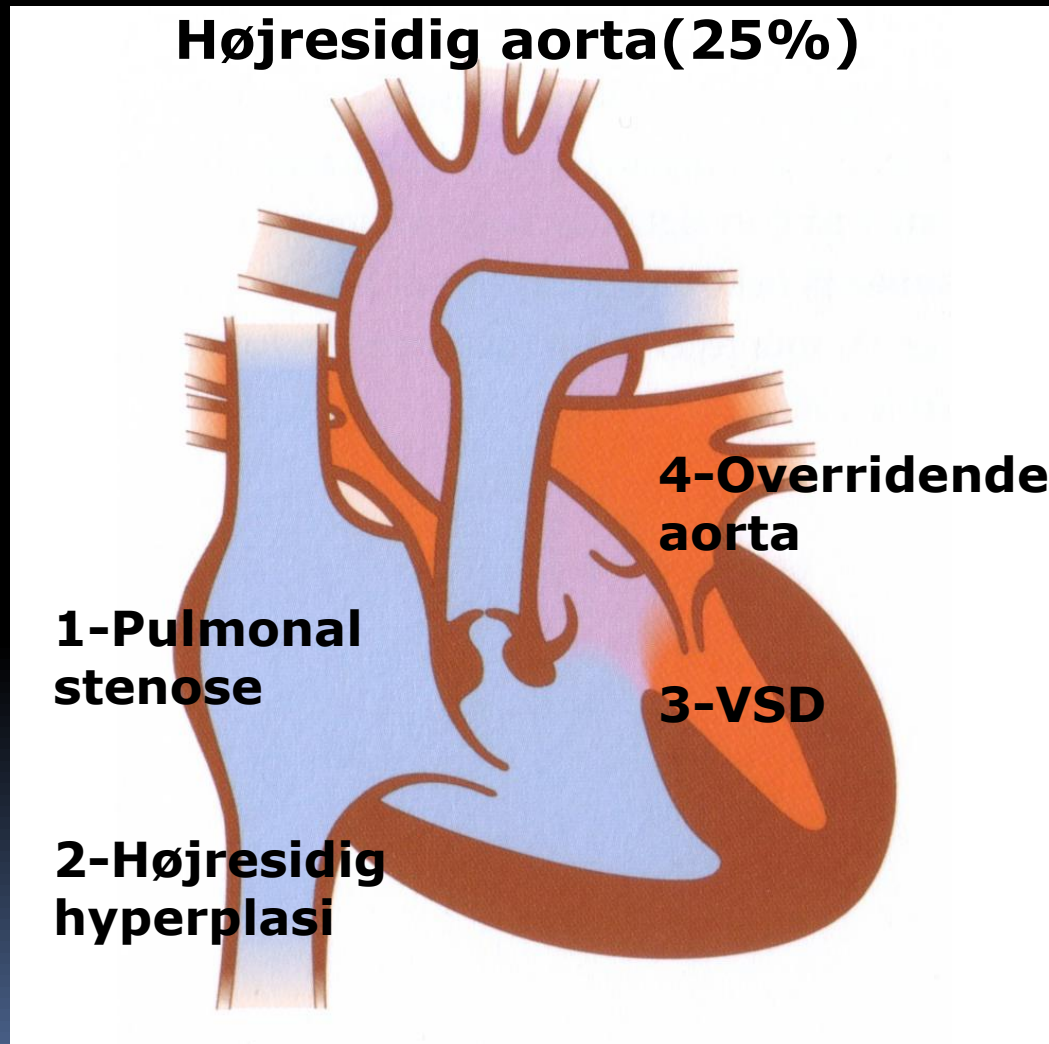
Radiology Assistant



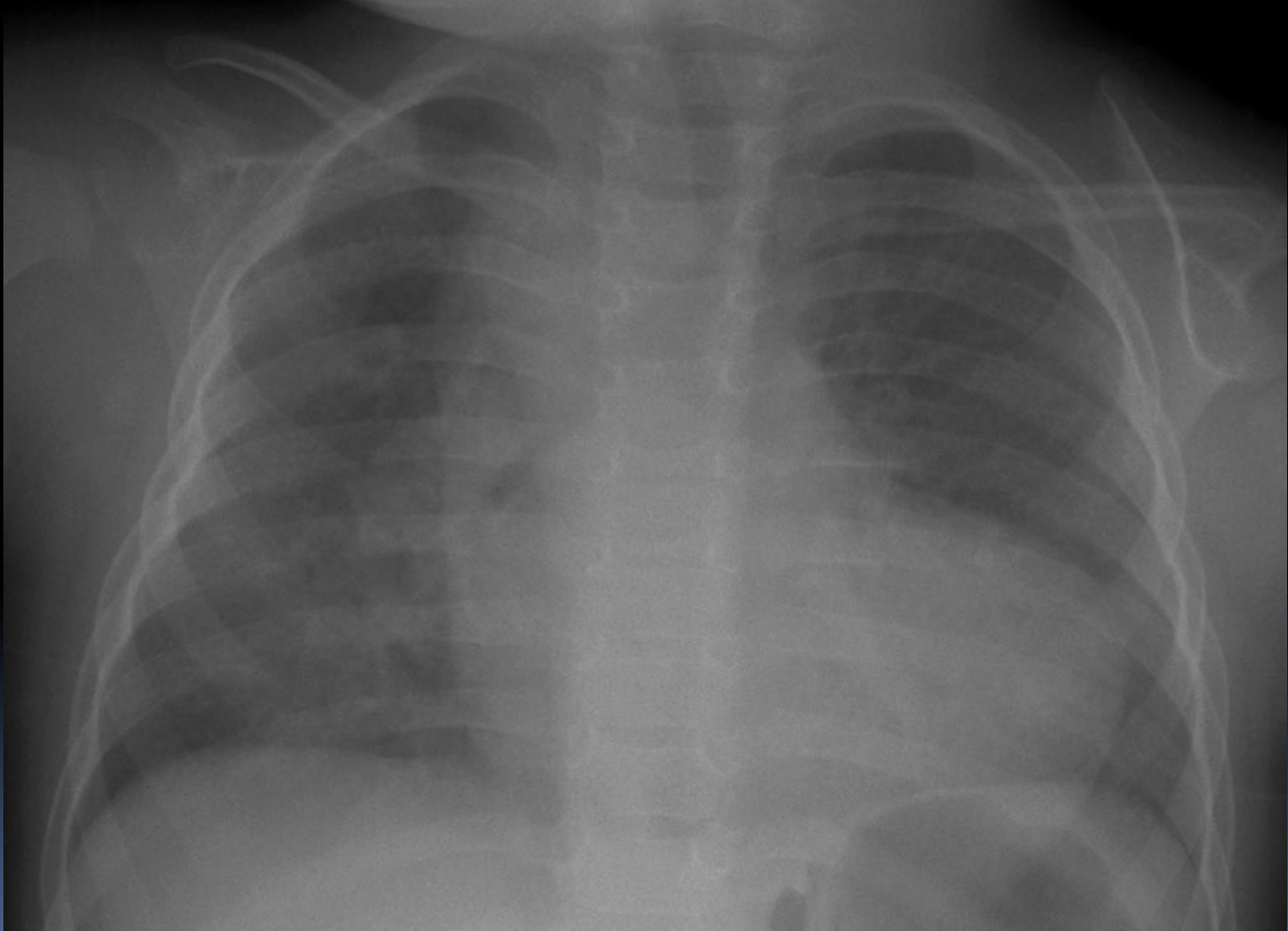
- 1 uge gl. pige
- "blevet blå" og det er værre når hun græder
- Har det ellers fint



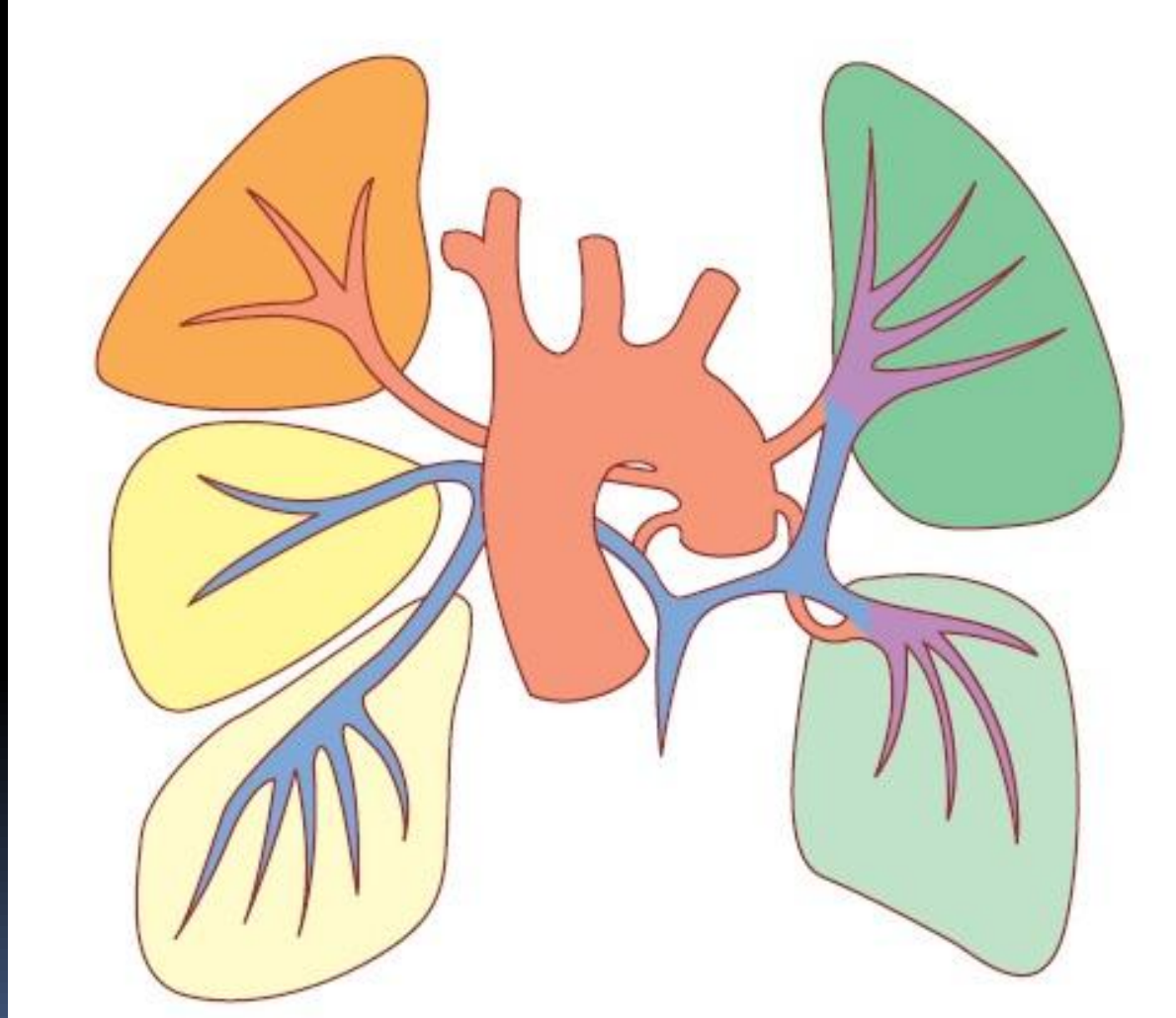
Falot's tetralogi (TOF)



Fallot's tetralogi (TOF)



Fallot's tetralogi (TOF + PA)



MAPCA = Major aortopulmonary collateral arteries

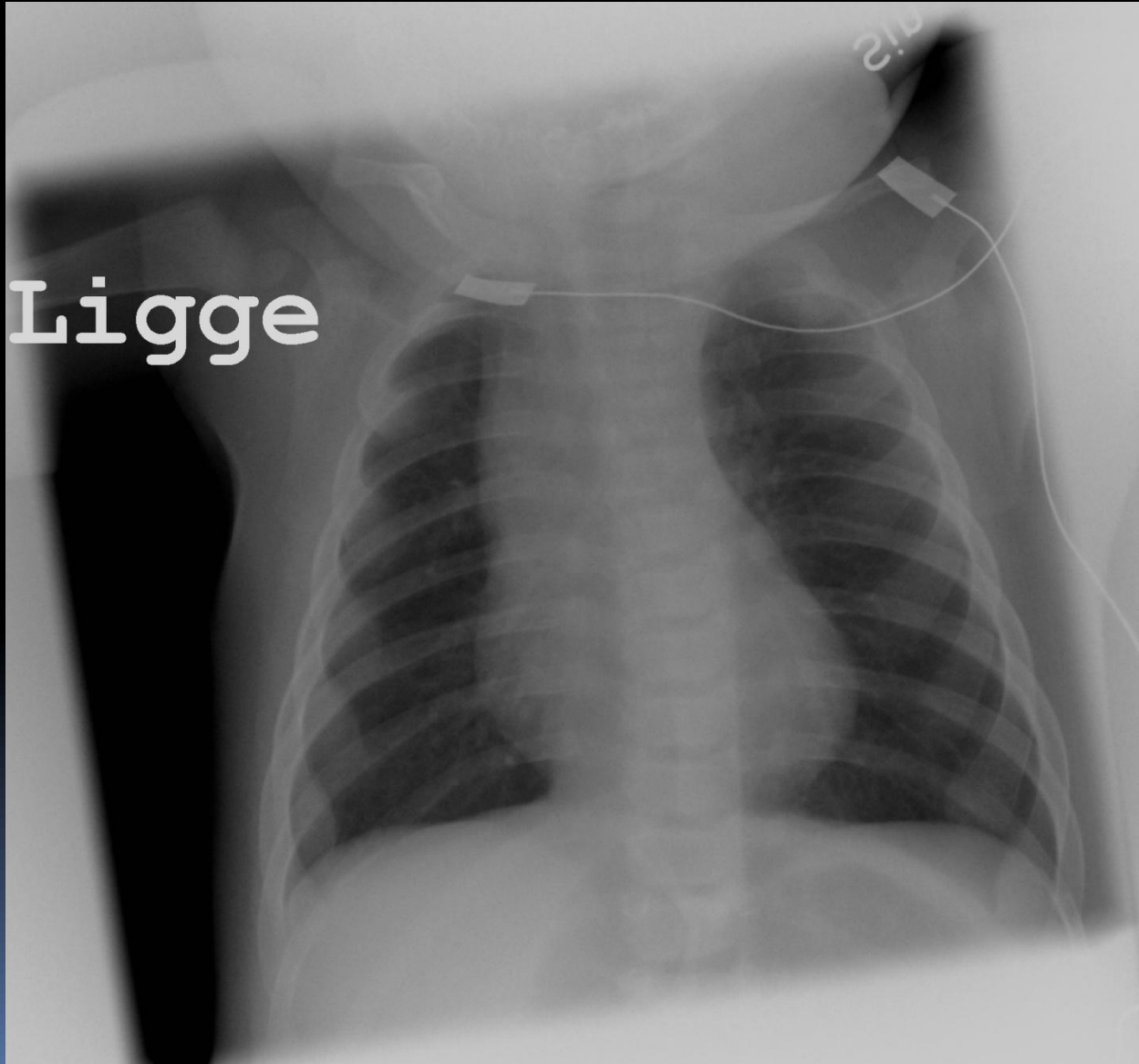
Fallot's tetralogi (TOF)

MAPCA



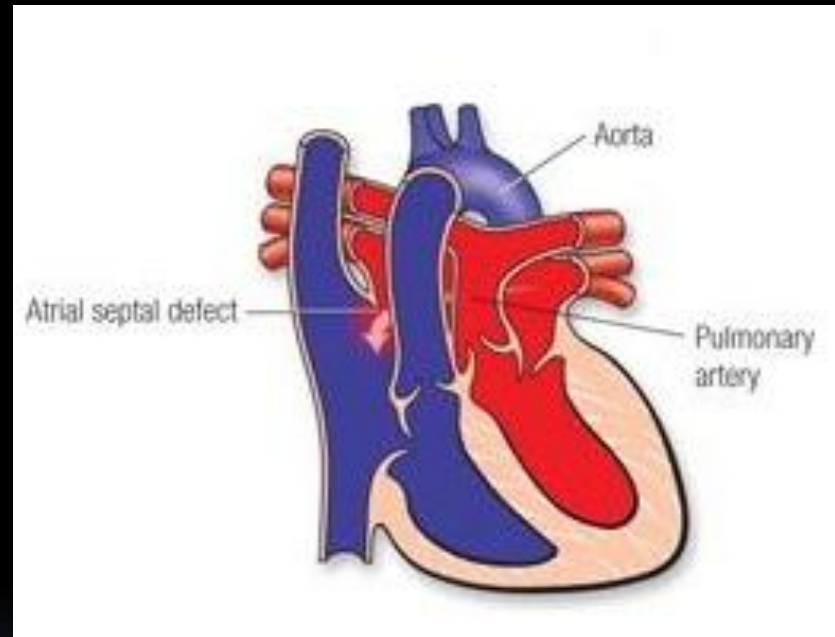
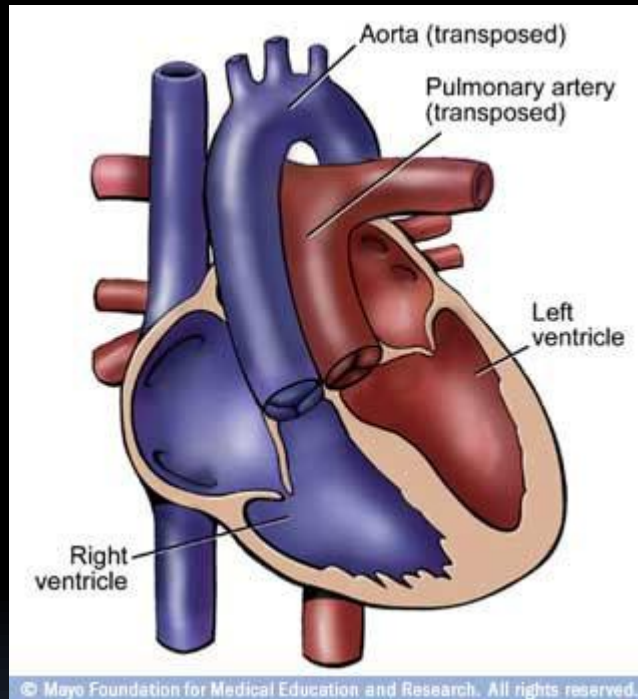
- Nyfødt barn, GA 39+2 FV 3100g
- "Blågrållig" kulør
- Takypnøisk, men ikke "besværet"
vejrtrækning

Ligge



Transposition (TGA)

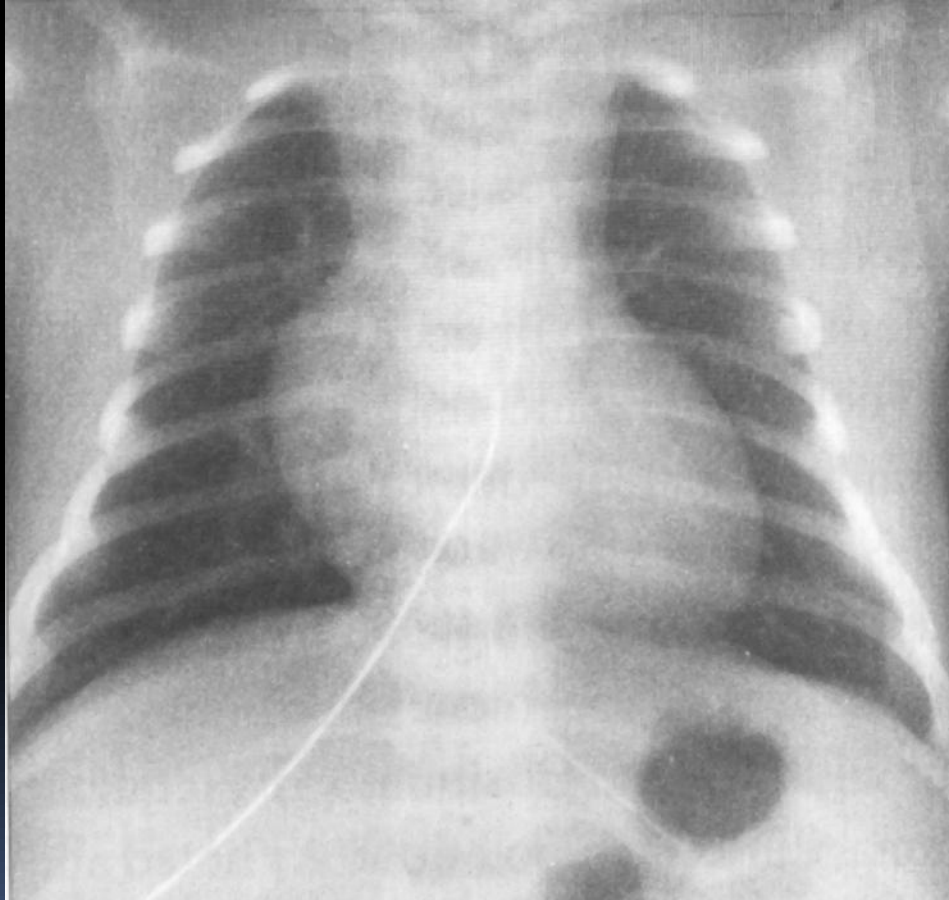
Transposition of the Great Arteries



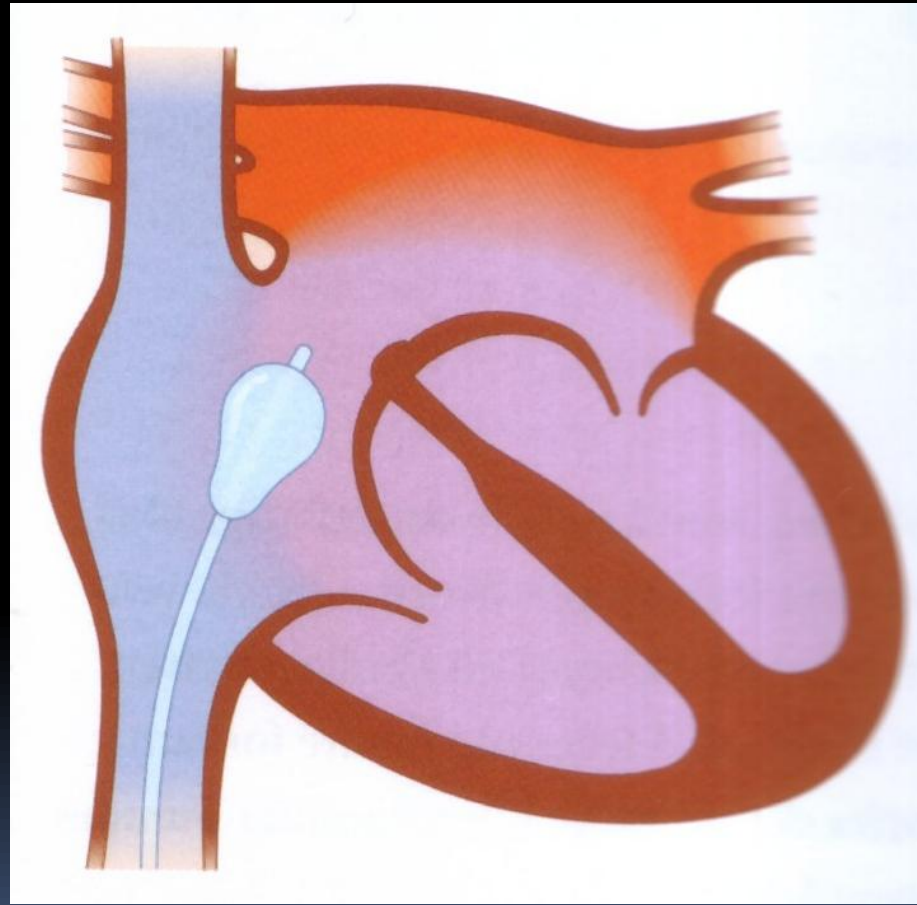
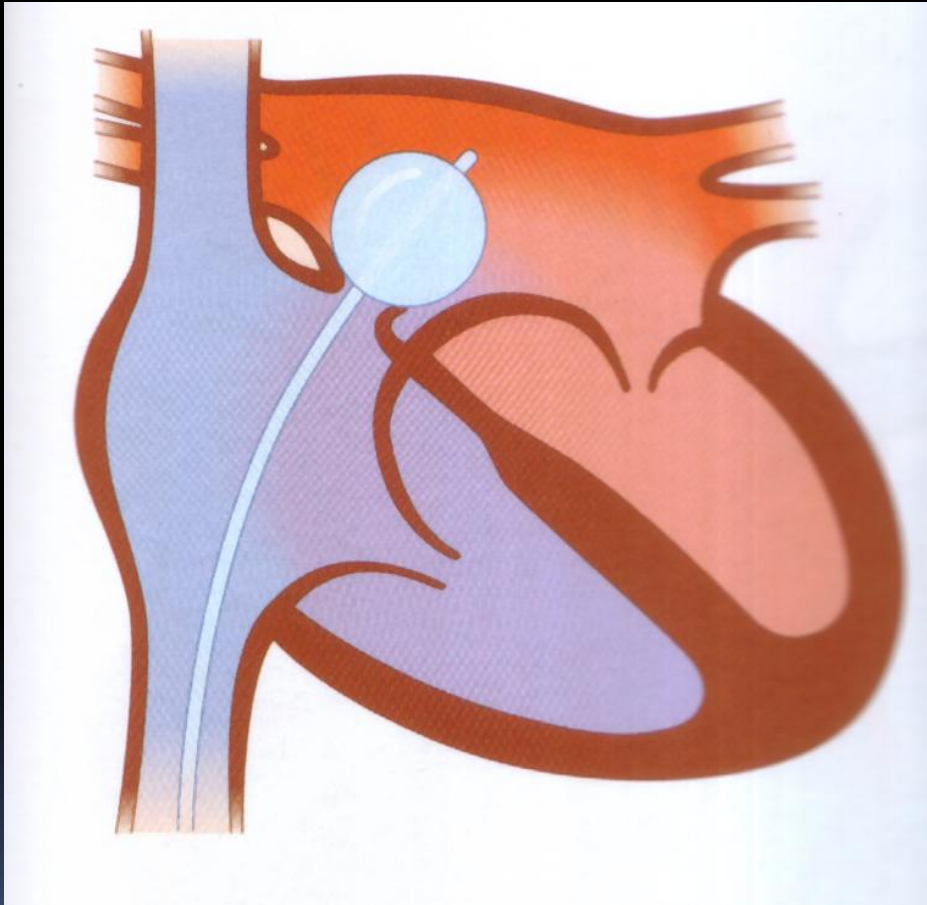
Ofte med åben foramen ovale og PDA

25% af patienterne med VSD og 5% med både VSD og PS

Transposition (TGA)



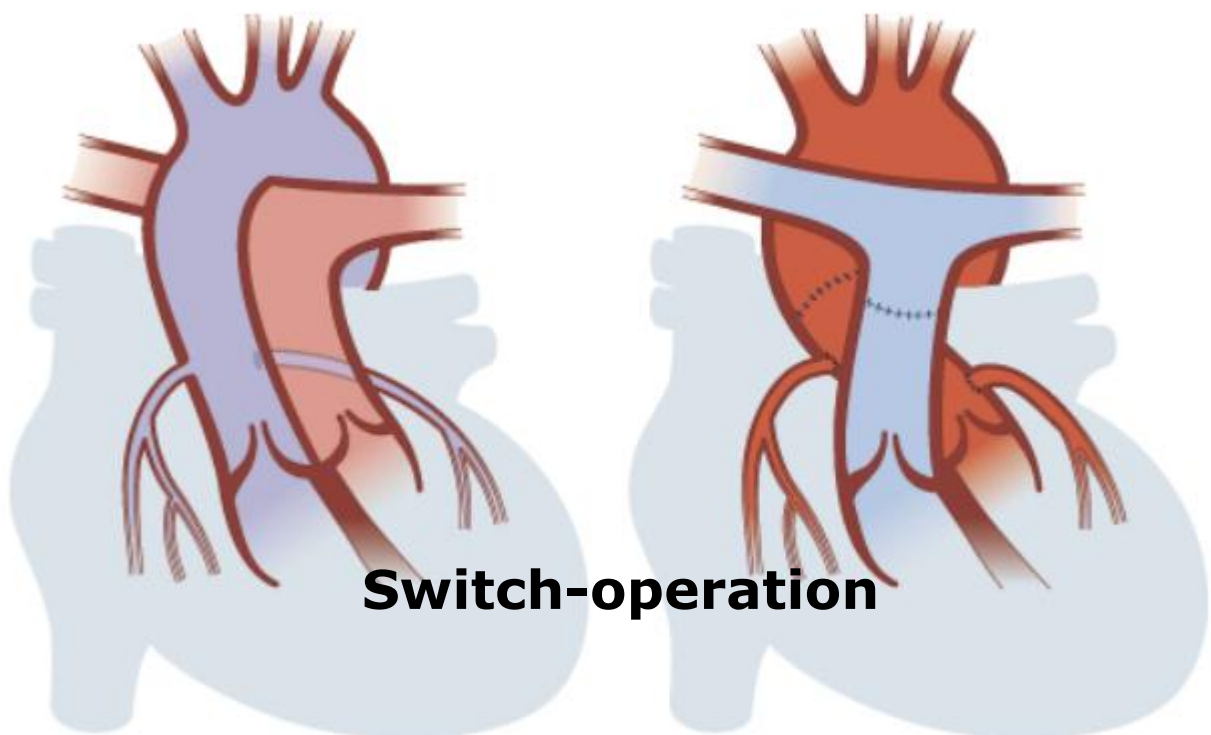
Transposition (TGA)



Ballonatrieseptostomi

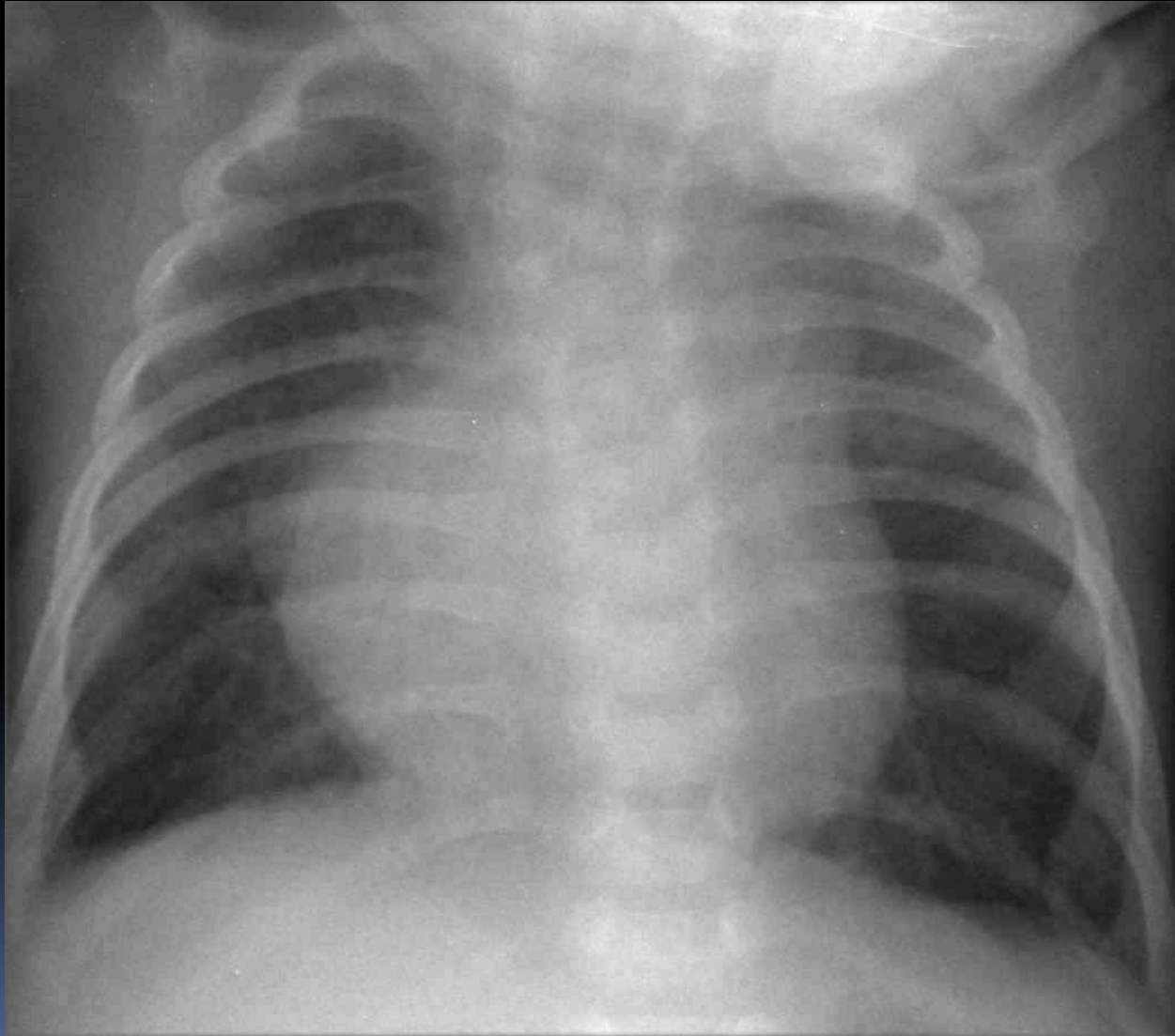
Transposition (TGA)



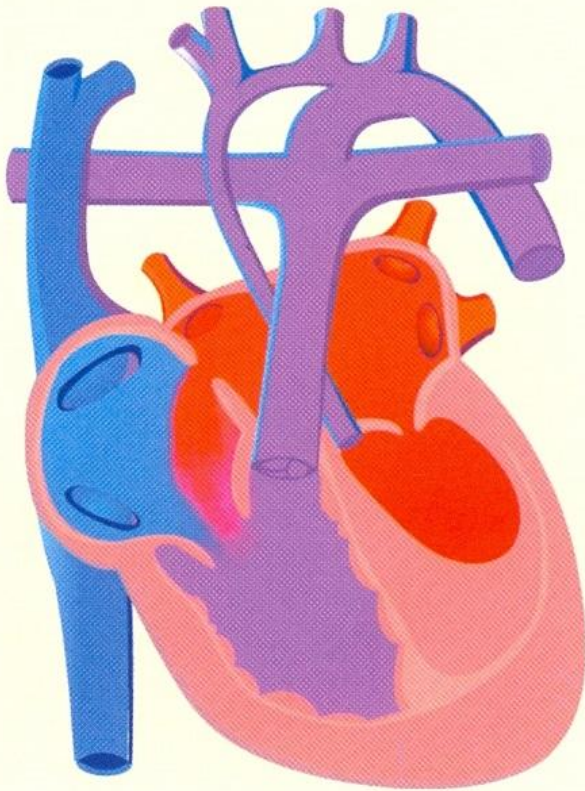


Switch-operation

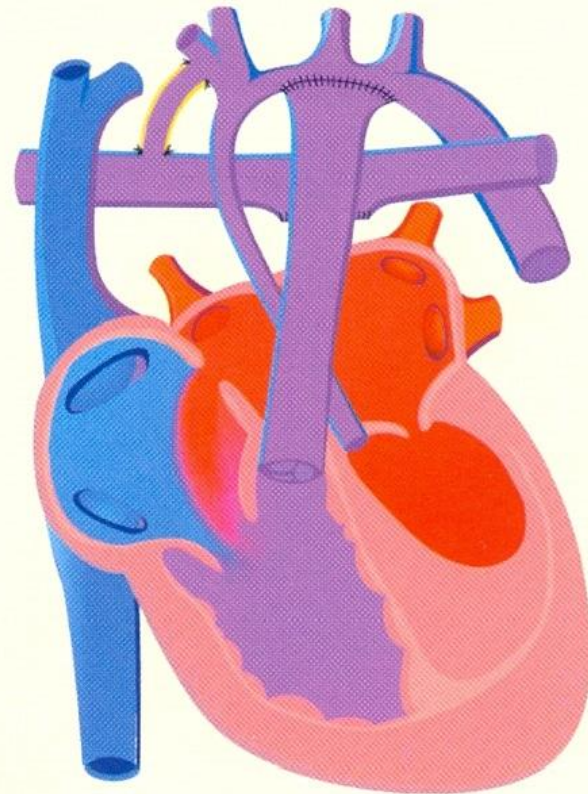
Hypoplastisk venstre ventrikel (HLV)



Norwood-operation



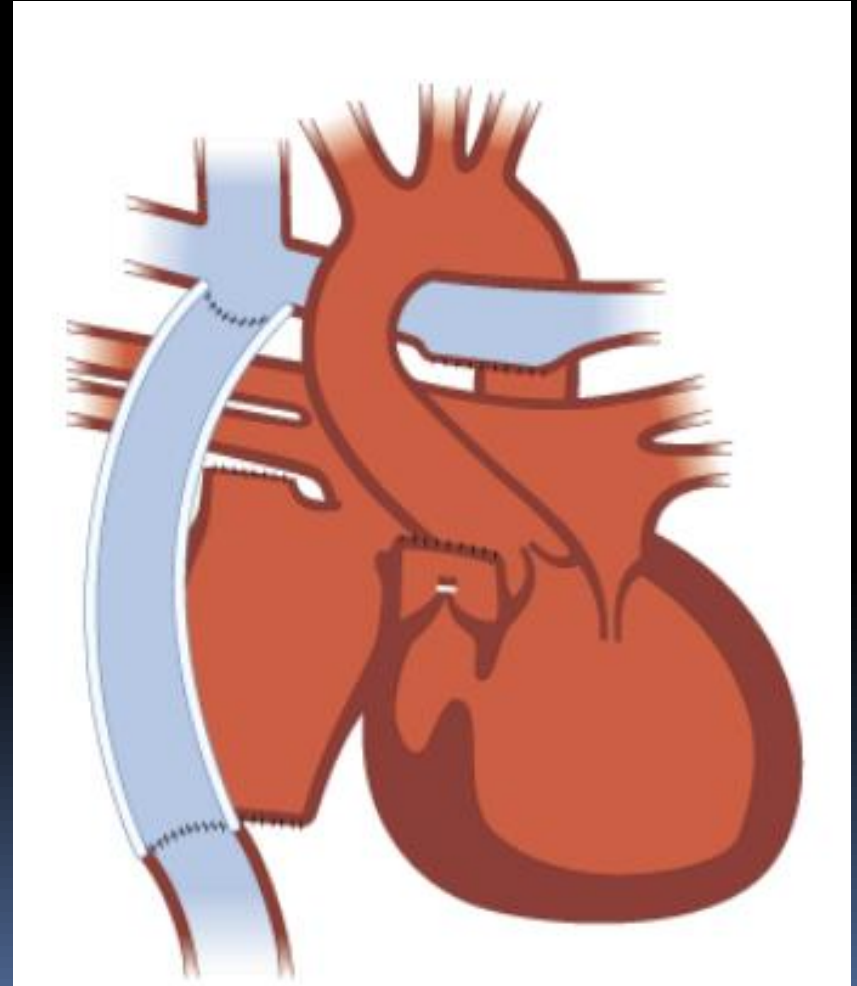
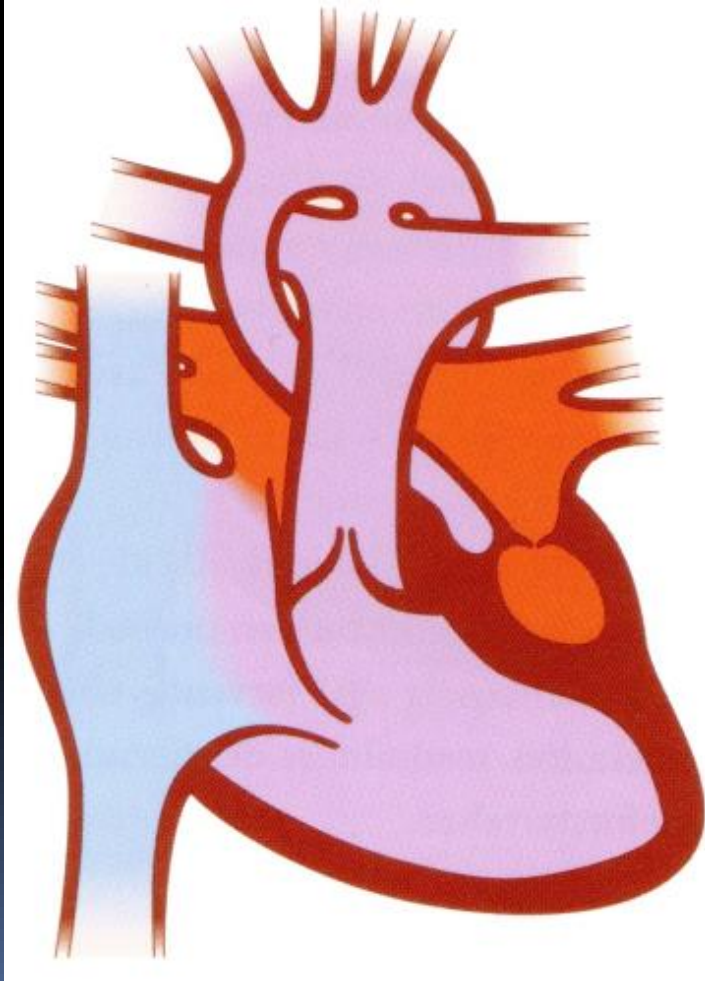
Hypoplastisk venstre ventrikel syndrom



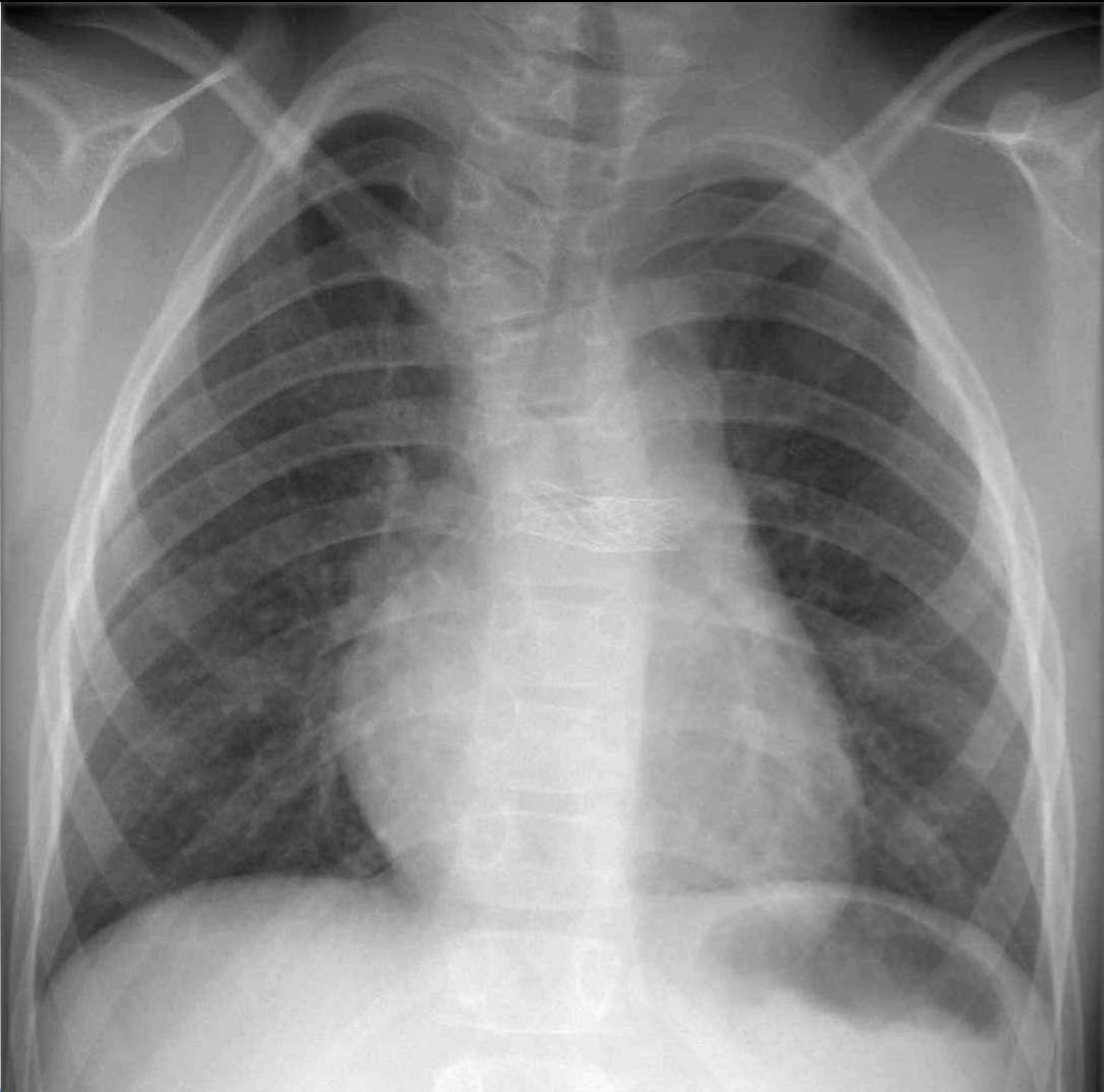
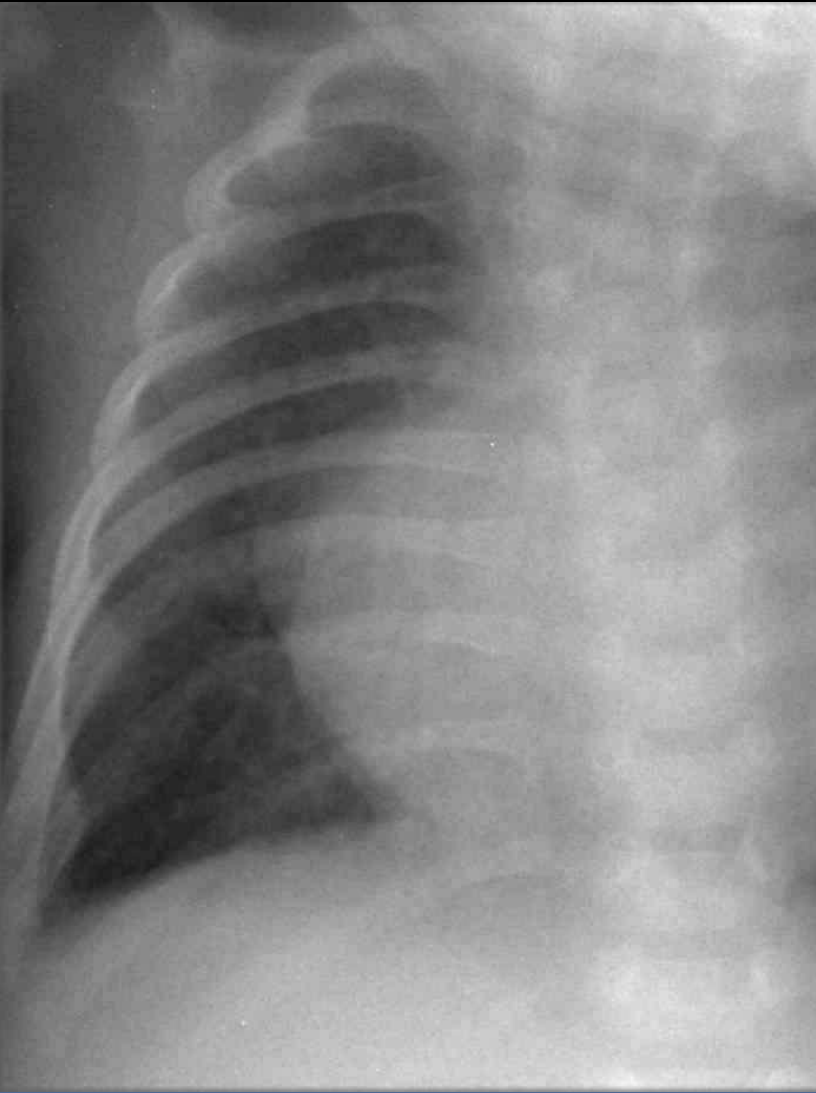
Norwood-Operation

TCPC

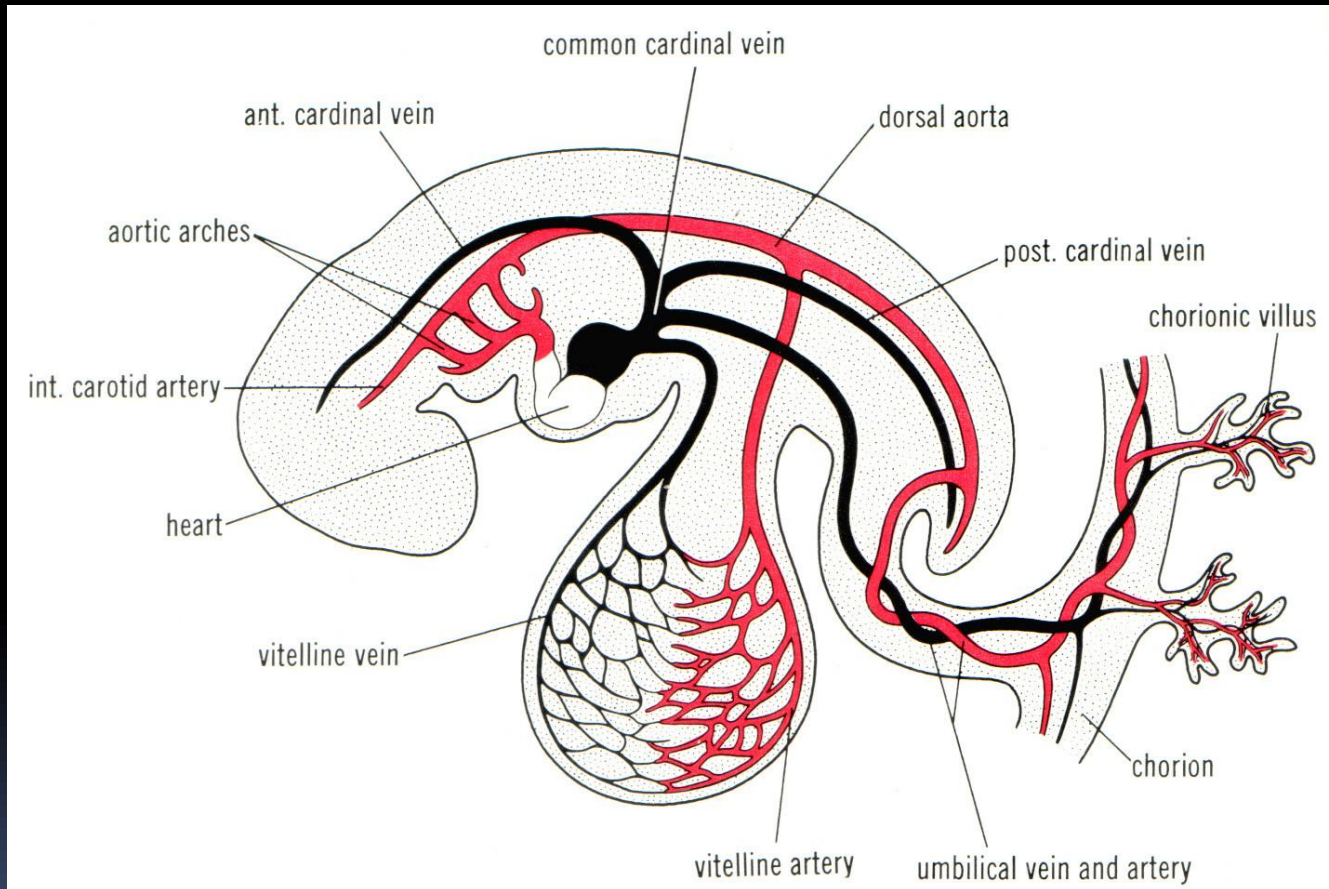
2-4 års alderen

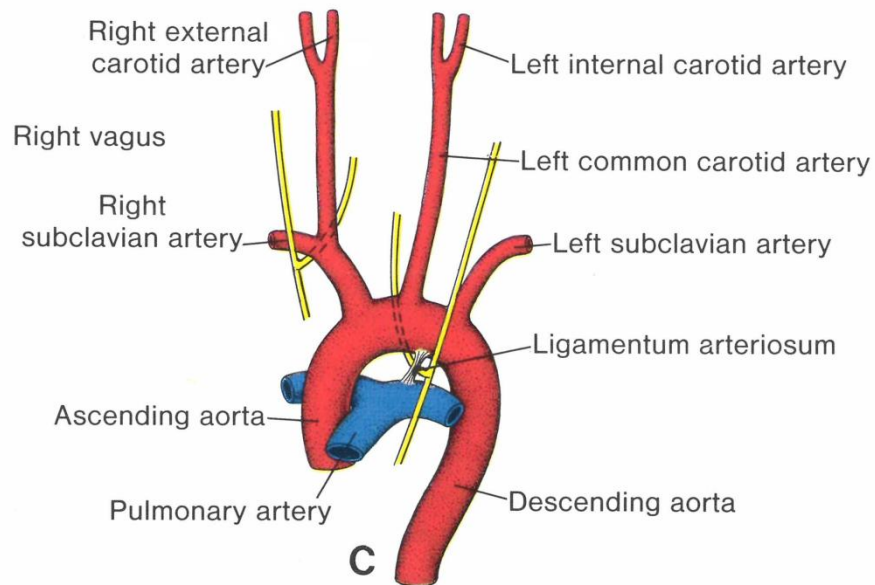
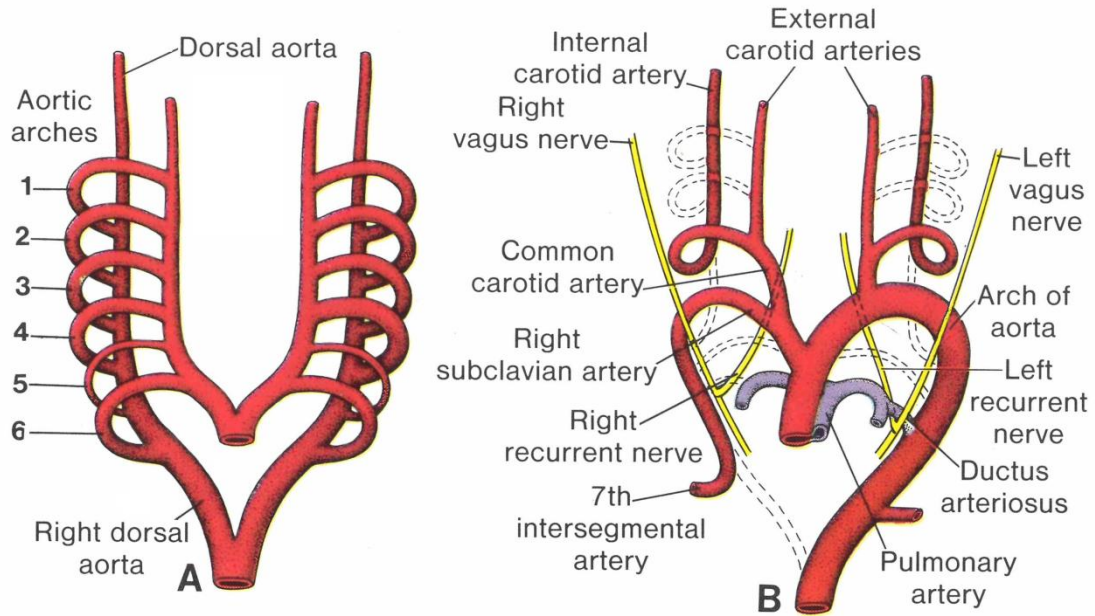


HLV (post TCPC + stents i Aa. pulm.)



Aortabuer



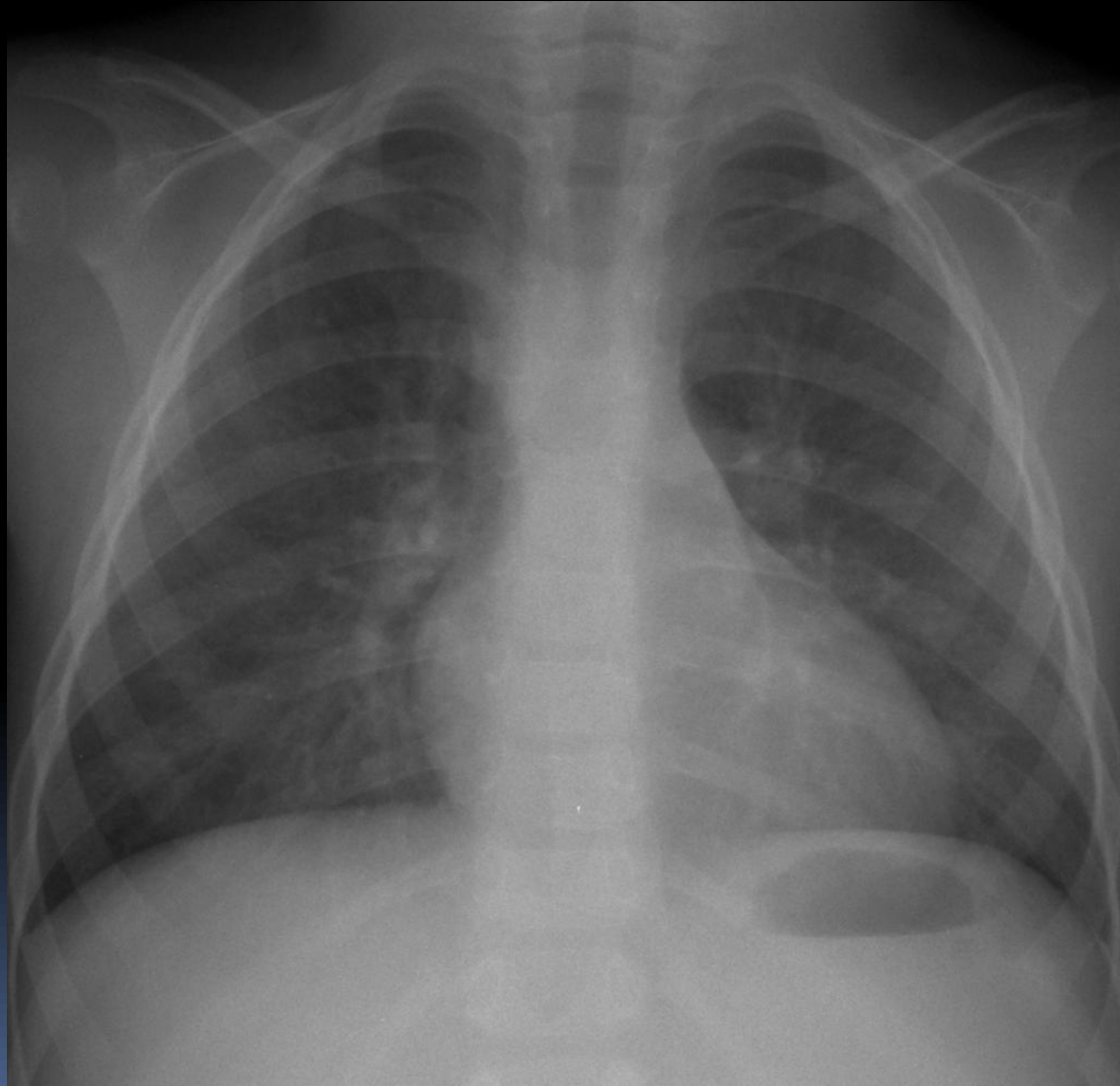


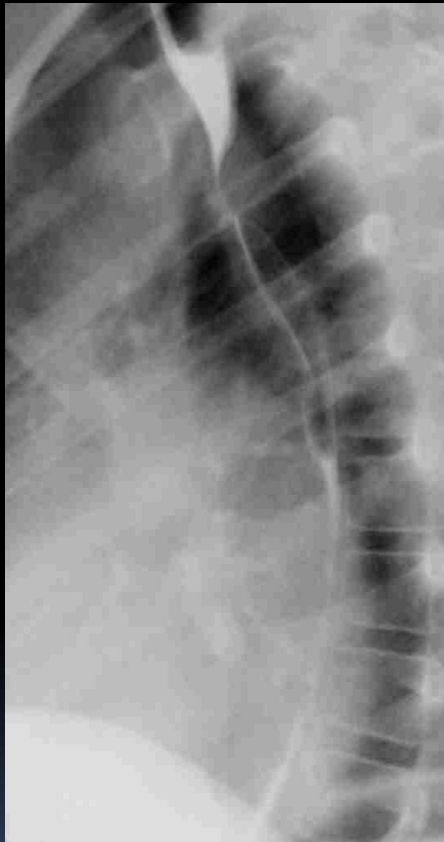
Synkebesvær og hvæsende vejrtrækning

Barnet er begyndt med fast føde

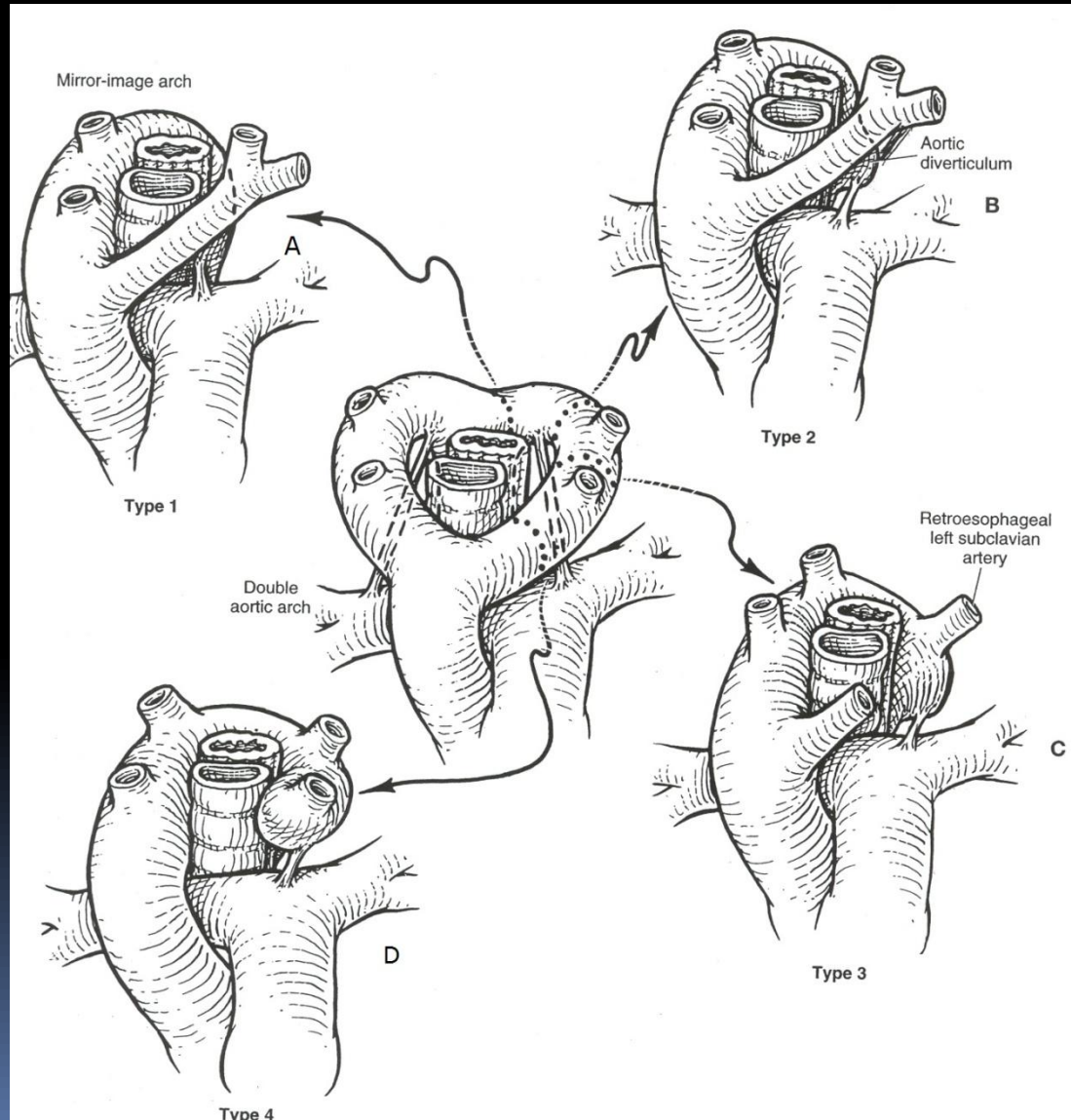
Symptomerne var også tilstede i spædbarnsalderen.

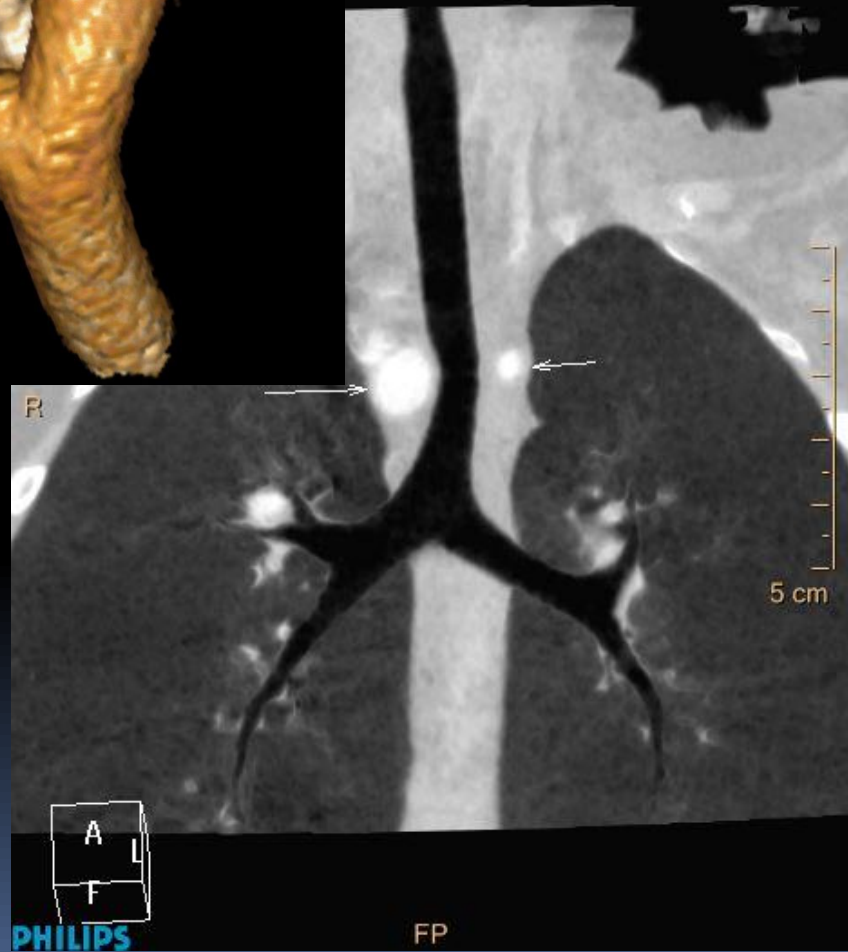
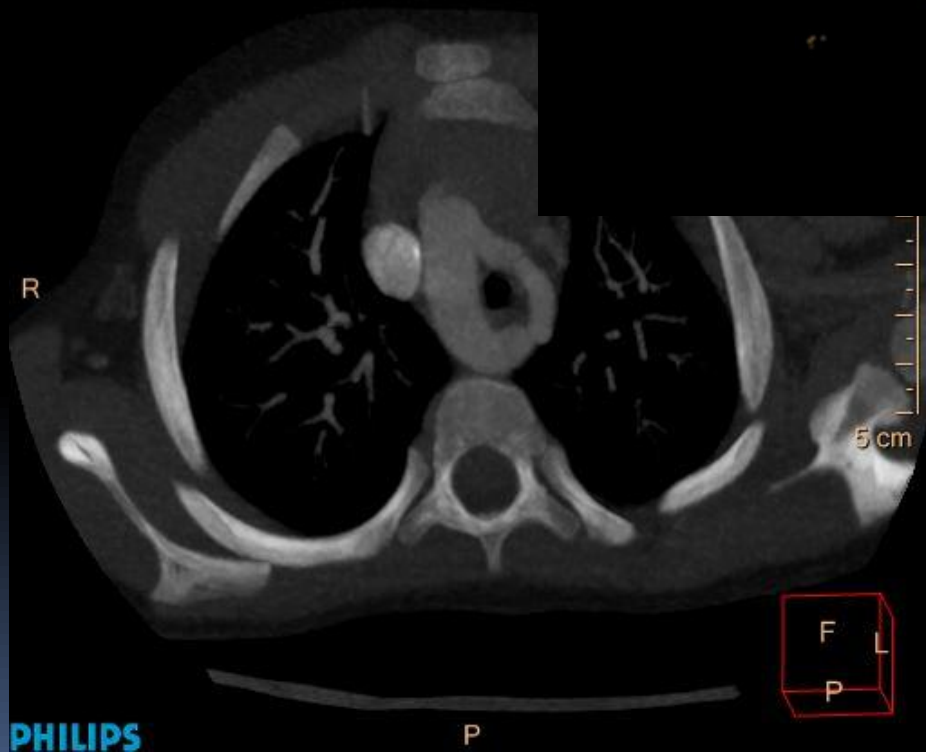
Tendens til konstant hoste.



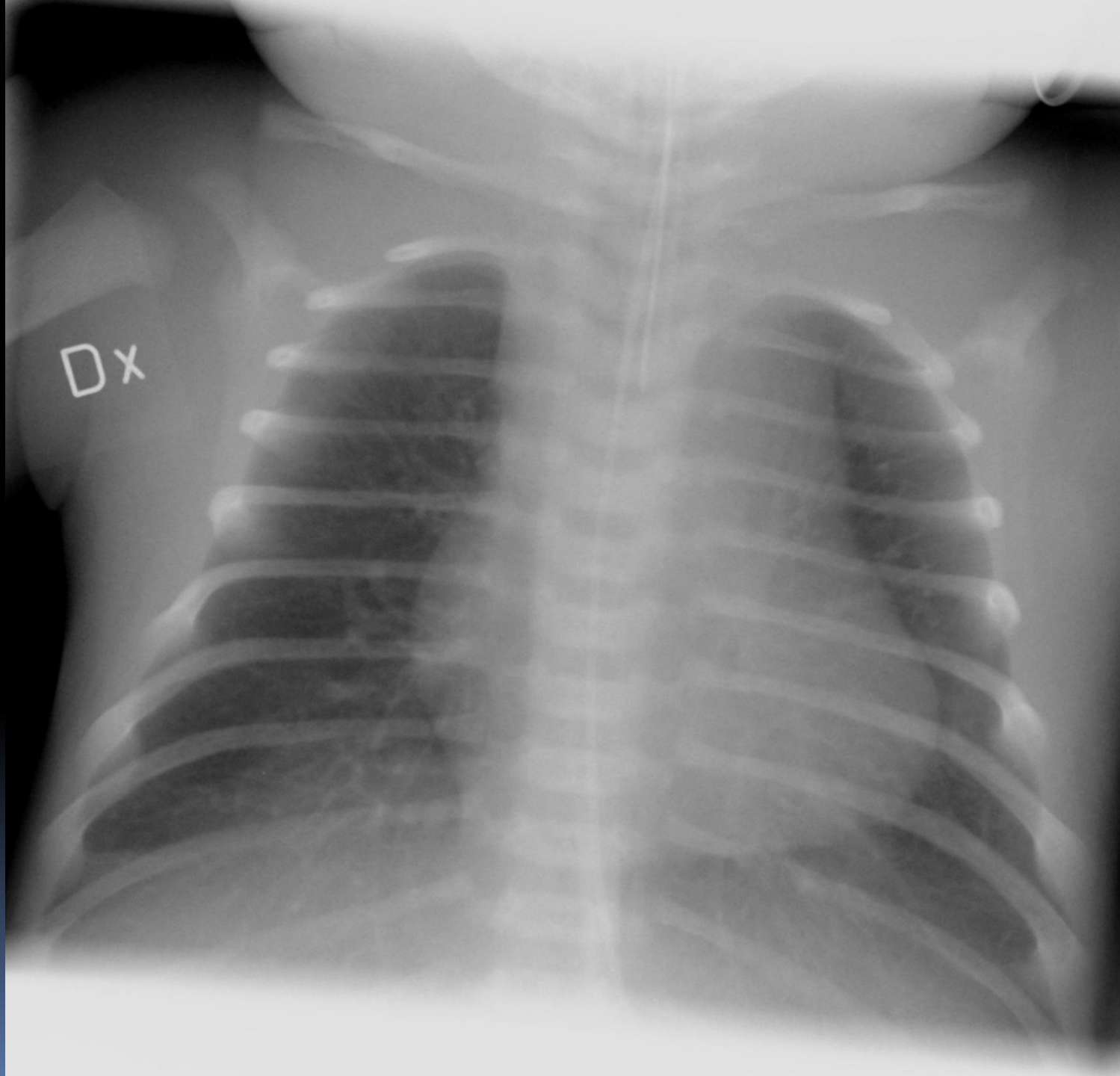


Vaskulær ring



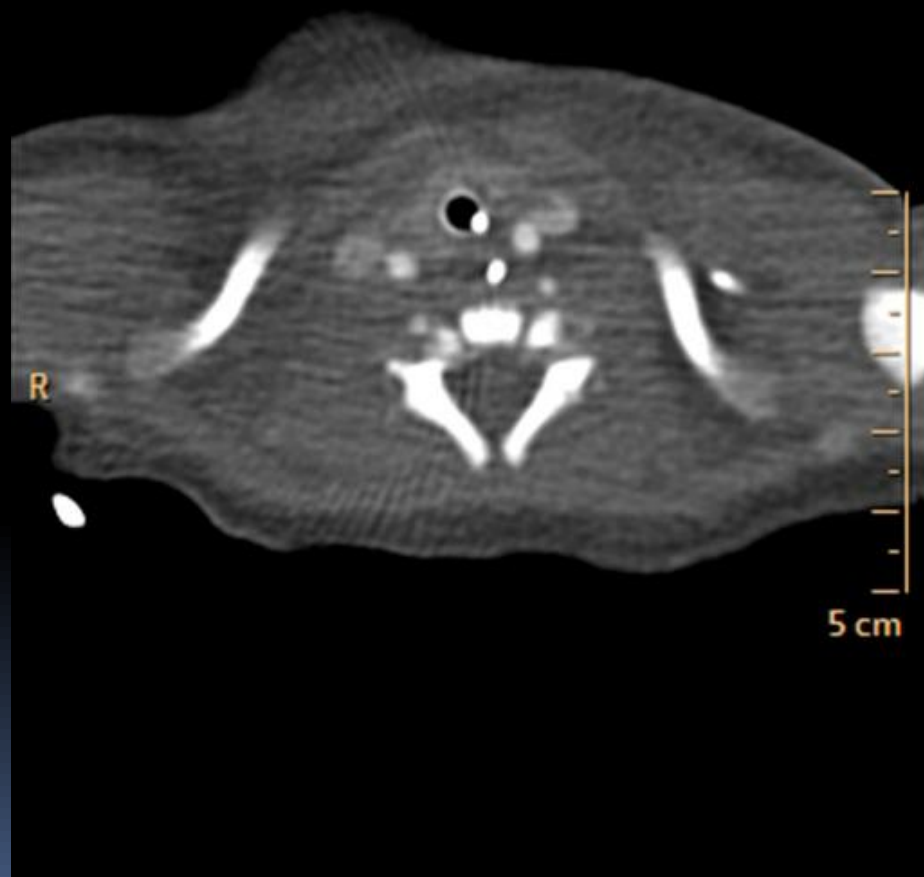
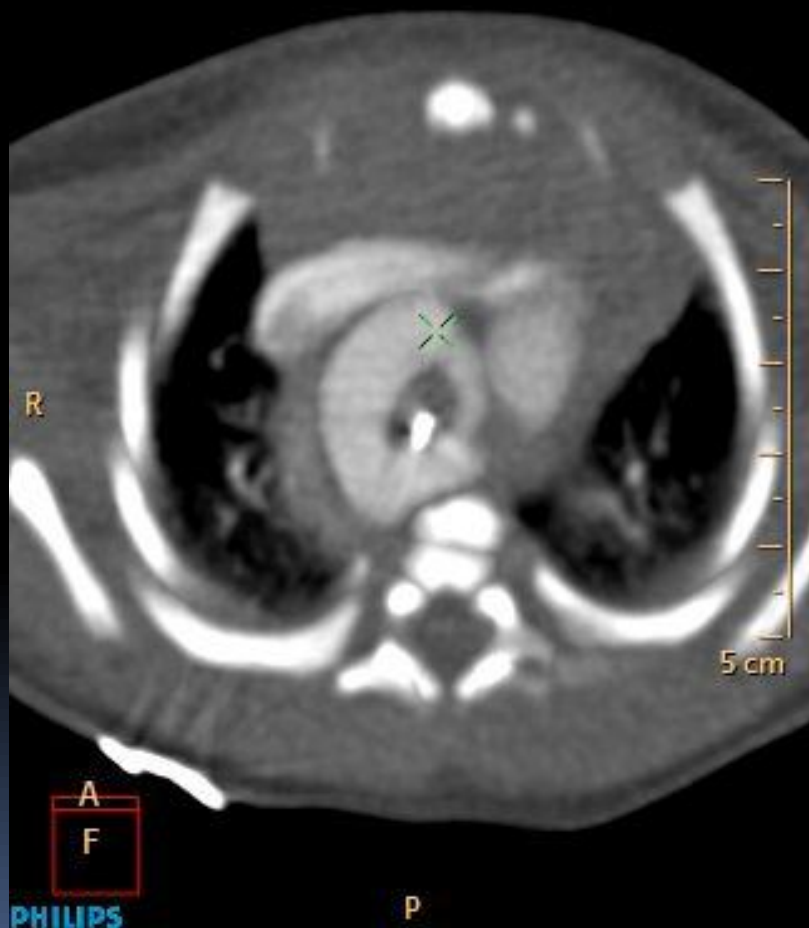


- Matur dreng, knirken og takypnoe umiddelbart efter forløsning
- Respiratorisk ustabil pga. inspiratorisk stridor
- Overflytted intuberet fra Regionalhospitalet **X** til AUH i Skejby

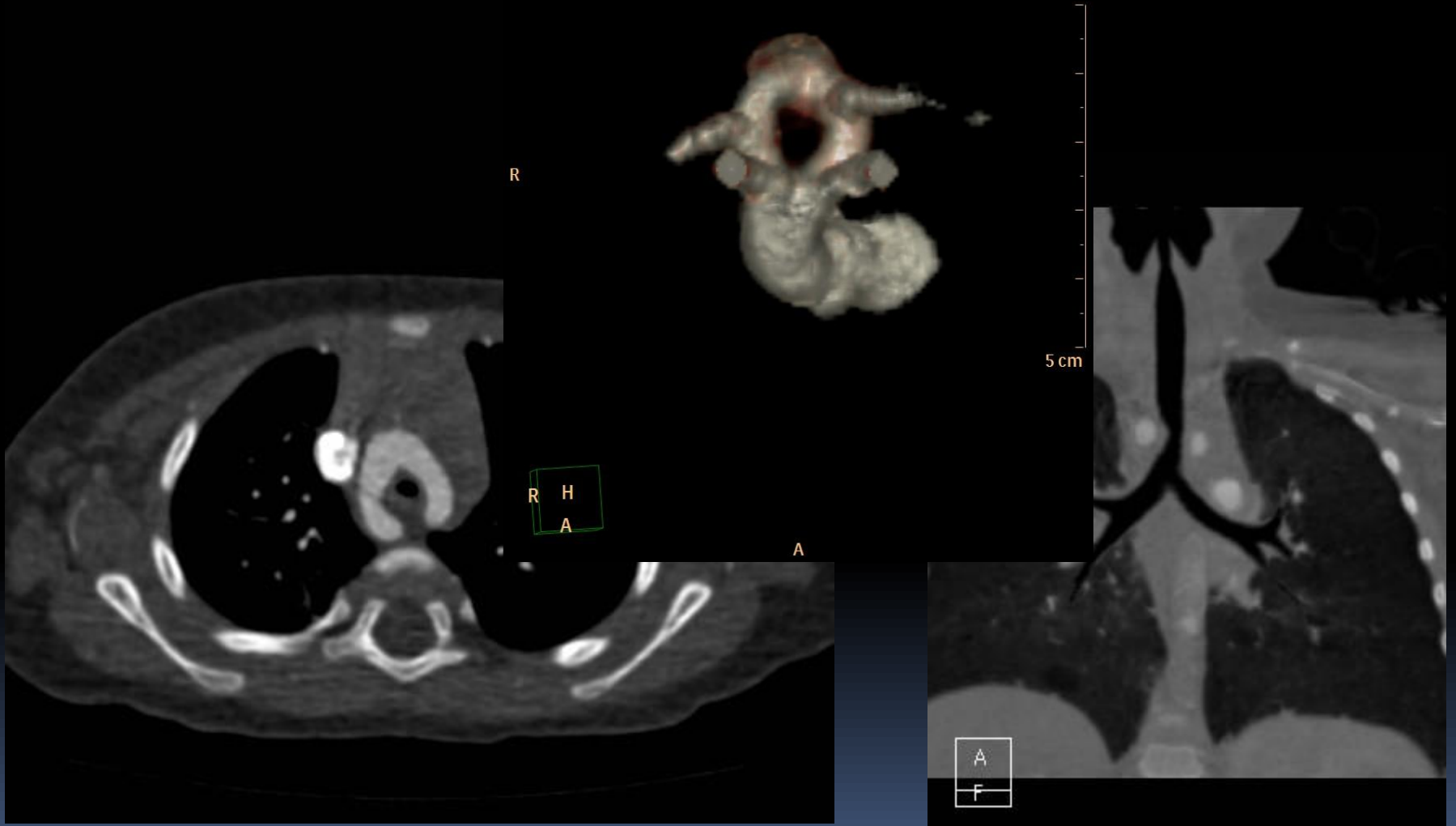


Dx

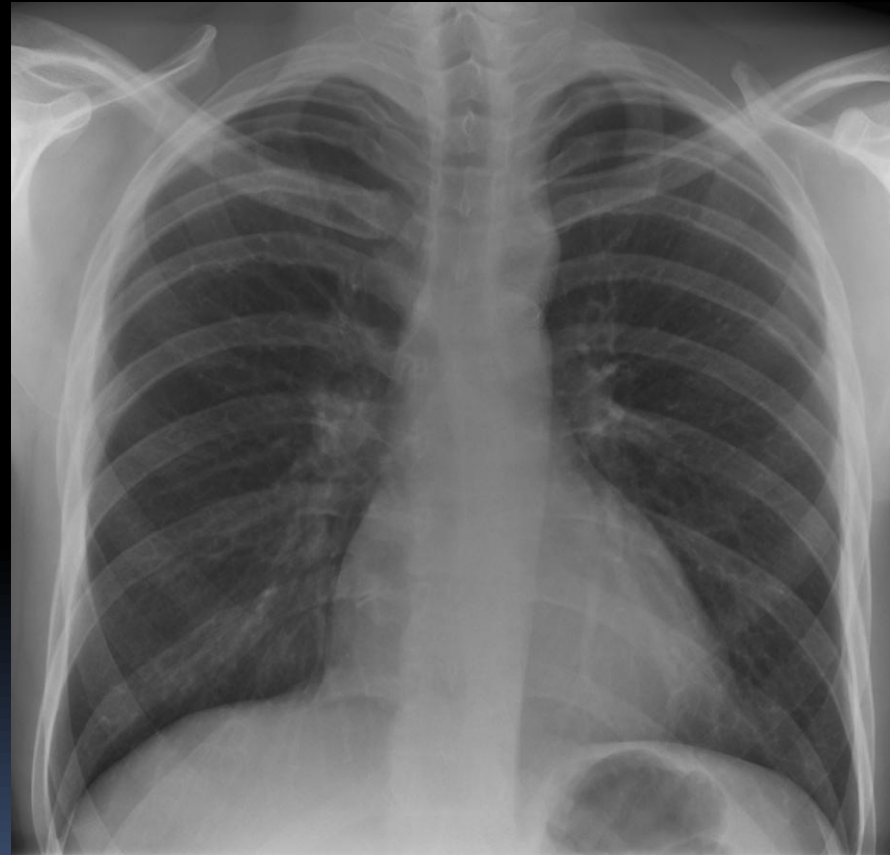
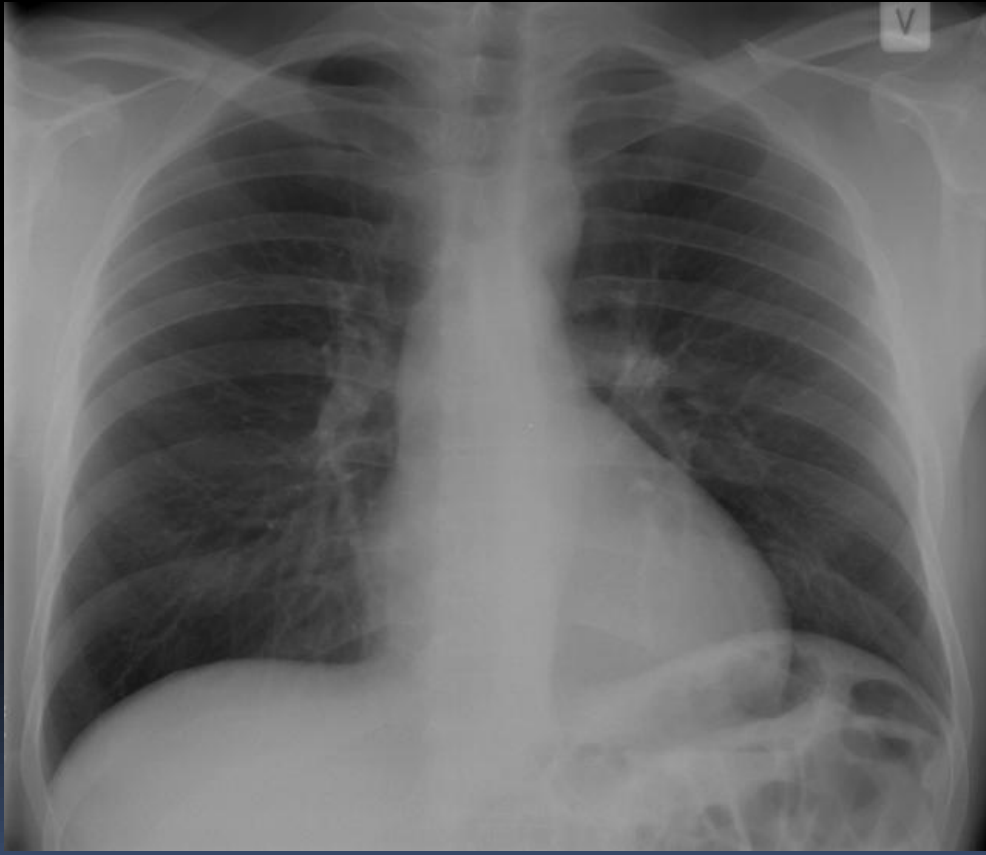
Vaskulær ring



Va



Coarctatio Aortae



Coarctatio Aortae



- Usurer i costae, sjældent før 5 års alder
- 3/B konfiguration i venster side af aorta

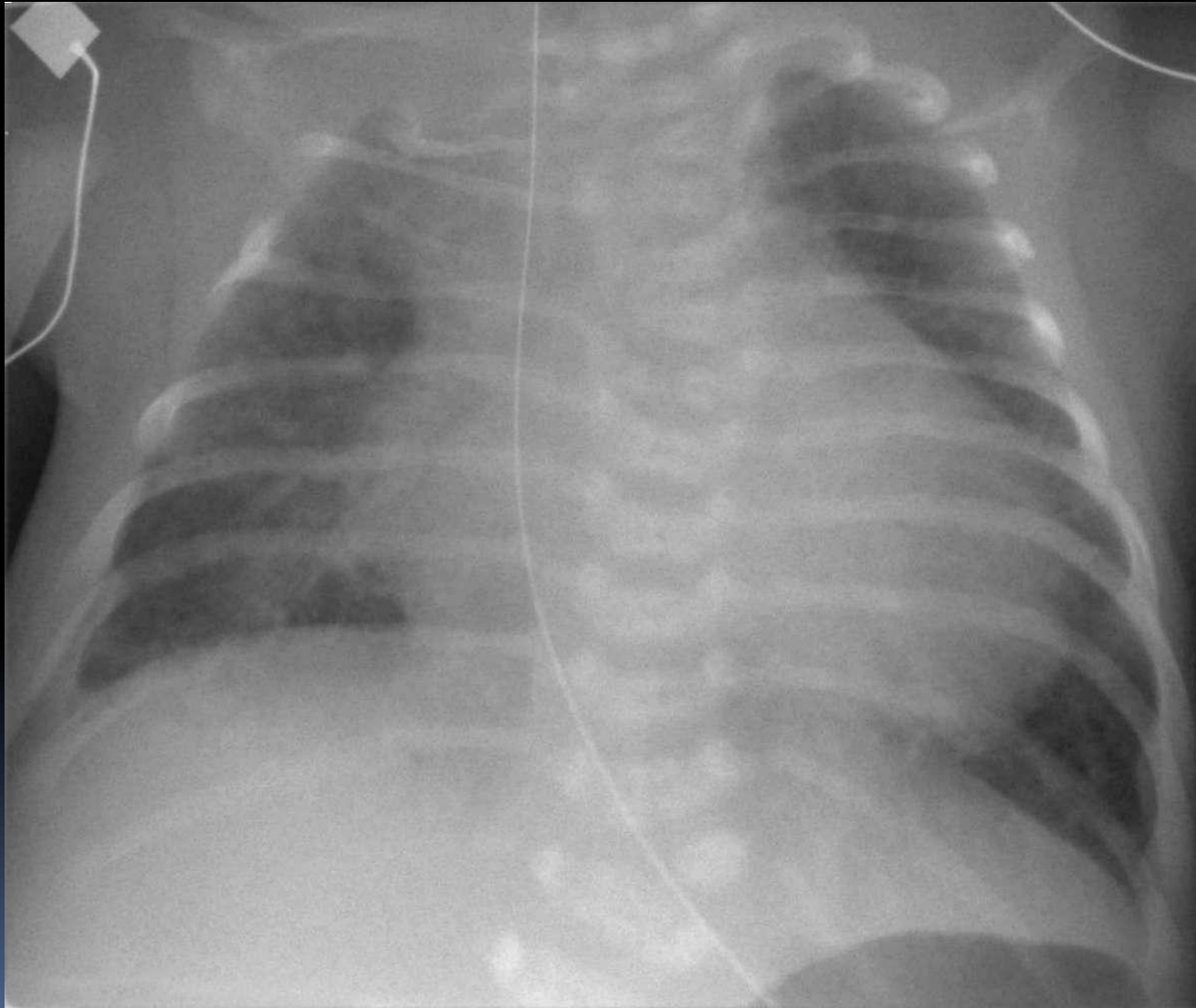
Coarctatio Aortae



Coarctatio Aortae



Diagnose ?



Thoraxrtg. Ved Kongenit hjertesygdom

Thoraxrtg. avgiver diagnostisk fingerpeg
som må suppleres med anden modalitet
for en definitiv diagnose

Center for Medfødte Hjertesygdomme

Center for Medfødte Hjerter... x +

www.auh.dk/om+auh/afdelinger/center+for+medfødte+hjertesygdomme

Google



Forsiden A⁺ A⁺



Aarhus Universitetshospital

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Center for Medfødte Hjertesygdomme

Aarhus Universitetshospital er center for undersøgelse og behandling af fostre, børn og voksne med medfødt hjertesygdom. Centret er et murstensløst, multidisciplinært samarbejde mellem specialister på Hjertemedicinsk Afdeling B, Hjerte-Lunge-Kar-Kirurgisk Afdeling T, Børneafdeling A, Anæstesiologisk-Intensiv Afdeling I og Gynækologisk-Obstetriske Afdeling Y.

Dette team af specialister står altid klar til at rådgive og hjælpe.

Revideret 28.10.2013

Udskriv Del
Læs op Hjælp

Kontakt

Center for Medfødte Hjertesygdomme
Aarhus Universitetshospital
Brendstrupgårdsvej 100
DK-8200 Aarhus N

Tlf. 7845 3002
Skejby.cmh@rm.dk

Om regionen

Find vej



Kort - parkering - transport

Adresser

- » Nørrebrogade 44
DK-8000 Aarhus C
- » Brendstrupgårdsvej 100
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- » Tage-Hansens Gade 2
DK-8000 Aarhus C
- » P.P. Ørums Gade 11
DK-8000 Aarhus C
- » Sygehusvej 26
8305 Samsø

Aarhus Universitetshospital

- » er en sammenlægning af Skejby og Århus Sygehus (det tidligere Århus Kommunehospital, Århus Amtssygehus, Marselisborg Hospital og Samsø Sygehus)
- » er på vej til at blive samlet under fælles tag i Skejby: Læs om byggeriet på [dnu.dk](#)

Samarbejdspartnere

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- » [auhrisskov.dk](#)
- » [health.au.dk](#)
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Børnehjertefonden

Steno-Fallots tetralogi

https://www.boernehjertefonden.dk/sygdomsinformation/medfodte-hjertesygdomme/sygdomme-a-z/steno-fallots-tetralogi

Google

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søg...

Børnehjertefonden

BØRNEHJERTEFONDEN

SYGDOMSINFORMATION

MØD ANDRE

STØT OS

> Om medfødte hjertesygdomme

> Gode råd til familien

> Find hjælp

> Motion og sundhed

> Forskning

> Fortællinger

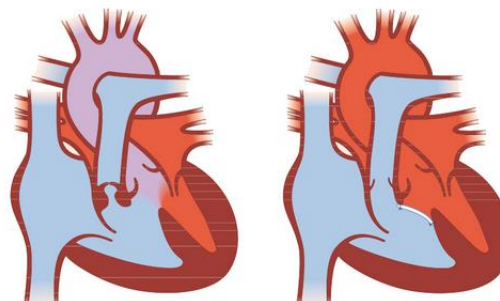


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Om medfødte hjertesygdomme

- ⊙ Generelt om medfødte hjertesygdomme
- ⊙ **Sygdomme A-Z**
- ⊙ Om behandlinger og operationer
- ⊙ Årsager og forklaringer
- ⊙ Symptomer
- ⊙ Undersøgelser
- ⊙ Ordforklaring

Steno-Fallots tetralogi



Steno-Fallots tetralogi

Opereret Steno-Fallot

Ved „Fallot“ er der dels et hul i skillevæggen mellem hjertekamrene (Ventrikelseptumdefekt, se [Ventrikelseptumdefekt](#)) og

Bog

Vibeke E. Hjortdal og Peter K. Paulsen

Thorax kirurgi



Thoraxkirurgi
for læger og andet
fagpersonale
- gennemrevideret
og med helt nye
illustrationer

Fadl's Forlag

