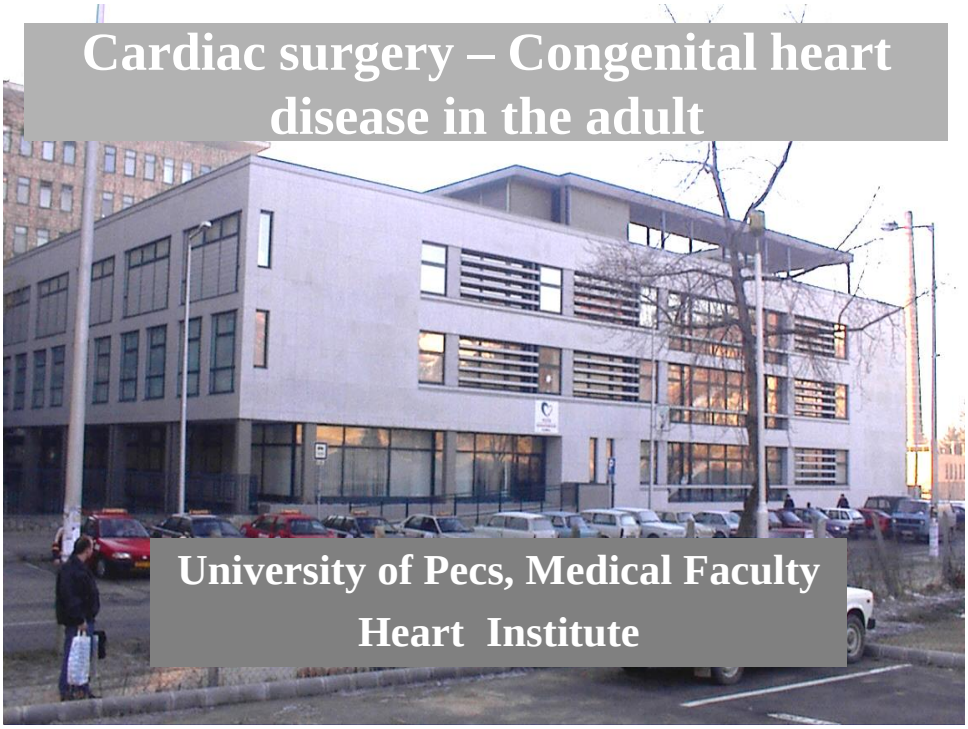
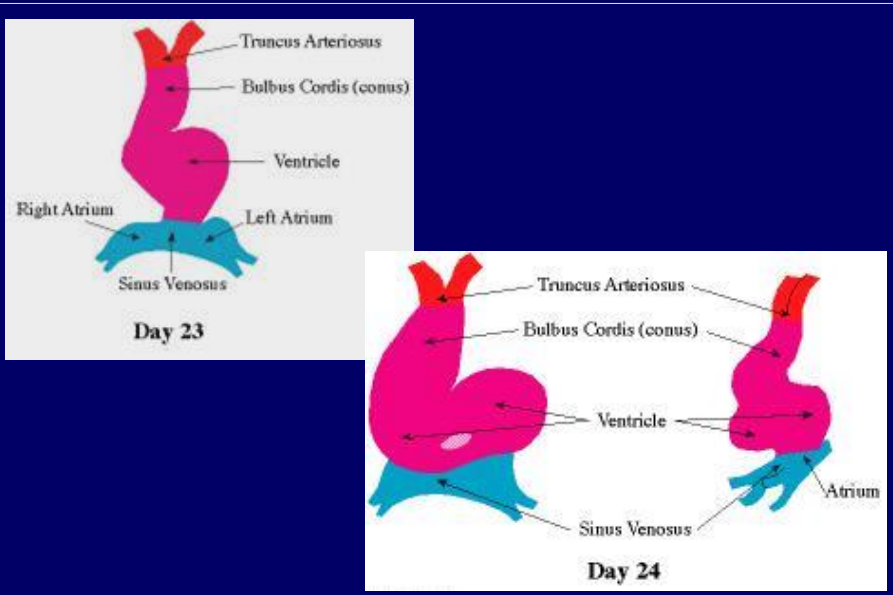
Cardiac surgery – Congenital heart disease in the adult

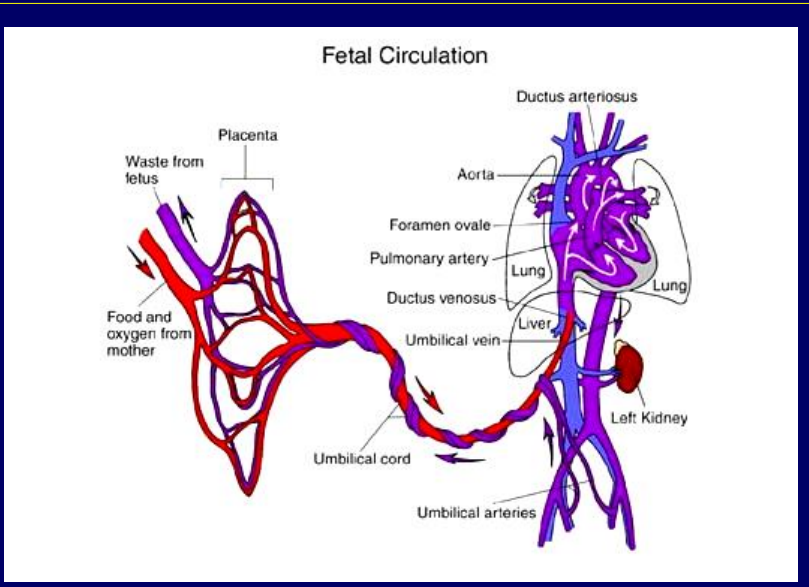


University of Pecs, Medical Faculty
Heart Institute

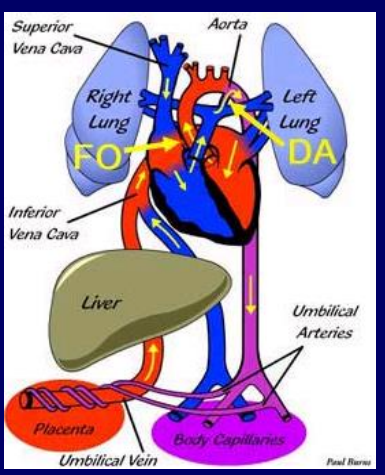
Embryogenesis of the heart

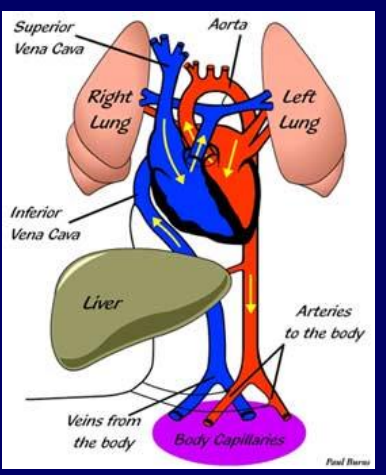


The fetal circulation



Transformation of the fetal circulation





Classification of congenital heart diseases

Left-to-right shunt
- atrial septal defect
- ventricular septal defect
- persistent ductus arteriosus
- atrioventricular septal deffect
- partial transposition of pulmonary veins

Obstructive
- aorta stenosis
- pulmonary stenosis
- coarctation of aorta

Cyanotic (right-to-left shunt)
- great vessel transposition
- tetralogy of Fallot
- tricuspidal atresia
- pulmonary atresia
- Ebstein-anomaly
- total transposition of pulmonary veins
- persistent truncus arteriosus
- univentricular heart

Operative management

- Why operate? symptoms of circulatory failure, frequent airway infections, retardation in growth, Eisenmenger syndrome
- Earlier: several-stage operations starting with palliation
- Nowadays primary total anatomical reconstruction even in newborns
- Reduced mortality recently
- Less demanding for the society and for the family
- Diagnostics: mainly echocardiography, less angiocardiography (X-ray, contrast agent!), cardiac MRI

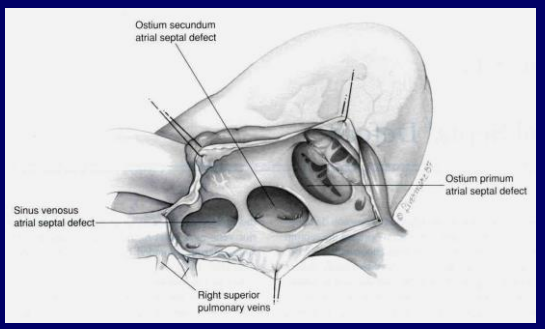
Postoperative follow-up

- Regular follow-up is necessary in most cases
- (Elective multistage operations to the strength of the child)
- Redo operations (adhesions!): graft replacement for a bigger one, calcified homograft, late complications
- Endocarditis prophylaxis (in case of residue)
- Physical education/load according to capacity
- Psychological/mental guidance

GUCH (Grown-up congenital heart) disease

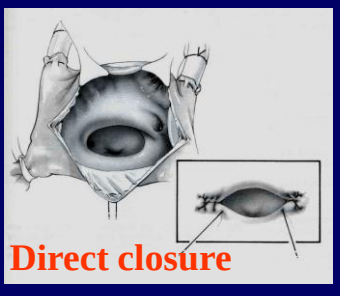
- 80-85% of patients born with congenital heart disease survive to adulthood
- Relatively small population, but complex and variable pathology
- Special follow-up: cardiology, intensive care, anesthesia, pregnancy
- 40% simple or cured disease – no specialist, 35-40% – access to expert consultation, 20-25% – life long expert supervision
- Pediatric cardiologist and cardiac surgeon ↔ Adult cardiologst and cardiac surgeon

Atrial septal defect (ASD)

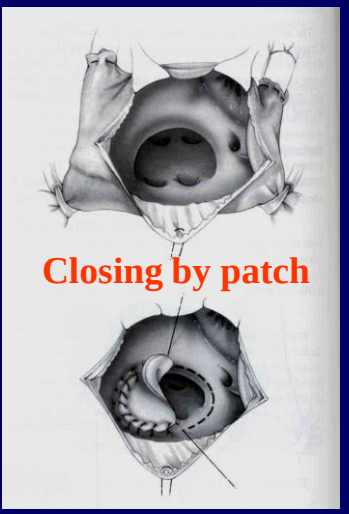


Op.:
Qp/Qs > 2.0

Paradoxic emb.

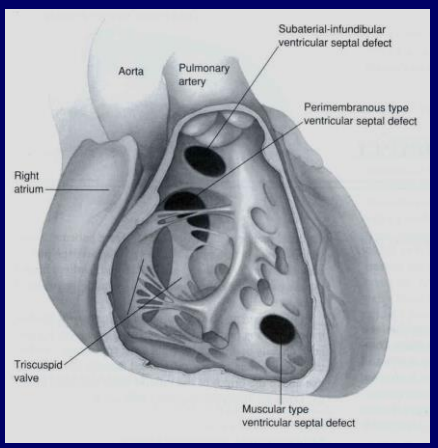


Direct closure

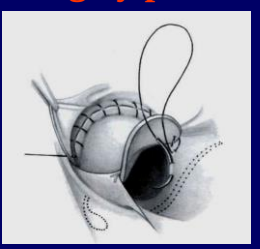


Closing by patch

Ventricular septal defect (VSD)



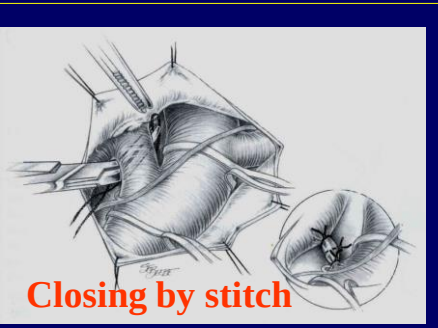
Closing by patch



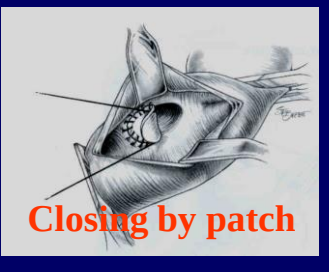
Op.:
Qp/Qs > 2.0

Persistent Ductus Arteriosus (PDA)

Closing by clip

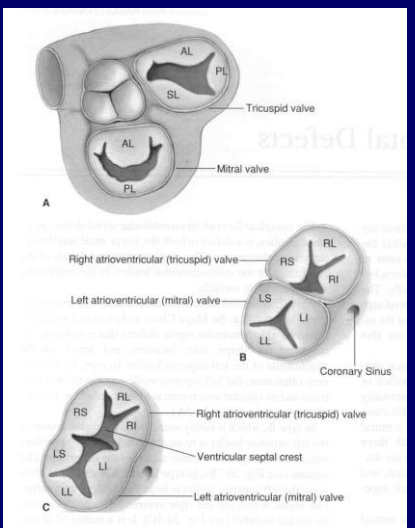


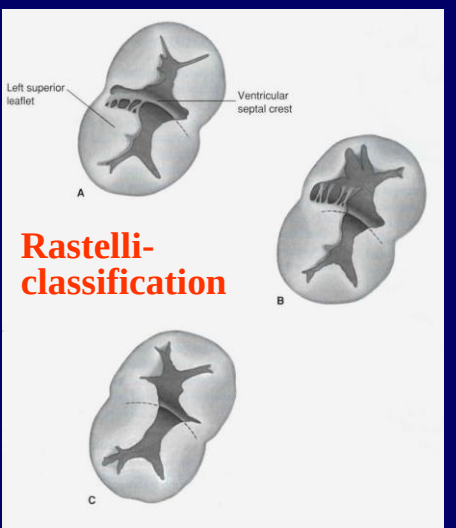
Closing by stitch



Closing by patch

Atrioventricular septal deffect, AV-canal, AVSD

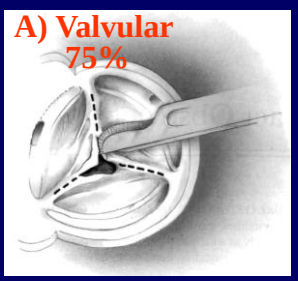




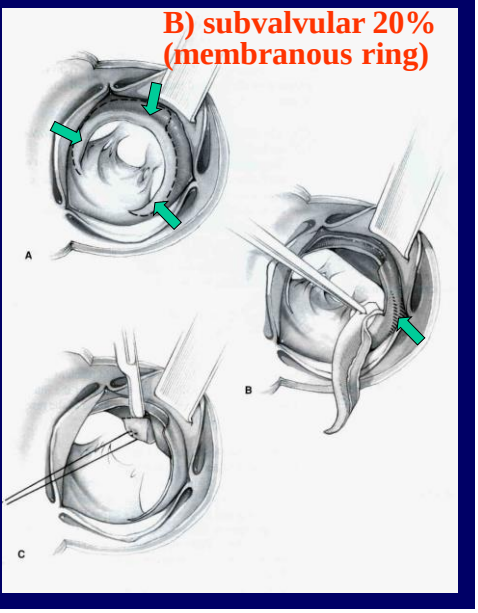
Rastelli-classification

Congenital aortic stenosis

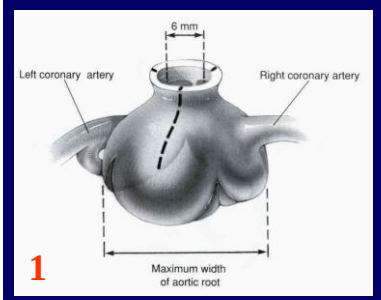
A) Valvular 75%

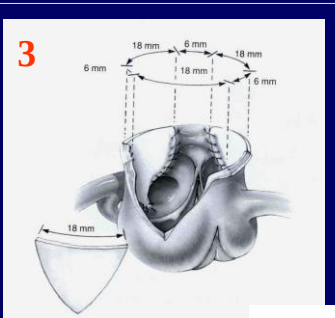


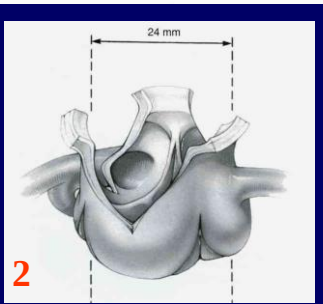
B) subvalvular 20% (membranous ring)



Congenital aortic stenosis

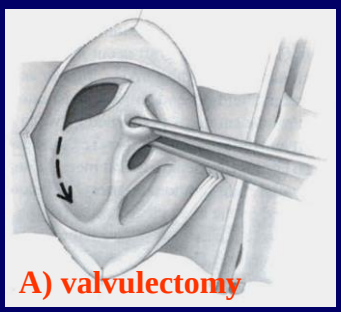






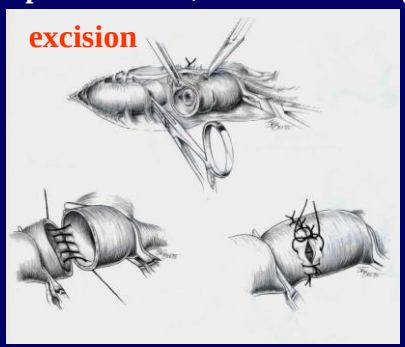
C) supravalvular 5%

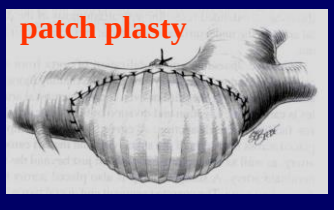
Pulmonary stenosis

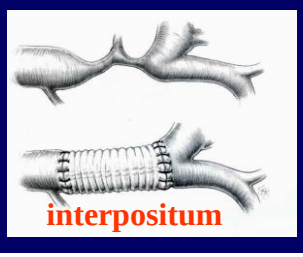


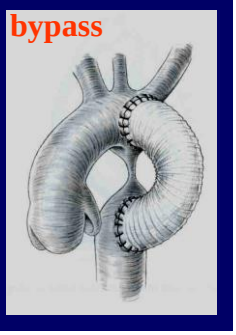
Coarctation of the aorta

praeductal, postductal type
Op.: sten>50%, RRdiff>20-30Hgmm

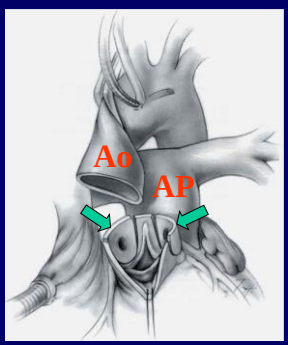


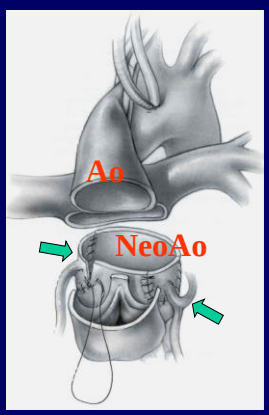




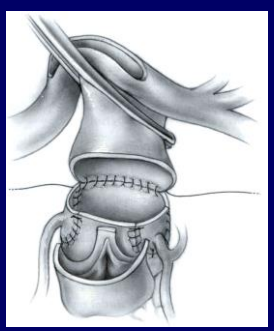


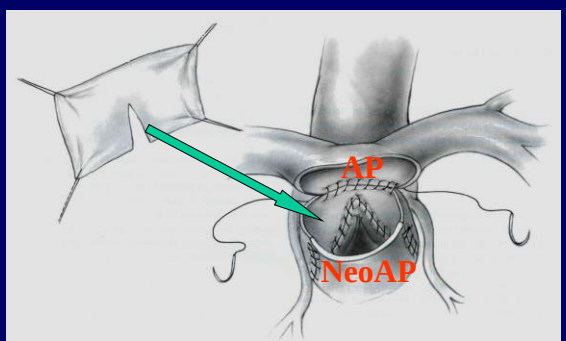
Transposition of the great vessels





Transposition of the great vessels

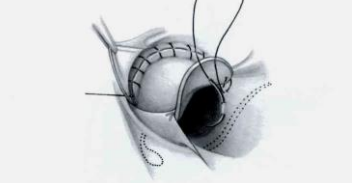




Tetralogy of Fallot

- Pulmonary infundibular stenosis
- VSD
- Overriding aorta
- Right ventricular hypertrophy

2 closing the septal deffect



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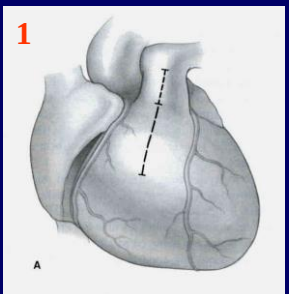
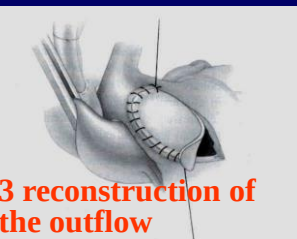
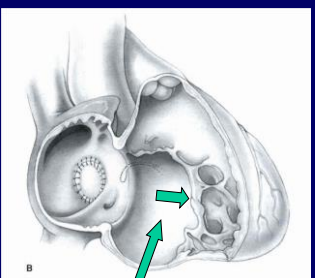


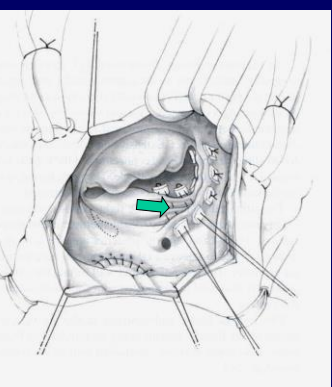


3 reconstruction of the outflow

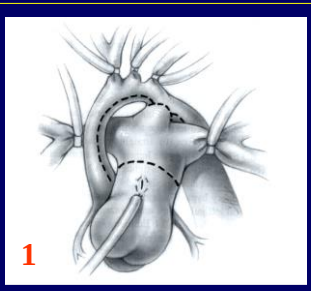
Ebstein-anomaly

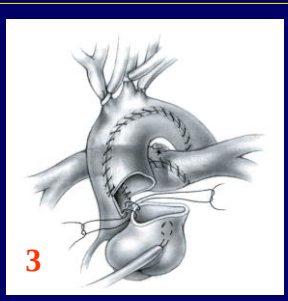


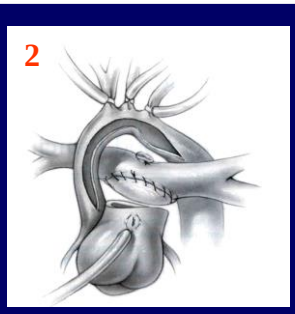
Atrialized right ventricle



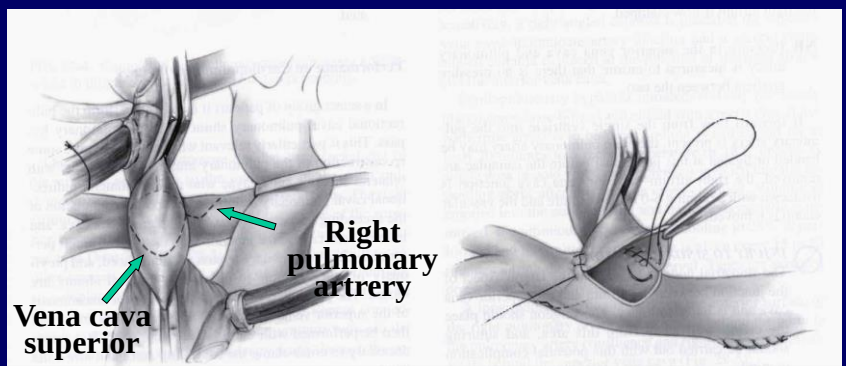
Univentricular heart (<1%)



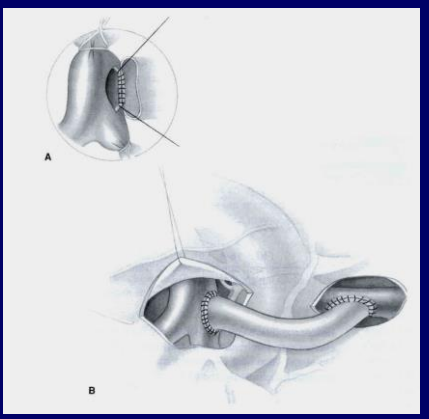


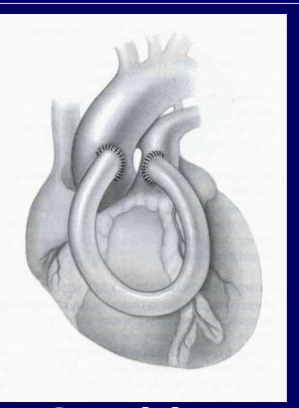


Bidirectional cavopulmonary anastomosis



Aorto-pulmonary shunts





Central shunt

Reducing pulmonary perfusion

pulmonary artery banding
preventing pulmonary hypertension