CONGENITAL HEART DISEASE

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Causes

- Mostly unknown
- Genetics play part in some disorders e.g long QT
- Often other related conditions eg 1/3 of downs syndrome have heart defect (AVSD)

Statistics

- 1 in every 120 births has CHD
- Mild – resolve by themselves
- Non life threatening – but require treatment
- Severe – multiple operations , lifetime medication

Statistics – Alder Hey 2003

- Referrals – 1740
- Diagnosed – 914
- Cyanosed – 149
- ASD – 132 VSD – 156
- PDA – 136 Fallots – 32
- PS – 54 TGA - 33

Statistics - Complex

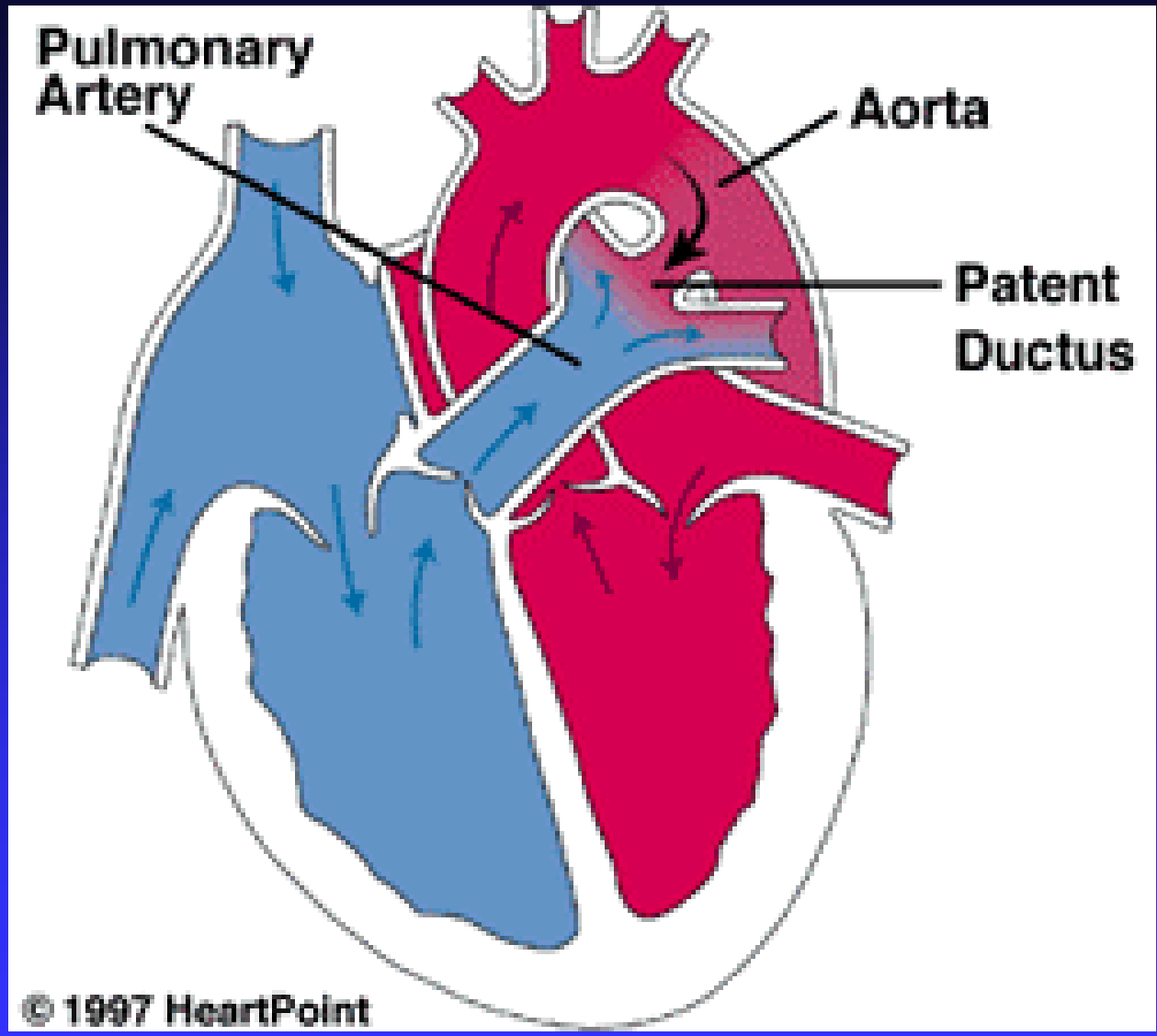
- HLH – 7
- TV atresia– 3
- PV atresia – 13
- EBSTEIN – 3
- DILV – 5
- Long QT – 11

Common disorders

- PDA – patent ductus arteriosus
- Normal fetal structure , allows blood to bypass circulation to the lungs (O2 provided by placenta)
- Connection LPA to Ao
- Normally closes 24hrs after birth (hi 02)
- Can correct several months after birth

PDA - problems

- Shunting of blood Ao to PA
- Too much blood going to lungs
- Increased PA pressure – increase RV
- Long term damage to lungs and heart


Pulmonary Artery
Aorta
Patent Ductus
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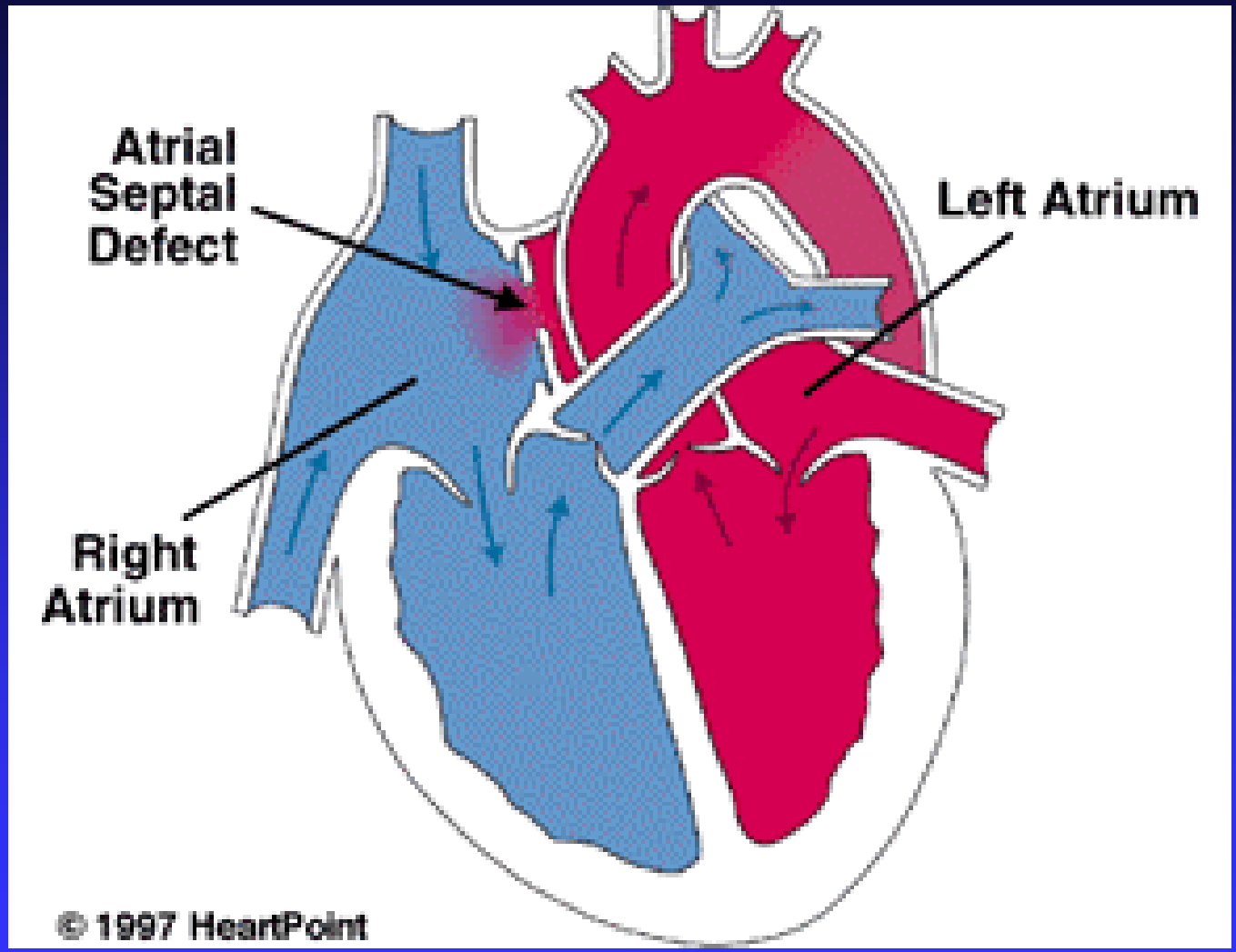
PDA - solutions

- Drug treatment to induce closure
- Cath lab – amplatzer or coil
- Surgery – ligation
- With associated severe CHD beneficial to remain patent

Atrial Septal Defect

- Hole between the two atria
- Blood flows left to right
- PFO – Patent foramen ovale fails to close
- Right heart becomes dilated
- Too much blood to the lungs


Atrial
Septal
Defect
Left Atrium
Right
Atrium
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Three types

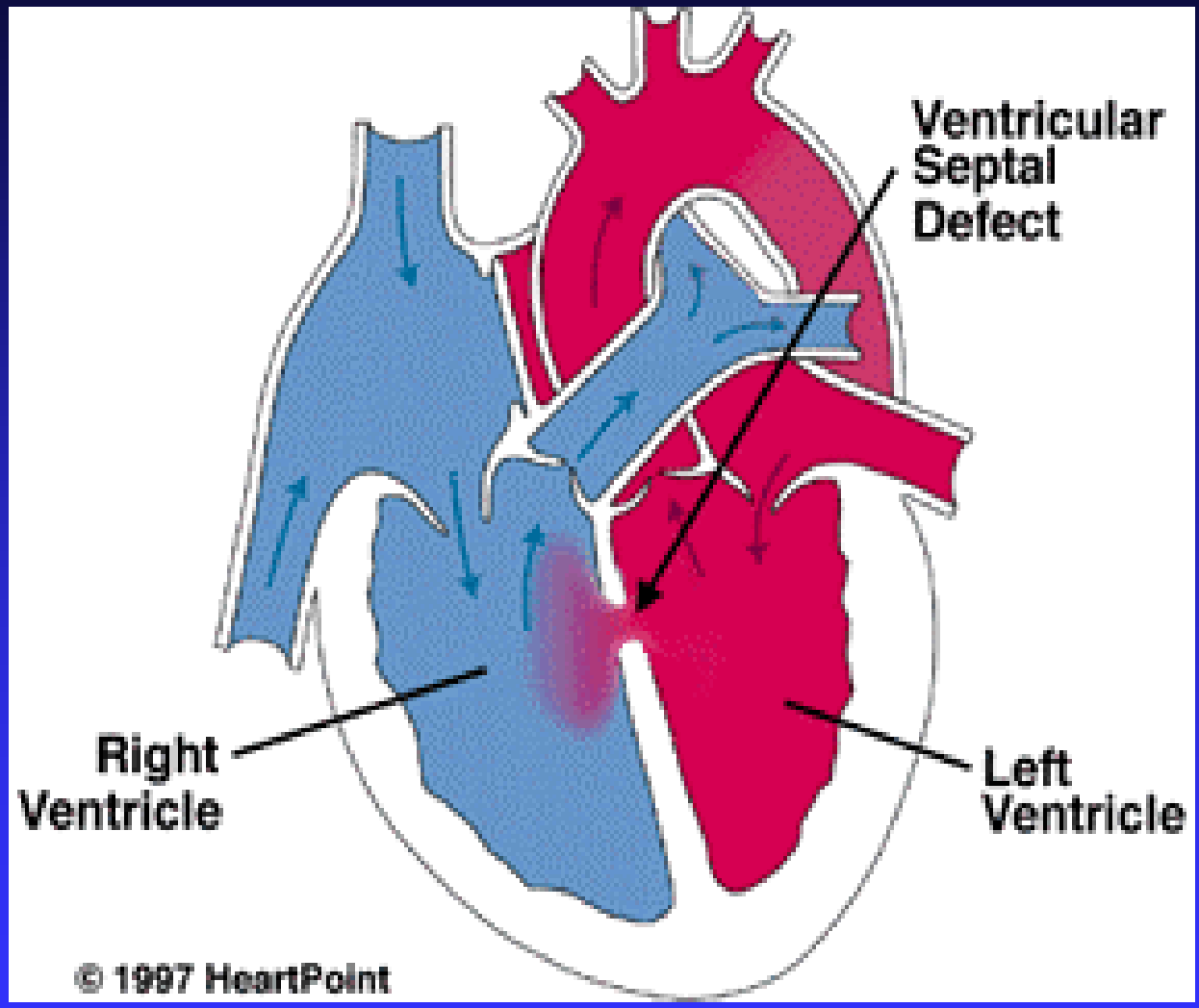
- Primum ASD
- Secundum ASD
- Sinus venosus
- AVSD – Atrio ventricular septal defect

ASD solutions

- Secundum – closure in cath lab if suitable
- Surgery – patch or stitch – CP bypass
- Smaller defects – allow time to close - ? Stroke in later life

Ventricular Septal Defect

- Hole between the two ventricles
- Left to right shunt – majority
- Dilated right heart – too much blood to lungs – increase in pulmonary pressure
- Smaller defects can close spontaneously


Ventricular
Septal
Defect
Right
Ventricle
Left
Ventricle
© 1997 HeartPoint

Three types

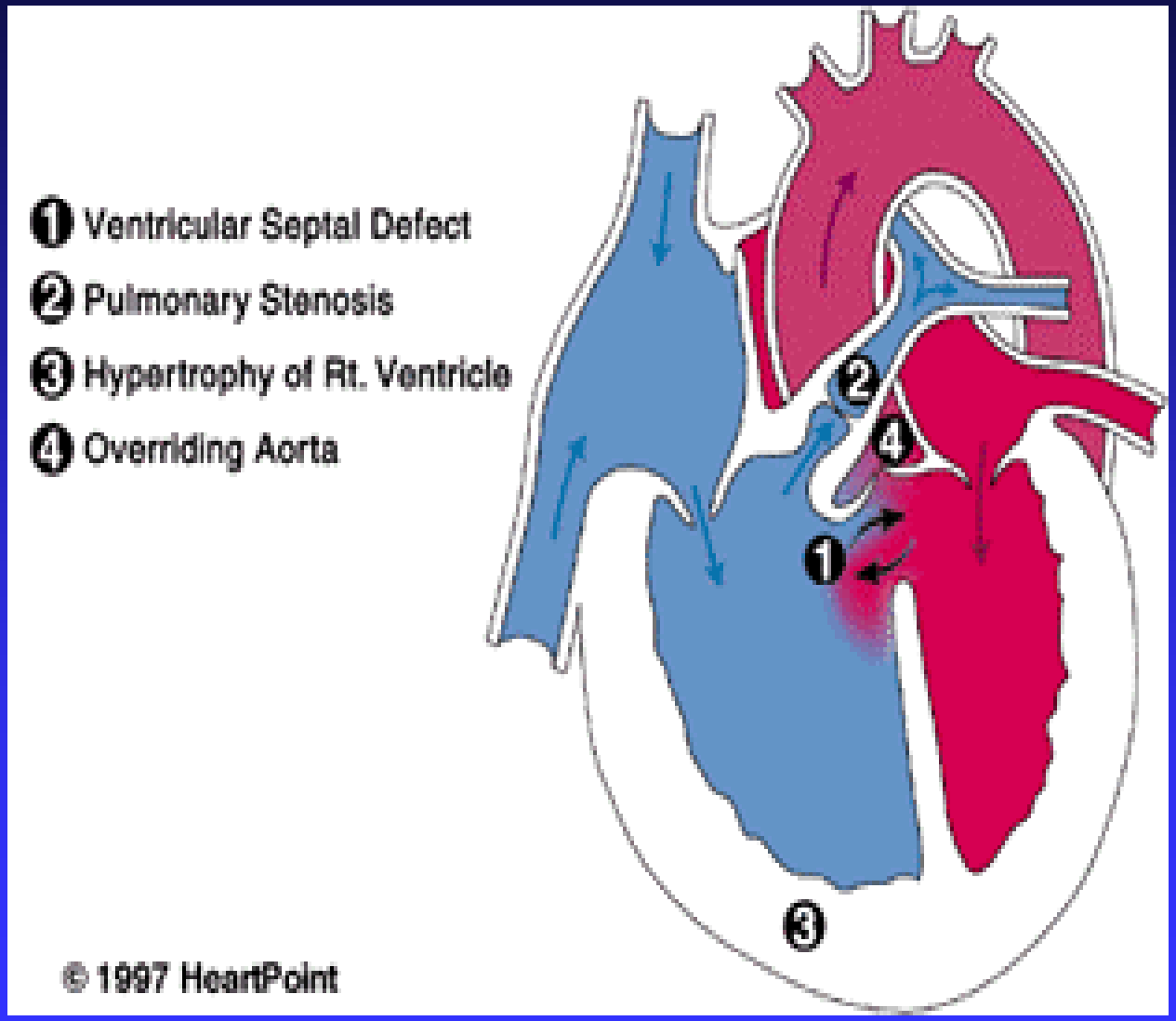
- Perimembranous VSD – most common
- Muscular VSD – can be multiple
- Apical VSD – usually small
- Variable in size

VSD solutions

- Surgical – CP bypass
- Catheter lab – Amplatzer if suitable
- Residual defects

Tetralogy of Fallot (TOF)

- Four related defects:
- Pulmonary stenosis (obstuction PV/RVOT)
- VSD
- Overriding Aorta (large AV)
- Right ventricular hypertrophy (RVH)
- Secondary – asd /


1 Ventricular Septal Defect
2 Pulmonary Stenosis
3 Hypertrophy of Rt. Ventricle
4 Overriding Aorta
© 1997 HeartPoint

TOF - problems

- Reduced blood flow to the lungs
- Low 02 blood pumped up Ao (shunting)
- Reduced Sa02 in circulation
- Cyanosis – baby appears blue (lips/skin)
- Increased RV pressure (RVH)

TOF – symptons/diagnosis

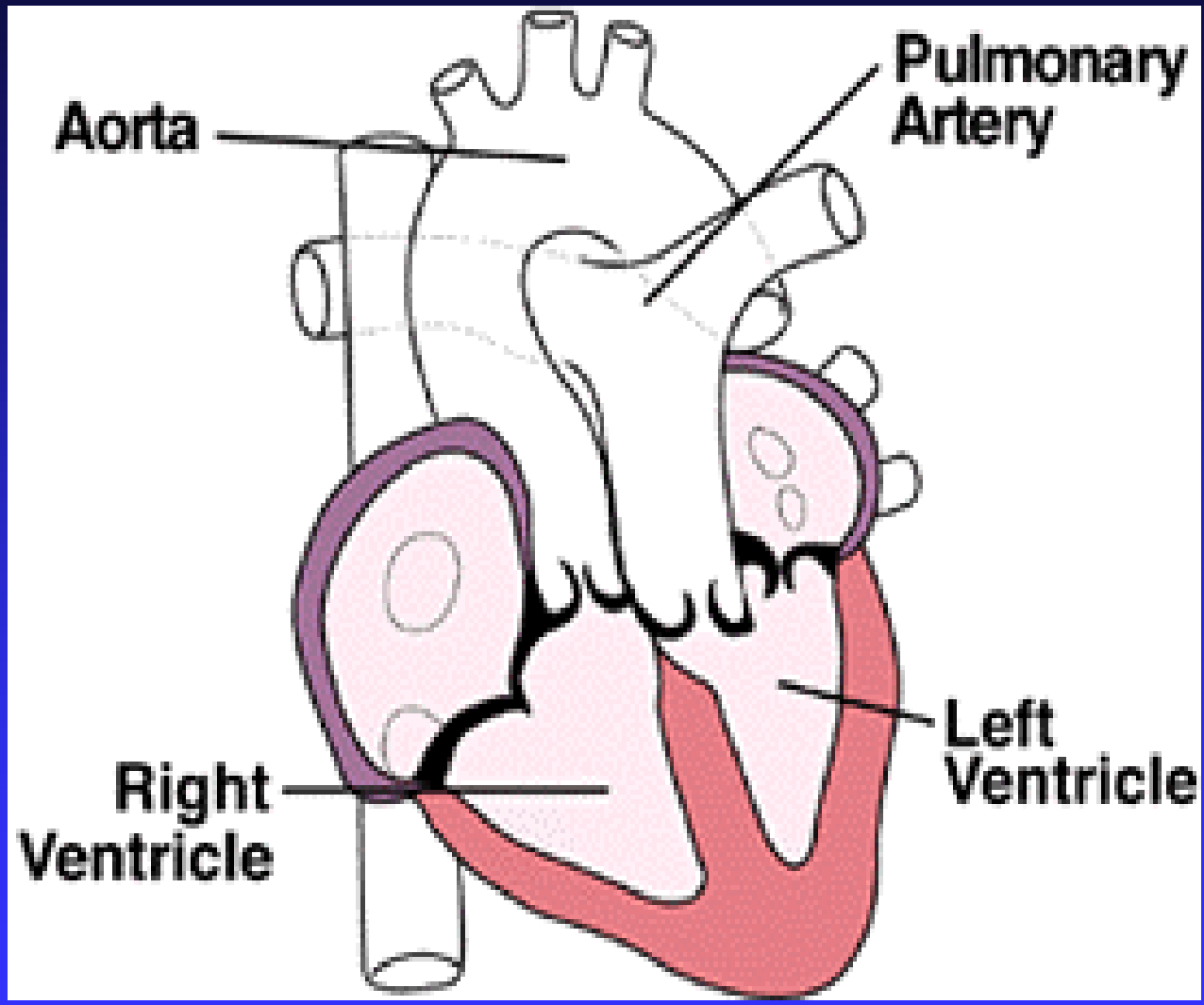
- Diagnosed in first few weeks of life – loud murmur/cyanosis
- PDA closes – symptons increase
- Rapid breathing
- Tet spell – sudden increase in pulm resistance /decrease Sa02 /more blue/squat
- Increasing 02 breathed – little effect
- Echo ? Cath –assess PA's

TOF - treatment

- Drugs – increase pulm blood flow/Sa02
- Surgical repair dependant on Pt condition
- Complete repair at 6 months. Elective
- Palliative op – BT shunt . LSCA to PA
- VSD dacron patch. PS cut away obstuction and patch RVOT
- Very successful op – pulm problems in later life.? Residual VSD.

Transposition of the Great Vessels

- Pulmonary arteries supplied by left ventricle
- Aorta by right ventricle
- Not compatable with life
- Immediate survival dependant on shunt from left heart to right heart
- 25% have VSD. 33% abnormal coronaries


Aorta
Pulmonary Artery
Left Ventricle
Right Ventricle

TGA

- Diagnosed in first few days of life
- Cyanosis. Low sa02. Rapid breathing.
- PDA closes. Symptons worsen.
- 02 treatment does not improve pt

TGA Treatment

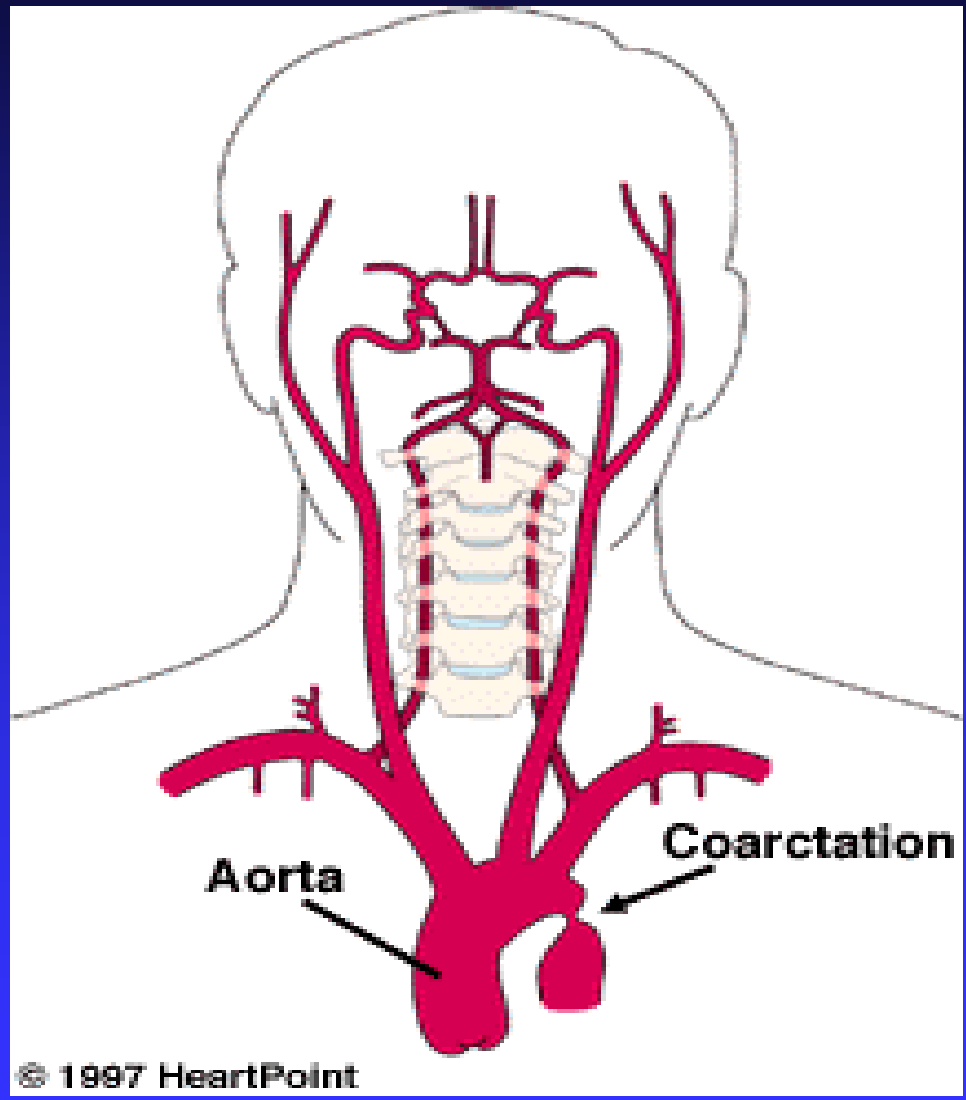
- Drug (prostin) maintain PDA
- Cath lab/echo for atrial septostomy(palliative)
- Requires surgery within weeks
- Mustard/Senning – ventricular failure/arrythmias
- Switch operation

TGA Surgery

- Division of Ao and PA just above heart
- Reconnect to correct ventricle
- Coronaries disconnected and reimplanted onto new Ao (difficult)
- Close ASD and VSD if present
- Excellent results – PA problems in later life

Coarctation of the Aorta

- Narrowing of the Dao – juxta ductal
- Often associated with other CHD-e.g.bicusp AV,VSD
- LVH /congestive heart failure
- Severe coarct require immediate treatment
- Weak femoral pulses – reduced blood flow to lower limbs


Aorta
Coarctation
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Coarctation -Treatment

- Depends on severity of the narrowing
- Newborn – drug treatment urgent surgery
- Older children – elective surgery
- Surgery – patching/resection/reconstuction
- Cath lab – balloon(post surgical repair)/stents

Coarctation- problems

- Damage to lower organs during surgery
- Recoarctation – highest risk in newborn
- Hypertension – even post repair
- Importance of cardiology follow up especially if AV bicusp

THE END