

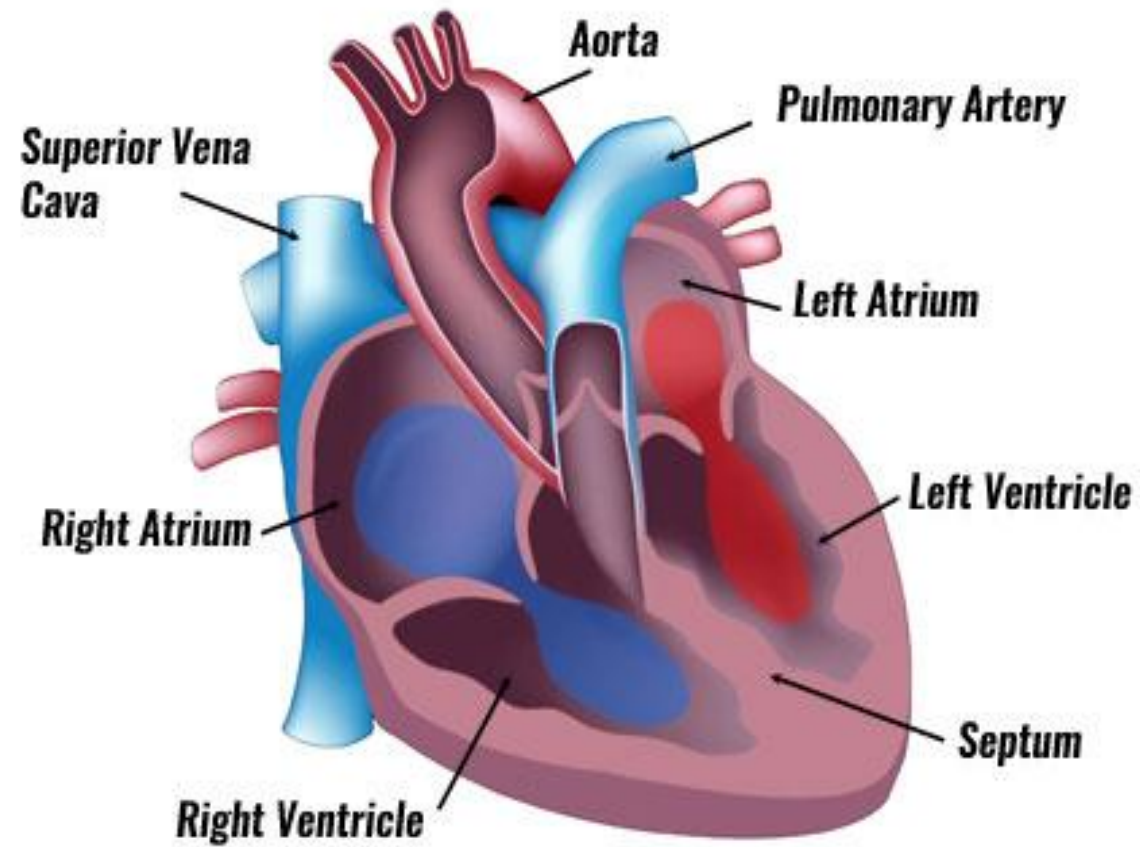
Lorna Carruthers  
ACHD NS  
Freeman Hospital  
Transposition of the great arteries  
TGA/ccTGA



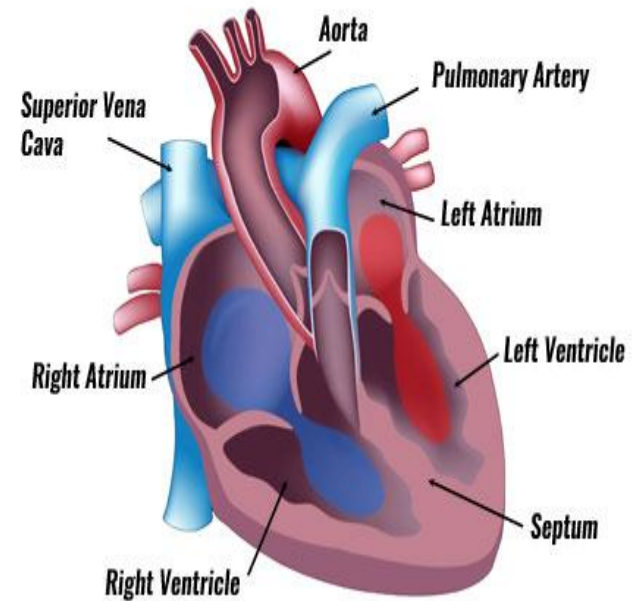
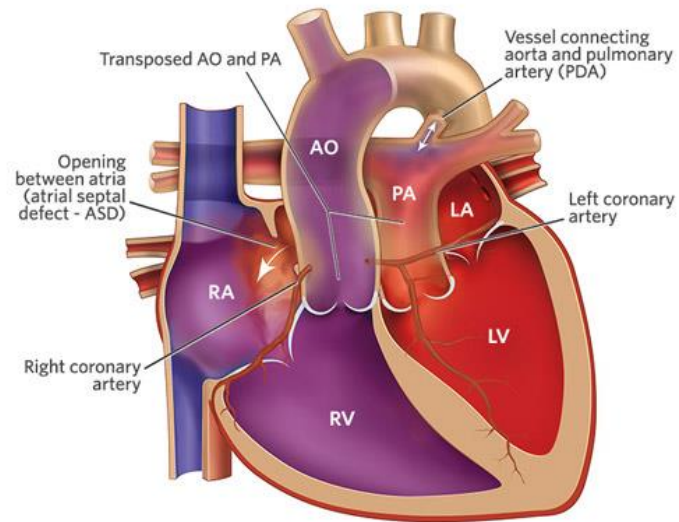
## Aim of session

- Normal heart anatomy
- TGA – Mustard & Senning
- TGA – Arterial switch
- ccTGA – Congenitally corrected

# Normal Heart



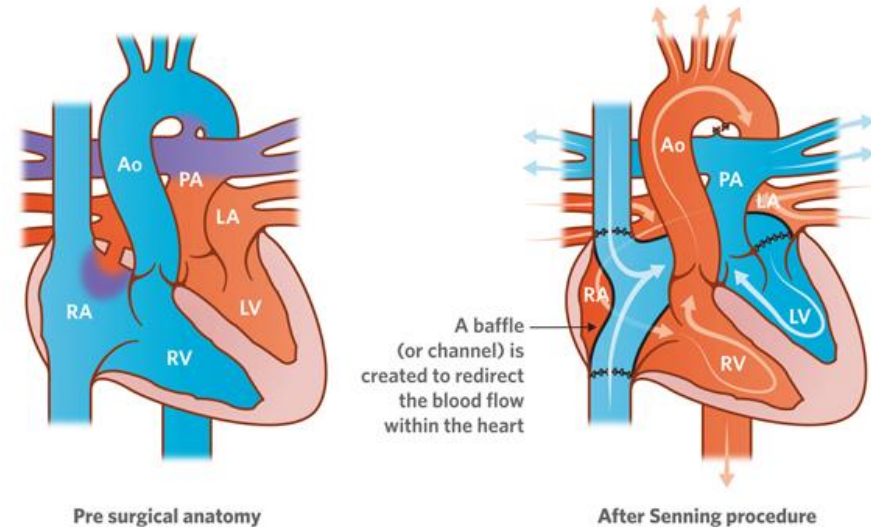
# Transposition of the Great Arteries/ Vessels



# Mustard / Senning Procedure (atrial switch)

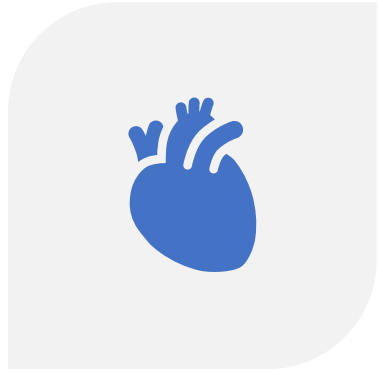
- Dr Ake Senning of Sweden performed the first Senning procedure in 1957.
- The Mustard procedure was performed in Canada in 1963 by Dr William Mustard.
- The Mustard & Senning Procedure allows total correction of the blood flow (although it is still abnormal). These procedure's create, a baffle to redirect blood flow to the left atrium which then pumps blood to the left ventricle which then pumps the deoxygenated blood to the lungs.( In a normal heart, de-oxygenated blood is pumped into the lungs via the right ventricle.)

Surgery for transposition of the great arteries — Senning operation

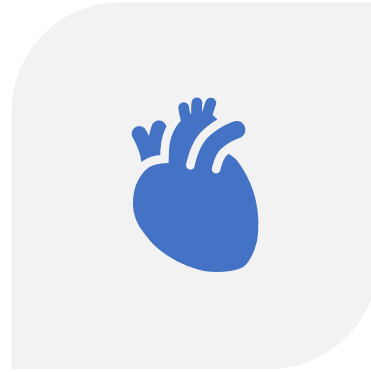


# Complications

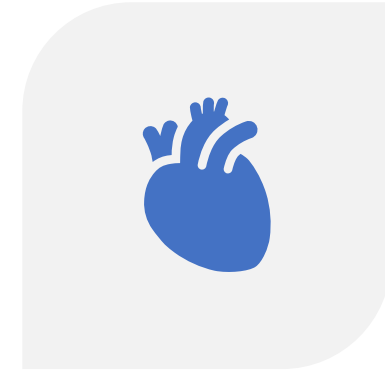
- Rhythm Issues
- Baffle Problems
- Pump Failure



THIS PROCEDURE CAN  
LAST PATIENTS UP  
UNTIL THEIR 40/50'S.



VENTRICULAR FUNCTION WILL  
DECLINE AS RIGHT SIDE OF  
HEART NOT DESIGNED TO  
PUMP BLOOD AROUND THE  
BODY



TRANSPLANTATION

Outcomes for Mustard/Senning

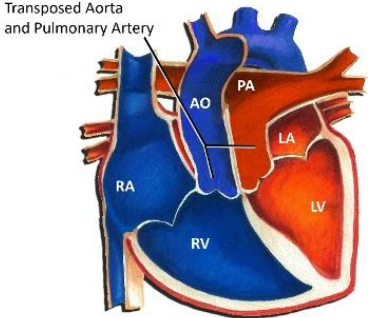
# Arterial switch

- Replaces Mustard/Senning procedure
- Developed by William Mustard
- First performed in 1975 in Brazil
- Usually performed within 1<sup>st</sup> month of life
- Involves re – implantation of coronaries arteries
- Cutting and re-suturing aorta and pulmonary artery

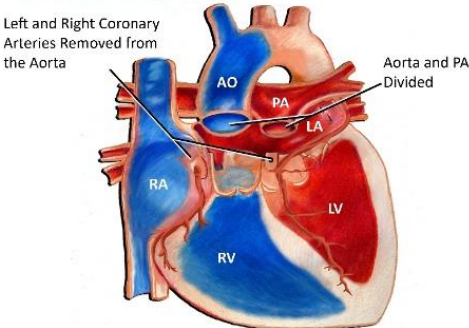


# Arterial Switch

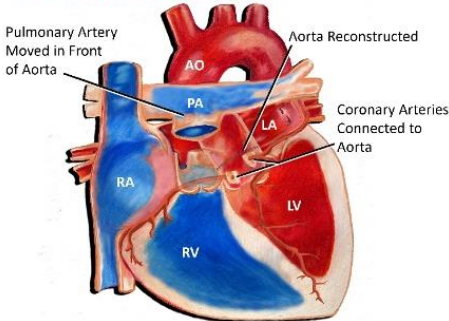
Transposition of the Great Arteries



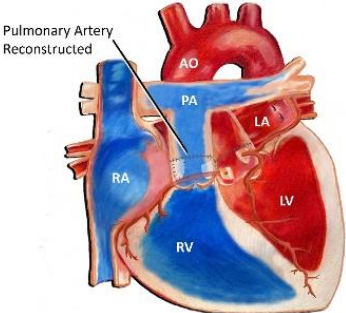
Transposition of the Great Arteries: The Arterial Switch Operation Step 1



Transposition of the Great Arteries: The Arterial Switch Operation Step 2



Transposition of the Great Arteries: The Arterial Switch Operation Step 3





# Complications

- Subacute coronary occlusion
- Supravalvular pulmonary stenosis at the anastomotic site
- Dilatation of the neo-aortic root
- Coronary artery stenosis, which may result in sudden death or Myocardial infarction
- Rhythm issues

# Outcomes for Arterial switch

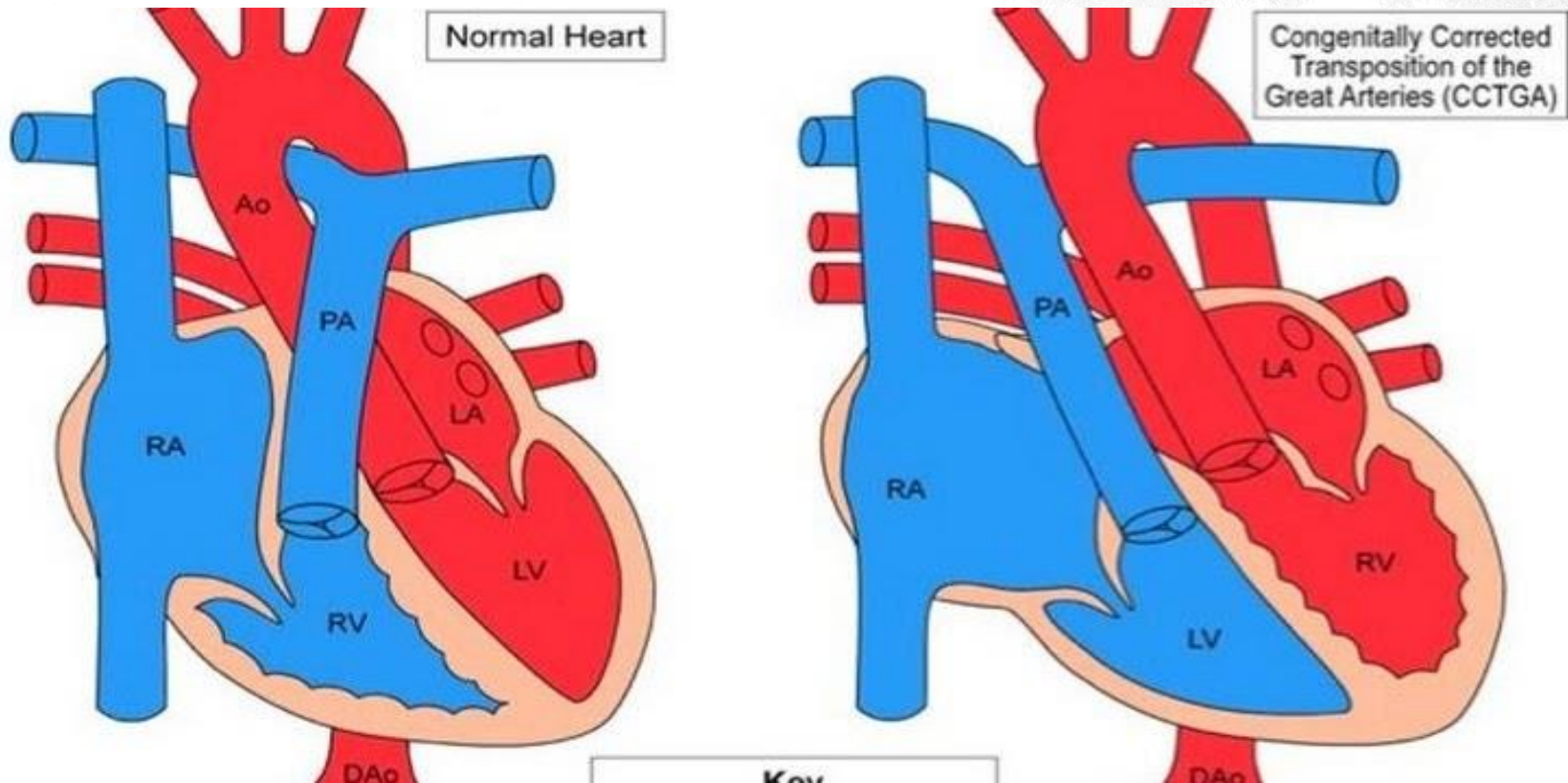
- Low mortality
- Complications if associated with other defects
- Require regular follow up

# ccTGA

## Congenitally Corrected transposition of the great arteries

- In CCTGA both ventricles (pumping chambers) of the heart are reversed.
- The atria are in the correct anatomical place
- The main vessels are in the correct anatomical place
- The heart corrects the abnormal development in utero (hence the name)
- This condition however is not normal!!

# ccTGA





# Complications

- Can have a VSD, a hole between the two pumping chambers of the heart.
- Reduced blood flow to the lungs , pulmonary stenosis.
- An abnormal valve that tends to leak.
- Disturbance in the electrical conduction system – may require pacemaker

# Surgical Options

- Closure of the VSD, insertion of a tube (conduit) between the heart and the lungs.
- Leaving the VSD open and repairing the heart as if it had only one pumping chamber (ventricle).
- Double switch operation. Surgeons redirect blood flow from one side of the heart to the other. The heart's major arteries are also switched during this operation.
- Replacement tricuspid valve +/- pacemaker insertion.

# Outcomes for ccTGA

- Dependant on age of diagnosis
- Surgical intervention required



# Summary

- More common now to see arterial switch surgery for TGA
- Will still see Mustard/ Senning patients – failing requiring tx
- Look at normal cardiac anatomy and work backwards
- **The nurse specialists (and a few consultants) struggle with this anomaly so do not worry if your head is frazzled!!!**

Questions??

