CONGENITAL HEART DISEASE

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Introduction

- Congenital—means from birth
- Congenital heart defects (CHD) can vary from small and innocuous holes in the heart to very serious malformations
- Most of the defects are genetic and very often the cause or reason cannot be ascertained
- Fetal echo is one means of detecting CHDs early
External Normal Heart (Frontal View)
Internal Normal Heart

1. Heart has 4 chambers and 2 arteries—aorta and pulmonary artery
Fetal Heart and Newborn

• The fetus (baby in mother’s womb) cannot breathe since it is surrounded by amniotic fluid.
• The fetus gets oxygenated blood from the mother’s placenta.
• The fetus has 2 holes to allow oxygenated blood to enter the aorta and nourish all parts of the body.
• The holes close after birth.
Fetal versus Post-Natal Circulation

Fetal Circulation

Post-Natal Circulation
Common Congenital Heart Diseases (CHD)

- **Pink baby**
  - Holes in heart -- ASD, VSD, PDA
  - Narrowing of Valves -- AS, PS,
  - Narrowing of a pipe -- COA of aorta
  - Weak heart muscle Cardiomyopathy

- **blue baby**
  - TOF, TGA, TAPVC,
  - E’S – EBSTEIN EISENMENGTER
  - SINGLE VENTRICLE
Expansion for abbreviations

- ASD—Atrial septal Defect
- VSD—Ventricular septal defect
- PDA—Patent Ductus Arteriosus
- TOF—Tetralogy of Fallot
- AS—Aortic Stenosis
- PS—Pulmonary Stenosis
Expansion for abbreviation

- TOF—Tetralogy of Fallot
- TGA---Transposition of great arteries
- TAPVC—Total Anomalous pulmonary venous drainage
Treatment

- Can be medical, interventional or surgery
- The next few slides shows the surgical and interventional treatment in some common congenital heart diseases
Atrial Septal Defect

Patch Repair
Occlusion of Intracardiac and Vascular Shunts
Amplatzer occlusion of atrial septal defect

Clockwise from above: Transcatheter delivery of Amplatzer device, which is positioned across the atrial septal defect

Left: Amplatzer device in place
Occlusion of Intracardiac and Vascular Shunts
Coil embolization of PDA

Left, top: Catheter crosses the PDA from the aortic side and delivers a coil.
Left, bottom: Withdrawal of catheter, leaving coil in PDA
Occlusion of Intracardiac and Vascular Shunts
Amplatzer Ductal Occluders

Amplatzer ductal occluder
Illustration courtesy AGA Medical Group

Aorta angiogram with device occlusion of PDA, lateral view
Ventricular Septal Defect Repair
Tetralogy of Fallot Repair

(Above) With Transannular Patch

(Right) With Pulmonary annulus retained