

Ventricular Septal Defect

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The normal heart

Systemic blood flow = Q_s

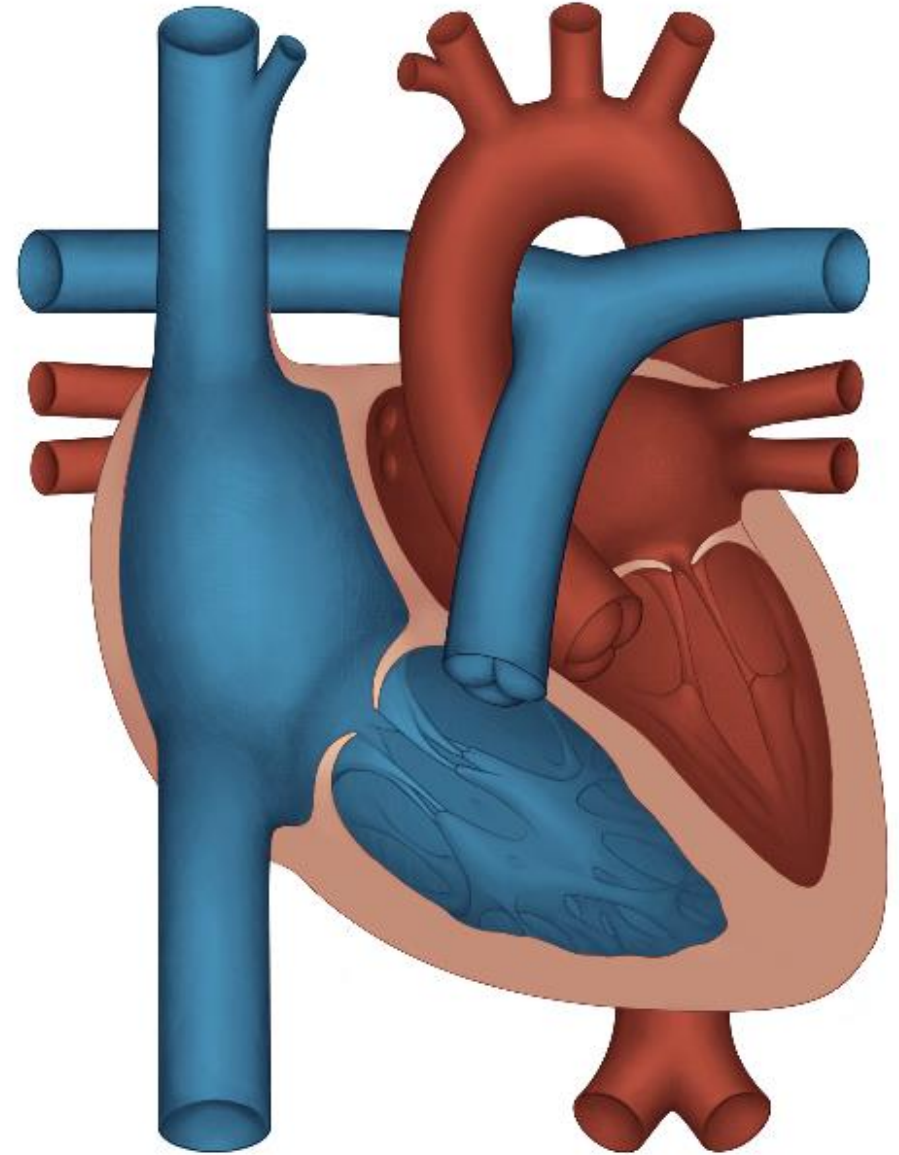
Pulmonary blood flow = Q_p

Effective pulmonary blood flow = Q_{ep}

Systemic vascular resistance = SVR

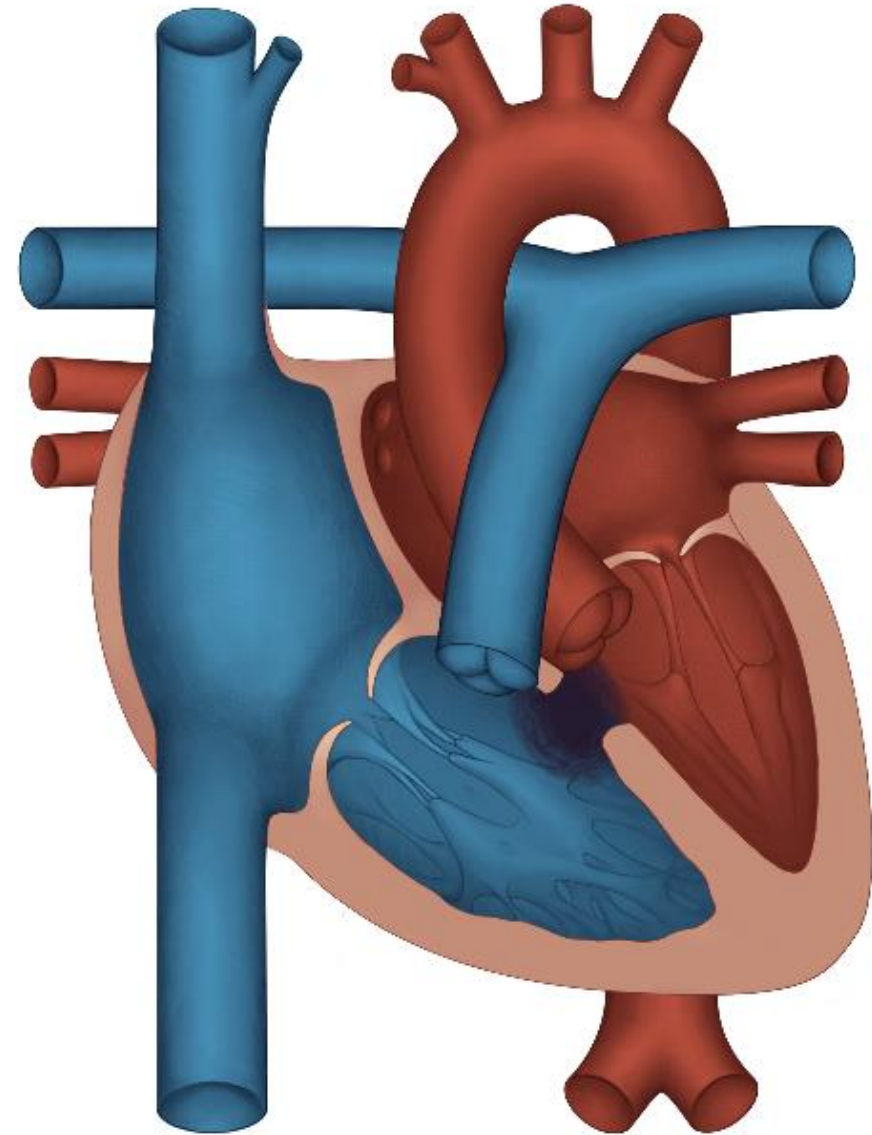
Pulmonary vascular resistance = PVR

Q_p/Q_s



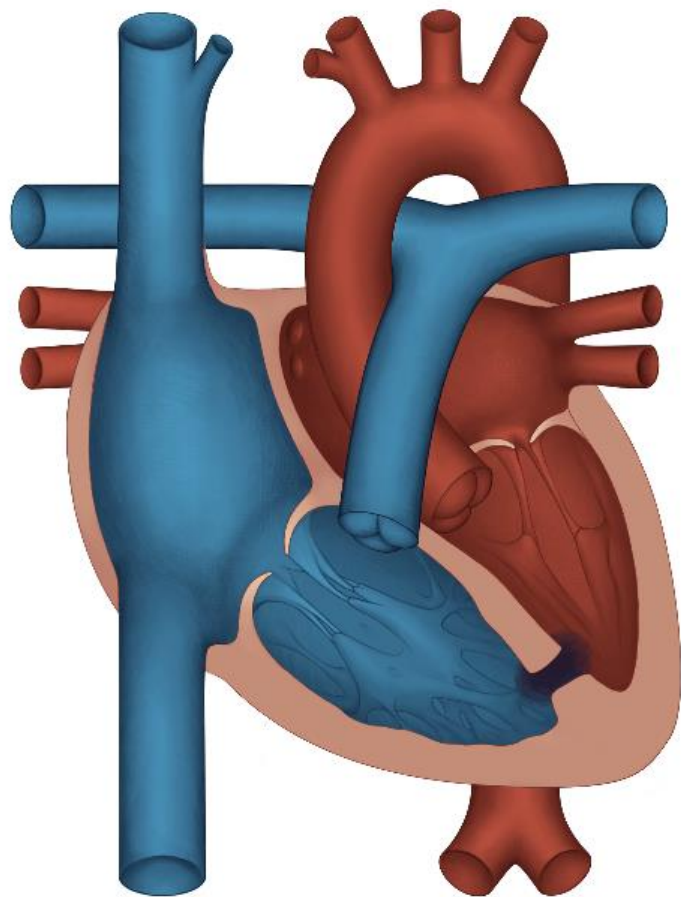
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Heart with a VSD

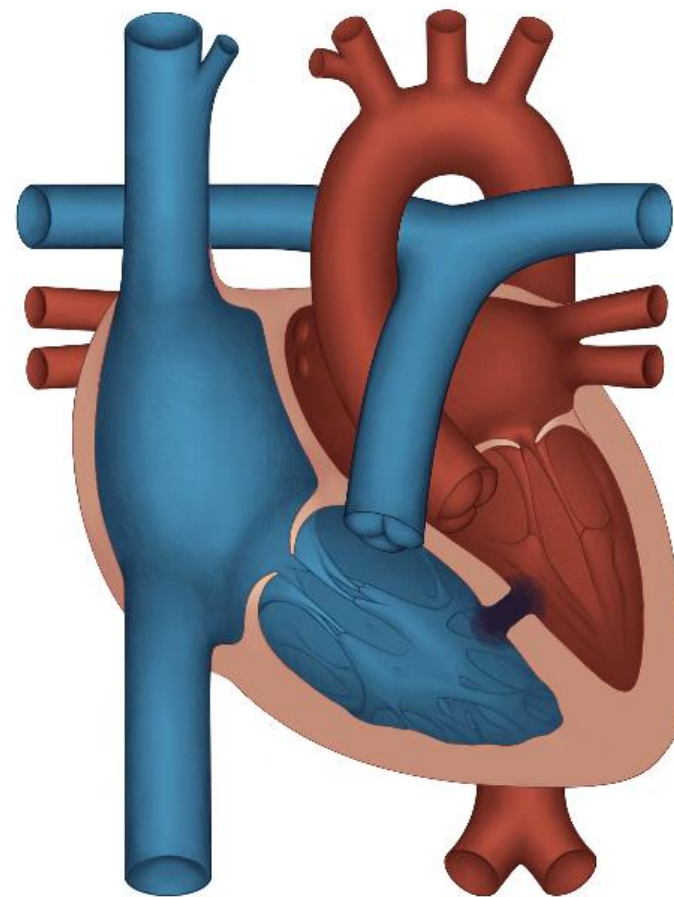


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Various types



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Types of Isolated VSDs

- Perimembranous
- Muscular
- Inlet
- Outlet/supracristal/subarterial/doubly committed/subpulmonic

Heart with a VSD

Systemic blood flow = Q_s

Pulmonary blood flow = Q_p

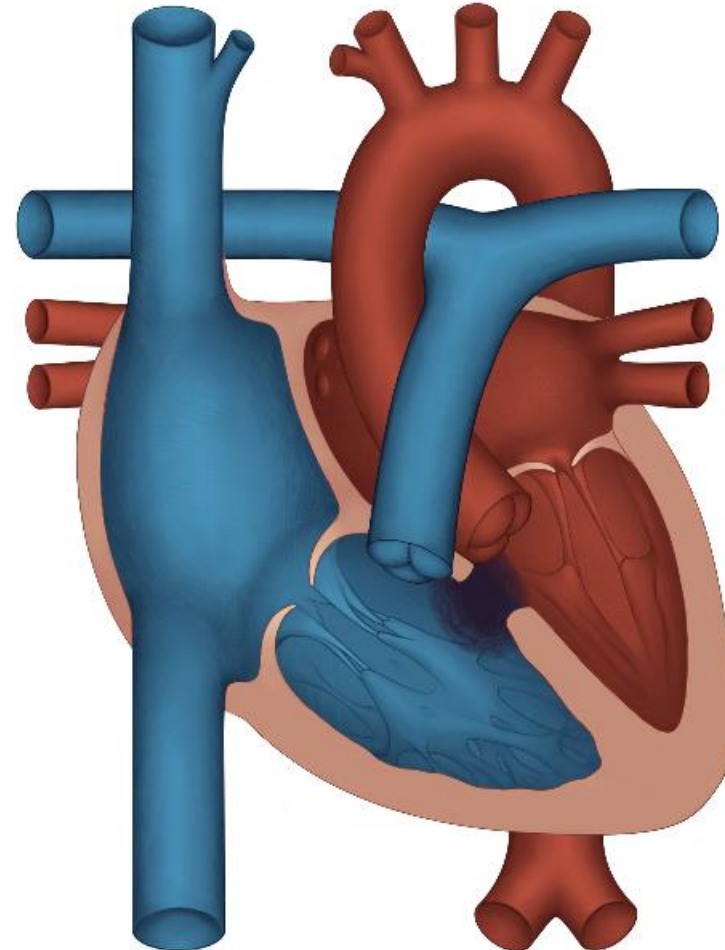
Effective pulmonary blood flow = Q_p

Systemic vascular resistance = SVR

Pulmonary vascular resistance = PVR

Q_p/Q_s

 MyHeartArt®



Size of hole

Balance
between
resistances

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Effect of left to right shunting

- Increased pulmonary blood flow
 - Pulmonary edema/congestion
 - Lung stiffness and airway resistance
 - Increased pulmonary artery pressure
 - Reactive
 - Fixed
- Decreased systemic blood flow

Compensatory factors

- Salt and water retention
- Vasoconstriction
- Renin-angiotensin-aldosterone
- Sympathetic / parasympathetic system

Congestive heart failure

Modifiers

- Size of shunt
- Presence of atrial communication
- Other shunts, e.g. PDA
- Pulmonary valve stenosis
- Coarctation
- Altitude

History – the story you want to hear

- My baby was doing well but now.....
- Increased work of breathing
 - Diaphoresis with feeds – sweating over the forehead
 - Head bobbing
- Always hungry and not failure to thrive
- Cold clammy skin

The story you don't want to hear

- My child was well at birth
- Then the baby had poor growth
- Over time things got better and baby grew well
- And now.....

Natural history

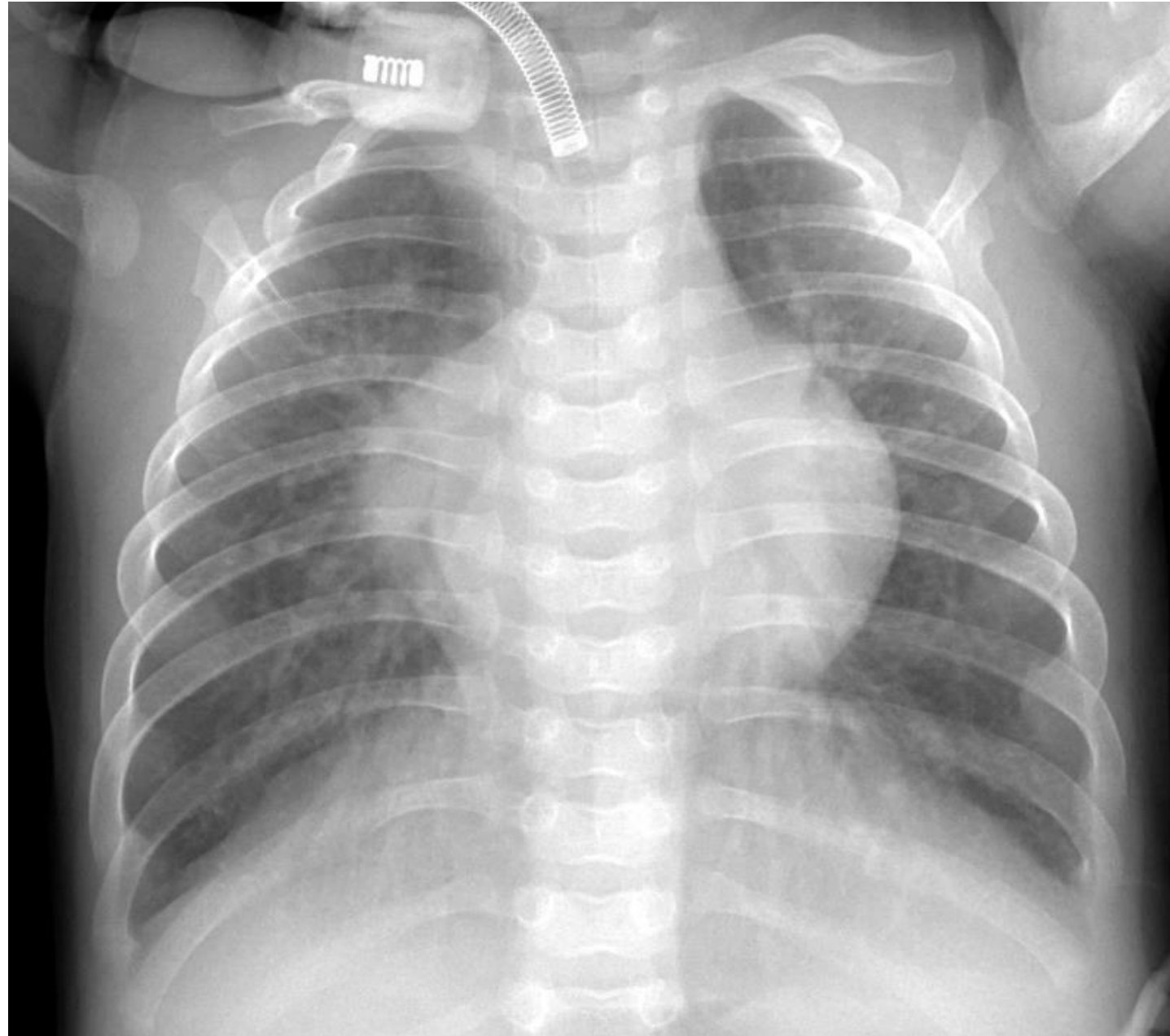
- Age dependent
- Determined by normal and abnormal changes in PVR

Physical Examination

- Vitals (oxygen saturation is a must)
- Respiratory
- Cardiac
- Abdomen

Investigations

- EKG
- Chest x-ray
- Echocardiogram
- Cardiac Catheterization
- Cross-sectional imaging



Management

- Diuretics
- Nutrition
- Digoxin, inotropes
- Afterload reduction/oral beta blocker therapy
- Permissive hypoxia and hypercarbia
- Intercurrent infections

Congestive heart failure

Failure to thrive

Close the hole!

Which investigations and when?