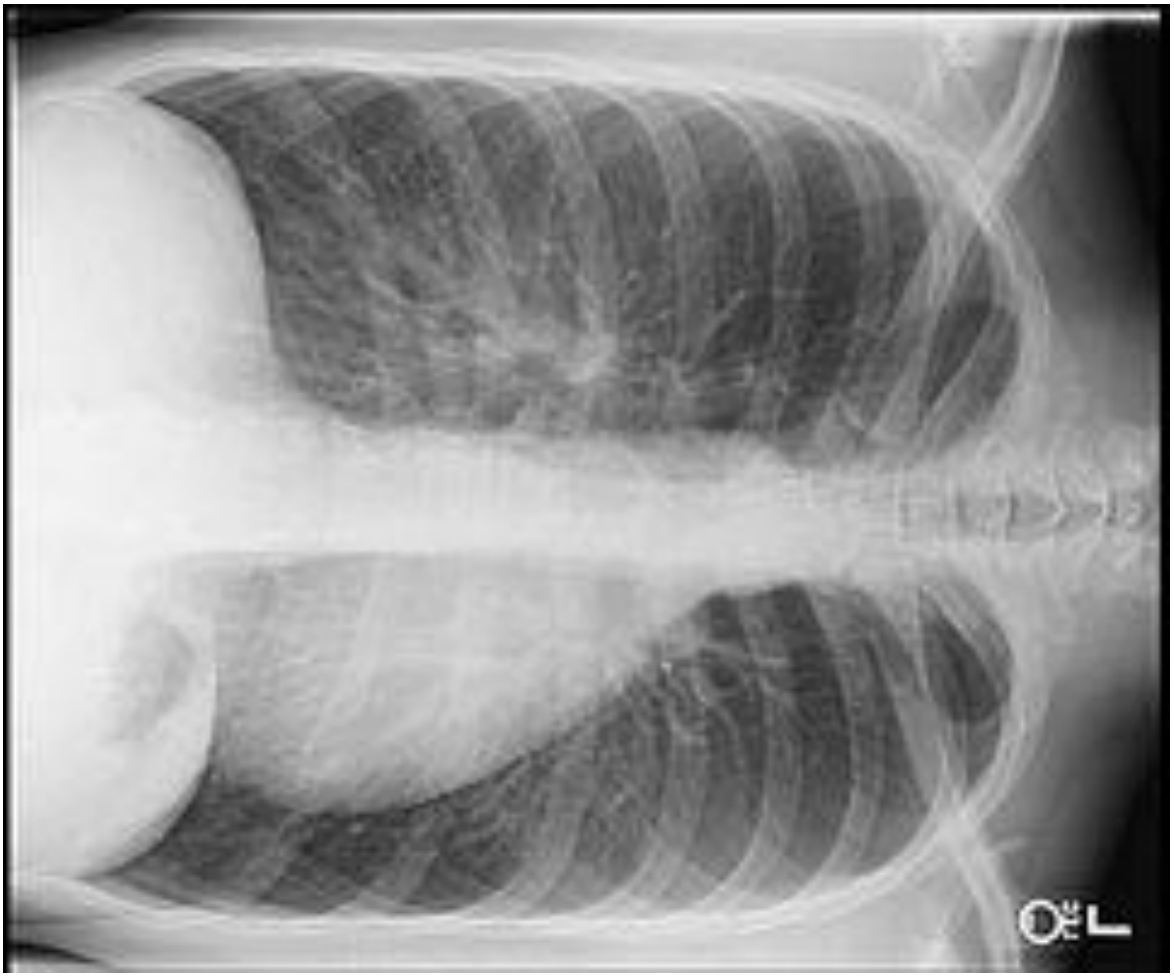
CARDIO-VASCULAR SYSTEM 3

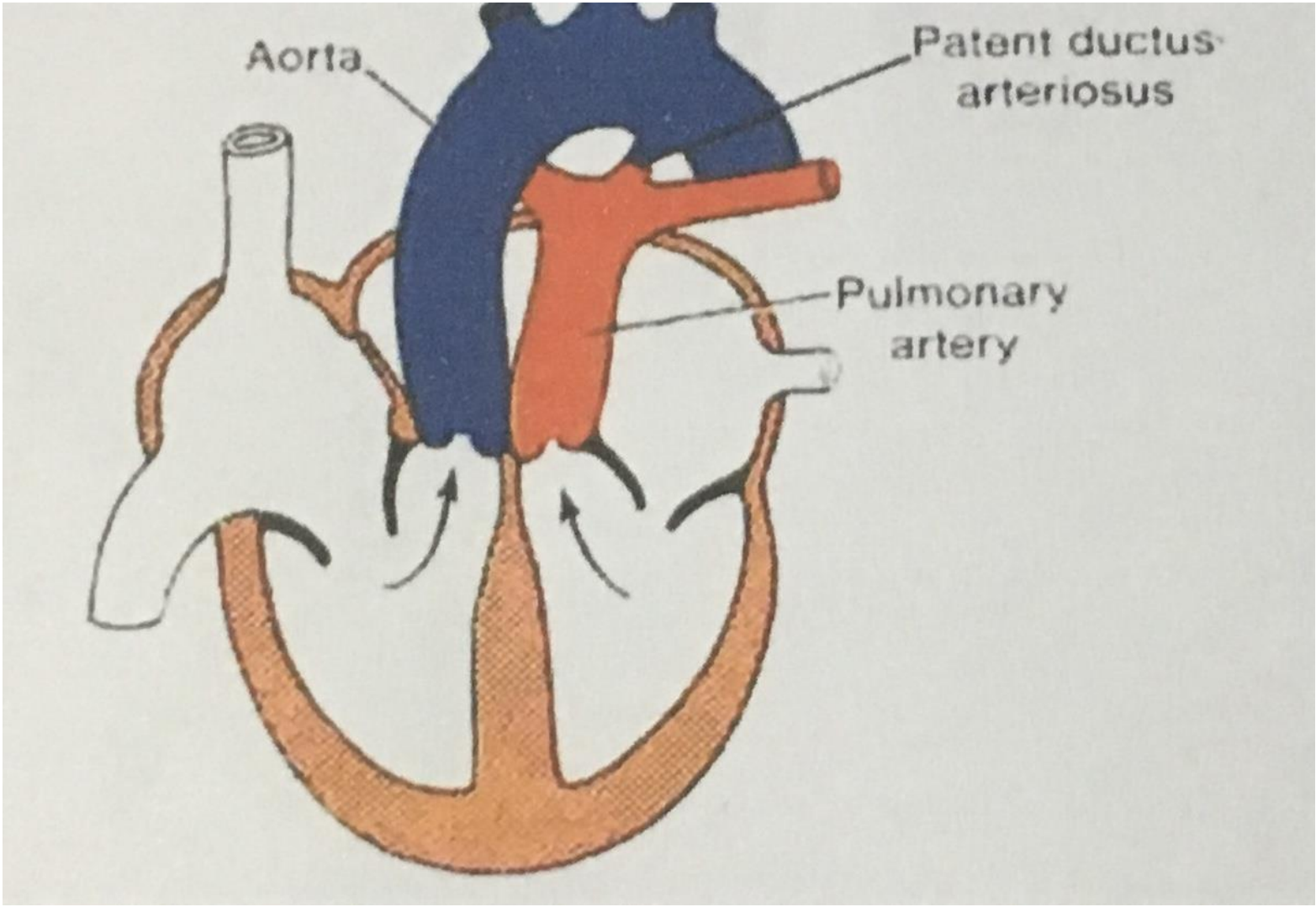
Septum formation in atrio-ventricular region

Septum formation in conotruncal region

Valve formation

Clinical implication

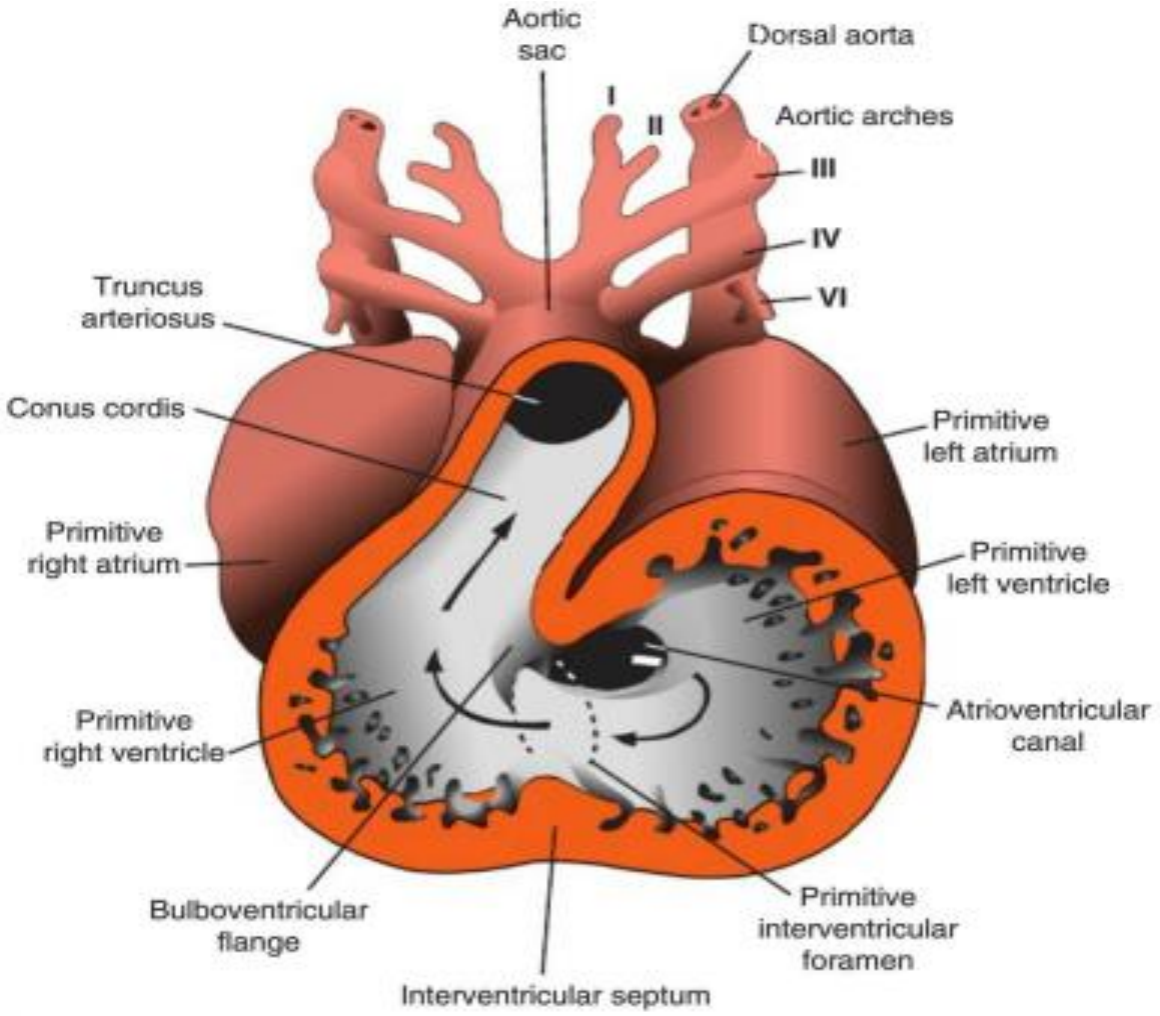



Aorta
Patent ductus arteriosus
Pulmonary artery

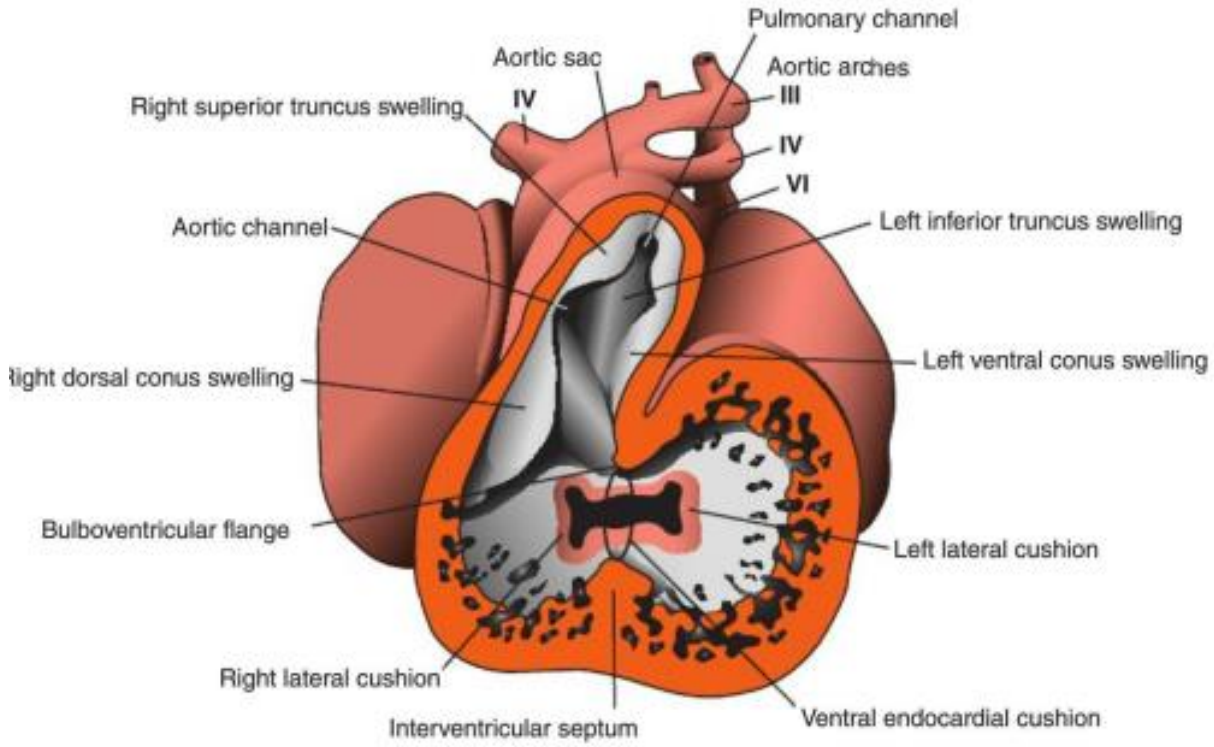
Septum formation in atrio-ventricular canal

- Begins at the end of third week
- Initially primitive ventricle communicates with bulbus cordis across narrow canal formed by bulbo-ventricular ridge (flange)
- Begins as a superior and inferior endocardial cushions (swellings)

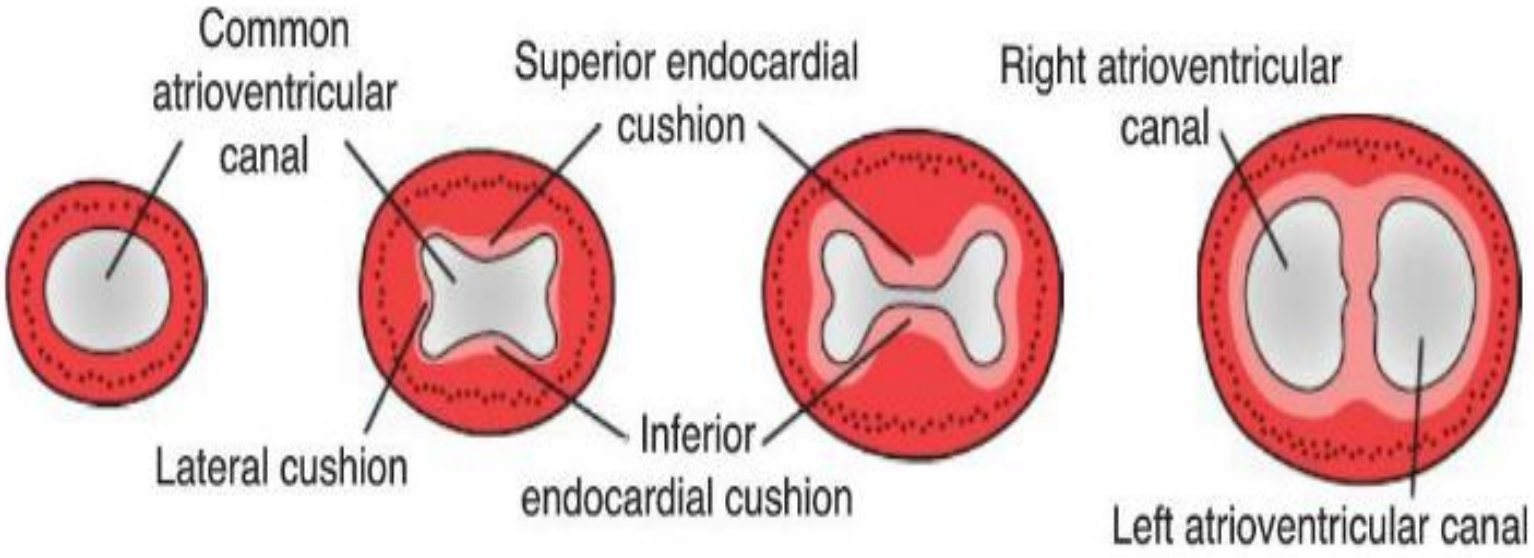
30 days embryo with primary inter ventricular foramen

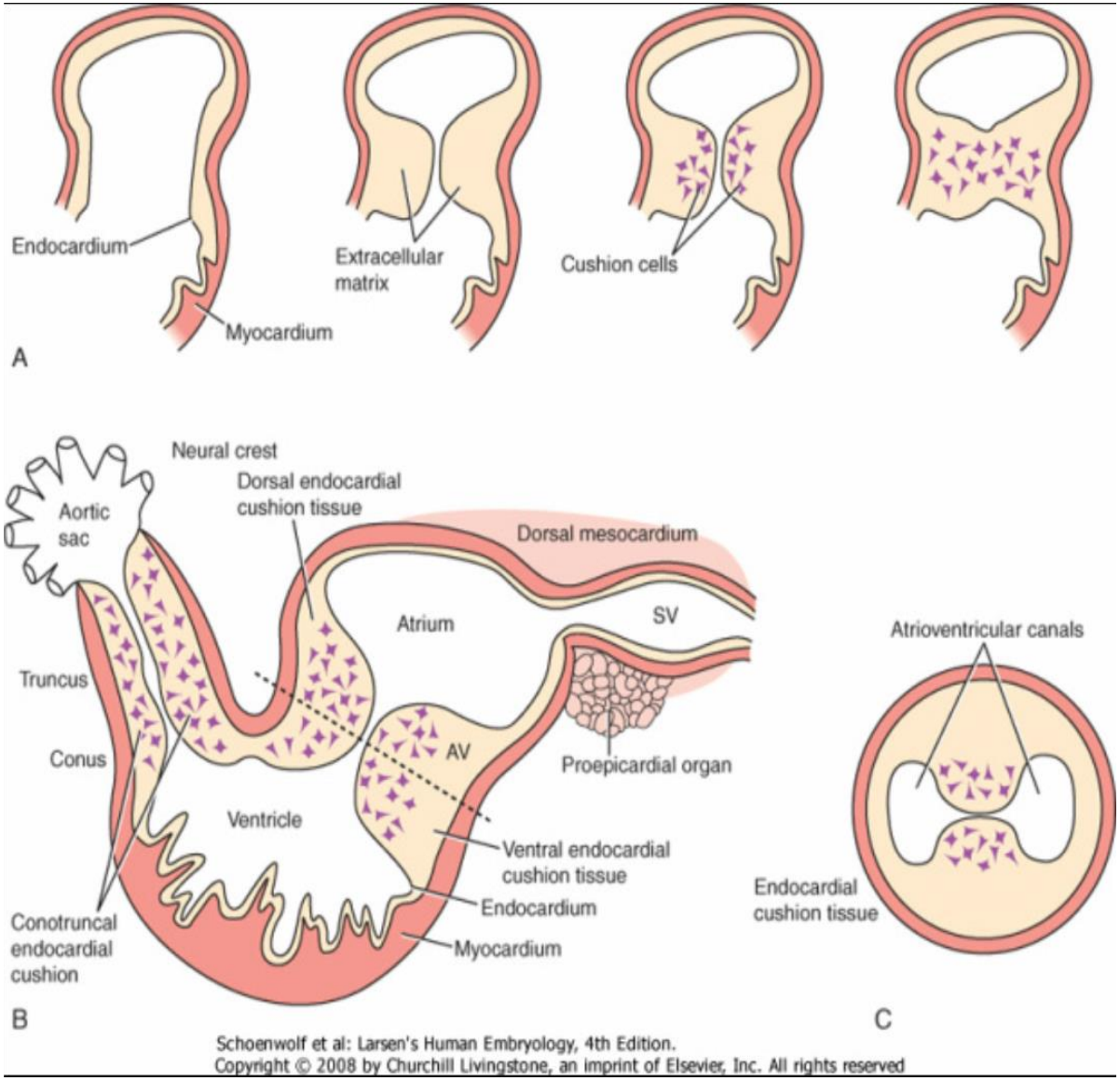


35 Days embryo



- Lateral atrio ventricular swellings appear.
- Superior & inferior swellings fuses in mid line to form right & left atrio-ventricular orifices.





Atrio-ventricular valves

- After fusion of superior and inferior endocardial swellings at orifice proliferation of mesenchymal tissue occurs
- Then a thin tissue is formed at ventricular margin
- Initially valves are connected to venticles by muscle fibers which degenerates and replaced by fibrous tissue (chordae tendinae)

- Bicuspid and tricuspid valve formed in this manner.

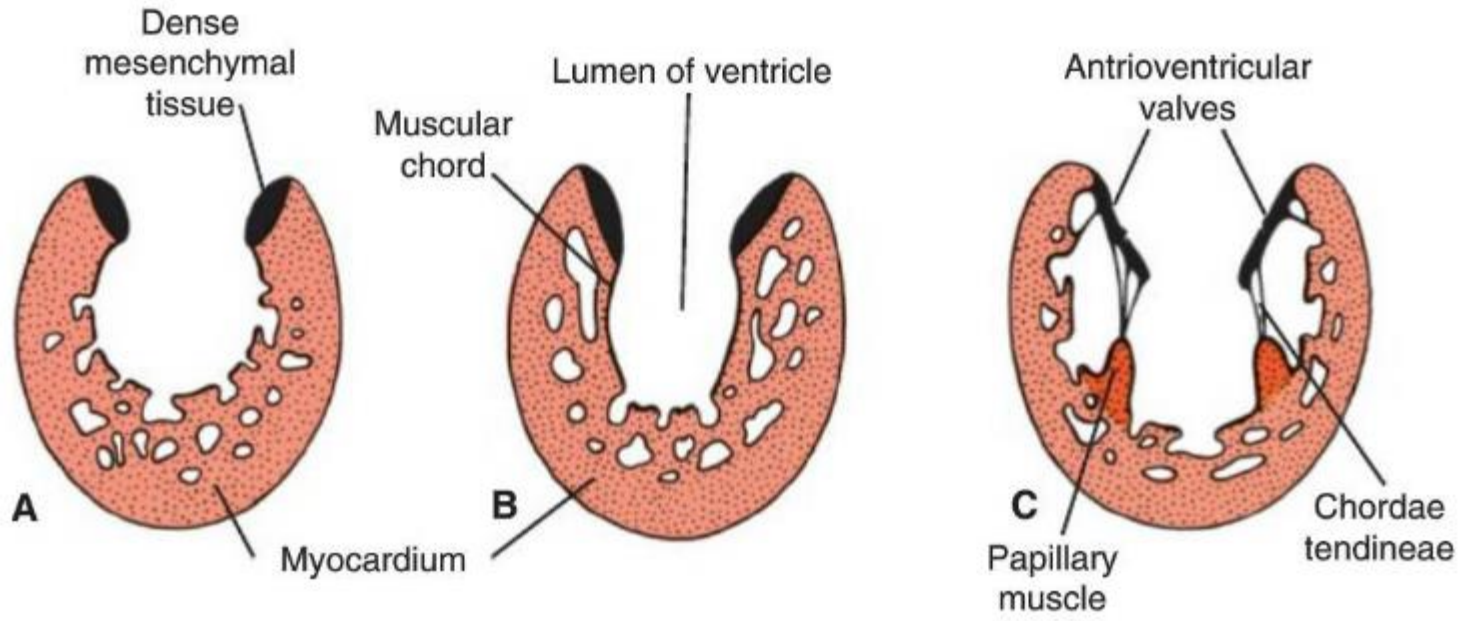


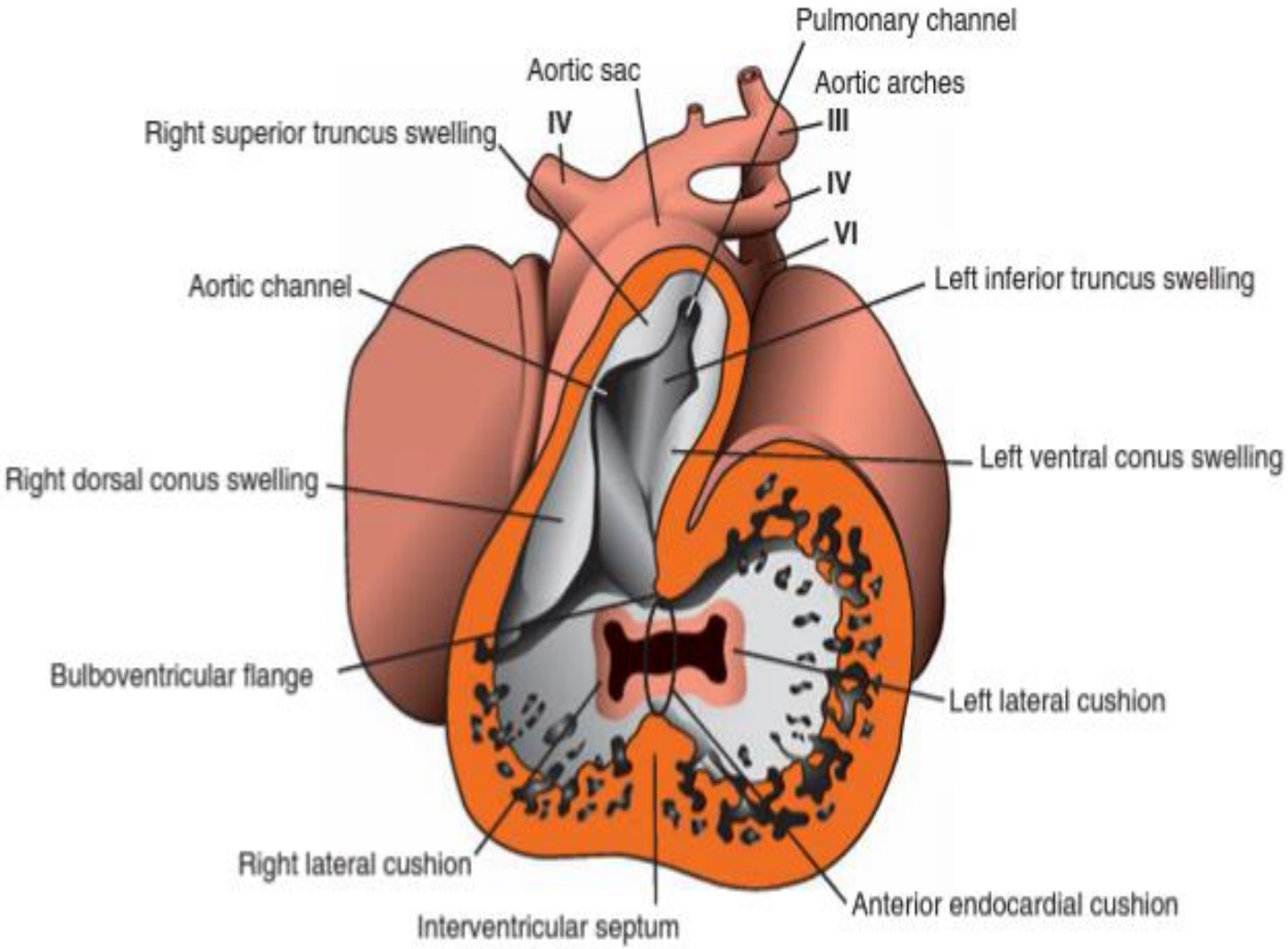
FIGURE 13.21 Formation of the atrioventricular valves and chordae tendineae. The valves are hollowed out from the ventricular side but remain attached to the ventricular wall by the chordae tendineae.

Septum formation in truncus arteriosus

- Begins during 5th week
- Formed by two truncus swellings (cushions)
  - Right superior truncus swelling
  - Left inferior truncus swelling
- Truncus swellings grow towards aortic sac and meet each other
- Right superior truncus swelling
  - Grows distally and to the left side

- Left inferior truncus swelling
  - Grows distally and to the right side
- After fusion with each other forms a twisted septum between aortic and pulmonary channels (Aortico- pulmonary septum)

35 days embroyo



Septum formation in conus cordis

- Formed by two conus swellings(cushions)

  -right dorsal swelling

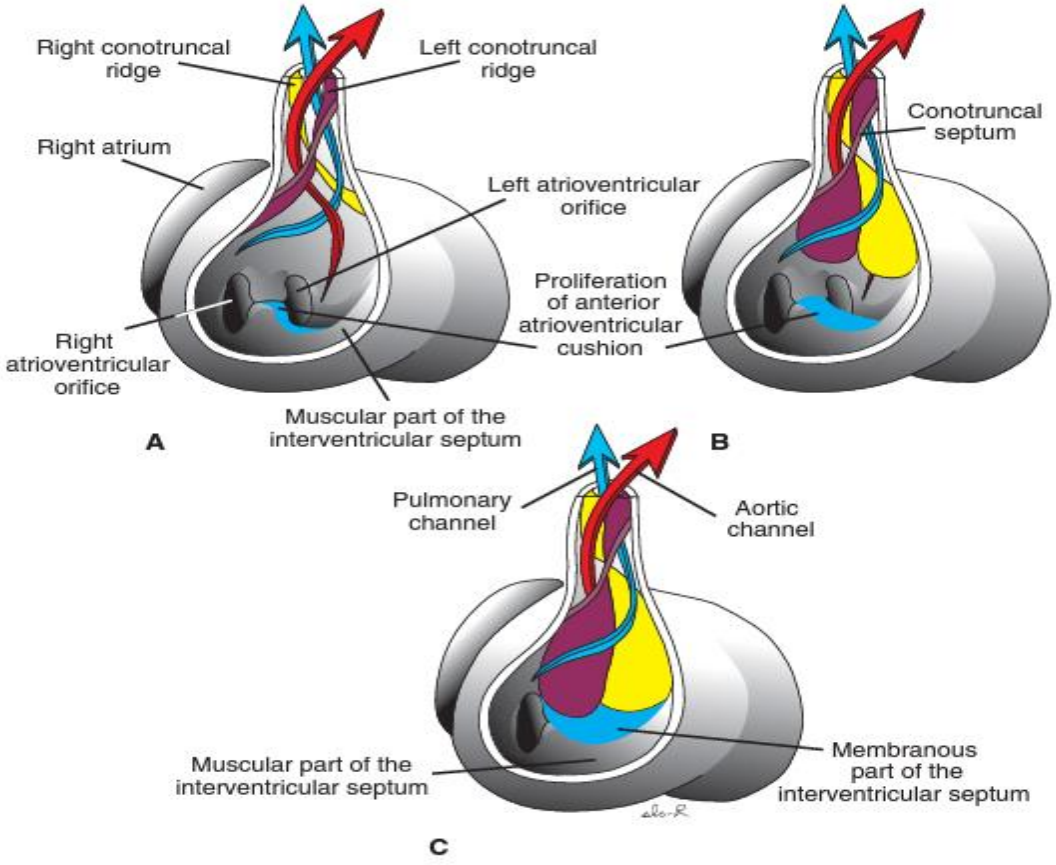
  -left ventral swelling

- Conus swellings grow distally to fuse with truncus septum &towards each other
- Forms two channels

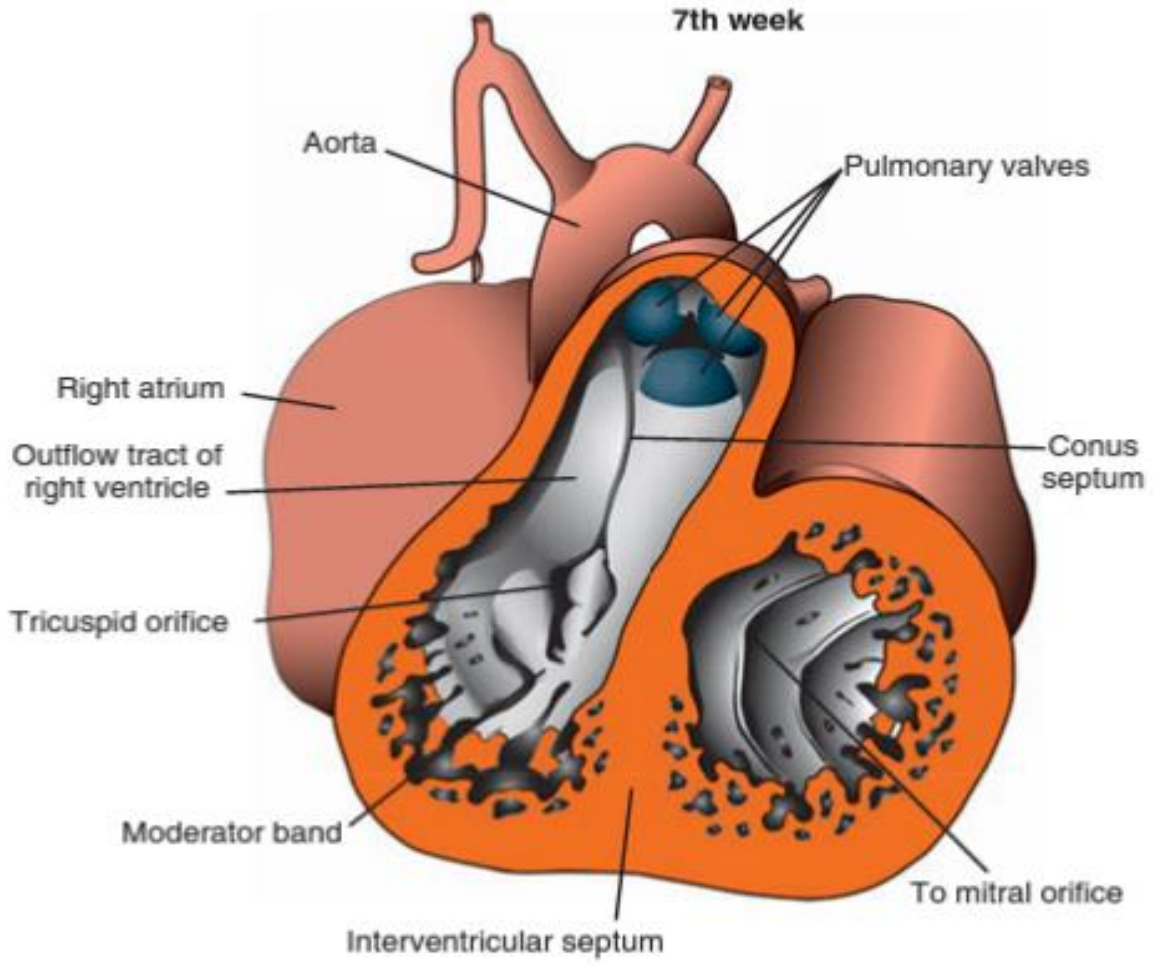
-anterolateral channel-outflow tract of right ventricle

-posteromedial channel –outflow tract of left ventricle

Development of conotruncal ridges

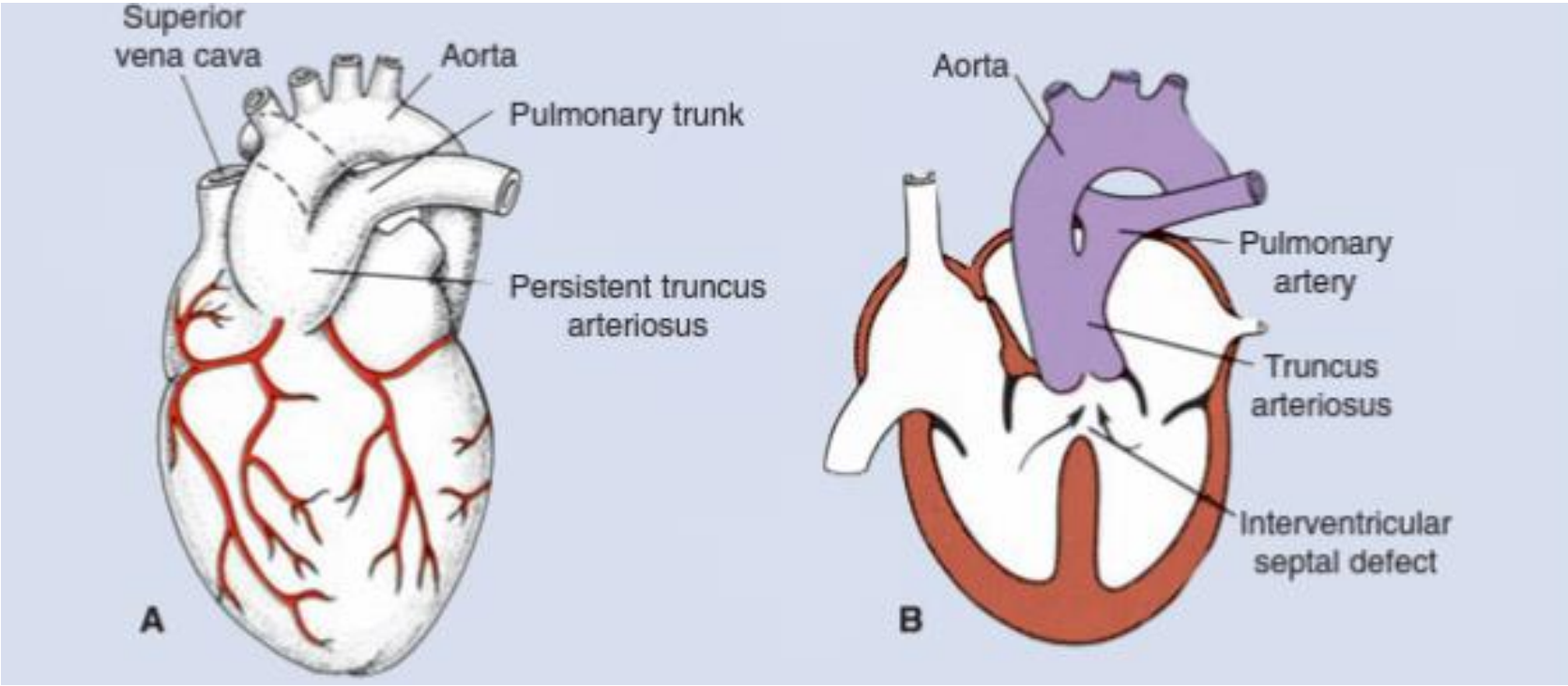


Aorticopulmonary septum



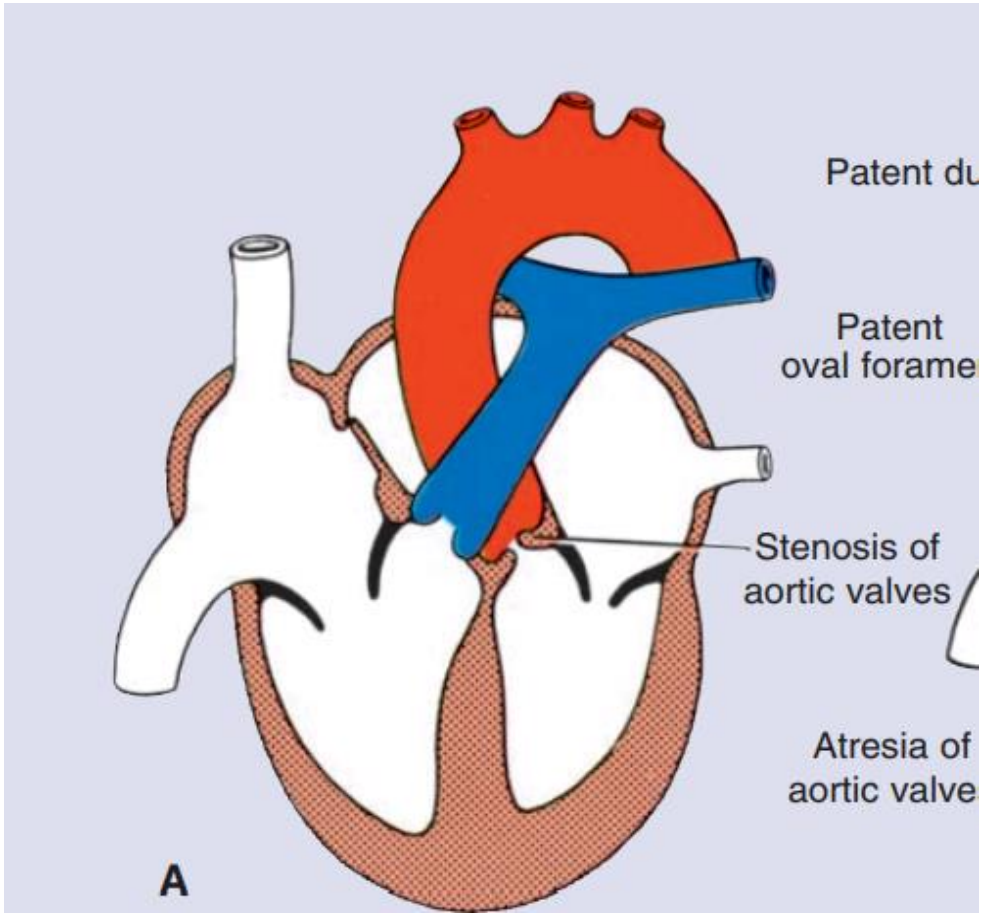
Persistent truncus arteiosus

Persistent truncus arteiosus

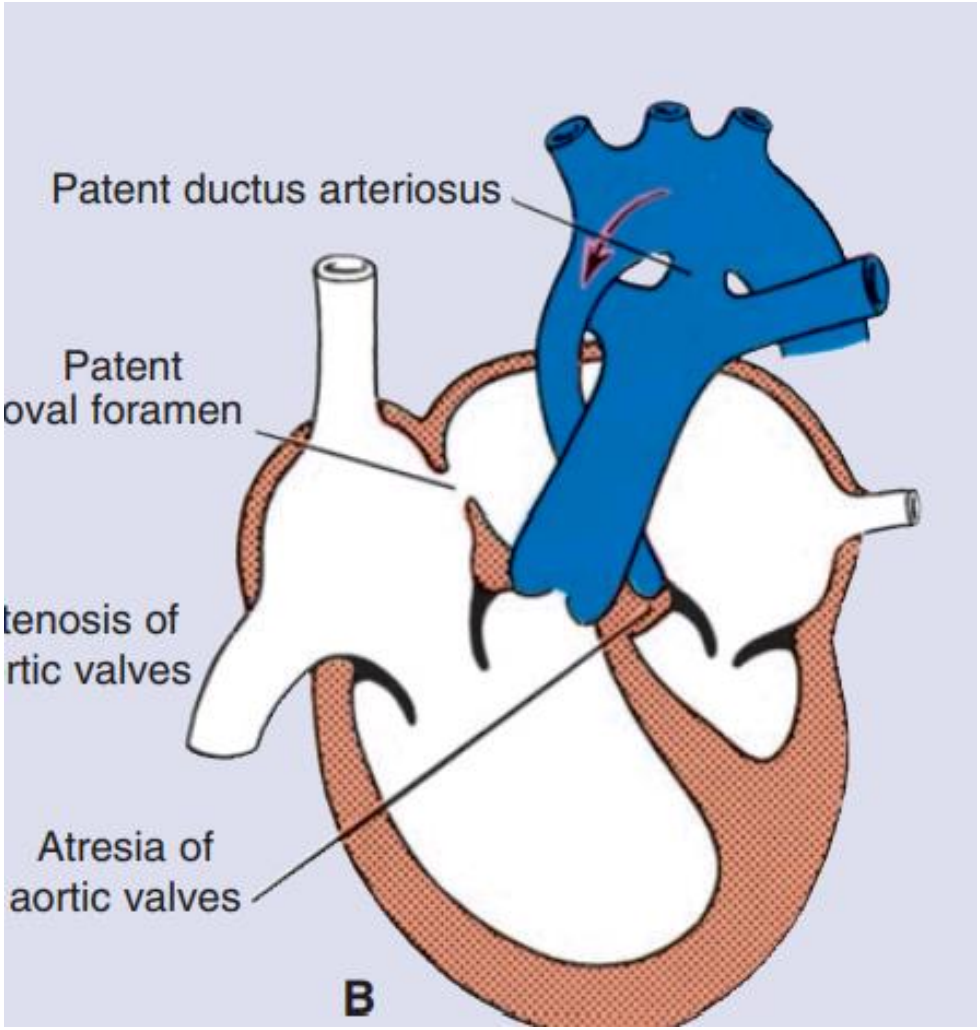


Valvular defects

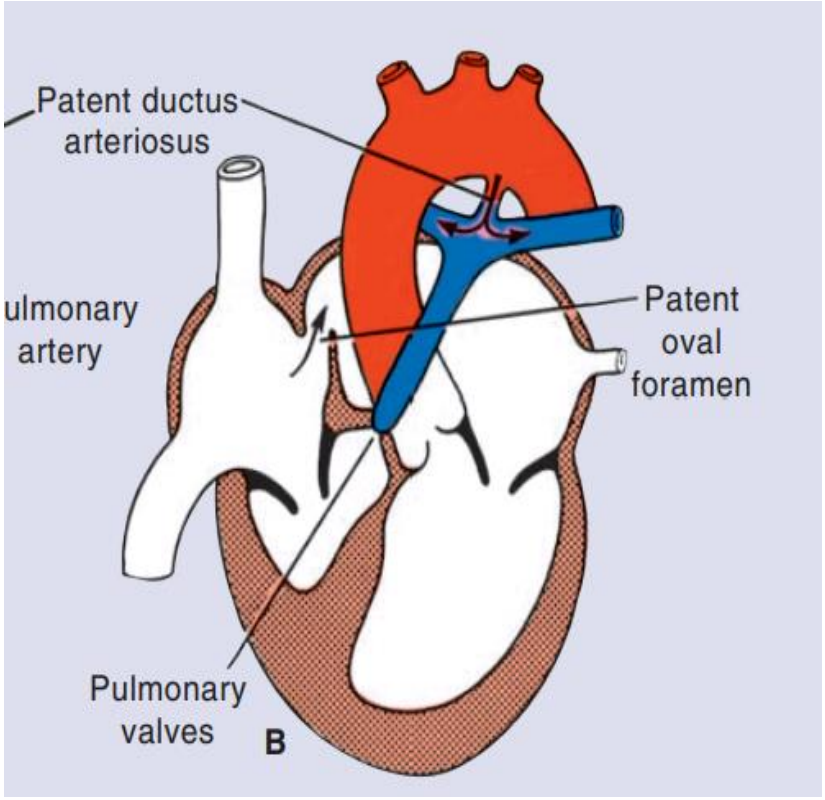
Aortic valve stenisis



Aortic valve atresia

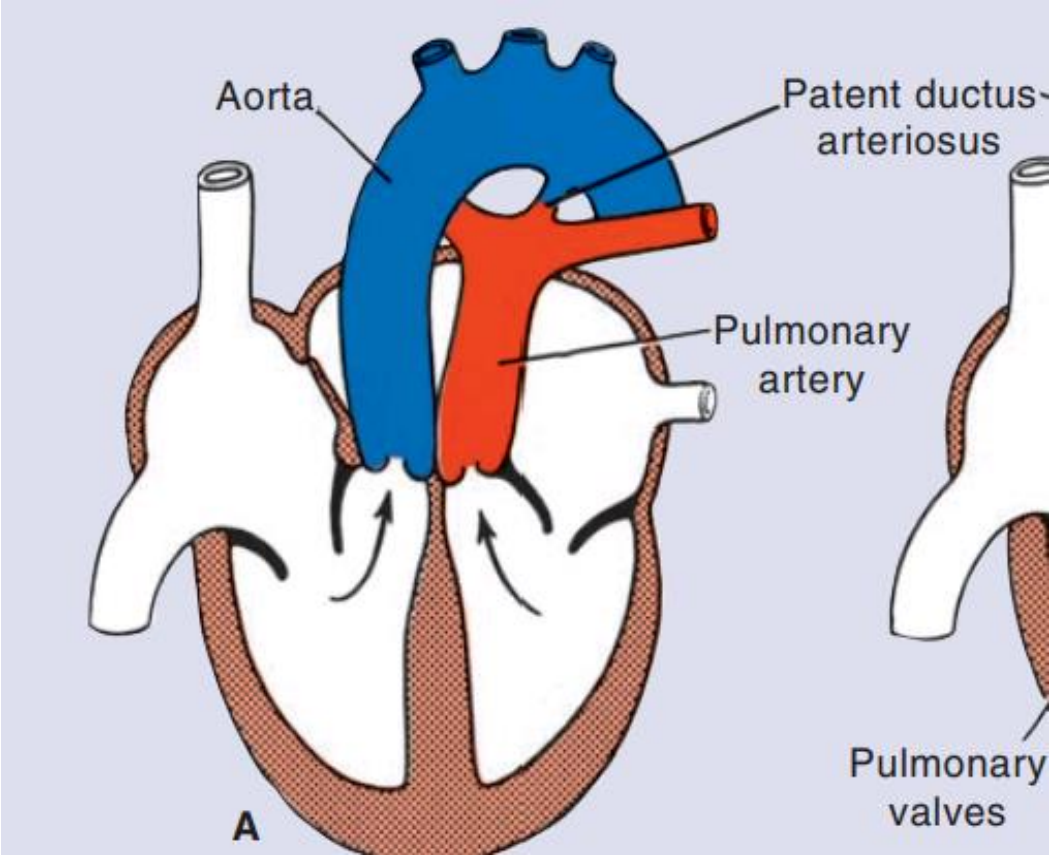


Pulmonary valve atresia



Transposition of great vessels

Transposition of great vessels



Tetralogy of Fallots

Tetralogy of Fallots

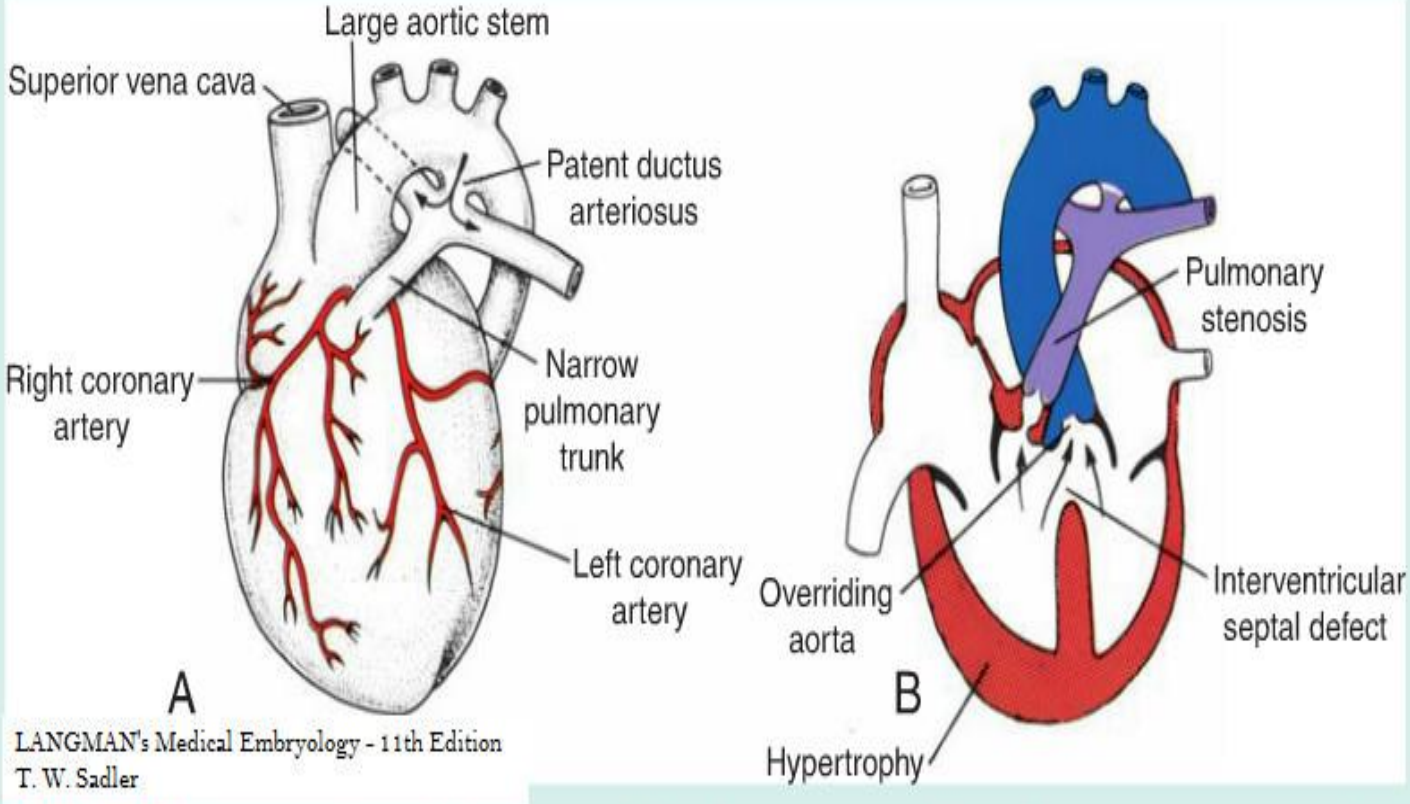


Figure 12.29 Tetralogy of Fallot. **A.** Surface view. **B.** The four components of the defect: pulmonary stenosis, overriding aorta, interventricular septal defect, and hypertrophy of the right ventricle.

Summary

- Inter atrial septum formation
- Inter ventricular septum formation
- Septum formation in atrio ventricular region
- Septum formation in conotruncal region
- Valve formation
- Clinical implications