

CARDIO VASCULAR SYSTEM 5

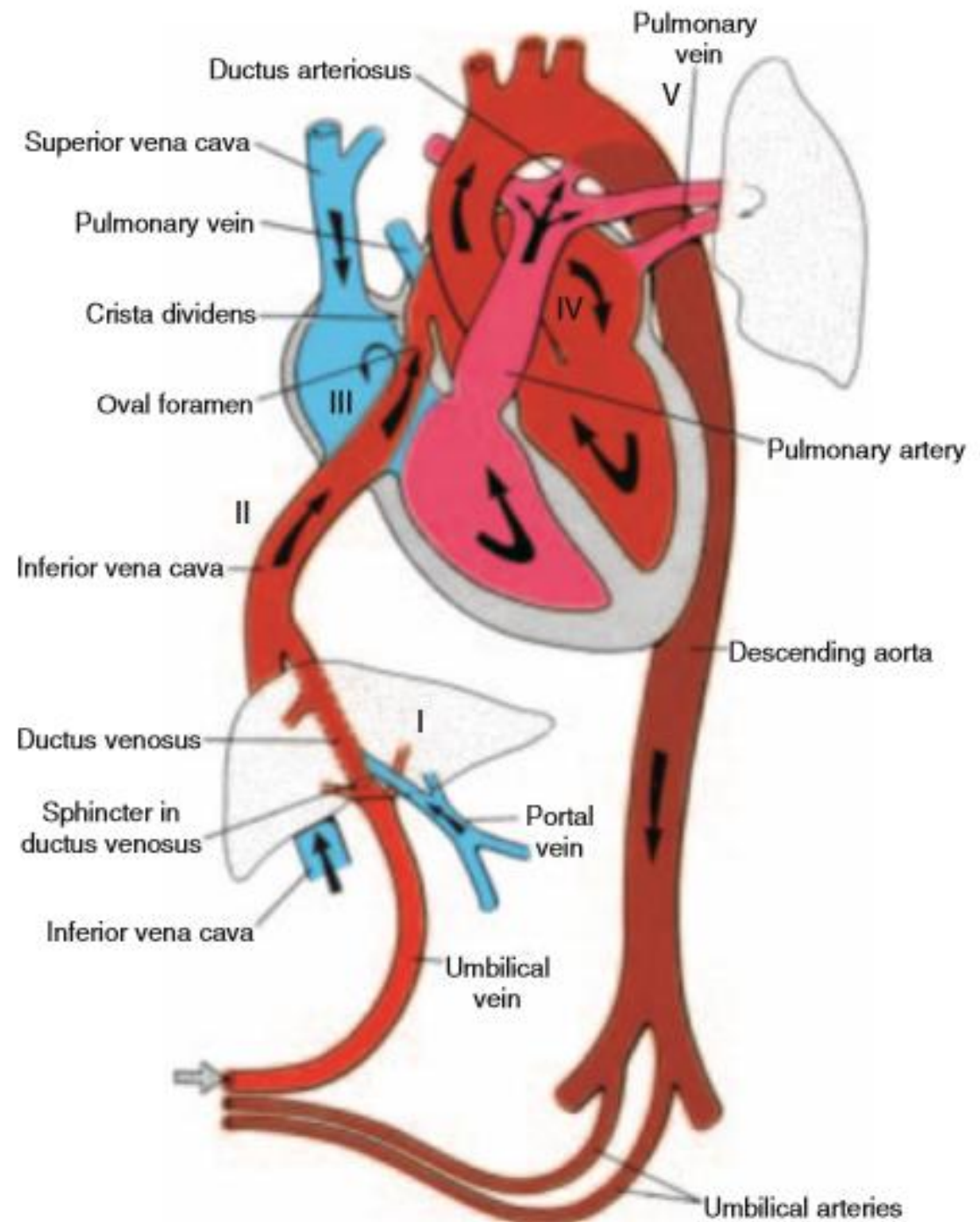
Fetal circulation

Circulatory changes after birth

Development of Lymphatic system

- Fetus -----→ new born

Fetal Circulation



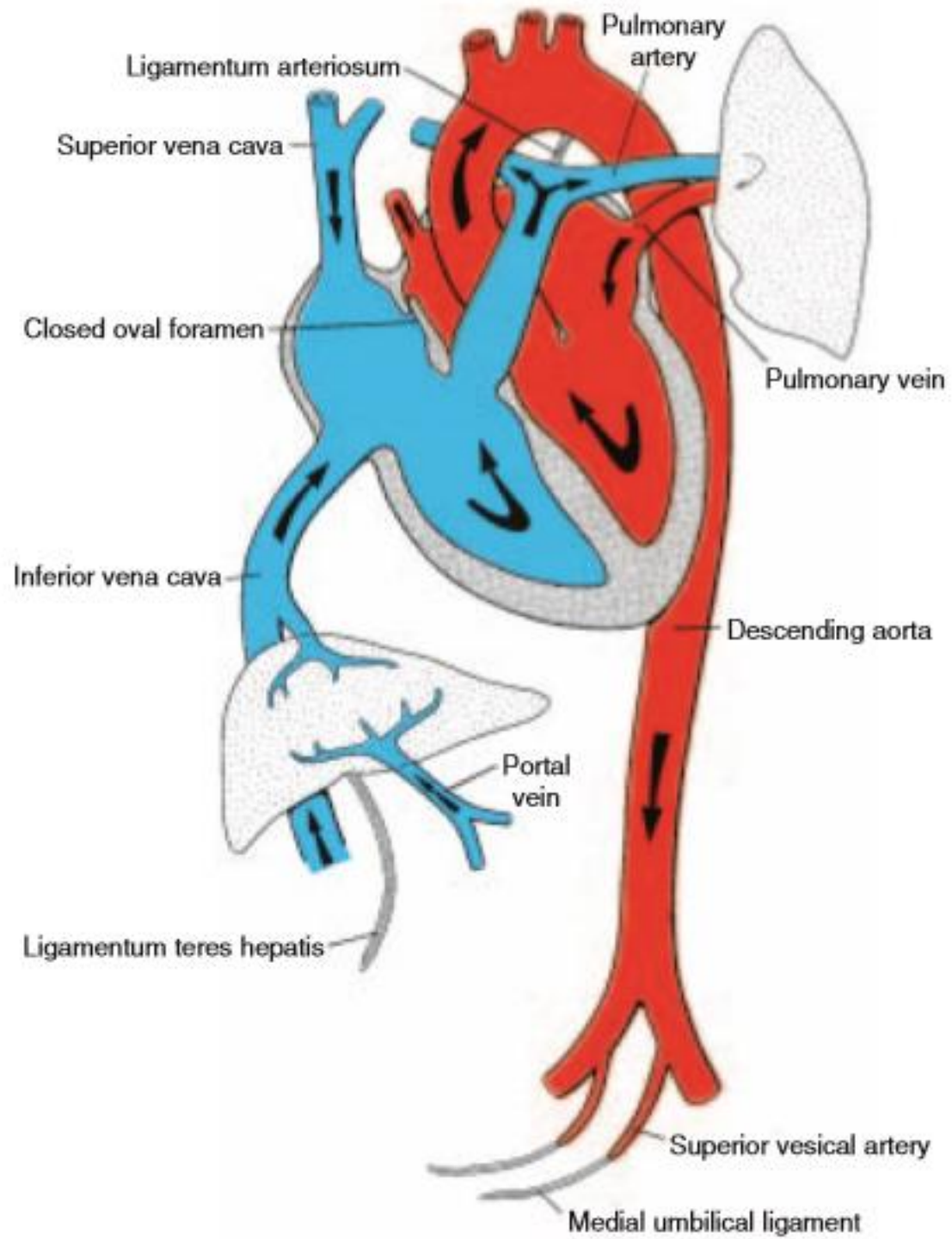
Mixing of oxygenated & deoxygenated blood occurs in

1. Umbilical vein & portal venous blood at liver
2. Ductus venosus & IVC
3. IVC & SVC at RA
4. Blood from RA & pulmonary venous blood at LA
5. Aortic blood & pulmonary trunk blood at ductus arteriosus

What happens because of mixing of blood ?

- 80% O₂ saturation reaches from placenta
- O₂ saturation decreases steadily up to systemic circulation
- Tissues receive less than 58% of O₂ saturation
- Fetal Hb molecules are having more affinity for O₂ carriage.

Circulatory changes after birth



Factors that brings the changes to fetal circulation just after birth

- Cessation of placental circulation
- Change of temperature in the body
- Beginning of respiration at lungs
- Reduction of intra vascular pressure in pulmonary vessels
- Sudden increase of O₂ saturation in fetal circulation
- Muscular wall contraction followed by fibrosis of vessels

Sites of Where Circulatory Change Occurs

- Closure of the Umbilical Arteries

- Occurs few minutes after Birth

- Due to

- Change in temperature in Blood
 - Change in O₂ Saturation

- Initial Closure is due to muscular wall contraction followed by Fibrosis(takes 2-3 months)

- Represented by medial umbilical ligament in adult life

- Closure of umbilical vein and ductus venosus
 - Occurs few minutes later than the closure of the umbilical arteries
 - Because of this delay more Blood enters into the fetal circulation
 - Due to drop in O₂ saturation
 - Represented in adult life
 - Umbilical Vein – ligamentum teres in lower edge of the falciform ligament
 - Ductus Venosus – ligamentum venosum

- Closure of ductus arteriosus
 - ✓ Occurs immediately after birth
 - ✓ Due to bradykinin secretion secreted by initial inflation of lung
 - ✓ Initial closure by muscular contraction followed by proliferation of intima (takes 1-3 months)

- Closure of Oval foramen

- ✓ Occurs due to

- Increased pressure inside the LA

- Decreased pressure inside the RA

- ✓ With the first breath premium pressed against the septum secundum closing of the foramen.

- ✓ Closure is not permanent till one year after birth

- When baby cries can open the foramen and causes cyanotic spells.

Summary

- We have Studied
Fetal circulation
Changes that takes place during and after birth