

- * L58: Development of venous system
- * DR. Rehan
- * ***By the end of this session, the student should be able to:***

- * Describe formation of vitelline veins.
- * Describe formation of umbilical veins.
- * Describe formation of cardinal veins.
- * Correlate this knowledge to clinical conditions.

- * Development of venous system
- * Around 5th week, three pairs of the major vein appears.
- * Vitelline vein
- * Umbilical vein
- * Cardinal vein
- * Development of Vitelline vein
- * Before entering in the sinus venosus, vitelline vein form plexus around

duodenum and pass by septum transversum

- * The developing liver forms sinusoids in septum.
- * With regression of left sinus horn, right portion of vitelline vein enlarges.

- * Development of vitelline vein
- * Right hepatocardiac channel forms hepatocardiac portion of inferior vena cava.
- * Proximal part of left vitelline vein disappears.
- * Anastomotic network forms portal vein
- * Sup. Mesenteric vein derives from right vitelline vein.
- * Distal portion of vitelline vein disappears.
- * Development of umbilical vein
- * During fourth week, umbilical vein on both sides passes by the side of liver.

- * The proximal part will disappear from both sides
 - * Distal part of right also disappears.
 - * Only left umbilical vein persist up to 12 wks
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- * Development of umbilical vein
 - * With increase in placental circulation, the direct connection will form hepatocardiac channel and left umbilical vein
 - * After birth, left umbilical vein form ligamentum teres
 - * Ductus venosus form ligamentum venosum.
 - * Development of cardinal vein
 - * Up to 4th week of gestation, cardinal vein form main venous drainage.
 - * Anterior cardinal vein drain cephalic part of embryo.

- * Posterior cardinal vein drain the remaining
- * Common cardinal vein
- * Development of cardinal vein
- * From 5th to 7th week, number of additional veins are formed.
- * Sub cardinal veins
- * Sacricardinal veins
- * Supracardinal veins

- * Development of venous system
- * Anastomosis between anterior cardinal vein will form future left brachiocephalic vein
- * This will channelize blood from left side of head and neck to right
- * Terminal part of left post. Cardinal vein will retained as left sup. Intercostal vein

- * Development of venous system
- * Formation of Sup. Vena cava

- * Formation of internal jugular vein
- * External jugular derives from venous plexus in face
- * Left renal vein formed by anastomosis of subcardinal vein
- * Distal part of left subcardinal vein persists as left gonadal vein.
- * Renal segment of inferior vena cava
- * Development of venous system
- * Left common iliac vein
- * Sacrocardinal segment of inferior vena cava
- * Body wall is drained by supracardinal vein after 7th week
- * It is drained by 4th to 11th right intercostal vein
- * Formation of azygos vein
- * 4th to 7th left intercostal vein drained in left supracardinal vein

- * Clinical correlations

- * **Double inferior vena cava:** persistence of the connection between sacrocardinal and subcardinal vein
- * **Absence of inferior vena cava:** failure in the connection between right subcardinal vein with hepatic segment
- * Clinical correlations
- * **Left superior vena cava:** persistence of left anterior cardinal vein
- * **Double superior vena cava:** persistence of left anterior cardinal vein and failure of the formation of left brachiocephalic vein.
- * Summary

- * References
- * Langman's medical embryology, 12 edition.
- * <http://www.uco.es/organiza/departamentos/anatomia-y-anat->

patologica/embriologia/T8_SistemaCircu
latorio/eng/development_of_the_venou
s_system.html