

# Liver

## Chapter 7

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New Terminology			
Combining Form	Meaning	Example	Meaning of New Term
Bil/i	Bile	Biliary	Pertaining to bile
Chol/e	Bile/gall	Cholecystitis	Inflammation of the gallbladder
Cholangi/o	Bile duct	Cholangiography	Process of recording a bile duct
Choledoch/o	Common bile duct	Choledocholith	Stone of the common bile duct
Duoden/o	Duodenum	Duodenoscopy	Visual exam of the duodenum
Enter/o	Small intestine	Enteritis	Inflammation of the small intestine

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New Terminology			
Combining Form	Meaning	Example	Meaning of New Term
Esophag/o	Esophagus	Esophagostenosis	Narrowing or stricture of the esophagus
Gastr/o	Stomach	Gastralgia	Pain of the stomach
Hepat/o	Liver	Hepatitis	Inflammation of the liver
Ile/o	Ileum	Ileotomy	Cutting or incision of the ileum
Jejun/o	Jejunum	Jejunostomy	Mouth-like opening into the jejunum
Lapar/o	Abdomen, abdominal wall	Laparoscope	Instrument used to view inside the abdominal cavity

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New Terminology			
Combining Form	Meaning	Example	Meaning of New Term
Pancreat/o	Pancreas	Pancreatitis	Inflammation of the pancreas
Phag/o	Eating, swallowing	Phagocyte	Eating cell (type of WBC)
Pylor/o	Pylorus	Pylorostenosis	Narrowing or stricture of the pylorus
Sigmoid/o	Sigmoid colon	Sigmoidoscope	Viewing instrument for the sigmoid colon
Steat/o	Fat	Steatorrhea	Flow or discharge of fat

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## LIVER

- Largest organ of the abdomen
- Bordered by the Right hemidiaphragm
  - Superiorly
  - Laterally
  - Anteriorly
- Medial surface is bordered by
  - Stomach
  - Duodenum
  - Transverse Colon

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## LIVER

- Inferior surface is bordered by
  - Hepatic Flexure
- Posterior surface is bordered by
  - Right Kidney

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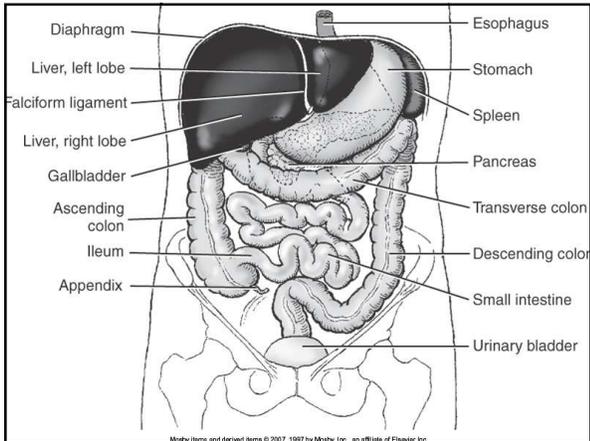
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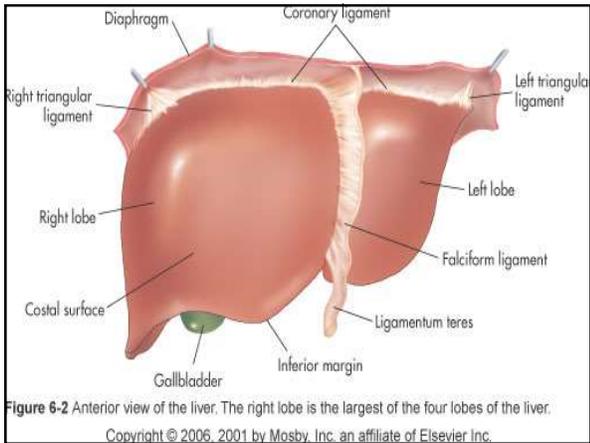


Figure 6-2 Anterior view of the liver. The right lobe is the largest of the four lobes of the liver.  
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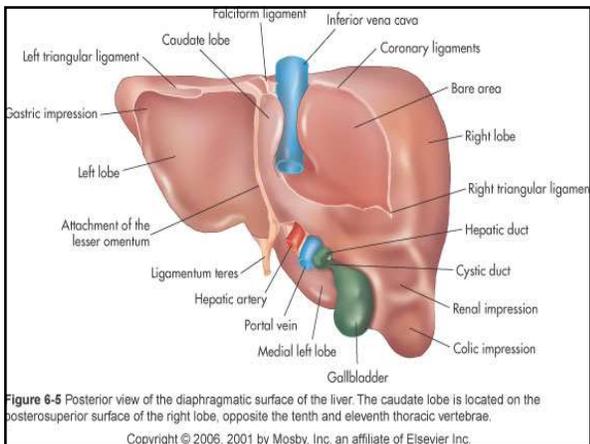


Figure 6-5 Posterior view of the diaphragmatic surface of the liver. The caudate lobe is located on the posterosuperior surface of the right lobe, opposite the tenth and eleventh thoracic vertebrae.  
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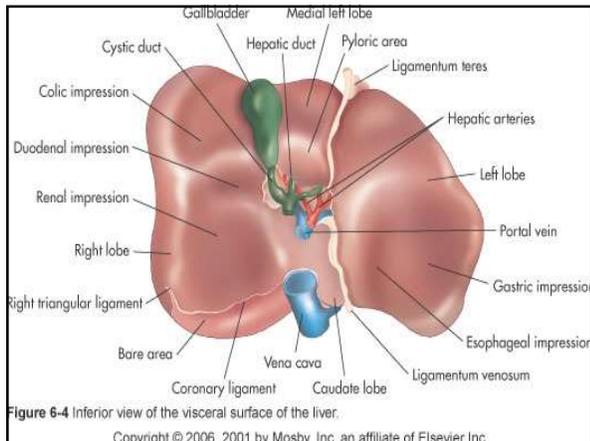
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## Glisson's Capsule

- Surrounds the liver
- Strong connective tissue capsule
- Gives shape and stability to soft hepatic tissue

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## LIVER

- Entirely covered by peritoneum
  - Except
    - Gallbladder fossa
    - Surface in proximity to IVC
    - Bare Area

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## FISSURES

- **Umbilical Fissure (Fissure for Ligamentum Teres)**
  - Divides the left lobe into
    - Medial Segment
    - Lateral Segment
- **Fissure for the Ligamentum Venosum**
  - Separates the caudate from the left lobe

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## FISSURES

- **Transverse Fissure (Portal)**
  - Contains portions of Right & Left Portal Veins
- **Interlobar Fissure (Main Lobar Fissure)**
  - Fissure for the gallbladder
    - Divides the right & left lobe
  - Imaginary line drawn through the GB fossa and the middle hepatic vein (MHV) to the IVC

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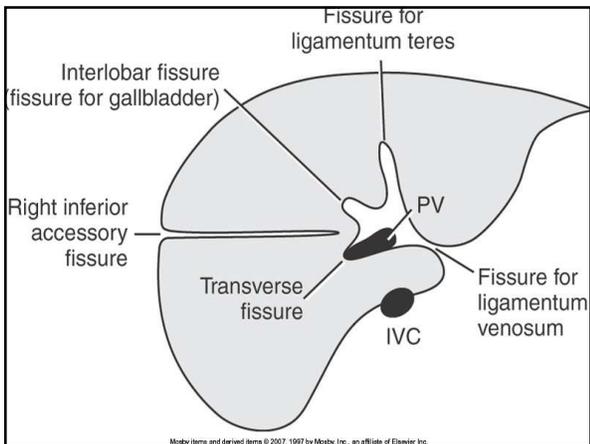
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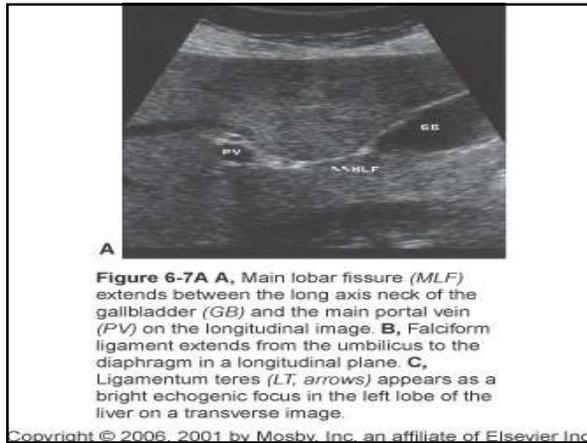
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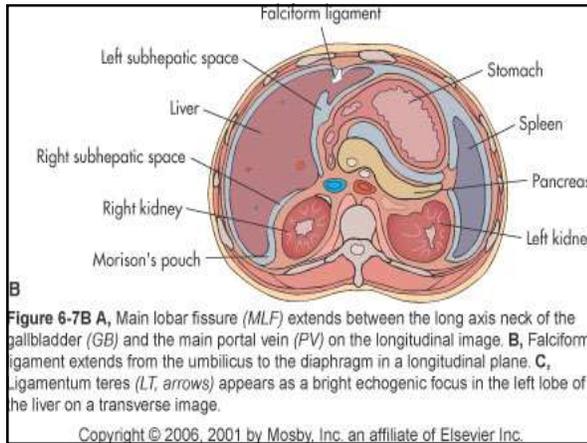
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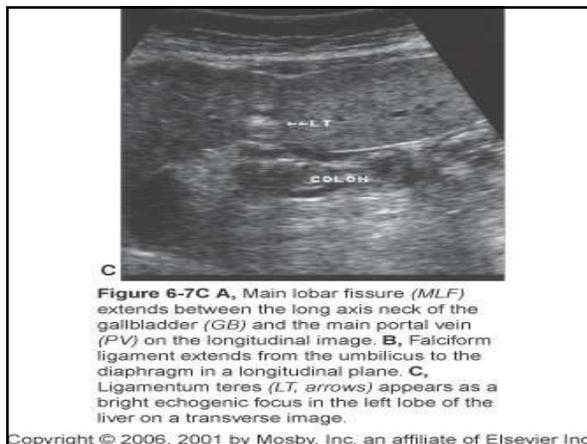
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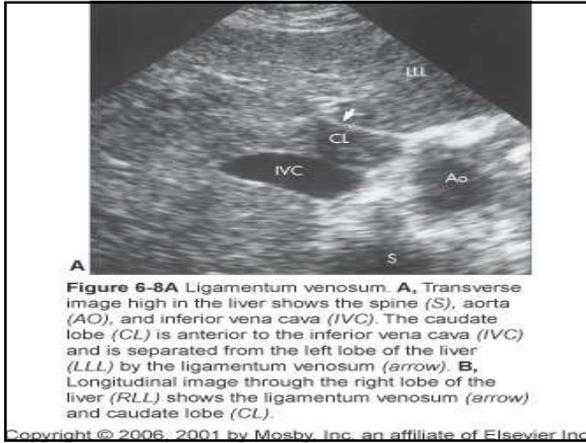
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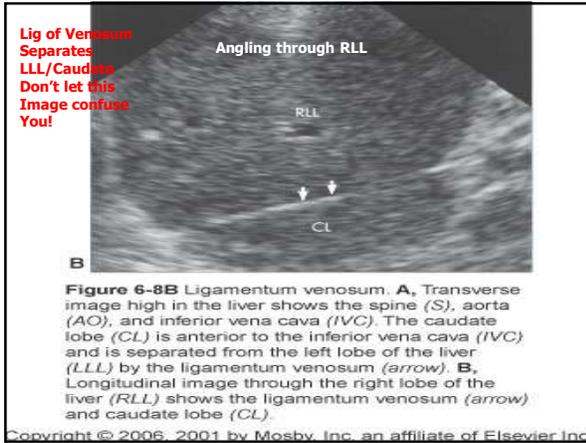
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## Lobes

- Right Lobe
  - Largest
  - Most Lateral
- Left Lobe
  - Most anterior
  - Extends across the midline

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# Lobes

- **Caudate**
  - Smallest lobe
  - On the **superior** (book says inferior) and posterior liver surface
  - Lies between IVC & Ligamentum Venosum
- **Quadrata**
  - Anteroinferior surface of the Left Lobe
  - Lies between GB and Ligamentum Teres

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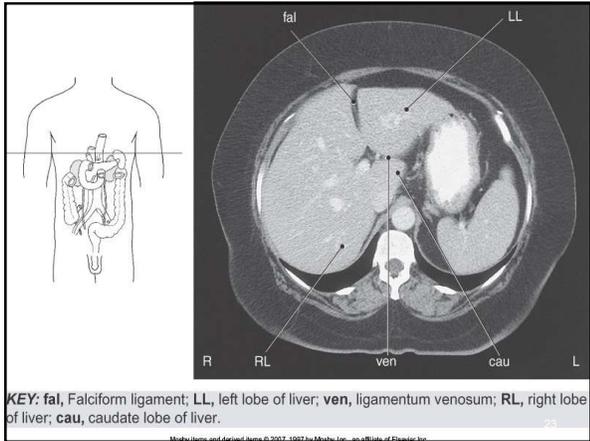
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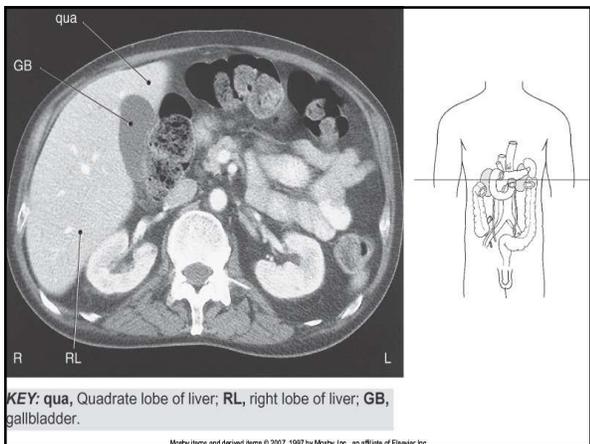
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# Segmental Anatomy

- **Current practice**
  - Divides liver into 8 segments
- **Based on the branching**
  - Portal veins (supplies blood)
  - Hepatic veins (drains blood)
- **Each segment can function independently**

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# Segmental Anatomy

- **Main Hepatic Veins divide**
  - Liver longitudinally into 4 sections
- **MHV divides liver into Right/Left**
- **RHV divides RLL into Anterior/Posterior**
- **LHV divides LLL into Medial/Lateral**
  
- **Portal Veins divide transversely**
  - Right and Left Portal Veins

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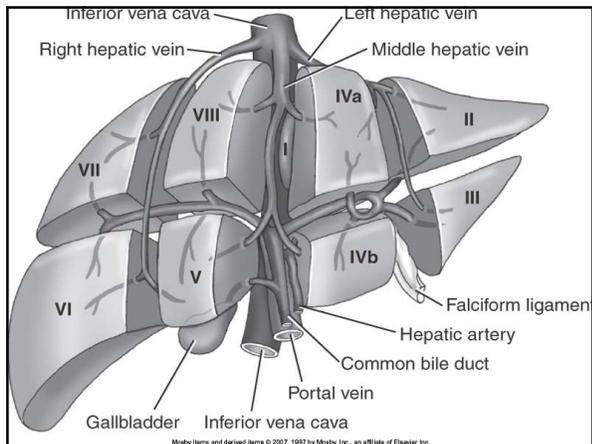
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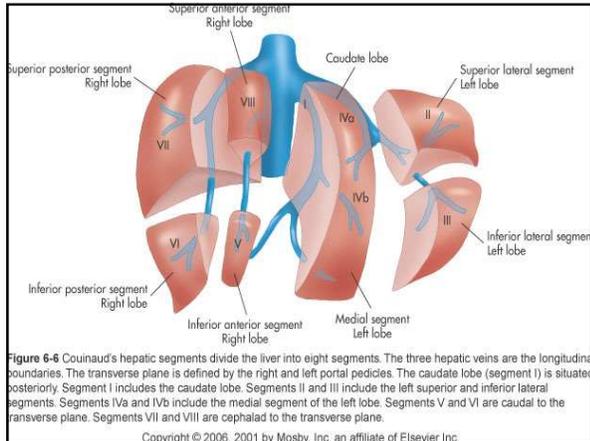
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### Segmental Anatomy

Line of Proximal Interphalangeal (PIP) joints = Plane of portal vein, separating liver into upper and lower segments.

Interdigital spaces = Interssegmental planes (hepatic fissures - left, middle and right) in which corresponding hepatic veins run and divide liver sagittally

2nd finger = Left medial segment = Segment IV  
Proximal phalanx = Segment IVa  
Distal phalanx = Segment IVb

Distal phalanx of 3rd finger = Right inferior anterior segment = Segment V

Distal phalanx of 4th finger = Right inferior posterior segment = Segment VI

Proximal phalanx of 4th finger = Right superior posterior segment = Segment VII

Proximal phalanx of 3rd finger = Right superior anterior segment = Segment VIII

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From Curry RA, Tienpin BB. Sonography: Introduction to Normal Structure and Function, 2nd edition, 2004, WB Saunders.

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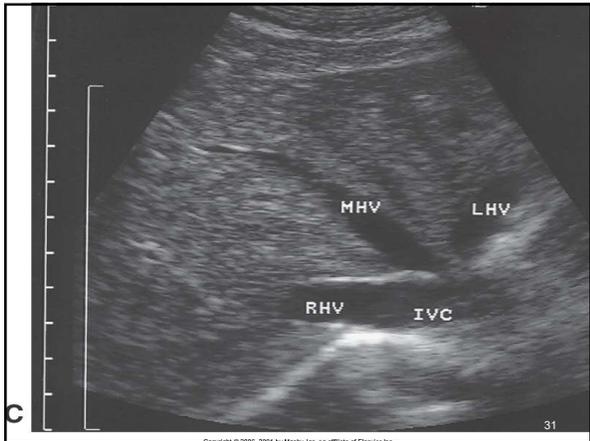
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## Portal Veins

- Supplies liver with nutrient-rich blood
- Main Portal Vein (MPV)
  - Formed by:
    - Superior Mesenteric Vein (SMV)
    - Splenic Vein (SV)
  - Enters Liver at Porta Hepatis
    - Branches into Right & Left Portal Veins

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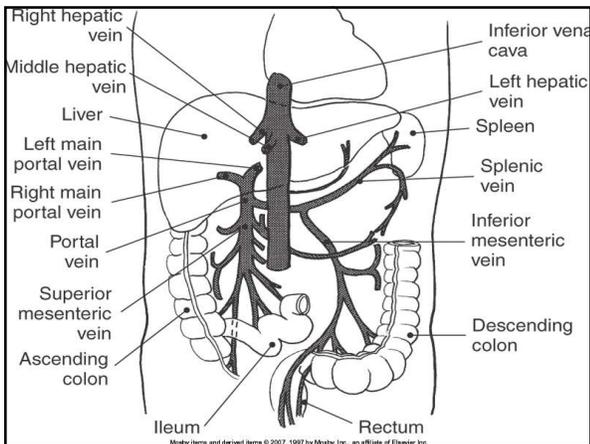
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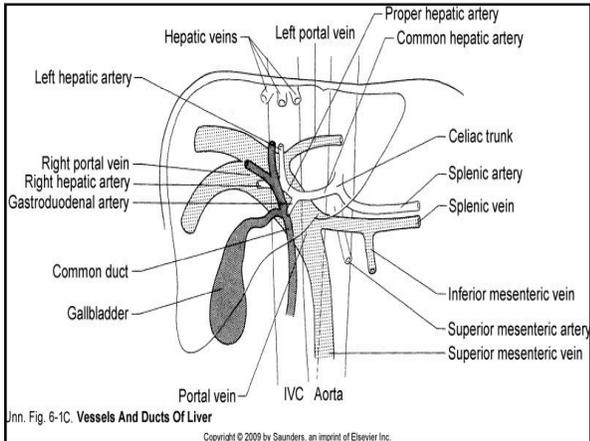
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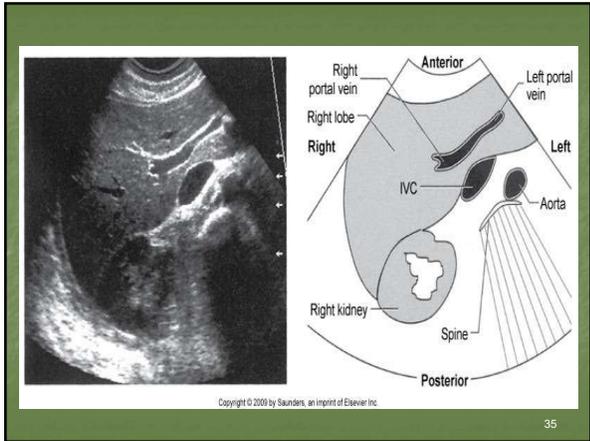
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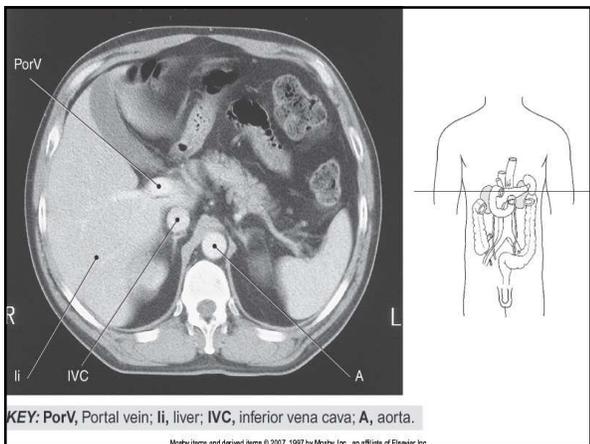
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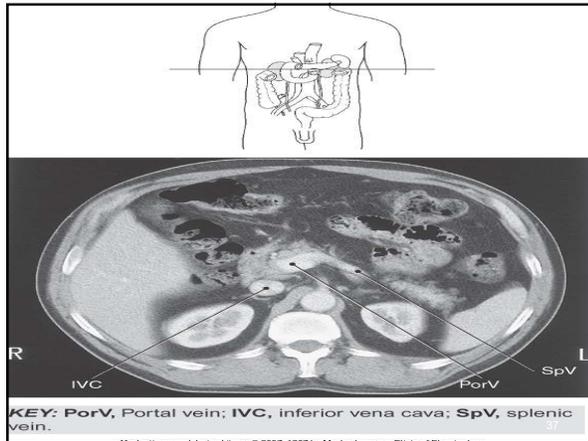
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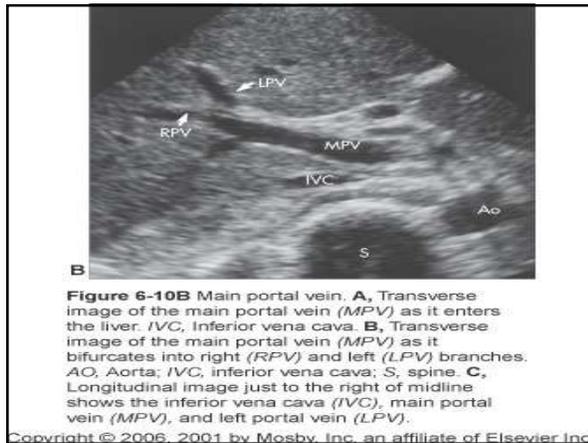
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## Vasculature

- **Dual blood supply**
  - **Common Hepatic Artery**
    - Arterial blood
    - 20-25%
  - **Portal Vein**
    - Nutrient-rich venous blood
    - 75-80%

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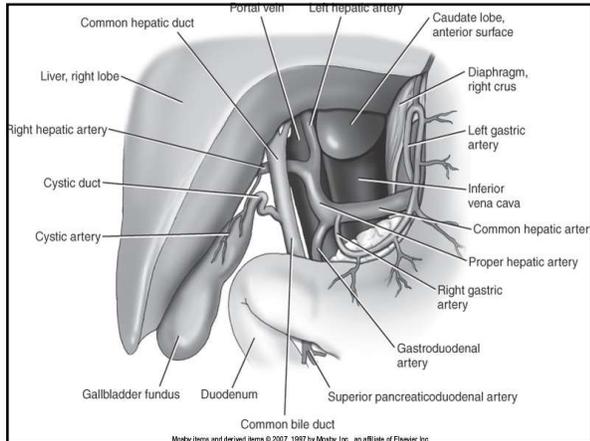
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## Hepatic Artery

- **Common Hepatic Artery**
  - Branch off the Celiac Artery
  - Continues to form the Proper Hepatic Artery
  - Branches into
    - **Right Hepatic Artery**
      - Larger, supplies majority of right lobe
    - **Left Hepatic Artery**
      - Smaller, supplies caudate, quadrate, medial & lateral segments of left lobe

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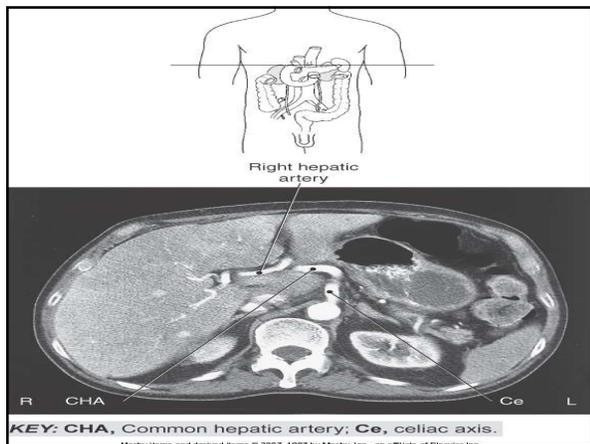
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# Hepatic Veins

- 3 major Hepatic Veins
  - Right (largest)
  - Middle
  - Left (smallest)
- Frequently the middle and left converge to form a common trunk before emptying into the IVC

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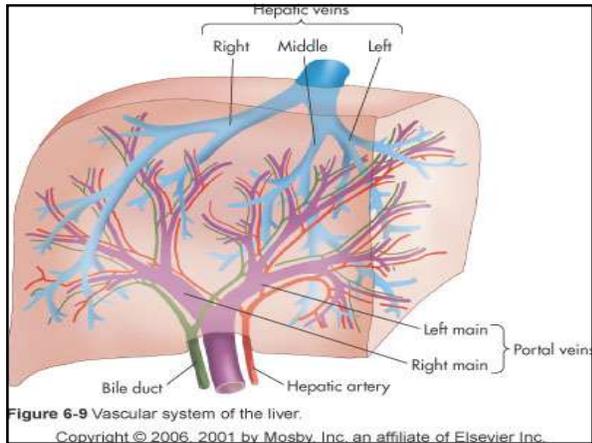
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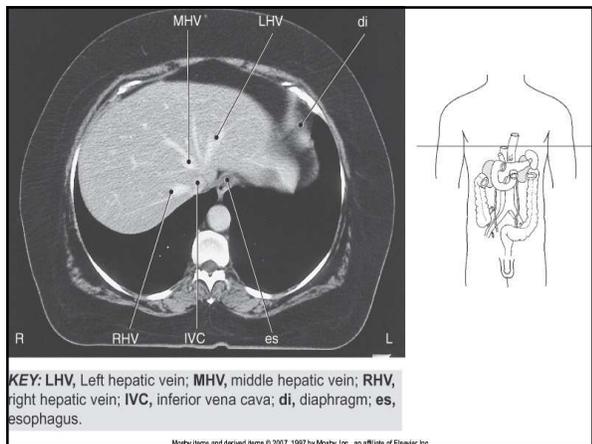
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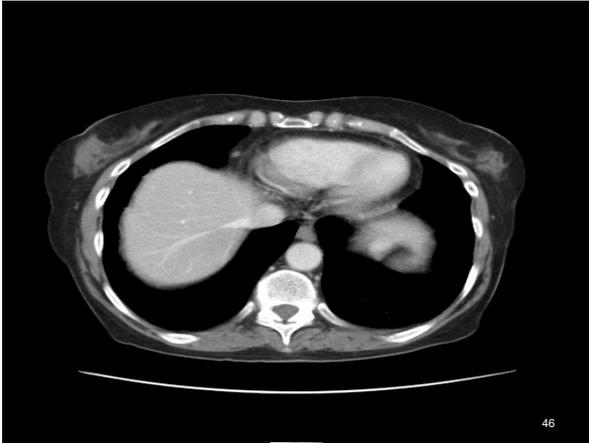
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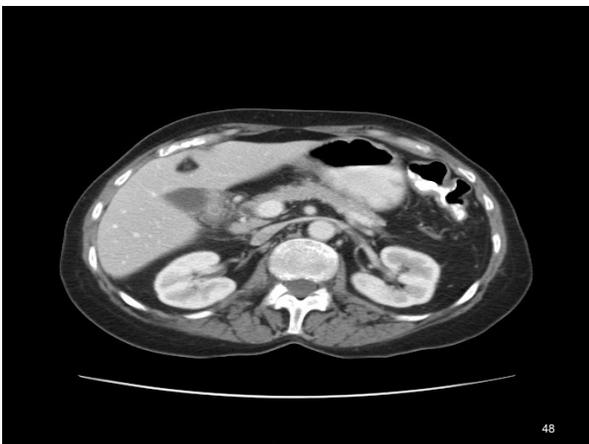
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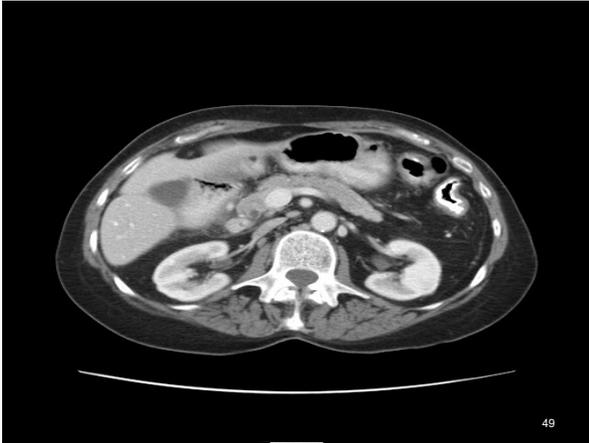
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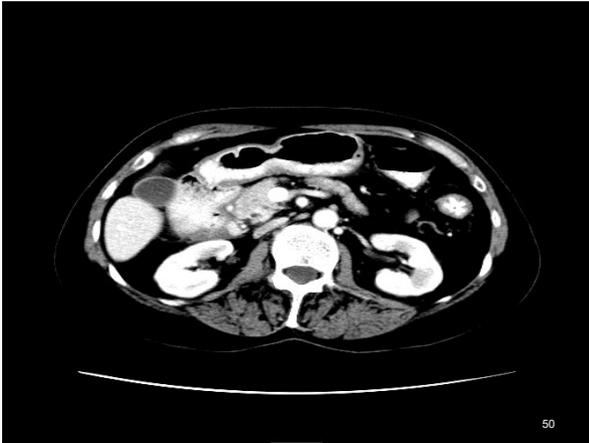
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