

THORACIC DUCT & THE SPLEEN



Thoracic Duct

General Features

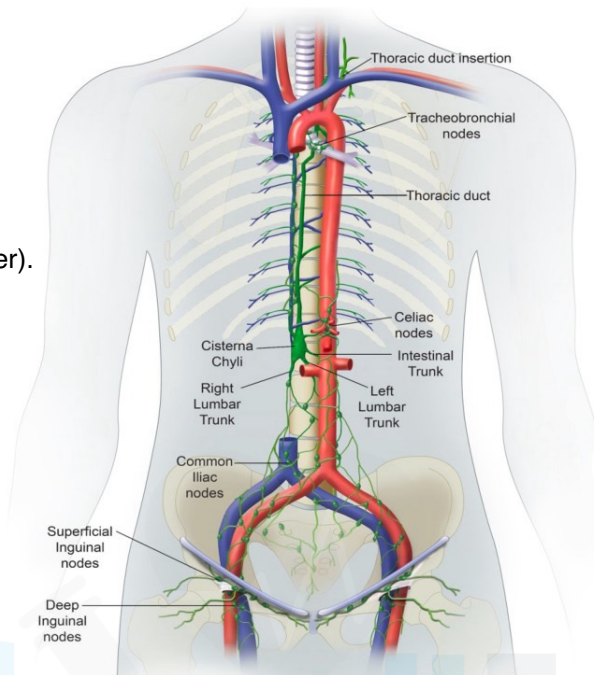
- It is the largest lymphatic vessels in the body.

Beginning

- From the upper end of the cisterna chyli (a sac-like, retroperitoneal chamber).
- Lies anterior to bodies of L1, L2 vertebrae
- Between the right crus of the diaphragm and the aorta

Shape

- It is a thin-walled vessel
- Has a beaded appearance due to presence of many valves



Course and Relations

6. Termination

- Descends to end into the junction of:
- Left subclavian vein
- Left internal jugular vein
- At the end of the duct there are 2 valves to prevent regurgitation of the blood

5. In the Neck

- At level of C6
- Curves behind the carotid sheath

4. Superior Mediastinum

- Ascends behind left border of esophagus

3. At Level of T5

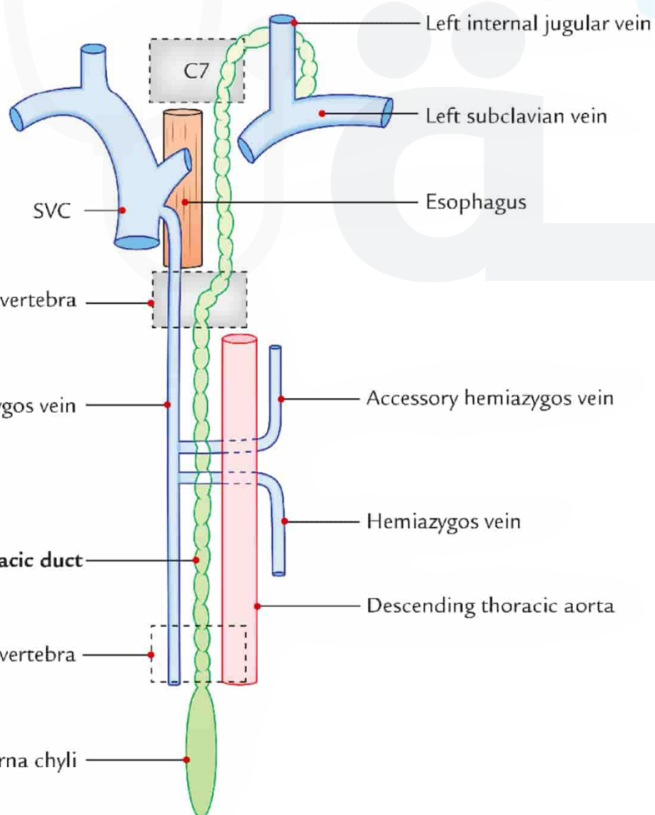
- Crosses the median plane from right to left
- Behind the esophagus

2. Posterior Mediastinum

- Ascends between:
- Aorta (left)
- Azygos vein (right)
- Behind right border of esophagus
- In front of:
- Vertebral column
- Posterior intercostal arteries
- Hemiazygos veins

1. Entry into Thorax

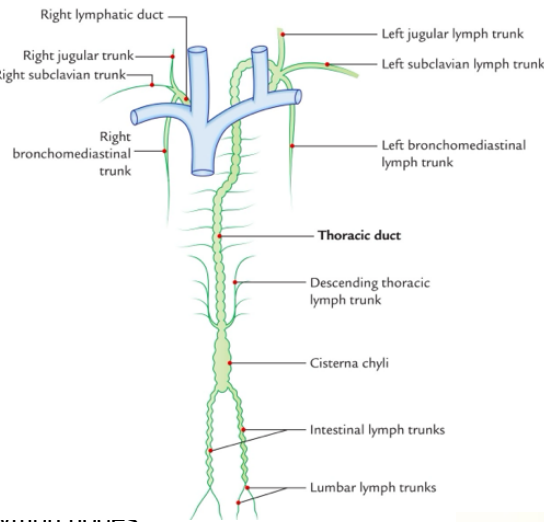
- It enters the thorax through the aortic opening of the diaphragm
- Between:
- Aorta (on the left)
- Azygos vein (on the right)



Tributaries

1. Cisterna chyli receives lymph from lower body via:

- A. Intestinal lymph trunk (from abdomen and
- B. Right and left lumbar lymph trunks (from



2. Other Tributaries

- 2. Left broncho-mediastinal lymph trunk:
- 3. Left subclavian trunk: drains the left u
- 4. Left jugular lymph trunk: drains the left

3. Additional Tributaries

- 5. Efferent from the posterior mediastina
- 6. Efferent from the posterior intercostal lymph nodes

Right Lymphatic Duct

- Usually empties into the junction of:
- Right subclavian vein
- Right internal jugular vein
- Otherwise opens into either of these veins

Spleen

General

- It is a lymphatic organ connected to the vascular system

Position

- Lies in the left hypochondrium
- Always remember the odd numbers:

1, 3, 5, 7, 9, and 11

- 1 inch thick
- 3 inch broad
- 5 inch long
- 7 ounces (200 gm) weight
- Lies between ribs 9 and 11

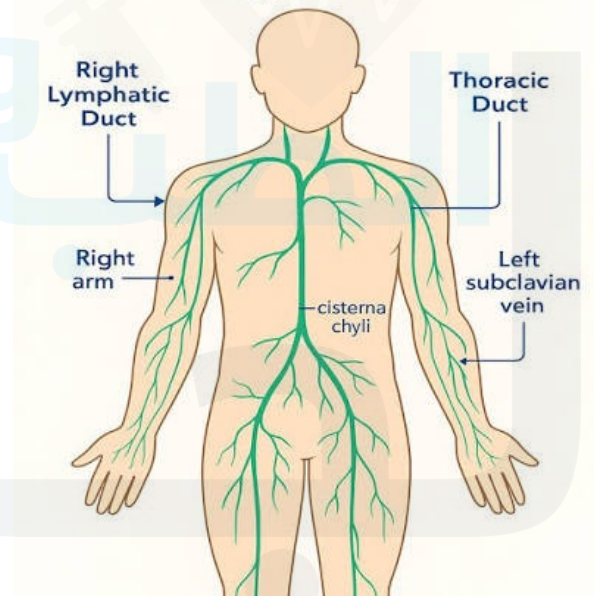
Functions

- 1. Storage of blood
- 2. Destruction of old RBCs

Surface Anatomy

- Long axis lies along the long axis of the 10th rib
- Upper border parallel to superior border of 9th rib
- Lower border parallel to inferior border of 11th rib
- Anterior end lies just behind left midaxillary line
- Posterior end lies 1.5 inches lateral to T10 spine

Did You Know Your Left Side Drains Differently to Your Right Side?



There is an explanation below.

Clinical Note

- The normal spleen is not palpable
- If felt below costal margin → enlarged at least 3 times



How to Place the Spleen in Correct Anatomical Position

1. Hold spleen in left hand:
 - Convex surface → palm
 - Posterior end → wrist
 - Anterior end → fingers
 - Notched upper border → thumb
2. Place hand:
 - Behind left midaxillary line
 - At 45° angle with horizontal

There is an explanation below.

Features of the Spleen

A. Ends

1. Posterior end:
 - Tapering
 - Directed upwards, backwards, medially
2. Anterior end:
 - Broad
 - Directed downwards, forwards, laterally

B. Borders

1. Upper Border

- Sharp
- Has one or more notches near anterior end
- Meets anterior end at angle of spleen

N.B: Notching indicates fetal lobulation

2. Lower Border

- Thick and round

C. Surfaces

- Diaphragmatic surface
- Visceral surface



Relations of the Spleen

1. Diaphragmatic Surface

- Smooth and convex
- Related to diaphragm

Separates it from:

- Ribs 9, 10, 11
- Intercostal structures
- Left pleura
- Left lung

2. Visceral Surface

- Inner surface
- Contains hilum
- Has 4 impressions

A. Gastric Impression

- Between upper border and hilum
- Related to posterior surface of stomach

B. Renal Impression

- Between hilum and lower border
- Related to anterior surface of left kidney

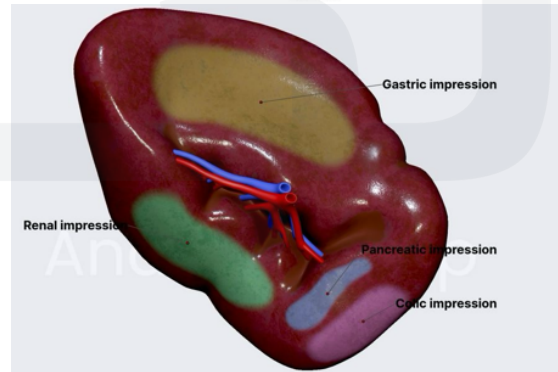
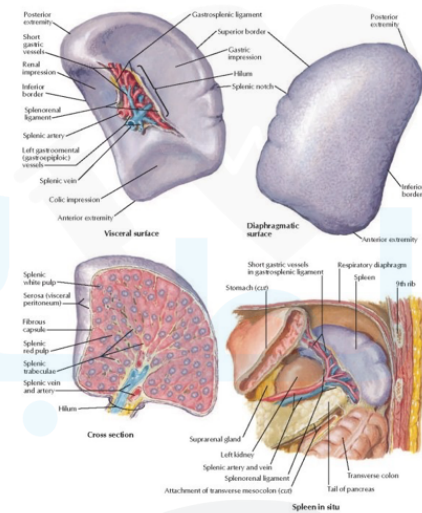
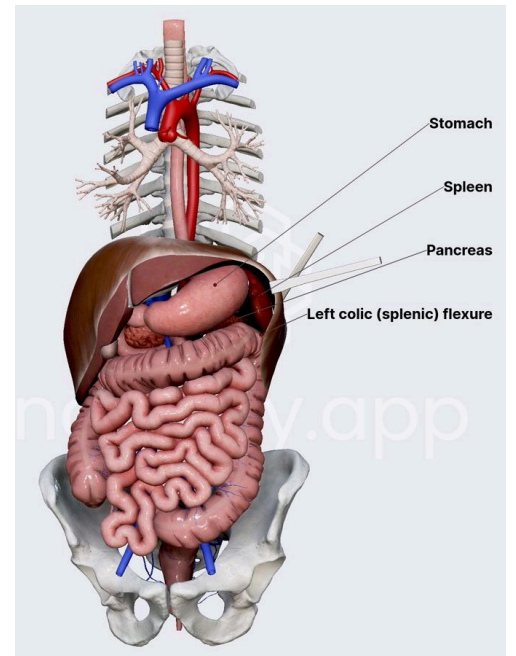
N.B: Intermediate margin between gastric and renal impressions

C. Colic Impression

- Near anterior end
- Related to left colic flexure

D. Pancreatic Impression

- Below lateral end of hilum
- Related to tail of pancreas



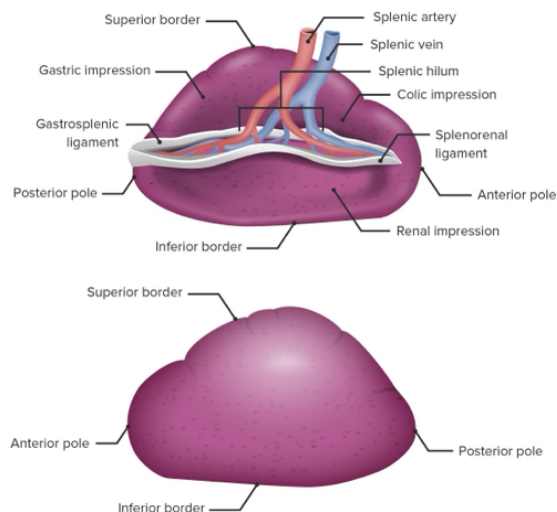
Hilum of the Spleen

- Between gastric and renal impressions

Transmits:

1. Splenic artery branches (5–6)
2. Tributaries of splenic vein
3. Autonomic nerves and lymphatics

- Gives attachment to:
- Lienorenal ligament
- Gastrosplenic ligament



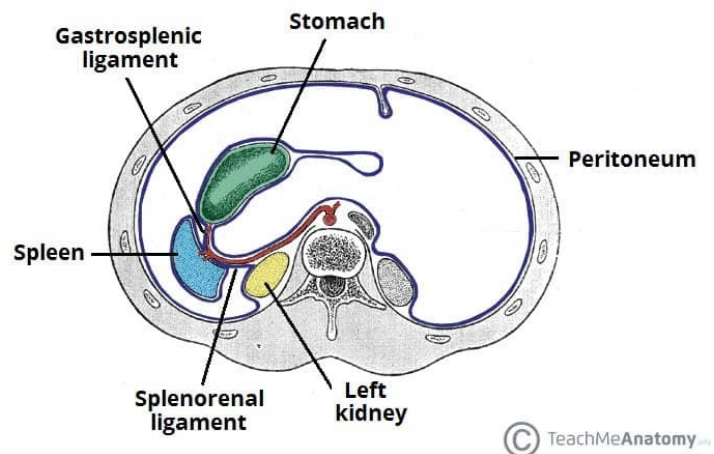
Ligaments of the Spleen

1. Gastrosplenic Ligament

- Between spleen and stomach

Contents:

1. Short gastric vessels
2. Left gastro-epiploic vessels
3. Sympathetic plexus
4. Pancreatico-splenic lymph nodes
5. Extraperitoneal fat

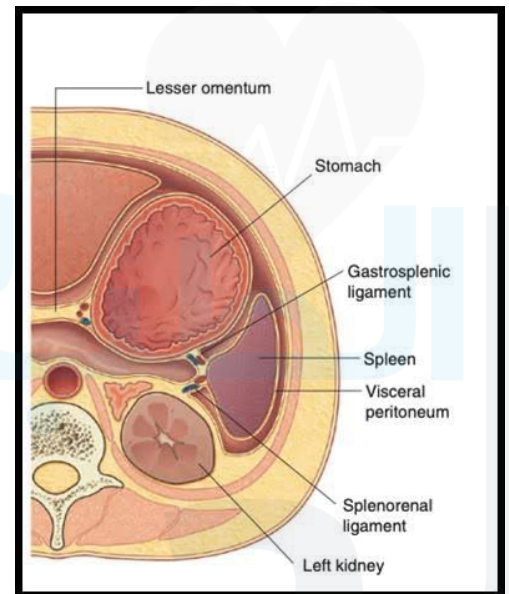


2. Lienorenal Ligament

- Between spleen and left kidney

Contents:

1. Tail of pancreas
2. Splenic vessels
3. Sympathetic plexus
4. Pancreatico-splenic lymph nodes
5. Extraperitoneal fat



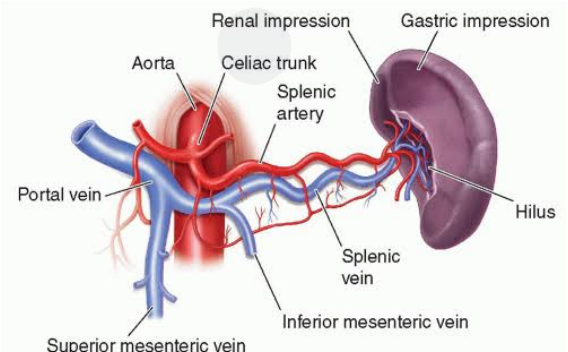
3. Phrenicocolic Ligament

- From left colic flexure to diaphragm
- Supports spleen
- In splenomegaly → spleen extends toward umbilicus

Blood Supply

Arterial Supply

- Splenic artery (largest branch of coeliac trunk)
- Runs tortuous course along upper border of pancreas
- Enters lienorenal ligament
- Divides into 5–6 branches (end arteries)



- White pulp = Lymph (immune)
- Red pulp = Blood (no lymphatics)

Red pulp is specialized for blood filtration and lacks lymphatic vessels.”

Venous Drainage

- Splenic vein runs behind pancreas
- Joins superior mesenteric vein → portal vein

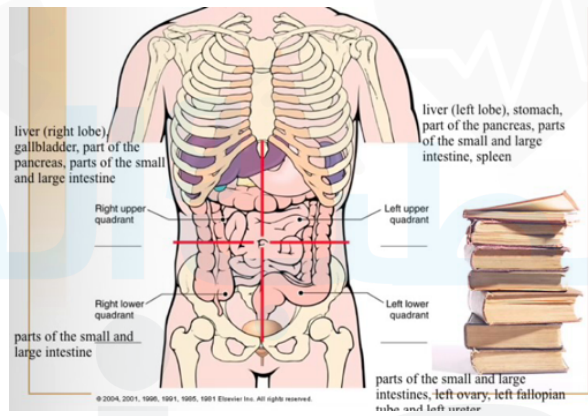
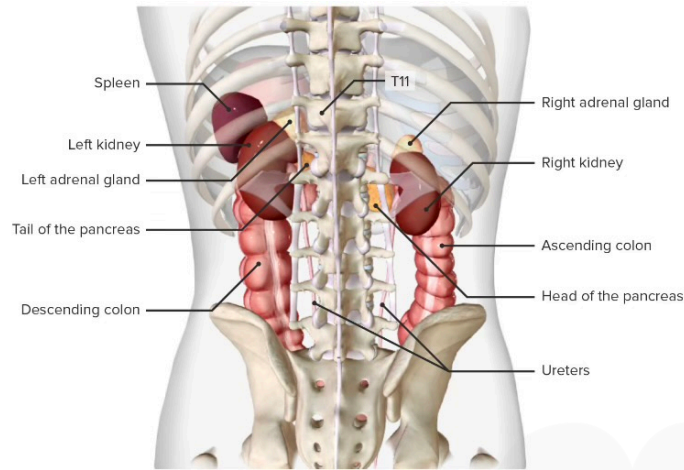
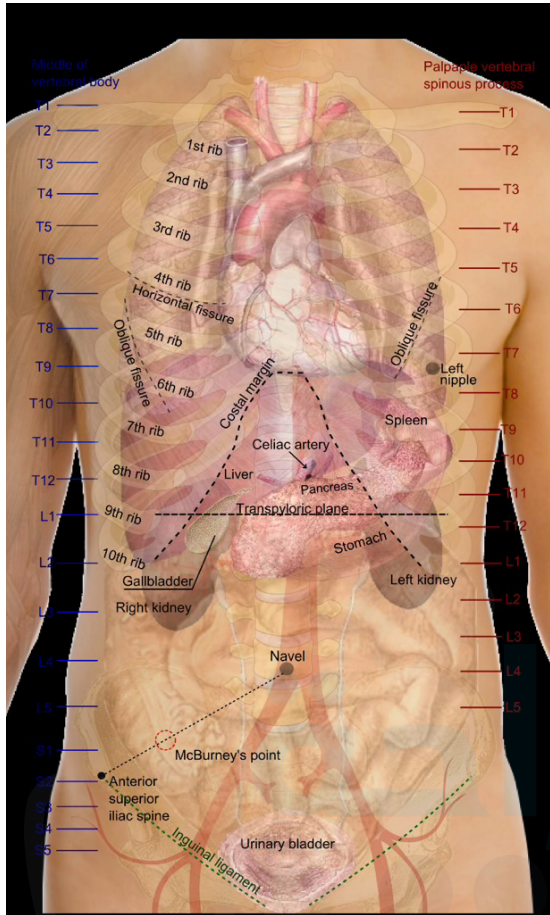
Lymphatic Drainage

- To pancreatico-splenic lymph nodes
- Red pulp has no lymphatics



First: Visualize the spleen position

A simplified explanation, just for understanding.



🔑 The CORE idea (very important)

Forget details first – remember this ONE sentence:

👉 **“Spleen lies along rib 10, between ribs 9 and 11”**

That alone gives you 80% of the answer.

👉 Break it into 3 easy chunks

1) Ribs relation (the skeleton part)

- Long axis → **10th rib** ✅
- Upper border → **9th rib** ⬆️
- Lower border → **11th rib** ⬇️

💡 Memory trick:

“9 – 10 – 11 → spleen sits in heaven 😊”

(Top = 9, middle = 10, bottom = 11)

3) Ends (front vs back)

◆ Anterior end (front)

- Behind **left midaxillary line**

💡 Meaning:

👉 Not too forward, still hidden under ribs

◆ Posterior end (back)

- 1.5 inches **lateral to T10 spine**

💡 Translation:

👉 Close to the spine, but slightly to the left

2) Direction (how it lies)

- It runs **diagonally** (oblique) along rib 10

👉 Not vertical, not horizontal

💡 Think:

“**Spleen is a slanted organ**”

Imagine this:

- A banana 🍌 (spleen)
- Placed diagonally on rib 10
- Covered by ribs 9 (top) and 11 (bottom)

🧩 Put it all together (exam sentence)

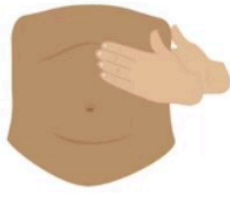
👉 “The spleen lies obliquely along the 10th rib, between the 9th and 11th ribs, with its anterior end near the left midaxillary line and its posterior end close to the T10 vertebra.”

🧠 First concept: Palpation (very important clinically)

A simplified explanation, just for understanding.



Location of spleen



Hand placement to palpate



Palpate during deep breath



🔑 Key idea:

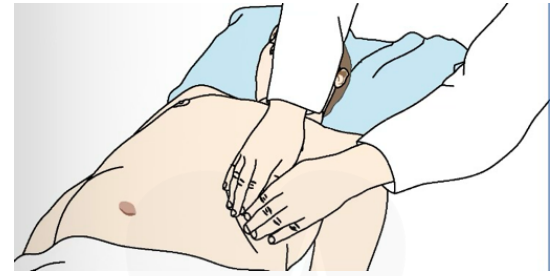
- Normal spleen → NOT palpable ❌
- If you can feel it below costal margin → **it is enlarged (≥ 3x)** ✅

💡 Why?

Because the spleen normally hides under ribs 9–11. It only becomes palpable when it grows downward.

👉 Exam phrase:

“A palpable spleen is always enlarged.”

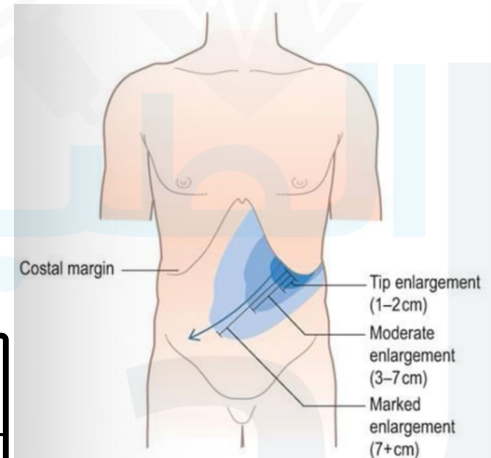


👉 Second concept: How to orient the spleen (VERY common exam trick)

🟢 Step 1: Hold the spleen correctly

👉 Use your LEFT hand

Where it goes in your hand	Part of spleen
On your palm 🖐️	Convex surface
Near your wrist	Posterior end (round)
Toward your fingers	Anterior end (round)
Toward your thumb 👍	Notched border



🟢 Step 2: Place it in the body

- Move your hand to the left midaxillary line
- Tilt it 45° (oblique)

👉 This matches:

- Rib 10 direction
- Natural spleen alignment



🧩 Final mental image

Imagine:

- You're holding a curved mango 🍌
- Thumb touching a notch (bite mark)
- Wrist = back of body
- Fingers = front
- Then you tilt it like a slope (45°)

لَا حَوْلَ وَلَا قُوَّةَ إِلَّا بِاللَّهِ

"من كنوز الجنة"