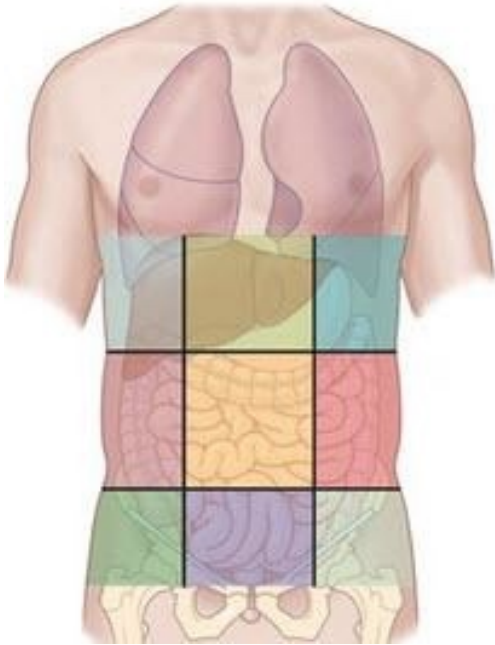


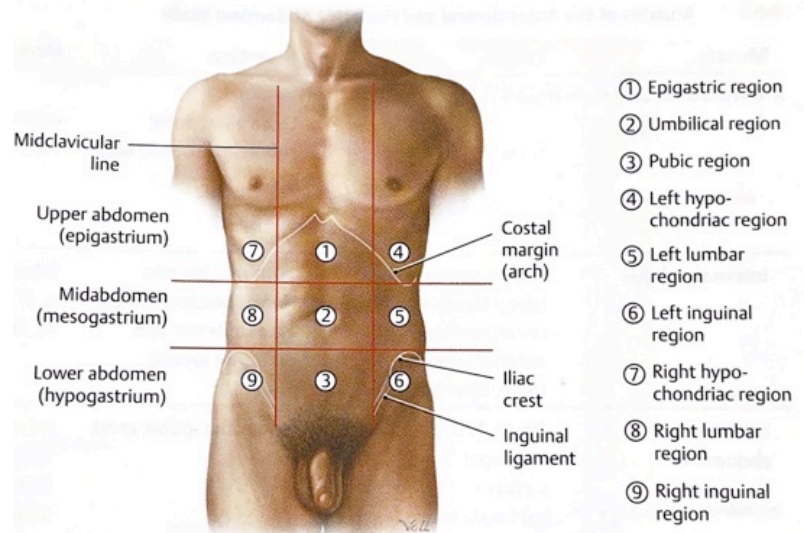
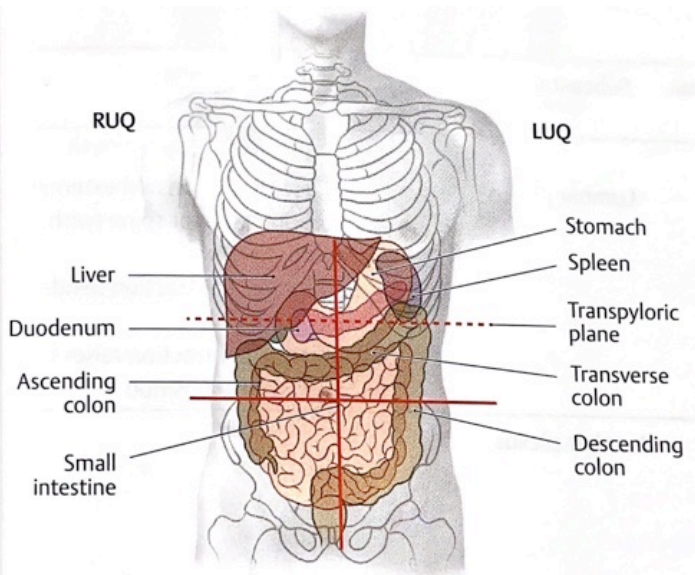
# Abdominal wall and Inguinal region

## • regions and planes

- is divided into 4 quadrants/9 regions
- transpyloric plane: provides orientation to internal anatomy of abdomen

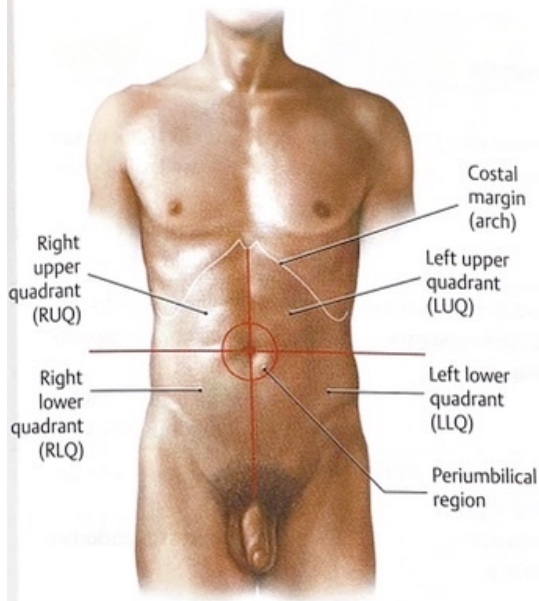


<b>Right Hypochondriac Region</b> <ul style="list-style-type: none"> <li>• Liver</li> <li>• Gallbladder</li> <li>• Right kidney</li> </ul>	<b>Epigastric Region</b> <ul style="list-style-type: none"> <li>• Stomach</li> <li>• Liver</li> <li>• Pancreas</li> <li>• Right and left kidneys</li> </ul>	<b>Left Hypochondriac Region</b> <ul style="list-style-type: none"> <li>• Stomach</li> <li>• Liver (tip)</li> <li>• Left kidney</li> <li>• Spleen</li> </ul>
<b>Right Lumbar Region</b> <ul style="list-style-type: none"> <li>• Liver (tip)</li> <li>• Small intestines</li> <li>• Ascending colon</li> <li>• Right kidney</li> </ul>	<b>Umbilical Region</b> <ul style="list-style-type: none"> <li>• Stomach</li> <li>• Pancreas</li> <li>• Small intestines</li> <li>• Transverse colon</li> </ul>	<b>Left Lumbar Region</b> <ul style="list-style-type: none"> <li>• Small intestines</li> <li>• Descending colon</li> <li>• Left kidney</li> </ul>
<b>Right Iliac Region</b> <ul style="list-style-type: none"> <li>• Small intestines</li> <li>• Appendix</li> <li>• Cecum and ascending colon</li> </ul>	<b>Hypogastric Region</b> <ul style="list-style-type: none"> <li>• Small intestines</li> <li>• Sigmoid colon</li> <li>• Bladder</li> </ul>	<b>Left Iliac Region</b> <ul style="list-style-type: none"> <li>• Small intestines</li> <li>• Descending colon</li> <li>• Sigmoid colon</li> </ul>



**B** Coordinate system composed of two vertical and two horizontal lines divide the abdomen into nine regions, each located in either the upper, middle, or lower abdomen. The two vertical lines are the left and right midclavicular lines. One of the two horizontal lines passes through the lowest point of the 10th ribs and the other through the summit of the two iliac crests.

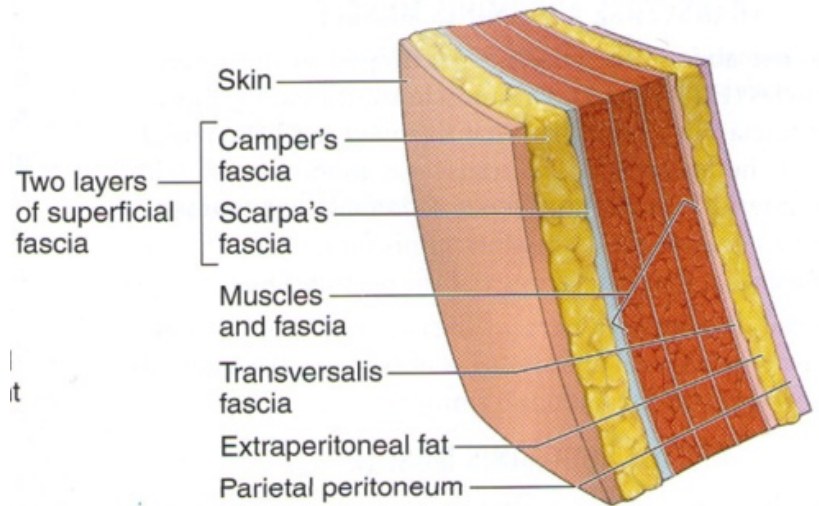
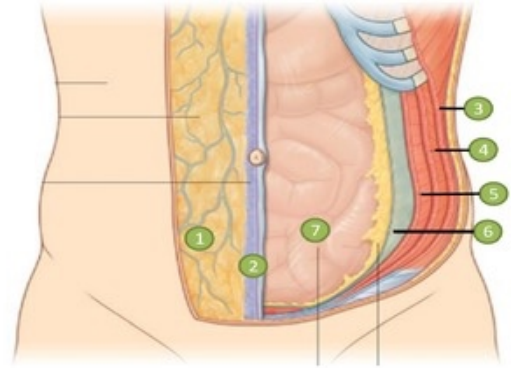
**Fig. 7.3** Transpyloric plane (dashed red line) and its relationship to abdominal viscera  
Anterior view. RUQ, right upper quadrant; LUQ, left upper quadrant.



A The abdomen is divided into four quadrants by two perpendicular lines that intersect at the umbilicus.

Fig. 7.2 Criteria for dividing the abdomen into regions

1. Superficial ("Camper's fascia)
2. Deep ("Scarpa's fascia)
3. External oblique
4. Internal oblique
5. Transversus abdominus
6. Transversalis fascia
7. Parietal peritoneum

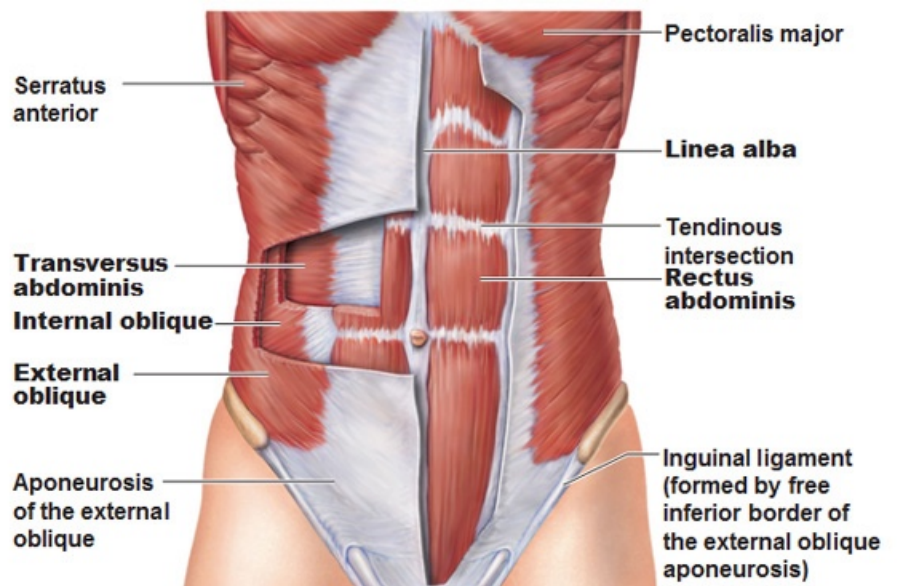


### • **structure of abdominal wall**

- superficial fascial layer - lies deep to skin and superficial to muscular layer.
- has 2 components
  - superficial fatty later (camper's fascia), layer of fat continuous with superficial fascia of thorax and back
  - deep membranous layer (Scarpa's fascia) lies deep to Camper's fascia, covers lower anterior abdominal wall, extends inferiorly into perineum, continuous with superficial perineal (Colles') fascia

### • **Muscular layer**

- 3 flat muscles making up muscular layer of lateral and anterior walls of abdomen
  - external oblique (forms inguinal ligament)
  - internal oblique
  - transversus abdominis
    - transversus and internal oblique join to form conjoined tendon
- In anterior midline, the aponeurosis of these muscles form linea alba which is a tendinous raphe (junction) that extends from xiphoid process to pubis.



○ 5 muscles form posterior abdominal wall:

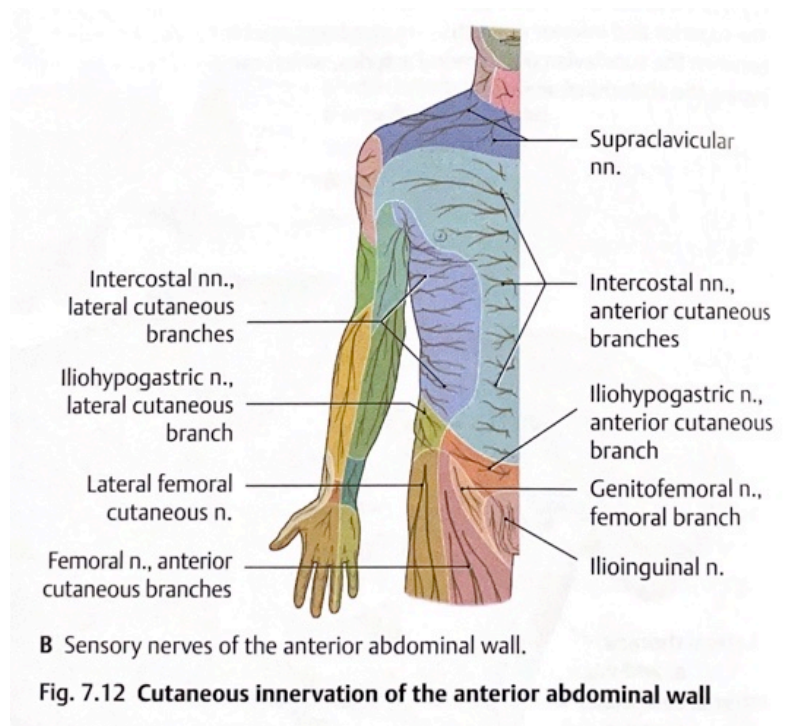
- psoas major
- psoas minor (sometimes absent)
- quadratus
- lumborum
- iliacus
- diaphragm
- which two muscles unite to form iliopsoas muscles? psoas major and iliacus, pass into thigh

○ Endoabdominal fascia

- deep fascia layer that lines internal surface of abdominal wall muscles
- lies outside of parietal peritoneum and is separated from fatty layer (preperitoneal fat)
- this fascia is named for muscle it lines (ex: psoas fascia)

• **Internal surface of Ant. Abdomen Wall**

- lined with transversalis fascia and parietal peritoneum, with preperitoneal fat
  - iliopubic tract is a thickened line of transversalis fascia
- peritoneal folds
- peritoneal fossae
  - formed between peritoneal folds and are potential sites for herniation
  - fossae include
    - suprapubic
    - medial inguinal (hesselbach's triangle)
    - lateral inguinal
- falciform ligament
  - double layered peritoneal reflection between liver and anterior abdominal wall
  - it encloses round ligament which is an opening for the paraumbilical veins



• **Neurovasculature of Abd Wall**

- **arteries** arise from
  - branches of internal thoracic a.
    - musculophrenic a. and superior epigastric a. which descend within rectus sheath posterior to rectus abdominis m.
  - paired parietal segmental br. of abdominal aorta
    - intercostal, subcostal, lumbar aa.
  - br. of external iliac a.
    - inferior epigastric a.
    - deep circumflex iliac a.
  - br. of femoral a. in thigh that supply abdominal wall

- superficial epigastric a.
- superficial circumflex iliac a.

### ○ veins

- drain to superior and inferior vena cava via brachiocephalic, azygos, hemiazygos, and common iliac v.
- subcutaneous venous network drain
  - superiorly to internal and lateral thoracic v. of thorax
  - inferiorly to inferior and superficial epigastric v.

### ○ lymphatics

- is **divided into upper and lower regions** by a curved line known as "watershed"
  - watershed is between umbilicus and costal margin
- upper region
  - drains superiorly to ipsilateral axillary and parasternal nodes --> superiorly to the right and left jugulosubclavian junctions (venous angles)
- lower region
  - drains inferiorly to ipsilateral superficial inguinal nodes --> external iliac and common iliac nodes --> thoracic duct

### ○ nerves

- arise from thoracic and lumbar spinal nerves
  - lower intercostal n (T7-T11) and the subcostal n. (T12) of thorax
  - iliohypogastric n. of lumbar plexus
- dermatomes follow slope of ribs
  - landmark dermatomes (surface features)
    - T10 at umbilicus
    - L1 at inguinal ligament and top of pubis
    -

## • **Inguinal region**

- also known as the groin area, includes inferolateral region of anterior abdominal wall

### ○ Inguinal Canal

- is an oblique passage through abdominal wall that allows structures to pass between abdominal and pelvic cavities and perineum.
- **what creates the inguinal canal? deficiencies in anterolateral abdominal muscles, aponeuroses, and their deep fascia**
- canal has **2 openings**:
  - superficial inguinal ring lies in anterior wall of inguinal triangle of Hesselbach
  - deep inguinal ring lies in lateral inguinal fossa
- contents in this canal include spermatic cord in males and round ligament of uterus in females
  - **spermatic cord**: forms at deep inguinal ring, traverses inguinal canal, exits through superficial inguinal ring, enters scrotum and descends to posterior surface of testis.

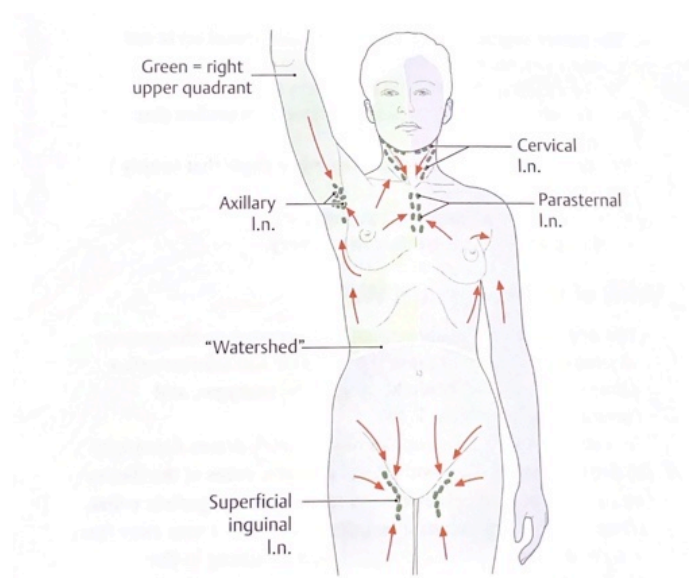
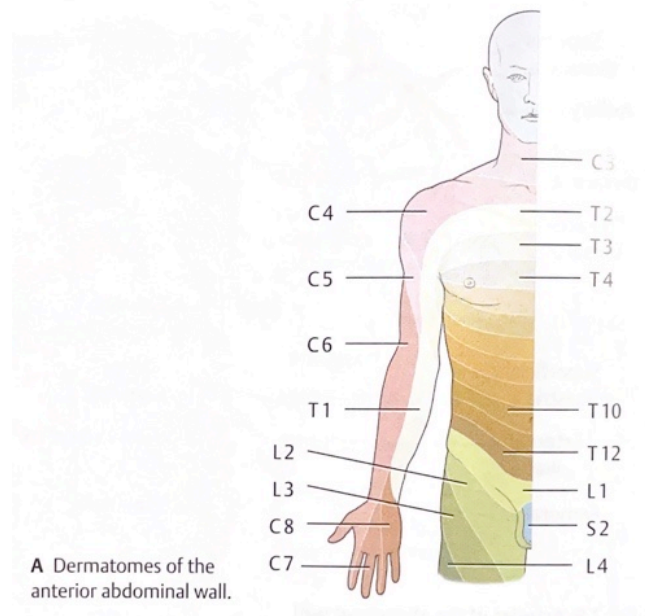


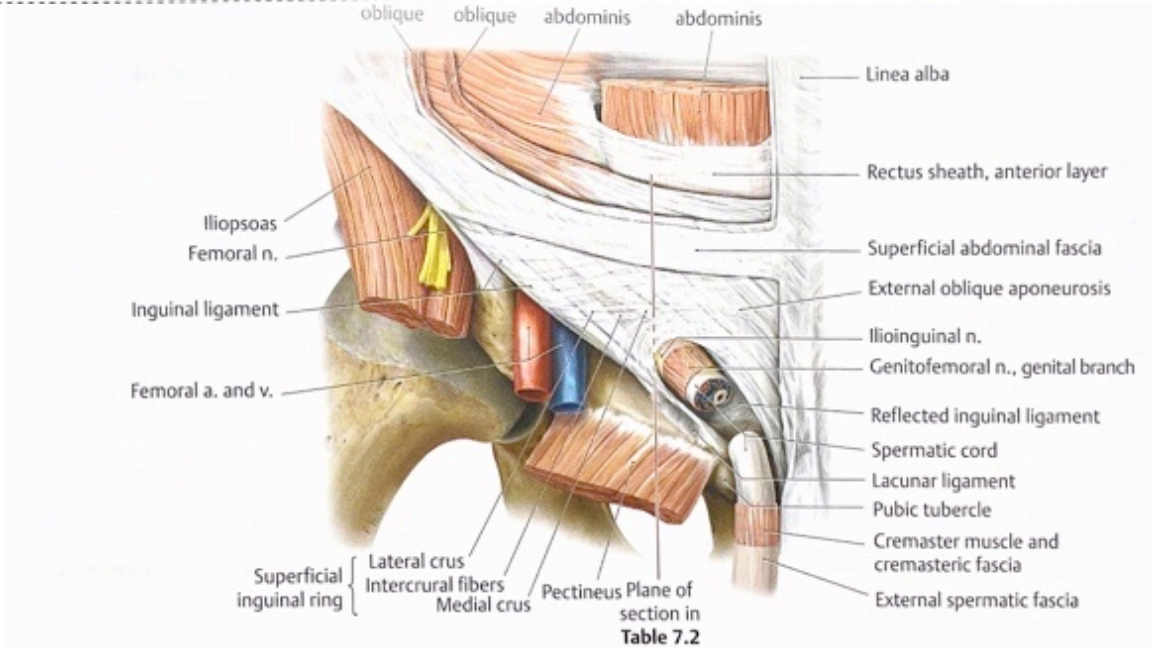
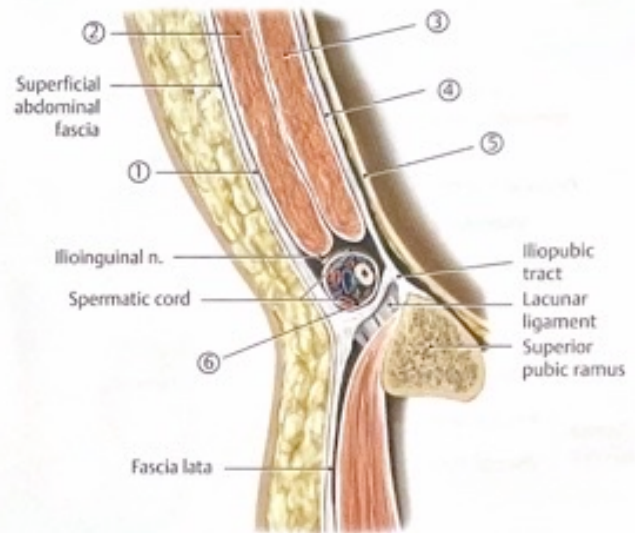
Fig. 7.11 Lymphatic pathways and regional lymph nodes of the anterior trunk wall  
Anterior view. Arrows indicate the direction of lymph flow.



A Dermatomes of the anterior abdominal wall.

**Table 7.2 Structures of the Inguinal Canal**

Structures	Formed by
Wall	Anterior wall ① External oblique aponeurosis
Roof	② Internal oblique muscles ③ Transversus abdominis
Posterior wall	④ Transversalis fascia ⑤ Parietal peritoneum
Floor	⑥ Inguinal ligament (densely interwoven fibers of the lower external oblique aponeurosis and adjacent fascia lata of thigh)
Openings	Superficial inguinal ring: Opening in external oblique aponeurosis; bounded by medial and lateral crus, intercrural fibers, and reflected inguinal ligament
	Deep inguinal ring: Outpouching of the transversalis fascia lateral to the lateral umbilical fold (inferior epigastric vessels)



**Fig. 7.13 Male inguinal region**  
Right side, anterior view.