



كلية المستقبل الجامعة
قسم تقنيات التخدير

Anatomy

المرحلة الاولى

2022-2023

**Lecture Eight : Anatomy of
abdomen**

Dr.Neama hasson Aljoubori

Dr.Ali Hussein Al-Nasrawi

Anatomy of the Abdomen

Anterior Abdominal Wall

Anterior abdominal wall

The anterior abdominal wall is made up of skin, superficial fascia, deep fascia, muscles, extra peritoneal fascia (transversalis fascia), and parietal peritoneum (figure 1).

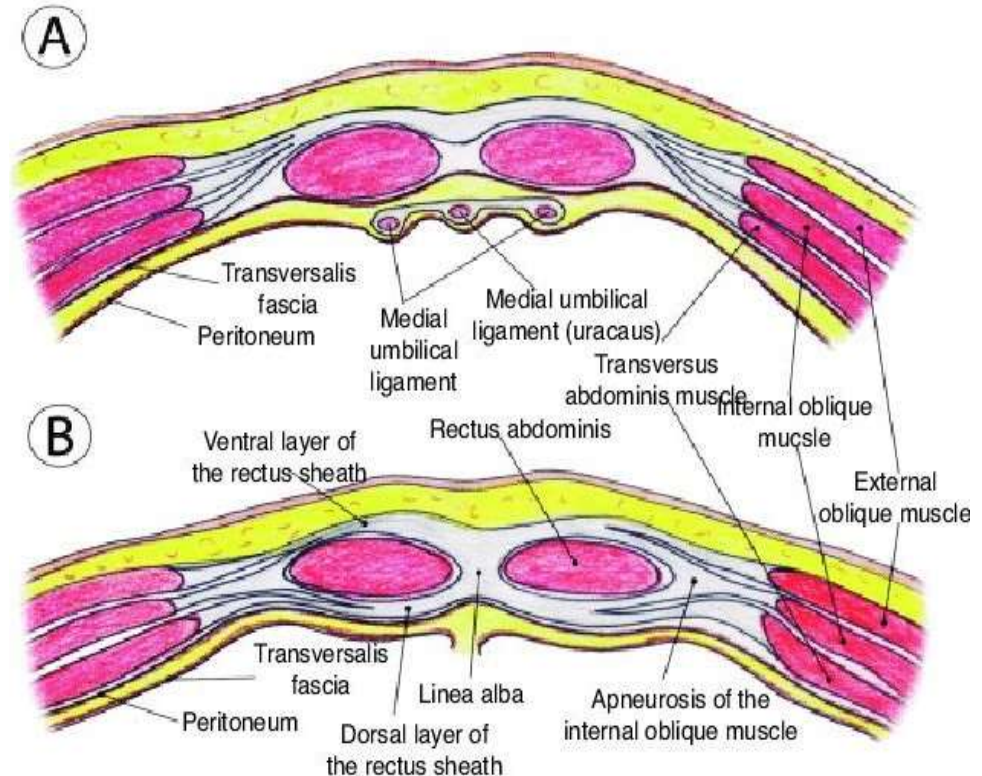
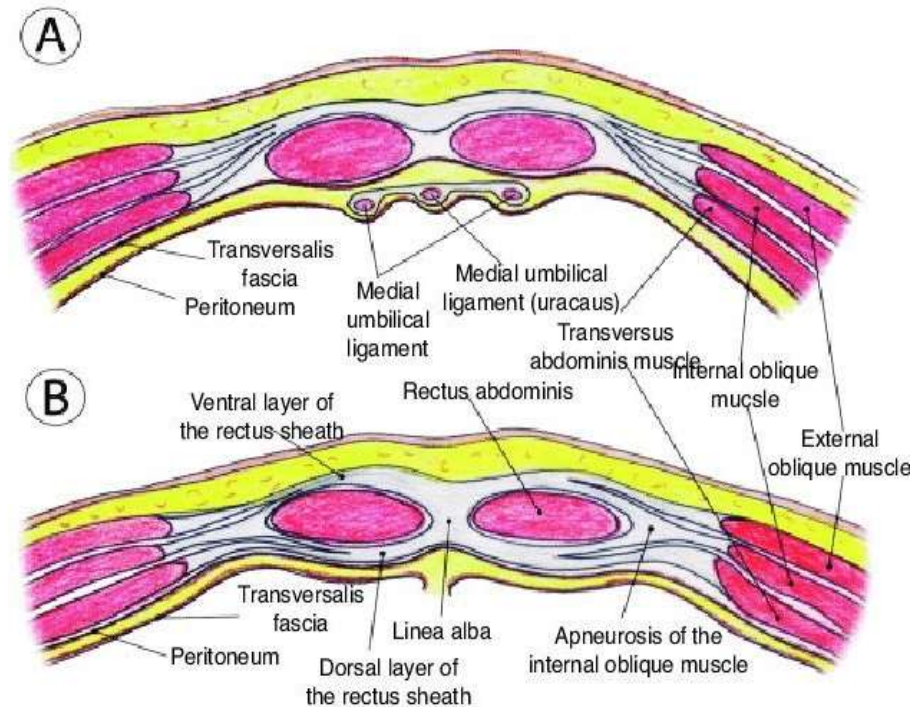


Figure
1

Anterior Abdominal Wall

The skin is loosely attached to the underlying structures except at the umbilicus, where it is adherent to the scar tissue. The **umbilicus** is a scar representing the site of attachment of the umbilical cord in the fetus; it is situated in the linea alba.



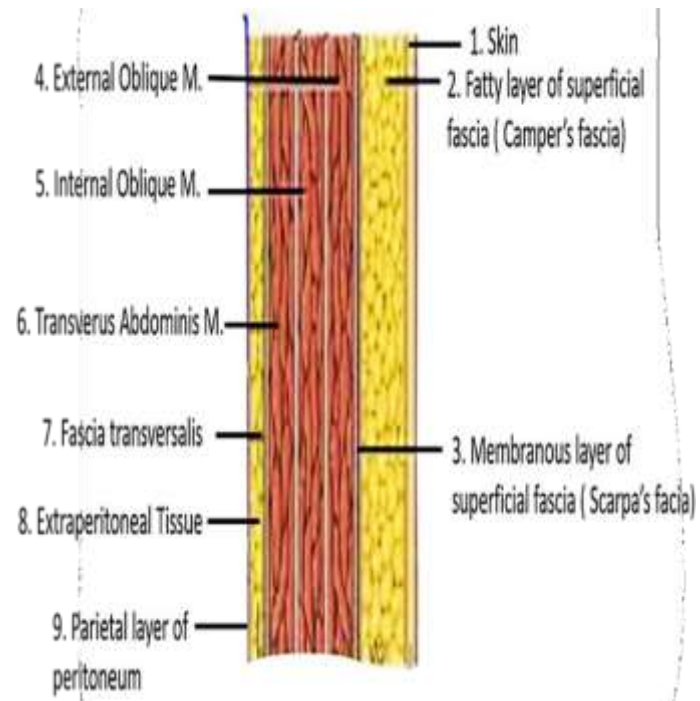
Anterior Abdominal Wall

Superficial Fascia

The superficial fascia is divided into a superficial **fatty layer (fascia of Camper)** and a deep **membranous layer (Scarpa's fascia)**.

Deep Fascia

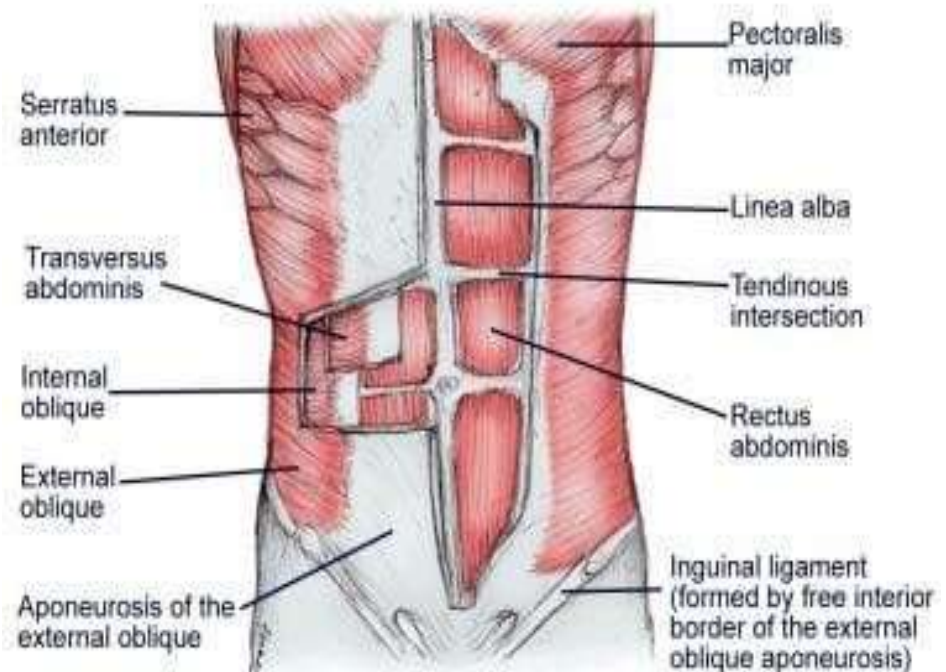
The deep fascia in the anterior abdominal wall is merely **a thin layer of connective tissue** covering the muscles; it lies immediately deep to the membranous layer of superficial fascia.



Anterior Abdominal Wall

Muscles of the Anterior Abdominal Wall

They consist of three muscles that end anteriorly by **aponeuroses**; from exterior to interior they are the **external oblique, internal oblique, and transversus** (Fig. 4). Anteriorly, on either sides of the midline there is a wide vertical muscle called **the rectus abdominis**. As the aponeuroses of the three muscles pass forward, they enclose the rectus abdominis to form the **rectus sheath**.



Figure

Anterior Abdominal Wall

The External Oblique

It **arises** from the outer surfaces of **the lower eight ribs starting from the 5th** and fans out to be **inserted** into:

- the xiphoid process,
- the linea alba,
- the pubic crest,
- the pubic tubercle, and
- the anterior half of the iliac crest. (figure 5).

The most posterior fibers passing down to the iliac crest form a posterior free border.

External Obliques

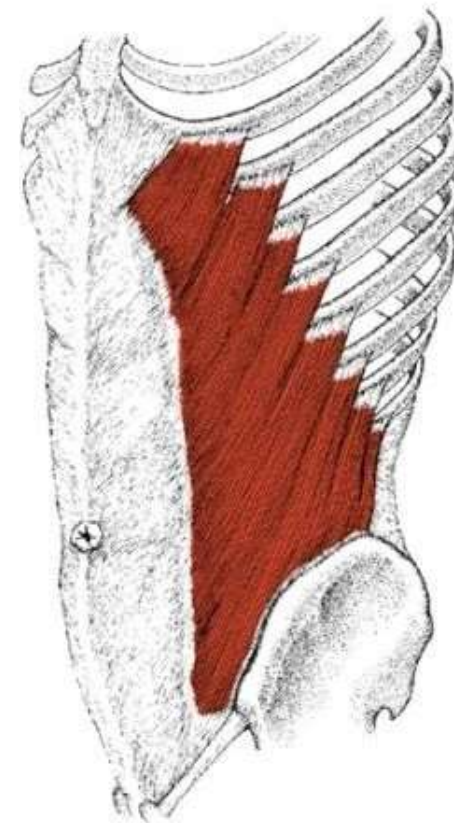


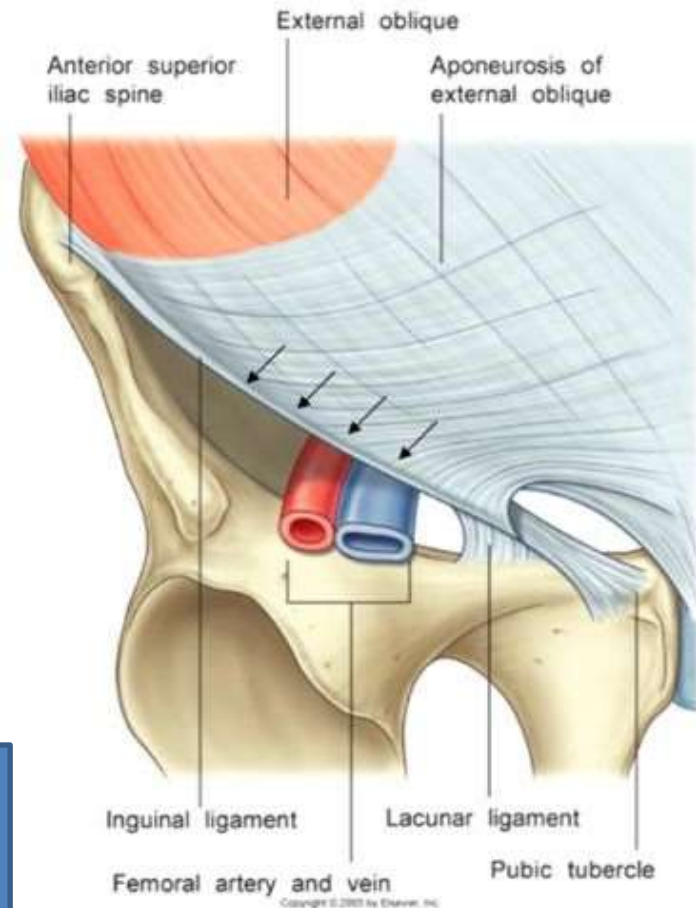
Figure
5

Anterior Abdominal Wall

Superficial inguinal ring

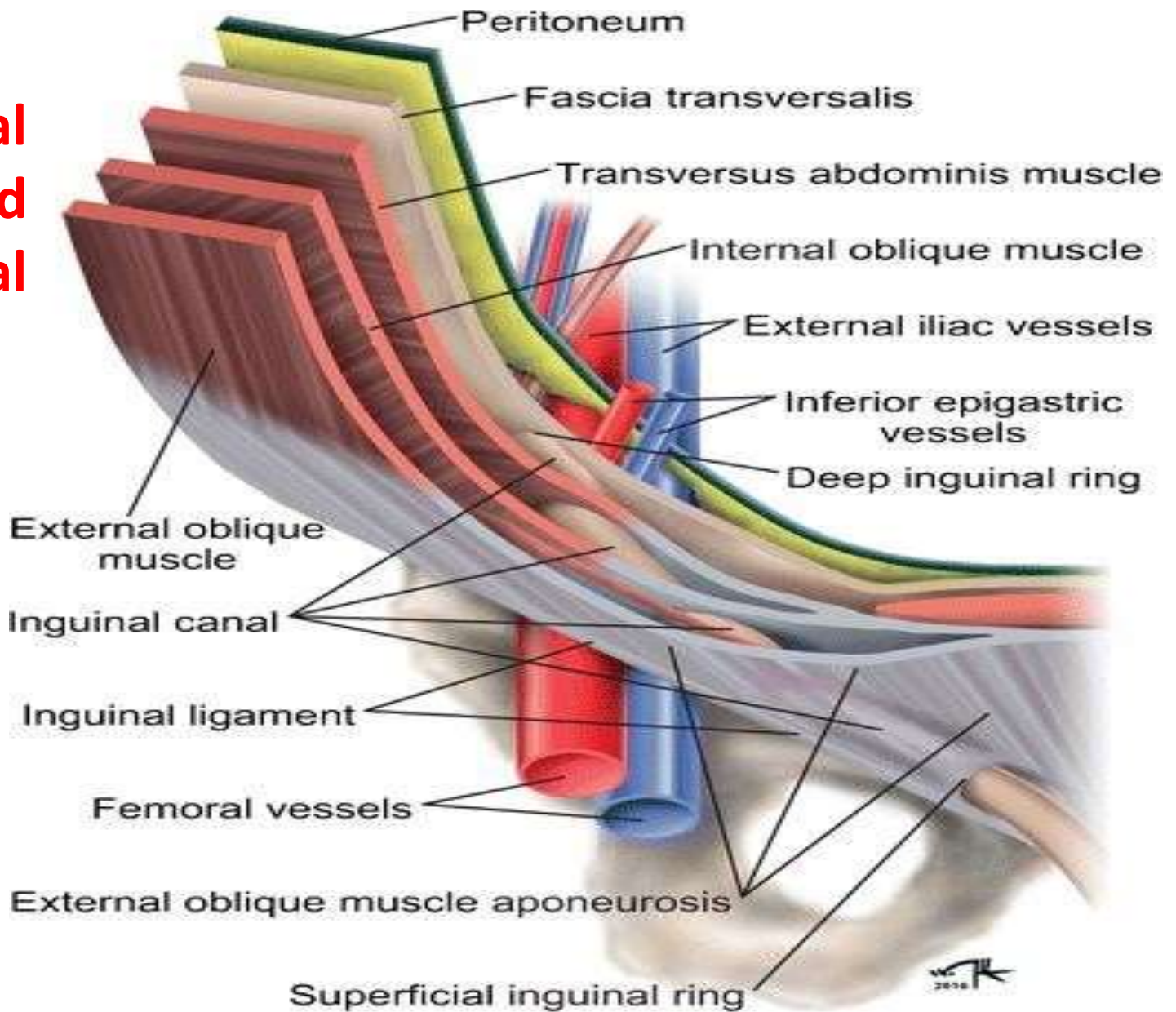
Is a triangular-shaped defect in the **external oblique aponeurosis** lies immediately above and medial to the pubic tubercle. **The spermatic cord** passes through this opening. Between the anterior superior iliac spine and the pubic tubercle, the lower border of the aponeurosis is folded backward on itself to form the **inguinal ligament**.(figure.(6 a and b)

Figure.
6a



Inguinal rings and canal

Figure 6b

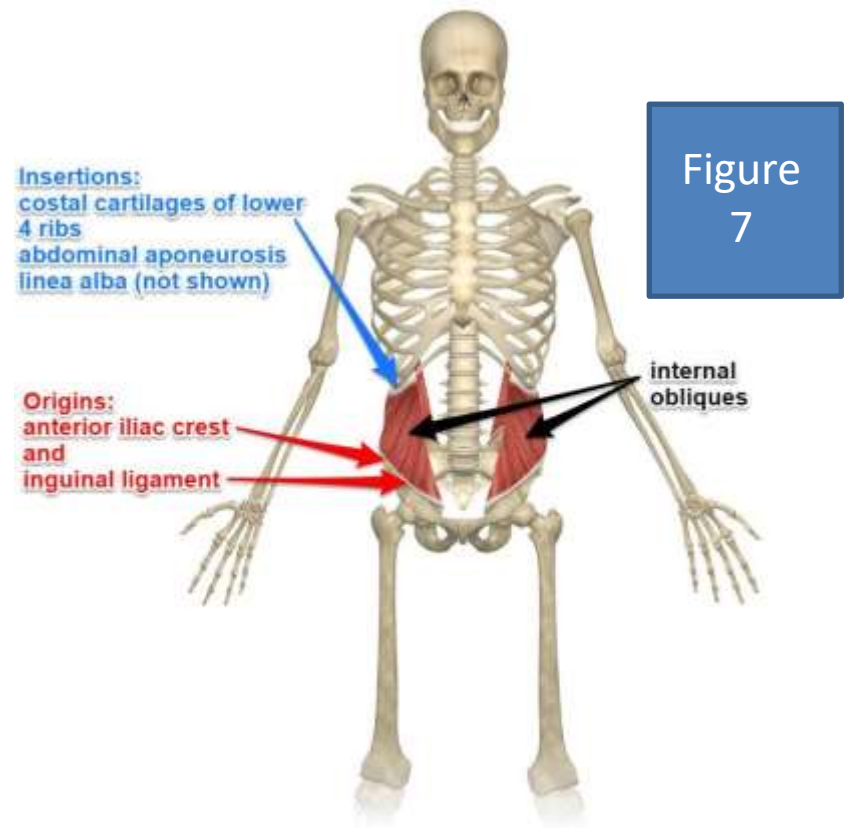


Anterior Abdominal Wall

Internal Oblique

The internal oblique muscle lies deep to the external oblique. It **arises** from: (figure 7)

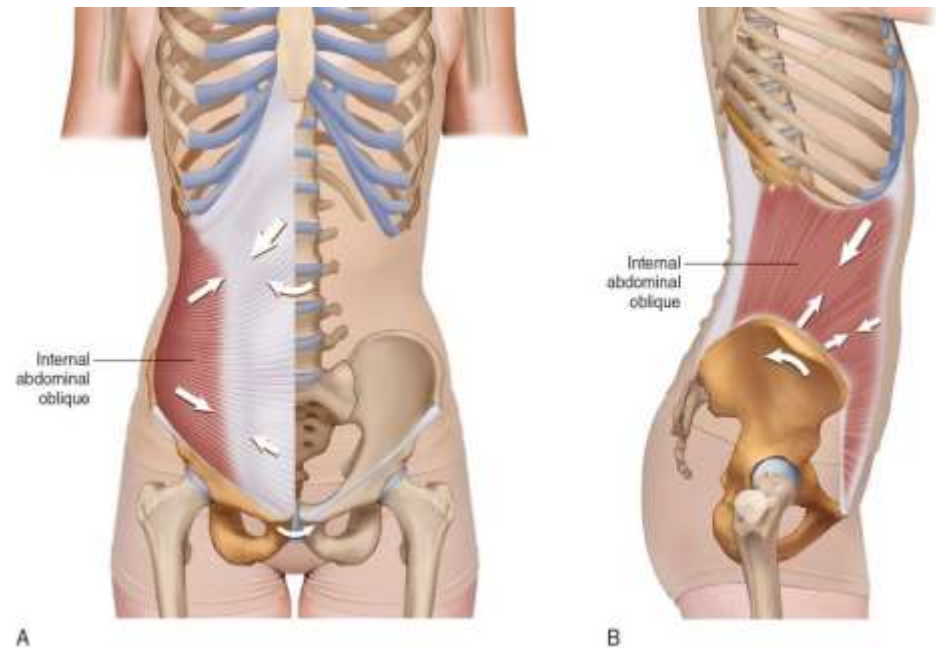
- the lumbar fascia,
- the anterior two thirds of the iliac crest, and
- the lateral two thirds of the inguinal ligament.



Anterior Abdominal Wall

The muscle is inserted into: (figure 8)

- a. the lower borders of the lower three ribs and their costal cartilages,
- b. the xiphoid process,
- c. the linea alba,
- d. The symphysis pubis.



© Dr. Joe Muscolino (www.learnmuscles.com), art by Giovanni Rimasti

Figure
8

Anterior Abdominal Wall

Transversus Abdominis (figure 9)

The muscle lies deep to the internal oblique. It **arises** from

- the deep surface of the lower six costal cartilages ,
- the lumbar fascia,
- the anterior two thirds of the iliac crest, and
- the lateral third of the inguinal ligament.

It is **inserted** into the **xiphoid process, the linea alba, and the symphysis pubis.**

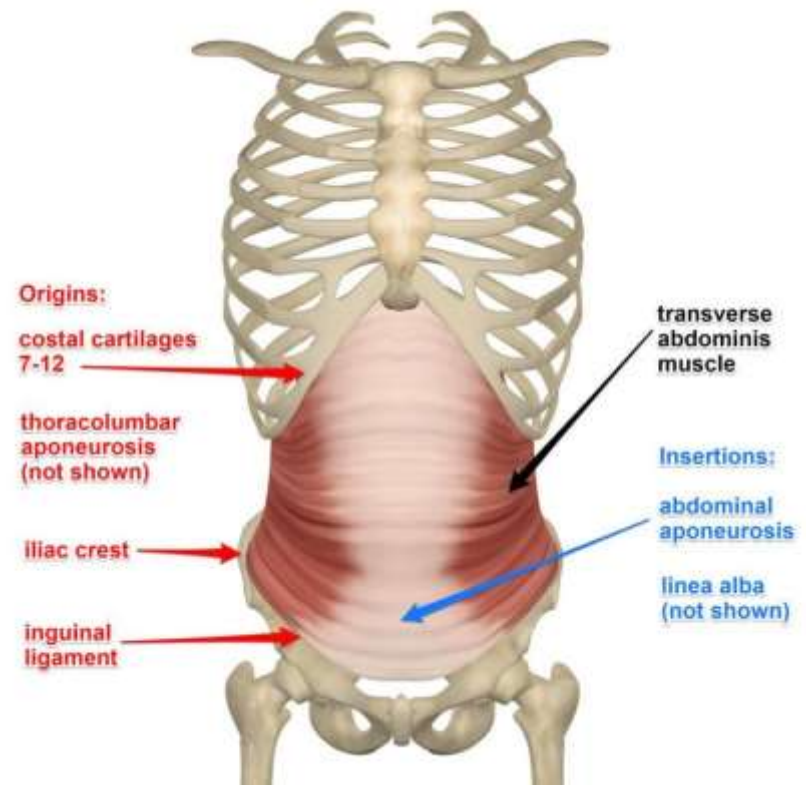


Figure
9

Anterior Abdominal Wall

The rectus abdominis muscle arises by two heads, from the front of the **symphysis pubis** and from the **pubic crest**.

It is inserted into the **5th, 6th, and 7th costal cartilages** and **the xiphoid process**. The rectus abdominis is enclosed between the **aponeuroses of the external oblique, internal oblique, and transversus**, which form the **rectus sheath**.

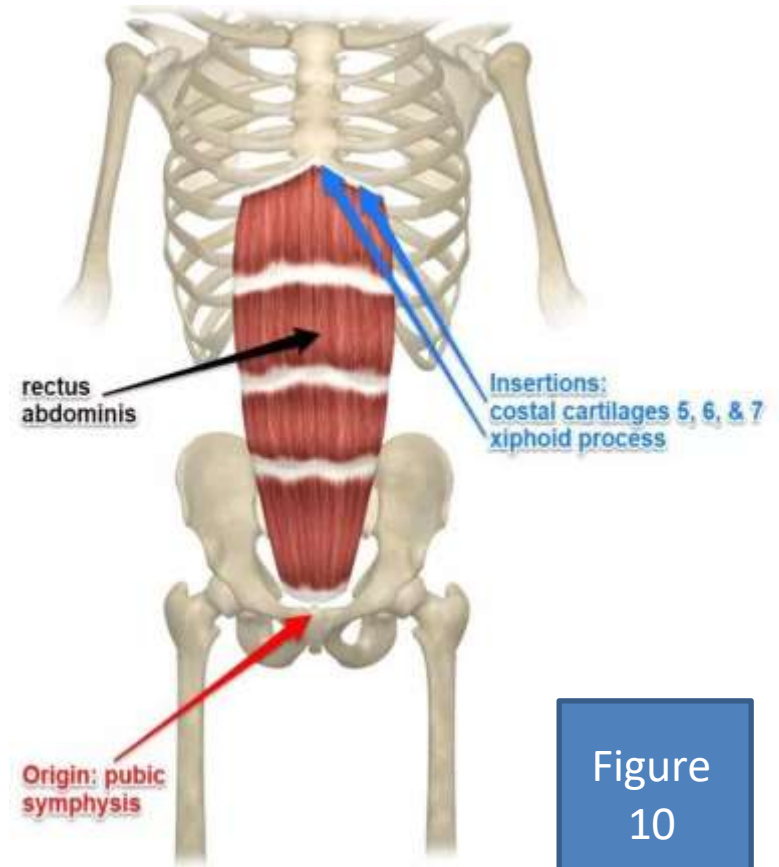


Figure
10

Anterior Abdominal Wall

Function of the Anterior Abdominal Wall Muscles.

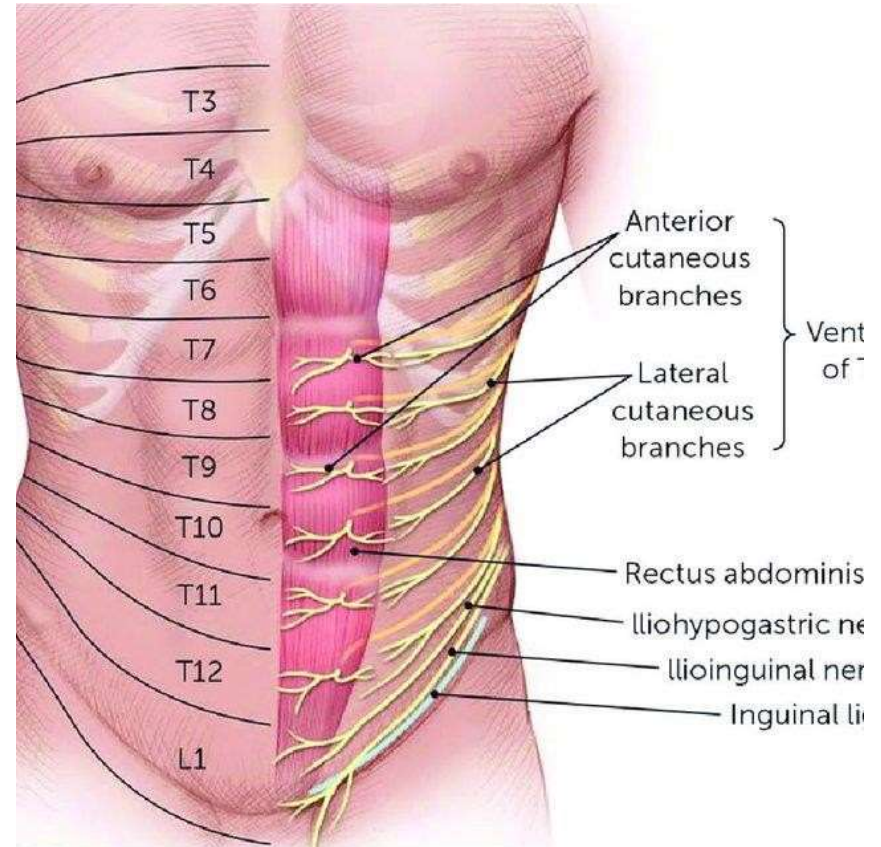
The oblique muscles **laterally flex and rotate the trunk**. The rectus abdominis **flexes the trunk and stabilizes the pelvis**. They assist the **diaphragm during inspiration** by relaxing as the diaphragm descends so that the abdominal viscera can be accommodated. The transverses increases the intra-abdominal pressure and help in micturition, defecation, vomiting, and parturition

Muscle	Role in movement	Role in respiration
Rectus abdominis	Flexion of vertebral column, assisting in lateral flexion	Pulls ribcage downwards to assist in (forced) expiration
External oblique	Flexion, rotation and lateral flexion of the vertebral column	Pulls ribcage downwards to assist in (forced) expiration
Internal oblique	Rotation and lateral flexion of the vertebral column	Pulls ribcage downwards to assist in (forced) expiration
Transverse abdominis	Stabilization of the pelvis	Increases intra-abdominal pressure to assist in (forced) expiration

Anterior Abdominal Wall

Nerve Supply of Anterior Abdominal Wall Muscles

The oblique and transversus abdominis muscles are supplied by the lower six thoracic nerves and the iliohypogastric and ilioinguinal nerves (L1). The rectus muscle is supplied by the lower six thoracic nerves.

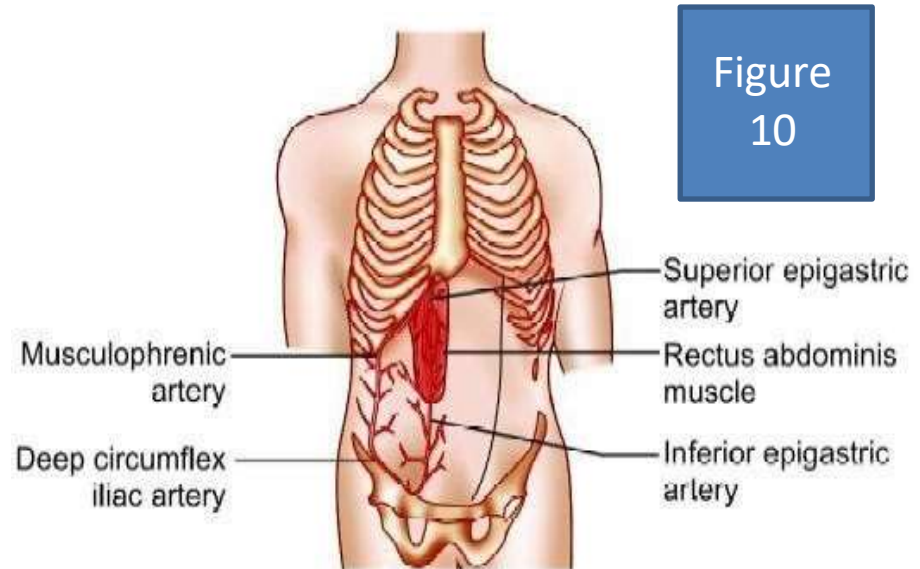


Anterior Abdominal Wall

Arteries of the Anterior Abdominal Wall (figure10)

1. The superior epigastric artery, one of the terminal branches of the internal thoracic artery, it supplies the upper central part of the anterior abdominal wall.

2. The inferior epigastric artery is a branch of the external iliac artery just above the inguinal ligament. It supplies the lower central part of the anterior abdominal wall, and anastomoses with the superior epigastric artery.



Anterior Abdominal Wall

3. The deep circumflex iliac artery (figure 11)

is a branch of the external iliac artery just above the inguinal ligament. It supplies the lower lateral part of the abdominal wall. The lower two posterior intercostal arteries, branches of the descending thoracic aorta, and the four lumbar arteries, branches of the abdominal aorta, pass forward between the muscle layers and supply the lateral part of the abdominal Wall.

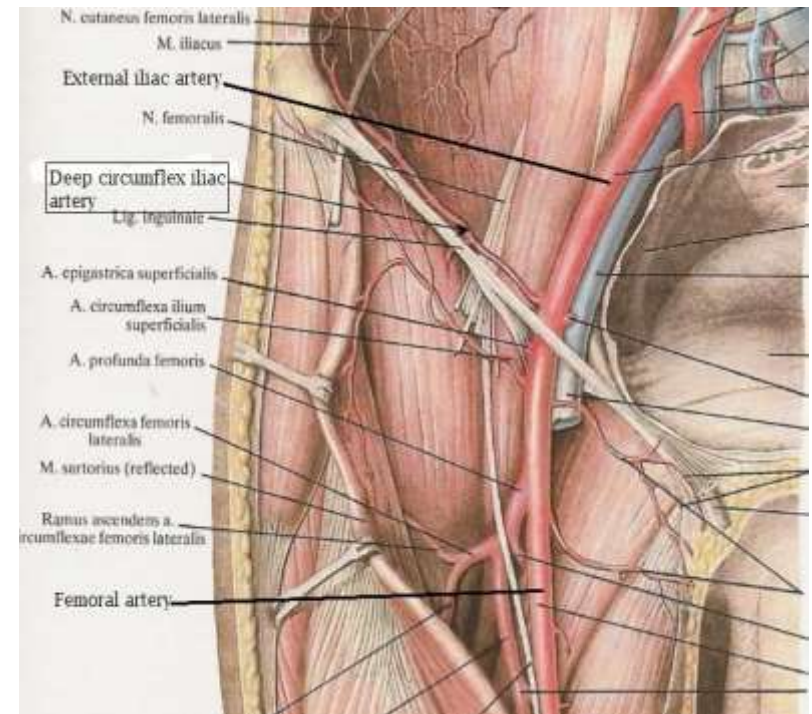


Figure
11

Anterior Abdominal Wall

Inguinal Canal

The inguinal canal is an oblique passage through the lower part of the anterior abdominal wall **(figure 12)**. The canal is about 4 cm long in the adult and extends from the deep inguinal ring, to the superficial inguinal ring,

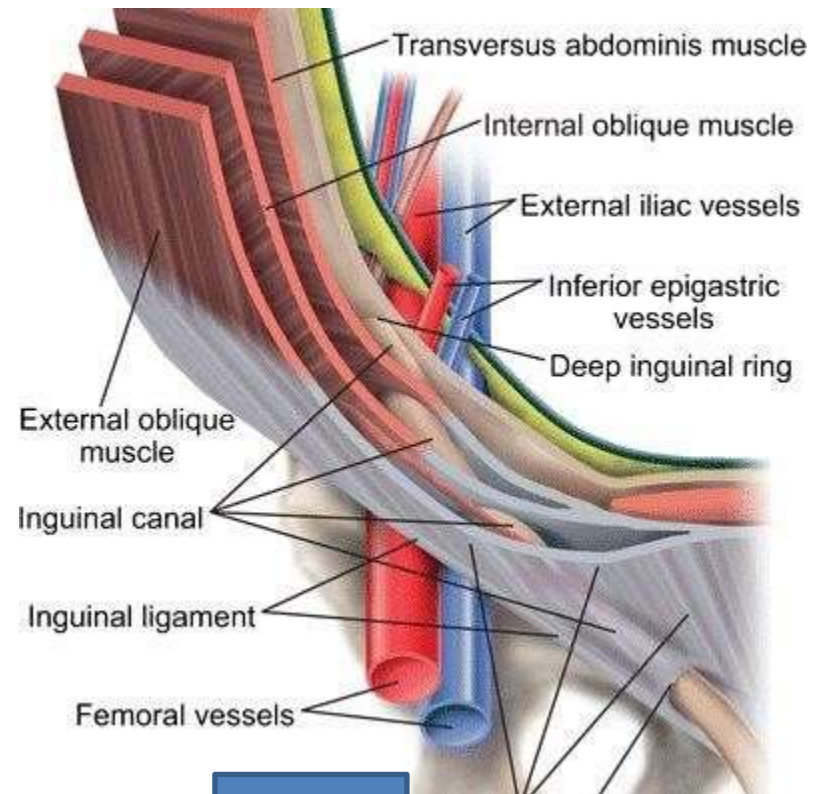


Figure
12

Anterior Abdominal Wall

Spermatic Cord

The spermatic cord is a collection of structures. It **begins at the deep inguinal ring and ends at the testis (figure 13.)**

Structures of the Spermatic Cord

The structures are as follows:

- ■ Vas deferens
- ■ Testicular artery
- ■ Testicular veins (pampiniform plexus)
- ■ Testicular lymph vessels

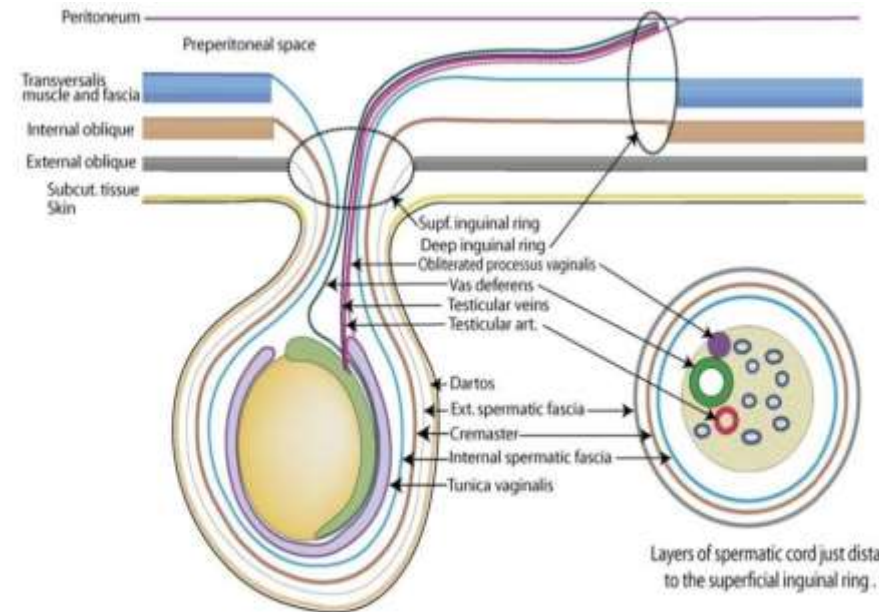


Fig. 8.1 As the normal testicles descend from their retroperitoneal embryonic origin to the anteriorly situated scrotal sac to maintain lower temperature for spermatogenesis, they bring along a thin covering of each layer of the abdominal wall progressively from the deep inguinal ring past the superficial inguinal ring. Testicles, even though enveloped by a knuckle of the double layer of the peritoneum, continue to be extraperitoneal. The vas deferens, spermatic vessels, and lymphatics continue to drain into their respective preperitoneal and retroperitoneal target organs.

figure
13