

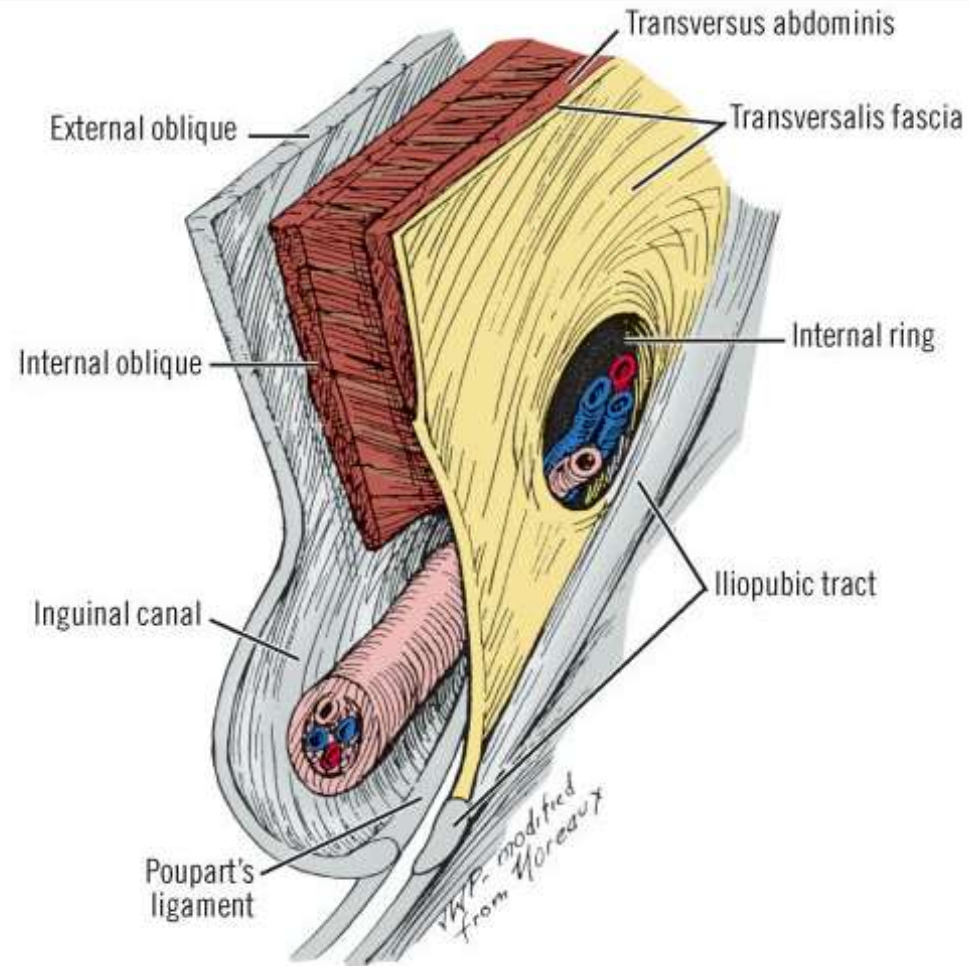
# Inguinal region

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# Inguinal Canal

- The inguinal canal in the adult is an oblique rift in the lower part of the anterior abdominal wall.
- It measures approximately 4 cm in length.
- It is located 2 to 4 cm above the inguinal ligament
- Begins at the internal (deep) inguinal ring
- Ends at external (superficial) ring.



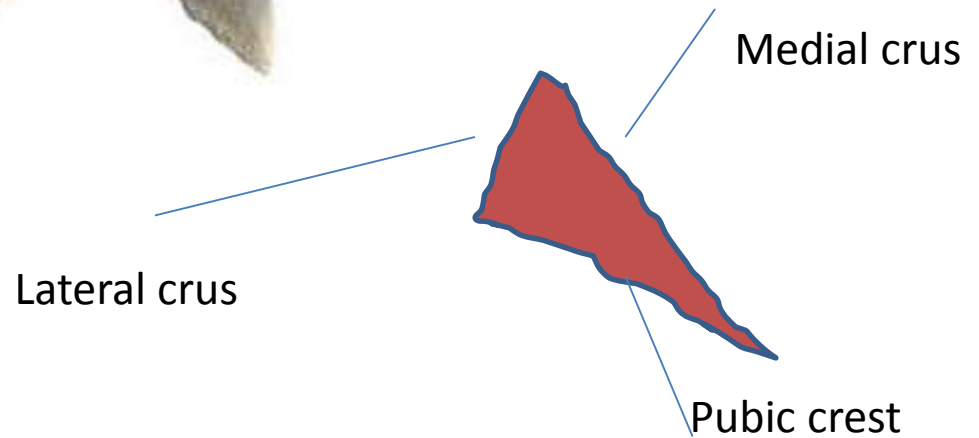
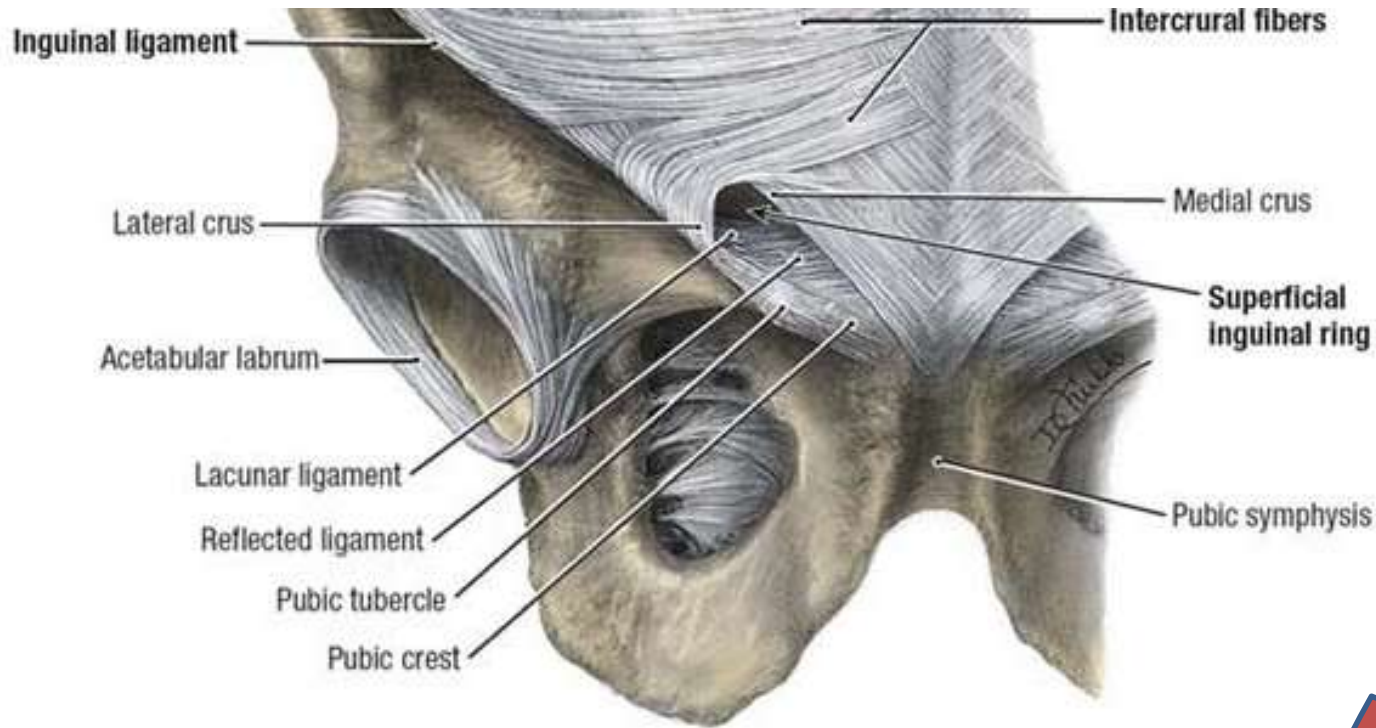
# Inguinal Canal: Deep Inguinal Ring

- Beginning of the inguinal canal
- Midway between the anterior superior iliac spine and the pubic symphysis
- 2-3cm above the inguinal ligament and immediately lateral to the inferior epigastric vessels.
- Opening in the transversalis fascia

# Inguinal Canal: Superficial Inguinal Ring

- End of the inguinal canal
- Superior to the pubic tubercle
- Triangle-shaped opening in the external oblique aponeurosis
  - *Apex* points superolaterally
  - *Base* formed by the pubic crest.
  - *Medial* boundary is medial crus which is attached to the symphysis
  - *Lateral* Boundary is the lateral crus) which is attached to the pubic tubercle,
- Apex of the triangle are held together by the intercrural fibers, which prevent further widening of the superficial ring.

# Superficial Inguinal Ring

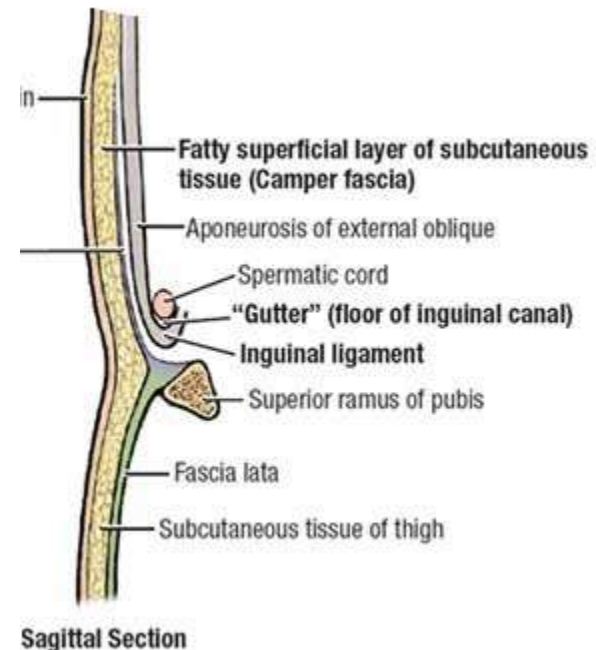


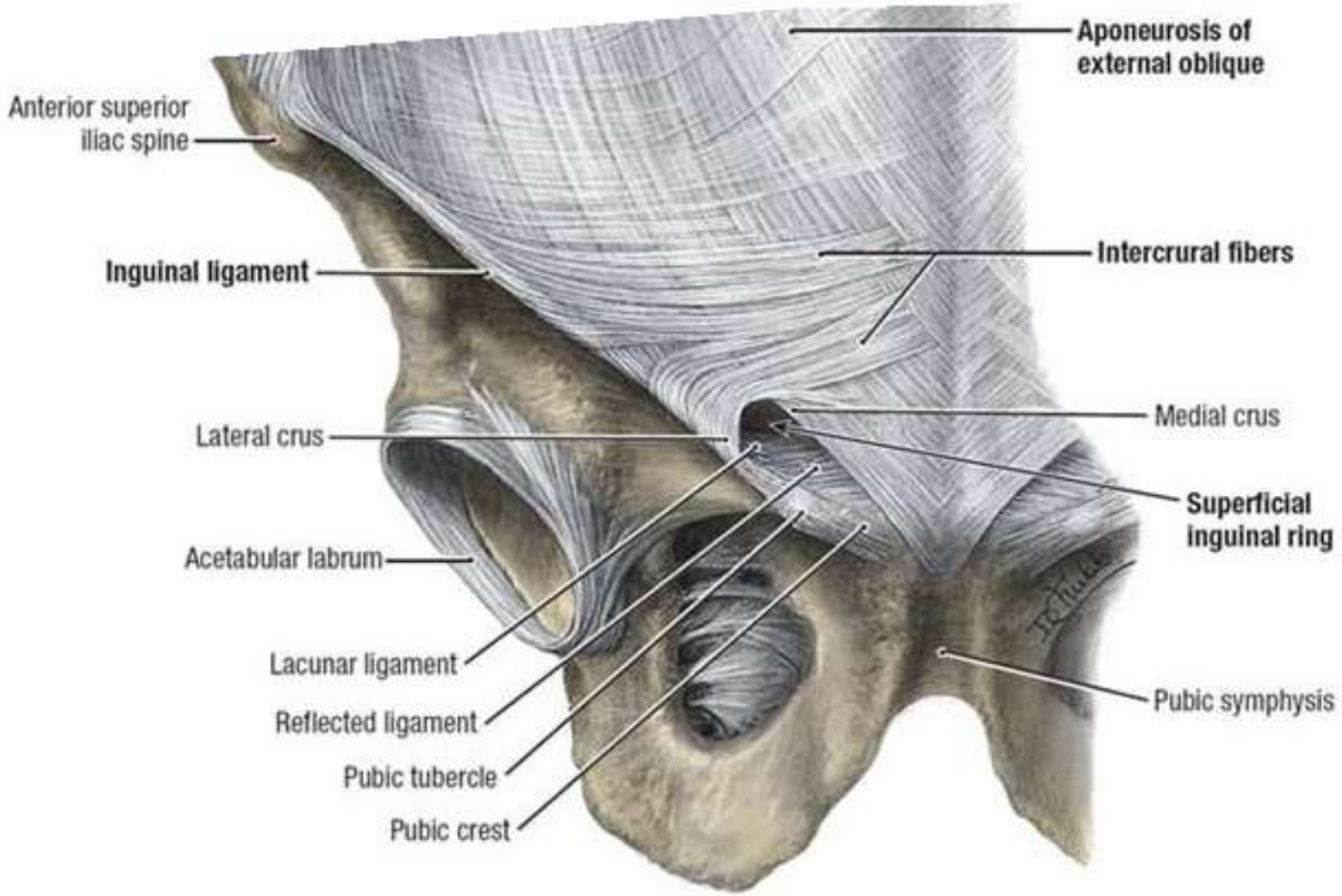
**Scheme of the ring: roughly triangular**

# Inguinal Canal: Walls

- ***Anterior***

Aponeurosis of the external oblique muscle and, more laterally, the internal oblique muscle.





# Anterior Wall

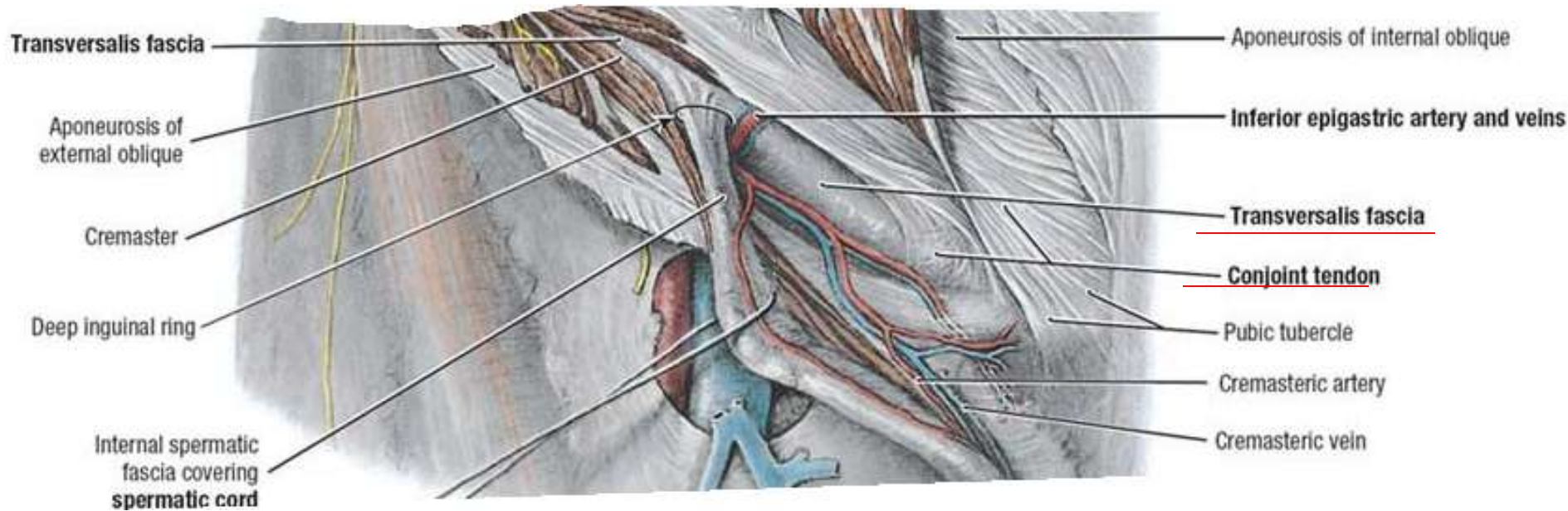
# Inguinal Canal: Walls

- ***Posterior:***

- In 75% of the population, this is the conjoint tendon (aponeurosis of the transversus abdominis muscle and the transversalis fascia).
- In the remaining 25%, the posterior wall is the transversalis fascia only.
- Medially the posterior wall is reinforced by the internal oblique aponeurosis.



# Posterior Wall



# Inguinal Canal: Walls

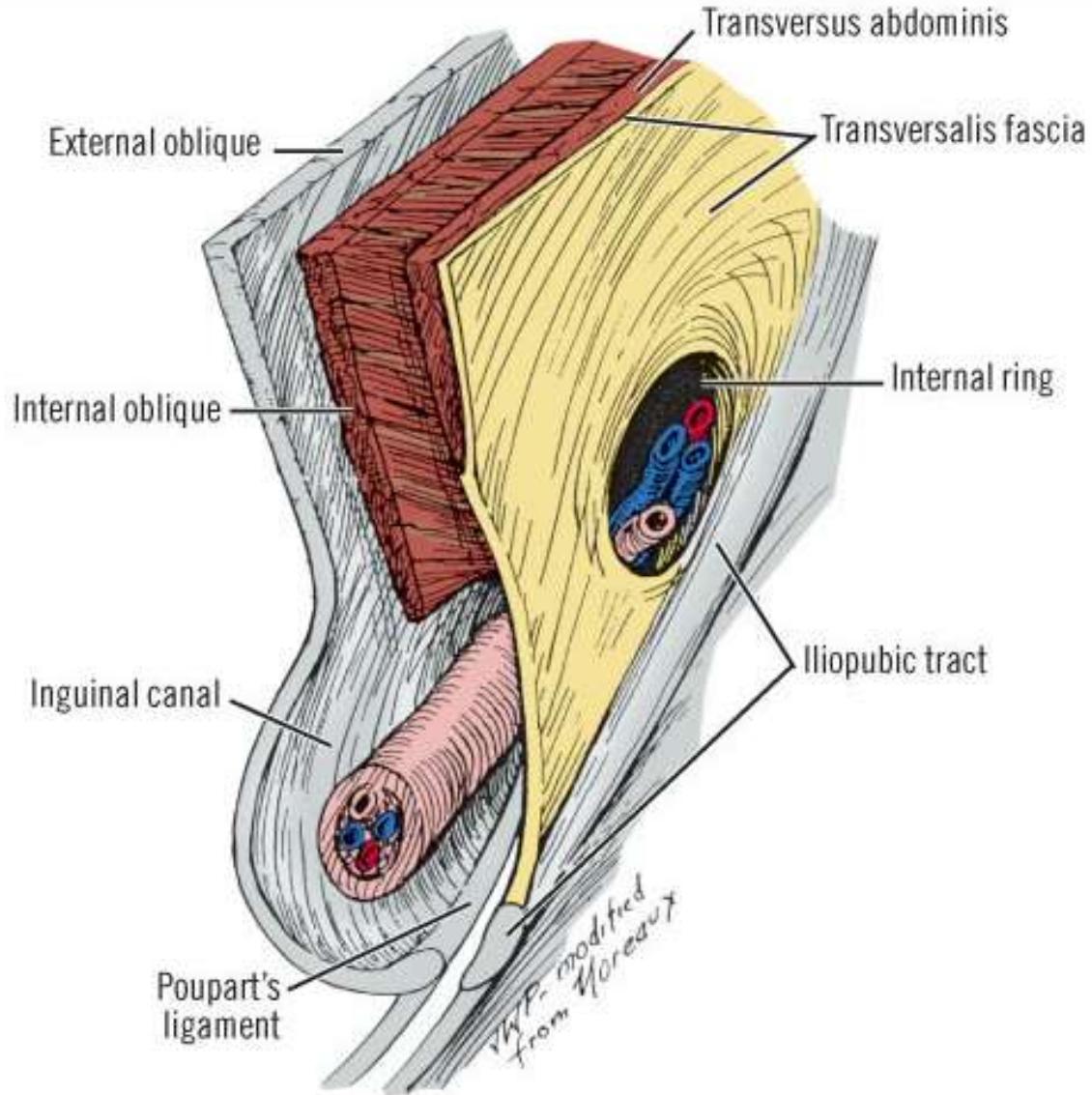
- ***Superior (Roof)***: Arched fibers of the lower edge (roof) of the internal oblique muscle and by the transversus abdominis muscle and aponeurosis.
- ***Inferior (Floor)***: Inguinal ligament and the lacunar ligament.

# Inguinal Canal: Walls

**Table 2.2 Structures Forming The Inguinal Canal**

<b>Boundaries</b>	<b>Lateral Third</b>	<b>Middle Third</b>	<b>Medial Third</b>
Posterior wall	Transversalis fascia including deep inguinal ring	Transversalis fascia	Transversalis fascia Conjoint tendon
Anterior wall	Aponeurosis of external oblique Internal oblique	Aponeurosis of external oblique	Aponeurosis of external oblique Superficial inguinal ring
Roof	Arching fibers of internal oblique and transversus abdominis		
Floor	Inguinal ligament	Inguinal ligament	Inguinal ligament Lacunar ligament

# The Inguinal Canal



# Inguinal Canal: Contents

- **Three**

- I. The spermatic cord in men or the round ligament of the uterus in women. This structures contains many more structures
- II. Genital branch of the genitofemoral nerve
- III. Ilio-inguinal nerve

# Contents of the spermatic cord

- The spermatic cord encloses 12 structures which are categorized as follows:
  - 3 Fascia layers
  - 3 Arteries
  - 3 Nerves
  - 3 Other structures

# Contents of the spermatic cord

- **3 Fascia layers**

- i. External spermatic fascia* from the external oblique aponeurosis
- ii. Cremasteric fascia* from the internal oblique aponeurosis which contains muscle fibers called the cremaster muscle
- iii. Internal spermatic fascia* from the transversalis fascia

# Contents of the spermatic cord

- **3 Arteries**

- i. Testicular artery* from the aorta

- ii. Cremasteric artery* from the inferior epigastric artery

- iii. Artery of the ductus deferens* from the inferior vesical artery



# Contents of the spermatic cord

- **3 Nerves**

- i. Genital branch of the genito-femoral nerve which supplies the cremaster muscle
- ii. Ilio-inguinal nerve from L1. Supplies the skin of lower inguinal region, mons pubis, anterior scrotum or labium majus, and adjacent medial thigh; lowermost fibres of internal oblique and transverse abdominis muscles
- iii. Sympathetic autonomic plexus (fibers from T10-T11)

# Contents of the spermatic cord

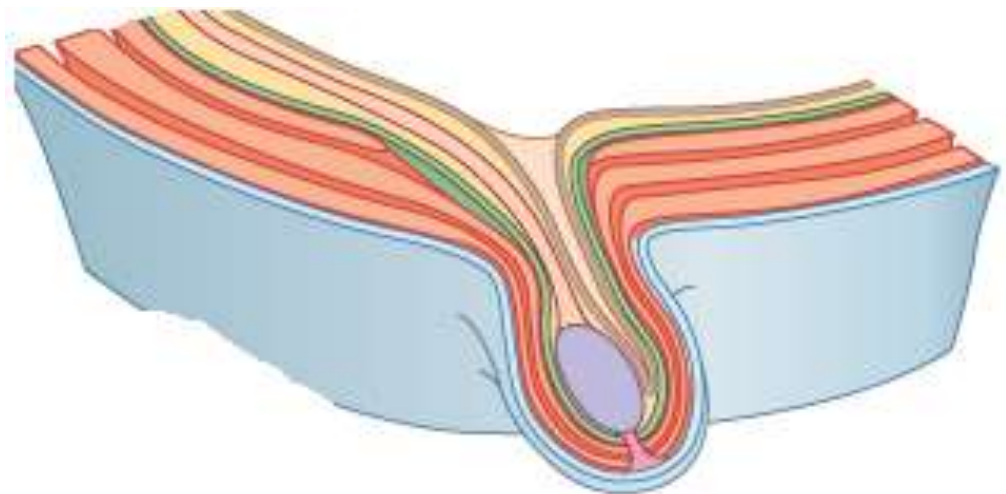
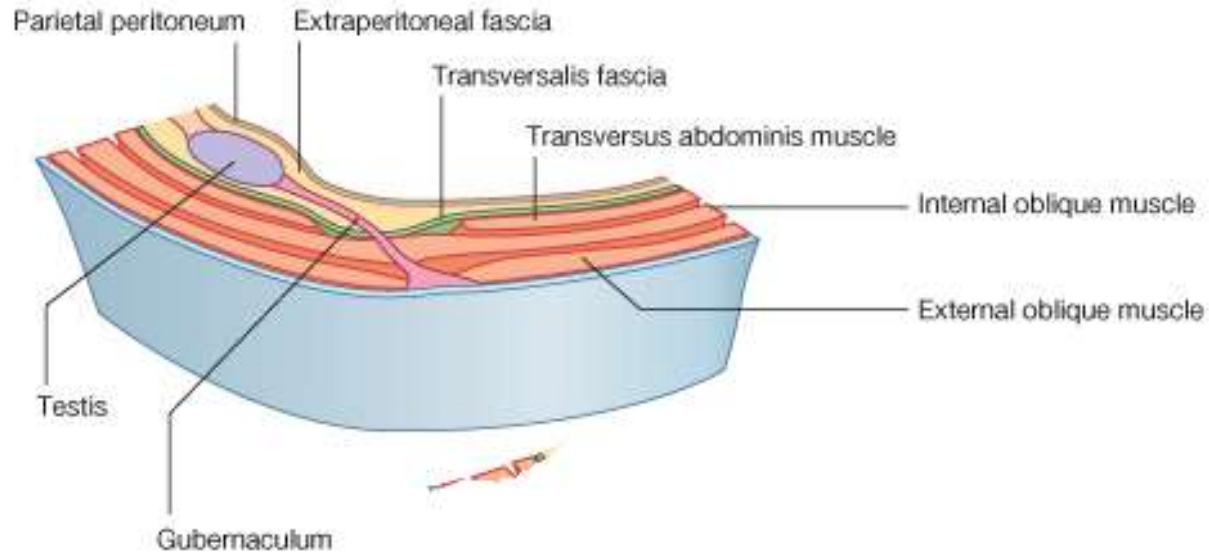
- **3 Other structures**

- i. Lymphatic vessels draining the testis into the paraaortic lymph nodes
- ii. Ductus deferens
- iii. Pampiniform venous plexus contains up to 12 veins which eventually becomes the testicular vein

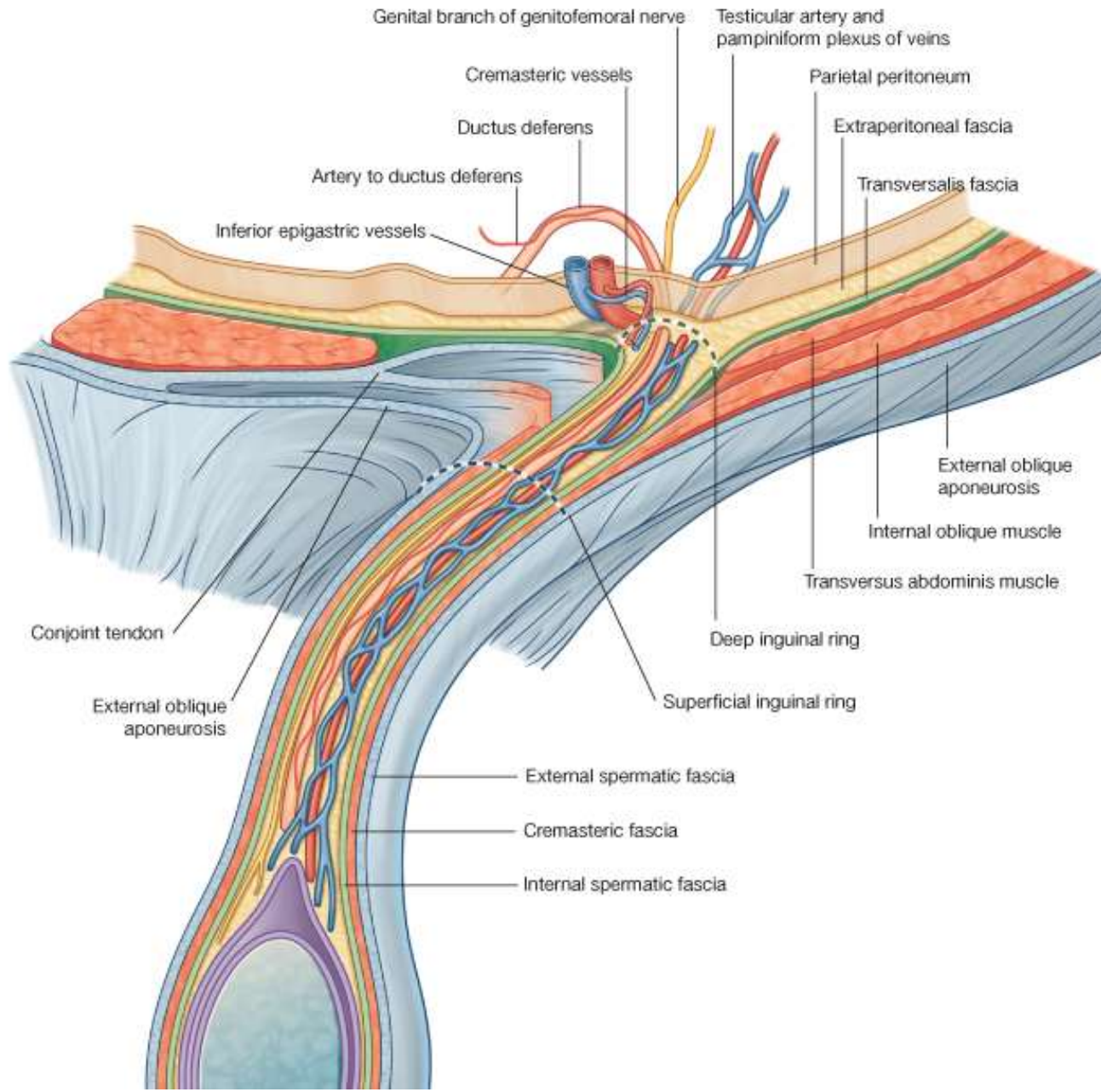
# Contents of the round ligament

- The content of the round ligament is different from the contents of the spermatic cord
- The round ligament does not contain comparable structures.
- It contains only vestiges of the lower part of the ovarian gubernaculum and the processus vaginalis

# Evolution of the Spermatic cord

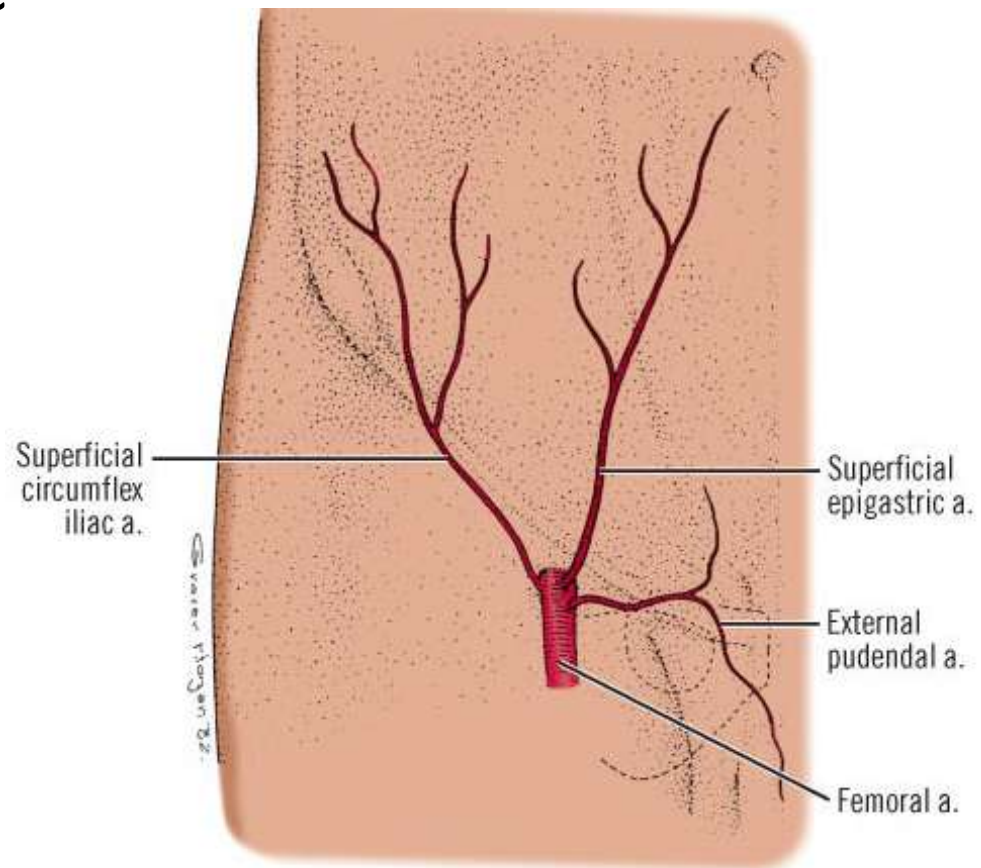


# Spermatic cord



# Inguinal Region: Blood Supply

- Superficial circumflex iliac artery (close to the iliac crest)
- Superficial epigastric artery (at the midgroin area, with an upward vertical orientation)
- Superficial external pudendal artery (inferior to the inguinal ligament at the fossa ovalis)



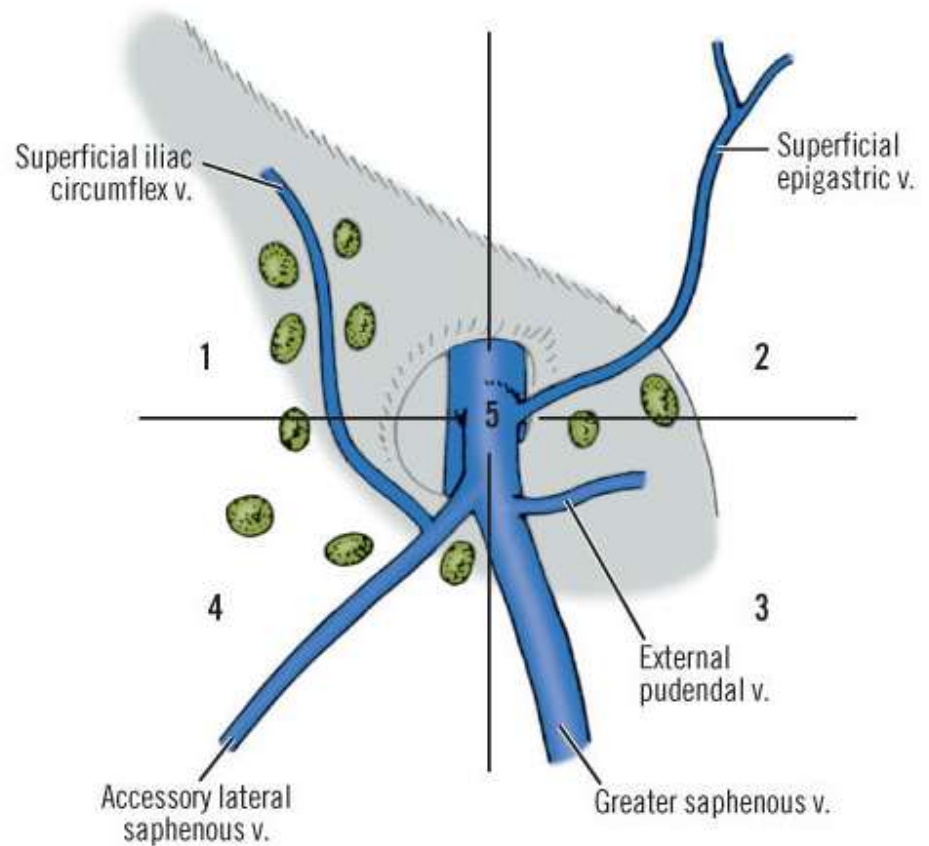
# Inguinal lymph nodes

Inguinal lymph nodes may be divided into:

- Superficial nodes between the superficial fascia and the fascia lata
- Deep inguinal nodes beneath the fascia lata
- Aberrant inguinal nodes within the inguinal canal which is only present occasionally

# Superficial Inguinal Lymph Nodes

- Divided into Five zones around the Great Saphenous Vein
- Usually numbers between 8 and 25
- Lies in close relation to the veins

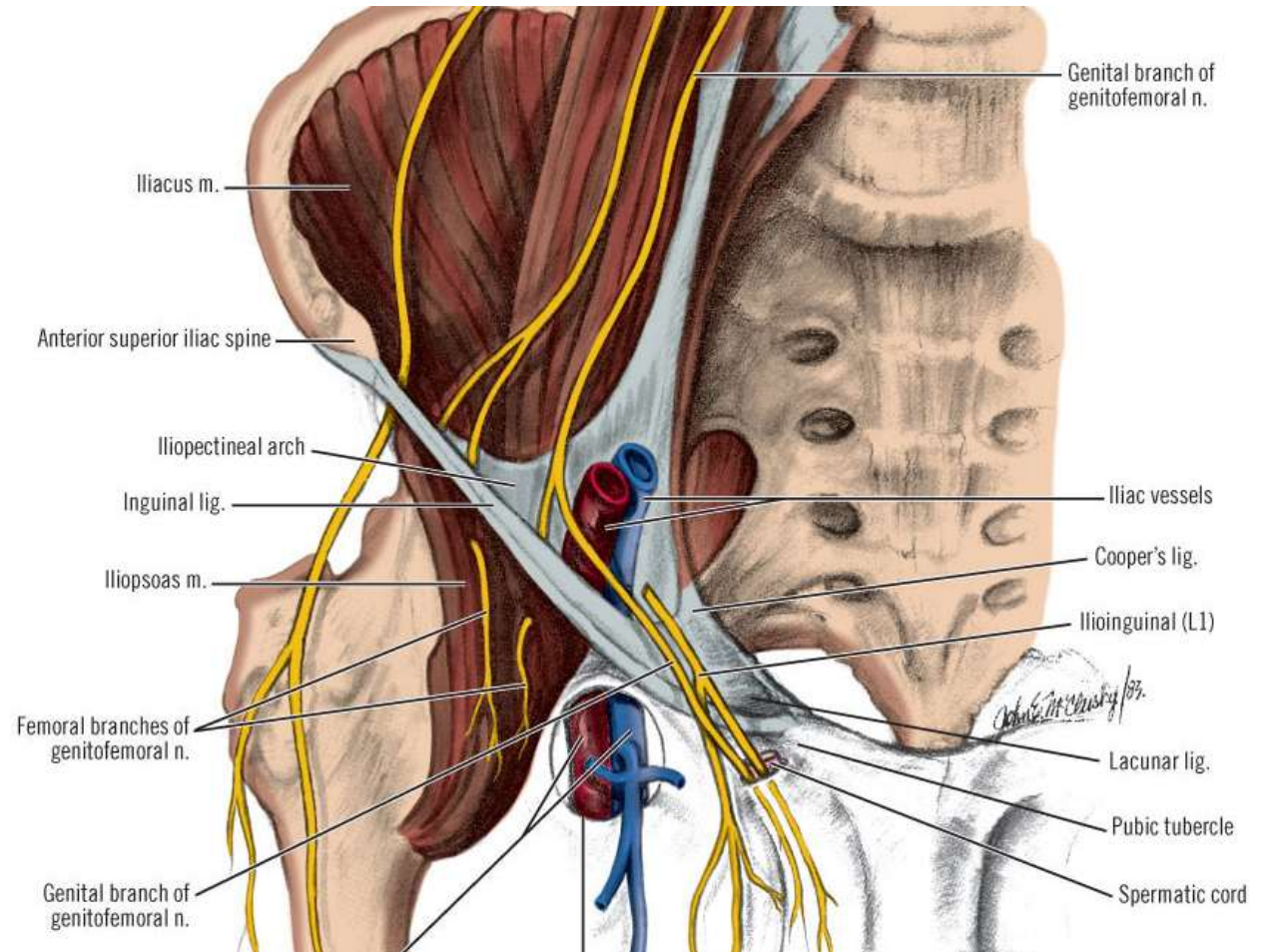




# Deep Inguinal Lymph Nodes

- Two or three small nodes lie beneath the fascia lata along the femoral vein.
- The largest is the node of Cloquet, in the femoral ring between the vein and the lacunar ligament, is almost always present.

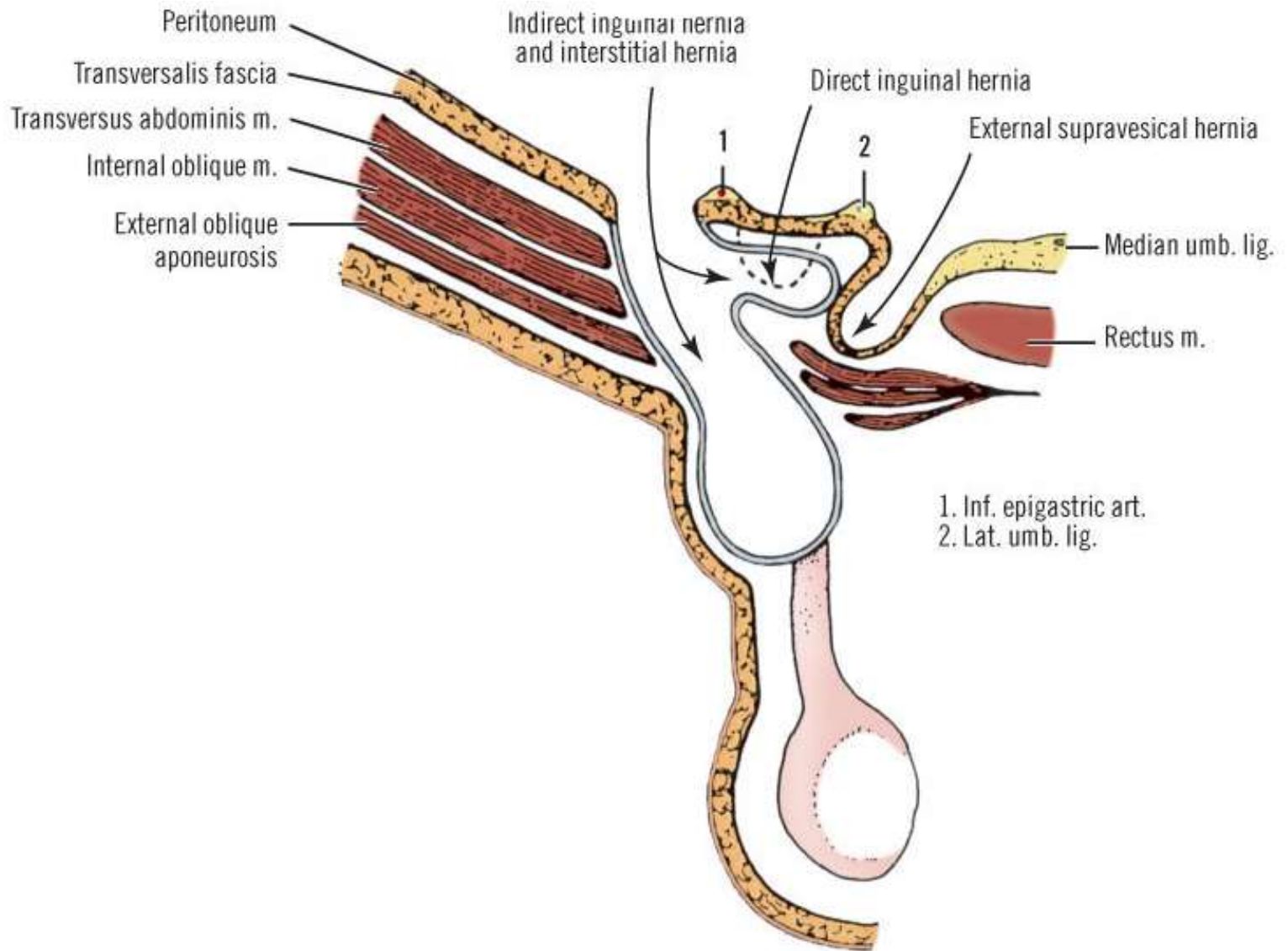
# Nerves of the Inguinal Region



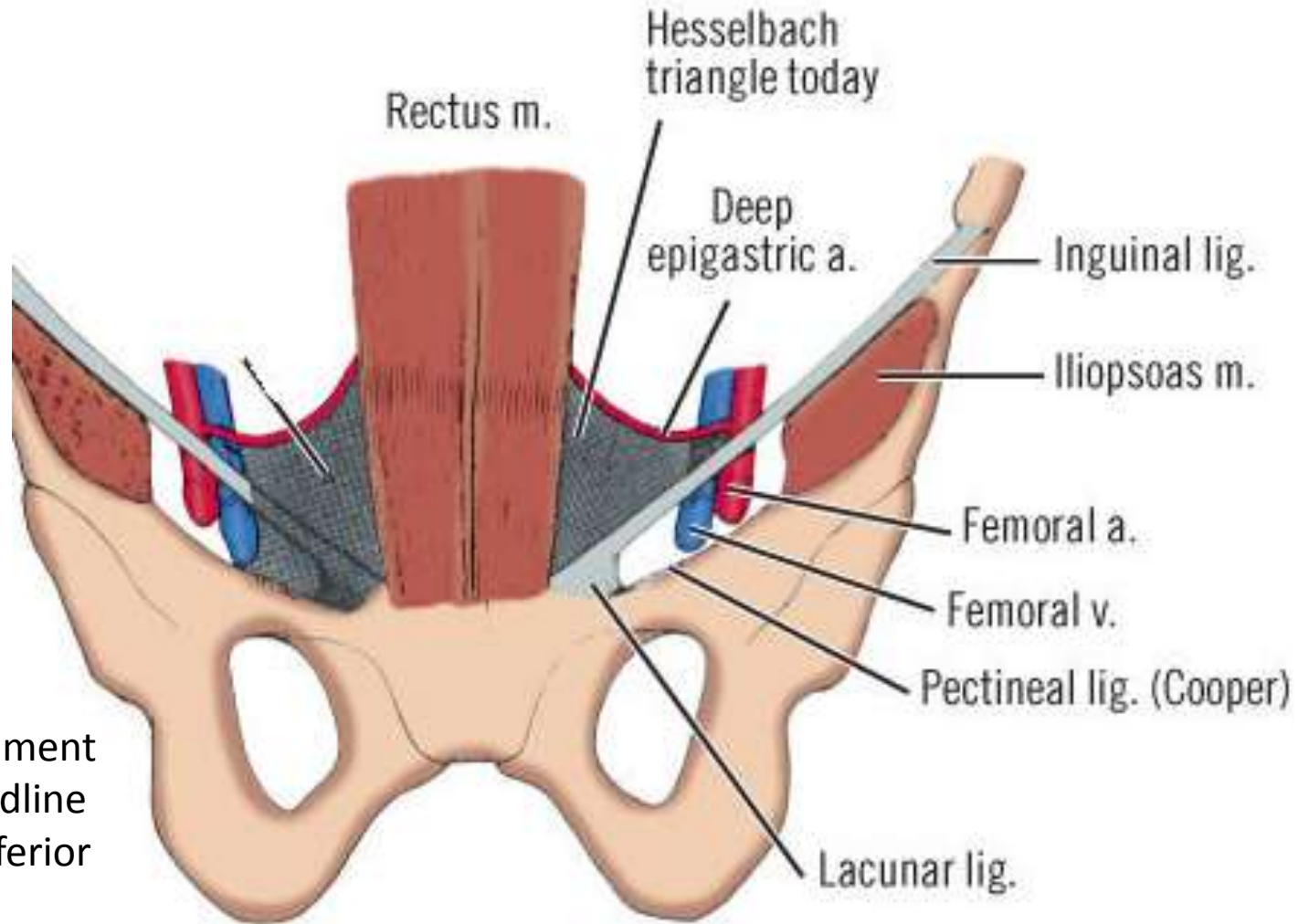
# Inguinal hernias

- Indirect inguinal hernia pass via deep inguinal ring along the canal then if large enough emerges through the external ring and descends into scrotum.
- Direct hernia pushes through the posterior wall of the inguinal canal via Hesselbech's triangle, whose base is the inguinal ligament, medial border is the midline and lateral border are the inferior epigastric vessels.
- The inferior epigastric vessels demarcate the indirect hernia sac pass lateral and direct hernia medial to these vessel.

# Inguinal hernias

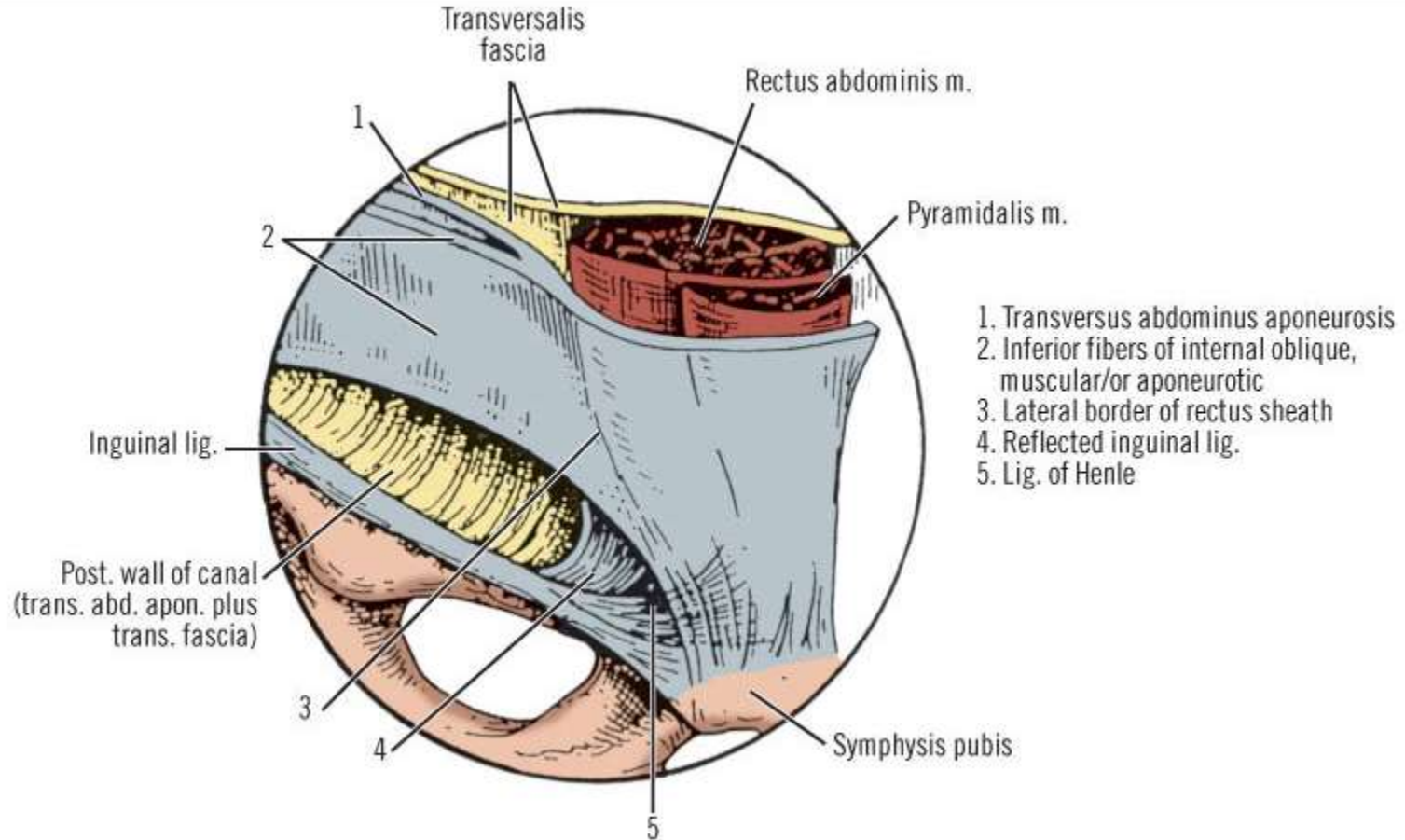


# Inguinal hernias: Hassebach triangle



**Base** = the inguinal ligament  
**Medial border** = the midline  
**Lateral border** = the inferior epigastric vessels.

# Inguinal Hernia: Conjoint Tendon



Any Question?

