

# Inguinal canal and hernia's

Tuesday Tick-Box teaching

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# Revision

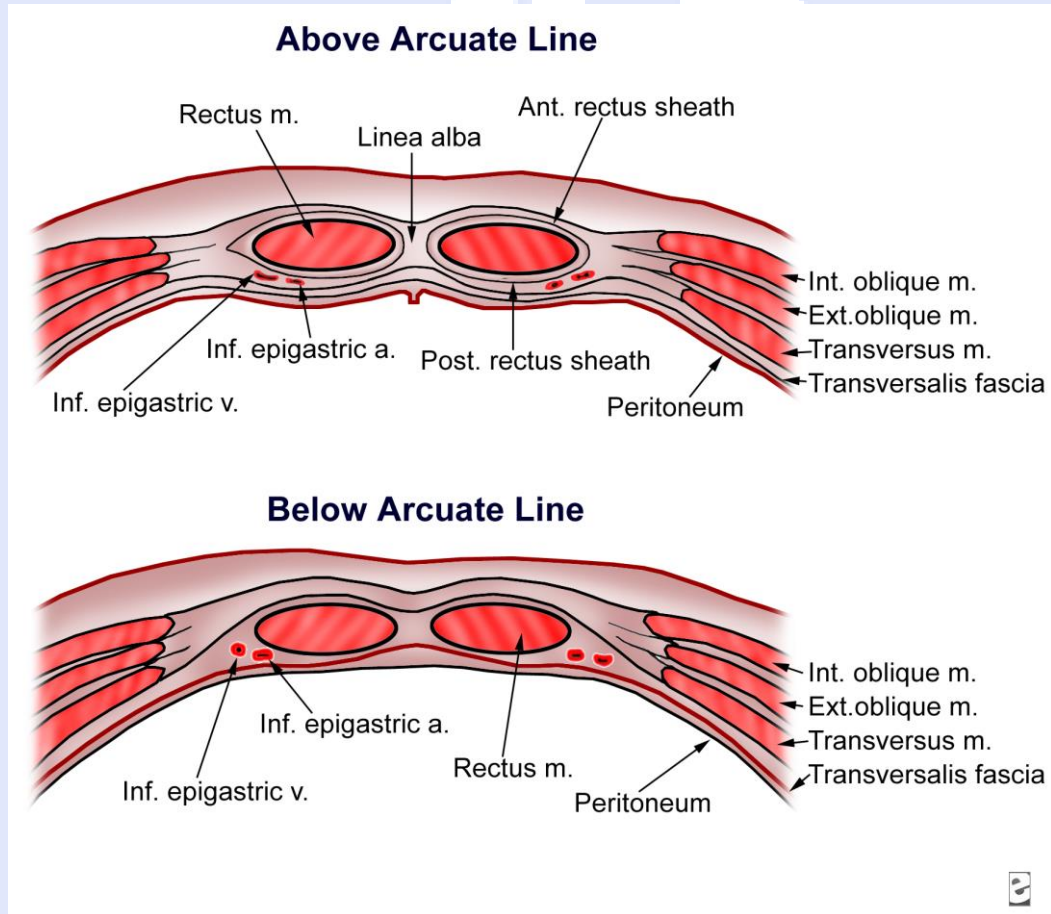
# Objectives

- Understand the purpose of the inguinal ligament
- Understand the anatomy of the abdominal wall
- Understand the anatomy of the inguinal canal and how this relates to hernias
- Understand the anatomy of the spermatic cord and the scrotum
- Understand the anatomy of the female inguinal canal.
- Understand the operative options and complications.

# Inguinal ligament

- AKA Pouparts or groin ligament
- Runs between ASIS and Pubic Tubercle.
- Boundary between abdominal wall and thigh
- Marks location of inguinal canal – which starts about  $\frac{1}{2}$  way along inguinal ligament, then runs medially.
- Formed by the rounding of the external oblique aponeurosis
- Femoral vessels and triangle run under it, inguinal canal over it.

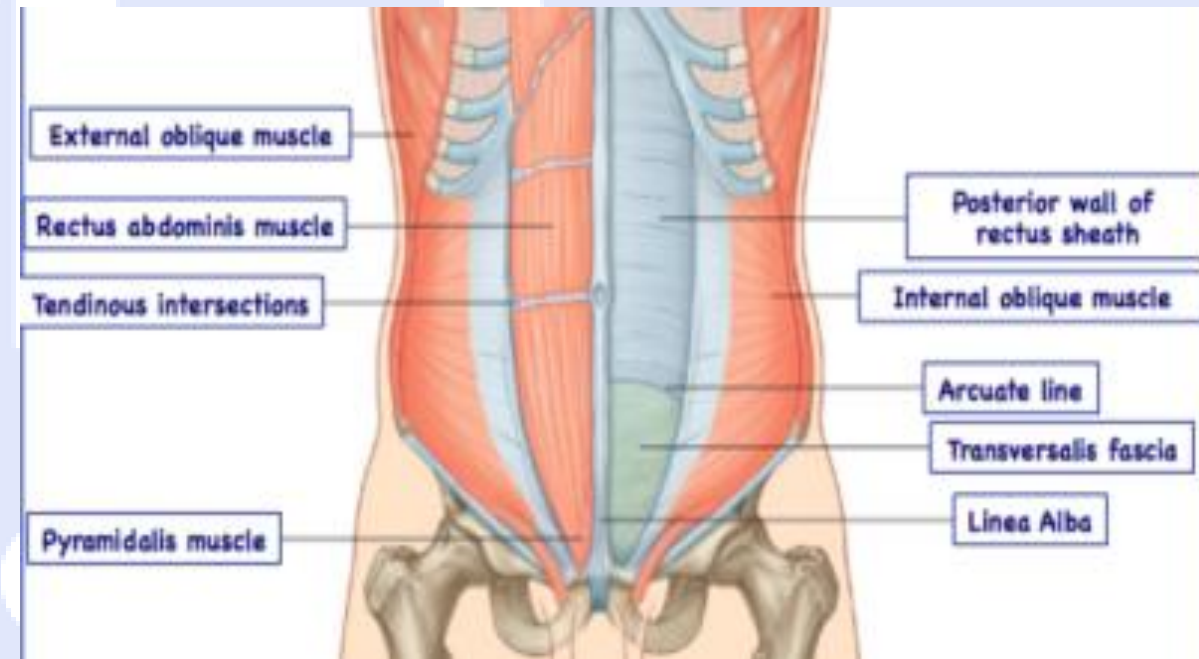
# Abdominal wall



- Rectus abdominus split in midline by linea alba from xiphisternum and pubic symphysis.
- External Oblique lateral anterior abdominal wall ribs 5-12 to iliac crest and pubic tubercle and linea alba. It rolls around on itself between these forming to anterior wall of the canal and the inguinal ligament.
- Internal Oblique under external iliac crest and connective tissue under inguinal ligament to 10-12<sup>th</sup> ribs and linea alba and thoracolumbar fascia. Also attached to conjoint tendon.
- Transversus abdominus – deepest muscle deep layer of this is the Transversalis fascia
- Peritoneum lining beneath that
- These muscles become aponeuroses

# What is the arcuate line? AKA linea semicircularis or Douglas line

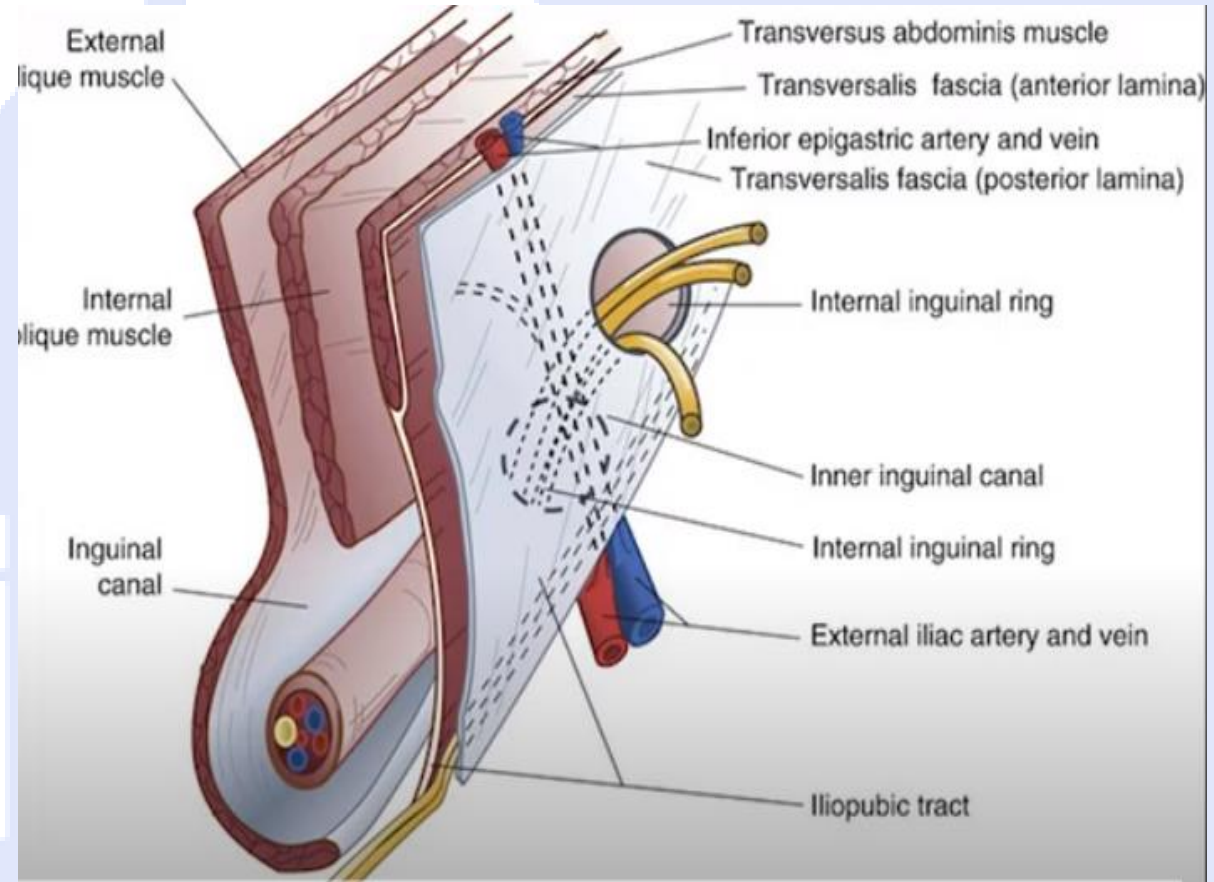
- Above the arcuate line, the aponeuroses of the transverse abdominus, internal and external oblique split to go around the rectus abdominus anterior and posterior lamina.
- About halfway between the umbilicus and the pubis all the aponeuroses become thick anterior lamina.



<https://www.chegg.com/flashcards/anterior-abdominal-wall-42f1f9ec-7b97-4cb0-adf2-dfda1439660a/deck?referrer=https://www.studyblue.com>

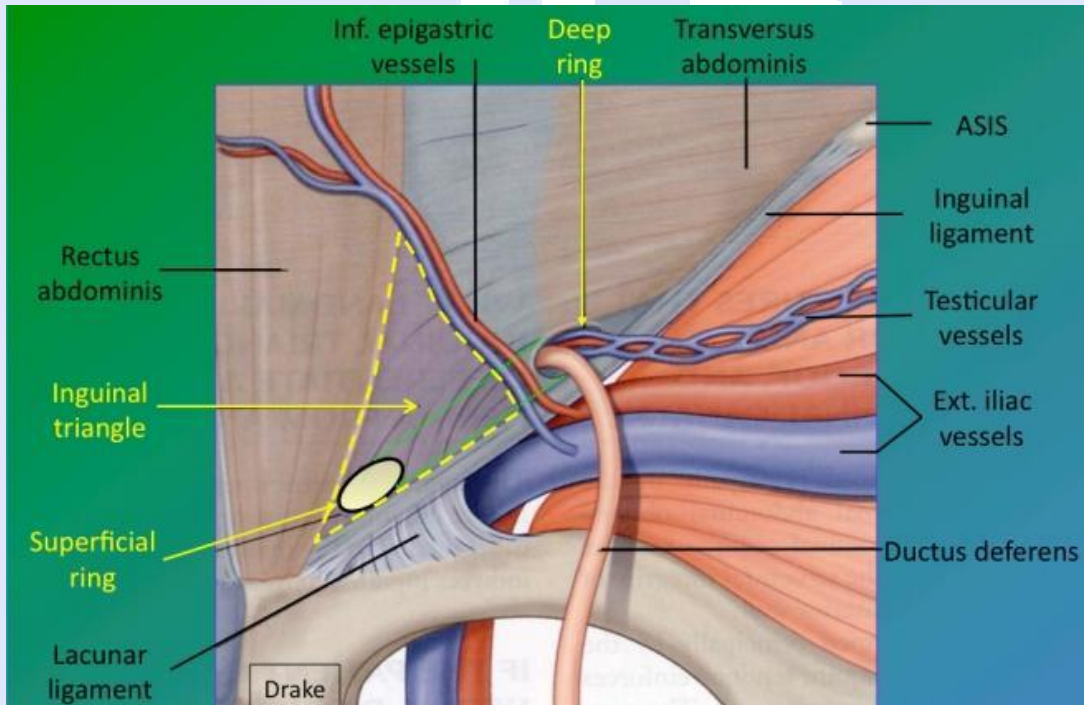
# MALT – I'm not a fan, but some people find it helps

- 2 Muscles: Internal Oblique and Transverse abdominus muscles (superior border)
- 2 Aponeuroses: External Oblique and *Internal Oblique aponeurosis* (Anterior border)
- 2 Ligaments: Inguinal ligament and *lacunar ligament* (inferior border)
- 2 T's: Transversalis fascia and conjoint tendon (posterior border)





# Walls

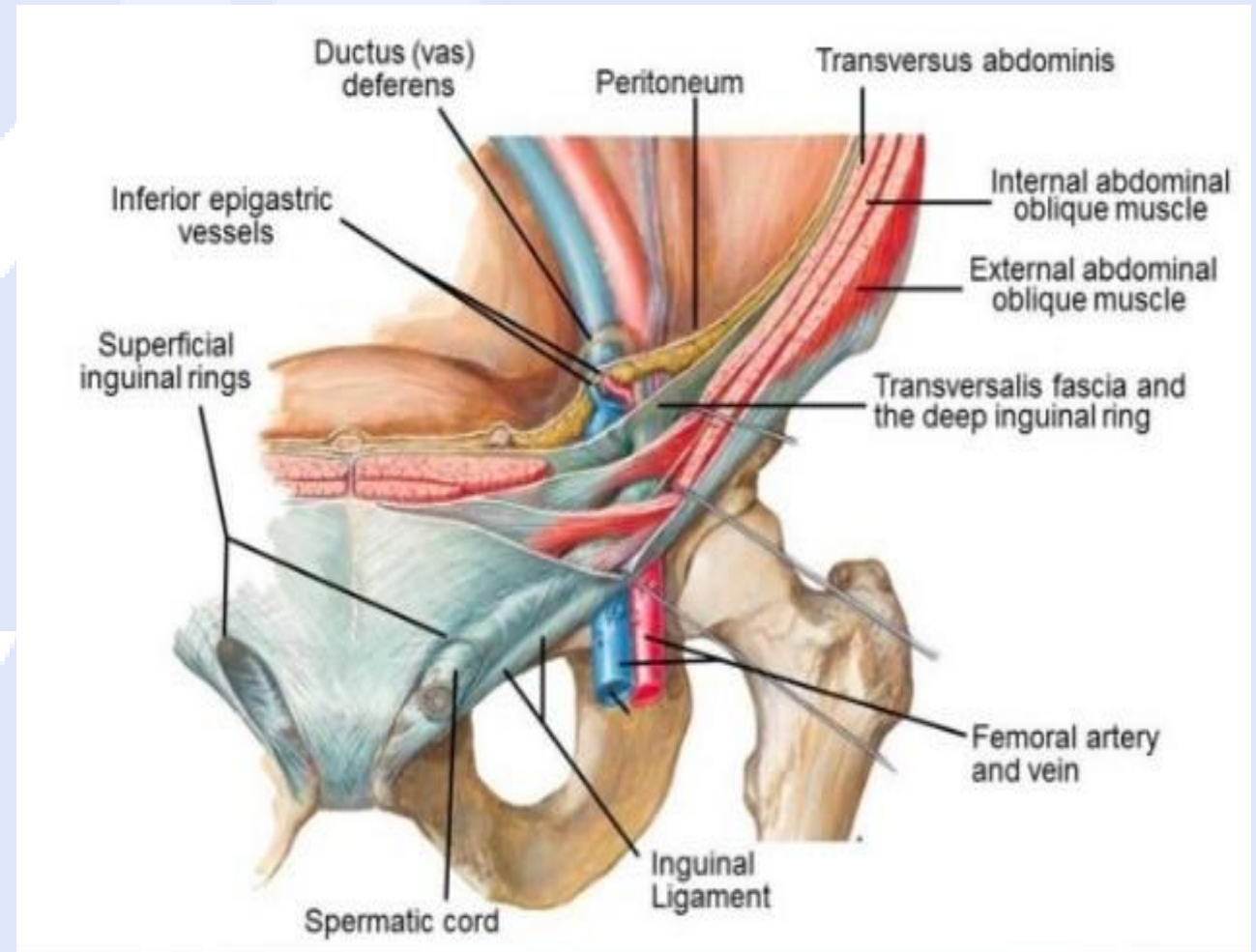


- Superior (roof) – internal oblique, transversus abdominis and a portion of transversalis fascia. These muscles split where cord comes through and then join together to form the conjoint tendon
- Anterior – aponeurosis of external oblique muscle and internal oblique muscles (more laterally) – superficial ring through this.
- Inferior (floor) – top portion of the inguinal ligament.
- Posterior – transversalis fascia – deep ring through this.

<https://www.chegg.com/flashcards/anatomy-086c8c61-d77b-4aba-bc88-d6f18a0dae10/deck?referrer=https://www.studyblue.com>

# Canal – Deep and superficial inguinal rings

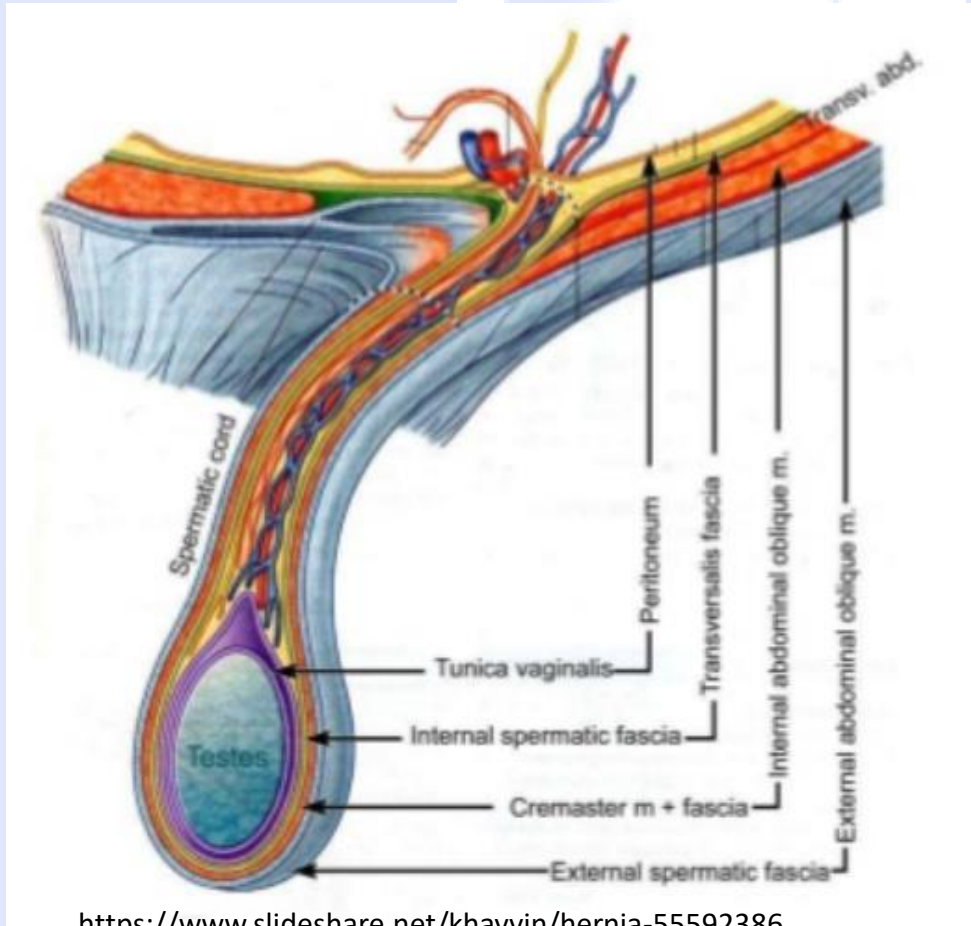
- Inferior epigastric artery and vein at medial border of indirect inguinal hernias
- Pantaloon hernias go either side of the vessels.
- Inferior epigastric vessels are NOT a target, I repeat NOT a target.
- See the external ring first when dissecting down to canal, as the fibres of the external oblique seem to bifurcate around it.





# Spermatic cord

- Layers determined by the layers of the abdominal wall that pulled through the inguinal canal.
- Connects testes to penis



<https://www.slideshare.net/khayvin/hernia-55592386>

Pills

Pampiform plexus

Don't

Ductus Deferens

Contribute

Cremasteric Artery and fascia

To

Testicular artery and lymph

A

Autonomic fibres

Good

Genitofemoral nerve

Sex

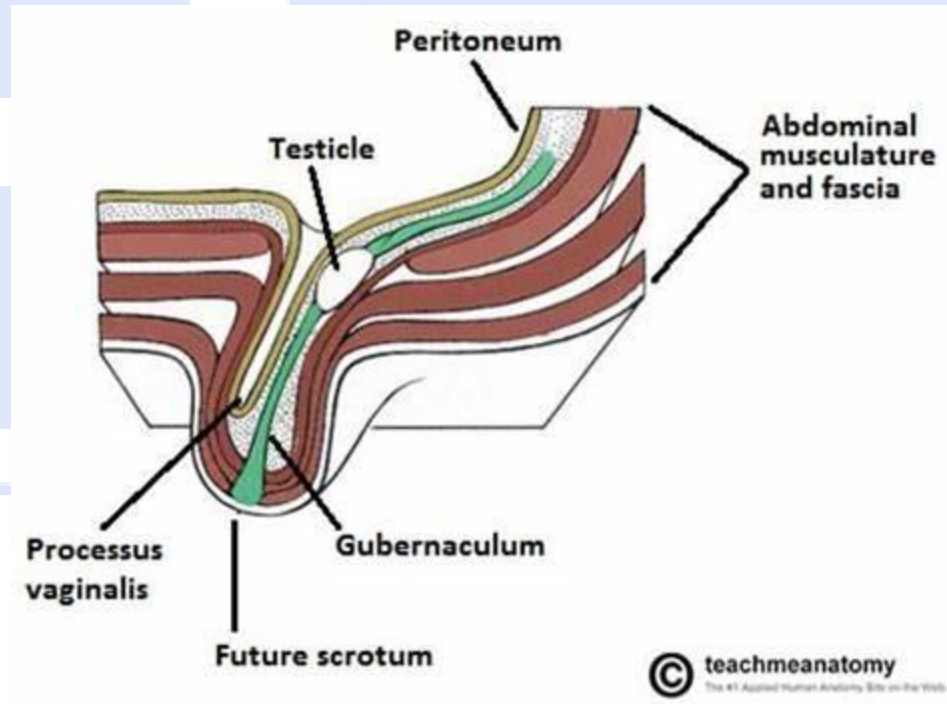
Sympathetic nerve fibres

Life

Lymphatics

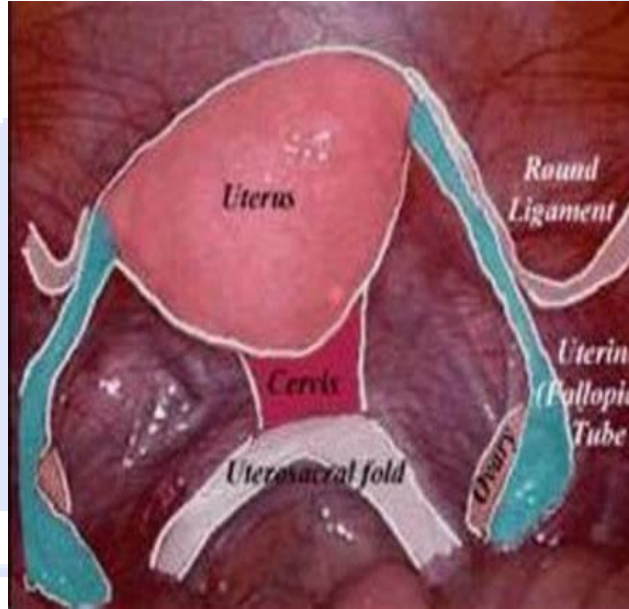
# Thinking about the scrotum

- Think of it as an outpouching of the anterior abdominal wall.
- The testes / gonads develop in the abdomen and descend into their final position. (Ovaries to pelvis, testes to scrotum)
- Gubernaculum (Greek Rudder) guides descent of the gonads to labioscrotal swellings which become labia in girls, and scrotum in boys.
- Round ligament in females, spermatic cord in males (thicker therefore the inguinal canal is bigger).
- Take a 'film' of the layers that they go through with them.

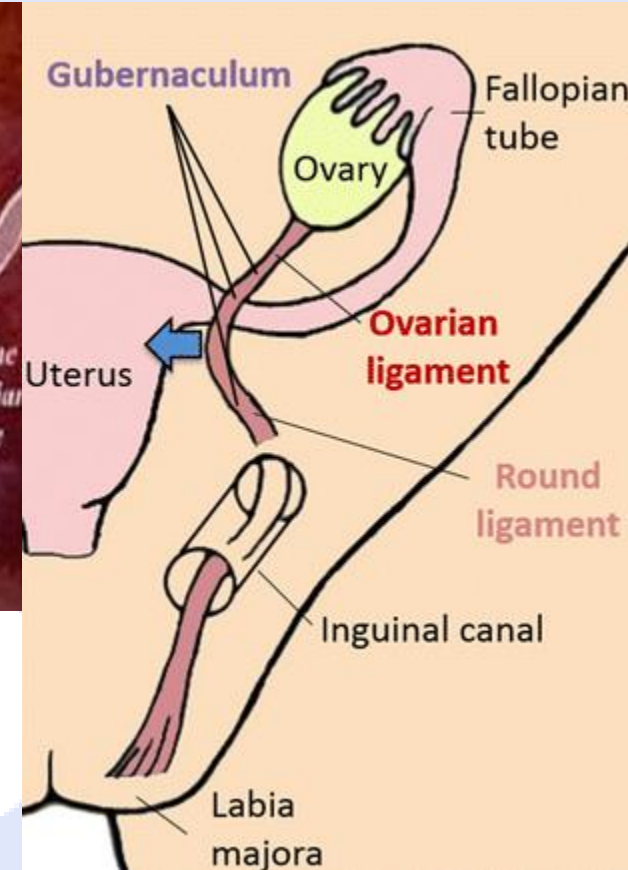


# Round ligament in the inguinal canal

- Basically we do not know a lot about the function of the round ligament, and the popular assumption is that it is to maintain anteversion of the uterus.
- Often sacrificed in old ladies
- So why not sacrifice the cord structures in old men?
- Down with the patriarchy!!!!



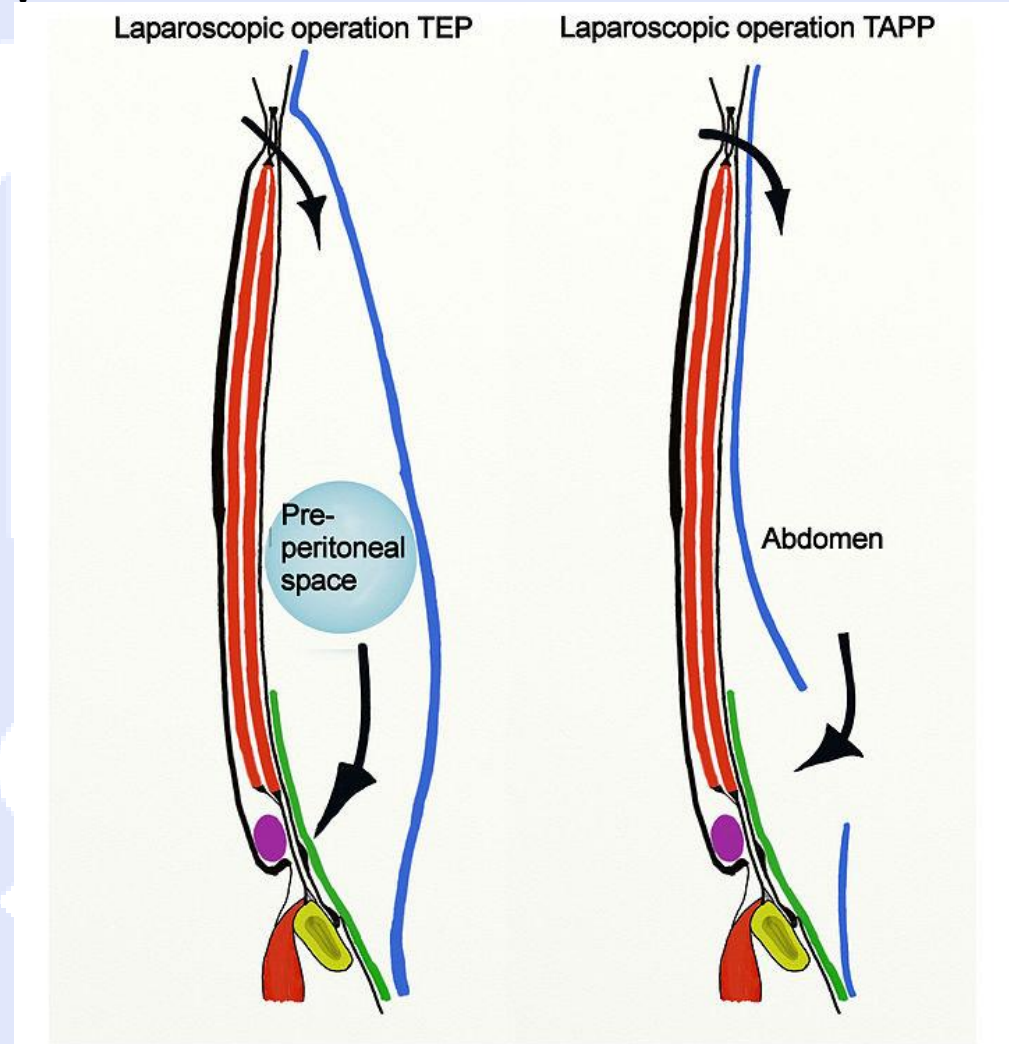
<http://healthsaline.com/round-ligament-pain.html>



<https://link.springer.com/article/10.1007/s00247-017-3853-6>

# Open or laparoscopic approach

- Very patient specific but if Bilateral hernias or re-do operations then laparoscopic approach best.
- TAPP = Transabdominal, Preperitoneal repair
- TEP = Totally Extraperitoneal Repair.



[https://commons.wikimedia.org/wiki/File:Laparoscopic\\_Approach\\_of\\_Groin\\_Hernia.jpg](https://commons.wikimedia.org/wiki/File:Laparoscopic_Approach_of_Groin_Hernia.jpg)



# Complications of repair

- Pain including chronic pain
  - Often thought to be relate to nerves getting caught in repair sutures.
- Infection, collection and bleeding
  - Haematomas not entirely uncommon.
- Damage to cord structures
  - Testicular atrophy
- Damage to bowel
- Recurrence

