



Abdominal Wall, Hernias & Umbilicus L3

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الخميس ٢٠٢١ / ١٠ / ١٤

Bailey & Love's Short Practice of Surgery, 27th Edition . CH 60 .

Browse's Introduction to The Symptoms and Signs of Surgical Disease , 4th Edition.

SPECIFIC HERNIA TYPES

- Inguinal hernia.
- Femoral hernia.

Inguinal hernia

- Is the most common hernia in men and women but much more common in men.
- Congenial : (indirect, oblique or lateral).
- Acquired : (direct or medial) , (sliding or lateral).

Presentation :

Risk factors

Swelling , reducible / irreducible , Pain .

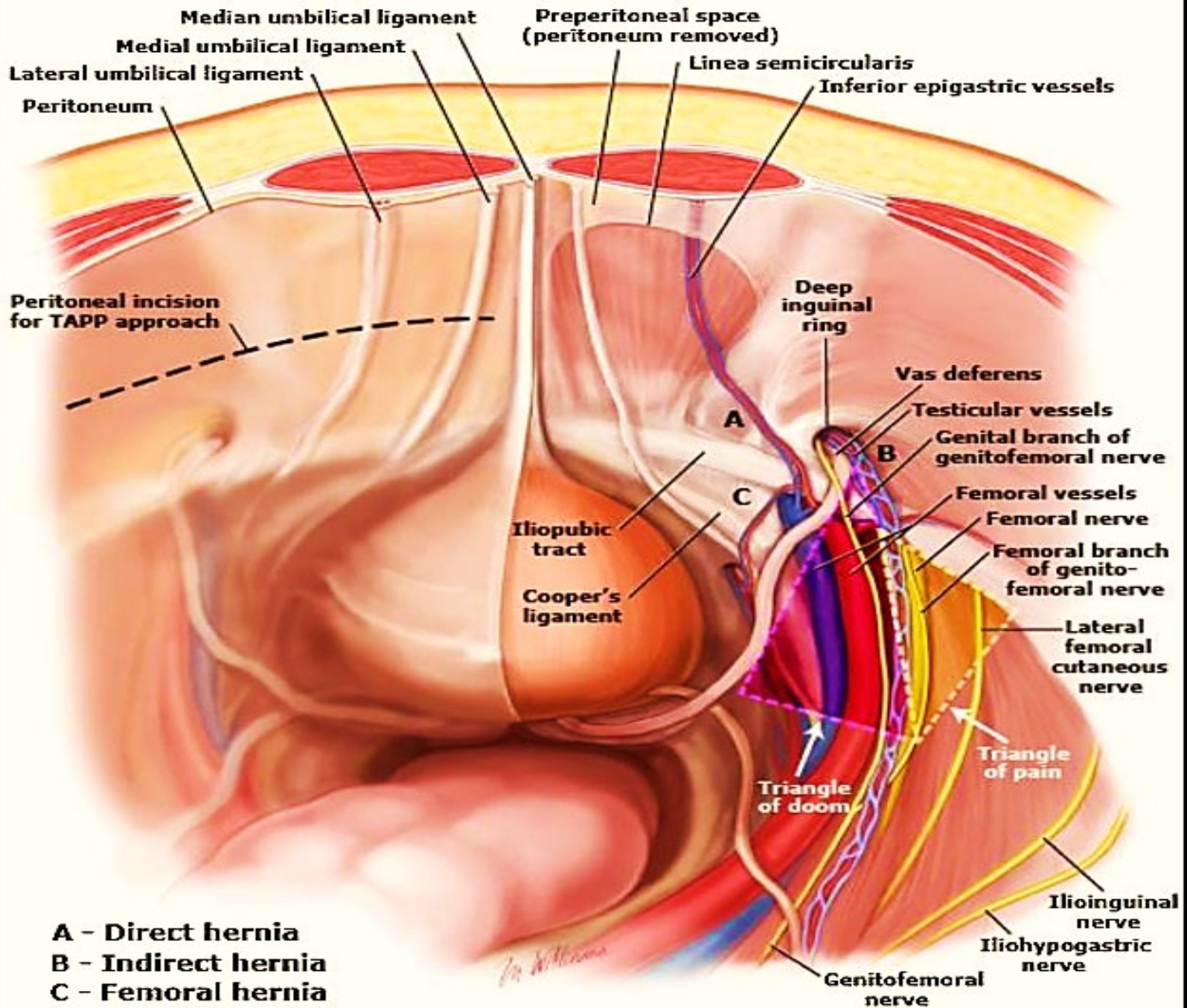
(Intestinal obstruction +/- strangulation.

Features of an Indirect inguinal hernia

- Can (and often does) descend into the scrotum
- Reduces upwards, then laterally and backwards
- Controlled, after reduction, by pressure over the internal inguinal ring.
- The defect is not palpable, as it is behind the fibres of the external oblique muscle
- After reduction, the bulge reappears in the middle of the inguinal region and then flows medially before turning down to the neck of the scrotum

Features of a Direct inguinal hernia

- Does not (hardly ever) go down into the scrotum
- Reduces upwards and then straight backwards
- Not controlled, after reduction, by pressure over the internal inguinal ring
- The defect may be felt in the abdominal wall above the pubic tubercle
- After reduction, the bulge reappears exactly where it was before
- Uncommon in children and young adults



Median umbilical ligament
 Medial umbilical ligament
 Lateral umbilical ligament
 Peritoneum
 Preperitoneal space (peritoneum removed)
 Linea semicircularis
 Inferior epigastric vessels

Peritoneal incision for TAPP approach

Iliopubic tract
 Cooper's ligament

Deep inguinal ring
 Vas deferens
 Testicular vessels
 Genital branch of genitofemoral nerve
 Femoral vessels
 Femoral nerve
 Femoral branch of genitofemoral nerve
 Lateral femoral cutaneous nerve
 Triangle of pain
 Ilioinguinal nerve
 Iliohypogastric nerve
 Genitofemoral nerve

A - Direct hernia
B - Indirect hernia
C - Femoral hernia

Dr. Williams

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Deep
inguinal
ring

Vas deferens

Testicular vessels

Genital branch of
genitofemoral nerve

Femoral vessels

Femoral nerve

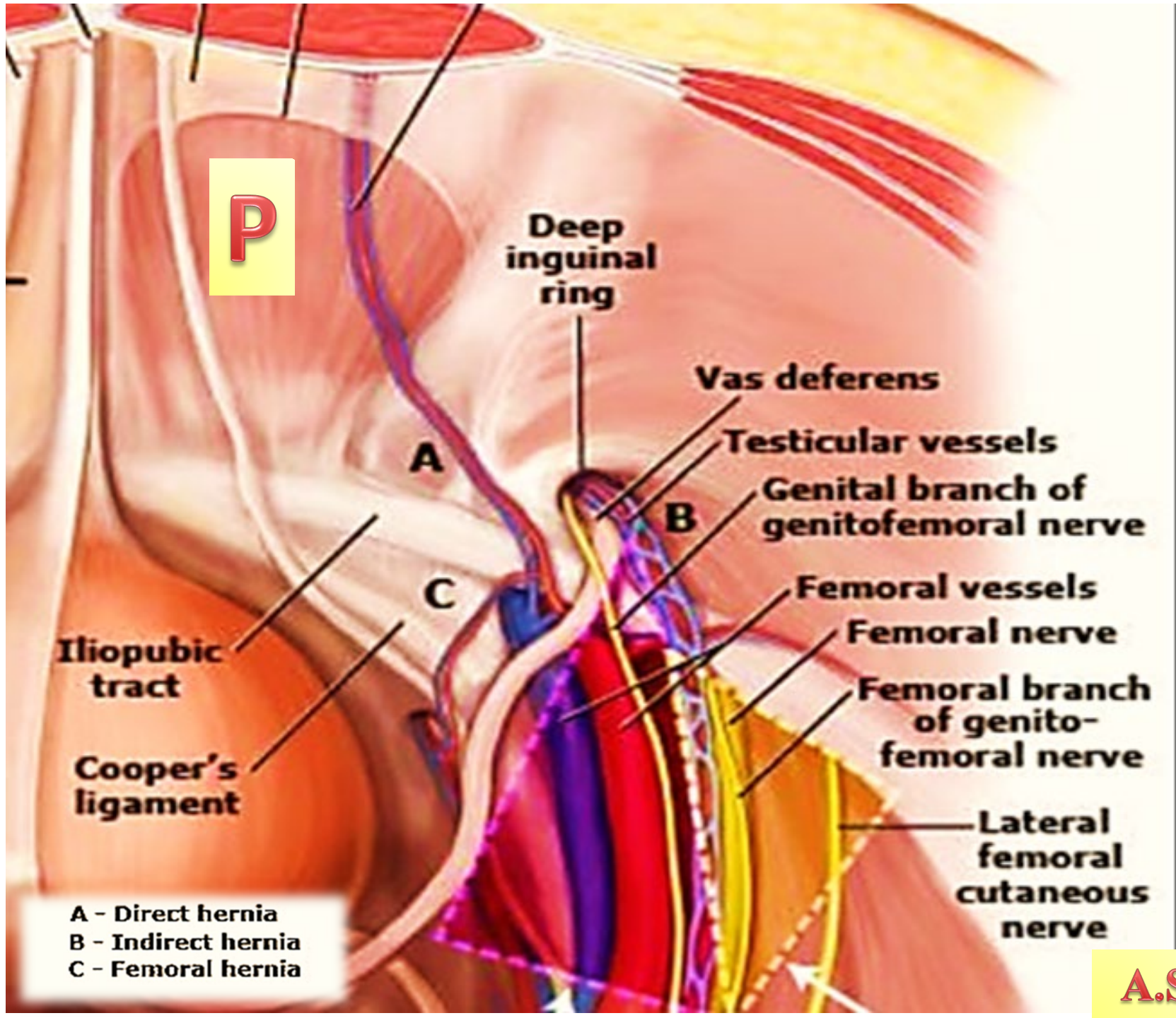
Femoral branch
of genito-
femoral nerve

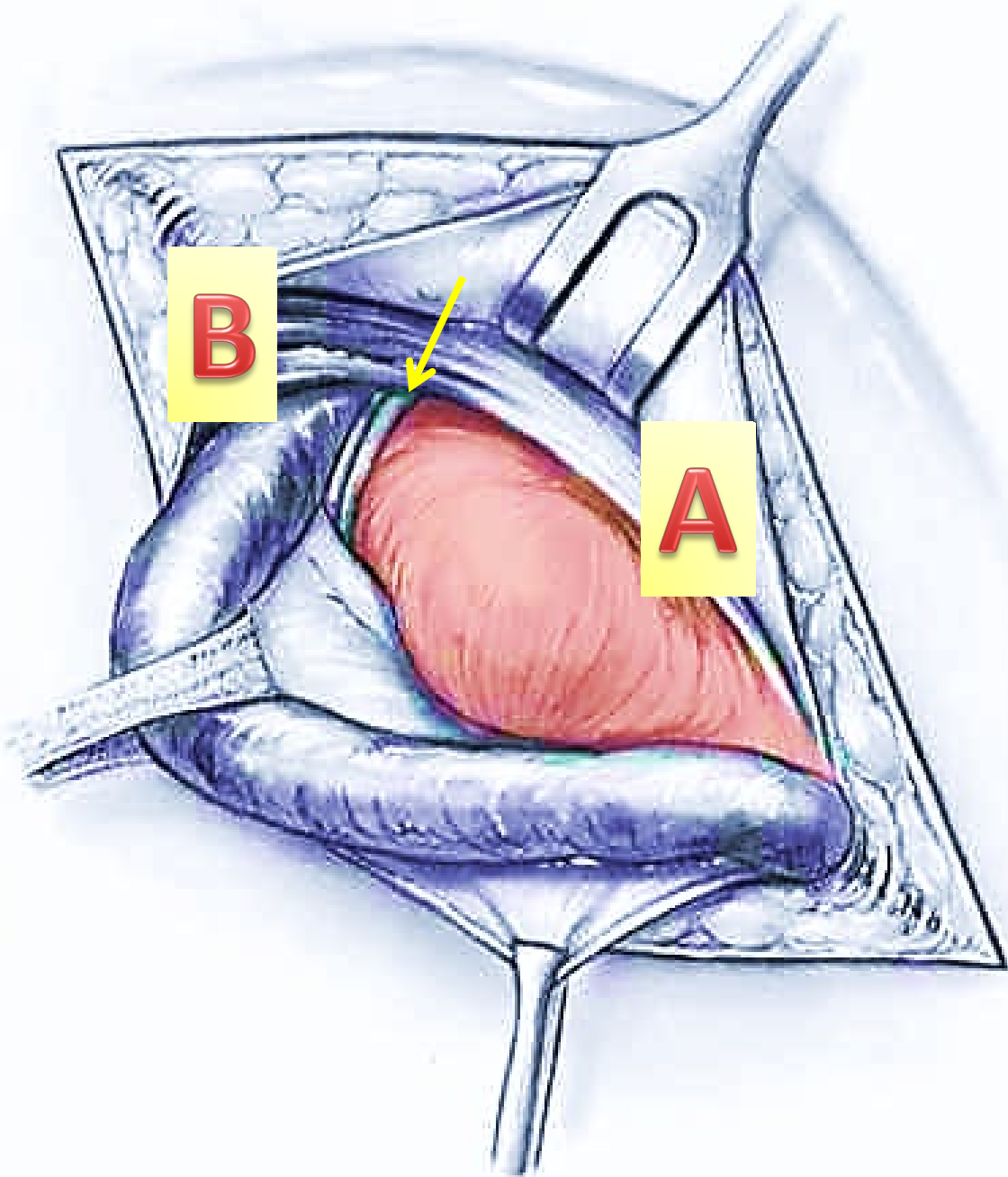
Lateral
femoral
cutaneous
nerve

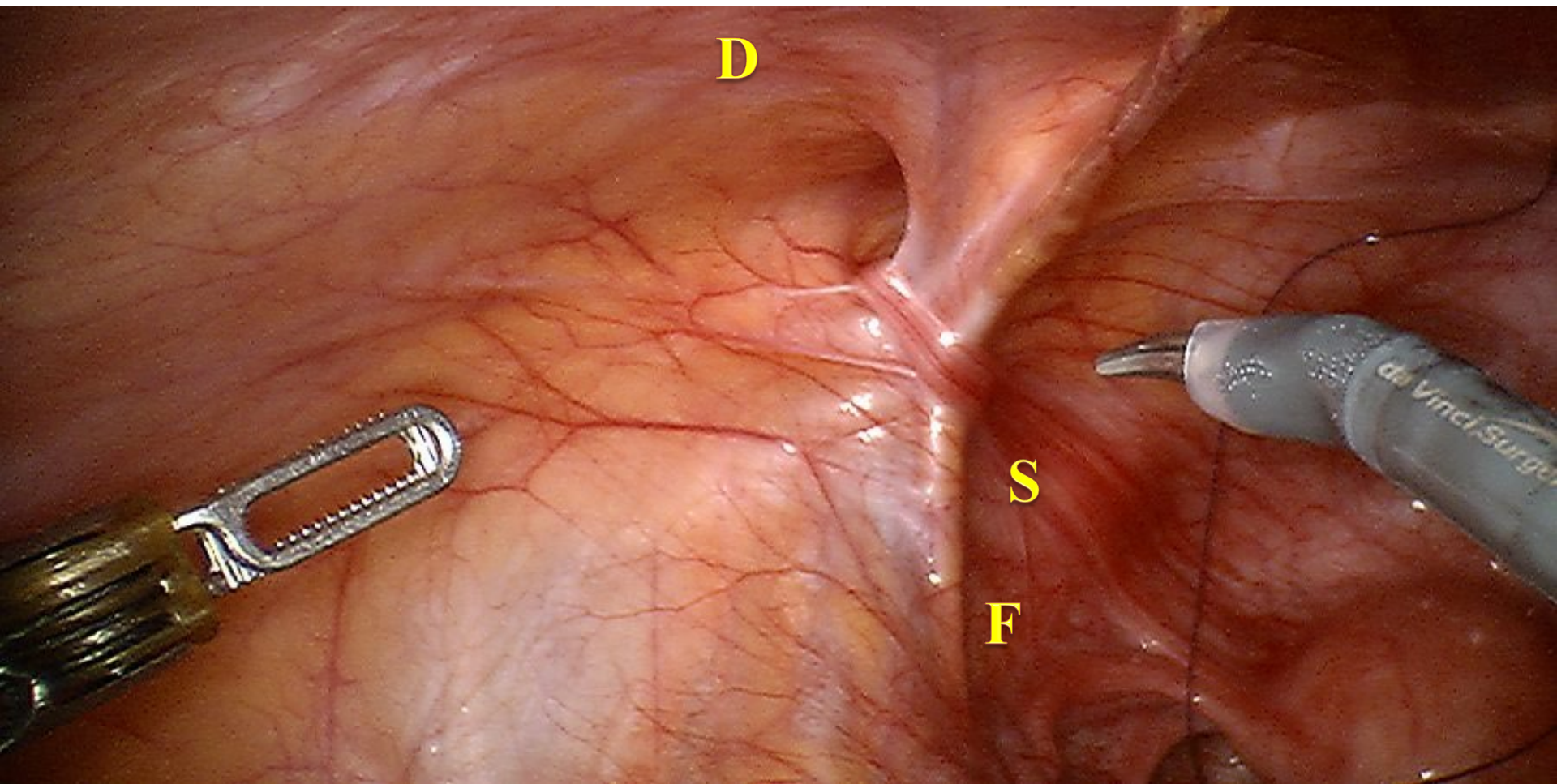
Iliopubic
tract

Cooper's
ligament

A - Direct hernia
B - Indirect hernia
C - Femoral hernia

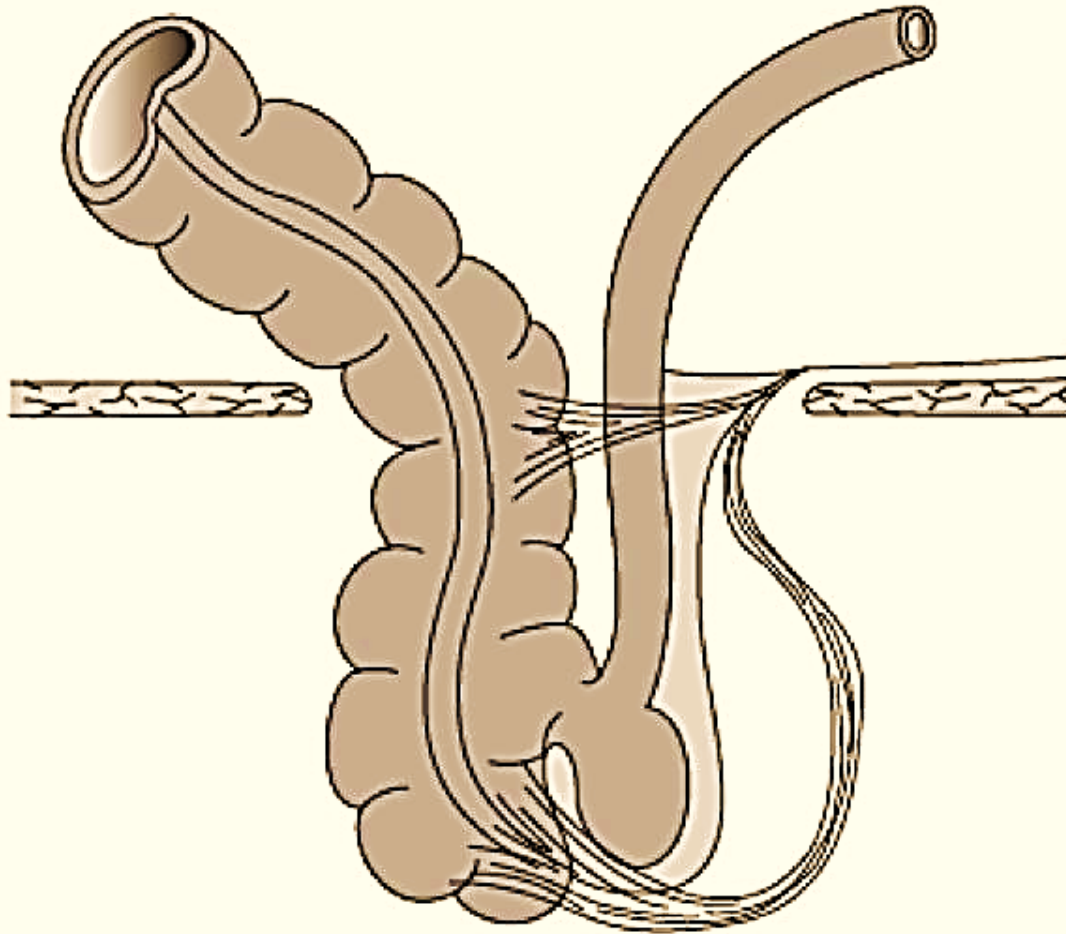


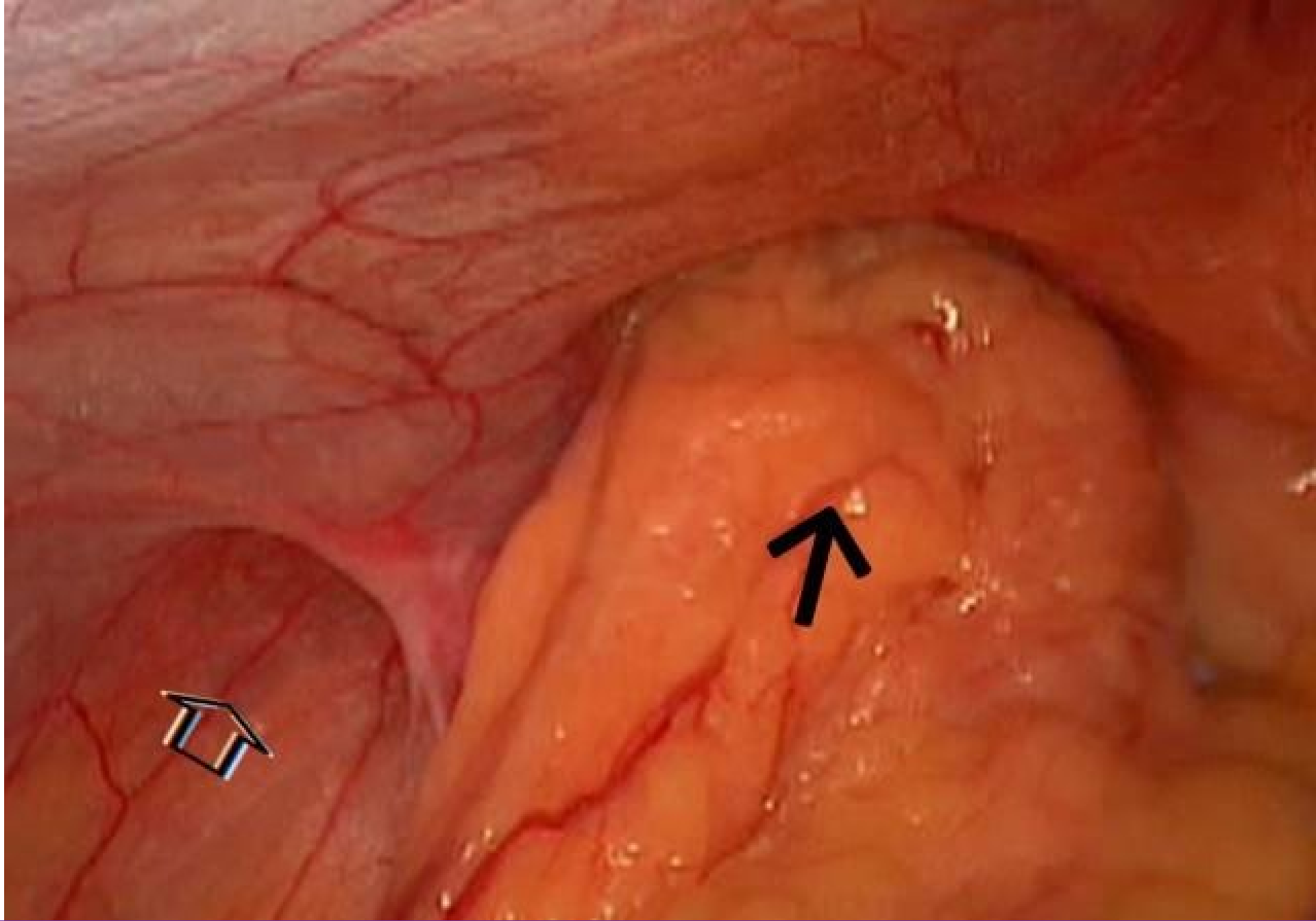




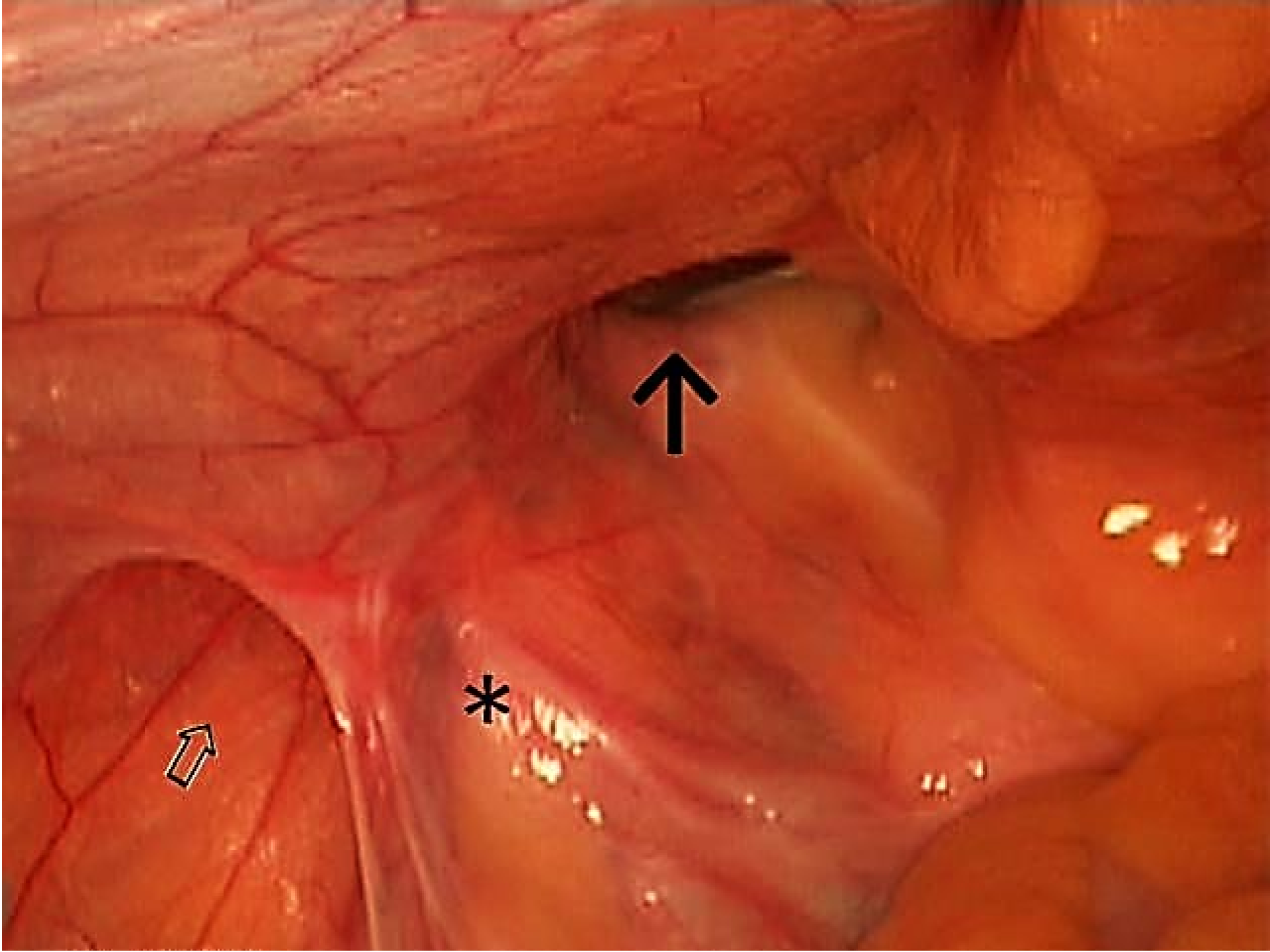
- The other type of inguinal hernia is referred to as a sliding hernia. This is also an acquired hernia due to weakening of the abdominal wall, but occurs at the deep inguinal ring lateral to the IE vessels. Retroperitoneal fatty tissue is pushed downwards along the inguinal canal. As more tissue enters the hernia, peritoneum is pulled with it, thus creating a sac. However, the sac has formed secondarily, distinguishing it from a classic indirect hernia.
- On the left side, sigmoid colon may be pulled into a sliding hernia and on the right side the caecum. Surgeons need extra caution during repair because the wall of the large bowel may not be covered by peritoneum and can be damaged.
- Occasionally, both lateral and medial hernias are present in the same patient (pantaloon hernia).

Sliding inguinal hernia





Left direct (black arrow) and indirect hernia (White arrow) in a man.



Examination

Inspection

Palpation

Percussion

Auscultation

- Ask the patient to stand up.
- Look at the lump from in front.
- Feel from the side.
- You must now ascertain the following facts about the lump:
 - ■ position
 - ■ temperature
 - ■ tenderness
 - ■ shape
 - ■ size
 - ■ tension
 - composition (solid, fluid, or gaseous)
 - ■ reducibility.
 - Feel the other side

Examine the abdomen
Cardiovascular and respiratory
assessment
Examine scrotum

COUGH IMPULSE

- Visible & Palpable cough impulse.
- Reappear on straining, standing or coughing



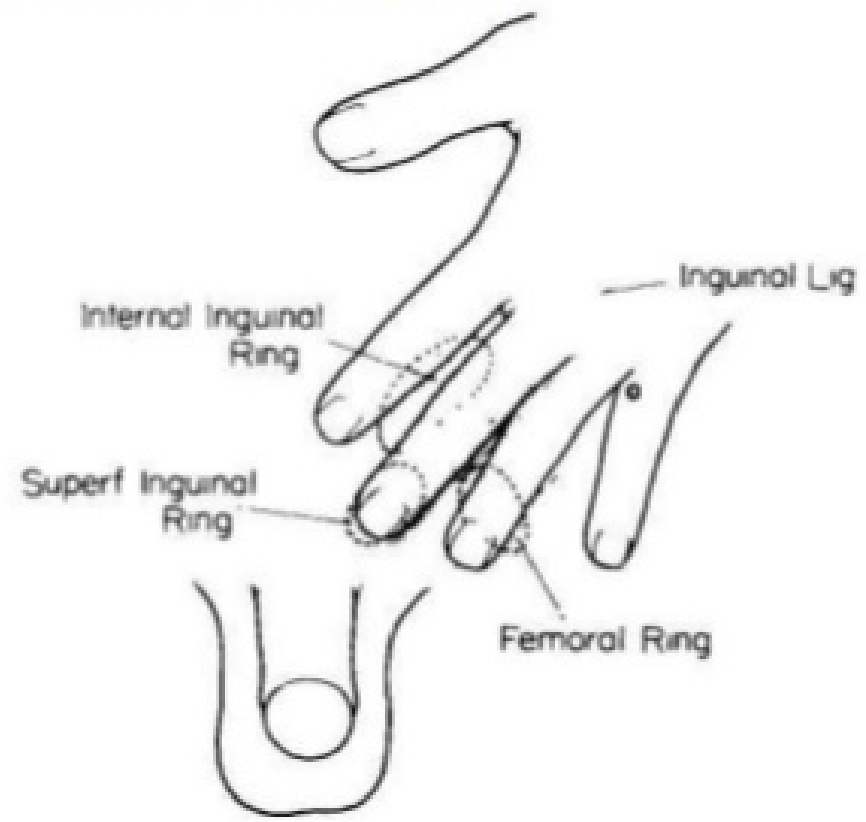
INVAGINATION TEST

- Felt on the pulp: **direct hernia**
- Felt on the tip: **indirect hernia**



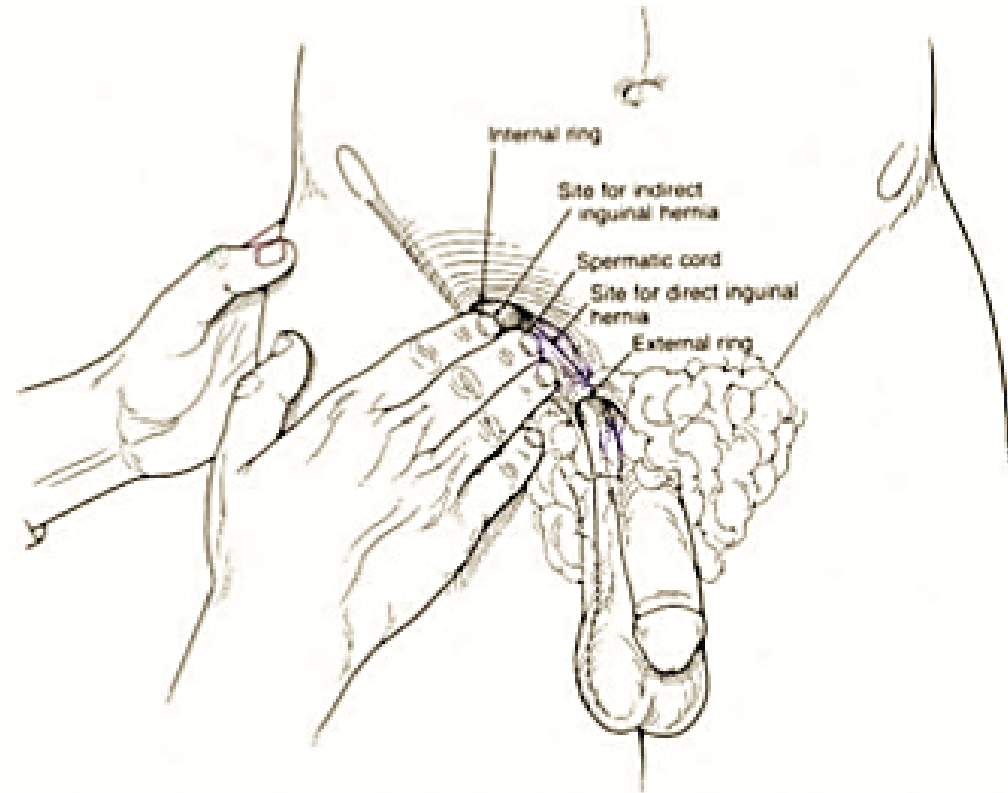
THREE FINGER TEST / ZIEMAN'S TECHNIQUE

- Index finger: deep inguinal ring (**indirect hernia**)
- Middle finger: superficial ing. Ring (**direct hernia**)
- Ring finger: saphenous opening (**femoral hernia**)



RING OCCLUSION TEST

- (-) ring occlusion test: bulging of the hernia: **INDIRECT HERNIA**
- (+) ring occlusion test: no bulging of the hernia: **DIRECT HERNIA**



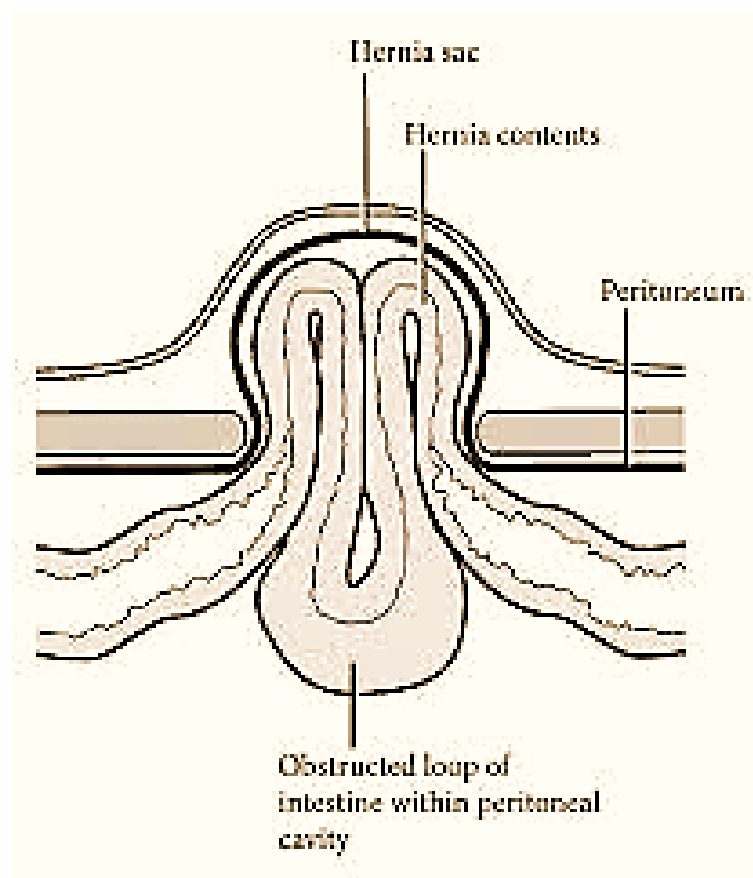
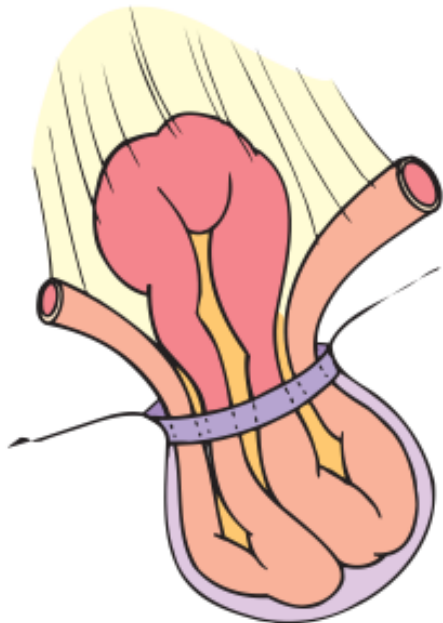
DDX hydrocele

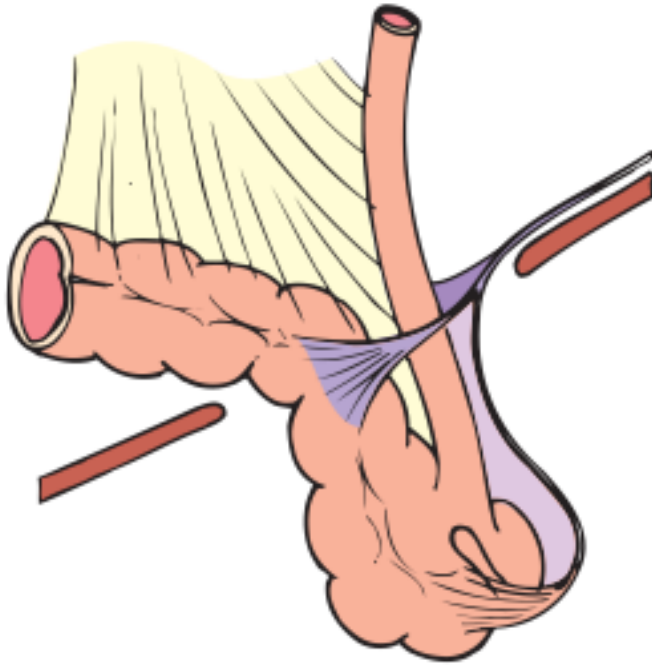
Inguinal hernia :

- Transillumination test. (-ve)
 - Scrotal examination . (You can not get above it ?).
 - Abdominal examination (Intestinal obstruction).
-
- Malgaigne's bulge (Bulging of the inguinal regions with coughing is common; minor bulging of the inguinal canal is normal .

Maydl's hernia (hernia-en-W)

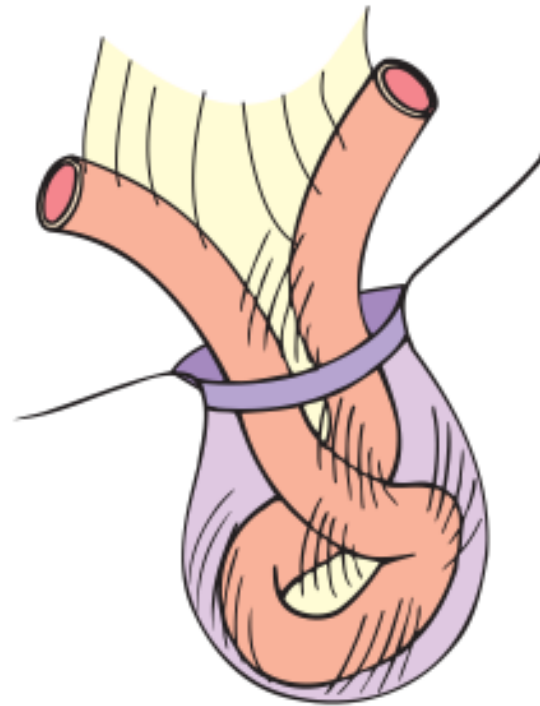
- Two loops of bowel in the sac, with strangulation of the loop of bowel in the abdomen which connects them. Diagnosis is made at operation.





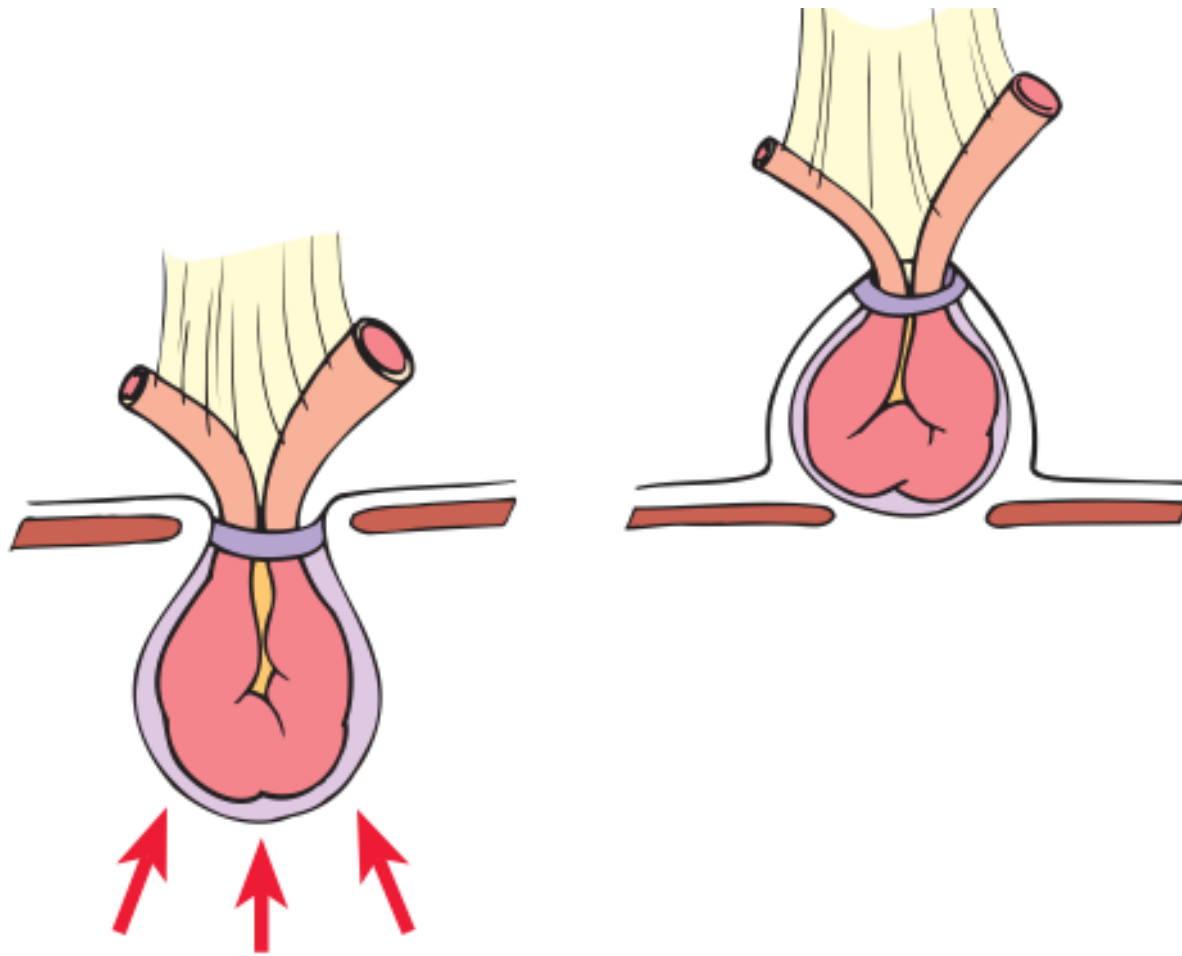
Sliding hernia

If bowel which is normally extraperitoneal forms one side of the sac, it is thought to have slid down the canal pulling peritoneum with it, hence the name hernia-en-glissade. The sac can contain other loops of bowel, and the gut forming the wall of the sac can be strangled by the external ring.



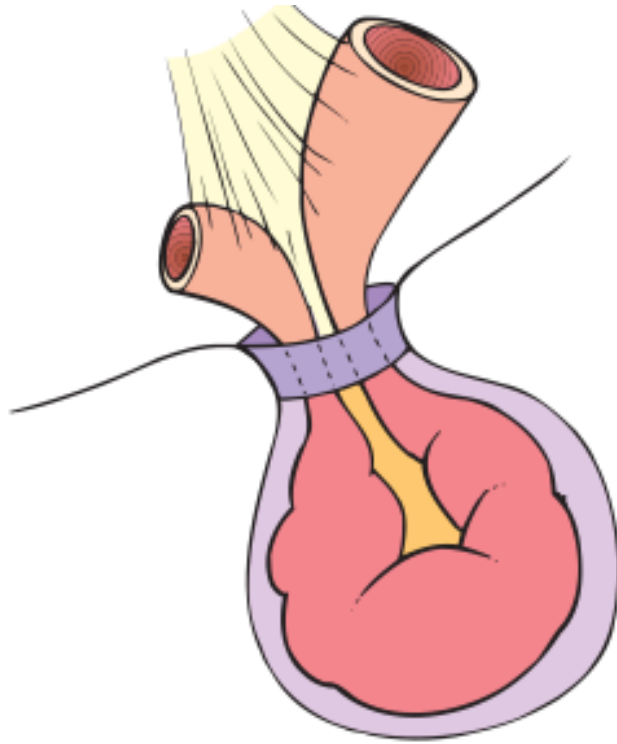
Incarceration

The contents are fixed in the sac because of their size and adhesions. The hernia is irreducible but the bowel is not strangulated or obstructed.



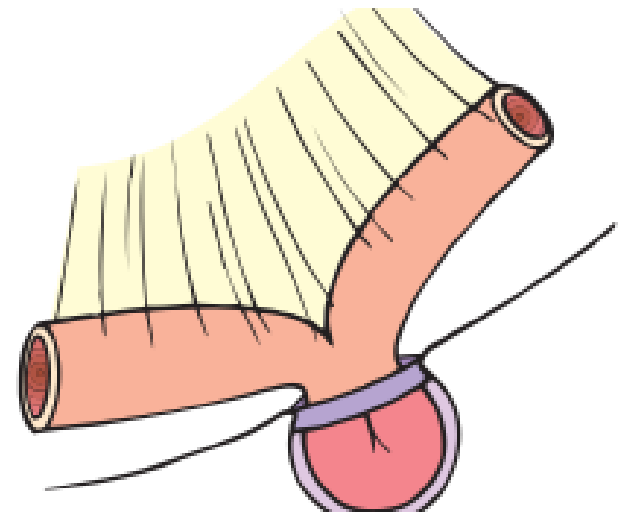
Reduction-en-masse

It is possible to push a hernia back through the abdominal wall, so apparently reducing it, without actually pushing the contents out of the sac. If they were strangulated in the first position they will still be strangulated in the second. *Never push hard* when trying to reduce a hernia.



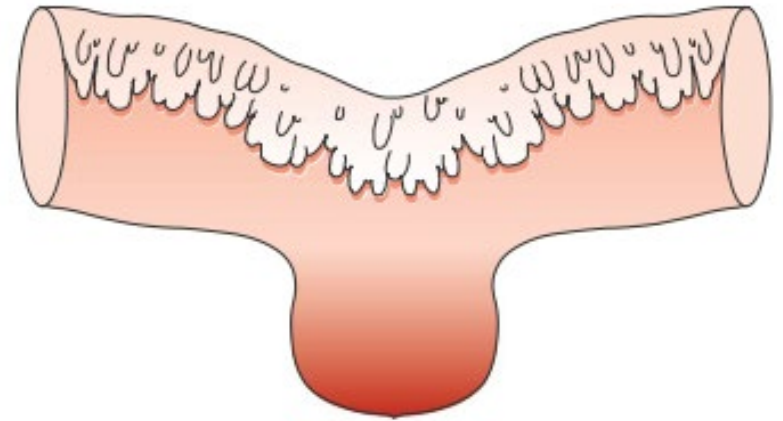
A **strangulated hernia**

The blood supply of the contents of the hernia is cut off. When a loop of gut is strangulated there will also be intestinal obstruction.



A **strangulated hernia**

If the sac is small, a knuckle of bowel can be caught in the sac and strangulated without causing intestinal obstruction. This is called a **Richter's hernia**.



The differential diagnosis of inguinal hernia

- Femoral hernia
- Vaginal hydrocele
- Hydrocele of the cord or the canal of Nuck
- Undescended testis
- Lipoma of the cord

Recurrent Hernia

- Recognition is important because strangulation is more likely than with a new hernia.
- Duration.

- Inguinal hernia in women.
- Inguinal herniae in children (Pediatric Lectures).

EHS Groin Hernia Classification		Primary	Recurrent		
	0	1	2	3	x
L					
M					
F					

The European Hernia Society has recently suggested a simplified system of:

- primary or recurrent (P or R);
- lateral, medial or femoral (L, M or F);
- defect size in fingerbreadths assumed to be 1.5 cm.

Investigations for inguinal hernia

- Most cases require no diagnostic tests.
- But ultrasonography, CT and MRI are occasionally used.
- A herniogram involves the injection of contrast into the peritoneal cavity followed by screening which shows the presence of a sac or asymmetrical bulging of the inguinal anatomy.

Nyhus Classification of Inguinal Hernias

Hernia Type	Description
Type 1	Indirect hernia with internal inguinal ring of normal size
Type 2	Indirect hernia with dilated internal inguinal ring but intact posterior inguinal wall
Type 3	Posterior inguinal wall defect
Type 3A	Direct inguinal hernia
Type 3B	Indirect hernias with a large, dilated internal inguinal ring that encroaches on the posterior inguinal wall; includes pantaloon, scrotal, and sliding hernias
Type 3C	Femoral hernia
Type 4	Recurrent hernias
Type 4A	Direct
Type 4B	Indirect
Type 4C	Femoral
Type 4D	Combined

Type VI:
Pantaloons hernia
(direct + indirect hernia)

Type IV:
Direct hernia +
total disruption of direct floor

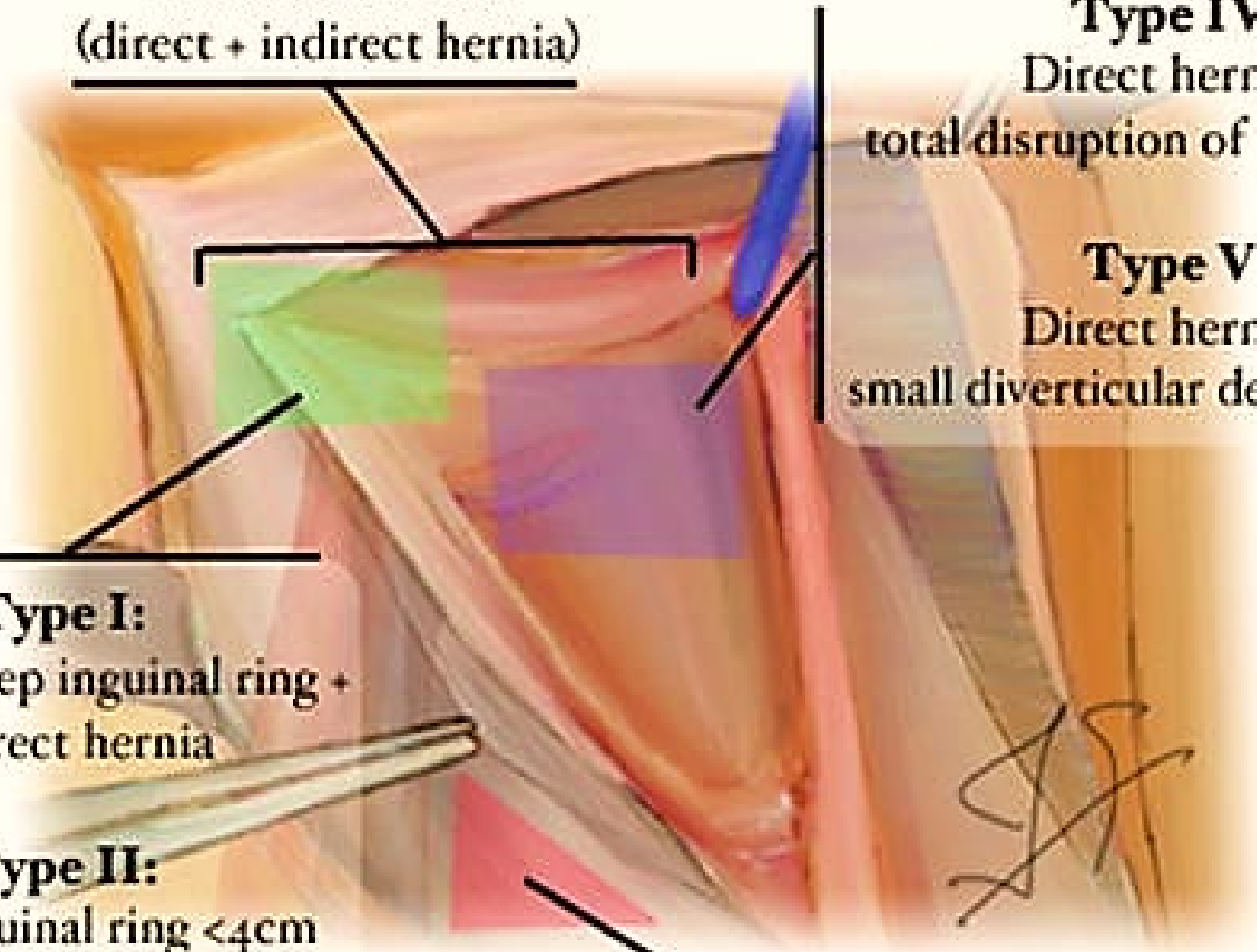
Type V:
Direct hernia +
small diverticular defect (1-2cm)

Type I:
Normal deep inguinal ring +
indirect hernia

Type II:
Deep inguinal ring <4cm

Type III:
Deep inguinal ring >4cm

Type VII:
Femoral hernia

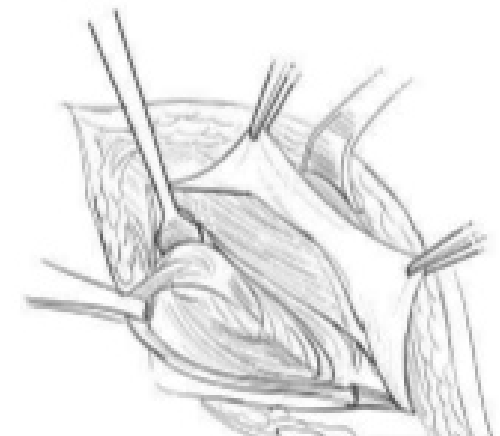
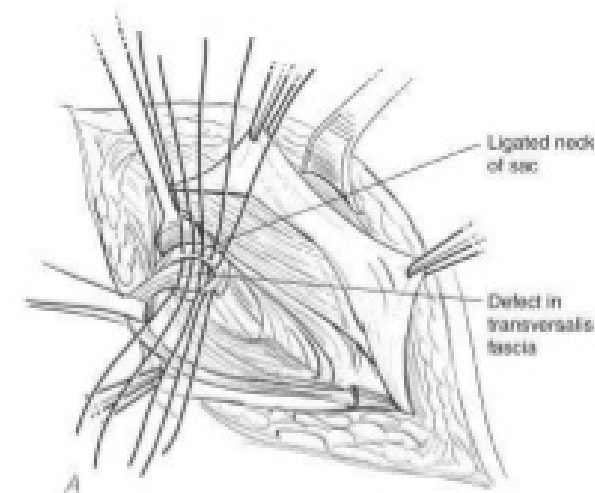


Operations for inguinal hernia

- Herniotomy (In children). In adult surgery, herniotomy alone has a high recurrence rate and some form of muscle strengthening is added (herniorrhaphy).
- Open suture repair (Bassini , Shouldice).
- Open flat mesh repair (Lichtenstein)
- Open complex mesh repair (Plugs , Hernia systems)
- Open preperitoneal repair (Stoppa)
- Laparoscopic repair (TEP , TAPP) The totally extraperitoneal (TEP) approach is more widely used than the transabdominal preperitoneal (TAPP) approach.

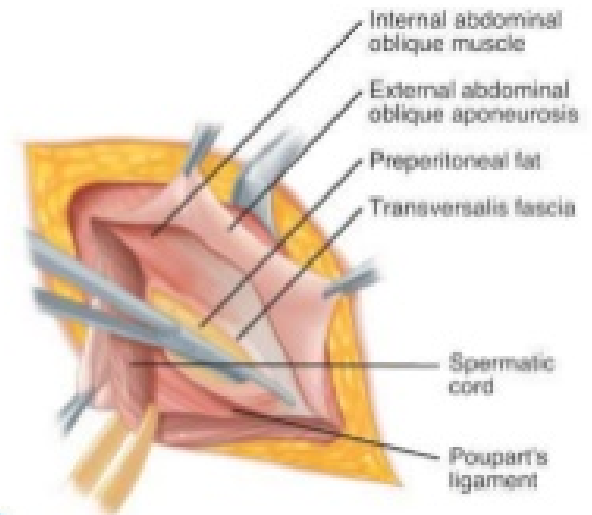
MARCY REPAIR

- simplest nonprosthetic repair performed today
- main indication is in Nyhus type I
- The essential features: high ligation of the hernia sac plus narrowing of the internal ring

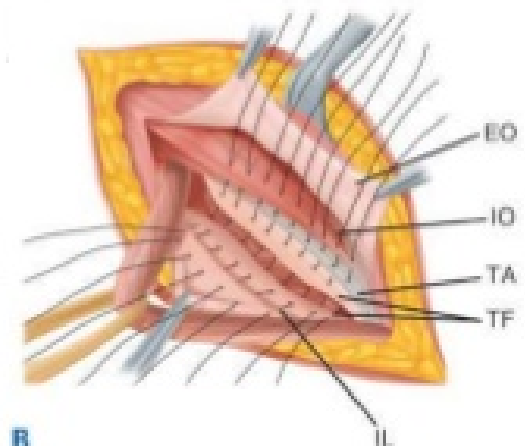


BASSINI REPAIR

- Sutures approximate reflection of inguinal ligament (Poupart's) to the transversus abdominis aponeurosis/conjoint tendon
- Major Components:
 - Division of the external oblique aponeurosis
 - Division of the cremaster muscle
 - Division of the floor or posterior wall of the inguinal canal
 - High ligation of an indirect sac
 - Reconstruction of the posterior wall



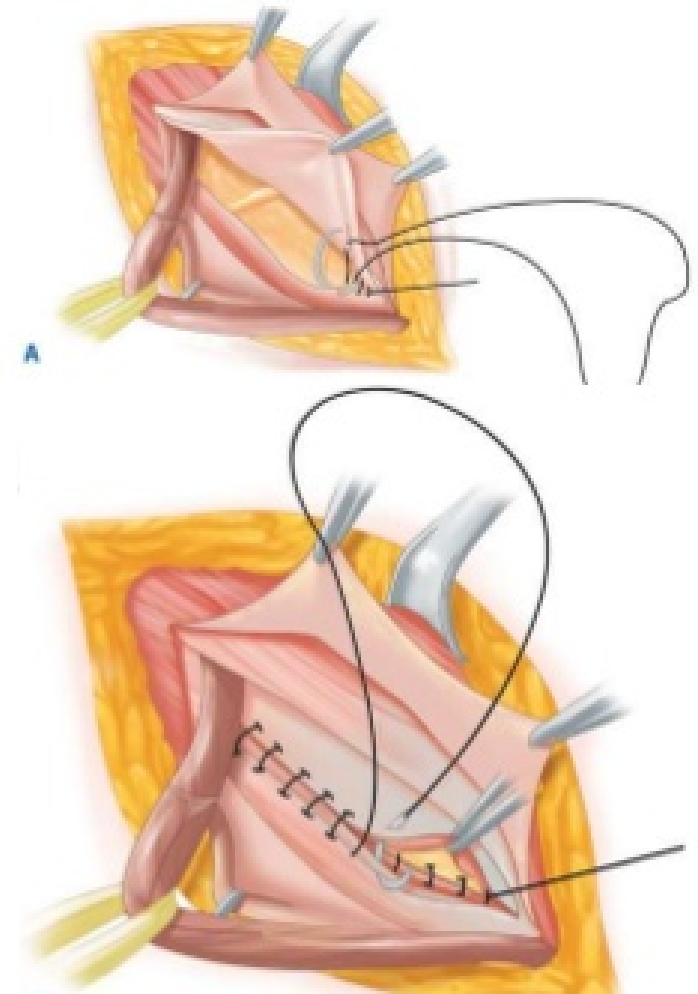
A



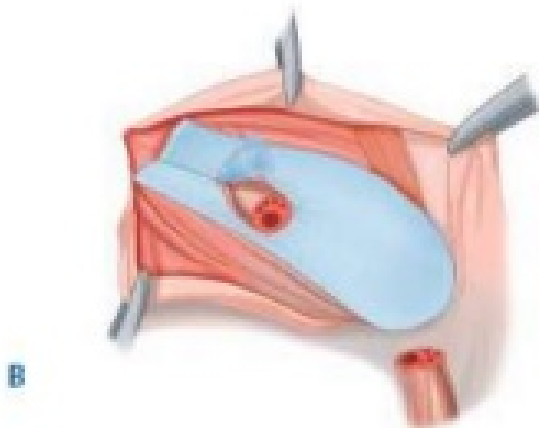
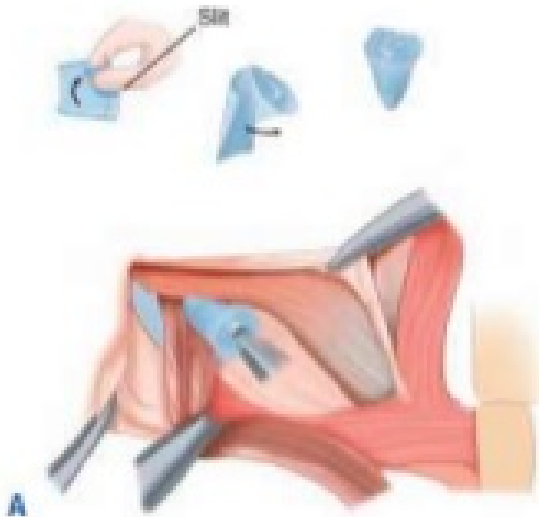
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SHOULDICE REPAIR

- Initial approach similar to Bassini:
- 2 continuous sutures:
 - Iliopubic tract → rectus sheath → inf. Trans. Flap → sup. Flap → int. inguinal ring → back to superior flap → tie at pubic tub.
 - Int ing ring → apo. of int. obl. & trans. abd. → ext. obl. → tie at pubic tub.
- distribution of tension over several tissue layers results in lower recurrence rates



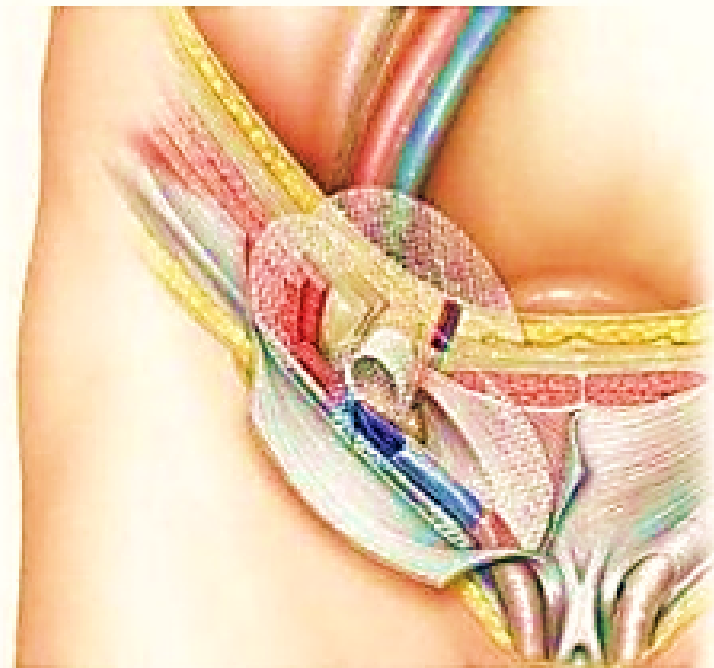
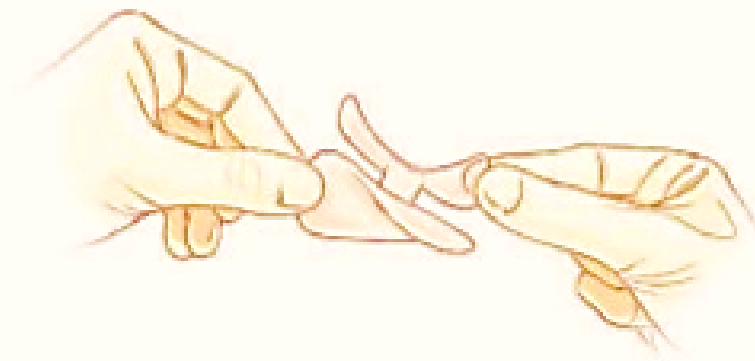
PLUG AND PATCH TECHNIQUE



- Modification of the Lichtenstein repair; developed by Gilbert and later popularized by Rutkow and Robbins
- **Indirect:** plug is placed alongside the spermatic cord through the internal ring
- **Direct:** sac is reduced, and the plug is sutured to Cooper's ligament, the inguinal ligament, and the internal oblique aponeurosis

PROLENE HERNIA SYSTEM

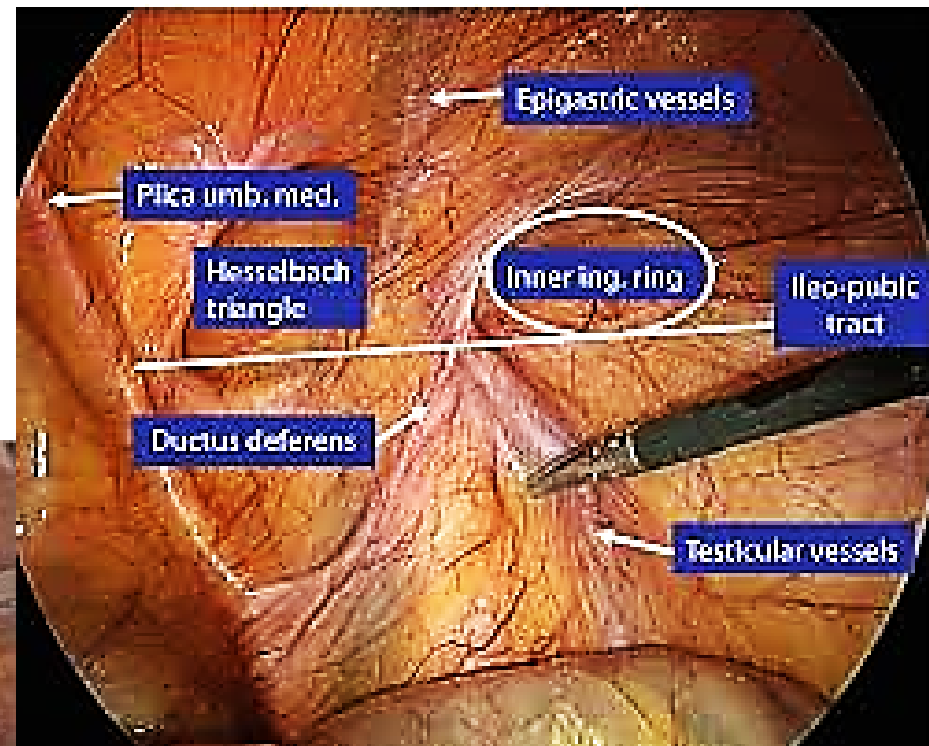
- provides reinforcement to the anterior and posterior aspects of the abdominal wall
- The advantage of the preperitoneal mesh position:
 - increased intra-abdominal pressure pushes the mesh into closer apposition to the abdominal wall.
- The overlay flap reinforces the inguinal floor similar to a tension-free repair.



LAPAROSCOPIC APPROACH

Transabdominal Preperitoneal Procedure

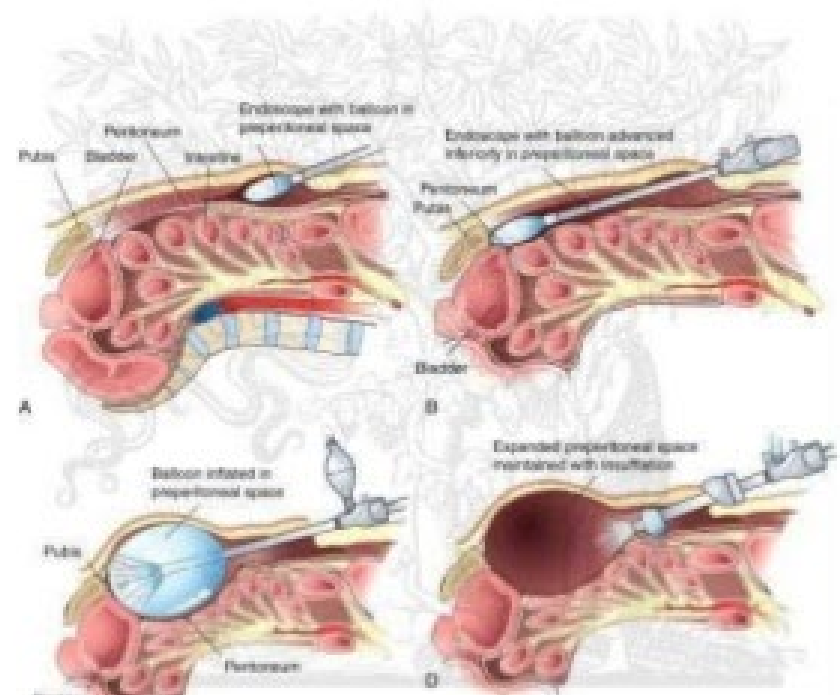
- Useful for bilateral hernias, large hernia defects, and scarring from previous lower abdominal surgery

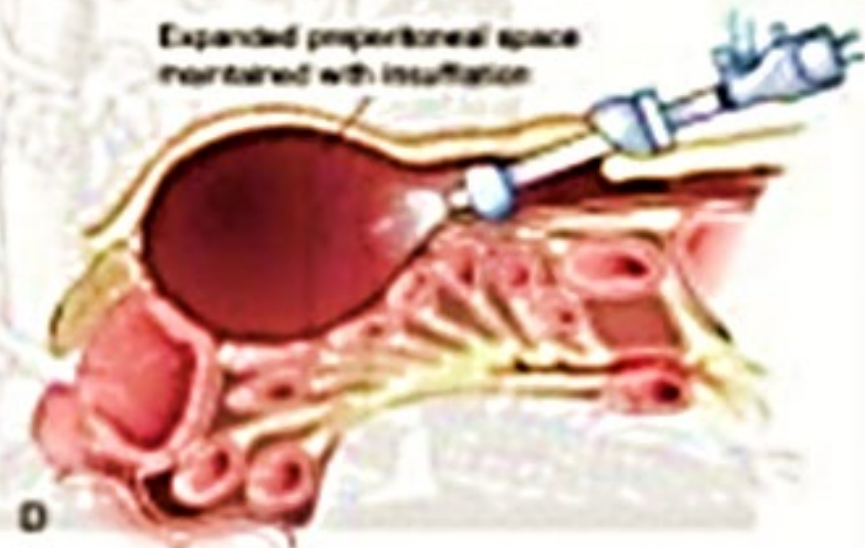
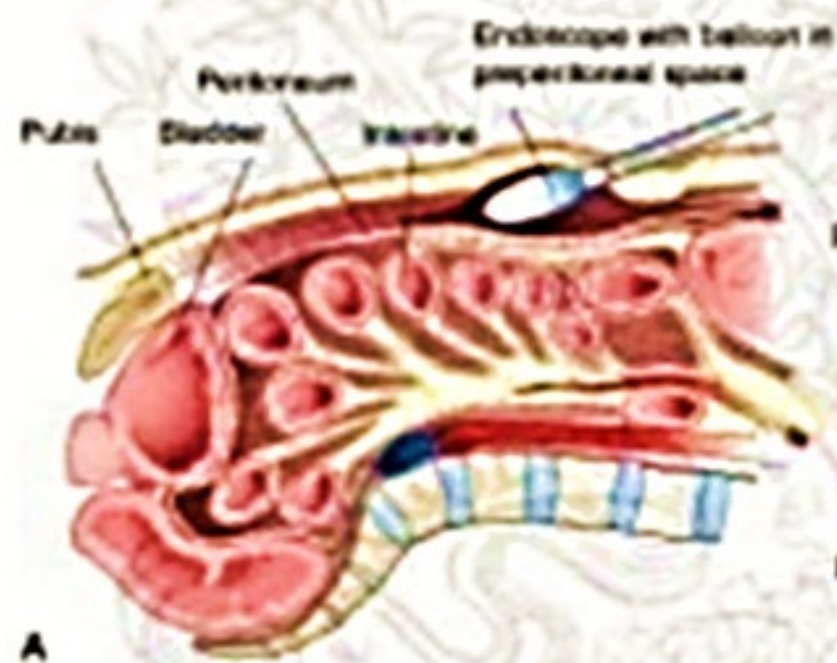


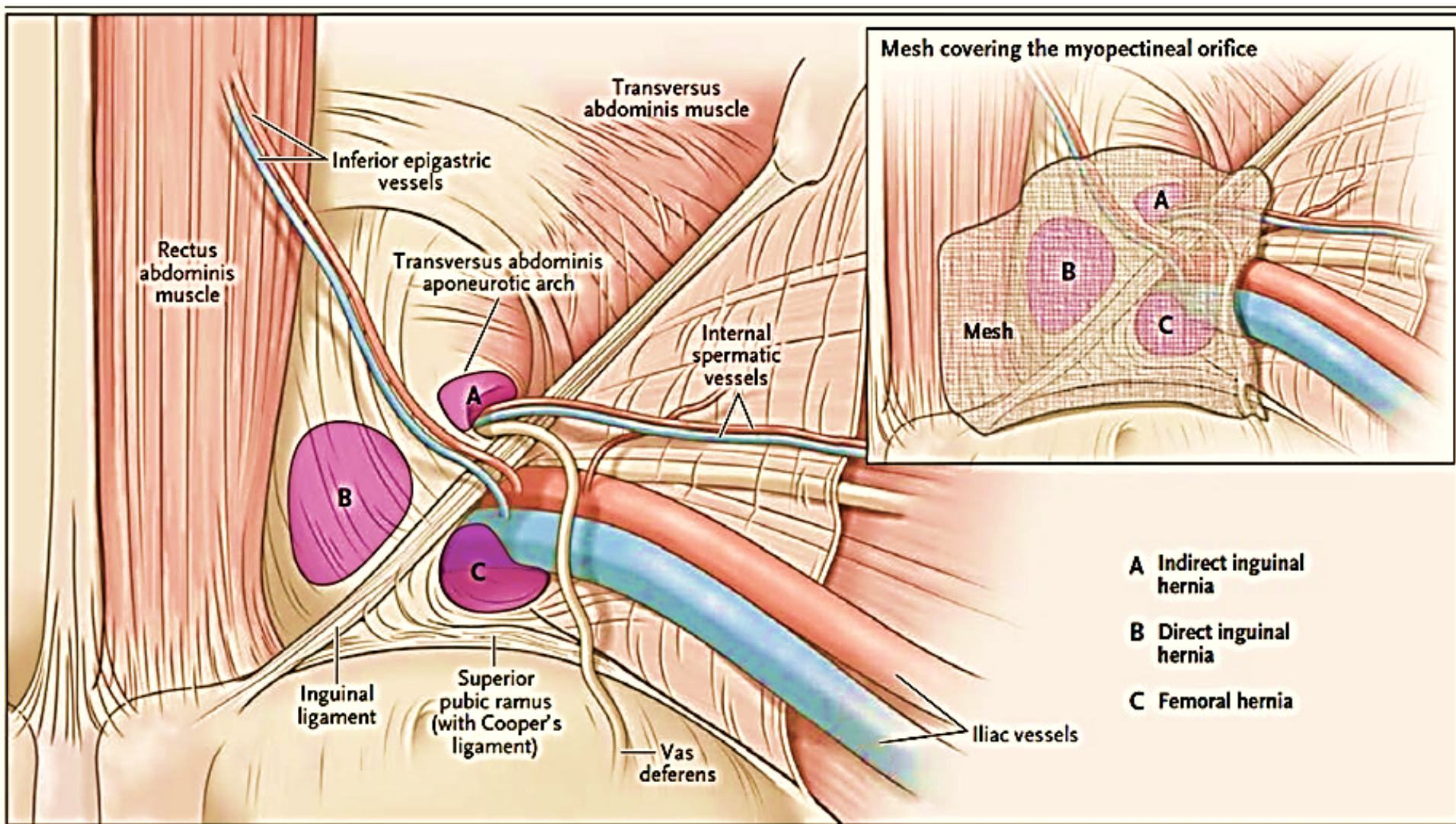
LAPAROSCOPIC APPROACH

Totally Extraperitoneal Procedure

- Advantage: access to the preperitoneal space without intraperitoneal infiltration
- minimizes the risk of injury to intra-abdominal organs and port site herniation through an iatrogenic defect in the abdominal wall







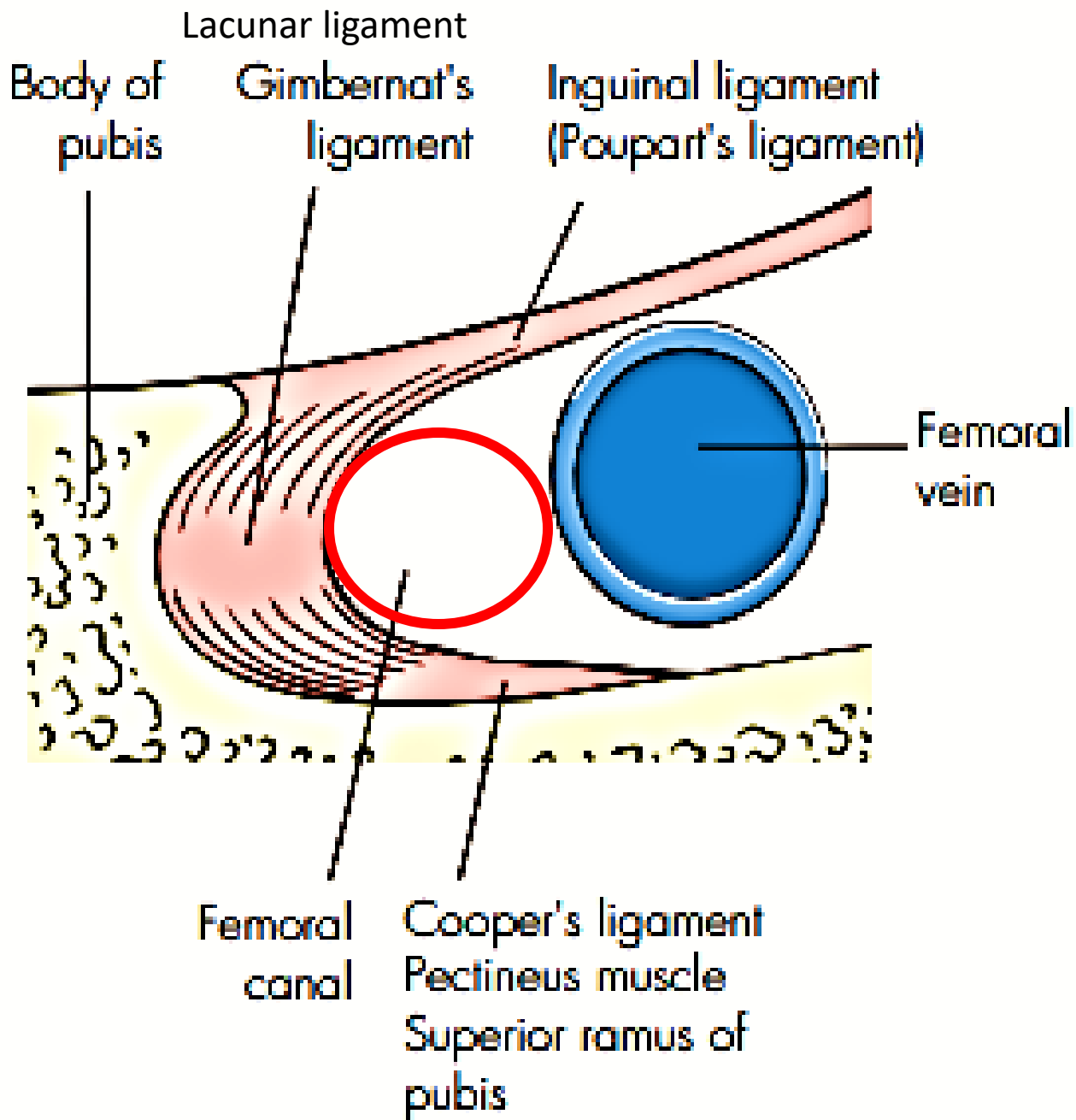
- A** Indirect inguinal hernia
- B** Direct inguinal hernia
- C** Femoral hernia

COMPLICATIONS OF INGUINAL HERNIA SURGERY

- Immediate complications (bleeding, urinary retention)
- Over the next week :seroma formation and wound infection may occur.
- Recurrence
- Chronic pain, defined as pain present 3 months after surgery, is common after all forms of surgery. It is less common and less severe after laparoscopic surgery. neuralgic pain due to nerve irritation. may be due to the mesh.(LESS IN LAPROSCOPY.
- Rarely, damage to the testicular artery can lead to testicular infarction,

Femoral hernia.

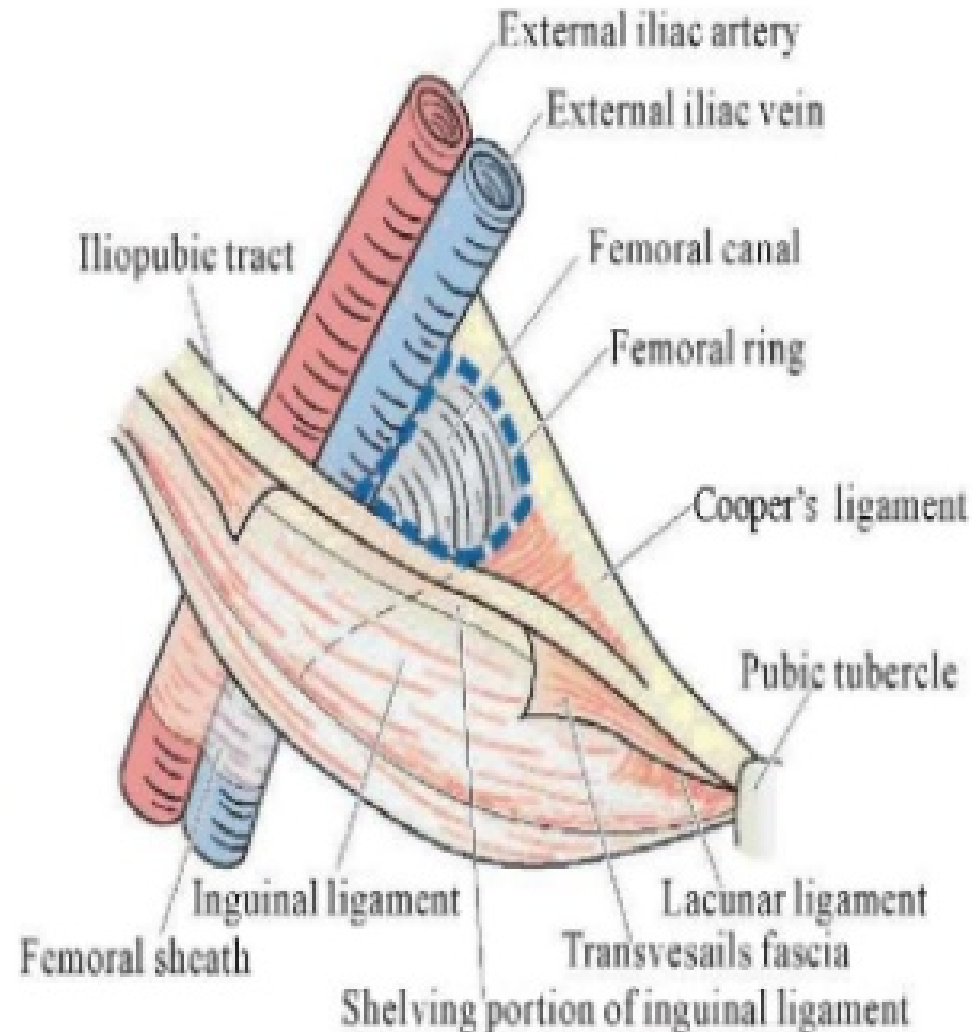
- Less common than inguinal hernia
- It is more common in women than in men
- Easily missed on examination
- Of cases 50% present as an emergency with very high risk of strangulation



Femoral hernia.

Boundaries of femoral ring

- **Anterior:** Inguinal ligament
- **Posterior:** Ligament of Cooper (pectineal ligament).
- **Medial:** Lacunar ligament (Gimbemat's ligament)
- **Lateral:** Thin septum which separates the femoral canal from femoral vein (silver fascia).



- Female > Male (wide neck with relative small size femoral vessels, wide pelvis)

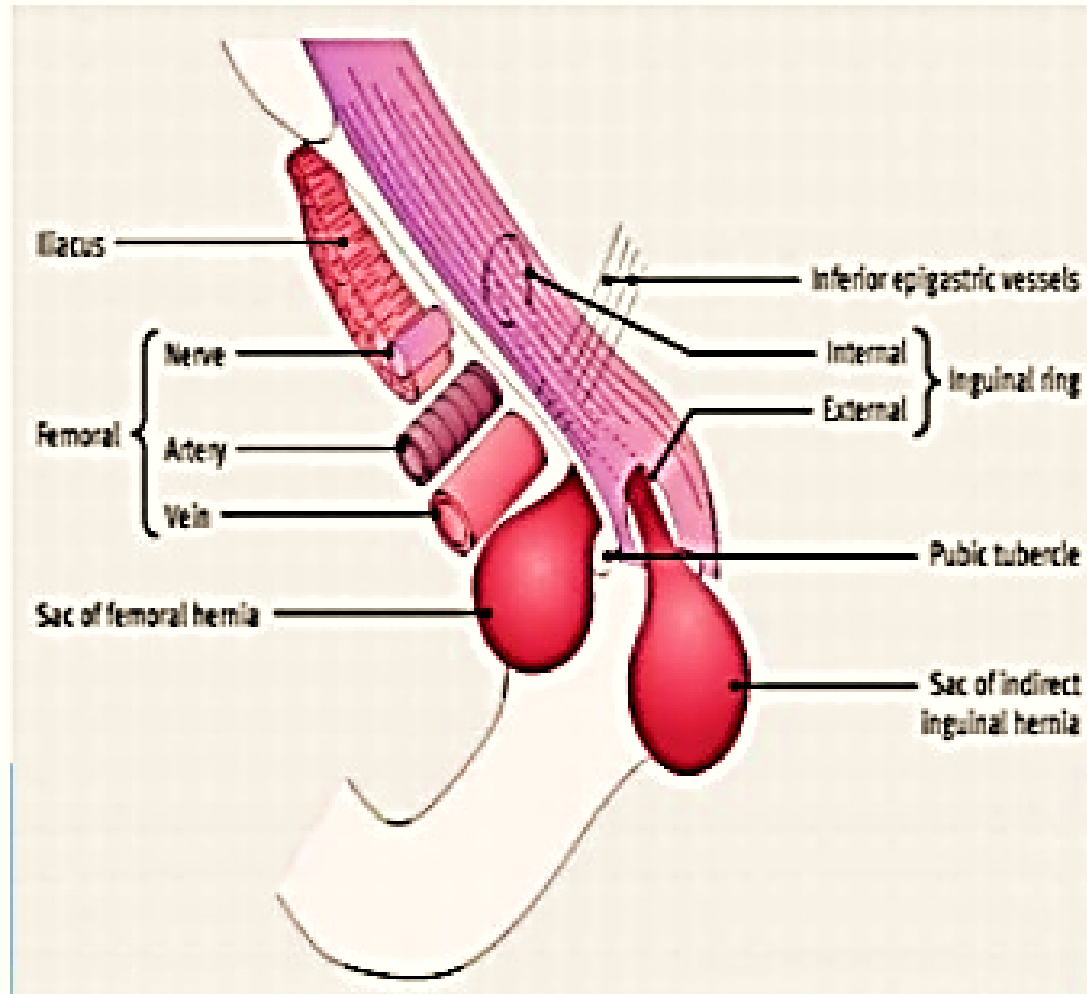
Femoral hernia

- Inferior
- Lateral

Inguinal hernia

- Superior
- Medial

To Pubic Tubercle



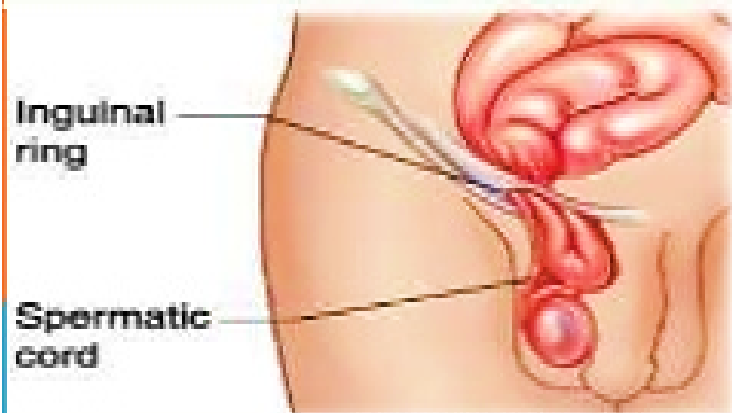
INGUINAL

Above and medial to the pubic tubercle

Above the crease of the groin

Can be reduced completely

Cough impulse usually present



Inguinal hernia

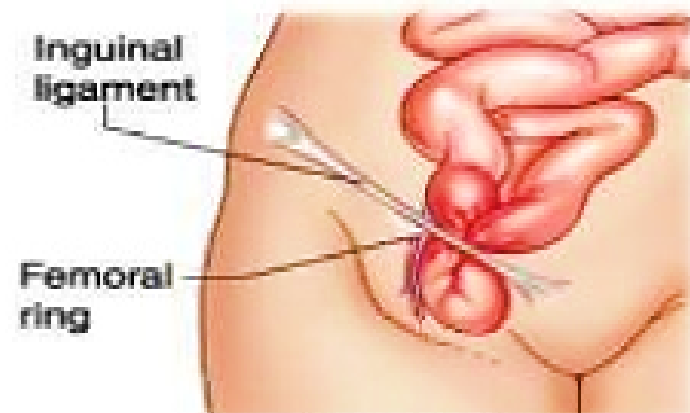
FEMORAL

Below and lateral to the pubic tubercle

Below the crease of the groin

Cannot be reduced completely

Many do **not** have cough impulse



Femoral hernia

- Pain
- Tense and Tenderness.
- Swelling.
- Gaur's sign :
- Mostly is irreducible.
- Intestinal obstruction
- Strangulation.

- The hernia (saphenous foramen) appears below and lateral to the pubic tubercle and lies in the upper leg rather than in the lower abdomen.
- The hernia often rapidly becomes irreducible and loses any cough impulse due to the tightness of the neck.
- It may only be 1–2 cm in size and can easily be mistaken for a lymph node.
- A direct inguinal hernia leaves the abdominal cavity just above the inguinal ligament and a femoral hernia just below.

Differential diagnosis

- Inguinal hernia
- Lymph node
- Saphena varix
- Femoral artery aneurysm
- Psoas abscess / Bursa.
- Rupture of adductor longus with haematoma.
- Lipoma.

Investigations

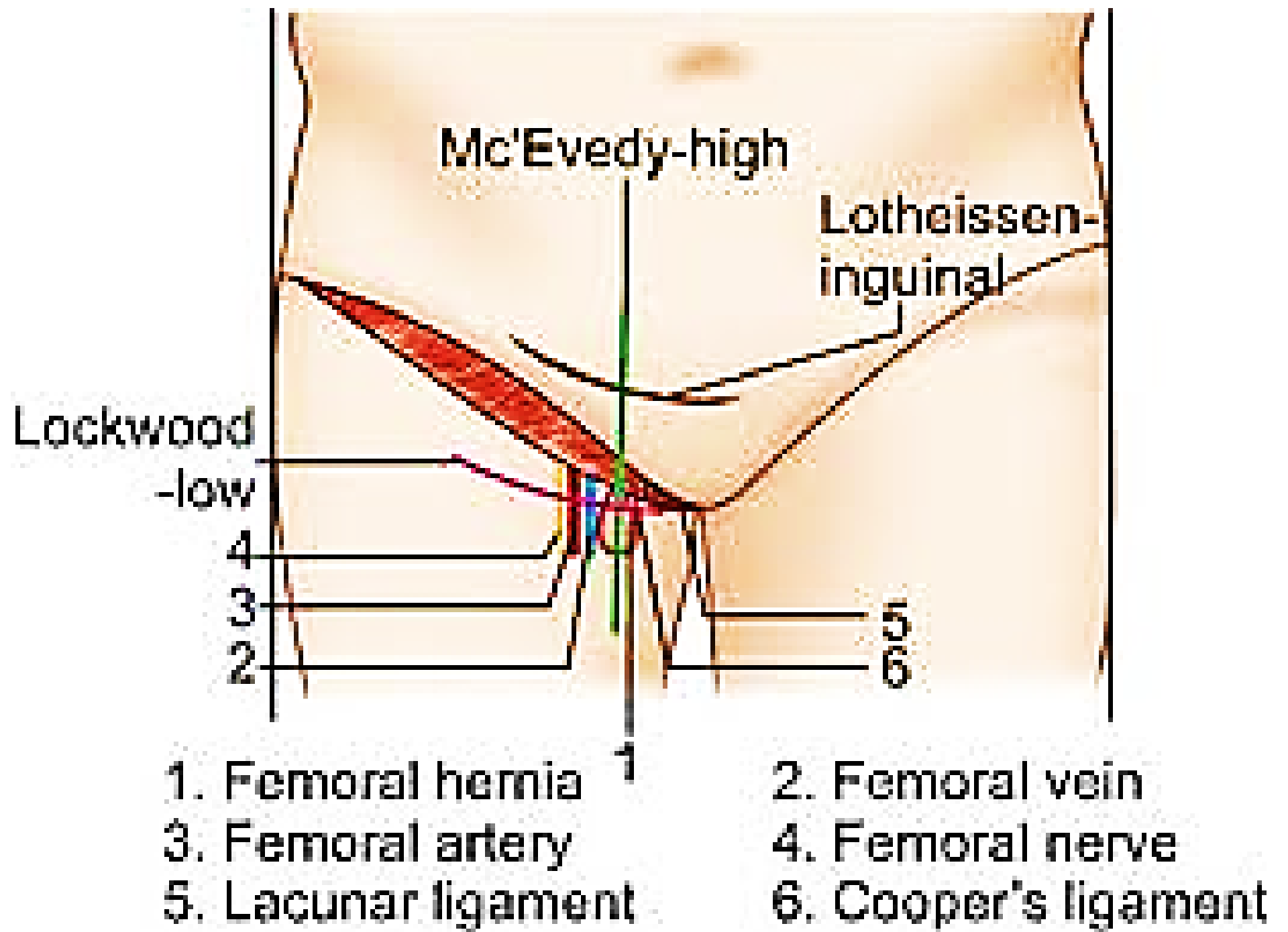
- All patients with unexplained small bowel obstruction should undergo careful examination for a femoral hernia.
- Plain X ray of abdomen.
- Ultrasonography.
- CT scan . it can identify an obstructing femoral hernia missed by clinicians.

Surgery for femoral hernia

Open approach with sutures or a mesh plug.

- LOW APPROACH (LOCKWOOD) suitable only when there is no risk of bowel resection.
- THE INGUINAL APPROACH (LOTHEISSEN)
- HIGH APPROACH (McVEDY) is ideal in the emergency situation where the risk of bowel strangulation is high.

LAPAROSCOPIC APPROACH (Both the TEP and TAPP approaches can be used for a femoral hernia and a standard mesh inserted.



تم بتوفيق الله