

HERNIA

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Definition

A hernia is a protrusion of a viscus or part of a viscus through an abnormal opening in the walls of its containing cavity .

Common Hernia

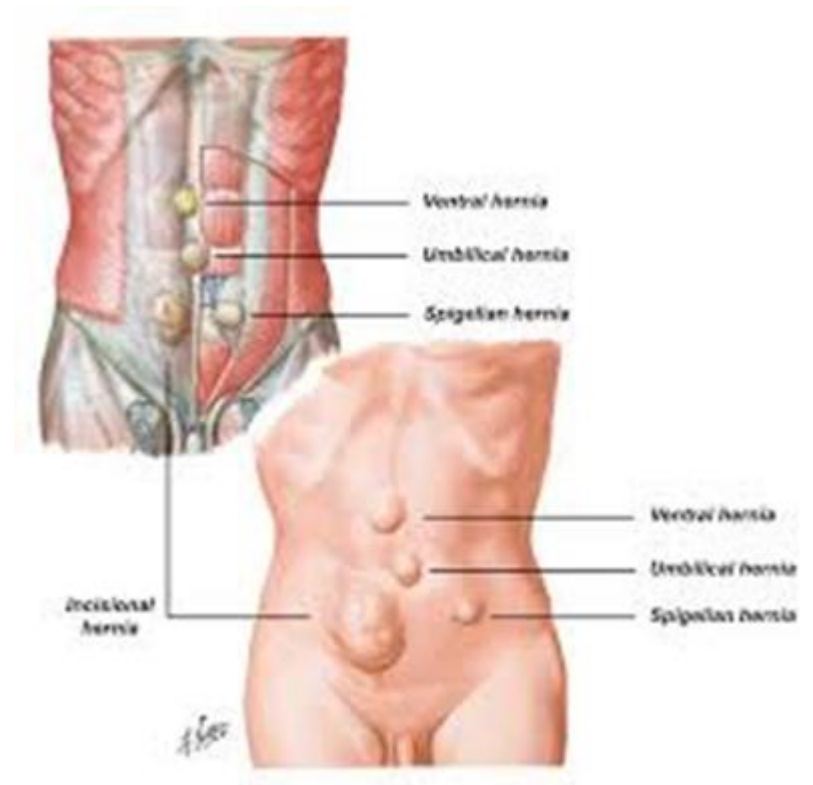
Umbilical

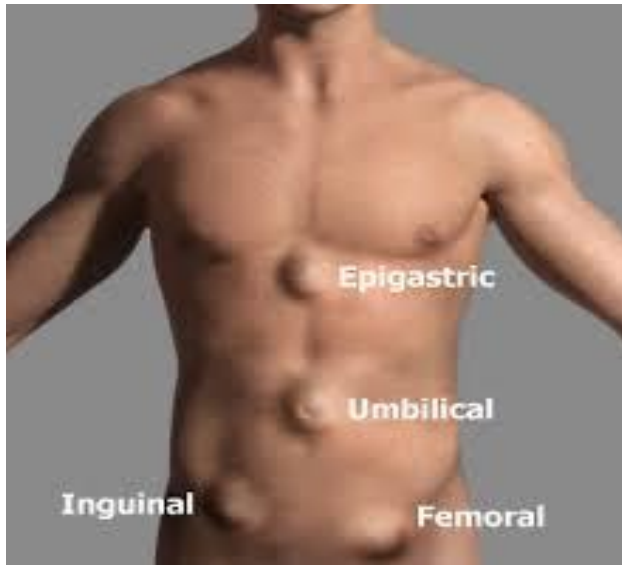
Incisional

Inguinal

Direct and indirect

Femoral





Incisional Hernia



Anatomy

- The inguinal canal :-

The inguinal canal is approximately 4 cm long and is directed obliquely inferomedially through the inferior part of the anterolateral abdominal wall.

The canal lies parallel and 2-4 cm superior to the medial half of the inguinal ligament.

This ligament extends from the anterior superior iliac spine to the pubic tubercle.

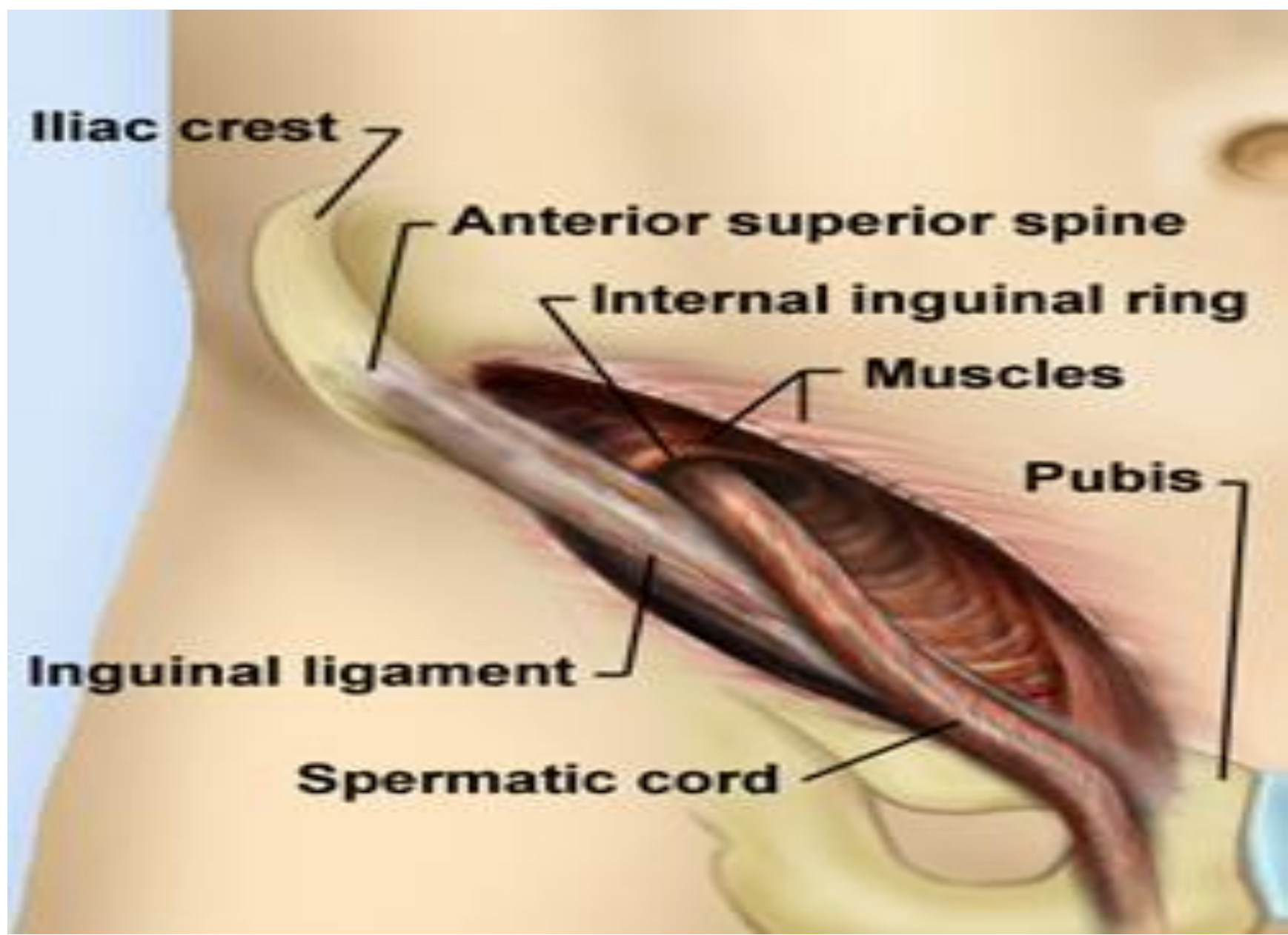
The inguinal canal has openings at either end :

The deep (internal) inguinal ring is the entrance to the inguinal canal. It is the site of an outpouching of the transversalis fascia. This is approximately 1.25 cm superior to the middle of the inguinal ligament

The superficial, or external inguinal ring is the exit from the inguinal canal. It is a slitlike opening between the diagonal fibres of the aponeurosis of the external oblique

Inguinal canal

- Walls of the inguinal canal :
- The anterior wall is formed mainly by the aponeurosis of the external Oblique
- The posterior wall is formed mainly by **transversalis fascia**
- The roof is formed by the arching fibres of the internal oblique and transverse abdominal muscles.
- The floor is formed by the inguinal ligament, which forms a shallow trough. It is reinforced in its most medial part by the lacunar ligament.



Iliac crest

Anterior superior spine

Internal inguinal ring

Muscles

Pubis

Inguinal ligament

Spermatic cord

Groin Anatomy--Anterior

Inguinal ligament

Layers

External ring

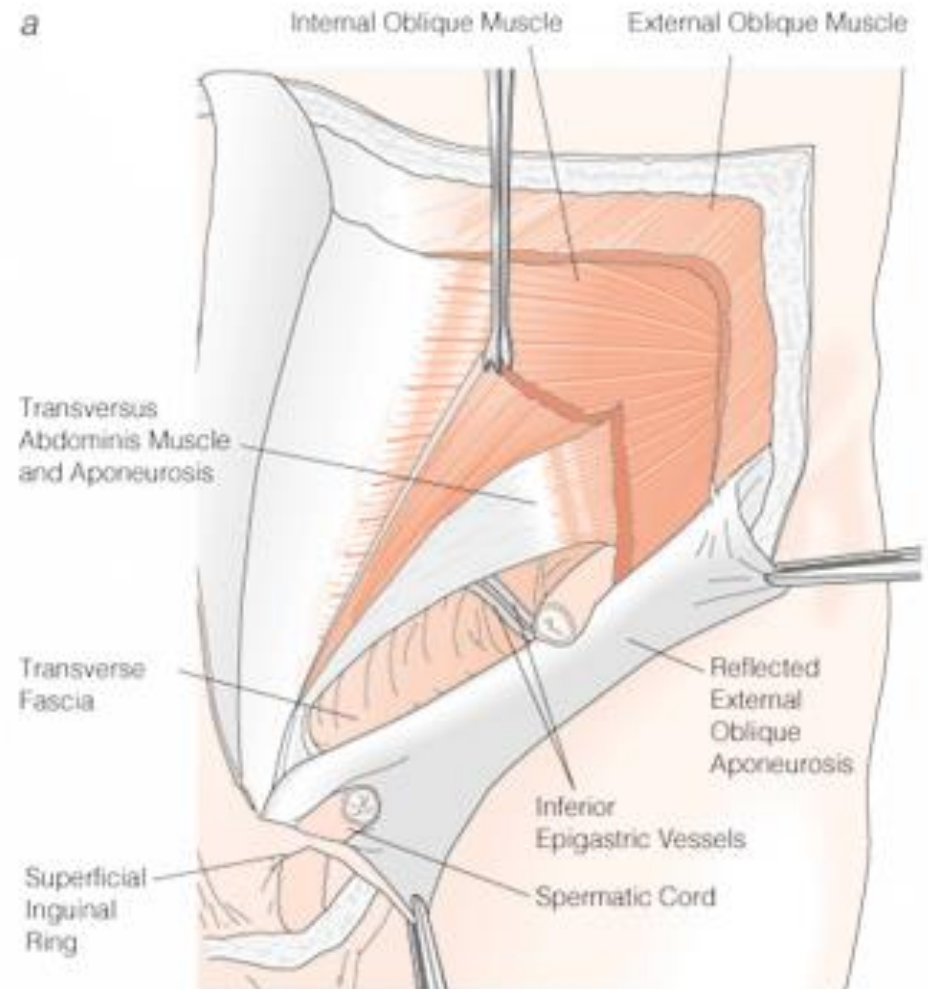
Internal ring

Spermatic cord

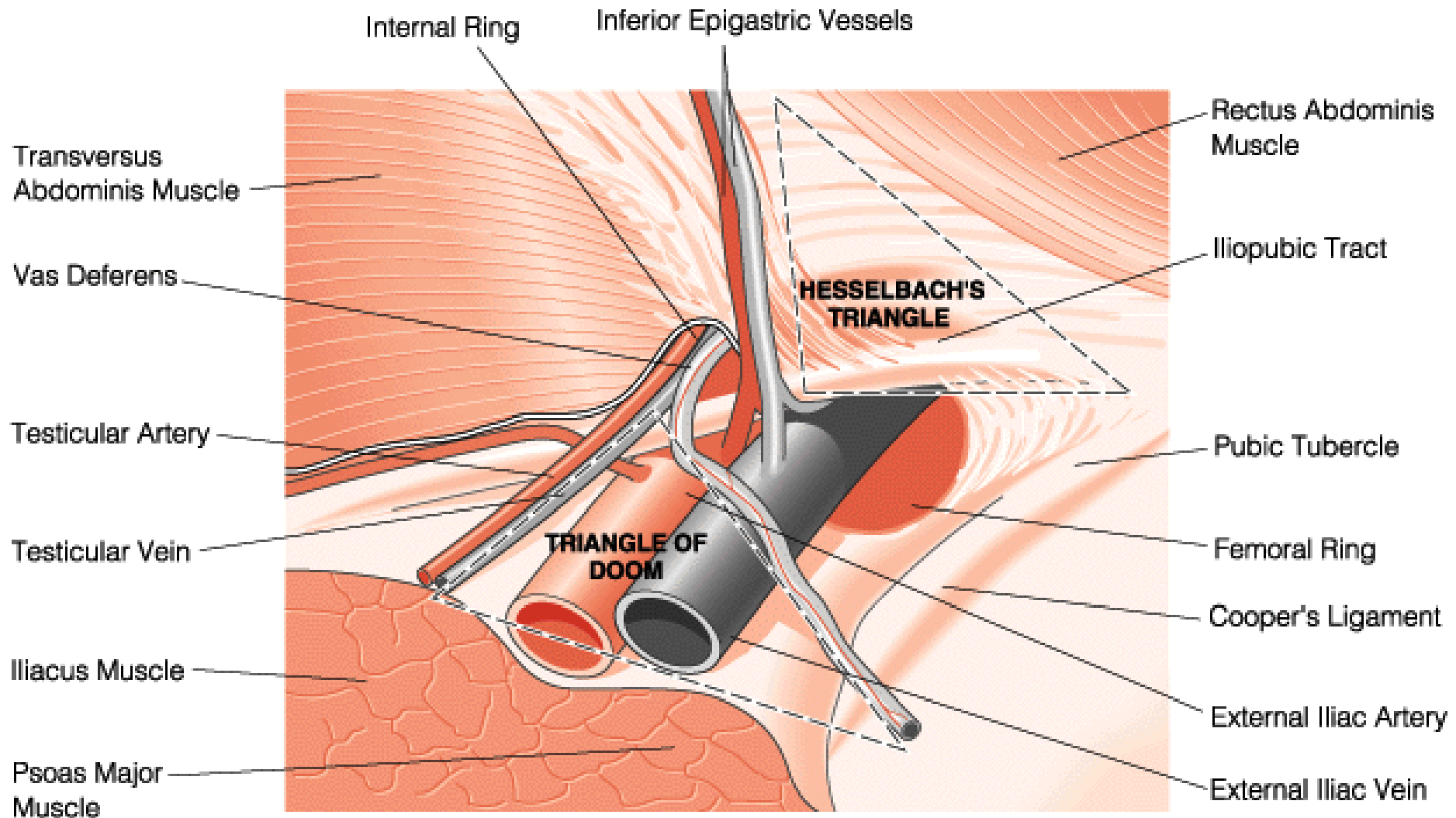
Inferior epigastrics

Hesselbach's triangle

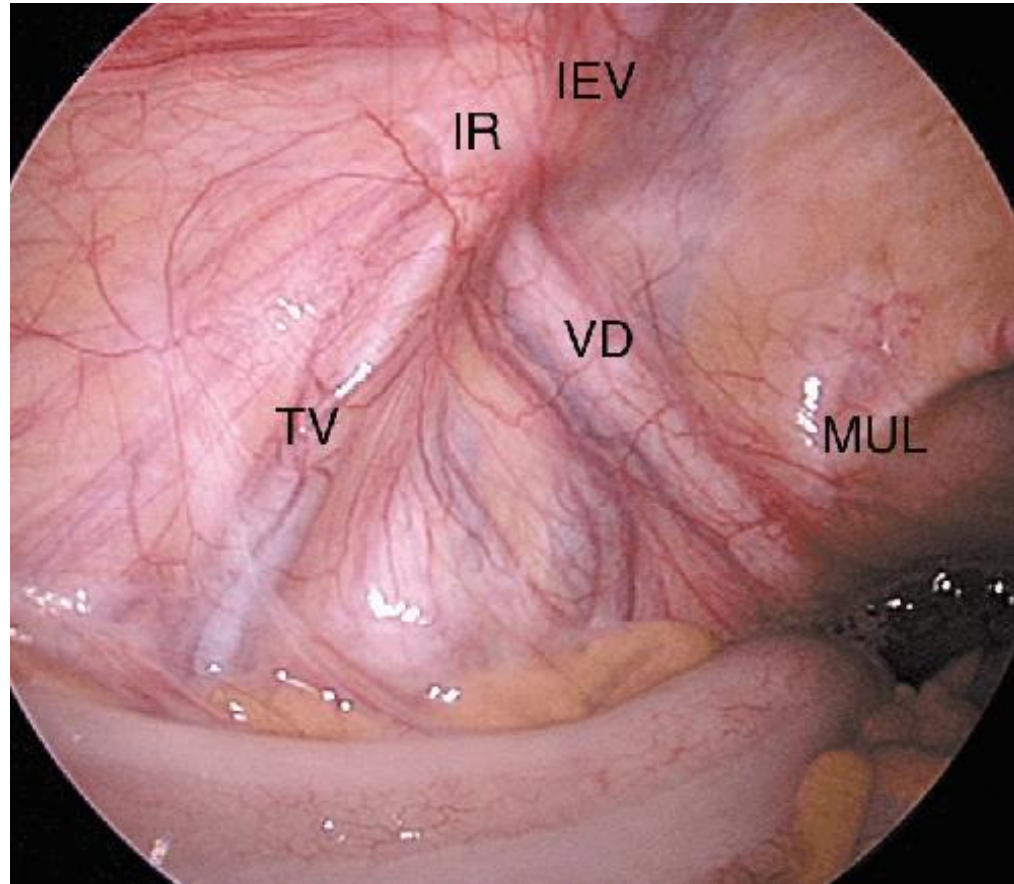
Femoral vessels



Groin Anatomy--Posterior



Transperitoneal Anatomy



Content :

1. Spermatic cord (round ligament of the uterus in female)

The Cord Itself.—The contents of the spermatic cord are

(a) the **ductus (vas) deferens** and its artery .

(b) the testicular artery and venous (**pampiniform**) plexus.

(c) the **genital** branch of the genitofemoral nerve.

(d) lymphatic vessels and sympathetic nerve fibers.

(e) fat and connective tissue surrounding the cord and its coverings in various amounts

2. Ilioinguinal nerve .

3. Ilioinguinal lymph node .

Femoral Canal

Contains, from lateral to medial, the femoral artery, femoral vein, and femoral canal. Other features of the femoral triangle include the femoral nerve, which lies lateral to the sheath,

- **Wall of The Femoral canal**

Anterior is the inguinal ligament

Posterior is the iliopsoas, pectineal, and long adductor muscles (floor).

Medial is lacunar ligament

Lateral is femoral vessel

Predisposing:

All hernias occur at the site of
WEAKNESS OF THE ABDOMINAL
WALL which are acted on by
repeated INCREASE in abdominal
pressure

Table 37-3

Presumed causes of groin herniation

Coughing

Chronic obstructive pulmonary disease

Obesity

Straining

 Constipation

 Prostatism

Pregnancy

Birthweight <1500 g

Family history of a hernia

Valsalva's maneuver

Ascites

Upright position

Congenital connective tissue disorders

Defective collagen synthesis

Previous right lower quadrant incision

Arterial aneurysms

Cigarette smoking

Heavy lifting

Physical exertion

- Indirect Inguinal Hernia

Hernia through the inguinal canal (**Lateral Hernia**)

- Direct Inguinal Hernia

The sac passes through a weakness or defect of the transversalis fascia in the posterior wall of the inguinal canal- **Hasselbach triangle.. (Medial Hernia)**

- Femoral Hernia

Hernia medial to femoral vessels under inguinal ligament

- Umbilical Hernia

Hernia through the **umbilical ring**

Paraumbilical Hernia

A protrusion through the linea alba just above or sometimes just below the umbilicus

Epigastric Hernia

Protrusion of extraperitoneal fat through the linea alba anywhere between the xiphoid process and the umbilicus

Incisional Hernia

Hernia through an incisional site

Lumber Hernia

occur through the inferior lumber triangle of Petit

Repeated INCREASE in abdominal pressure is usually due to

- Chronic cough
- Straining
- Bladder neck or urethral obstruction
- Pregnancy
- Vomiting
- Sever muscular effort
- Ascetic fluid

Inguinal hernia

- History:

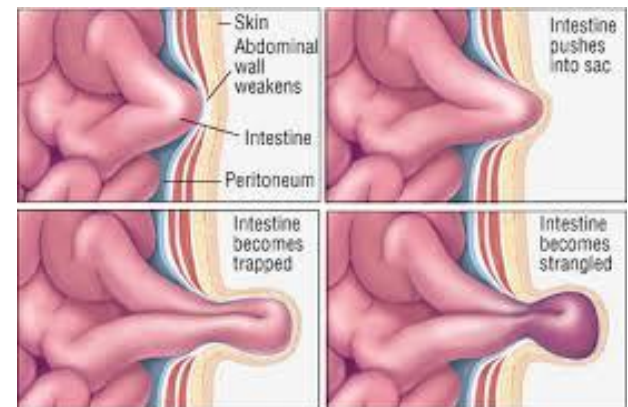
1. Age (young vs. old)

2. Occupation (nature ??)

3. Local symptoms: **Swelling, discomfort and pain**

4. Systemic symptoms: if there is obstruction or strangulation

5. Precipitating factors



Pertinent Exam

Location

Reducible? (**incarcerated**=irreducible)

Tender?

Skin changes?

Palpable edges

Genitalia

Rectal

Inguinal hernia

- Examination:
 1. Inspection for site, size, shape and color.
 2. Palpation for surface, temp, tenderness, composition and reducibility.
 3. Expansible cough impulse.
 4. General exam: for common causes of increase intra abdominal pressure

Indirect Versus Direct inguinal hernias

- Indirect is the most common form of hernia and its usually congenital due to patent processus vaginalis
- Direct usually acquired occur in **old men** with weak abdominal muscles.

Indirect Versus Direct inguinal hernias

Indirect Inguinal Hernia	Direct Inguinal Hernia
Pass through inguinal canal.	Bulge from the posterior wall of the inguinal canal
Can descend into the scrotum.	Cannot descent into the scrotum.
Lateral to inferior epigastric vessels.	Medial to inferior epigastric vessels.
Reduced: upward, then laterally and backward.	Reduced: upward, then straight backward.
Controlled: after reduction by pressure over the internal (deep) inguinal ring.	Not controlled: after reduction by pressure over the internal (deep) inguinal ring.
The defect is not palpable (it is behind the fibers of the external oblique muscle).	The defect may be felt in the abdominal wall above the pubic tubercle.
After reduction: the bulge appears in the middle of inguinal region and then flows medially before turning down to the scrotum.	After reduction: the bulge reappears exactly where it was before.
Common in children and young adults.	Common in old age.

Femoral hernia

Small femoral hernia may be unnoticed by the patient or disregarded for years perhaps until the day it strangulates. Adherence of the greater omentum sometimes causes a dragging pain. Rarely a large sac is present .

Femoral hernia

History

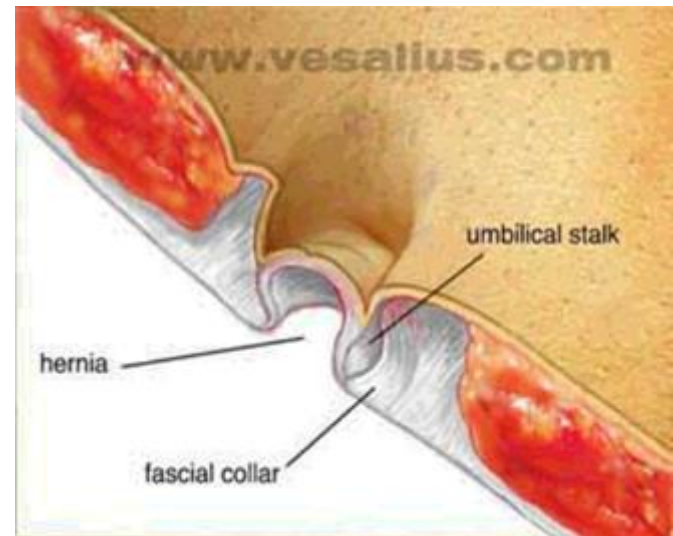
- Age ; uncommon in children , most common in old age female .
- Sex; women $>$ men (but still commonest hernia in women the inguinal hernia)
- The patient came with local symptoms
- 1- discomfort and pain
- 2- swelling in the groin
- General ; femoral hernia is more likely to be strangulated than the inguinal hernia
- Multiplicity ; often bilateral

Femoral hernia versus inguinal hernia

Inguinal hernia	Femoral hernia
1- more common in male	1- more common in females
2- pass through the inguinal canal	2- pass through the femoral canal
3- less common to be strangulated	4- more common to be strangulated
4- can be treated without surgery	5- must be treated surgically

Umbilical Hernia

- Hernia through the umbilical scar , so it is a true umbilical hernia.
- Not common and is usually secondary to increase intra abdominal pressure.
- **The most common causes**
 - 1- pregnancy
 - 2- ascitis
 - 3- ovarian cyst
 - 4- fibrosis
 - 5- bowel distention



Incision hernia

- Signs and symptoms
- Previous operation or accidental trauma
- Age ; all ages , but more common in old age.
- Symptom ; lump ,pain ,intestinal obstruction (distention ,colic, vomiting ,constipation , sever pain in the lump)
- Examination
- 1- reducible lump
- 2- expansile cough impulse
- 3- if the lump dose not reduse and dose not have cough impulse , than it may be not a hernia

- Ddx
- Tumor
- Chronic abscess
- Hematoma
- Foreign body granuloma

Etiology of Incisional Hernia

Patient-related factors—DM, Obesity, Smoke, Chronic obstructive pulmonary disease, multiple surgery, cancer, chemotherapy, radiotherapy, malnutrition, jaundice, CRF..

Technical factors---bad surgical technique, wrong surgical materials

Mechanical factors---Mechanical factors increase the intra-abdominal pressure after an operation and causes the hernia. Common causes include-

Chronic cough- Coughing and vomiting are associated with a brief but significant increase in intra-abdominal pressure. This, again, leads to too much tension on the incision and possible breakdown of the incision.

Lifting heavy weights- Obviously, if a patient lifts something too heavy immediately after the operation, he or she can also tear the incision and cause a hernia.

Postoperative ileus- This occurs when the abdomen becomes distended because the intestines are not working properly after an operation. The swelling of the intestines increases the pressure in the abdomen and places tension on the incision. The tension then leads to defective healing.

Constipation- Straining to move bowels after surgery

Management and Repair

Reduction

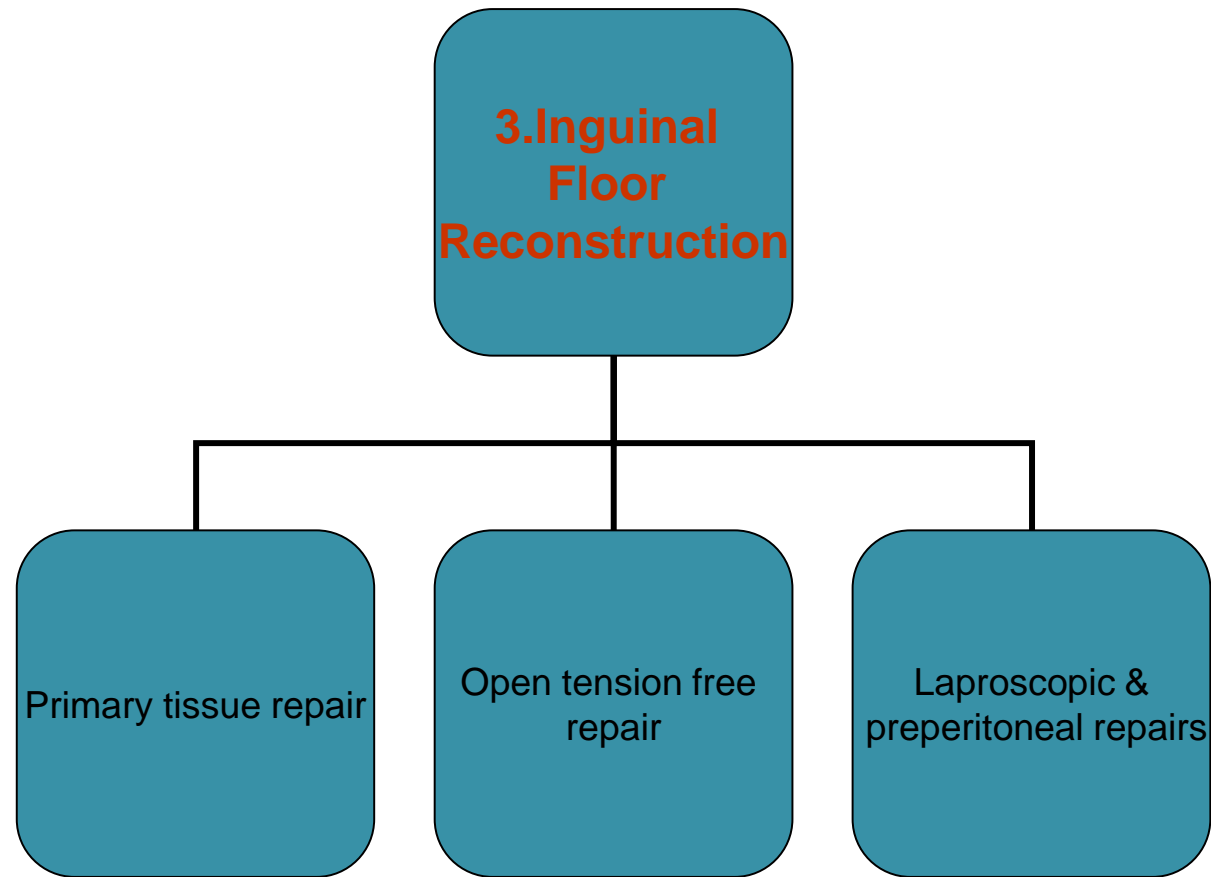
- Uncomplicated:
- Manual → Gentle pressure over hernia → Gentle traction over the mass → sedation
- Complicated (**strangulated**):
- no attempt!! should be made to reduce the hernia **because of potential reduction of gangrenous segment of bowel with the hernial sac.**

Surgical Treatment

- I.choice of anesthetic:
- Elective open repair : Local/Spinal anesthesia is preferred
- Laproscopic hernia repair: more commonly under GA.

Inguinal Floor Reconstruction

- Some method of reconstruction of the inguinal floor is necessary in all adult hernia repairs to prevent recurrence.

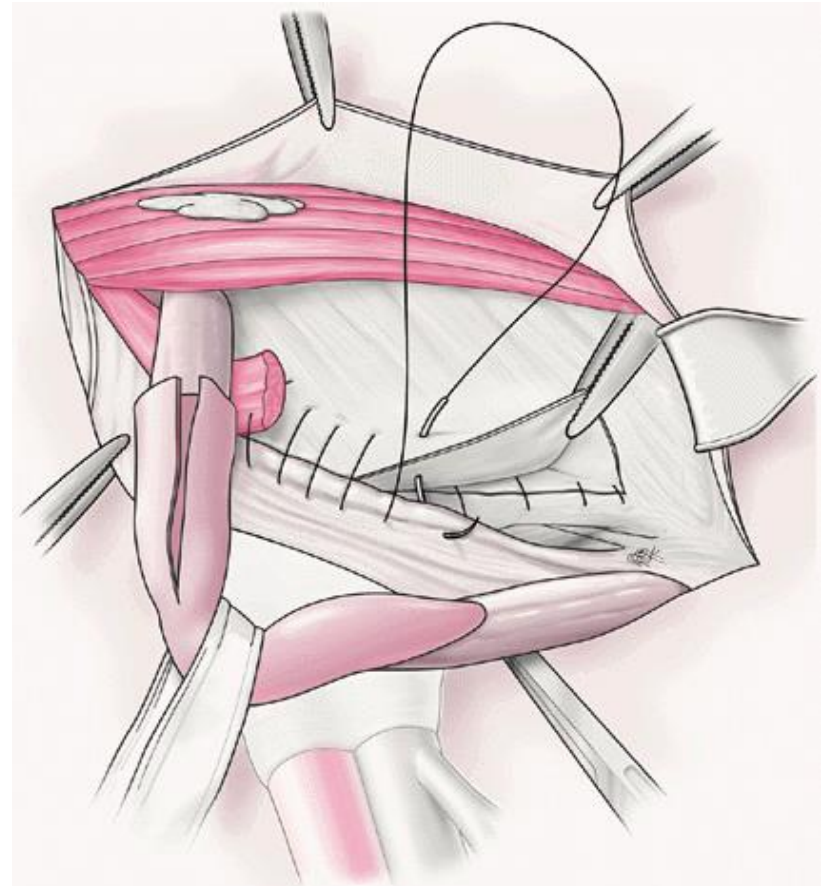
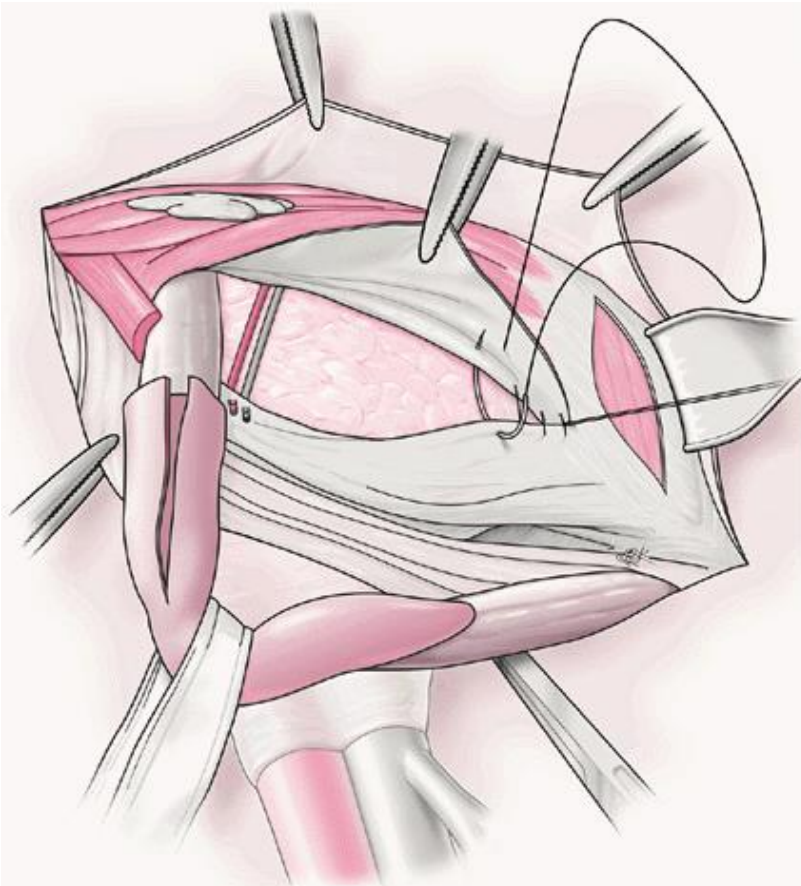


I. Primary tissue repair

- **Bassini repair:** inferior arch of transversalis fascia (TF) or conjoint tendon is approximated to shelving portion of inguinal ligament.
- **McVay:** TF is sutured to cooper ligament.
- **Shouldice:** TF is incised and reapproximated.

Shouldice Repair

Imbricated, running repair



2. Open tension free repair

- Lichtenstein repair & Patch and Plug technique: Mesh is used to reconstruct inguinal floor
- Mesh plug technique : place mesh in the hernial defect

Mesh repair

Tension free

Less painful

Foreign body

