Abdominal Hernia

Monday 19 Nov 2007 , Dr. Omar Farouq

Hello !! These are some guiding signs :

(!) : Important note .

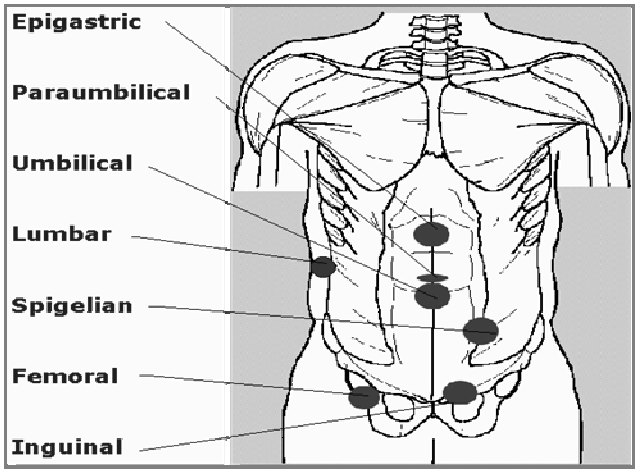
⊠ : The Dr didn't mention this at all but it was found in the slides .

✡ : Is a risk question --> The Dr said that this point was important or asked a question about it .

- Have Q's ? found errors ? send them at : surgeryqueens@gmail.com
- Have fun studying ,, or .. at least اخلصوا النية لله.

What is a Hernia?

✓ A hernia is protrusion of a viscous through a congenital or acquired facial defect in the abdominal wall.



Etiology:

1. **Raised intra-abdominal pressure:**
   - ✓ Cough.
   - ✓ Straining for micturition or defecation.
   - ✓ Lifting heavy objects.
   - ✓ Multiparity.
2. **Congenital :** e.g. patent processus vaginalis.

(!) Congenital hernia also include umbilical & indirect inguinal hernia

(!) Chronic cough that may cause hernia (asthma-bronchitis-bronchectasis)

(!) Males are more predispose to straining hernia coz of benign prostatic hyperplasia that occur commonly at age of 40 which compress the urethra so the pt. strains to pass urine.

COMPOSITION:

1. The sac.
2. The coverings.
3. The contents.

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THE SAC :

- ✓ Diverticulum of peritoneum consisting of mouth, neck, body and fundus.
- ✓ In direct inguinal and incisional hernia no actual neck.
- ✓ Strangulation is likely in narrow neck.
- ✓ The body varies in size and not necessarily occupied.

(!) Reducable hernia means that it can be comes out & goes inside peritoneal cavity .

(!) Reduction of hernia may be spontaneous by resting or lying down or by the pt. him self .

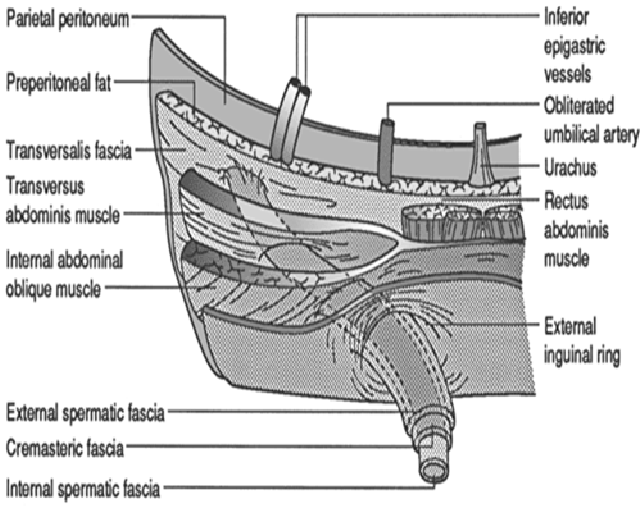
(!) Adhesion by impact to the lumen sac.

(!) Incarceration: means that reducible hernia become irreducible.

(!) Rigid surrounding >> bony structure.

THE COVERINGS:

- ✱ Derived from the layers of the abdominal wall.



THE CONTENTS:

- ✓ Omentum : omentocele.
- ✓ Intestine : enterocele.
- ✓ Richter's hernia : a portion of the circumference of the bowel.
- ✓ Bladder.
- ✓ Litter's hernia: meckel's diverticulum.
- ✓ Fluid or part of ascites.

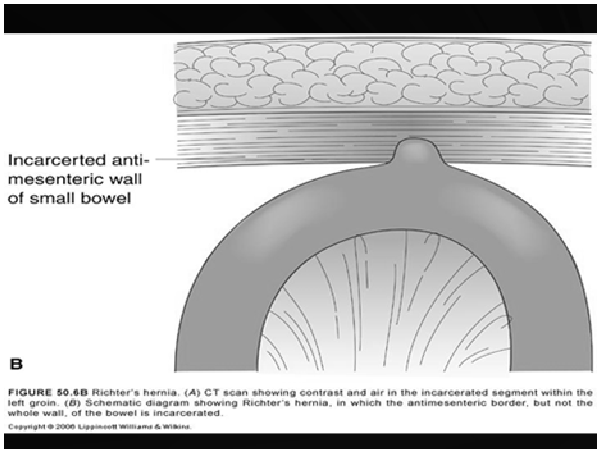


FIGURE 50.6B Richter's hernia. (A) CT scan showing contrast and air in the incarcerated segment within the left groin. (B) Schematic diagram showing Richter's hernia, in which the antimesenteric border, but not the whole wall, of the bowel is incarcerated.

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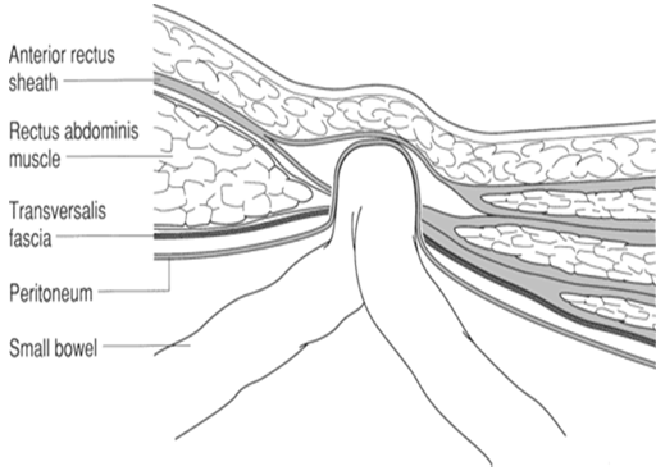

CLASSIFICATION:

1. **Reducible.**
2. **Irreducible:**
   - ✓ Adhesion.
   - ✓ Narrowing of neck of sac.
3. **Incarceration:**
   - ✓ Trapped or imprisoned.
   - ✓ It is irreducible.
   - ✓ Does not denote obstruction.
4. **Obstructed :** containing intestine which is obstructed.
5. **Strangulated :** the blood supply is seriously impaired rendering the contents ischemic.
   - ✓ Gangrene may occur 5-6hrs. after the onset of symptoms.
   - ✓ The femoral hernia is most liable to strangulation due to its narrow neck and its rigid surroundings.
6. **Inflamed hernia :** Due to the inflammation of the contents of the sac e.g. acute appendicitis or salpingitis.

INGUINAL HERNIA:

* **Surgical anatomy :**
  - ✓ **The superficial ring** : triangular aperture in external oblique aponeurosis 1.25 cm above the pubic tubercle.
  - ✓ **The deep ring :** U-shaped condensation of the transversalis fascia 1.25 cm above the inguinal ligament.
* **The inguinal canal :**
  - ✓ In infants the two rings are superimposed and the canal is slightly oblique.
  - ✓ In adults it is 3.75cm long.

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* **Contents Of The Canal:**
  - ✓ Spermatic cord.
  - ✓ Ilio-inguinal nerve.
  - ✓ Genital branch of the genito-femoral nerve.
  - ✓ Testicular artery.
  - ✓ Pampiniform plexus of veins.
  - ✓ In females it contains the round ligament.
* **Boundaries of the canal:**
  - ✓ Anteriorly : External oblique aponeurosis.
  - ✓ Posteriorly : Fascia transversalis and conjoined tendon.
  - ✓ Superiorly : Internal oblique and transversus muscles.
  - ✓ Inferiorly : The inguinal ligament.
* **Indirect hernia:**
  - ✓ Travel down the canal on the outer side of the spermatic cord.
  - ✓ Occurs outside of Hesselbach's Triangle (lateral to the inferior epigastric vessels)

DIRECT HERNIA:

* Occurs within Hesselbach's Triangle.
* The neck is medial to the inferior epigastric vessels .
* Saddle-bag or pantaloon hernia has both direct and indirect components.

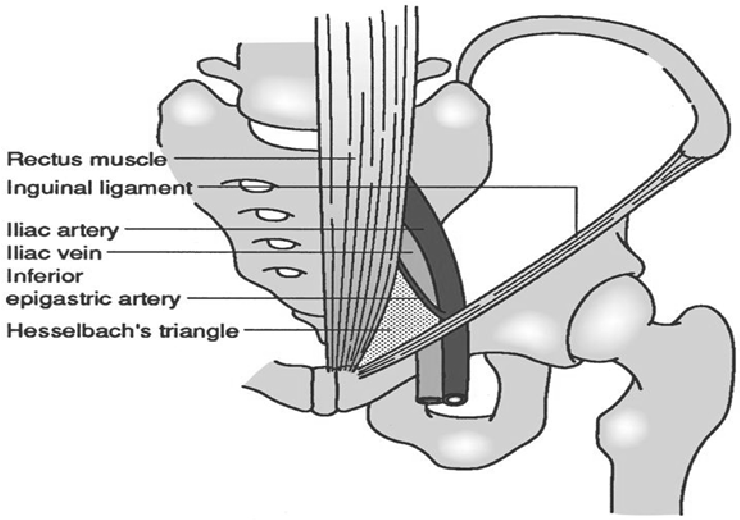

FIGURE 73.13 The inguinal (Hesselbach's) triangle.

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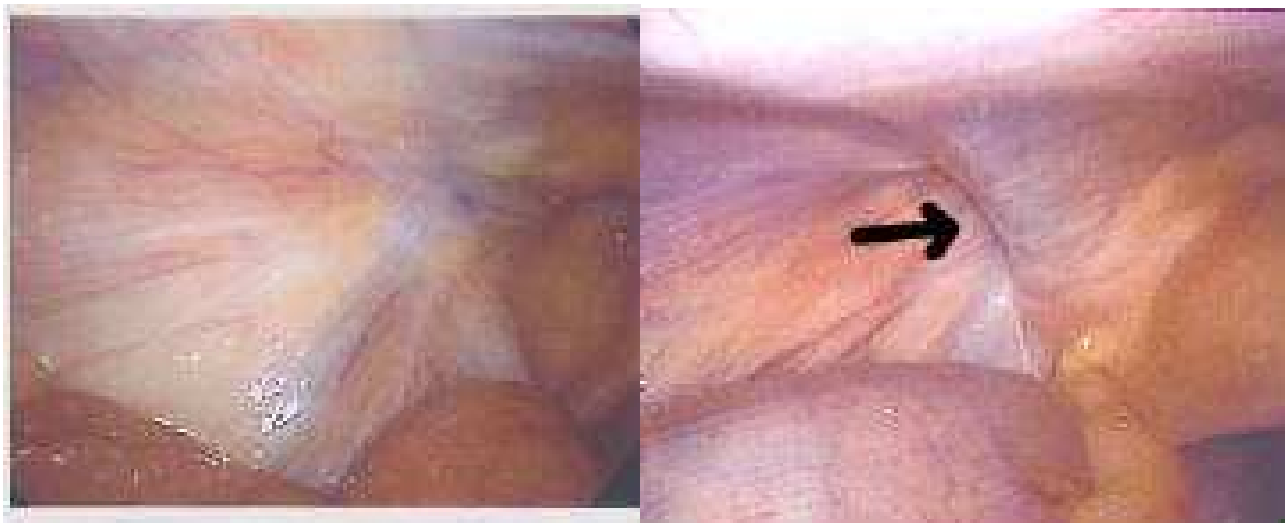
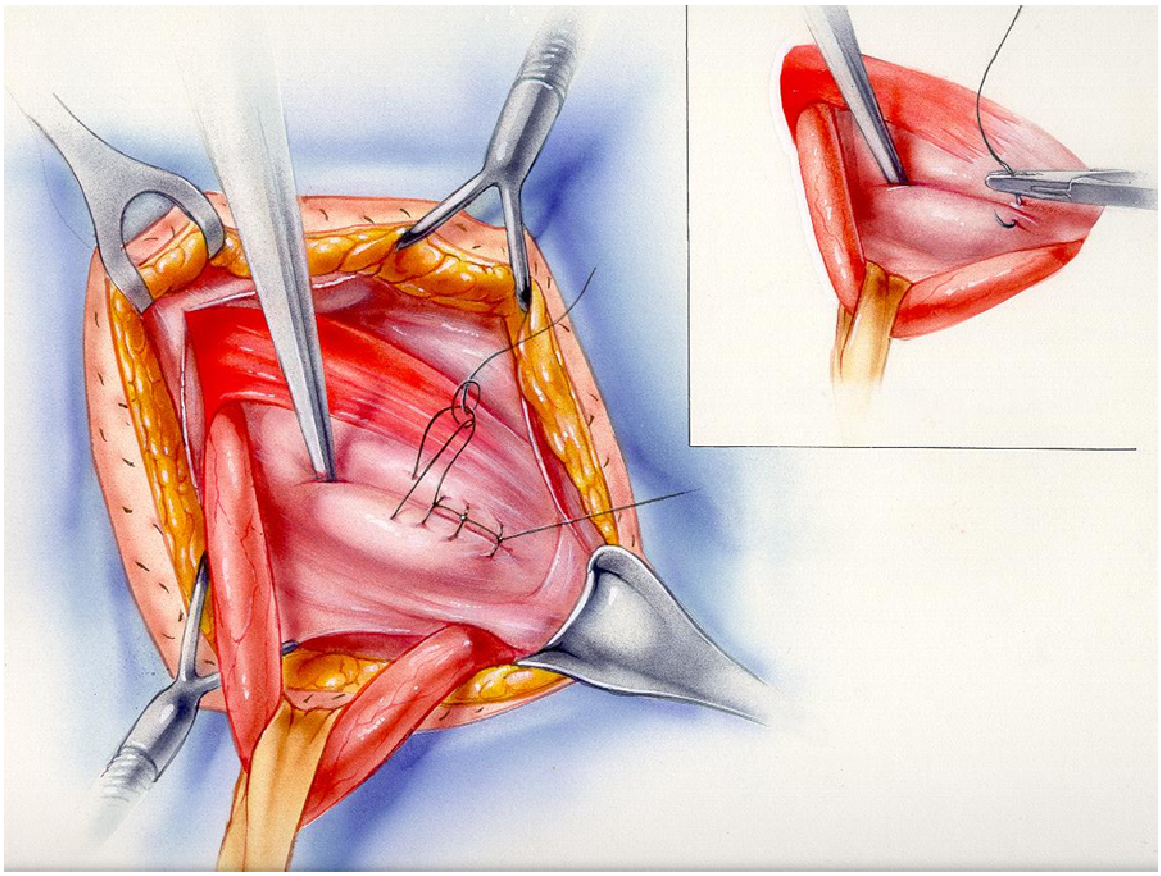


(LEFT : Normal Inguinal Hernia , RIGHT : Indirect Hernia going through deep inguinal ring)



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INDIRECT INGUINAL HERNIA:

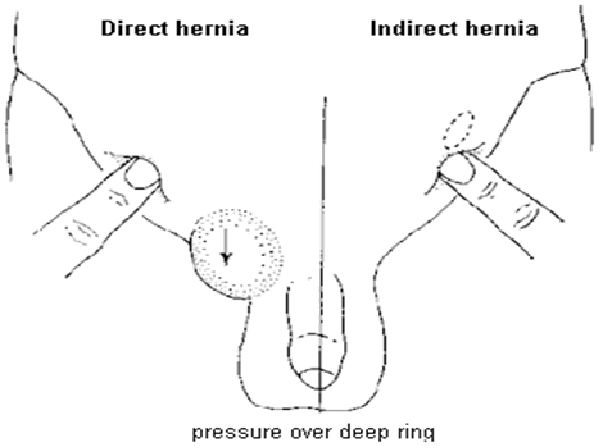
- ✓ Most common of all forms.
- ✓ Seen in young patients.
- ✓ In adult males:
  - ♦ 65% are indirect.
  - ♦ 55% on the right side.
  - ♦ 12% bilateral.
- ✓ M/F 20/1.

(!) Note:

- Direct inguinal hernia present medial to inferior epigastric artery.
- Indirect inguinal hernia present lateral to the inferior epigastric artery.

*** Clinically:**

- ✓ Inguinal swelling +/- pain.
- ✓ On coughing there is expansable impulse.
- ✓ Might be reducible or irreducible.



DIRECT INGUINAL HERNIA:

- * Always acquired.
- * Due to a weakness or defect of transversalis fascia.
- * Direct hernia does not attain a large size.
- * The neck is wide and there is no hazard of strangulation.

INGUINAL HERNIA:

Strangulated hernia:

- * Indirect hernia strangulate more commonly. The constricting agents in order of frequency:
  - ✓ The neck.
  - ✓ External ring in children.
  - ✓ Rarely adhesions with the sac.
- * Strangulation affect
  - ✓ The small intestine frequently.
  - ✓ The omentum OR .
  - ✓ Both are affected.
- * Sudden severe pain over the hernia.
- * Nausea and vomiting.

*** O/E:**

- ✓ The hernia is tense and tender.
- ✓ Irreducible.
- ✓ Absent cough impulse.

(!) Differentiation between Direct & Indirect hernia :

- Try to reduce the hernia.
- Obstruct the ring above the inguinal ligament
- Ask the patient to stand
- Ask the patient to cough
- If the hernia is a bulge it is Direct Hernia & vice versa because the indirect hernia should pass through the inguinal canal.

- ✓ Fever and tachycardia.

SLIDING HERNIA:

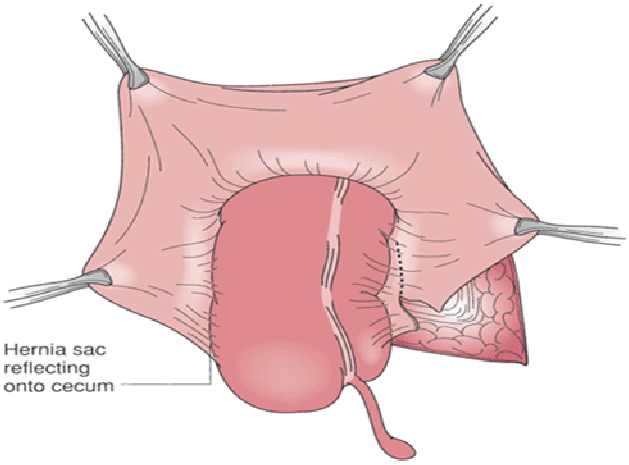
- ✱ It is a type of inguinal hernia in which part of the posterior wall of the sac is formed by a viscus .
  - ✓ Sigmoid colon.
  - ✓ Caecum.
  - ✓ Portion of the bladder.

RICHTER'S HERNIA:

- ✱ Only part of the circumference of the bowel is involved.
- ✱ Does not usually obstruct but can strangulate.

LITTER'S HERNIA:

- ✓ A groin hernia that contains a Meckel's diverticulum .
- ✓ If the diverticulum is symptomatic or strangulated then it is mandatory to excise it at the time of the repair.



✱ Differential diagnosis:

- ✓ Hydrocele
- ✓ Encysted hydrocele of the cord
- ✓ Varicocele
- ✓ Epididymoorchitis
- ✓ Torsion of the testis
- ✓ Undescended testis
- ✓ Ectopic testis
- ✓ Testicular tumor
- ✓ Pseudohernia
- ✓ Femoral artery aneurysm
- ✓ Saphena varix
- ✓ Lipoma of spermatic cord
- ✓ Inguinal lymphadenopathy
- ✓ Psoas abscess
- ✓ Cutaneous lesions (e.g., sebaceous cyst, skin tumor)

(!) Meckel's diverticulum : present in 2% of population 2 feet distance from ileocaecal valve 2 inches from inguinal region (rule of 2).

(!) Ectopic testis : a testis that did not descend completely.

(!) In sliding hernia the organ form part of the sac.

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* **Treatment:**
  - ✓ **Surgery:**
    - Open Technique.
    - Laparoscopy.
  - ✓ **Open technique:**
    - Bassini repair.
    - Herniotomy and repair
    - Darning.
    - Shouldice.
    - McVay (Cooper's ligament repair).
    - Mesh.

ESSENTIAL STEPS FOR THE INGUINAL HERNIA REPAIR:

* Complete division of the external oblique aponeurosis and the transversalis fascia .
* Differentiation between indirect and direct defects .
* Isolation of the spermatic cord .
* Ligation and removal of the sac at the deep inguinal ring flush with the peritoneum .
* Oblique reconstruction of the inguinal canal with an anterior and posterior wall and an internal and external ring .

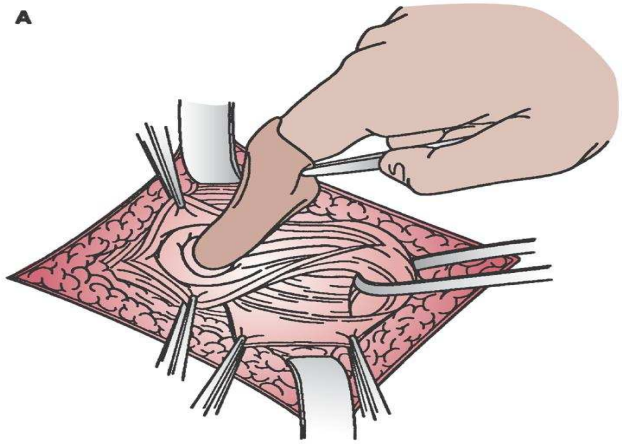

FIGURE 73.23A Bassini repair.

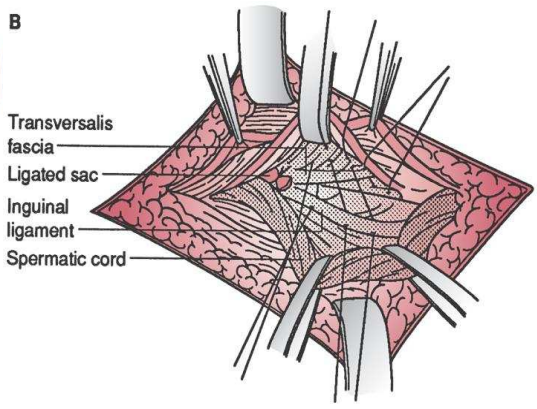

FIGURE 73.23B Bassini repair.

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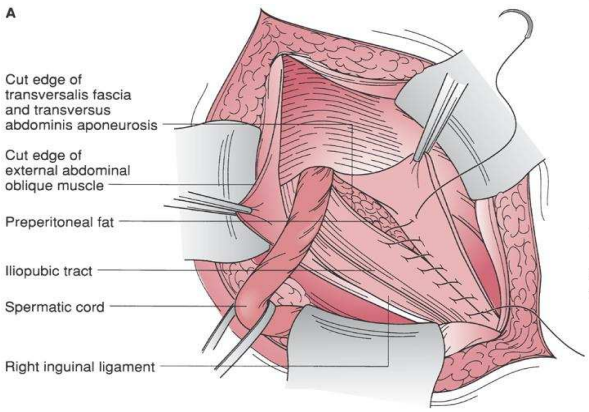


FIGURE 73.24A Shouldice repair.

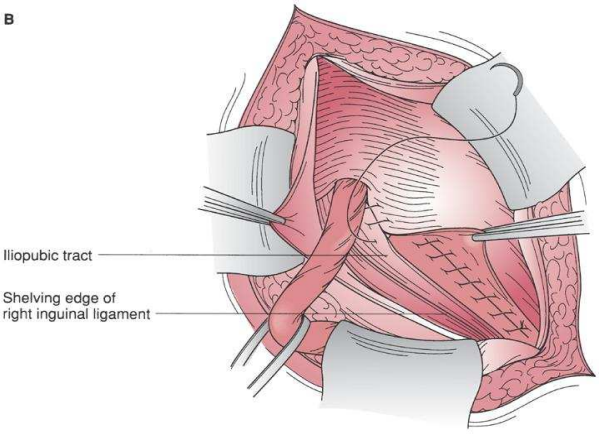


FIGURE 73.24B Shouldice repair.

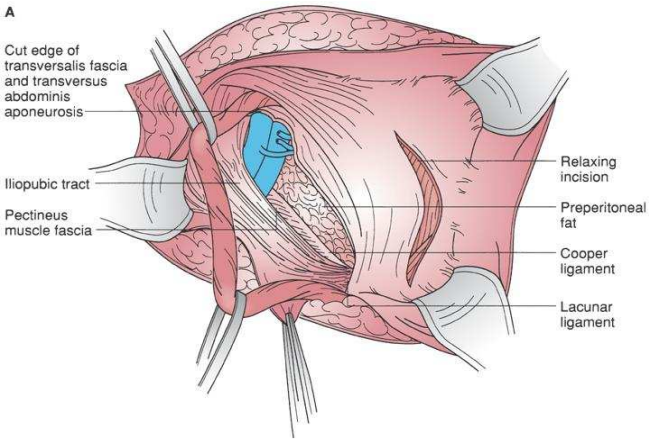


FIGURE 73.25A McVay (Cooper's ligament) repair.

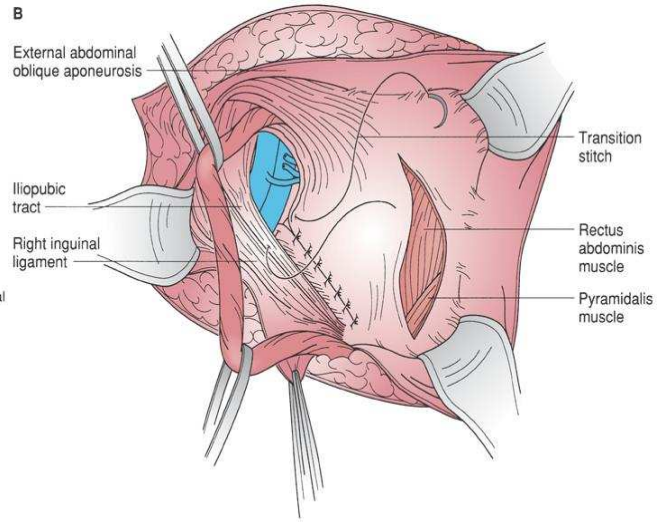
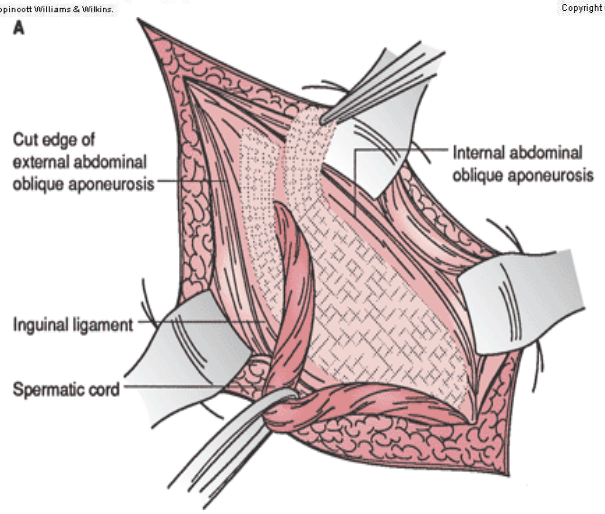
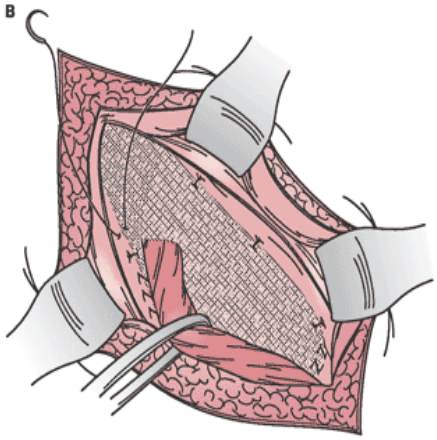


FIGURE 73.25B McVay (Cooper's ligament) repair.





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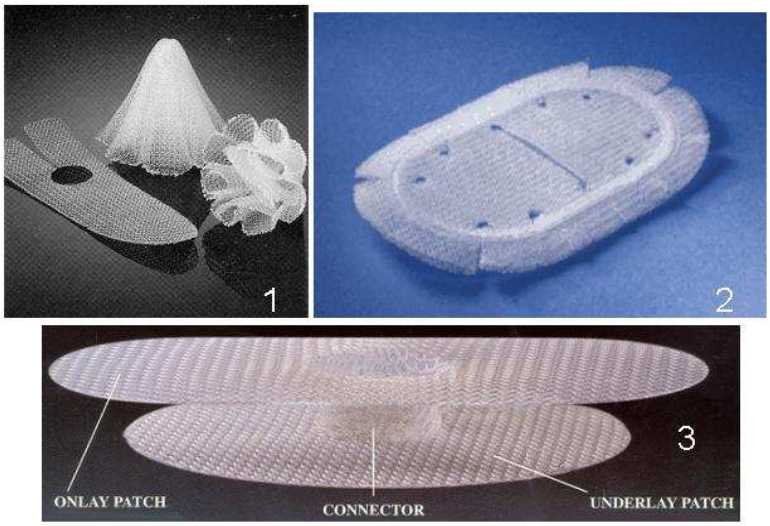
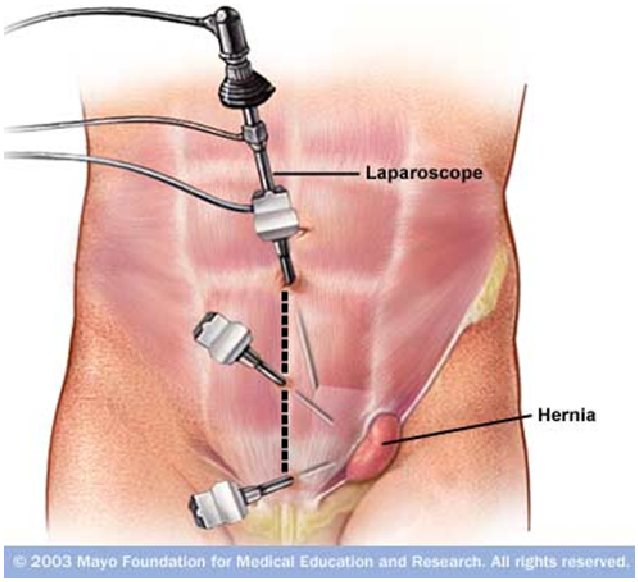


1. Plug & patch 2. Kugel patch 3.Prolene hernia system

* Treatment :

- ✓ Laparoscopic repair:
  1. TAPP repair.
  2. Tep repair.
- ✓ Indications of laparoscopic repair:
  1. Bilateral hernia.
  2. Recurrent hernia.



* Complications related to the Herniorrhaphy :

1) Recurrence: 2% or less
2) Post herniorrhaphy groin pain
   - ✓ Tissue damage.
   - ✓ Neuropathic pain due to nerve damage.
3) Infertility 0.3%
4) Ischemic orchitis
5) Miscellaneous: bleeding, seroma

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FEMORAL HERNIA :

- ✓ Commonly affecting females.
- ✓ Most liable to strangulation.

* Surgical Anatomy

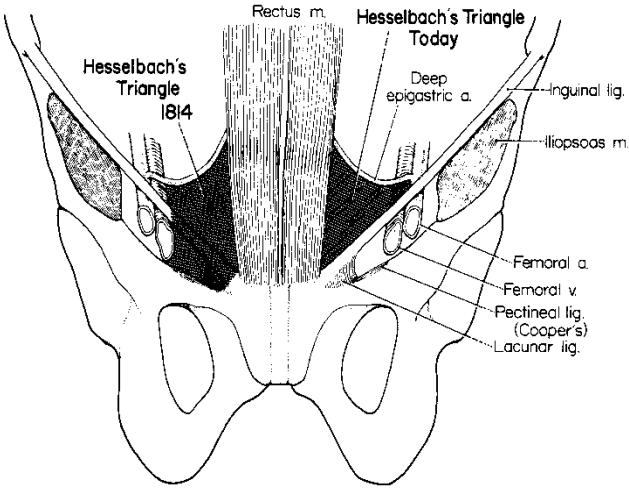
- ✓ Femoral canal is the most medial compartment of the femoral sheath.
- ✓ Extension: from the femoral ring to the saphenous opening.
- ✓ 1.25 cm long and 1.25 cm wide at the base.

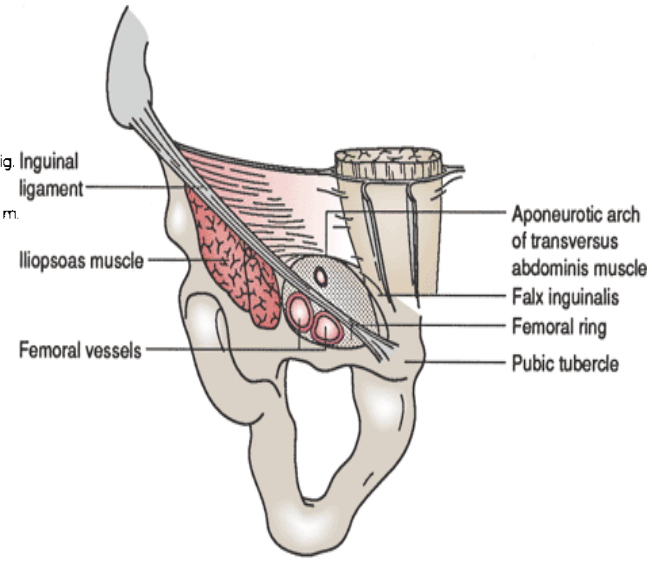
* Contents of the femoral canal

- ✓ Fat.
- ✓ Lymphatic vessel.
- ✓ Lymph node of Cloquet.

* Boundaries of the femoral sheath :

- ✓ **Anteriorly :** The inguinal ligament.
- ✓ **Posteriorly :** Iliopectineal ligament, the pubic bone and pectineus muscle fascia.
- ✓ **Medially :** The lacunar ligament.
- ✓ **Laterally :** The femoral vein.





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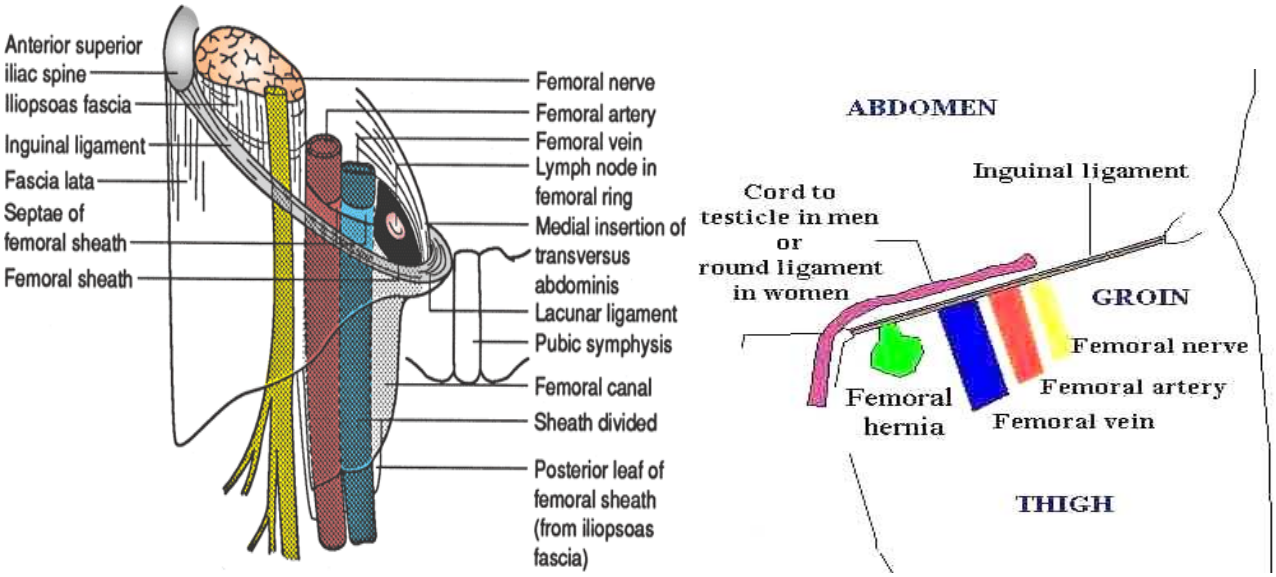
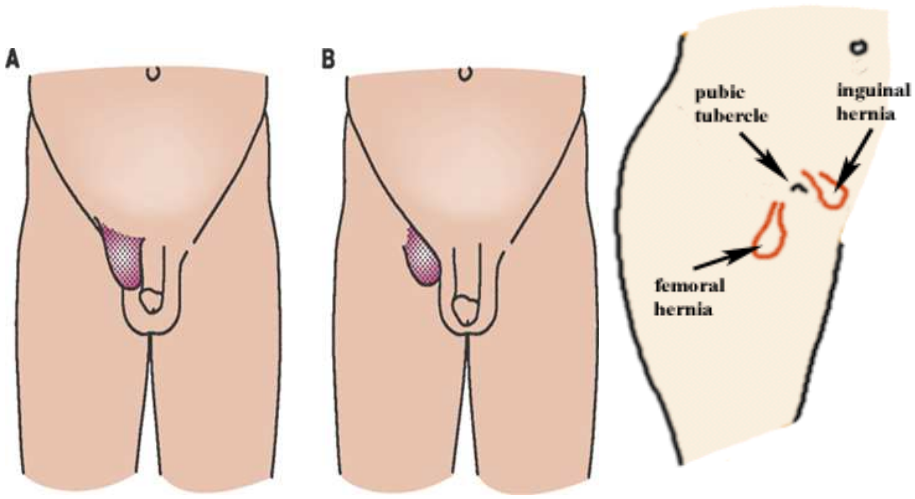


* **Pathology:** The hernia descends vertically to the saphenous opening.
* **Differential diagnosis:**
  - ✓ Inguinal hernia
  - ✓ Saphena varix
  - ✓ Femoral lymphadenopathy
  - ✓ Femoral artery aneurysm
  - ✓ Psoas abscess



* **Complications:** Strangulation due to narrow unyielding femoral ring
* **Treatment:** Surgery

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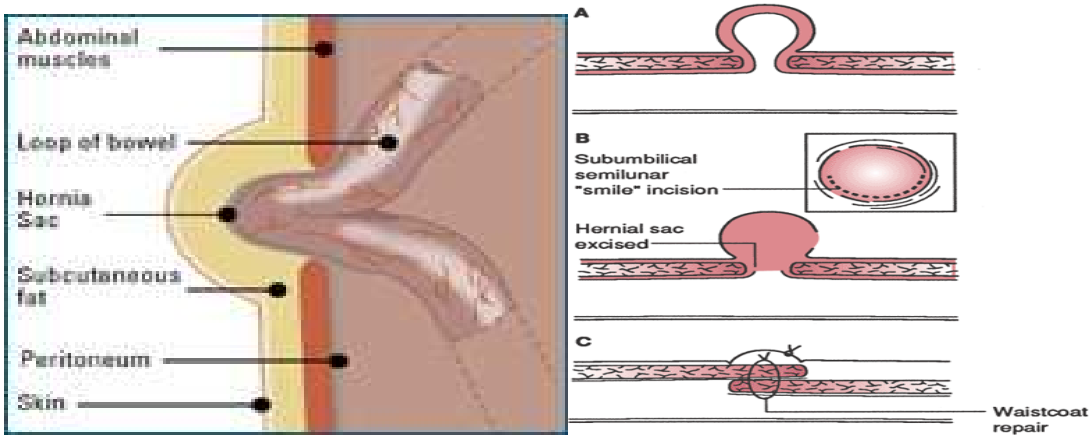
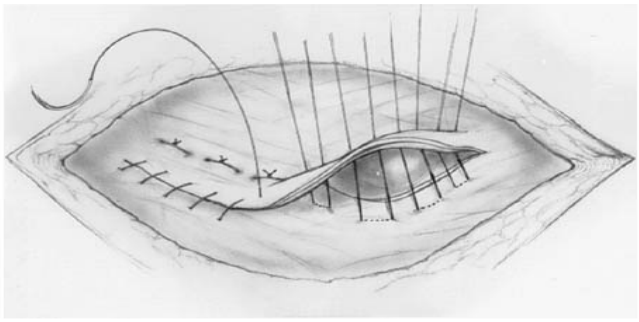
UMBILICAL AND PARA-UMBILICAL HERNIA :

* **Umbilical :** Seen in infants and children.
* **Para Umbilical :** Affects adults, the defect is either supra or ifra-umbilical through the linea alba.

When enlarged it becomes rounded or oval shaped.

* **Contents:**
  1. Omentum
  2. Small intestine or
  3. Transverse colon.
* **Incidence:** Female to male is 20/1.
* **Etiology:**
  (1) Obesity
  (2) Flabbiness of the abdominal muscles
  (3) Multiparity
* **Swelling :**
  - ✓ Pain colicky due to partial or complete intestinal obstruction.
  - ✓ Irreducibility in PUH is due to omental adhesions within the sac.
* **Treatment:**
  - ✓ Open technique :. Mayo's repair.
  - ✓ Laparoscopic repair : >4cm.





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EPIGASTRIC HERNIA :

- ✓ Due to defect in the linea alba between the umbilicus and the xiphoid process.
- ✓ Starts as a protrusion of the extra peritoneal fat at the site where a small blood vessel pierces the linea alba.
- ✓ If the protrusion enlarges it drags a pouch of peritoneum after it.

Clinically:

- ✓ Asymptomatic.
- ✓ Pain either locally or simulates peptic ulcer pain.

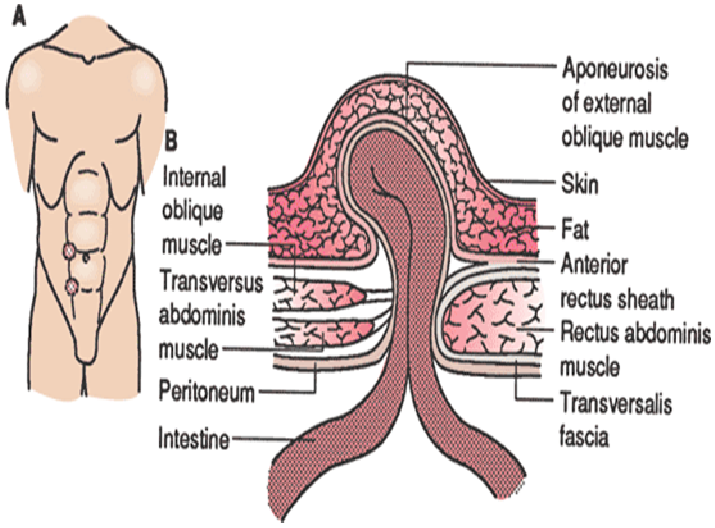
Treatment:

Mayo's repair.

RARE EXTERNAL HERNIAS :

SPIGELLIAN HERNIA :

- ✓ It occurs along the lateral edge of the rectus muscle at the space between the semilunar line and the lateral edge of the rectus muscle.
- ✓ Pre-operative diagnosis is correct in only 50% of patients.
- ✓ US and CT scan is helpful.
- ✓ Approximation of the tissues adjacent to the defect with interrupted sutures is curative. If the defect is large then it can be covered with mesh.



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LUMBAR HERNIIA :

A. Inferior lumbar triangle of Petit:

- ✓ Laterally : external oblique
- ✓ Medially : Latissmus dorsi
- ✓ Below : the iliac crest

B. Less commonly it occurs in the superior lumbar triangle

- ✓ 12th rib above
- ✓ Sacrospinalis medially
- ✓ Internal oblique laterally

✱ **Treatment:** surgery

Types of Lumbar hernia

Type	Description
Superior lumbar hernia of Grynfeltt	Occurs through a space between the latissimus dorsi, the serratus posterior inferior, and the posterior border of the internal oblique muscle
Inferior lumbar hernia of Petit	Occurs through a defect in the space bounded by the latissimus dorsi posteriorly, the iliac crest inferiorly, and the posterior border of the external oblique anteriorly
Secondary lumbar hernia	Develops as a result of trauma, mostly surgical (e.g., renal surgery), or infection; lumbar hernias were encountered relatively frequently in the past in cases of spinal tuberculosis with paraspinal abscesses

OBTURATOR HERNIA :

- ✓ Obturator canal is covered by a membrane pierced by the obturator nerve and vessels. Weakening of the obturator membrane and enlargement of the canal may result in the formation of a hernia sac which can lead to intestinal herniation and obstruction.
- ✓ Presentation could be with evidence of compression of the obturator nerve leading to pain in the medial aspect of the thigh.
- ✓ **Treatment :** surgery.

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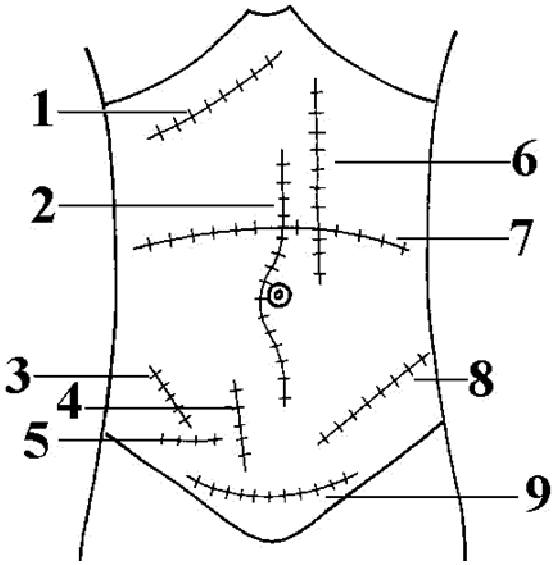
INCISIONAL HERNIA :

It is a hernia that occurs in a surgical scar.



✱ Causes:

1) **Mechanical factors**
- ✓ Prolonged ileus.
- ✓ Chronic cough.
- ✓ Repeated vomiting.
- ✓ Lifting heavy objects in the immediate post-operative period.

(2) **Patient factors:**
- ✓ Infection.
- ✓ Malnutrition.
- ✓ Diabetes and chronic illness.
- ✓ Steroid Treatment.

(3) **Technical factors:**
- ✓ Too much tension on closure.
- ✓ Ischaemia.
- ✓ Absorbable sutures.

✱ Clinically:
- ✓ Swelling at the scar .
- ✓ Wide neck.
- ✓ Pain.

✱ Treatment:

♦ **Surgery:**
- ✓ Open technique.
- ✓ Laparoscopic repair.

♦ **Divercation of the recti:**
- ✓ Elderly multiparous patients.
- ✓ A gap in the linea alba seen on straining through which the abdominal contents bulge.
- ✓ No Treatment is necessary.