UMBILICAL HERNIA

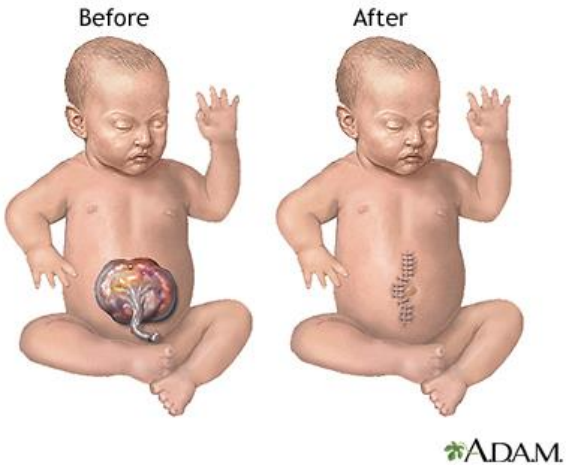
★ **Types:** ***Congenital, infantile and adult paraumbilical***

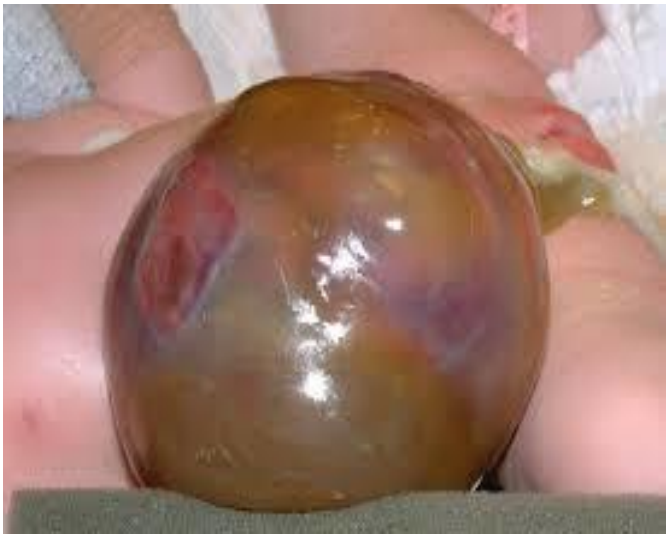
I. Congenital Umbilical Hernia

★ **Aetiology:** Failure of midgut to return to the abdomen during early fetal life.

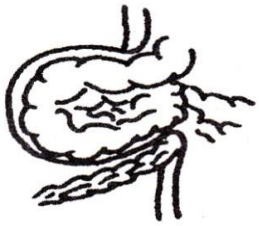
★ **Types:**

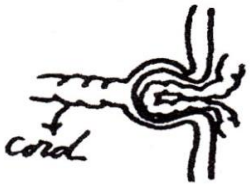
	★ *Exomphalos Minor* ★ (Minor omphalocele)	★ *Exomphalos Major* ★ (Major omphalocele)
*** Pathology:**		
1. Defect	♦ A small defect less than 5 cm at the base of umbilical cord .	♦ A large defect more than 5 cm, usually present above the umbilical cord .
2. *Sac.*	♦ A peritoneal sac protrude into the umbilical cord.	♦ A large wide necked sac.
3. *Content*	♦ Omentum , intestine or Meckel's diverticulum	♦ Many viscera & may contain part of liver.
4. Coverings	♦ Amniotic membrane & Wharton's jelly.	♦ Amniotic membrane .
*** Complications:**	♦ Injury of the contents during ligation of the cord.	♦ May be fatal due to: ➢ Rupture of the coverings →peritonitis. ➢ Respiratory complications .
*** Treatment:**	♦ Reduce the contents, excise the sac & primary repair of the defect.	♦ ICU & mechanical ventilator . ♦ IV fluids & nutrition . ♦ Cover the sac by synthetic mesh with gradual reduction of the contents , within few weeks , followed by closure of the abdominal wall .





Exomphalos Minor ***Exomphalos Major***





★ *Examphalos major* ★ *Examphalos minor*

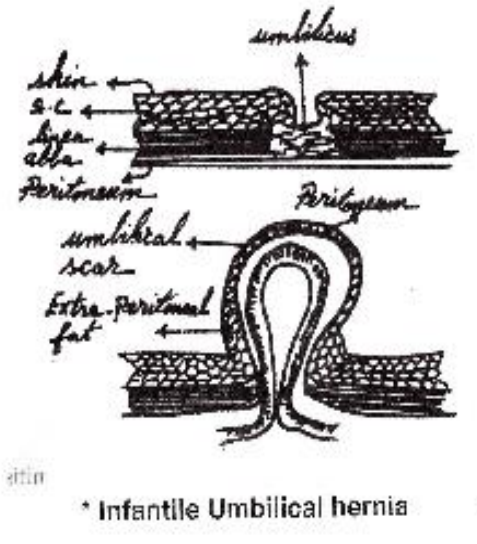
II. Infantile Umbilical Hernia

★ Aetiology:

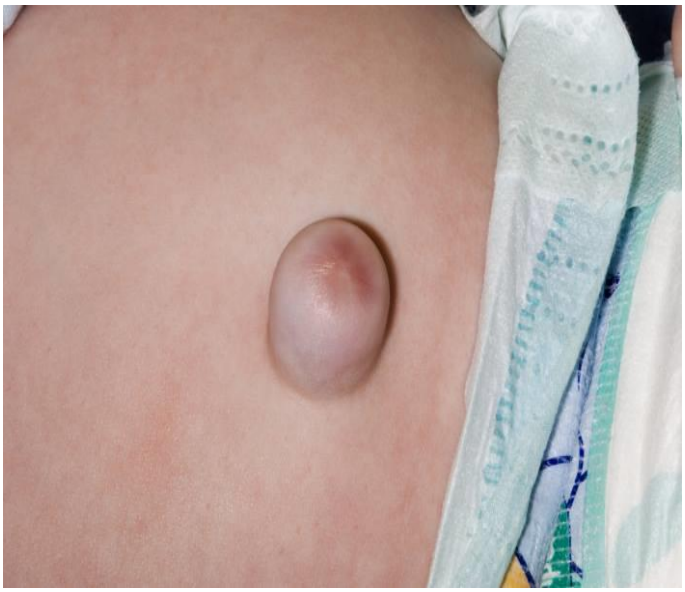
1. Weak umbilical scar due to infection.
2. Increased intra-abdominal pressure due to crying, or cough.

★ Pathology:

- ***Defect*** is exactly in the umbilicus. It is usually closed spontaneously before the age of 2 years.
- ***Sac :*** Wide neck → no complications and easy reducible.
- ***Coverings:*** Extraperitoneal fat and stretched umbilical scar.
- ***Contents:*** Intestine or omentum.



★ Infantile Umbilical hernia ★



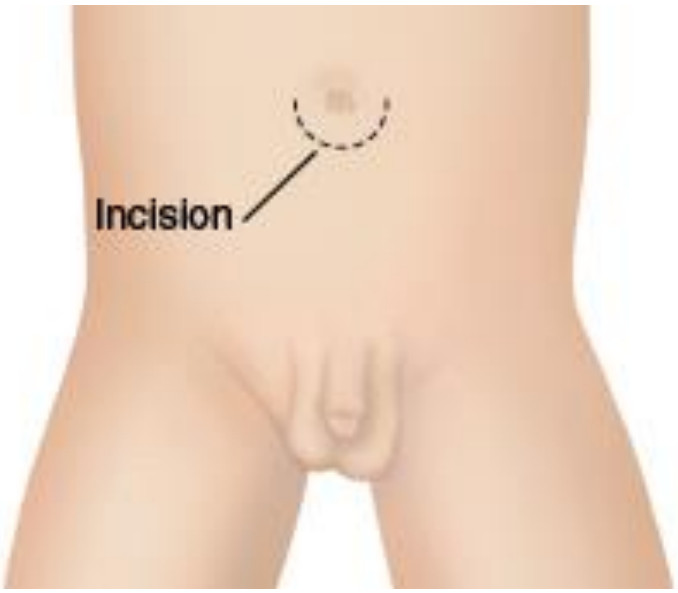
★ Clinical picture:

- Umbilical eversion *&* protrusion, increasing by coughing *&* crying.
- After reduction, the edge of the defect is felt as a firm ring.
- This type occasionally affect adults .

★ **Treatment:** Remove the **cause** of straining then one of the followings is done:

A. **Reassurance** of the parents , correct the cause of straining and follow up are the usual measure as the defect usually closes spontaneously within the first 2 years of life.

B. ***Surgical:*** Herniorrhaphy, If the defect is large (more than 2 fingers), above 2 years or complications occur. The hernia is reduced then through a semicircular incision below the umbilicus, the skin flap is undermined and the sac is transfixed *&* excised at the proper neck then the defect is closed by few polypropylene sutures .



III. Adult Paraumbilical Hernia

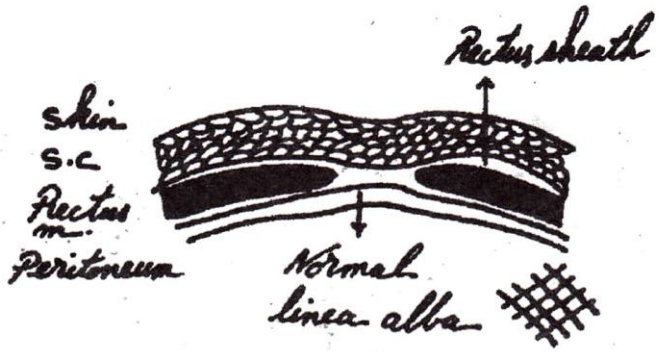
★ **Incidence:** Usually ***in fatty multiparous females***. It is the commonest hernia in the region of the umbilicus in adults.

★ **Aetiology:** Stretch and weakening of the linea alba by chronic increase of intra-abdominal pressure as repeated pregnancies, obesity & chronic straining , hepatosplenomegaly …etc.

★ **Pathology:**

1. The hernial sac protrudes through a defect in the linea alba usually above the umbilicus (rarely below the umbilicus) where the linea alba is broader, thinner & pierced by minute blood vessels.

2. ***The sac*** has a very narrow neck → complications are common → Adhesions inside the sac are common specially in the fundus → irreducibility is common.
3. ***Content:*** Usually omentum or intestine, rarely colon.
4. ***Coverings:*** Skin & S.C. fat.

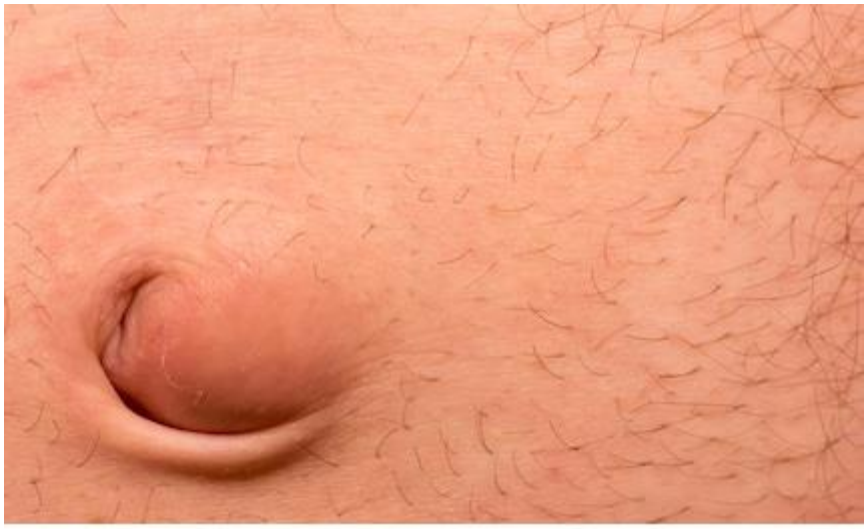


★ *Normal*

★ *Adult paraumbilical hernia*

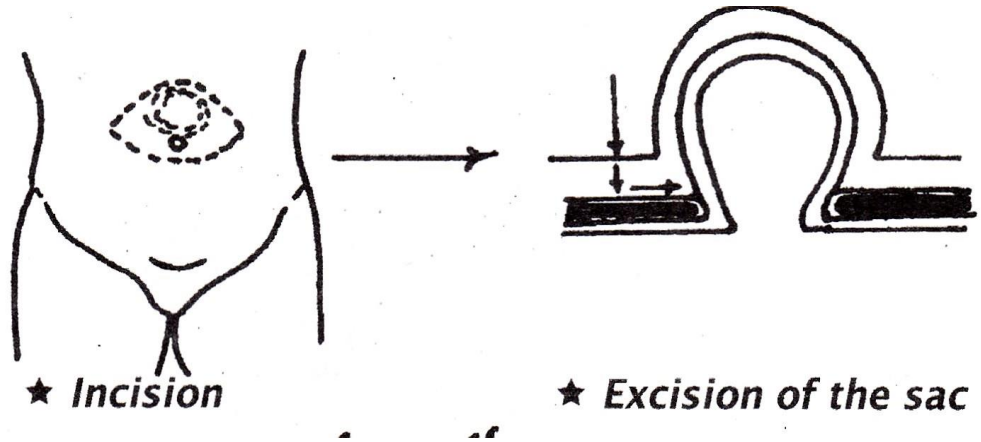
★ **Complications and clinical picture:** (As general) +

- Pain is common due to intestinal obstruction or dragging by large hernia.
- The upper part of the umbilicus is stretched over the lower part of the hernia → umbilicus is cresentic in shape.

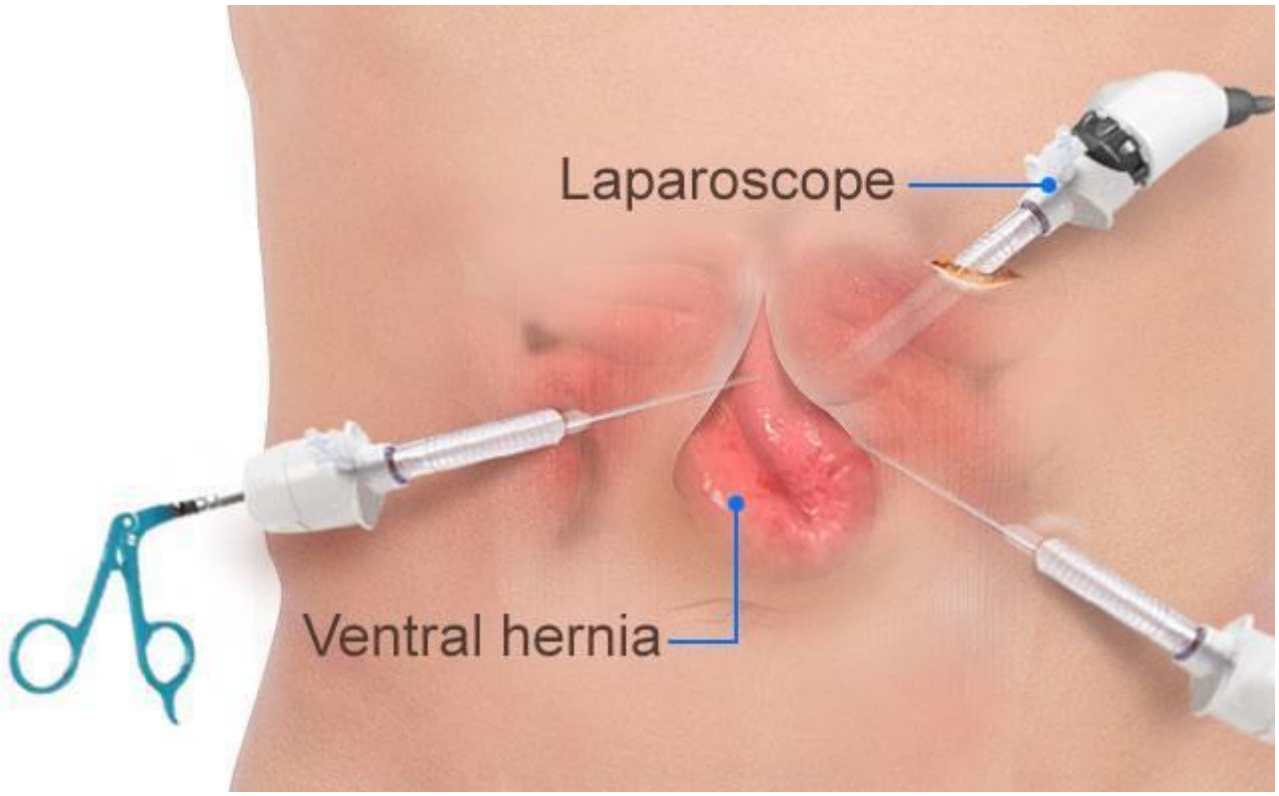


★ **Treatment:** Truss is contraindicated *&* ***treatment is only surgical.***

- ***After elimination of any predisposing factor*** & reduction of weight the followings are done:
  - Through transverse ***elliptical incision*** over the maximum convexity of the hernia & skin flaps are undermined.



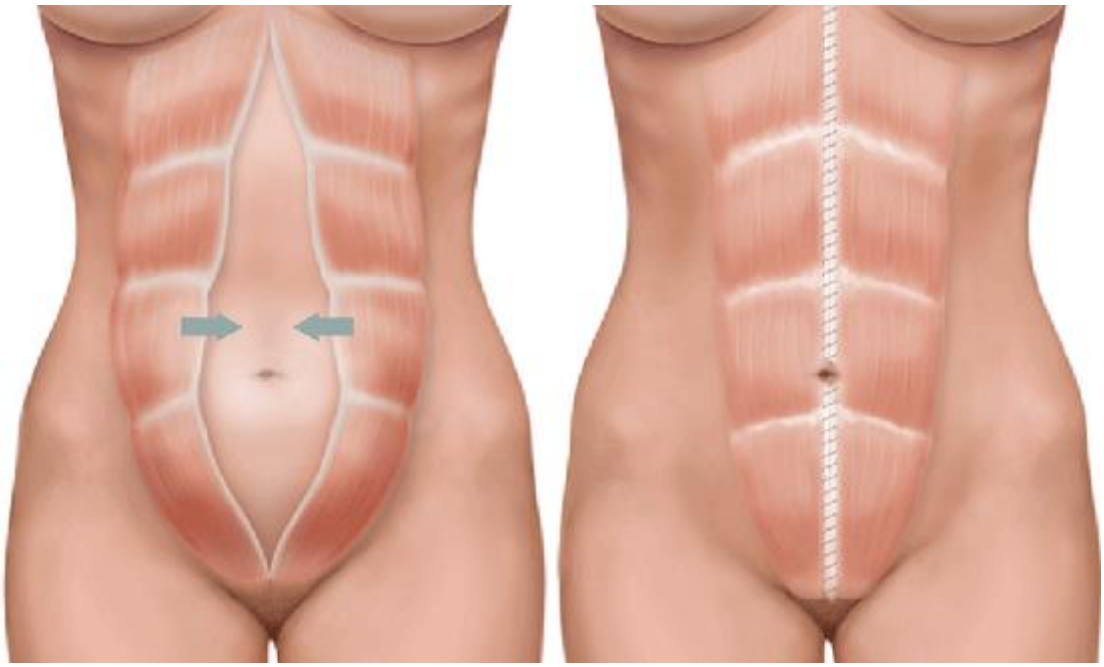
- ***The sac is excised*** at its proper neck after reduction of its contents.
- The ***defect*** in the linea alba is dealt with by one of the followings*:*
  - Small defect is closed by few polypropylene sutures
  - ***Hernioplasty by polypropylene mesh*** **f**or large defect, recurrent hernia or weak musculature .Nowadays , it is usually performed by **laparoscopic** approach or less commonly by open approach **.**



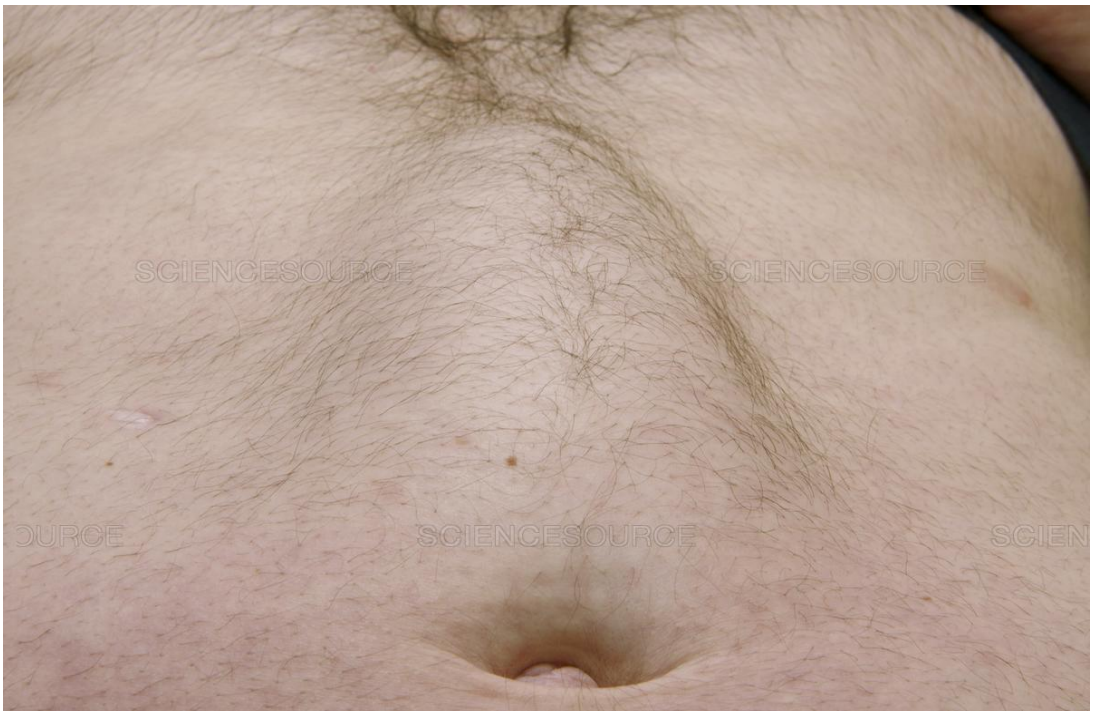
Divarication of Recti

(Diastasis Recti)

- **Definition:** Separation of the 2 recti due to stretch of the linea alba by chronically increase of intra-abdominal pressure.
- **Incidence:** Very common in elderly females due to repeated pregnancies and patients with hepatosplenomegaly.



- **Clinical picture:** When the abdomen is relaxed no swelling is visible but on raising the shoulders from the bed , the linea alba bulges as a longitudinal ridge between the 2 recti ***(marked divarication)*** or the fingers can be dipped between the 2 recti ***(minimal divarication).***

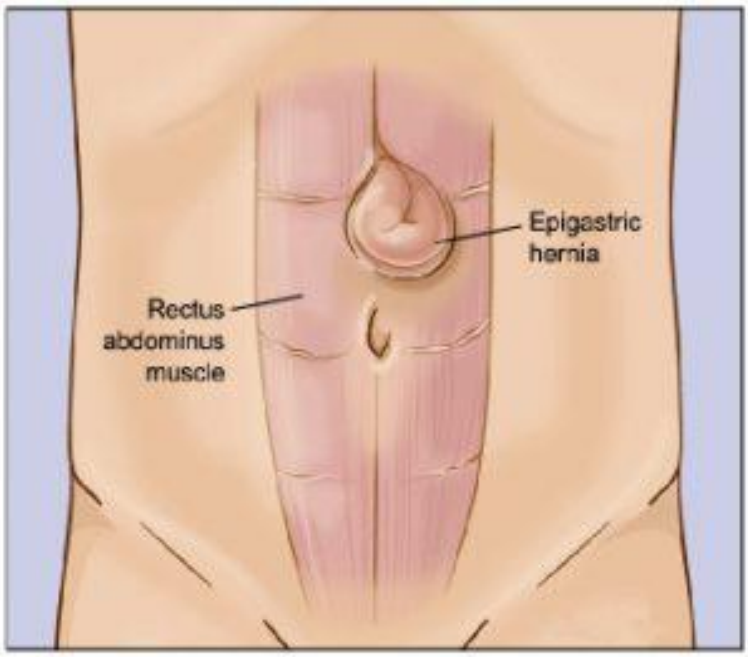


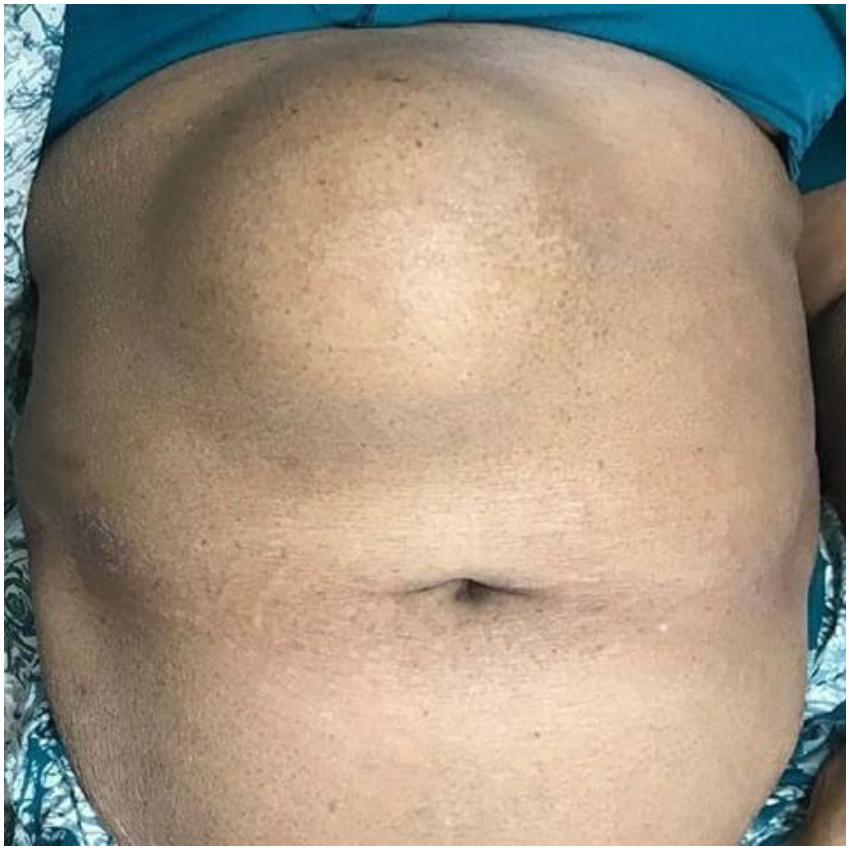
★ Treatment:

- Usually ***symptomless*** therefore *no treatment* is done or abdominal belt is enough.

Epigastric Hernia

★ **Definition:** Hernia through a defect in the linea alba between the umbilicus and xiphoid process, (usually midway between these 2 structures).





★ Aetiology , pathology & complications :

- It is the result of sudden strain tearing the interlacing fibres of linea alba with appeaance of narrow sharp defect .

1. ***Fatty hernia of linea alba:*** Early , there is only herniation of extraperitoneal fat without a peritoneal sac, through the linea alba.
2. ***True epigastric hernia:*** Later on , there is herniation of a peritoneal sac containing stomach , omentum or intestine.

- The **defect** is narrow & sharp , therefore complications are very common .

★ Clinical picture:

1. It may be asymptomatic.
2. It is frequently irreducible.
3. Dyspepsia *&* epigatric pain due to traction of the contents on the stomach.
4. After reduction , the edge of the defect is felt away from the umbilicus.

★ Treatment:

1. ***Small defect :*** Through a transverse incision, excise extraperitoneal fat and the hernia sac with repair of the defect in the linea alba.
2. ***Large defect :*** **Laparoscopic** polypropylene mesh hernioplasty .

Recurrent Hernia

★ **Aetiology:**

A - Pre-operative causes:

1. Weak muscles from senility or debility.
2. Untreated increased intra-abdominal pressure.
3. Strangulated hernia (no repair + infection).
4. General weakness and anaemia.

B- Operative causes:

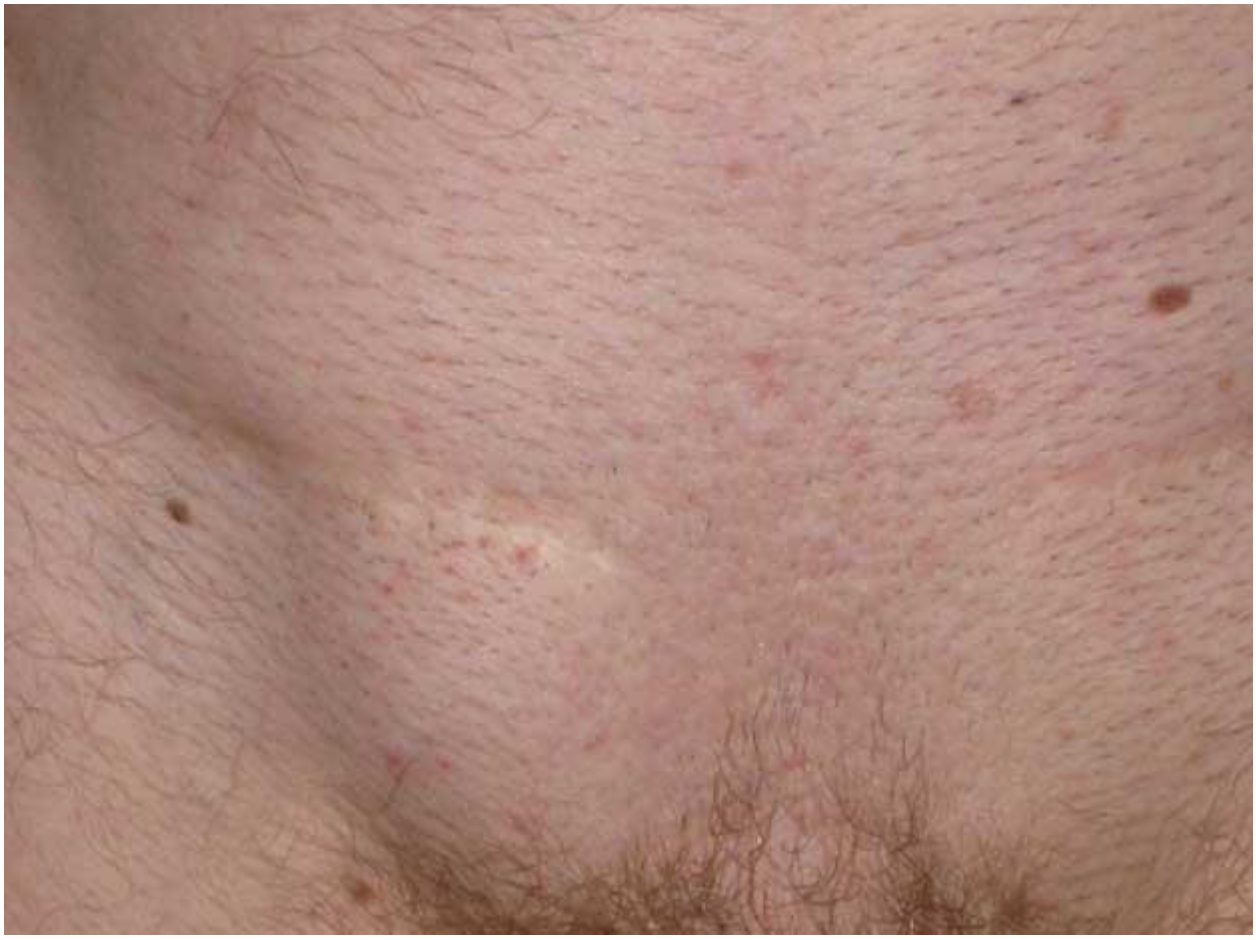
1. Missing exploration for another sac.
2. Incomplete excision of the sac.
3. Imperfect narrowing of the defect.
4. Damaging muscles by rough manipulation or injury of its nerve or blood supply.
5. Insufficient suturing or using absorbable sutures in repair.
6. Imperfect haemostasis $\rightarrow$ haematoma $\rightarrow$ infection.

C. Post-operative causes:

1. Wound haematoma and wound infection.
2. Recurrence of the cause e.g. cough,... etc.
3. Early return to work (ordinary work after 1-2 weeks and heavy manual work after 4-6 weeks).

★ **Pathology, complications and clinical picture:** (As general).

- Recurrent OIH usually occur in the medial part of the repair and will present as direct inguinal hernia .



★ **Treatment:** After removal of the cause.

- ***Hernioplasty*** by synthetic polypropylene mesh should be done**.**

Incisional Hernia

★ **Definition :** It is a hernia in a scar of previous operation .

★ **Aetiology:** As recurrent hernia +

A. ***Pre-operative causes:*** Obesity, malignancy, jaundice, cirrhosis, hypoproteinaemia, anaemia , senility, D.M., immune suppression *&* corticosteroid.

B. Operative causes:

1. **Operations** for peritonitis, pancreas with leakage of enzymes and intestinal obstruction (abdominal distension leading to suture under tension)
2. **Incision*:*** Muscle cutting, damage to nerve or blood supply to muscles, upper midline and vertical incisions are more liable for incisional hernia.
3. Insertion of **drainage tube** through the main incision.

C. Post-operative causes:

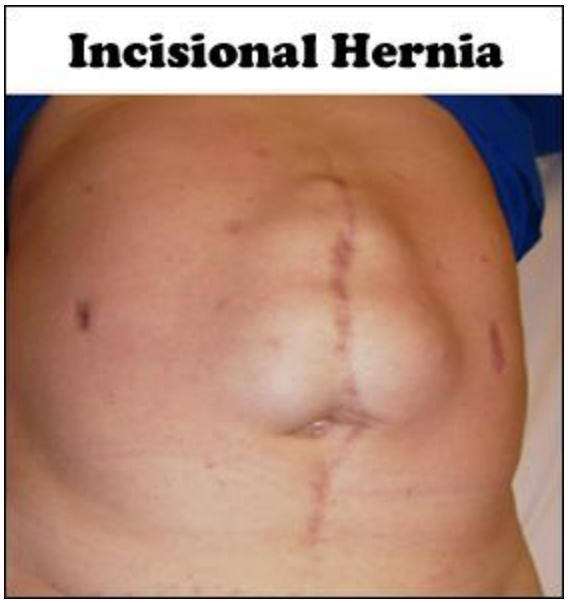
1. Post-operation cough, chest complications and distension.
2. Post-operative wound **infection**.

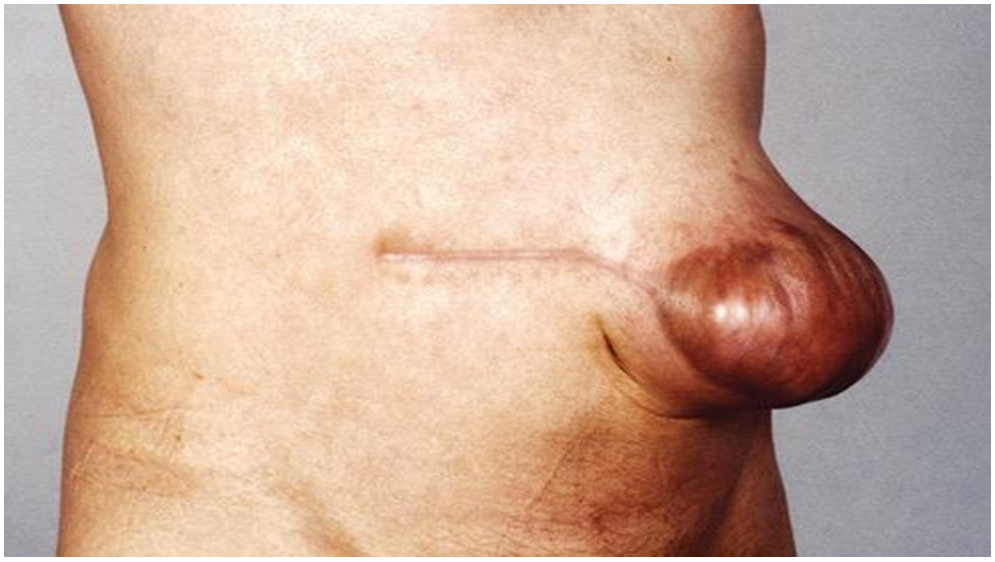
★ **Pathology:**

- The condition starts as a symptomless partial disruption of the deep layers of a laparotomy wound during immediate or very early post-operative period and the condition passes unnoticed.
- The defect may pass through a part or the whole of the incision.

★ **Complications:** Common if neck of the sac is narrow.

★ **C/P:** A swelling through a scar of an operation (+ general).





★ **Treatment:**

A. ***Prophylactic treatment****:* (The reverse of the etiology)

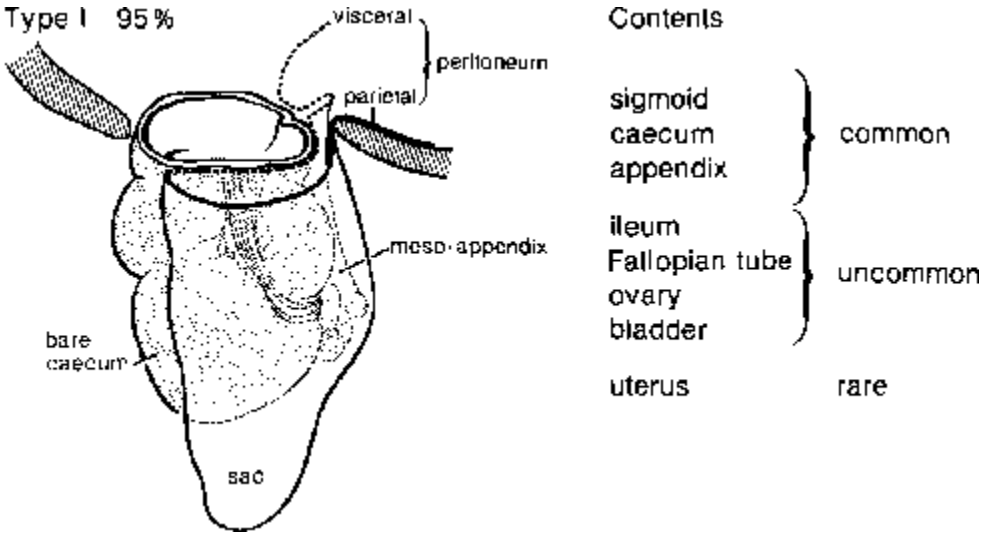
B. ***Palliative treatment****:* By abdominal belt, if the patient is unfit for surgery.

C. ***Surgical treatment****.*

- A polypropylene mesh **Hernioplasty:** For a very wide defect with weak musculature.

Rare External Hernias

1. Sliding hernia: A viscus (caecum, bladder or ovary) slides extraperitoneally beside the sac through the wide hernial defect.



★ **Clinical picture** :

- The condition is suspected in large partially reducible oblique inguinal hernia in obese elderly male .

★ **Treatment** :

- Never try to separate the sliding viscus from the sac as this may lead to devascularization or injury of the viscus .
- The viscus and the sac are pushed backwards behind the fascia transversalis which is repaired followed by synthetic mesh hernioplasty

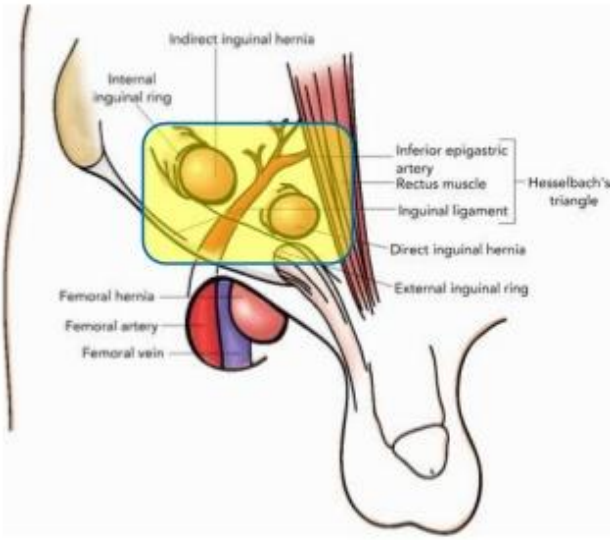
2. Pantaloon hernia :

★ **Definition** :Patient has 2 hernial sacs , one of oblique inguinal hernia and another for direct inguinal hernia separated by inferior epigastric vessels .

Other types of hernia

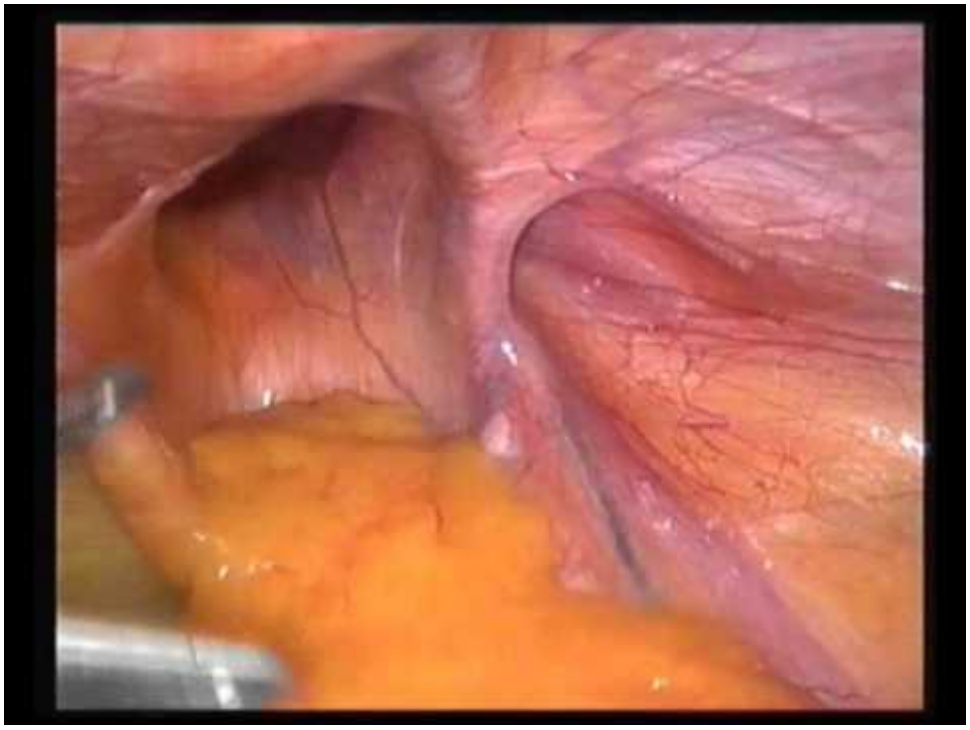
PANTALOON HERNIA

- **Romberg's hernia** or **saddle bag hernia**
- ipsilateral, concurrent direct and indirect inguinal hernias



Laparoscopic view

Of Pantaloon hernia



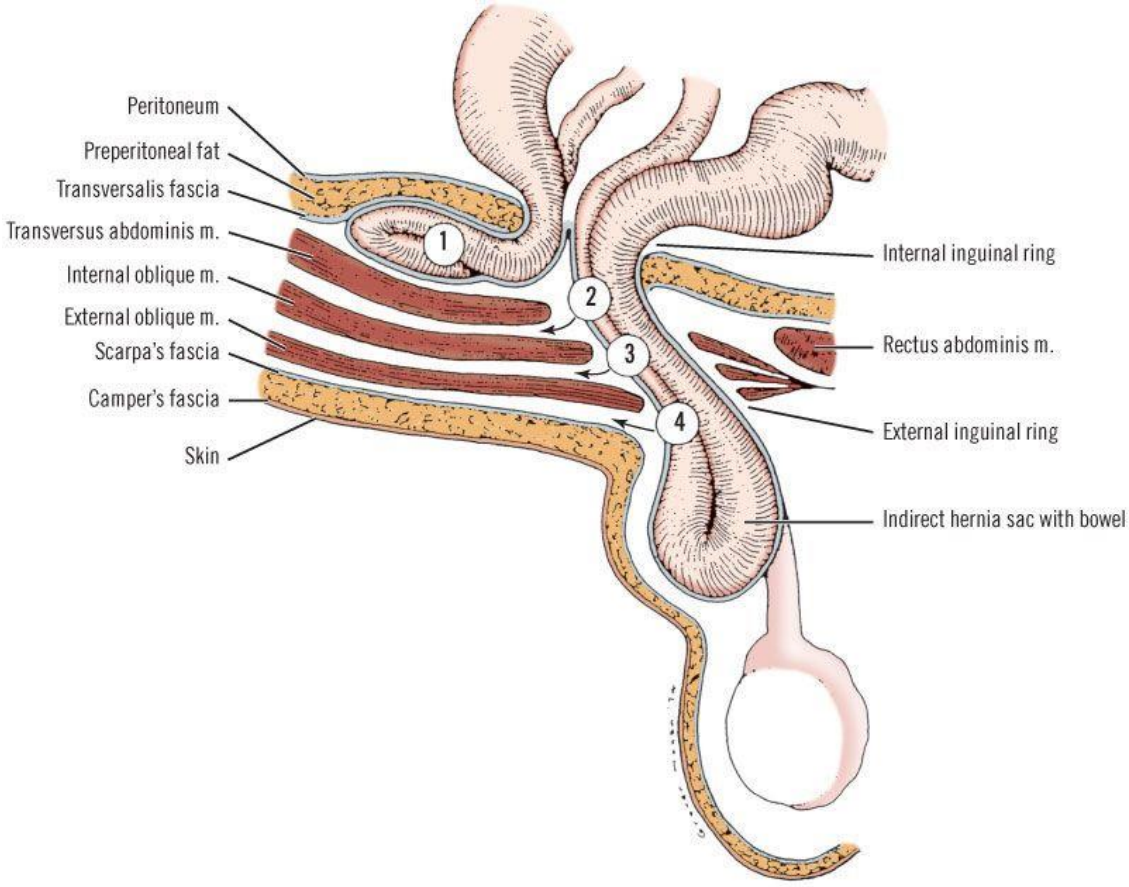
3. Interparietal hernia :

★ **Definition** : A sac of oblique inguinal hernia or part of it passes between layers of anterior abdominal wall .

★ **Diagnosis** :

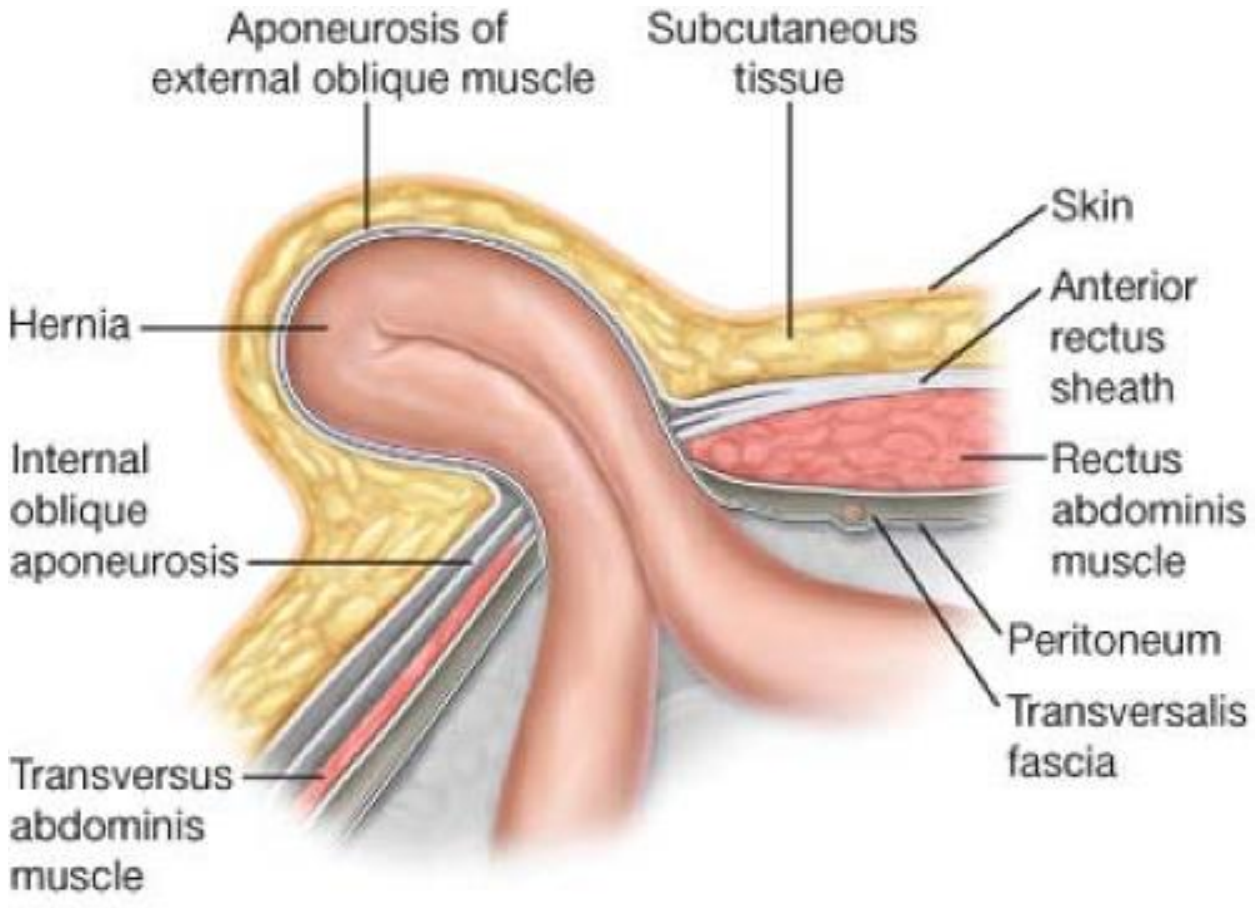
- A large partially reducible oblique inguinal hernia .
- Ultrasound is diagnostic .

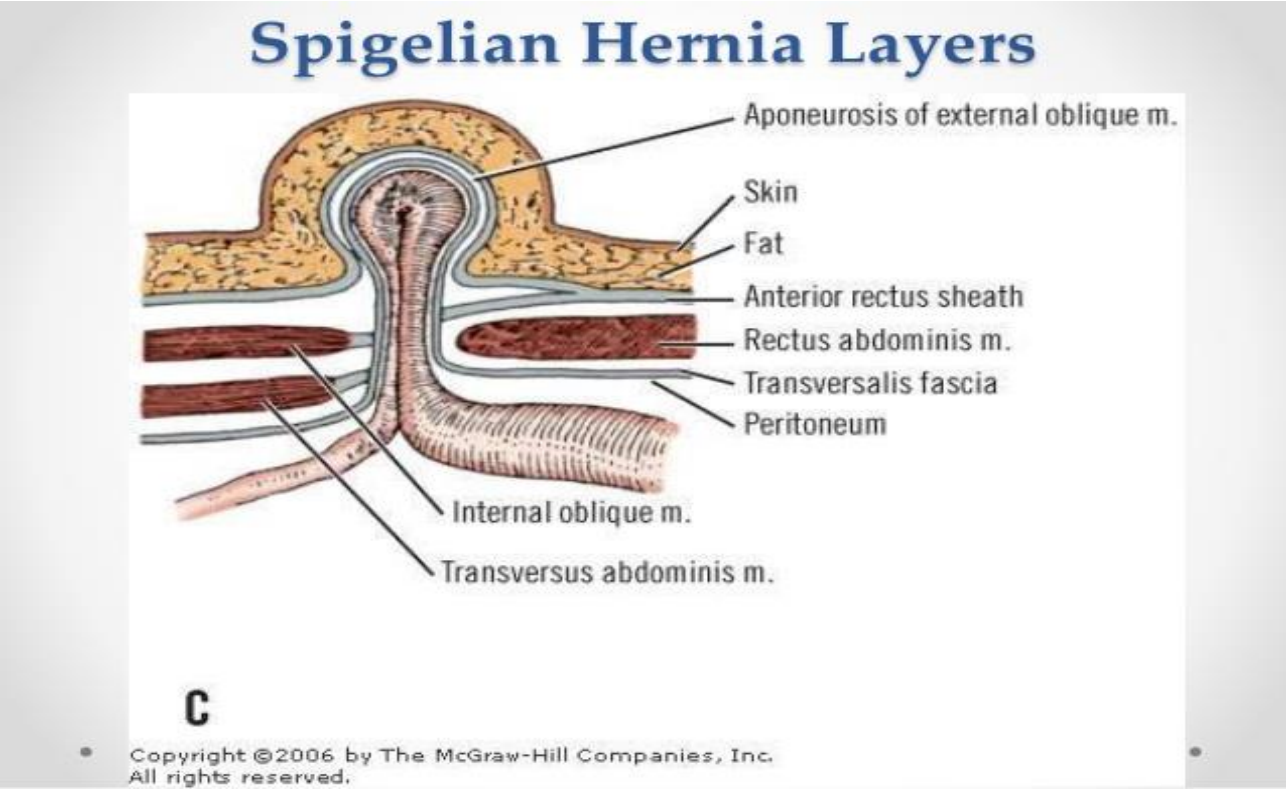
★ **Treatment** is surgery as soon as possible because complications are very common , by synthetic mesh hernioplasty .

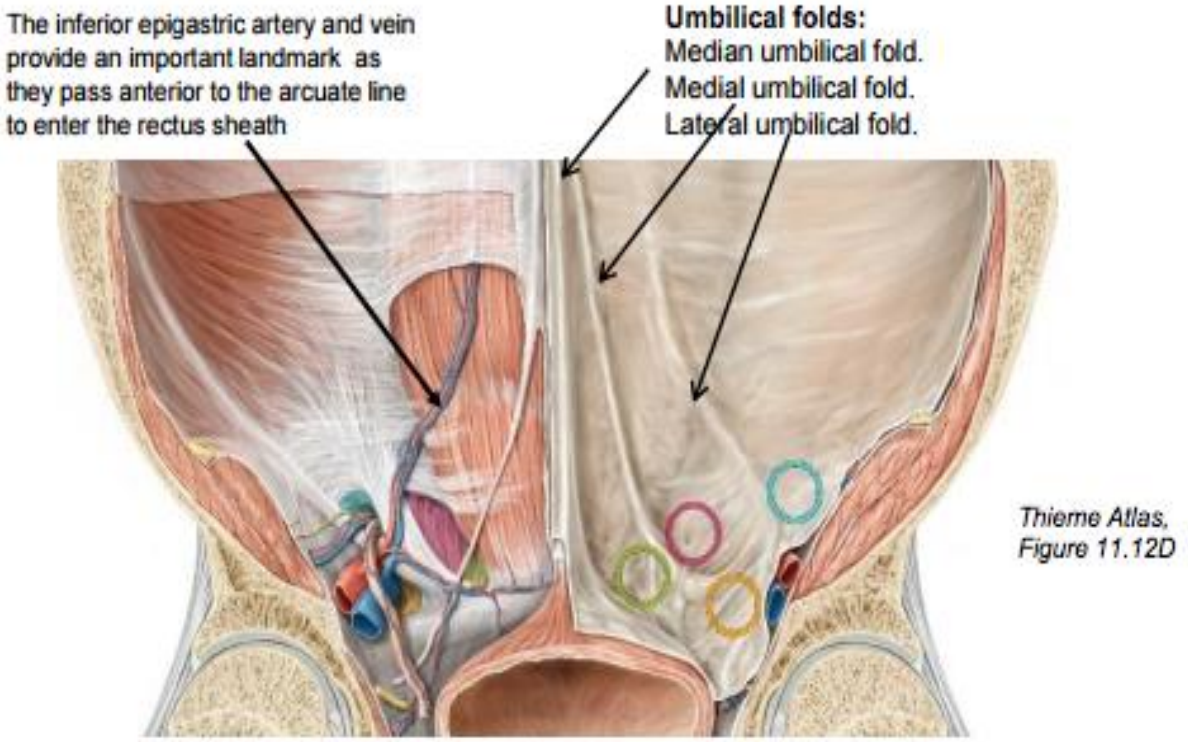


4. Spigelian Hernia:

- ★ A hernial sac passes through the aponeurosis of transversus abdominis (Spiglian fascia) which forms the lateral border of rectus sheath. Commonly at the level of arcuate line.
- ★ It may lie beneath the internal oblique where it is impalpable and diagnosed only by ultrasound but later on it advances through the muscles to lie between internal and external oblique → **swelling**.
- ★ **Complications** may be the first manifestation .







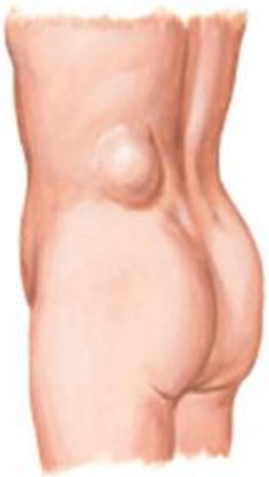
Thieme Atlas, Figure 11.12D

5. Lumbar Hernia: may be:

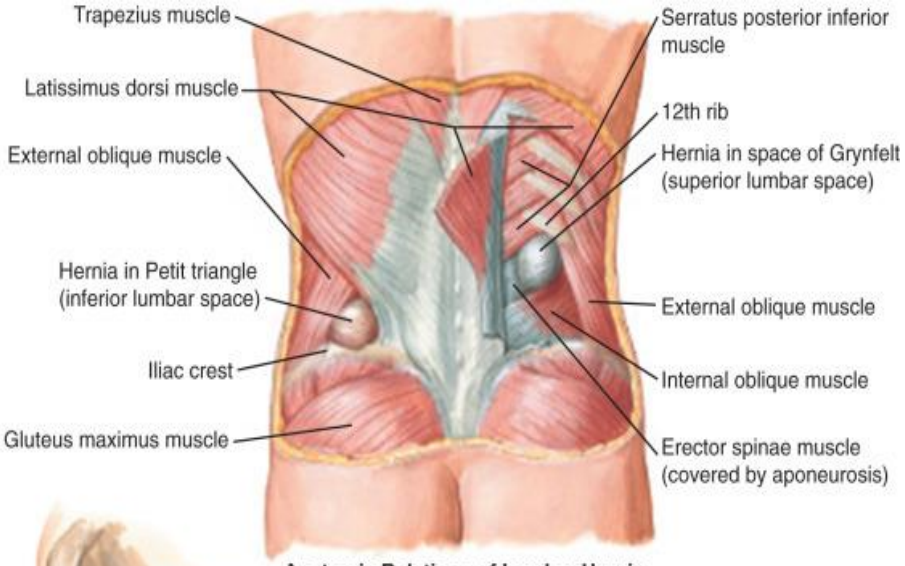
a) **Inferior lumbar hernia:** The commonest, passes through the **inferior lumbar triangle of Petit** which is bounded by iliac crest, the external oblique and latissimus dorsi.

b) **Superior lumbar hernia:** passes through the **superior lumbar triangle** bounded by 12th rib, erector spinae and posterior border of internal oblique.

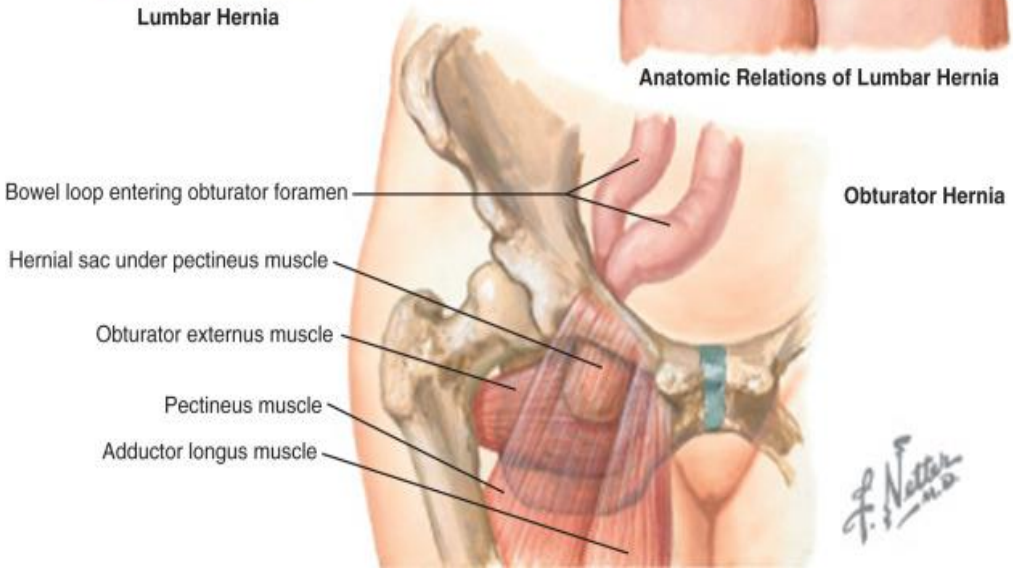
c) **Incisional lumbar hernia** following renal operation.



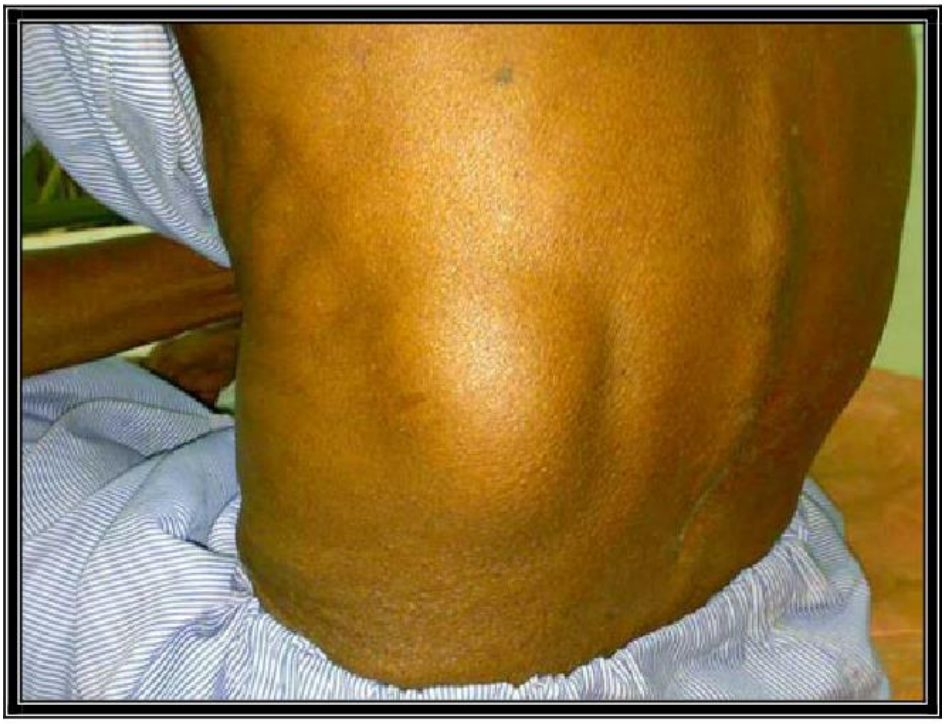
Lumbar Hernia

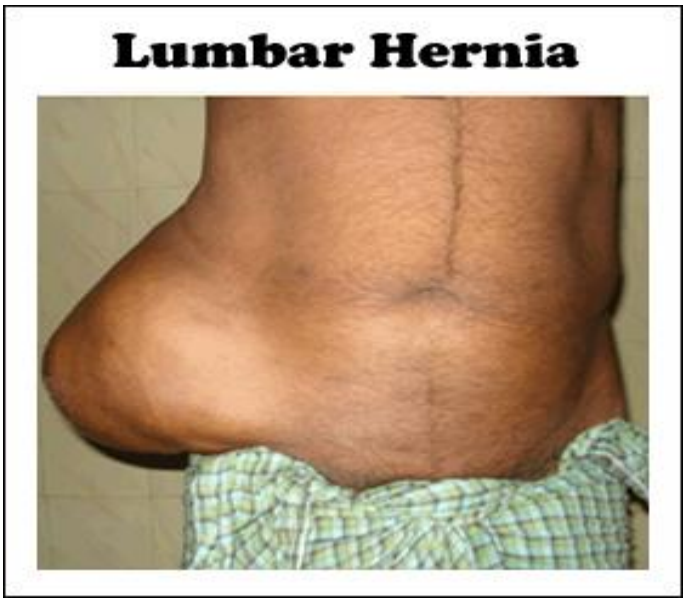


Anatomic Relations of Lumbar Hernia

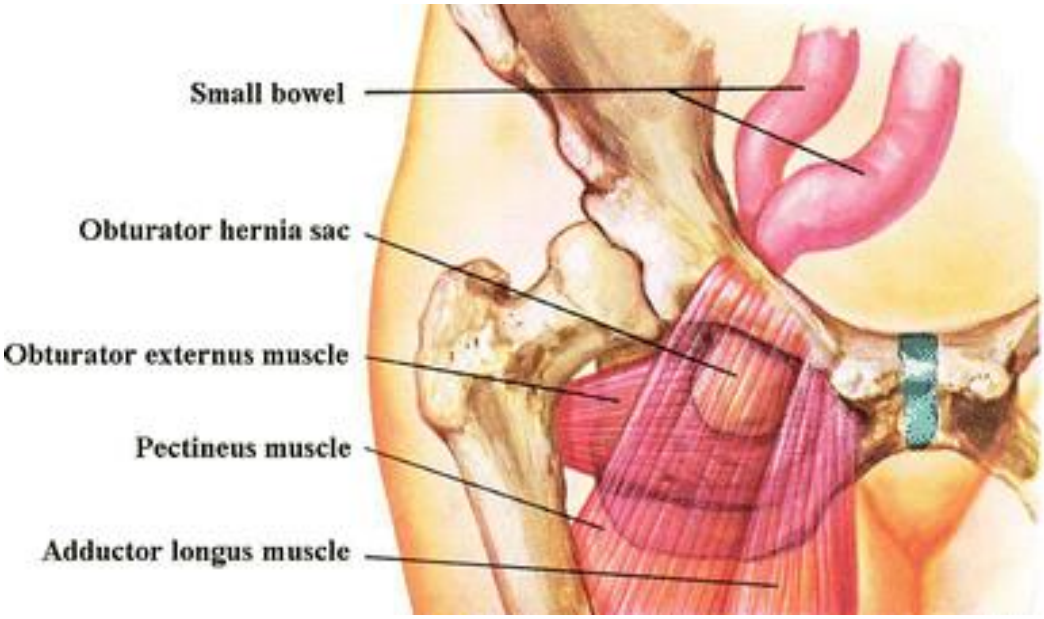


Obturator Hernia

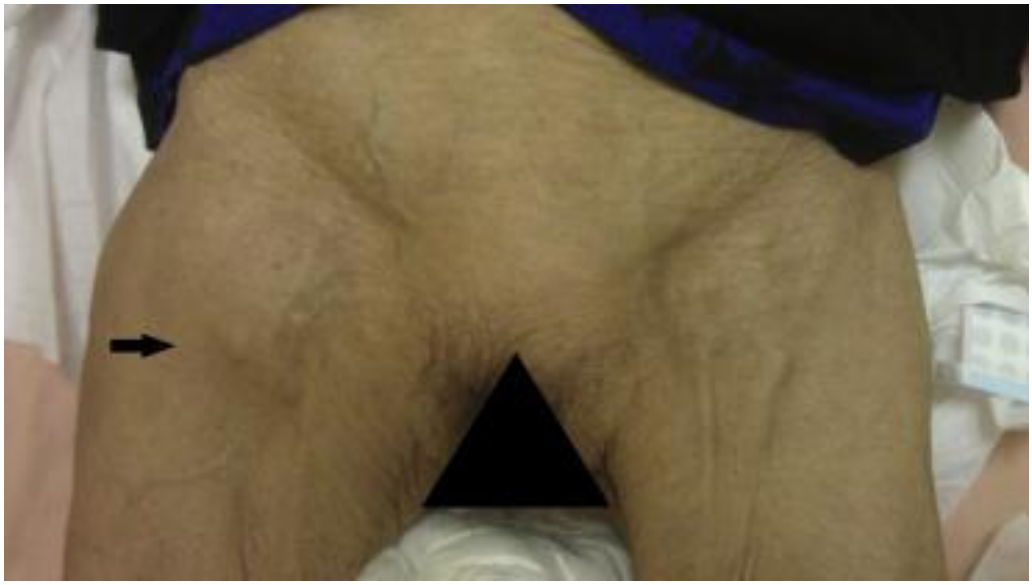


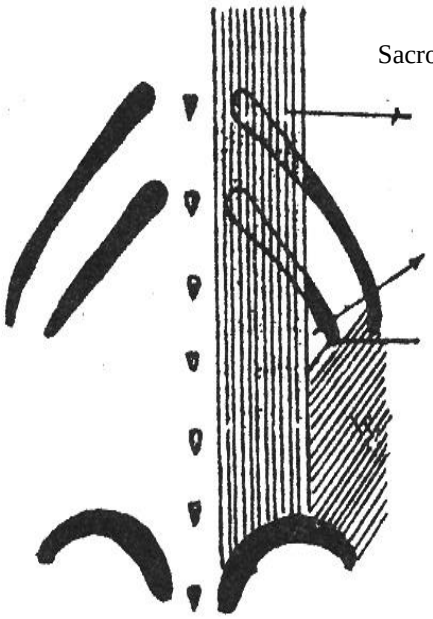

Lumbar Hernia

6. Obturator hernia: Passes through the obturator canal, more common in women. The swelling is liable to be overlooked because it is covered by pectineus . **D.D is femoral hernia**

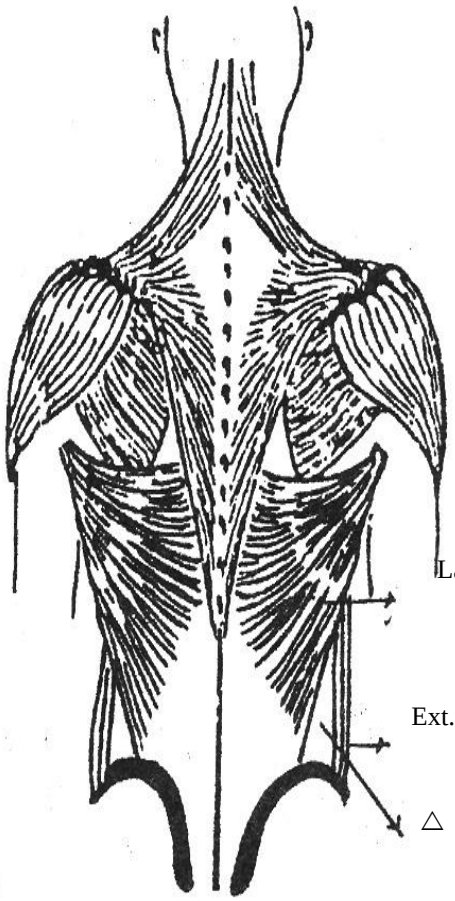


Obturator hernia

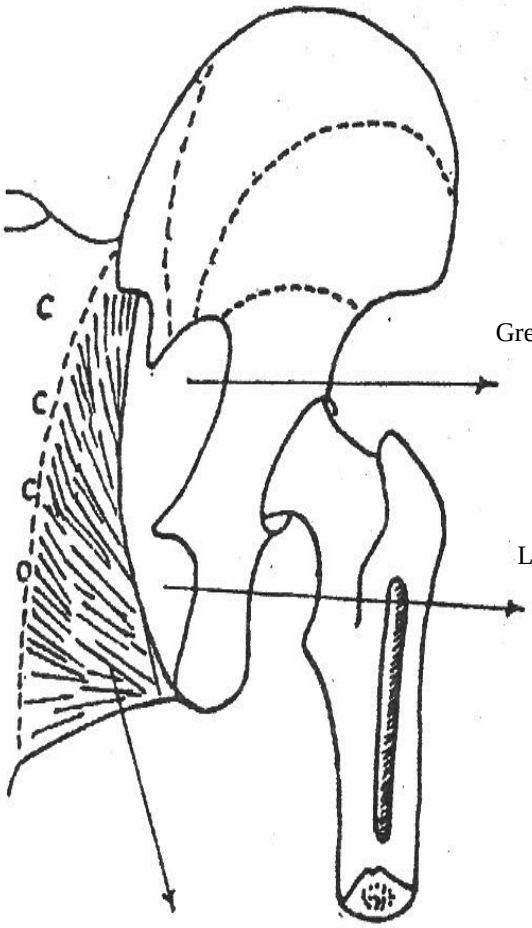




★ **Superior Lumbar Triangle**

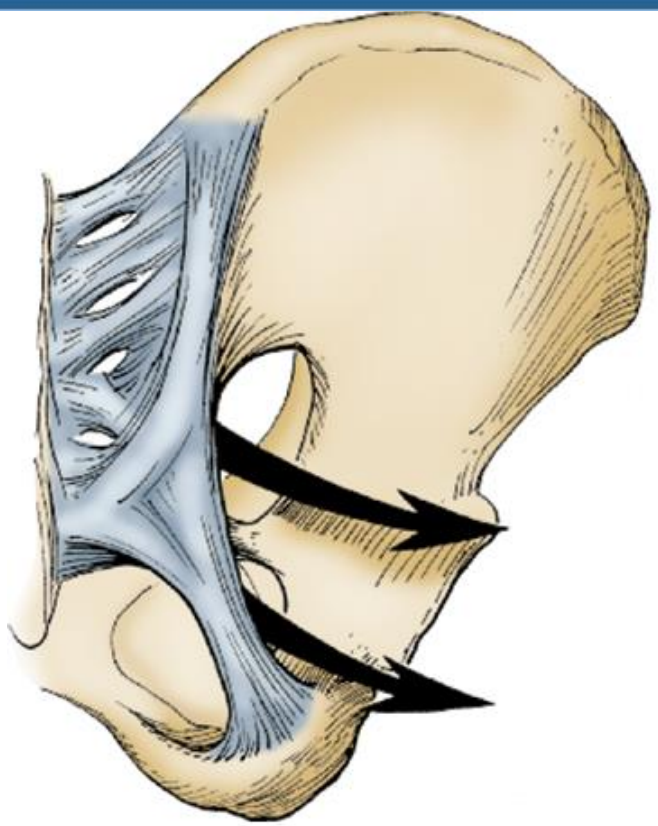


★ **Inferior Lumbar Triangle**



7. Gluteal hernia: Passes through the greater sciatic foramen.

8. Sciatic hernia: Passes through the lesser sciatic foramen.



Source: Zinner MJ, Ashley SW: *Maingot's Abdominal Operations*, 12th Edition: www.accesssurgery.com

9. Phantom hernia : a local abdominal bulge due to muscular weakness or paralysis of abdominal muscles due to injury of their nerve supply .