HERNIAS

Defination-

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

Composition-

Sac, Coverings of the sac, Contents of the sac.

- ***Sac –*** it is a diverticulum of peritoneum consisting of mouth, neck, body and fundus.
- ***Coverings-*** derived from the layers of abdominal wall through which the sac passes.
- ***Contents-*** any abdominal viscus-

  Omentum = omentocele

  Intestine = enterocele (usually small intestine)

  Portion of circumference of intestine = Richters hernia

Types of hernias-

- Inguinal – about 73%
- Femoral – about 17%
- Umbilical – about 8.5%
- Incisional

Aetiology-

1. Weakness of abdominal muscle

   Congenital weakness

a. Persistence of processus vaginalis – it is a preformed sac through which the contents herniate..and causes indirect inguinal hernia.

b. Patent canal of Nuck- in females, causes indirect inguinal hernia.

Acquired weakness

a. Excessive fat in the abdomen causes sepration of muscle fibres and weakness.

eg. Appearance of direct inguinal hernia.

b. Muscle weakness due to repeated pregnency.

c. Division of nerve fibres causes muscle weakness. eg. during appendicectomy division of ilio-inguinal nerve causes direct inguinal hernia.

2. Increased intra-abdominal pressure

eg. Chronic cough, urethral stricture, constipation, enlarged prostate.

Classification-

Reducible, Irreducible, Obstructed, Strangulated and inflammed.

- ***Reducible hernia-***

- reduces itself or by patient.

- Intestine gurgles on reduction, first portion is more difficult to reduce than the last.

- Omentum is doughy, last portion is more difficult to reduce than the first.

- Reducible hernia imparts an impulse on coughing.

- ***Irreducible hernia –***

- it is due to adhesions between the sac and its contents or from overcrowding within the sac.

- contents can't be returned to the abdomen.

- ***Obstructed hernia –***

- this is an irreducible hernia containing intestine which is obstructed from without or from within; but there is no interference to the blood supply to the bowel.

- ***Strangulated hernia –***

- when the blood supply to its contents is seriously impaired, rendering gangrene imminent.

INGUINAL HERNIA

Surgical anatomy-

- ***The superficial inguinal ring-*** Triangular aperature in the aponeurosis of external oblique, lies 1.25 cm above the pubic tubercle.
- ***Deep inguinal ring –*** U shaped opening in the transversalis fascia 1.25 cm above the midpoint of the inguinal ligament. TF is the fascial envelope of abdomen and competency of deep inguinal ring depends upon the integrity of this fascia.
- ***The inguinal canal –*** it is 3.75 cm long, directed downwards and medially from deep to superficial inguinal ring.

  In males inguinal canal transmits ***the spermatic cord***, ilio-inguinal nerve, genital branch of genito-femoral nerve and vestigial remnant of the processus vaginalis(it is the prolongation of peritoneum,when testis decent in scrtotum).

  In women, the round ligament of uterus traverses through the canal.

Hernias..

Coverings of spermatic cord-

- When testis descend through abd. wall in to scrotum it drags its vessels and nerves along with its ductus-deferens. these structure meet at deep inguinal ring and form spermatic cord.
- it extend from DIR to post. border of testis.

Coverings- int.spermatic fascia, cremesteric fascia, ext.spermatic fascia.

Structures of spermatic cord-

- vas deferens, testicular artery, pampiniform plexus of testicular veins, genito-femoral nerve.

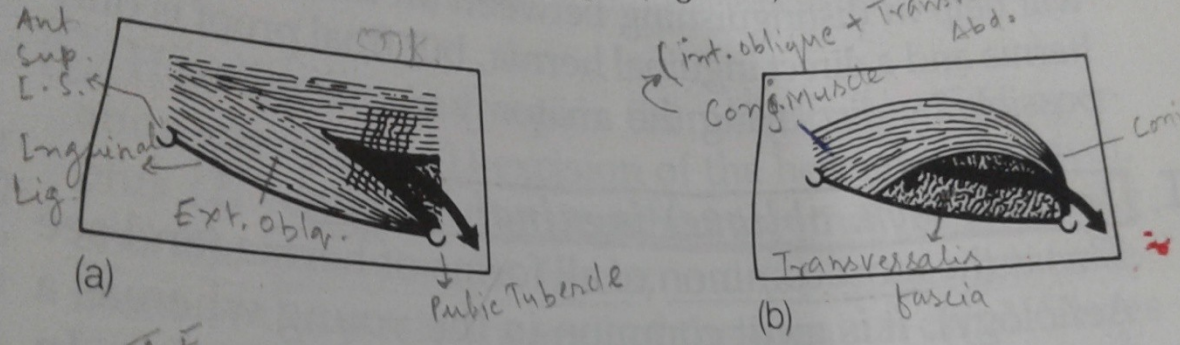
Indirect / oblique inguinal hernia-

- Most common in all forms of hernias.
- With deferred descent of the right testis.
- This hernia occurs when there is a preformed sac of partially or completely patent processus vaginalis. PV is obliterated shortly after birth at deep inguinal ring and just above the testis.
- In children, hernia is more common on right side due to later descent of right testis.

Types-

- *Bubonocele* - hernia is limited to the inguinal canal.
- *Funicular* – processus vaginalis is closed just above epididymus. the contents of the sac can be felt just above the testis.
- *Complete(scrotal)*- processus vaginalis is patent throughout. Hernial sac is continous with tunica vaginalis of testis. Hernia descends down to the bottom of the scrotum lying in front and at the sides of testis.

Indirect / oblique inguinal hernia



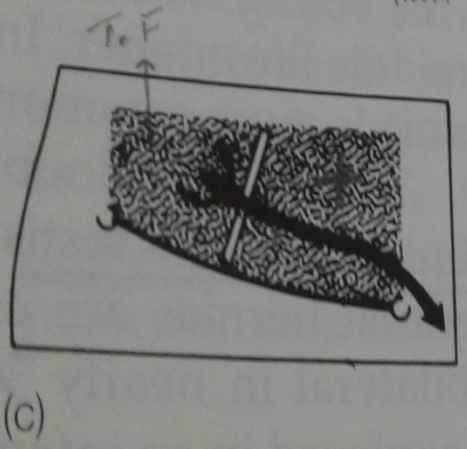


Fig. 55.4 The boundaries of the right inguinal canal. The inguinal ligament passes between the anterior superior iliac spine laterally, and the pubic tubercle medially. (a) The superficial layer, the external oblique aponeurosis, the crura of the external ring and the intercrural fibres; (b) the conjoined muscle (internal oblique and transversus) arching over the cord. Laterally the conjoined muscle lies superficial to the cord and the internal ring, then above the cord and medially, as the conjoined tendon, behind the cord; (c) the deepest layer which is the transversalis fascia (the fascial envelope of the abdomen). The inferior epigastric artery is shown lying medial to the internal ring.

Direct inguinal hernia-

Hesselbach's triangle –

- It is a weak spot of the ant. abdominal wall through which direct inguinal hernia protrudes.
- It is a triangle which is bounded by-

a. Medially- outer border of rectus abdominis muscle.

b.Laterally- by the inferior epigastric vessels.

c. Below- by medial part of inguinal ligament.

Floor is formed by fascia transversalis.

- Direct inguinal hernia protrudes through the posterior wall of inguinal canal medial to the inferior epigastric vessels ie. through Hasselbach's triangle.
- It is a small circular rigid orifice in the conjoined tendon just lateral to where it inserts with the rectus sheath.
- Direct hernia is always acquired type with poor abdominal musculature.
- Even if it comes out through superficial inguinal ring it never descends into the scrotum.
- Neck of direct hernia lies medial to the inferior epigastric vessels, whereas the neck of indirect hernia lies lateral to the inferior epigastric vessels.

Clinical features –

- ***Pain-*** dragging or aching type of pain in groin.
  Worse with passing of day.
  - pain ceases when it is fully formed.
  - very painful is indicative of strangulation.
- ***Lump-*** at inguinal or inguino-scrotal region.

Past history –

- Appendicectomy due to division of ilio-inguinal nerve.

Local examination-

1. Position and extent-

An inguinal hernia is positioned above the inguinal ligament and medial to the pubic tubercle, whereas a femoral hernia lies below the inguinal ligament and lateral to the pubic tubercle.

2. ***Get above the swelling-***

Differentiate a scrotal swelling from an inguinoscrotal swelling.

3***. Consistancy-***

If contents is omentum the swelling feels doughy and granular. if intestine it feels elastic.

4***. Impulse on coughing -***

An expensile impulse on coughing can be felt as the contents of the hernia will be forced out through the superficial inguinal ring.

5. Ring occlusion test-

The hernia is reduced first. Thumb is pressed on the deep inguinal ring and patient is asked to cough, a direct hernia may show a bulge.

Treatment of inguinal hernias-

A. Conservative treatment

- Using of a truss

B. Operative treatment

1. Herniotomy
2. Herniorrhaphy
3. Hernioplasty

Hernias..

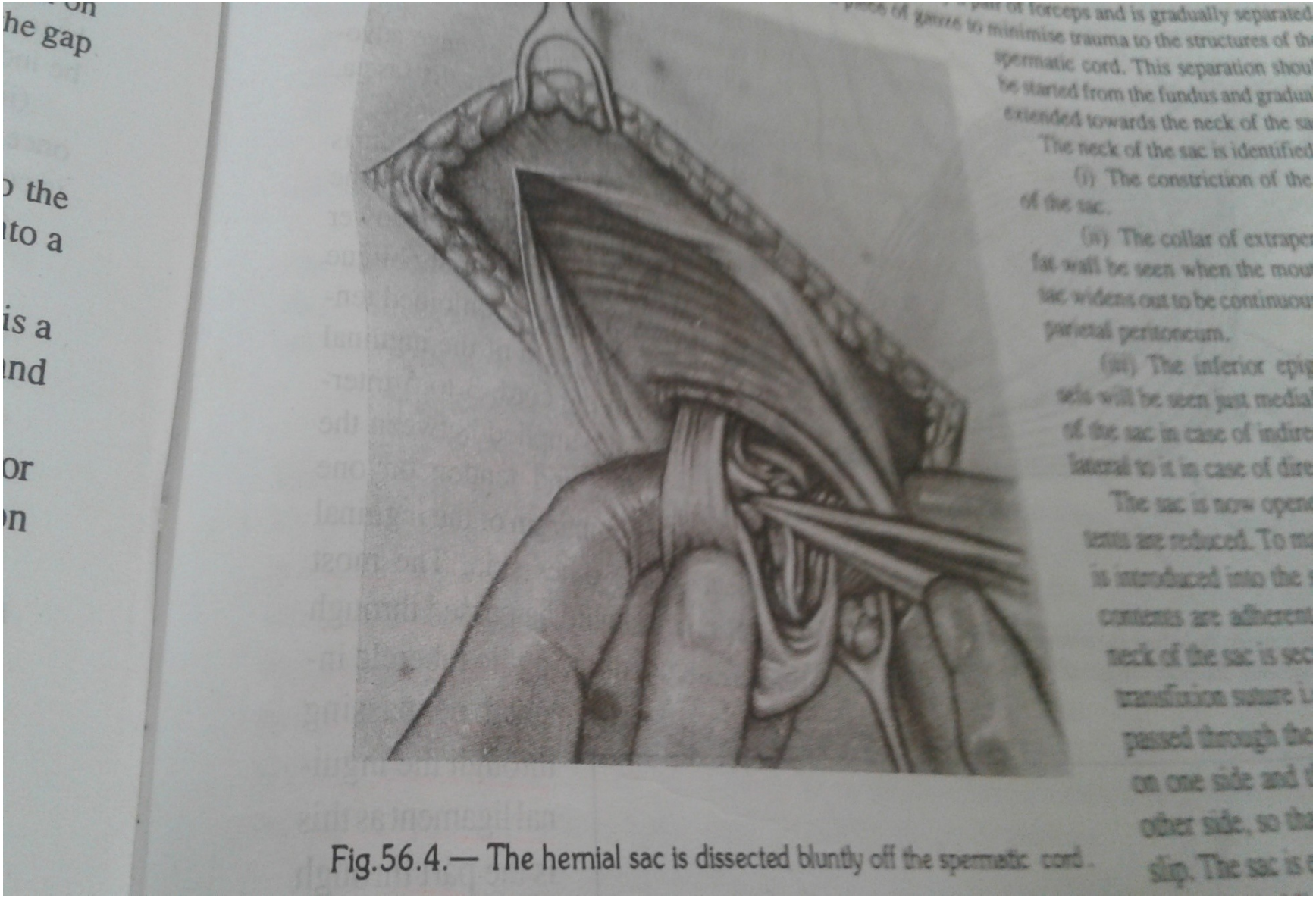


Fig.56.4.— The hernial sac is dissected bluntly off the spermatic cord.

Hernias..

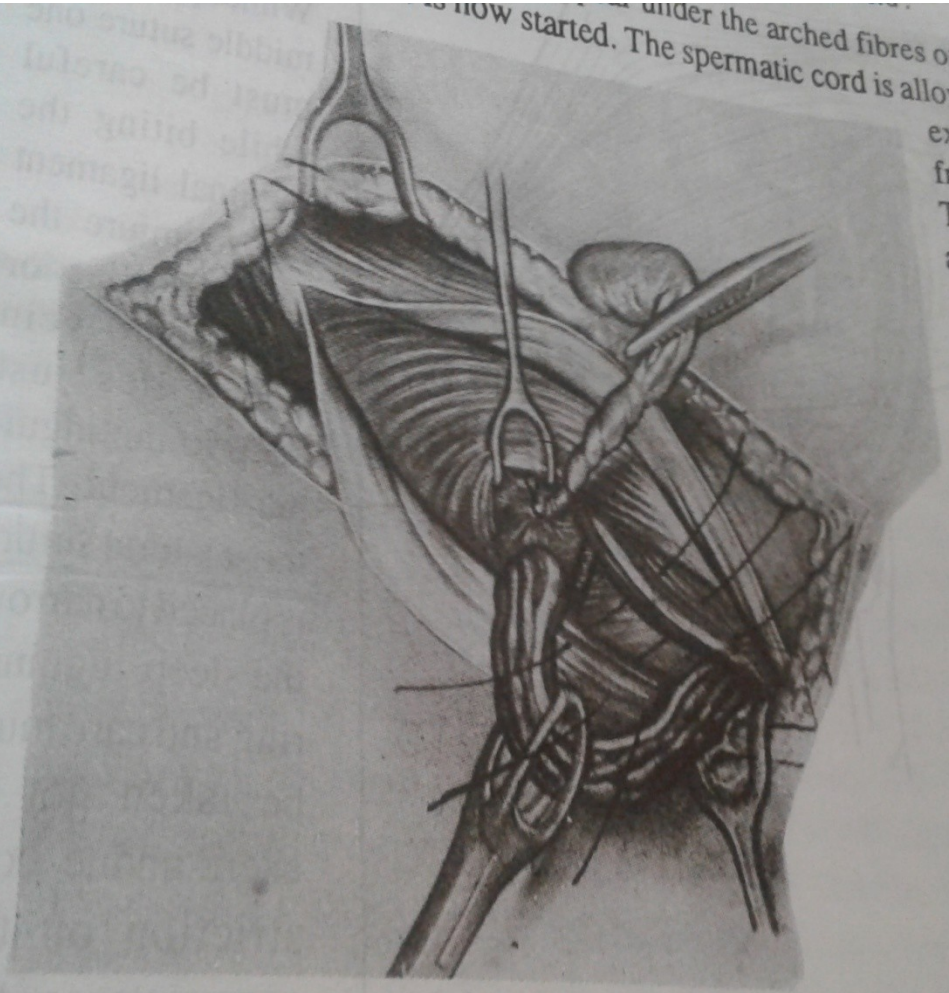


Fig.56.5.— The hernial sac is being twisted after the contents are squeezed into the abdomen before transfixion suture is applied.

under the arched fibres of the internal oblique.
now started. The spermatic cord is allowed to fall back to its normal position. The
slip. The sac is excised above the trans-
external oblique aponeurosis is sutured in
front of the cord by continuous catgut sutures.
The most medial portion is kept open so tha
a new superficial inguinal ring is constructe
through which the structures of the sperma
cord emerges. The skin is closed as u
either with silk or nylon or Michel's cli

HERNIORRHAPHY.— This
repair of the posterior wall of the in
canal in addition to a herniotomy op

The steps of operation are same
otomy upto the excision of the sac.

Before proceeding for repair of
rior wall, it is often advised to
fascia transversalis to narrow the
nal ring which often becomes str
presence of indirect hernia.
interrupted sutures are applie
transversalis picking up two
gap of $^1/_2$ inch in between.

Herniotomy-

- Incision is made ½ inch above and parallel to the medial 2/3rd of the inguinal ligament.
- Incision is made through skin, cubcutaneous, fascia of camper, fascia of scarpa, aponeurosis of external oblique so the whole of inguinal canal can be exposed.
- After dividing cremasteric fascia and internal spermatic fascia white wall of sac will appear.

Identification of sac

- The sac wall is gradually separated from the spermatic cord with blunt dissections to minimize the trauma to structures to spermatic cord.
- The separation should be started from the fundus and gradually extend towards neck of the sac.
- The neck is identified by the constriction of the sac.
- Inferior epigastric vessel will be seen just medial to the neck of the sac in case of indirect inguinal hernia.

- The sac is now opened and the contents are reduced.
- The neck of the sac is secured by means of transfixation sutures, the sac is excised above the transfixation sutures.
- Closure of the wound is now started by putting spermatic cord to its normal position.
- Ext.oblique aponeurosis is sutured infront of the cord.
- The skin is closed as usual.

Herniorrhaphy –

- Herniotomy operation.
- Repair of the posterior wall of the inguinal canal.

Bassini's repair –

-Its main aim is to strengthen the posterior wall of inguinal canal by stitching the lower margins of muscles (internal oblique and transversus) and the conjoined tendon to the inner margin of the inguinal ligament.

- The most lateral suture is placed to narrow the deep inguinal ring and care must be taken not to exert undue constriction on the spermatic cord at the deep inguinal ring.
- After repair of the post wall of inguinal canal, spermatic cord is placed in its position and the ext.aponeurosis is sutured as in herniotomy.

Lytle's method-

- If the deep inguinal ring is weak and streched, the transversalis fascia around the deep inguinal ring is sutured to narrow the ring.
- The spermatic cord is laterally displaced and the inferior epigastric vessels are carefully retracted.

Herniotomy and hernioplasty

Hernias..

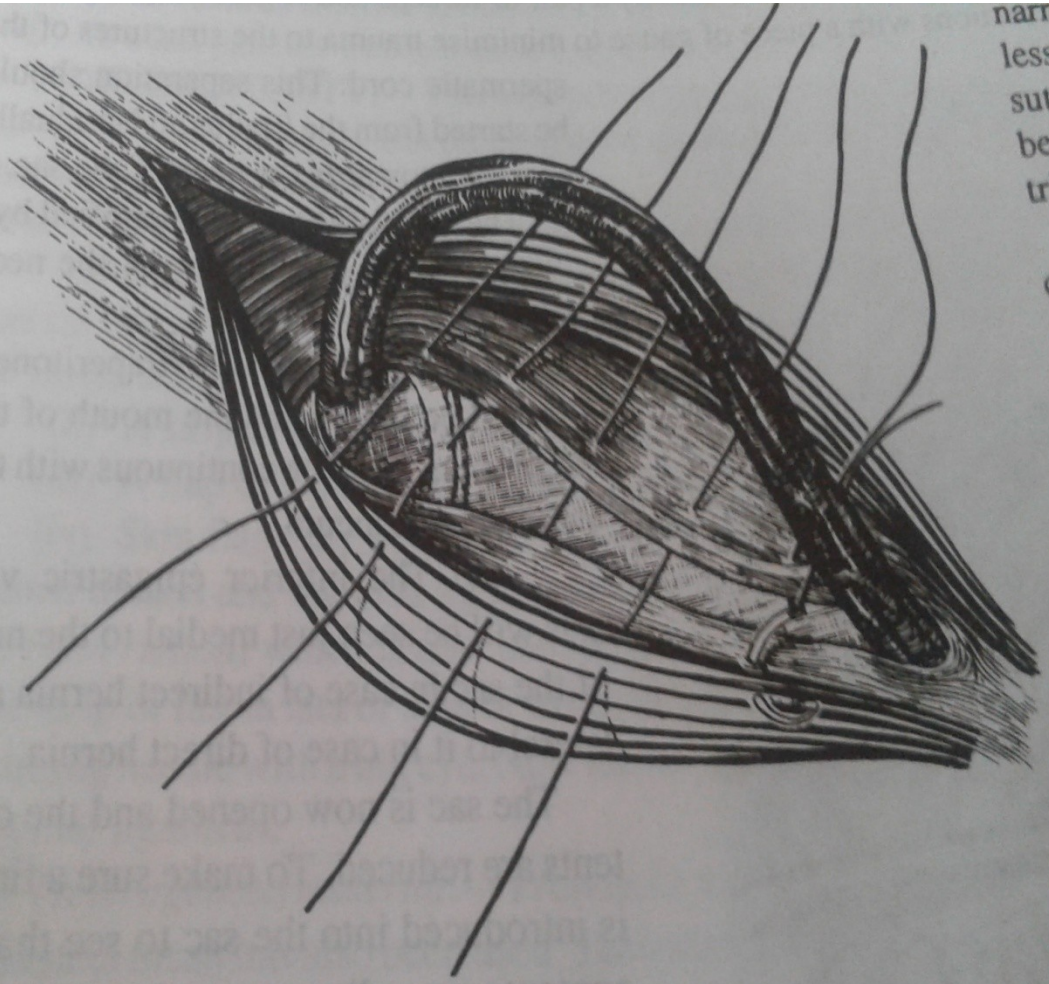


Fig.56.6.— Bassini's repair. Note how the sutures are applied through the conjoined tendon and the inner margin of the inguinal ligament.

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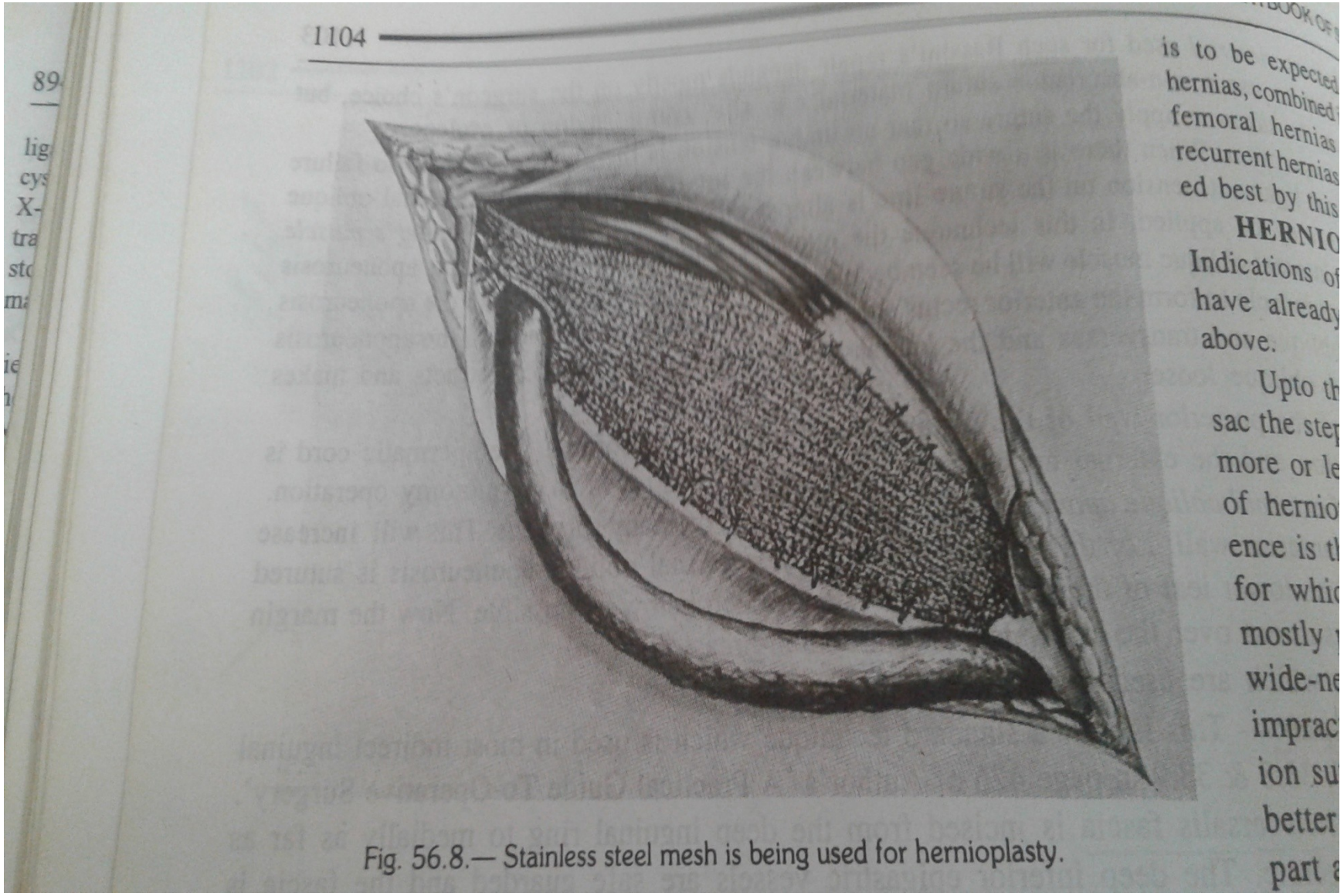

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Fig. 56.8.— Stainless steel mesh is being used for hernioplasty.

Hernioplasty-

- Dacron or mesh implant.
- a mesh patch is sutured to the aponeurotic tissue overlying the pubic bone and conjoined tendon above and inguinal ligament below.
- The lateral edge of the mesh is slipped to allow passage of the spermatic cord between the split limbs of the mesh.
- The spermatic cord structures are placed with in the inguinal canal overlying the mesh.
- External oblique aponeurosis is closed over the spermatic cord.

Umbilical hernia

- Occurs once in every 6000 births.
- It is due to failure of all or part of the midgut to return to the coelom during early fetal life.
- The sac is relatively small and to its summit is attached the umbilical cord.

Treatment –

- It is necessary only to twist the cord, so as to reduce the contents of the sac through the narrow umbilical opening in to the peritoneal cavity and to retain them by firm strapping.

Paraumbilical hernia

- It is a protrusion through the linea alba just above or sometimes just below the umbilicus.
- Oval or rounded in shape with a tendency to sag downwards.
- The neck of the sac is often narrow as compared to the size of sac which consist of greater omentum accompanied by small intestine.

Clinical features-

- Increasing obesity with flabbiness of the abdominal muscles and repeated pregnancy are important antecedents.
- Local dragging pain and gastrointestinal symptoms.

Paraumbilical hernia

- Untreated, the hernia increases in size and more and more of its contents become irreducible. eventually strangulation may occur.

Mayo's operation-

- A transverse elliptical incision is made around the umbilicus.
- Subcutaneous tissues are dissected off the rectus sheath to expose the neck of the sac.
- Neck is incised to expose the contents.
- Intestine is reduced to the abdomen, sac is then removed and the peritoneum of the neck closed with catgut.
- 3-5 mattress sutures are inserted in to the aponeurosis and the overlap is completed with a continuous suture.

Femoral hernia

- Hernial contents pass through the femoral ring, traverses the femoral canal and comes out through the saphenous opening.
- Common in females.

Symptoms-

- Pain- less pain then inguinal hernia.
- Swelling- small globular swelling below the inguinal ligament.

Signs – impulse on coughing.

- reducibility.

Clinical examination-

Zieman's technique- putting the index finger over deep inguinal ring, middle finger over superficial inguinal ring and ring finger over saphenous opening.

Femoral hernia

Inguinal operation(lotheissen's)-

- Incision is same as for inguinal hernia but it is placed nearer to the inguinal ligament.
- External aponeurosis is incised and inguinal canal is opened, spermatic cord and conjoined muscles are drawn upwards.
- Fascia transversalis is divided and the extra peritoneal fat is pushed aside by gauze to expose the hernial sac entering the femoral canal. If the sac is empty the neck is ligated and the rest of the sac is excised.
- The femoral ring is now obliterated by stitching the conjoined tendon or the inguinal ligament down to the pectineal ligament.

Femoral hernia

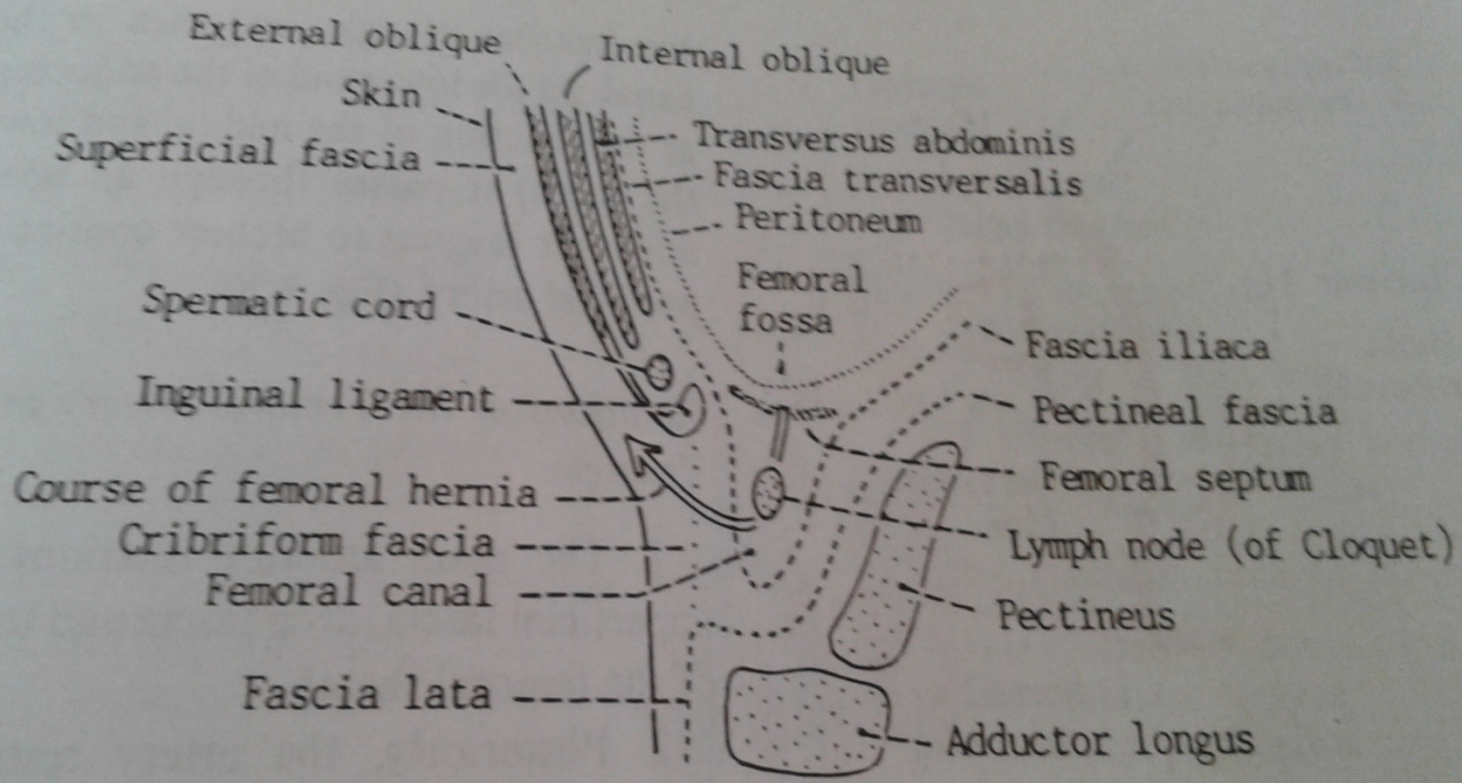

Fig. 3.18. Femoral canal and the course of a femoral hernia.

Femoral hernia

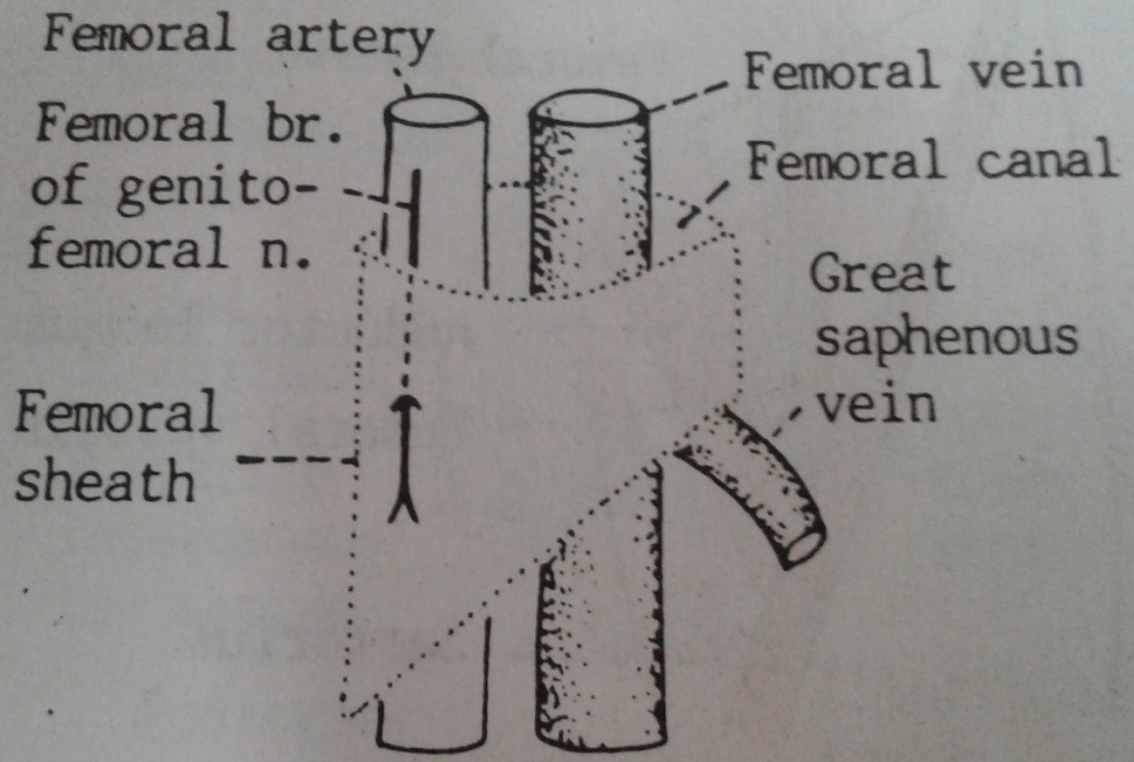

Fig. 3.16. Diagram to show that the femoral sheath resembles a funnel.