Hernia

What is a hernia?

Hernia is derived from the Latin for "rupture" and is the protrusion of an organ or part of an organ or other structure tough the wall of the cavity normally containing it.

Sir Percivall Pott, described hernias in 1756 as:

"The disease which makes the subject of the following tract, is one in which mankind are, on many acounts, much interested. No age, sex, rank, or condition of life, is exempted from it; the rich, the poor, the lazy,and the laborious, are equally liable to it; it produces certain inconvenience to all who are afflicted by it...

It sometimes puts the life of the patient in such hazard, as to require one of the most delicate operations in surgery; and it has in all times, from the most ancient down to the present, rendered those who labor under it subject to the most iniquitous frauds and impositions."

Groin Hernias

Definitions:

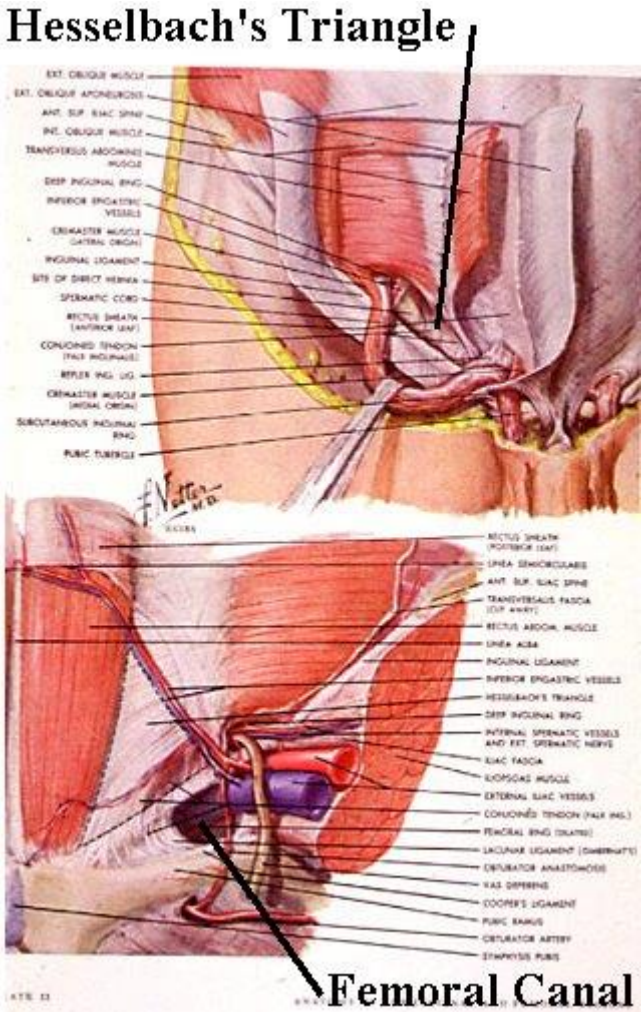
Incarcerated Hernia: Non-reducible. The contents of the hernia cannot be returned to its normal location.

Strangulated Hernia: The hernia contents, usually intestine, become gangrenous. This complication may have a 12-13% mortality, and will require removal of a portion of intestine.

Incidence: Groin hernias are found in 5% of male population, and represents 86% of hernia cases. It occurs 5 times more often in males and females.

Right sided hernias are more frequent than left sided ones.

Surgical Anatomy



Hasselbach's Triangle is defined as follows:

Laterally: The Inferior Epigastrics artery and vein
Medially: The Rectus Sheath
Inferiorly: The Inguinal Ligament
Posteriorly: Transversalis Fascia

Hernias medial to the epigastric vessels that enter te inguinal canal via Hasselbach's Triangle are Direct Hernias. Hernias that enter the canal via the internal (deep) inguinal ring, are indirect hernias.

Direct Inguinal Hernia

Incidence: 25% of hernia cases

The hernia contents enter the inguinal canal directly via a gap or defect in transversalis fascia, the floor of Hasselbach's Triangle.

These hernias are generally considered to be acquired, and may be associated with heavy lifting, straining due to constipation, coughing, or prostatic enlargement.

Bilateral Hernia

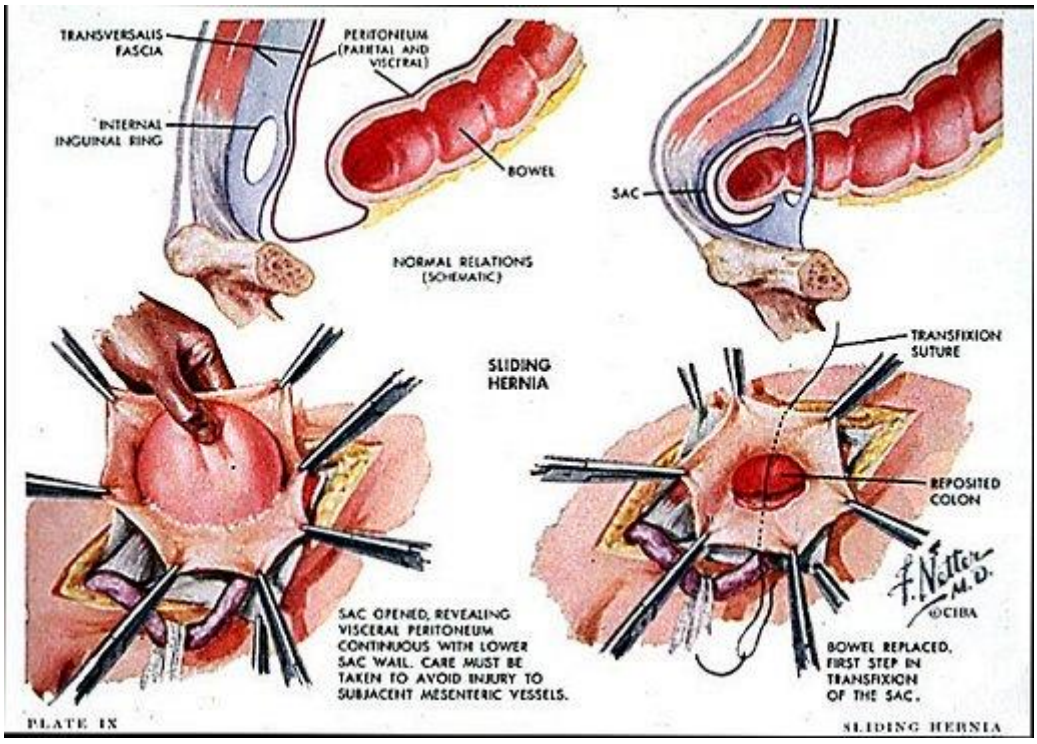
Definition: Simultaneous Right and Left Inguinal Hernia

Common in children and elderly men

If a left inguinal hernia is preesnt, there is a 25% risk of an occult right inguinal hernia

Both hernias may be repaired with one surgical procedure

Sliding Hernia

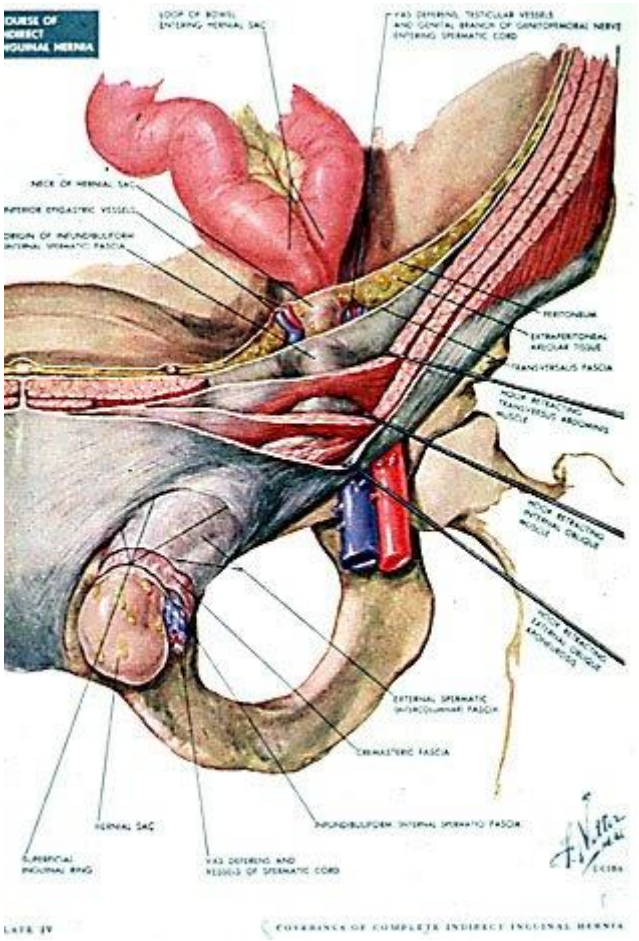


Posterior wall of sac is a viscous. Seen in 3% of hernia procedures. Great care must be taken to avoid visceral damage during the repair.

Pantaloon Hernia

- Direct and indirect hernias co-existing on same side
- Etiology for some recurrences.May be best approached by ligating the inferior epogastric vessels to convert the direct and indirect components to a single sac (Hoquet maneuver)

Richter's Hernia



Antimesenteric boarder only of the small intestine is incarcerated in the deep inguinal ring, therefore intestinal obstruction may be absent, but gangrene of the bowel wall may occur.

Treatment Options

All hernias should be surgically corrected to remove the risk of incarceration and strangulation. If there are compelling co-morbid medical conditions that preclude surgery, then a truss, or support hernia belt may be employed. A truss does not repair the hernia defect, but will afford some relief of symptoms.

Modern methods of repair include open primary closure of the defect with sutures (Shouldice or "Canadian" Repair, Bassini Repair); patch closure with prosthetic materials (Polypropylene or Gortex) tension-free (Lichtenstein-type) and laparoscopic repair.

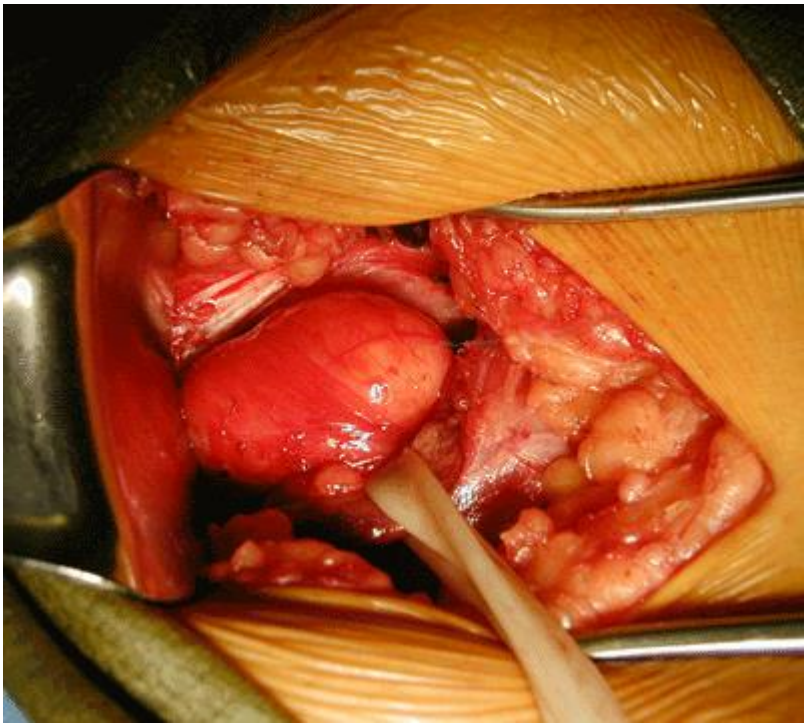
Tension-Free Hernioplasty

The Tension-Free Hernioplasty technique involves suturing permanent polypropylene mesh to strong tissues in the groin to close the gap in the inguinal canal. Anatomically, the mesh is inserted in the pre-peritoneal space, to afford the strongest mechanical advantage.

Any foreign body inserted into human tissues may be rejected, or become infected. The mesh is soaked in an antibiotic solution prior to implantation, and prophylactic antibiotics are administered intravenously to reduce the risk of infection.

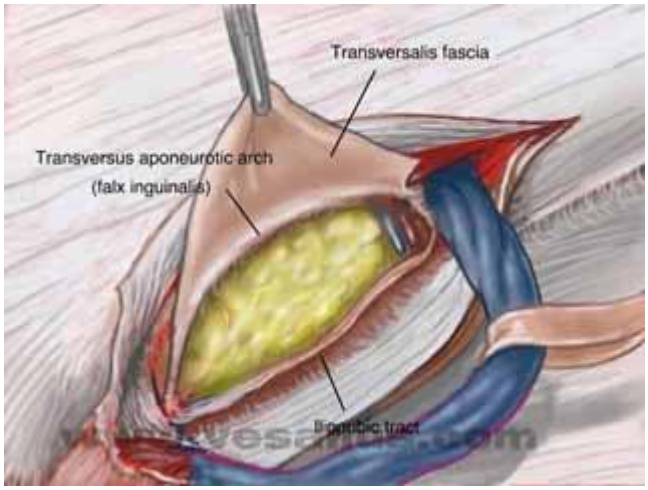
After surgery, patients are fully ambulatory, and the sole restriction is to avoid very heavy lifting for 30 days. Modern, water-proof dressings allow the patient to bathe. A prescription for pain medication is given, and patients are encouraged to gradually return to full activities as tolerated.

Sutures Used For Repair

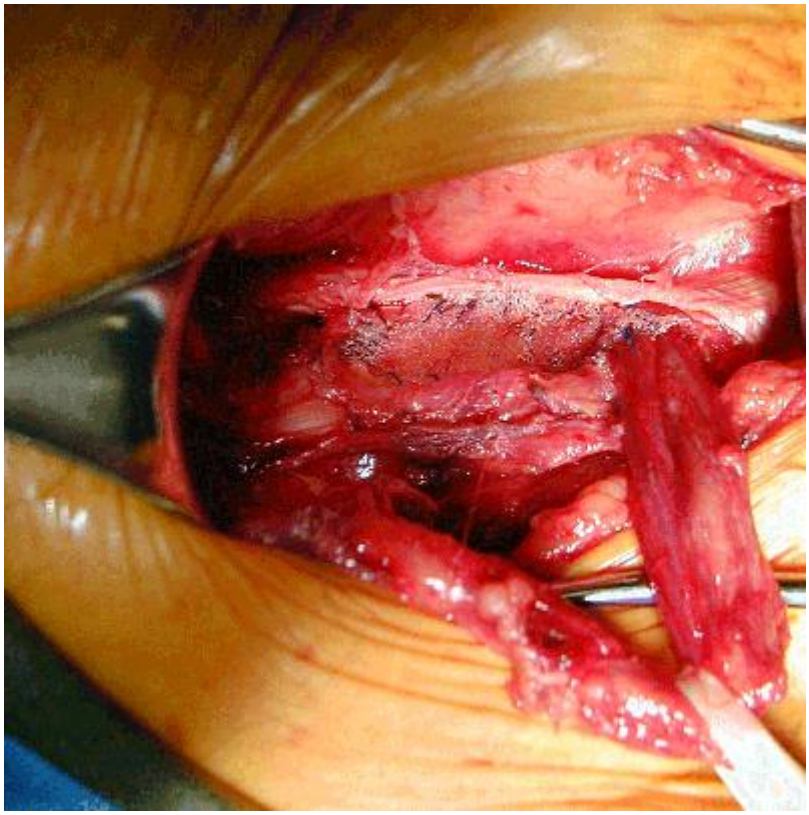


Direct Hernia Sac Exposed

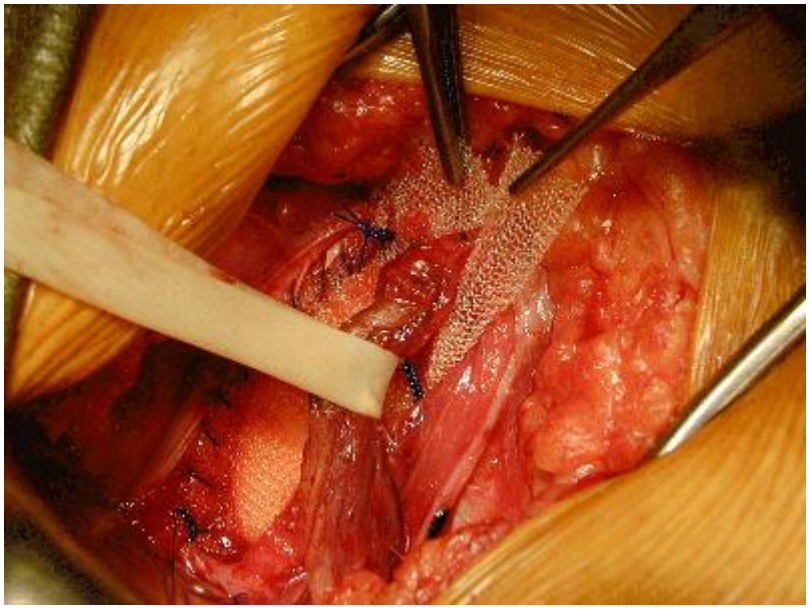
Hernia Sac Removed



Properitoneal Space Exposed by Opening Transversalis Fascia



Mesh Anchored at Pubis (near retractor)



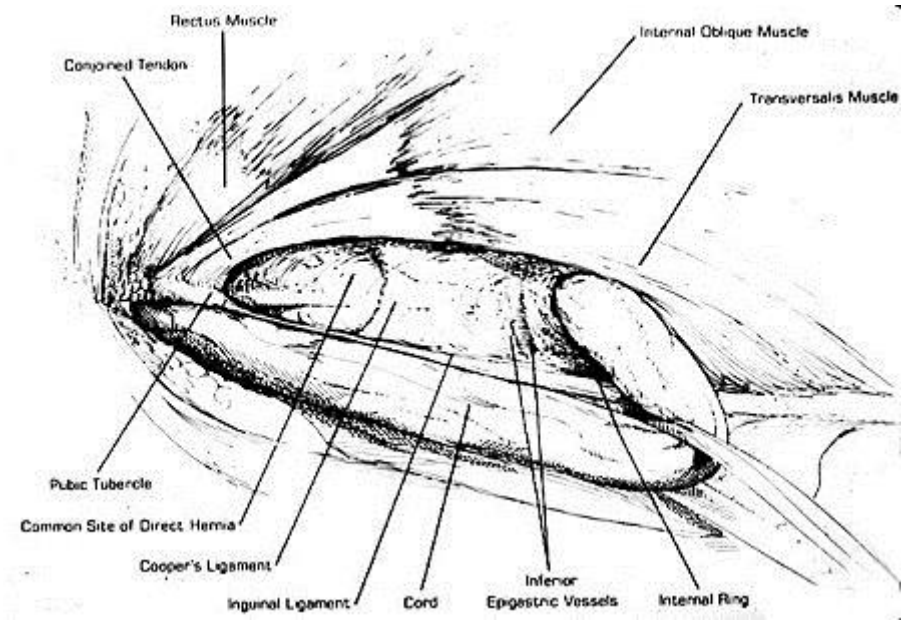
"Wings" of Mesh Posterior to Cord

(Re-Enforcing Internal Ring)

Completed Tension-free Repair

Shouldice Repair

(Canadian Repair)



A primary repair of the hernia defect with 4 overlapping layers of tissue.

Developed by a Canadian surgeon during WWII, E. E. Shouldice's hernia repair is widely used as a non-mesh technique. Two continuous back-and-forth sutures of permanent suture material are employed. The closure can be under tension, leading to swelling and patient discomfort.

Complications of Hernioplasty

Complications: Intra-operative

*Injury to vas deferens
*Injury to viscus (colon, bladder)
*Bleeding

Complications: Post-operative

*Testicular atrophy
*Recurrence
- Bassini (3-33%)
- Shouldice (0.8%)
- Laparoscopic repair (2-6%)

Laparoscopic Hernia Repair

- Techniques
  - transabdominal preperitoneal (TAPP)
  - totally extraperitoneal (TEP)

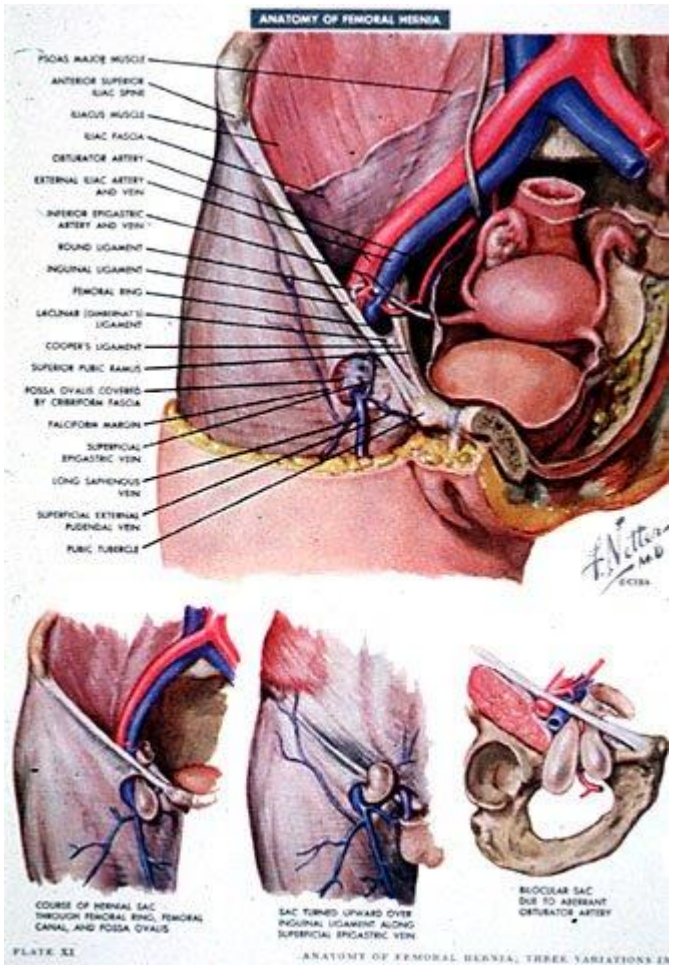
- Advantages
  - less pain and more rapid return to work
  - better for recurrent and bilateral hernias

- Disadvantages
  - cost
  - learning curve; higher recurrence rate
  - nerve irritation:
    - genitofemoral n. (2%)
    - Ilieoinguinal n. (1.1%)
    - lateral femoral cutaneous n. (1.1%)*

*Stark, et al: *Surg Endosc* 13:878 (1999)

Femoral Hernia

Visceral contents hernia through a dilated femoral canal and present with mass below inguinal ligament in the upper medial thigh.



Epigastric Hernia

- Linea alba defect in upper midline
- 5% of hernias
- Repair by resection of fat and primary facial closure

Umbilical Hernia

- Failure of closure of umbilical ring
- Common in males, and premature infants
- Acquired in adults with cirrhosis, obesity, ascites, malnutrition

- Repairs:
  - Mayo "vest-over-pants"
  - Primary mass closure
- Current trends in repair include mesh implantation into the properitoneal space to obtain a tension-free closure of the umbilical ring and remain extra-peritoneal. This is my personal choice for repair of umbilical hernias greater then 2 cm in diameter

Incisional Hernia

- 10% of cases; more common in females
- Unrecognized or late dehiscence
- Etiology:
  1. wound infection
  2. technical errors
  3. increased intra-abdominal pressure
- Multiple defects common; "button-hole"
- Risk of incarceration
- Repair:
  - tension-free: Mesh implantation - Stoppa repair
  - sutures should pass through normal fascia
- 24% recurrence wth traditional primary closure methods

Summary

1. Hernias are the second most common cause of intestinal obstruction, and a strangulated hernia is a life-threatening condition.

2. Barring significant medical contradications, **All Hernias Should Be Repaired**.

3. Tension-free Mesh Herniaplasty is a safe and effective out-patient technique of repairing an inguinal hernia in the setting of a modern university medical center.

4. Following hernia repair, patients may return to full and unrestricted activities.

Source