Hernia (4 Lectures)

Learning objectives:

To know and understand:

1. Basic anatomy of the abdominal wall and its weaknesses
2. Causes of abdominal hernia
3. Types of hernia and classifications
4. Clinical history and examination findings in hernia
5. Complications of abdominal hernia
6. Non-surgical and surgical management of hernia including mesh
7. Complications of hernia surgery
8. Other abdominal wall condition

Is the bulging of part of the contents of the abdominal cavity through a weakness in the abdominal wall

Anatomical and non-anatomical causes of abdominal wall herniation:

1. Natural
2. Many structures pass into and out of the abdominal cavity creating weakness
3. Developmental failure
4. Anatomical shape of the pelvis :
5. Sharp trauma.
6. Genetic weakness of collagen
7. Weakness due to ageing and pregnancy
8. Primary neurological and muscle diseases
9. Excessive intra-abdominal pressure:

Common principles in abdominal hernia

An abdominal wall hernia has two essential components:

1. a defect in the wall: .

2. The content:

Sac:

Covering: they become atrophied from stretching.

Classification:(irrespective of the site)

1. Occult –
2.Reducible H.:
3. Irreducible H.:
4. Obstructed H.:
5. Strangulated H.:
6. Infarcted :
7. Inflamed H.:

Clinical history and diagnosis in hernia cases:

- Self-diagnosis is common.
- The hernia is usually painless but patients may complain of an aching or heavy feeling.
- Reduces spontaneously or needs to be helped.
- Bowel obstruction.
- Is a primary hernia or a recurrence after previous surgery.
- General questions
- Prostatic symptoms

Examination for hernia

Checks

- ❖ Reducibility:
- ❖ Cough impulse:
- ❖ Tenderness
- ❖ Overlying skin color changes:
- ❖ Multiple defects/ contra-lateral side
- ❖ Signs of previous repair
- ❖ Scrotal content for groin hernia
- ❖ Associated pathology

Investigations for hernia

For most hernias, no specific investigation is required

Investigations

- ➢ Plain x-ray –
- ➢ Ultrasound scan
- ➢ CT scan –
- ➢ MRI scan –
- ➢ Contrast radiology –
- ➢ Laparoscopy –

Management principles:

- An abdominal wall hernia does not necessarily require repair.
- A patient may request surgery for relief of symptoms
- The surgeon should recommend repair when complications are likely,
- All cases of femoral hernia, should be repaired surgically.
- Any case of irreducible hernia,
- Surgery should be offered to younger adult
- In the elderly
- A truss can be

All surgical repairs follow the same basic principles:

1. Reduction of the hernia content ……
2. Excision and closure of a peritoneal ….
3. Re-approximation ……..
4. Permanent reinforcement …….

INGUINAL HERNIA:

Surgical anatomy:

- Deep ing. Ring:
- The inferior epigastric
- Conjoint tendon).
- Superficial ing. Ring:

Boundaries:

anterior = external oblique aponeurosis .

Posterior = transversalis fascia (inferior epigastric vessel ….. med. to deep ing. Ring).

Superior = conjoint tendon.

Inferior = ing. (Poupart's) Ligament.

Ing. Canal: B: in infants: superfascial and deep rings are almost superimposed.

A: in adult: 3.75 cm long …. Downward & medially.

Transmit: spermatic cord: …..

Indirect (oblique, lateral) ing H.:

- Travels down the canal on the outer side of spermatic cord.
- Neck = lateral to the inf. Epigastric vessel.
- Most common type of H. Common in young, M. 20 times > F.
- In the first decade = more common on the Rt. Side
- Pain in the groin referred to the testicles …..
- Visible & palpable bulging on coughing.
- As times goes on, …..
- In large H….
- In infant….

Types of indirect ing. H.:

1. Bubonocele:

2. Funicular

3. Complete(scrotal):

DDX:

1. A vaginal hydrocele
2. An encysted hydrocele of the cord.
3. Spermatocele.
4. A femoral H
5. An incompletely descended testis in the ing. Canal.
6. A lipoma of the cord.

Direct (medial) ing. H.:

There is a triangle referred to as **Hasselbach's triangle,**

Laterally… inferior epigastric vessels

Medially …. the lateral edge of the rectus abdominus muscle

Inferiorly …. the pubic bone (the iliopubic tract)

- Neck = medial to the inf. Epigastric vessel (except in S***addle-bag or Pantaloon H.*** …. Is a cause of the recurrence)
- 35% of ing. H. common in old males.
- All are acquired.
- Direct ing. H. do not attain a large size or descend into the scrotum.
- They rarely strangulated (wide neck).

Sliding H. :

The third type of inguinal hernia.

Occur as a result of slipping of the posterior parietal peritoneum on the underlying retroperitoneal structure.

The posterior wall of the sac is formed by the peritoneum with:

1. Sigmoid colon & its mesentery on the Lt.
2. The caecum & appendix on the Rt.
3. Portion of the bladder on both sides.

C/F:

- Almost always in man over 40 years.
- 80% on the Lt. Side, bilateral is rare.
- It should be suspected in a very large globular ing. H. descending well in the scrotum.

Diagnosis of an inguinal hernia:

- In most cases, self diagnosis.

Investigations for inguinal hernia

i. Most cases require no diagnostic tests
ii. U/S, CT scan and MRI scan are occasionally used.
iii. A herniogram

Management of inguinal hernia

1. It is safe to recommend no active treatment in cases of ……
2. Surgical trusses
3. Elective surgery for inguinal hernia is a common and simple operation.

Operations for inguinal hernia

1. Herniotomy: sufficient in infant , adolescence & young adult)
   a) dissection out & opening of the sac.
   b) reducing any content.
   c) transfixing the neck of the sac.
   d) removing the remainder.

2. Herniotomy and herniorraphy :
   i. Open suture repair:
   ii. Open flat mesh repair: Lichtenstein
   iii. Laparoscopic repair: TEP, TAPP

Strangulated ing H.:

- ☒ About 5%
- ☒ Ind. H. > direct (wide neck).
- ☒ Occur in patient who has worn a truss for a long time.
- ☒ In partially reducible or irreducible H.
- ☒ In order of frequency, the ***constricting agent***:
  1. The neck of the sac.
  2. The ext. ing. Ring in children.
  3. Adhesion within the sac.

Contents: small intestine, omentum or both. Large intestine is rare.

C/F:

- gangrene may occur as early as 5 – 6 hrs
- Sudden pain: localized….generalize
- N/V
- Increase in H. size

O/E:

- The H. is tens, tender, irreducible, no expensile cough impulse.
- If strangulation not relieved…….

Strangulated Richter's H.:

- Sac contains apportion of circumference of the small int. (usually in F.H.).
- Clinical features mimic gastroenteritis (delay in diagnosis).
- Normal or frequent bowel motion.
- Constipation is late (paralytic ileus).
- Gangrene of the knuckle of the bowel

Rx. Of strangulated H.:

1. By emergency operation.
2. Vigorous resuscitation:
3. The principles of surgery are the same as in an elective setting.

Results of operation for ing. H.:

Complications

a) Early – pain, heamatoma,
b) Medium – seroma, wound infection
c) Late – chronic pain,
   - ischemic orchitis & testicular atrophy:

Recurrence:

- 0.2 – 15% depending on the technique employed (with mesh <2%).
- 50% of the recurrence will become apparent within two years
- "False recurrence": another type of H.

Femoral H.:

Surgical anatomy:

F. canal:

it is 1.25 cm*1.25cm

Contents: fat, lymphatic vessel & LN of Cloquate

Bounded by:

1. Ant.: ing. Ligament
2. Post.: Astley Cooper (iliopectineal) lig.
3. Lat.: F. vein.
4. Med.: Concave border of lacuner lig.

C/F:

- Less common than inguinal hernia
- Easily missed on examination
- Fifty per cent of cases present as an emergency with very high risk of strangulation
- F : M is 2:1. Multipara > Nullipara

Diagnosis:

- Diagnostic error is common
- The hernia appears below and lateral to the pubic tubercle.
- It may only be 1–2 cm in size and can easily be mistaken for a lymph node.

Investigations

- No specific investigations are required.
- If there is uncertainly then ultrasound or CT should be requested.
- Plain x-ray ……

DDx:

1. An ing. H.
2. Saphena varix:
3. An enlarged F. LN:
4. A psoas abscess:
5. Distended psoas bursa:
6. Rupture of the abductor longus muscle:
7. Lipoma.
8. F. aneurysm.

Rx of F.H.:

By surgery (because the risk of strangulation)…open or laparoscopically, with or without mesh

Sportsman's hernia:

Umbilical hernia in adults:

Conditions which cause stretching and thinning of the midline raphe (linea alba), such as pregnancy, obesity predispose to reopening of the umbilical defect. In adults, the defect in the median raphe is immediately adjacent to (most often above) the true umbilicus. The term paraumbilical hernia is commonly used

Clinical features

- Patients are commonly overweight
- The bulge is typically slightly to one side of the umbilical depression,
- Women are affected more than men.
- Most patients complain of pain due to tissue tension or symptoms of intermittent bowel obstruction.

Treatment

a) Operation should be advised
b) Reduction of weight
c) Surgery may be performed open or laparoscopically.

Epigastric hernia:

- Occur through the linea alba anywhere between xiphoid process & the umb. Usually Midway.
- If it enlarge, it drags a pouch of peritoneal after it.
- The sac either empty or contains a small portion of greater omentum
- More than one H. may present

C/F:

a. Symptomless (discover accidentally).
b. Local pain & tenderness to touch & light clothing.
c. Referred pain (underlying peptic ulcer).
d. Rx: if the H. is symptomatic = operation.

Spigelian H.:

- They arise through a defect in the Spigelian fascia
- Most Spigelian hernias appear below the level of the umbilicus near the edge of the rectus sheath
- M = F , above 50 yrs
- O/E: ….
- Dx. Confirm by CT- scan or U/S.
- Strangulation may occur.
- Rx. By operation. (Surgery can be open or laparoscopic)

Lumbar hernia:

Anatomy:

Inferior lumber triangle
Superior lumber triangle

Primary H. are rare, mostly occure through inf. L. triangle.
Secondary H. are common , secondary to renal operations.
DDx:

1. Lipoma.

2. A cold (tuberculous abscess)
3.Pseudo-hernia

Rx:
- primary = operation (because it increase in size with time)
- Secondary (incisional) = large defect needs fascial flap or prosthetic mesh

Perineal H:
Obturator H.:
Gluteal & Sciatic H:
Traumatic hernia:

Parastomal hernia

- The muscle defect created tends to increase in size over time
- The rate is over 50 per cent.
- Difficult to manage a stoma
- The stoma may be resited
- Open suture and mesh techniques have been described to repair parastomal hernia
- Prophylactic mesh insertion at the time of formation of the stoma.

Burst abdomen (abd. Dehiscence) & Incisional H.

Etiology:

- Surgical factors:
  1. technique of wound closure:
     a. choice of suture material:
     b. method of closure = interrupted suturing
        = one layer closure
        = using short length of suture (golden rule:)
  2. drainage:
  3. factors relating to the incision:
  4. reasons for initial operation:
- Wound factors:
- Patient factors:

Incisional H.(postoperative H.):

- Arise through a defect in the musculofascial layers of the abdominal wall in the region of a postoperative scar.
- 10–50% of laparotomy incisions and 1–5% of laparoscopic port-site incisions
- Mostly in obese pt.
- Start as asymptomatic partial disruption of the deep layers during …..
- There may be several discrete hernias
- Increase steadily in size
- Attacks of partial intestinal obstruction

Rx:
= Palliative, abd. Belt (esp. H. through upper abd. Incision)
= Operation
Principles of surgery
1) The repair should cover the whole length of the previous incision.
2) Approximation of the musculofascial layers should be done with minimal tension

3) Prosthetic mesh should be used to reduce the risk of recurrence.
4) Mesh may be contraindicated in a contaminated field,
5) Appropriate systemic antibiotics should be used.
6) Surgery:

Open: simple apposition …obsolete.
prosthetic mesh: method of choice for all
Laparoscopic mesh technique

Reducing the risk of incisional hernia:

Burst abd. (abd. Dehiscence):

C/F:

- In 1 – 2 % Mostly between 6^{th} – 8^{th} postop. Day.
- A sersanguinous (pink) discharge from the wound
- Patient felt something given a way.
- If skin suture have been removed = …..
- Pain & shock are often absent.

Rx:

- Reassure the patient & cover the w. with sterile towel.
- N/G & IVF.
- Emergency operation (replaced the bowel & resutured the w.)

Divercation of the recti abdominis:

- Principally in elderly multipara pt.
- No risk of strangulation.
- There is gap between the recti.
- Rx by abd. Belt.

UMBILICAL CONDITIONS IN THE ADULT:

Chronic infection:

- patients with poor hygiene.
- in the obese
- when a paraumbilical hernia is present.
- a streptococcus and treated with penicillin

Chronic fistula:

- This may be due to simple, superficial infection
- An infected epidermoid cyst within the umbilicus.
- Due to a fistulous connection to deeper structures.
- A complication of umbilical hernia repair ….
- Vitellointestinal duct.

Patent urachus:

- it open at the apex of the bladder.
- It close temporarily during micturition..
- It reveals itself until maturity (when obst.)
- Rx: of obst. of urinary tract + umbilictomy with excision of the urachus.

Pilonidal sinus: some time encountered & should be excised.

Umb. Calculus:

- Composed of desquamated epithelium.
- Black in color.
- Rx by extraction, to prevent recurrence ….. excision of the umb.

Neoplasm of the umb.:

Benign:

1. Umb. Adenoma or raspberry tumor:
    - Commonly in infants.
    - Due to partially obliterated vetillo-int. duct.
    - Prolapsing of the mucosa-rosberry tumor-(moist, tend to bleed)
    - Rx: if pedunculated ……. Ligation.
      If recure …….. umbilictomy.
2. Endometrioma:

Malignant: secondary carcinoma **(Sister Joseph nodules)** from neoplasm in the stomach, colon, ovary or breast.

Neoplasms of the abdominal wall:

Desmoid tumour

- It is encapsulated fibroma.
- Common in women.
- Reported in familial adenomatous polyposis (FAP).
- Surgical excision with a wide margin is required to prevent recurrence which is a frequent problem.

Fibrosarcoma

- Highly malignant
- Respond poorly to both radio- and chemotherapy.
- Wide excision will often require plastic surgical reconstruction.

Progressive postop. Bact. Synergistic gangrene:

- Rare, commonly after laparotomy for perforated viscous, G.B. operation..
- Due to synergistic action of non-hemolytic streptoc. & staphylloc.
- Area around the wound exhibit sign of cellulites
- septicemia & MOFS.
- Rx: metranidazole & powerful broad spectrum antibiotic.
  surgical debridment of all necrotic tissue.
  hyperbaric oxygen is of benefit.

Cutaneous fistula:

- Chronic intraperitoneal abscesses …….. are the most likely sources.
- CT scanning will locate the internal abscess
- Crohn's disease ……
- Treatment today is usually by CT or ultrasound-guided drainage

Tearing of the inf. Epigastric artery:

- Following bout of cough or sudden blow to the abd. Wall.
- Heamatoma at level of arcuate line.
- Tender lump, bruises of the overlying skin.
- Occur in 3 different groups.
    - elderly women, often thin.
    - athletic muscular men.
    - pregnant women (multipara).
- DDx: appendicular abscess., Twisted ovarian cyst (in females), Spigelian H.
- Rx: usually conservative, if rupture in the perit. Cavity…..operation.

Abdominal compartment syndrome:

- Occur in severe intraabdominal sepsis, ….
- High pressure leads to reduced blood flow and tissue ischaemia …….MOF
- Tension releasing incisions or laparostomy.