جامعة الملك سعود
King Saud University
1957

Abdominal masses and hernias.

Surgery Team
MED 433

MED 433

Objectives :

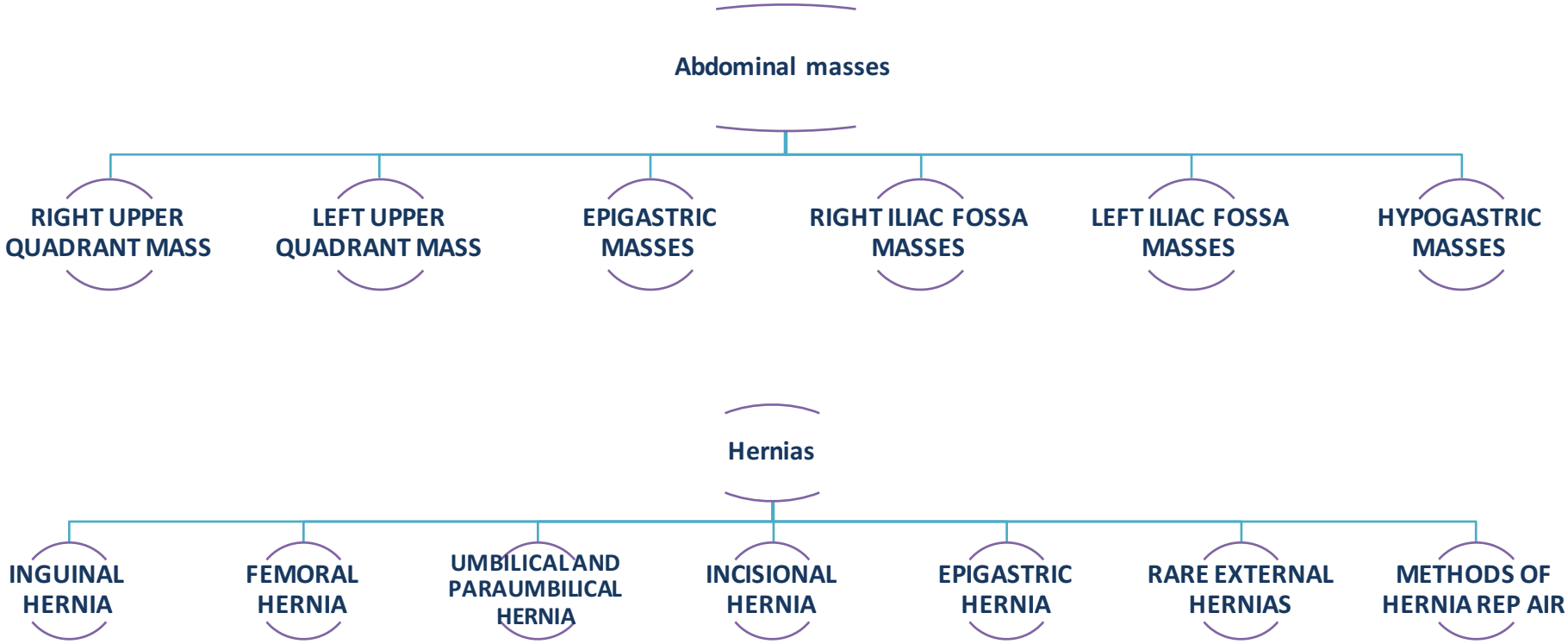
The lecture had no slides

So, this teamwork is from the Raslan's Notebook

Sources : Raslan's Notebook

Color Index : Slides & Raslan's | Textbook | Doctor's Notes | Extra Explanation

Mind Map


Abdominal masses
RIGHT UPPER QUADRANT MASS
LEFT UPPER QUADRANT MASS
EPIGASTRIC MASSES
RIGHT ILIAC FOSSA MASSES
LEFT ILIAC FOSSA MASSES
HYPOGASTRIC MASSES
Hernias
INGUINAL HERNIA
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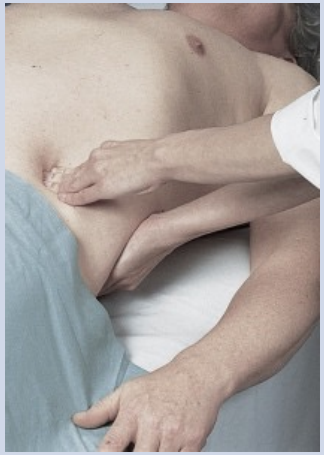
UMBILICAL AND PARAUMBILICAL HERNIA
INCISIONAL HERNIA
EPIGASTRIC HERNIA
RARE EXTERNAL HERNIAS
METHODS OF HERNIA REP AIR

RIGHT UPPER QUADRANT MASS

	HEPATIC MASSES:	GALLBLADDER MASSES
DDx	• Congestive heart failure • Macronodular cirrhosis • Hepatitis • Hepatoma or secondary carcinoma • Hydatid cyst • Liver abscess • Riedel's lobe: an extension of the right lobe down below the costal margin along the anterior axillary line	• Mucocele: Containing Mucus • Empyema: Containing pus • Courvoisier law: If the gallbladder is palpable and the patient is jaundiced, the obstruction of the common bile duct causing the jaundice is unlikely to be a stone because the previous inflammation will have made the gallbladder thick and non-distensible
Physical Sings	• Can't go above it, and moves with respiration • Dull to percussion up to the level of the 8th rib in the midaxillary line • Edge: Sharp or rounded • Surface: Smooth or irregular	• Moves with respiration • Not dull because it is covered by the colon • It can be balloted i.e. felt bimanually

LEFT UPPER QUADRANT MASS

	SPLEEN	ENLARGED LEFT KIDNEY
DDx	• Typhoid • Tuberculosis • Syphilis • Glandular fever • Malaria • Ka lazar • Myeloid and lymphatic leukemia • Spherocytosis • Thrombocytopenia purpura • Portal hypertension • True solitary cyst • Hydatid cyst • Lymphoma	
Physical Sings	• Appears from below the costal margin and enlarges towards the umbilicus • Firm, smooth and has a defined notch on its upper edge • Cannot get above it, and dull on percussion	

EPIGASTRIC MASSES

Cause	CARCINOMA OF THE STOMACH	PANCREATIC PSEUDOCUST
DDx	• Abdominal pain/mass • Indigestion • Loss of weight and appetite	• Collection of pancreatic secretion, caused by pancreatitis, on the surface of the pancreas or in part of the whole lesser sac. • There is history of acute pancreatitis followed by epigastric fullness, pain, nausea and sometimes vomiting.
Physical Sings	• When palpable it is hard and irregular and disappears below the costal margin i.e. cannot get above it • Moves with respiration	• Firm mass in the epigastric region with indistinct lower edge. • The upper limit is not palpable. • Usually resonant because it is covered by the stomach • Moves very slightly with respiration

RIGHT ILIAC FOSSA MASSES

	APPENDICULAR MASS	APPENDICULAR ABSCESS	TUBERCULOSIS
DDx	• Central abdominal pain shifting to the right iliac fossa associated with nausea, vomiting and loss of appetite	• As for appendicitis with additional symptoms of an abscess such as fever, rigors, sweating and increased local pain	• Inflamed ileocecal lymph nodes, parts of and the terminal ileum and the cecum • Vague chronic central pain for months • General ill health and weight loss • The pain eventually becomes intense and settles in the iliac fossa
Physical Sings	• Tender indistinct mass, dull to percussion and fixed to the right iliac fossa posteriorly.	• A tender mass which in its late stages may fluctuate and be associated with edema and reddening of the overlying skin	• The mass is firm, distinct and hard • It is not tender and does not resolve with observation

Continued: RIGHT ILIAC FOSSA MASSES

	CHRON'S DISEASE	PSOAS ABSCESS	OTHERS
DDx	• Recurrent episodes of pain in the right iliac fossa, malaise, loss of weight and episodes of diarrhea and melena.	• General ill feeling for months, night sweats and weight loss	• Cecal carcinoma • Actinomycosis • Ruptured epigastric artery • Iliac lymphadenopathy • Iliac artery aneurysm
Physical Sings	• The elongated terminal ileum forms an elongated sausage-shaped mass which is rubbery and tender.	• Soft, tender, dull and compressible • There may be fullness in the lumbar region • The swelling extends below the groin and it may be possible to empty the swelling.	

LEFT ILIAC FOSSA MASSES

	DIVERTICULITIS	CARCINOMA OF THE SIGMOID COLON	OTHERS
DDx	• Recurrent lower abdominal pain and chronic constipation for years • The acute episodes starts suddenly with severe pain, nausea, loss of appetite and constipation	• General cachexia • Lower abdominal pain associated with rectal bleeding • Change in bowel habits and sometimes intestinal obstruction	• Chron's disease • Psoas abscess (Same masses of the right iliac fossa)
Physical Sings	• Tender indistinct mass, with sings of general or local peritonitis	• Hard mass, non tender • May be mobile or fixed • The colon above the mass may be distended with indentable feces	

HYPOGASTRIC MASSES

	URINARY BLADDER	FIBROIDS	PREGNANT UTERUS
DDx	• Acute retention: the bladder is full and tender. • Chronic retention: Painless • History of prostatism	• They cause irregular and heavy periods, disturbed micturation, lower abdominal pain and backache	• The uterus enlarges to the xiphisternum by the 36th week of pregnancy, at this stage the fetus is palpable • A pregnant uterus is smooth, firm and dull
Physical Sings	• Arises out of the pelvis and so it has no lower edge • Not mobile and dull to percussion • Direct pressure often produces a desire to micturate.	• Arises out of the pelvis and so the lower edge is not palpable • Firm or hard, moves slightly in transverse direction and dull on percussion	

ABDOMINAL HERNIA

- **DEFINITION:**
- An abnormal protrusion of intra-abdominal contents through a defect in the abdominal wall.
- Protrusion of a viscus or part of it through an opening in the wall of its containing cavity.
- Abdominal hernias have a peritoneal sac, the neck of which is often unyielding and constitutes a potential source of compression of the hernial contents
- **ETIOLOGY**
- **CONGENITAL DEFECTS:**
- Indirect inguinal hernia, umbilical hernia
- Patent processes vaginalis: almost always causes indirect inguinal hernia
- **ACQUIRED**
- Loss of tissue strength and elasticity, due to aging or repetitive stress:
  - ✓ hiatal hernia
- Operative Trauma, in which normal tissue strength is altered surgically:
  - ✓ incisional hernia
- Increased intra-abdominal pressure:
  - ✓ Heavy lifting
  - ✓ Coughing, asthma, and COPD
  - ✓ Straining at defecation or urination (e.g. Benign prostatic hypertrophy, constipation, colon/rectal cancer)
  - ✓ Multiparity (Multiple pregnancies)
  - ✓ Ascites and abdominal distension o Obesity

- **COMPOSITION:**
  - ✓ The sac: diverticulum of peritoneum consisting of a mouth, neck, body and fundus
  - ✓ The body: varies in size and is not necessarily occupied
  - ✓ The coverings: derived from the layers of the abdominal wall
  - ✓ The contents: may be omentum, bowel, ovary, bladder... Etc
- **COMMON CLINICAL PRESENTATION OF ABDOMINAL WALL HERNIA:**
  - ✓ Swelling
  - ✓ Reduction
  - ✓ Site
- **ABDOMINAL WALL SITES:**
  - ✓ Mid-line
  - ✓ Umbilical area
  - ✓ Inguinal region
  - ✓ Femoral canal
  - ✓ Para-median lineObturator
  - ✓ Lumber area
  - ✓ Obturator foramen
  - ✓ Incisional or scar line

CLASSIFICATION

REDUCIBLE	The contents of the sac are reduced spontaneously or manually	
IRREDUCIBLE The contents remain constantly outside	INCARCERATED	• Trapped or imprisoned • Initially it is reducible, then it becomes irreducible => cannot be reduced (either spontaneously or manually). • Does not denote obstruction • **Blood supply remains intact** • Nausea, vomiting, and symptoms of bowel obstruction (possible).
	OBSTRUCTED	• Contains obstructed intestine • Small intestine obstruction presents with pallor and vomiting • Large intestine obstruction presents with distention and constipation • **Blood supply remains intact**
	STRANGULATED	• A surgical emergency • Likely in hernias with narrow necks • Blood supply is seriously impaired rendering the contents ischemic ⓘ • Gangrene may occur within 5-6 hours after the inset of symptoms • Symptoms of an incarcerated hernia present combined with a toxic appearance. • Strangulation is probable if pain and tenderness of an incarcerated hernia • persist after reduction. • The femoral hernia is the most liable to strangulation due to its narrow neck and its rigid surroundings ⓘ • The constricting agents that compress the blood supply are: (In order of frequency) ✓ The Neck ✓ External ring in children ✓ Adhesions with the sac (rare) Symptoms ✓ Sudden pain over the hernia o Nausea and vomiting ✓ Signs ✓ Tense and tender ✓ Absent cough impulse (non expansile)
	INFLAMED	Rare , due to inflammation on the sac contents, e.g. acute appendicitis or Salpingitis

SURGICAL ANATOMY (Just for your information)

- Superficial ring: triangular aperture in the external oblique aponeurosis 1.25 cm above the pubic tubercle
- Deep ring: U-shaped condensation of the transversalis fascia 1.25 cm above the inguinal ligament

• The inguinal canal:

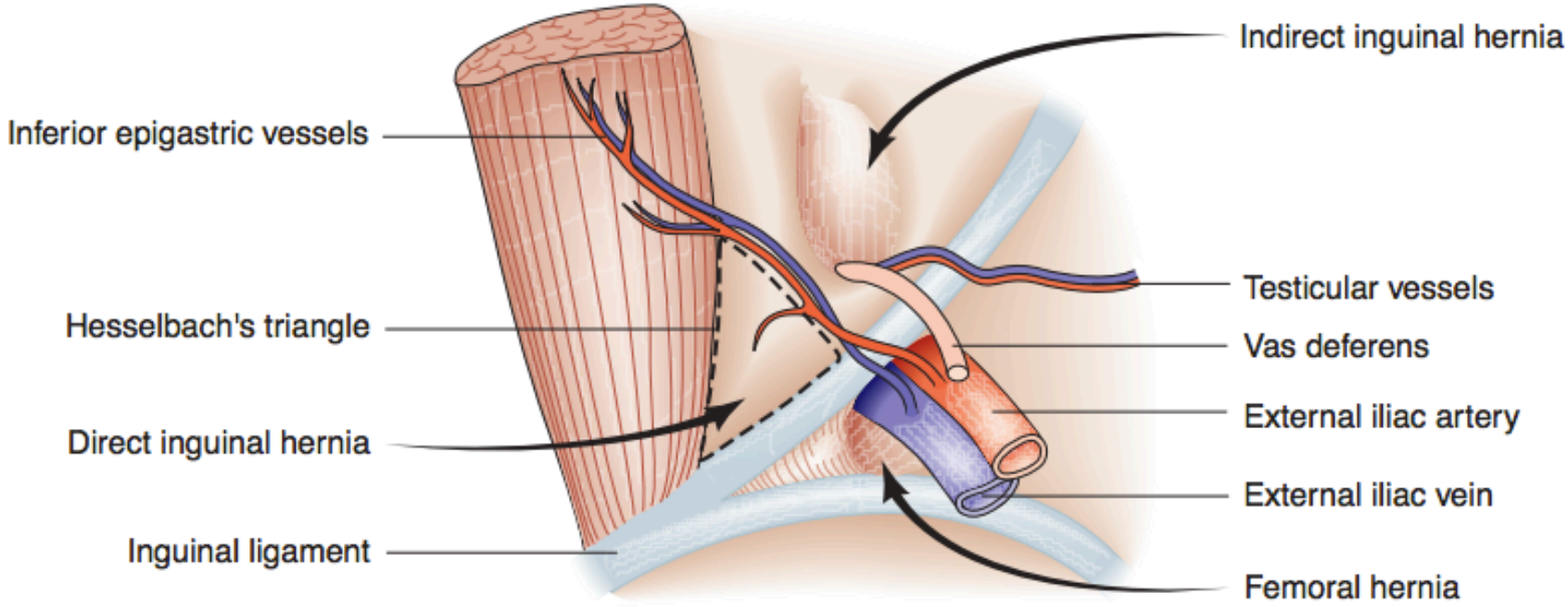
✓In infants the two triangular aperture are superimposed and the canal is slightly oblique
✓In adults it is 3.75-4 cm long
✓In females, it contains the round ligament of the uterus Contains the spermatic cord and round ligament of the uterus

•In males, it contains

✓The ilioingunal nerve
✓The spermatic cord and its contents, which are
- ○Genital branch of the genitofemoral nerve
- ○Testicular artery
- ○Pampiniform plexus of veins
- ○Cremasteric muscle fibers
- ○Cremasteric vessels
- ○Vas deferens

•Boundaries of the inguinal canal

✓Anteriorly: external oblique aponeurosis
✓Posteriorly: facia transversalis and conjoined tendon
✓Superiorly: internal oblique aponeurosis
✓Inferiorly: inguinal ligament



INGUINAL HERNIA

The most common form of hernia in both sexes
Subdivided into direct and indirect
in adult males it is most commonly indirect

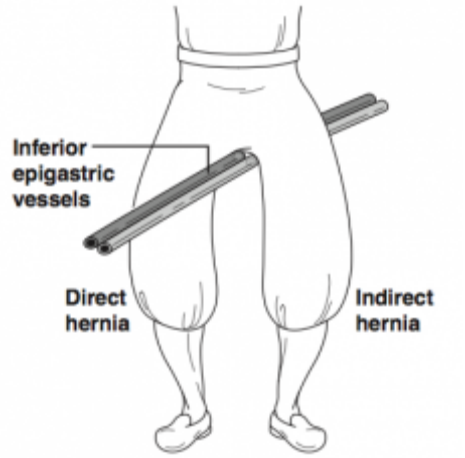
INDIRECT (OBLIQUE) INGUINAL HERNIA

- Most common of all forms at all age groups
- The male: female ratio is 20:1
- Travels down the inguinal canal on the outer side of the spermatic cord
- Its neck lies lateral to the inferior epigastric vessels
- Can be due to a congenital lesion i.e patent processus vaginalis
- Strangulation is common, but less than in femoral hernia
- Seen in young patients
- In adult males
  - ✓ Mostly on the right side because of delayed decent of the right testicle
  - ✓ 12% bilateral

DIRECT INGUINAL HERNIA

- Comes out forward via the posterior wall of the inguinal canal at Hasselbach's (i.e. inguinal) triangle due to a defect or weakness of the facia transversalis
- **Always acquired, never congenital**
- It has a wide neck and therefore there is no hazard of strangulation
- The neck is medial to the inferior epigastric vessels
- Does not attain a large size

- Pantaloon (Saddlebag) hernia is the simultaneous occurrence of a direct and an indirect hernia. It causes two bulges (medial and lateral) that straddle the inferior epigastric vessels
- Hasselbach's triangle is bounded by: ⓘ
  - ✓ Inguinal ligament inferiorly
  - ✓ Inferior epigastric artery laterally
  - ✓ Lateral border of rectus muscle medially



INGUINAL HERNIA

Clinical presentation	Groin pain referred to the testicle Cough impulse (Expensile) A large hernia causes dragging pain Presents as a swelling or fullness at the hernia site Aching sensation (radiates into the area of the hernia) No true pain or tenderness upon examination Enlarges with increasing intra-abdominal pressure and/or standing
Differential diagnosis	• Hydrocele • Encysted hydrocele of the cord • Varicocele • Epididymoorchitis • Testicular torsion Undescended testis • Ectopic testis • Testicular tumor • Pseudohernia • Femoral artery aneurysm • Saphena varix (dilation of the saphenous vein at its junction with the femoral vein in the groin) • Spermatic cord lipoma • Inguinal lymphadenopathy Psoas abscess • Cutaneous lesions, e.g. sebaceous cyst, skin tumor.
Treatment	Surgical repair: open vs laproscopic
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 peritoneum Oblique reconstruction of the inguinal canal with an anterior and posterior wall and an internal and external ring

FEMORAL HERNIA

- Commonly affecting females ⓘ
- Most liable to strangulation ⓘ
- The hernia descends vertically to the saphenous opening
- Surgical anatomy

Boundaries of the femoral sheath

- ✓ Anteriorly: inguinal ligament
- ✓ Posteriorly: Iliopectineal ligament, pubic bone and pectineus muscle fascia
- ✓ Medially: lacunar ligament
- ✓ Laterally: femoral nerve

The femoral canal

The most medial compartment of the femoral sheath

Extends from the femoral ring to the saphenous opening

1.25 cm long and 1.25 cm wide at the base

Contains fat, lymphatic vessels and the lymph node of Cloquet

Differential diagnosis o femoral hernia

- ✓ Inguinal hernias are located above and medial to the
- ✓ inguinal ligament and pubic tubercle, whereas femoral hernias are located below and lateral to the inguinal ligament and pubic tubercle ⓘ
- ✓ Saphena varix
- ✓ Femoral lymphadenopathy
- ✓ Femoral artery aneurysm o Psoas abscess

Complications:

Strangulation due to a narrow unyielding femoral ring

Treatment: Surgical repair

UMBILICAL AND PARAUMBILICAL HERNIA

- Umbilical hernia is seen in infants and children
- The female: male ratio is 20:1
- Paraumbilical hernia (PUH) affects adults.
- The defect is either supra or infraumbilical through the linea alba
- When enlarged, it becomes rounded or oval shaped
- May contain omentum, small intestine or transverse colon

Etiology

- ✓ Obesity
- ✓ Flabbiness of the abdominal muscles
- ✓ Multiparity

Clinical Features

- ✓ Irreducibility in PUH is due to omental adhesions within the sac
- Pain may be colicky due to parital or complete intestinal obstruction

Treatment: Open (Mayo's repair) or laproscopic repair (if the defect is more than 4 cm)

EPIGASTRIC HERNIA

- Due to a defect in the linea alba between the xiphoid process and the umbilicus
- Starts as a protrusion of the extraperitoneal 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

Clinical features

- ✓ May be asymptomatic or painful, either locally or simulates peptic ulcer pain

Treatment: Mayo's repair

INCISIONAL HERNIA

•Occurs in surgical scars and it has no actual neck (or its neck is wide), so it does not lead to complications

Causes

- Mechanical factors (increase in intraabdominal pressure postoperatively)
  - ✓ Prolonged ileus
  - ✓ Chronic cough
  - ✓ Repeated vomiting
  - ✓ Lifting heavy objects in the immediate postoperative period
- Patient factors
  - ✓ Infection
  - ✓ Malnutrition
  - ✓ Diabetes and chronic illness
  - ✓ Steroid treatment
- Technical factors
  - ✓ Too much tension on closure, or closure with absorbable sutures
  - ✓ Ischemia

✓ Clinical features: swelling at the scar associated sometimes with pain

✓ Treatment: Open or laparoscopic repair

OBTURATOR HERNIA

- The 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
- Treated by surgery

SPIGELIAN HERNIA

- Occurs at the space between the semilunar line and the lateral adge of the rectus muscle (Inferior to the arcuate line)
- The posterior recuts sheath is lacking which contributes to the inherent weakness in this ares
- Preoperative diagnosis is correct in only 50% of patients
- US and CT scan are helpful to confirm the diagnosis
- Approximation of the tissues adjacent to the defect with interrupted sutures is curative.
- If the defect is large, it can be covered with mesh

LUMBAR HERNIAS

- Broad bulging hernias
- Usually don't get incarcerated
- Petit's hernia

Occurs in the inferior lumbar triangle which has the following boundaries

- ✓ Laterally: external oblique muscle
- ✓ Medially: latissimus dorsi
- ✓ Inferiorly: iliac crest

- Grynfeltt's hernia Less common
- Occurs in the superior lumbar triangle which is bounded:
- ✓ Superiorly: inferior margin of the 12th rib
- ✓ Medially: sacrospinalis muscle
- ✓ Laterally: internal oblique muscle

•SLIDING HERNIA

•It is a hernia in which part of the posterior wall of the sac is formed by a viscus (intraabdominal organ), e.g. sigmoid colon, cecum, ovary or portion of the bladder

• The wall of the hernial sac, rather than being formed completely by peritoneum, is in part formed by a retroperitoneal structure

• Bladder slides posterio-medially (PM) and the colon posterio-lateral (PL)

RARE EXTERNAL HERNIAS

LUMBAR HERNIAS

- Broad bulging hernias
- Usually don't get incarcerated
- Petit's hernia

Occurs in the inferior lumbar triangle which has the following boundaries

- ✓ Laterally: external oblique muscle
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OBTURATOR HERNIA

- The 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
- Treated by surgery

Other Hernias

1.Richter's hernia

A. It is a hernia at ant site in which only part of the circumference of the
B. bowel (usually jejunum) is involved
C. Only one side of the bowel wall is trapped in the hernia, rather than
D. the entire loop of bowel.
E. Does not usually obstruct but can strangulate or become
F. incarcerated
G. This is especially dangerous because the incarcerated portion of
H. bowel can necrose and perforate in the absence of obstructive symptoms.

2.Littre's Hernia

A. Any groin hernia that contains a Meckel's Diverticulum,
B. Rare.
C. Usually incarcerated or strangulated
D. If the diverticulum is symptomatic or strangulated, it is mandatory to excise it at the time of repair.

3. Divarication (Separation) of the recti abdominis (Diastasis recti)

A. Only a facial weakness, not a true hernia
B. Seen more in elderly multiparous patients
C. A gap in the linea alba (medial margin of the recti) seen on straining through which the abdominal contents bulge.
D. No treatment is necessary

4. Perineal Hernias

Occur in the pelvic floor usually after surgical procedures such as an abdominoperineal resection.

5. Peri- or para-stomal Hernia

Hernia adjacent to an ostomy "e.g. colostomy".

6. Amyand's Hernia

Hernia sac containing a ruptured appendix.

7. Hesselbach's Hernia

Hernia under the inguinal ligament lateral to femoral vessels.

8. Cooper's Hernia

Hernia through the femoral canal & tracking into the scrotum or labia majus.

METHODS OF HERNIA REP AIR

OPEN TECHNIQUE (HERNIOTOMY AND REPAIR)

- Bassini repair
- Draning
- Shouldice
- McVay (Cooper's ligament repair)
- Mesh (i.e. hernioplasty)

LAPAROSCOPIC REPAIT

- **Two types**

1. TAPP (transabdominalpreperitoneal)repair
2. TEP (totallyextraperitoneal)repair

- Indicated in only **two** conditions:
  - **Bilateral hernia**
  - **Recurrent hernia**

HISTORY

LUMP

- duration, first symptoms, associated symptoms, progression, persistent ,other sites ,cause
- Does it reduce on lying down?
- Has there been an episode of pain in the swelling?
- Has there been an episode of abdominal pain?
- Does the patient have any febrile symptoms?

HISTORY OF RECTAL BLEEDING

- Causes of increase of intrabdominal pressure.
- Previous surgeries?

PHYSICAL EXAM

- Examine the patient in the **standing and supine positions.**
- Examine the patient from the front

Inspection

- lump: site shape
- scrotum: does it extend to the scrotum

Palpation

- Ask the patient about pain before you palpate
- Can you go above it
- Can you palpate the testis
- If it is a hernia type
- Define pubic tubercle

Feel from the sides

- Aim to examine the lump.
- Tenderness, temperature, size ,shape, site, composition
- Reducible. Ask the pts if you couldn't
- Controlled when you pressure over deep inguinal ring.
- Expensile cough impulse.
- Direction of reappearance.

Investigations

CBC

Leukocytosis may occur with strangulation.

Assess the hydration status of the patient with nausea and vomiting.

Urinalysis: *narrowing the differential diagnosis of genitourinary causes of groin pain*

Imaging studies:

maging studies are not required in the normal workup of a hernia.

Ultrasonography.(obese)

If an incarcerated or strangulated hernia is suspected:

Flat and upright abdominal films to diagnose a small bowel obstruction.

MCQs

From 432 team..

1. Which of the following is true regarding femoral hernia?
   - A. Commonly seen in children.
   - B. It is the commonest hernia seen in females
   - C. usually presents with inguinal swelling
   - D. it is liable for complications
   - E. usually treated conservatively

2. The most common cause of an enlarged lymph node in the femoral triangle is:
   - A. Tuberculosis lymphadenitis
   - B. Brucella
   - C. Neoplastic
   - D. Nonspecific lymphdenitis
   - E. Sarcoidosis

3. The first symptoms of strangulated Inguinal Hernia is:
   - A. Vomiting
   - B. Fever
   - C. Septic shock
   - D. Constipation
   - E. Pain

4. Inguinal Hernia:
   - A. Is more common in girls.
   - B. Hernioraphy is the treatment of choice.
   - C. Ultrasound is required to diagnose it.
   - D. Hernia sac may contain ovary, appendix, or omentum.
   - E. Direct inguinal hernia is more common than indirect.

5. Patent processus vaginalis results in:
   - A. indirect inguinal hernia
   - B. direct inguinal hernia
   - C. femoral hernia
   - D. umbilical hernia

6. The following are important steps in the management of strangulated hernia except:
   - A. Nasogastric tube
   - B. Antibiotics
   - C. Conservative treatment till obstruction is relieved
   - D. Intravenous fluids
   - E. Consent for possible bowel resection

7. All of the followings are external hernias except:
   - A. Obturator hernia
   - B. Hiatal hernia
   - C. Femoral hernia
   - D. Lumbar hernia

8. The differential diagnosis of an inguinal swelling could include all of the followings except:
   - A. Lipoma of the cord
   - B. Indirect inguinal hernia
   - C. Encysted hydrocele
   - D. Undescended testis
   - E. Varicocele

9. A 41 y/o woman is a known case of femoral hernia and was scheduled to be operated later. She presented in the ER with severe pain over the hernia and fever. On examination, the hernia was tense and tender, and the cough impulse was negative. The diagnosis is:
   - A. Inflamed hernia
   - B. Strangulated hernia
   - C. Obstructed hernia
   - D. Incarcerated hernia

10. Boundaries of Hesselbach's triangle include all the followings EXCEPT:
   - A. Lateral border of rectus muscle
   - B. Inferior epigastric artery
   - C. External iliac artery
   - D. Inguinal ligament

11. Which one of the following clinical future helps to differentiate between inguinal hernia and hydrocele in children?
   - A. Reducibility
   - B. Scrotal swelling
   - C. Tenderness
   - D. Transillumination

Answer Key

1:D 2:D 3:E 4:D 5:A 6:C
7:B 8:E 9:B 10:C 11:A

Thank You..

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