432 Surgery Team

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Abdominal Masses and Hernias

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42 Teams

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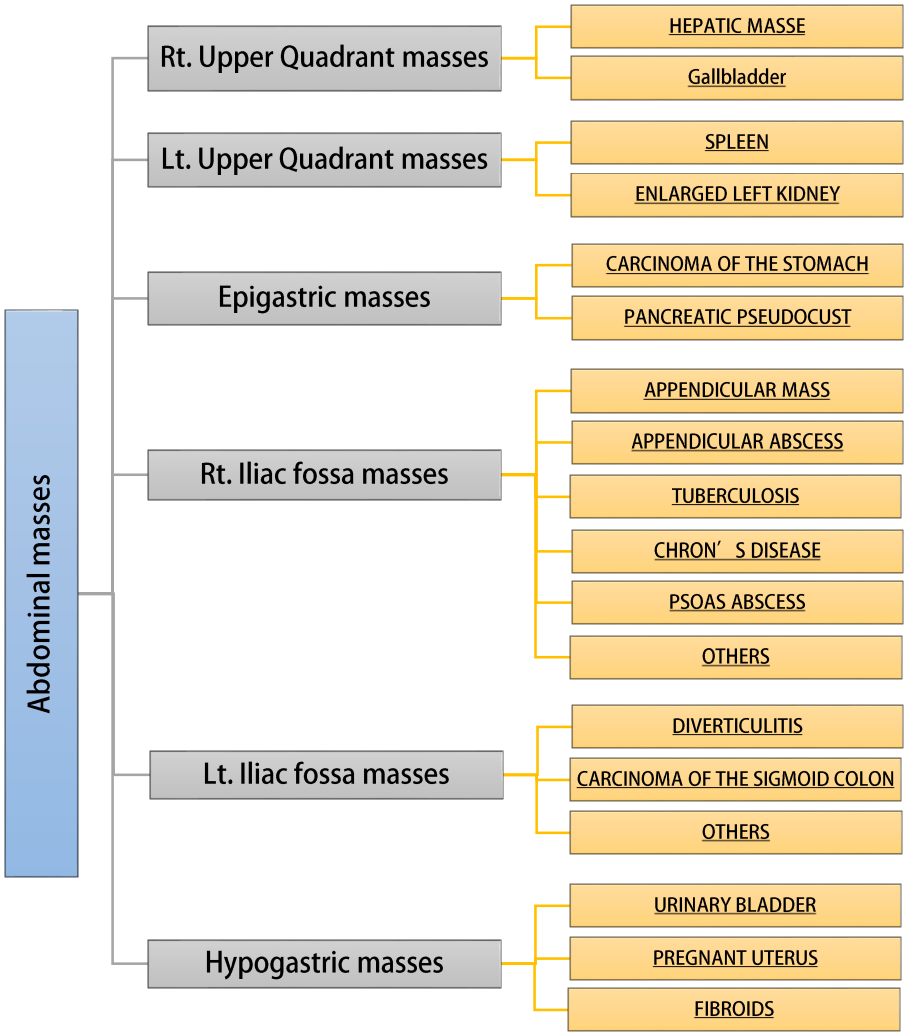
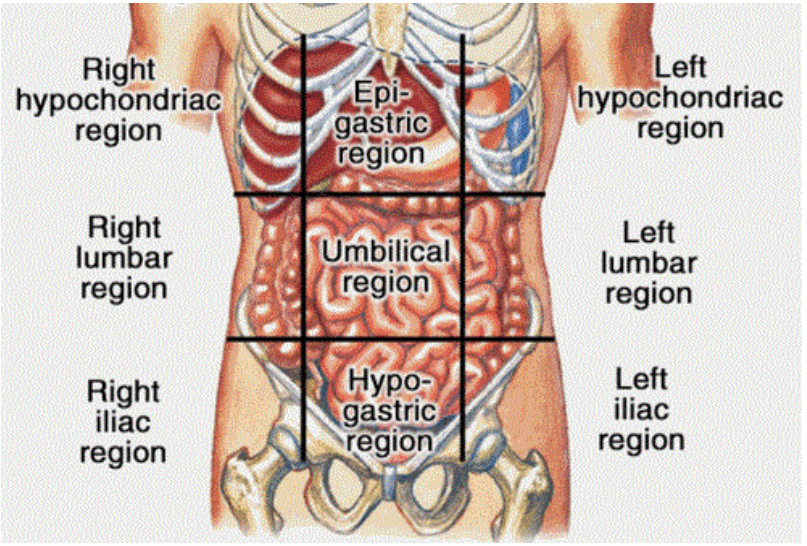
References of this lecture *(Texts are colored accordingly)*	**Your Manual To Surgery 351**
	Current Diagnosis and Treatment Surgery: 13th edition *"Doctor's handout"*
	Step-up to Surgery: 2nd edition





Abdominal Masses

Region	DDx	Physical Signs
RIGHT UPPER QUADRANT MASS		
HEPATIC MASSE	○ 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 marginalong the anterior axillary line	○ 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
GALLBLADDER MASSES	○ 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.	○ Moves with respiration ○ Not dull because it is covered by the colon ○ It can be balloted i.e. felt bimanually
LEFT UPPER QUADRANT MASSES		
SPLEEN	○ Typhoid ○ Tuberculosis ○ Syphilis ○ Glandular fever ○ Malaria ○ Ka lazar ○ Myeloid and lymphatic leukemia ○ Spherocytosis ○ Thrombocytopenia purpura ○ Portal hypertension ○ True solitary cyst ○ Hydatid cyst	○ 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.

Region	DDx	Physical Signs
ENLARGED LEFT KIDNEY	----	----
EPIGASTRIC MASSES		
CARCINOMA OF THE STOMACH	○ Abdominal pain/mass ○ Indigestion ○ Loss of weight and appetite	○ When palpable it is hard and irregular and disappears below the costal margin i.e. cannot go above it ○ Moves with respiration
PANCREATIC PSEUDOCUST	○ 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	○ 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	Central abdominal pain shifting to the right iliac fossa associated with nausea, vomiting and loss of appetite.	○ Tender indistinct mass, dull to percussion and fixed to the right iliac fossa posteriorly.
APPENDICULAR ABSCESS	As for appendicitis with additional symptoms of an abscess such as fever, rigors, sweating and increased local pain.	○ A tender mass which in its late stages may fluctuate and be associated with edema and reddening of the overlying skin.
TUBERCULOSIS	○ 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	○ The mass is firm, distinct and hard. ○ It is not tender and does not resolve with observation.

Region	DDx	Physical Signs
CHRON´S DISEASE	Recurrent episodes of pain in the right iliac fossa, malaise, loss of wight and episodes of diarrhea and melena	○ The elongated terminal ileum forms an elongated sausage shaped mass which is rubbery and tender
PSOAS ABSCESS	General ill feeling for months, night sweats and weight loss.	○ 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.
OTHERS	○ Cecal carcinoma ○ Actinomycosis ○ Ruptured epigastric artery ○ Iliac lymphadenopathy ○ Iliac artery aneurysm	----
LEFT ILIAC FOSSA MASSES		
DIVERTICULITIS	○ Recurrent lower abdominal pain and chronic constipation for years. ○ The acute episodes start suddenly with severe pain, nausea, loss of appetite and constipation.	○ Tender indistinct mass, with sings of general or local peritonitis.
CARCINOMA OF THE SIGMOID COLON	○ General cachexia. ○ Lower abdominal pain associated with rectal bleeding. ○ Change in bowel habits and sometimes intestinal obstruction.	○ Hard mass, non tender. ○ May be mobile or fixed. ○ The colon above the mass may be distended with indentable feces.
OTHERS	○ Chron´s disease. ○ Psoas abscess. ○ Same masses of the right iliac fossa.	----

Region	DDx	Physical Signs
HYPOGASTRIC MASSES		
URINARY BLADDER	○ Acute retention: the bladder is full and tender. ○ Chronic retention: Painless. ○ History of prostatism.	○ 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.
PREGNANT UTERUS	○ 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.	----
FIBROIDS	○ They cause irregular and heavy periods, disturbed micturation, lower abdominal pain and backache.	○ 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.

Let's review some Anatomy!

- 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 and 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.

- The femoral canal:
  - Femoral sheath:
    - Anteriorly: inguinal ligament.
    - Posteriorly: Iliopectineal ligament, pubic bone and pectineus muscle fascia.
    - Medially: lacunar ligament "Gimbernat".
    - Laterally: femoral nerve.

  - 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.

- Hasselbach' s triangle:
  - Inferiorly: Inguinal ligament.
  - Medially: Lateral border of rectus muscle.
  - Laterally: Inferior epigastric artery.

Abdominal Hernias

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.

Etiology:

- CONGENITAL DEFECTS:
  - Indirect inguinal hernia, umbilical hernia.
  - Patent processus 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 and Obesity.
    - 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.

COMPOSITION:

- The sac: diverticulum of peritoneum consisting of a mouth, neck, body and fundus.
- The body: varies in sice snd 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:

- Swelling.
- Reduction.
- Site.

ABDOMINAL WALL SITES:

- Mid-line.
- Umbilical area.
- Inguinal region.
- Femoral canal.
- Para-median line.
- Lumber area.
- Obturator foramen.
- Incisional or scar line.

CLASSIFICATION:

1- REDUCIBLE		• The contents of the sac are reduced spontaneously or manually.
2- 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.
		  ○ 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.

Types of Hernias:

Hernias			Definition	Causes
GROIN	INGUINAL	Indirect	Hernia lateral to Hesselbach triangle, traveling through the inguinal canal.	Congenital lesion i.e patent processus vaginalis.
		Direct	Hernia within Hesselbach triangle, directly through abdominal wall w/o traveling through the inguinal canal.	Defect or weakness of the facia transversalis (always acquired, never congenital).
	FEMORAL		Hernia under inguinal ligament, medial to the femoral vessels. It descends vertically to the saphenous opening (through the femoral canal).	
	SLIDING		An indirect inguinal hernia in which the wall of a viscus forms a portion of the wall of the hernia sac.	Variable degree of posterior fixation of the large bowel or other sliding components (eg, bladder, ovary) and their proximity to the internal inguinal ring.
OTHERS	UMBILICAL and PARA UMBILICAL		Improper healing of umbilical scar, leaving a fascial defect covered by skin.	○ UH: A gradual yielding of the cicatricial tissue closing the ring. ○ PUH: either supra or infraumbilical through the linea alba.
	EPIGASTRIC		Defect in linea alba between the xiphoid process and the umbilicus through one of the foramina of egress of the small paramidline nerves and vessels or through an area of congenital weakness.	

Hernias		Definition	Causes
	INCISIONAL (VENTRAL)	Occurs through a previously made incision in the abdominal wall, i.e. the scar left from a previous surgical operation. (The British Hernia Centre)	1. Poor surgical technique. (absorbable Sutures, tension on closure and Ischemia) 2. Postoperative wound infection. 3. Age. 4. General debility "e.g. diabetes and steroid treatment" and compromised nutrition. 5. Obesity. 6. Postoperative pulmonary complications and smoking. 7. Placement of drains or stomas in the primary operative wound. 8. Intraoperative blood loss greater than 1000 m. 9. Mechanical factors (increase in intraabdominal pressure postoperatively): Prolonged ilius - Chronic cough - Repeated vomiting - Lifting heavy objects.

Inguinal Hernias: "The most common form of hernia in both sexes"

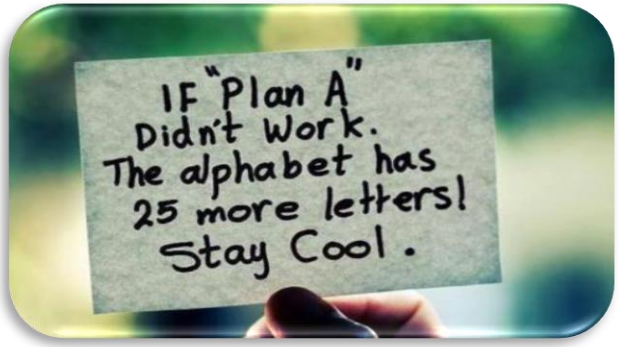
Hernias	Indirect INGUINAL	Direct INGUINAL
Strangulation	Strangulation is common, but less than in femoral hernia.	In general, direct hernias produce fewer symptoms than indirect inguinal hernias and are less likely to become incarcerated or strangulated "wide neck".
Neck	Lateral to the inferior epigastric vessels.	Medial to the inferior epigastric vessels.
	○ Most common of all forms at all age groups ○ The male: female ratio is 20:1	-----

Hernias	Indirect INGUINAL	Direct INGUINAL
Clinical features	Symptoms: ○ Groin pain referred to the testicle (particularly with indirect). ○ Cough impulse (Expensile). ○ A large hernia causes dragging pain. ○ Presents as a swelling or fullness at the hernia site. ○ As the hernia enlarges, it produces a sense of discomfort or 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. Signs: ○ A mass that may and may not be reduced. ○ The patient should be examined both standing and supine and also with coughing and straining. ○ Tissue must be felt protruding into the inguinal canal during coughing in order for a hernia to be diagnosed. ○ A hernia that descends into the scrotum is almost certainly indirect. ○ On inspection with the patient erect and straining, a direct hernia more commonly appears as a symmetric, circular swelling at the external ring; the swelling disappears when the patient lies down. An indirect hernia appears as an elliptic swelling that may not reduce easily. ○ On palpation, the posterior wall of the inguinal canal is firm and resistant in an indirect hernia but relaxed or absent in a direct hernia. If the patient is asked to cough or strain while the examining finger is directed laterally and upward into the inguinal canal, a direct hernia protrudes against the side of the finger, whereas an indirect hernia is felt at the tip of the finger. ○ The presence of an impulse in the mass with coughing, bowel sounds in the mass, and failure to transilluminate are features that indicate that an irreducible mass in the groin is a hernia.	
DDx	➢ Herniography, in which x-rays are obtained after intraperitoneal injection of contrast medium, may aid in the diagnosis in cases of groin pain when no hernia can be felt even after multiple maneuvers to increase intra-abdominal pressure. ➢ DDx: Hydrocele - Encysted hydrocele of the cord — Varicocele — Epididymoorchitis - Testicular torsion - Undescended testis - Ectopic testis - Testicular tumor - Pseudohernia - Femoral artery aneurysm - Saphenous varix (dilation of the saphenous vein at its junction with the femoral vein in the groin) - Spermatic cord lipoma - Inguinal lymphadenopathy - Psoas abscess - Cutaneous	

Hernias	Indirect INGUINAL	Direct INGUINAL
	lesions, e.g. sebaceous cyst, skin tumor - Residual hematoma following trauma or spontaneous hemorrhage in patients taking anticoagulants.	
Treatment	○ Surgical repair: open vs laproscopic ○ In adults, we do *herniotomy* and *herniorrhaphy* (repair) because the problem is due to weakness. In children, we do *herniotomy* only; because the problem is congenital, not muscle weakness. ○ Inguinal hernias should always be repaired unless there are specific contraindications to avoid the risks of incarceration, obstruction, and strangulation. ○ Although most direct hernias do not carry as high a risk of incarceration as indirect hernias, the difficulty in reliably differentiating them from indirect hernias makes the repair of all symptomatic inguinal hernias advisable. Direct hernias of the funicular type, which are particularly likely to incarcerate, should always be repaired.	
Prognosis	○ Because tissue is often more attenuated in direct hernias, recurrence rates are higher in indirect hernias. ○ The point of recurrence is most often just lateral to the pubic tubercle	

Note:

Pantaloon (Saddlebag) hernia is the simultaneous occurrence of both a direct and an indirect hernia. It causes two bulges (medial and lateral) that straddle the inferior epigastric vessels.



Other Hernias:

	Clinical features	DDx	Treatment	Notes
FEMORAL	○ Asymp. until incarceration or strangulation occurs. ○ Discomfort in the abdomen more than femoral area. ○ Colicky abdominal pain and signs of intestinal obstr.	○ Inguinal hernia ○ A saphenous varix ○ Femoral adenopathy ○ Psoas abscess	Surgical repair ○ Inguinal approach is most commonly used. ○ The Lotheissen-McVay repair is most commonly employed.	○ Most liable to strangulation "narrow neck" ○ Inguinal hernias: above and medial to the inguinal ligament and pubic tubercle, whereas femoral hernias are below and lateral to them. ○ Femoral hernia is more common in women, but in both sexes femoral hernia is less common than inguinal hernia.
SLIDING	○ No special signs. ○ Suspected: any large hernia that cannot be completely reduced or in elderly man. ○ Strongly suggestive: Finding a segment of colon in the scrotum on contrast radio.	-----	○ Most sliding hernias: Bevan technique and one of the standard types of repair. ○ Very large sliding hernias: La Roque technique.	○ Higher recurrence rate. ○ Complications: bowel or bladder injury. ○ On the right side, the cecum is most commonly involved, and on the left side, the sigmoid colon.
UMBILICAL and PARA UMBILICAL	○ In adults, umbilical hernia increases steadily in size. ○ Multiple loculations. ○ Usually contain omentum, small or large bowel. ○ Sharp pain on coughing or straining "Hernias with tight rings".	-----	Open (Mayo's repair) or laproscopic repair (if the defect is more than 4 cm) ○ Repairs utilizing mesh result in the lowest recurrence rate. ○ A transverse closure of the aponeurotic defect results in the strongest repair.	○ UH: infants and children. ○ PUH: adults. ○ It is more common in women than in men. ○ Predisposing factors include: Multiparity, ascites, obesity, large intra-abdominal tumors and Flabbiness of the abdominal muscles. ○ In healthy individuals, surgical repair gives good results with a low rate of recurrence.

	Clinical features	DDx	Treatment	Notes
	○ Very large hernias produce a dragging or aching sensation.		○ The laparoscopic approach has less postoperative pain and faster recovery.	
EPIGASTRIC	May be asymptomatic or painful, either locally or simulates peptic ulcer pain (radiated to the back or the lower abdominal quadrants) accompanied by bloating, nausea, or vomiting. Often occur after a large meal and on occasion may be relieved by reclining.	○ Peptic ulcer. ○ Gallbladder disease. ○ Hiatal hernia. ○ Pancreatitis. ○ Upper small bowel obstr. ○ Diastasis recti.	Mayo' s repair "Video"	○ More common in men than in women ○ 80% occur just off the midline. ○ The smaller masses are often tender and most frequently contain only preperitoneal fat and are especially prone to incarceration and strangulation. ○ The recurrence rate is 10—20%.
INCISIONAL (VENTRAL)	Swelling at the scar associated sometimes with pain.	-----	Open or laparoscopic repair ○ Small Hernias: direct fascia-to-fascia repair. Interrupted or continuous closure may be used. Nonabsorbable sutures. ○ Large Hernias: nonabsorbable mesh using an inlay or sandwich technique.	○ Has no actual neck (or its neck is wide), so it does not lead to complications. ○ Sutures tied too tightly or tension on the repair will predispose to recurrence. ○ Prognosis: varies with the size of the fascial defect.

Rare types:

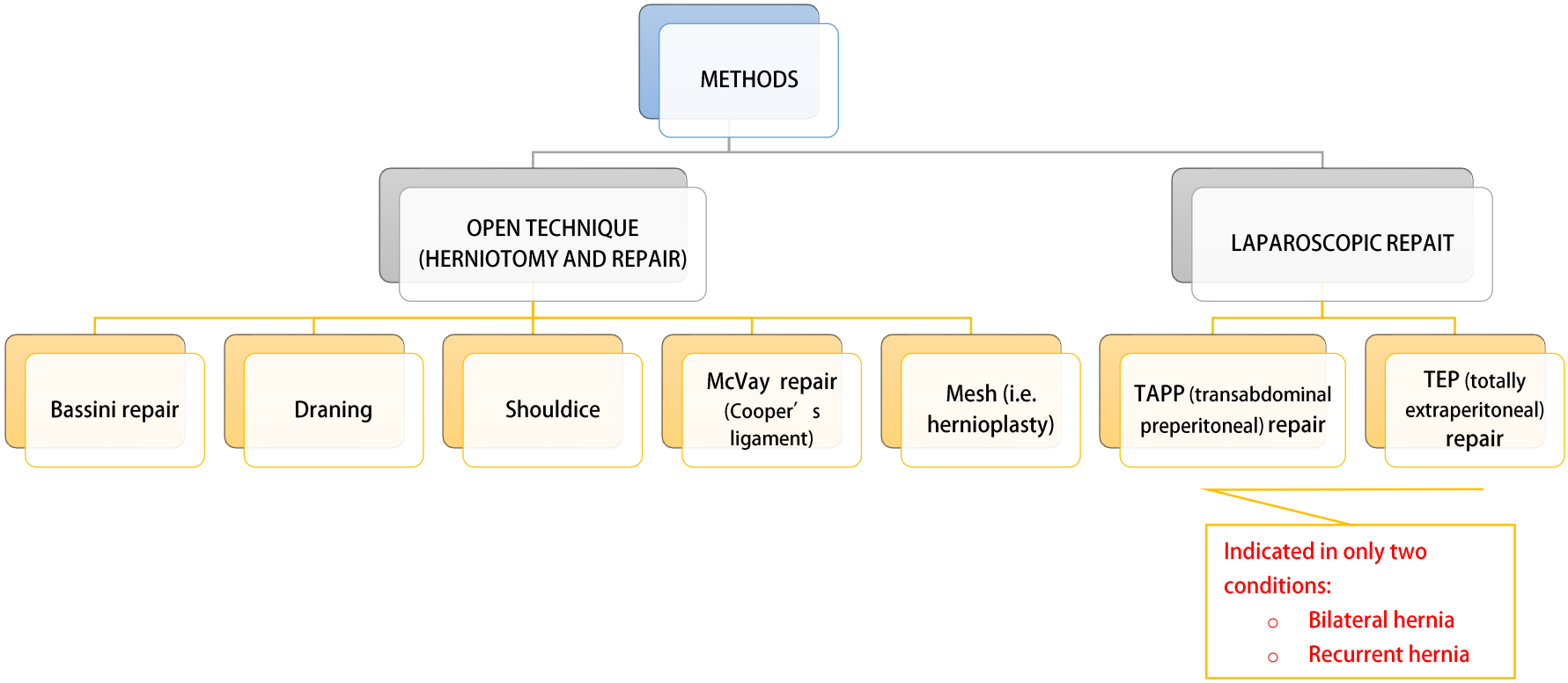
Hernia	Notes
SPIGELIAN	○ Occurs at the space between the semilunar line and the lateral adge of the rectus muscle (Inferior to the arcuate line). ○ The posterior recuts sheath is lacking which contributes to the inherent weakness in this area. ○ Preoperative diagnosis is correct in only 50% of patients. ○ 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	○ 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
	○ Secondary lumbar hernia develops as a result of trauma, mostly surgical (e.g. renal surgery) or infection.
	○ Lumbar hernias were encountered relatively frequently in the past in cases of spinal tuberculosis with paraspinal abscesses

OBTURATOR	○ 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.

RICHTER′ S	○ It is a hernia at ant site in which only part of the circumference of the bowel (usually jejunum) is involved. ○ Only one side of the bowel wall is trapped in the hernia, rather than the entire loop of bowel. ○ Does not usually obstruct but can strangulate or become incarcerated. ○ This is especially dangerous because the incarcerated portion ofbowel can necrose and perforate in the absence of obstructive symptoms.
LITTRE′ S	○ Any groin hernia that contains a Meckel′ s Diverticulum, ○ Rare. ○ Usually incarcerated or strangulated. ○ If the diverticulum is symptomatic or strangulated, it is mandatory to excise it at the time of repair.
Diastasis recti	○ Divarication (Separation) of the recti abdominis. ○ Only a facial weakness, not a true hernia. ○ Seen more in elederly multiparous patients. ○ A gap in the linea albe (medial margin of the recti) seen on straining through which the abdominal contents bulge. ○ No treatment is necessary.
PERINEAL	○ Occur in the pelvic floor usually after surgical procedures such as an abdominoperineal resection.
Peri- or para-stomal Hernia	○ Hernia adjacent to an ostomy “e.g. colostomy”.
Amyand′ s Hernia	○ Hernia sac containing a ruptured appendix.
Hesselbach′ s Hernia	○ Hernia under the inguinal ligament lateral to femoral vessels.
Cooper′ s Hernia	○ Hernia through the femoral canal & tracking into the scrotum or labia majus.

Methods of Hernias' Repair:



MCQs

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

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

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