

# **Dr Mohd Asim Aideh**

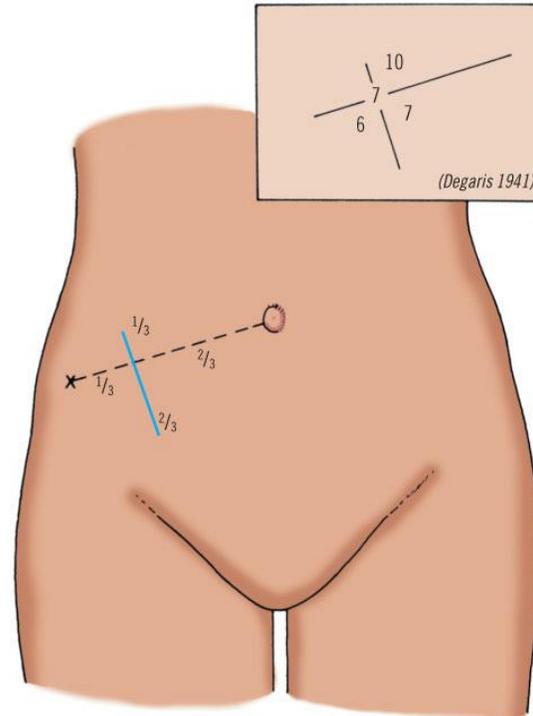
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MD, Minimally Invasive

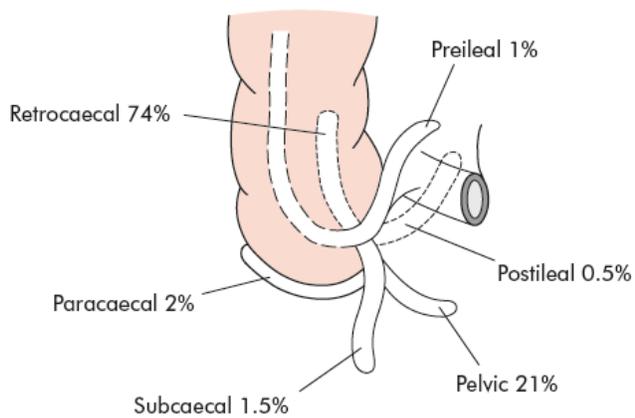
AND GI surgery

IMRCS

❖ Appendix:



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**McBurney's point:**

Point one third from the anterior superior iliac spine to the umbilicus (often the point of maximal tenderness)

-What vessel provides blood supply to the appendix?

Appendiceal artery—branch of the ileocolic artery ~~post. cecal Art~~ **post. cecal Art**

-Appendix role : 1- part of immunity 2- stabilize the ureter

-Name the mesentery of the appendix:

Mesoappendix (contains the appendiceal artery)

-How can the appendix be located if the cecum has been identified?

Follow the teniae coli down to the appendix; the teniae converge on the appendix

## ❖ Gallbladder:

### the anatomy of gallbladder

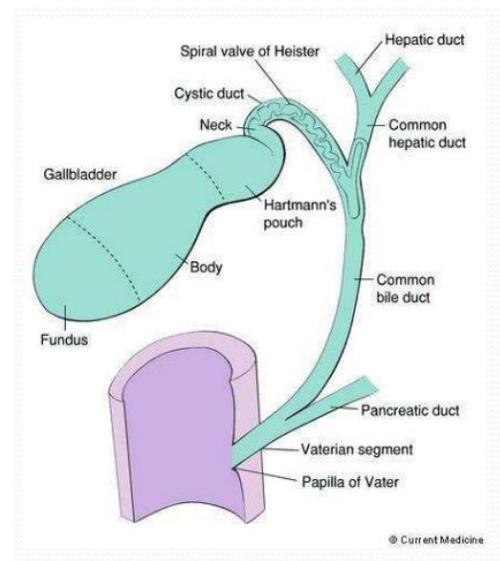
Its pear-shaped sac (7 to 10 cm long ) with average capacity of 30 to 50 mL((When obstructed up to 300 ml))

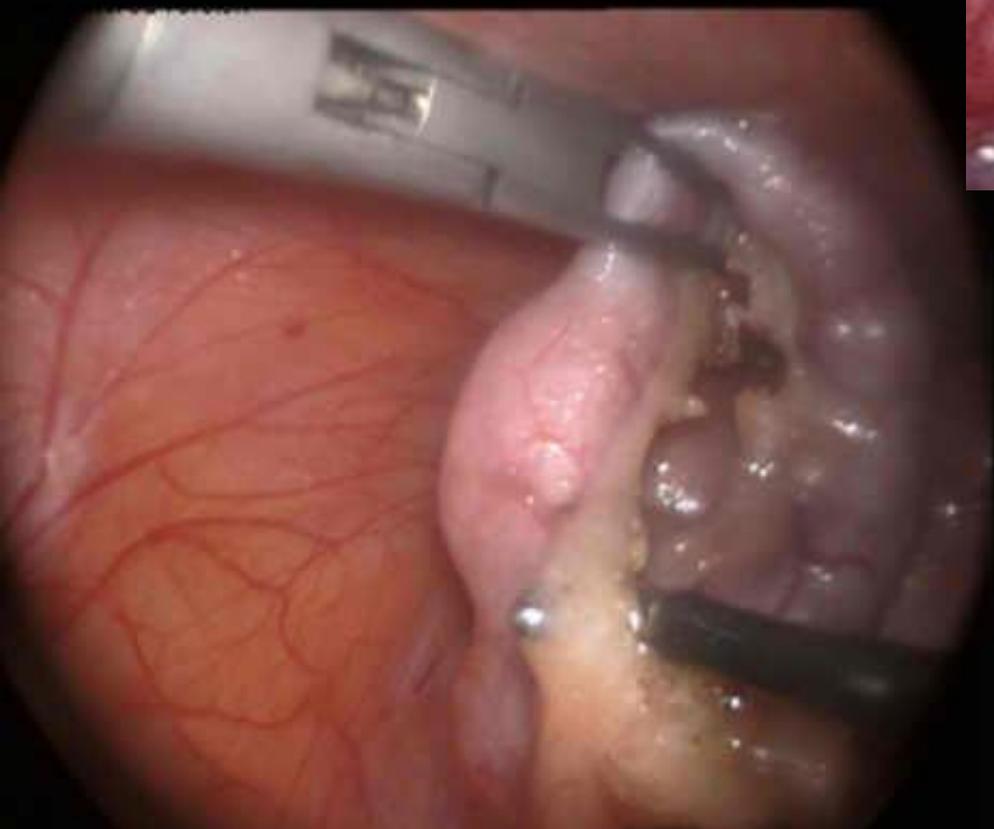
🌀 Divided into:

**Neck:** (has a small pouch called **Hartmann's pouch**.)

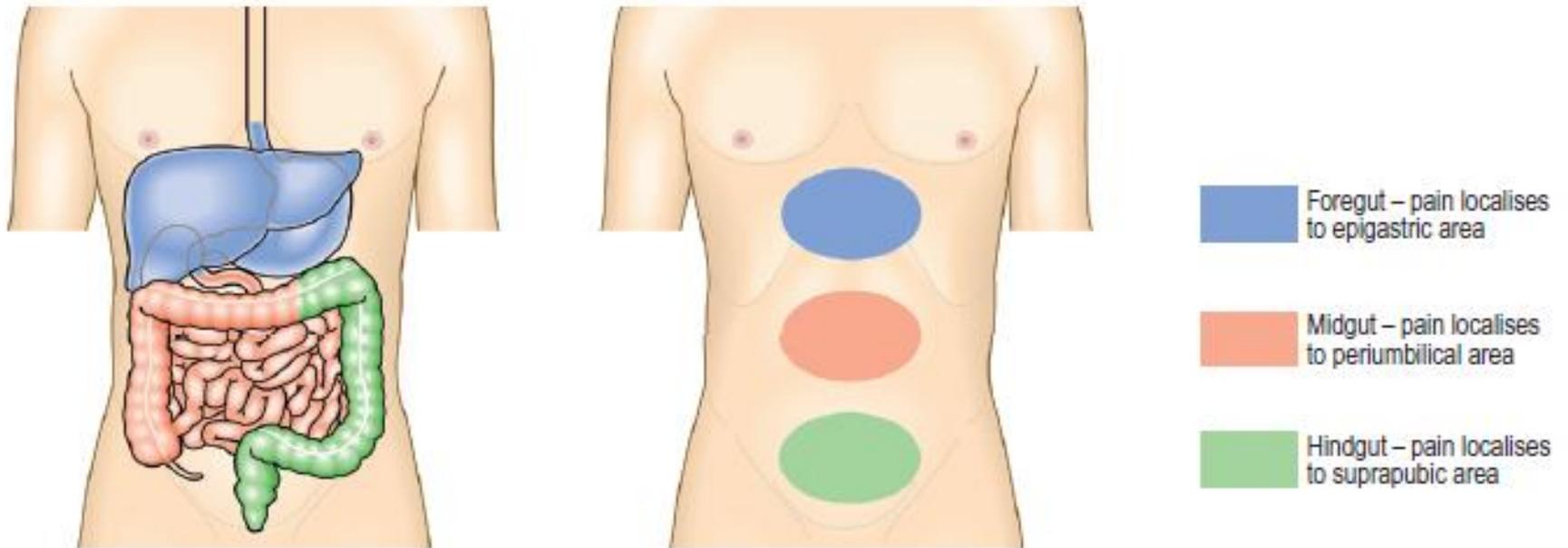
This is the location of most of the pathology)

**Body , Fundus**





# Abdominal Pain



**Fig. 8.5 Abdominal pain.** Perception of visceral pain is localised to the epigastric, umbilical or suprapubic region, according to the embryological origin of the affected organ.

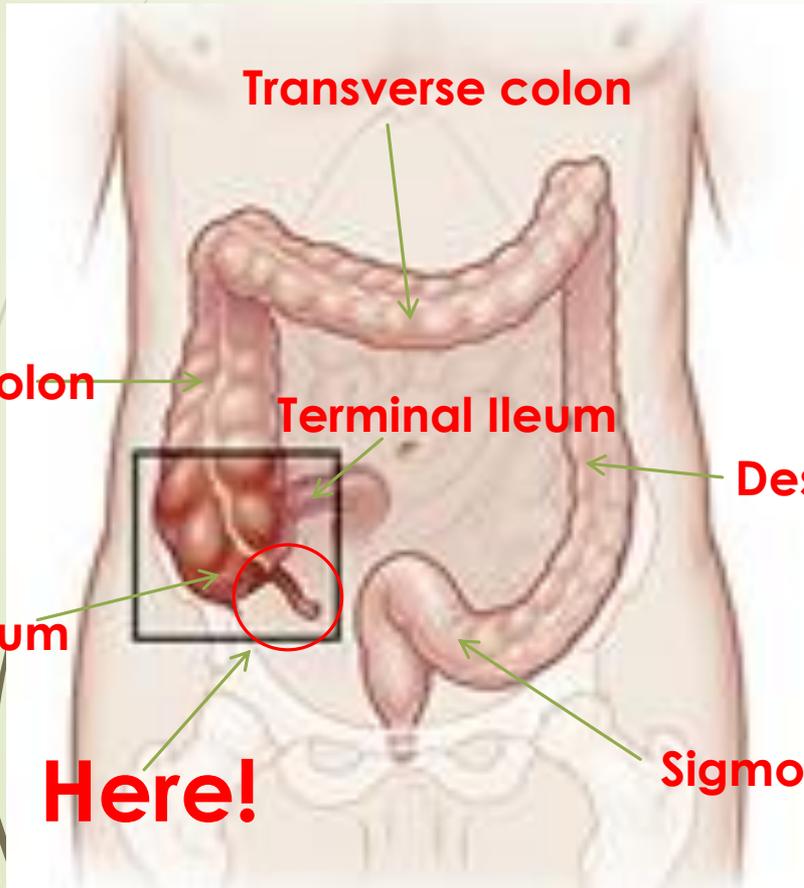


# Acute Appendicitis

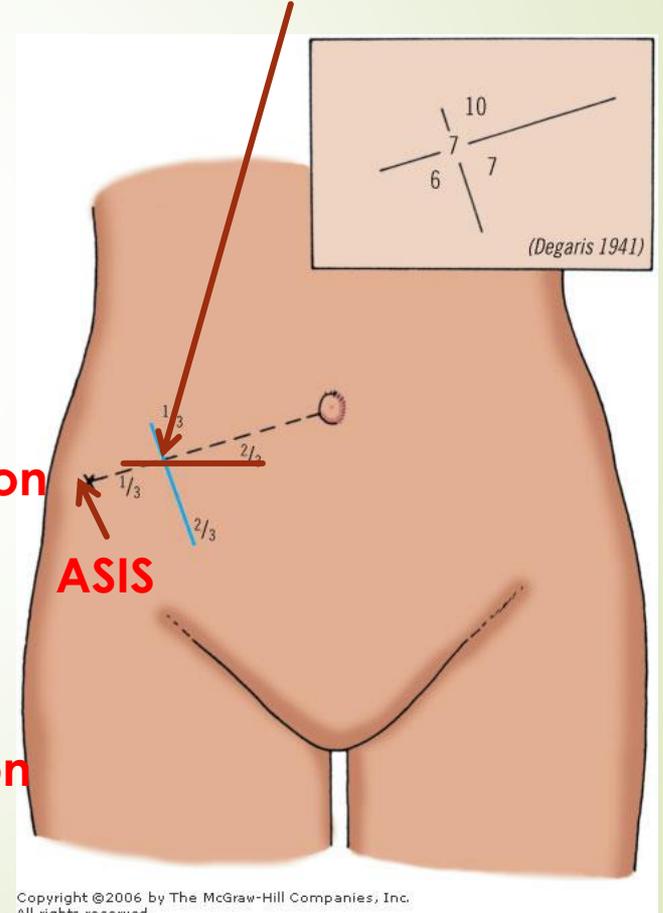
- Appendicitis is common- **7-9% lifetime risk**
- Mostly young people but can present at any age.
- Delay in diagnosis/management causes significant morbidity- **can be a surgical emergency**
- Usually clinical diagnosis- not reliant on imaging
- Has classic presentation but often presents atypically- it is a common pitfall!

# Anatomy

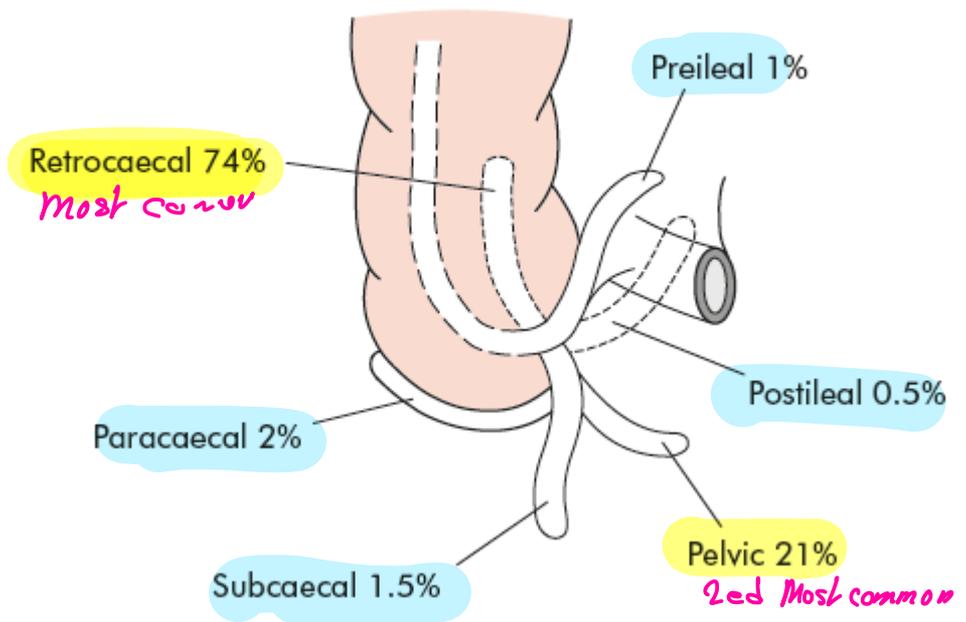
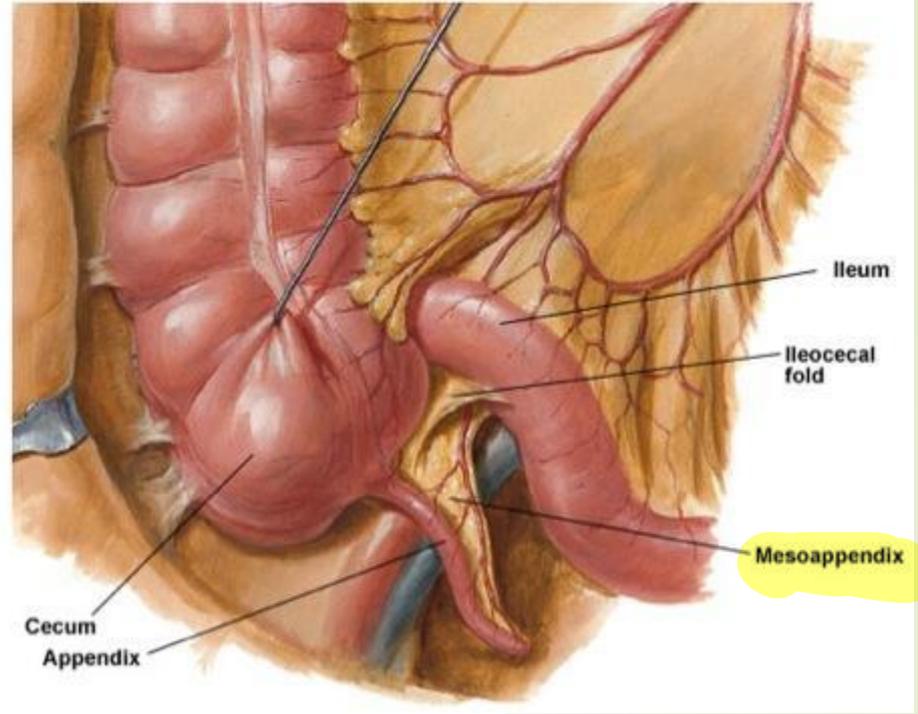
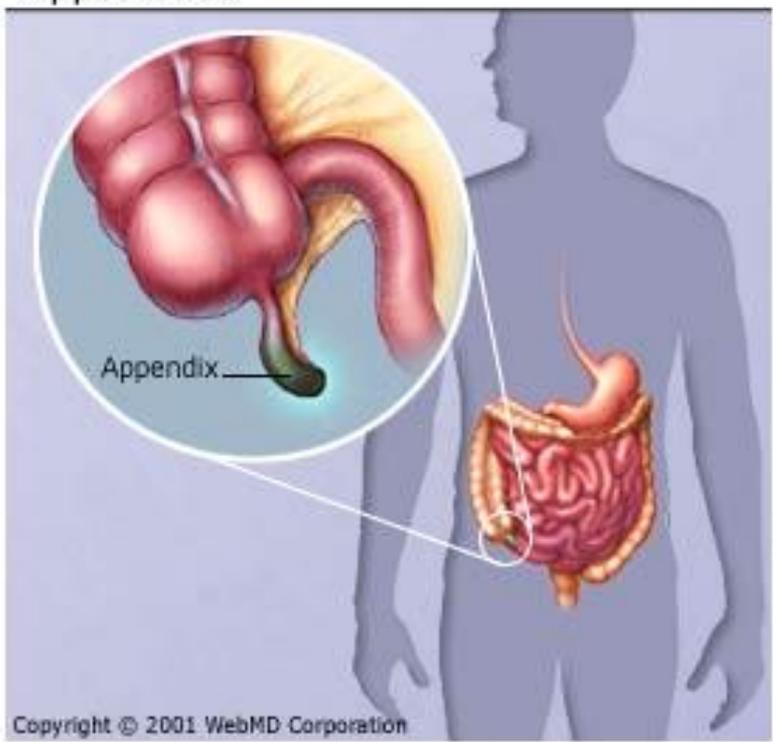
## 1. The Appendix is...



## 2. McBurney's Point



# Appendicitis



# *ACUTE APPENDICITIS*

## Incidence:

- rare in infants, increasingly common in childhood and early adult life, peak incidence in the teens and early 20s.
- before puberty males = females.
- In teenagers and young adults the male–female ratio 3:2
- Thereafter, the greater incidence in males declines.

# Aetiology

No definite cause

1- Decreased dietary fibre and increased consumption of refined carbohydrates  
(low fiber diet)

2- Bacterial proliferation within the appendix,

no single organism is responsible (mixed growth of aerobic and anaerobic organisms).

3- Obstruction of the appendix lumen

- Lymphoid hyperplasia

- faecolith (composed of inspissated faecal material,

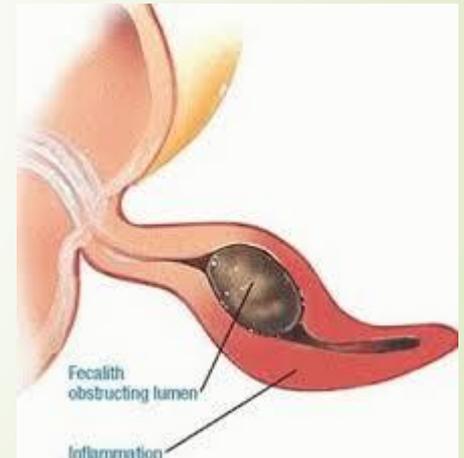
calcium phosphates, bacteria and epithelial debris

- stricture

- foreign body (rare)

- tumour, particularly carcinoma of the caecum (middle age and elderly)

- Intestinal parasites, particularly *Oxyuris vermicularis*

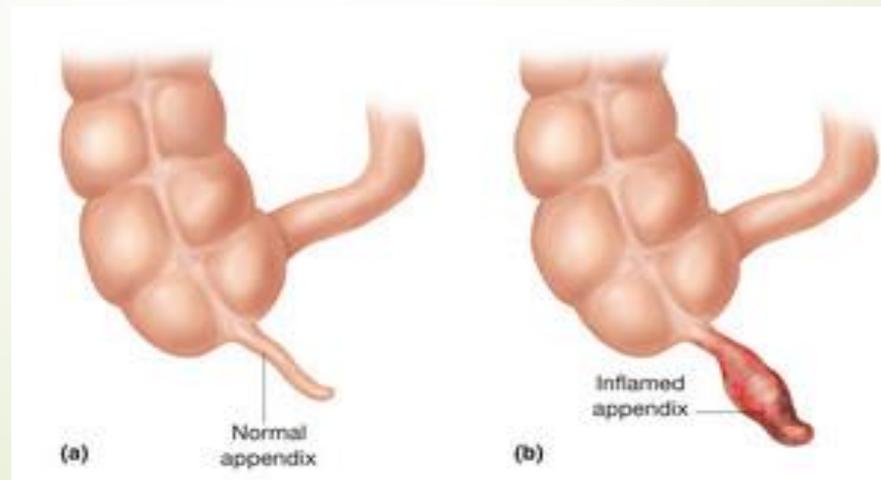


# Pathology

**Lymphoid hyperplasia** narrows the lumen → luminal obstruction.

- Continued **mucus secretion** and **inflammatory exudation** → increase **intraluminal pressure** → **obstructing lymphatic drainage** → Oedema
- Mucosal ulceration
- Bacterial translocation to the submucosa.

*Lymph obstruction first then vein then Artery*



**Resolution** may occur (spontaneously/antibiotic therapy).

or

**Condition progresses**, more distension → **venous obstruction & wall ischaemia**  
→ **bacterial invasion** through the **muscularis propria** and **submucosa**, producing acute  
appendicitis.

**Ischaemic necrosis** → **gangrenous appendicitis** → **free bacterial contamination** of the  
peritoneal cavity (**peritonitis**).



- Alternatively, the greater omentum and loops of small bowel become adherent to the inflamed appendix, walling off the spread of peritoneal contamination, and resulting in a **phlegmonous mass** or **paracaecal abscess**.



Rarely, appendiceal inflammation resolves, leaving a distended mucus-filled organ termed a **'mucocoele'** of the appendix .



## *Emergency situation*

Diffuse peritonitis is the great threat of acute appendicitis, it occurs as a result of:

free migration of bacteria through an ischaemic appendicular wall

- frank perforation of a gangrenous appendix
- delayed perforation of an appendix abscess.

### Factors that promote this process include:

- extremes of age
- immunosuppression
- diabetes mellitus
- faecolith obstruction of the appendix lumen
- free-lying pelvic appendix
- previous abdominal surgery

In these situations, a rapidly deteriorating clinical course is accompanied by signs of diffuse peritonitis and systemic sepsis syndrome.

کیف تفرق در Appendicitis و gastroenteritis

→ اگر اول دردی است pain ← Appendicitis

→ اگر اول دردی است و تهوع و استفراغ gastroenteritis

→ تهوع و استفراغ یک یا دو بار (در Appendicitis)

→ تهوع و استفراغ بیشتر gastroenteritis

# Clinical diagnosis History

## PAIN

*while pancreatitis not colicky pain*

-poorly localised, colicky abdominal pain (midgut visceral discomfort in response to appendiceal inflammation and obstruction).

-The pain in periumbilical region. *Referred pain*

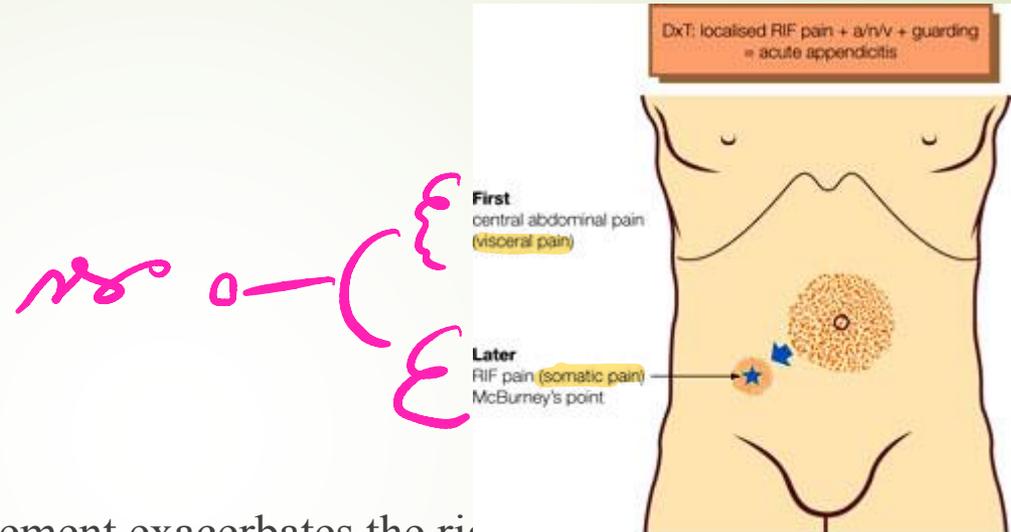
- Central abdominal pain + anorexia, nausea and usually one or two episodes of vomiting that follow the onset of pain.

*only while more gastroenteritis*

With progressive inflammation of the appendix:

**Shifting of pain:** from central abdominal pain (irritation of RIF parietal peritoneum) visceral to **somatic pain** which is :

- more intense
- constant
- localised to right iliac fossa



Typically, coughing or sudden movement exacerbates the right iliac fossa pain.

# ANOREXIA

-constant clinical feature, particularly in children.

## Family history

1/3 of children with appendicitis have a first-degree relative with a similar history .

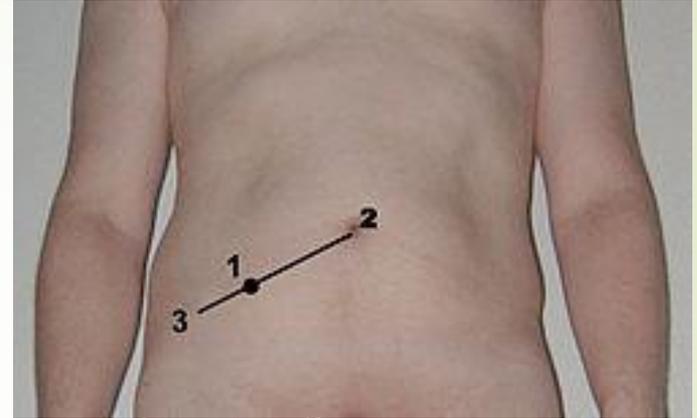
One half of acute appendicitis → classic visceral–somatic sequence of pain .

## *Signs*

### Temperature and pulse rate:

- **After 6 hours, slight pyrexia** (37.2–37.7°C) with a corresponding **increase in the pulse rate to 80 or 90** is usual.
- Changes of greater magnitude may indicate complications.

- Unwell patient with low-grade pyrexia
- Inspection of the abdomen → limitation of respiratory movement in the lower abdomen.
- localised abdominal tenderness maximum at McBurney's point.
- Muscle guarding → peritonitis
- Rebound tenderness → Appendicitis



Asking the patient to cough or gentle percussion over the site of maximum tenderness will elicit rebound tenderness .

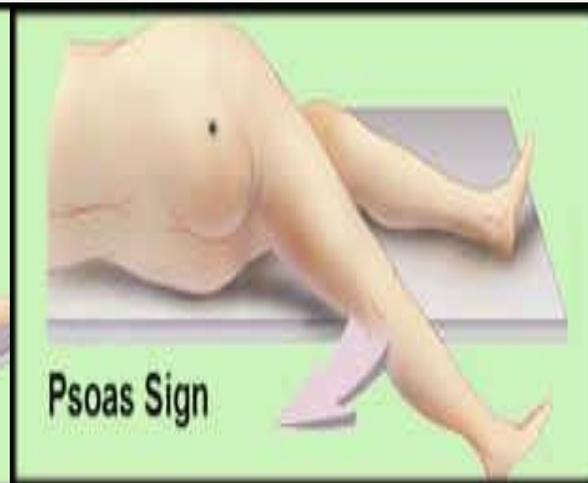
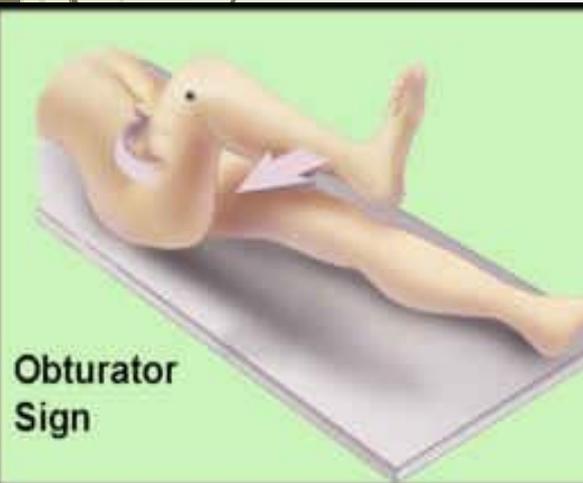
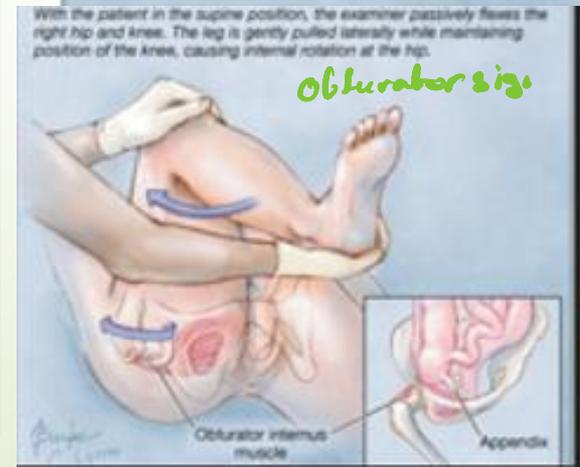
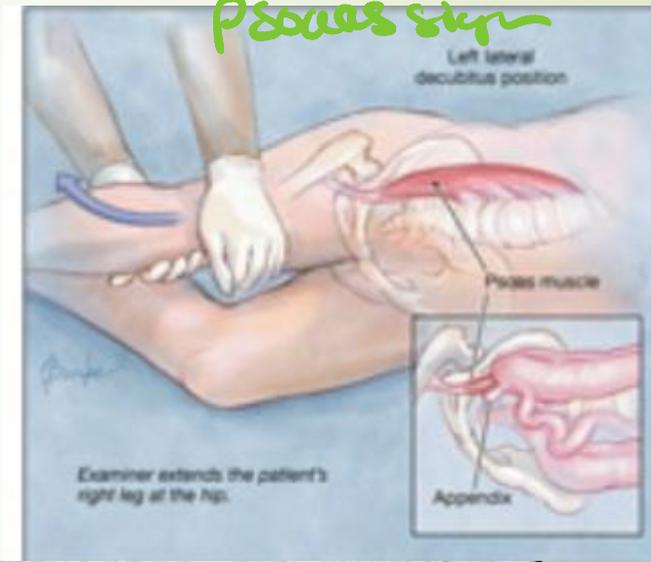
- **Pointing sign:** The patient is asked to point to where the pain began and where it moved .

- **Rovsing's sign:** Deep palpation of the left iliac fossa may cause pain in the right iliac fossa.

- **Psoas sign :** passive extension of hip or active flexion of hip against resistance → pain. The patient will lie with the right hip flexed for pain relief .

- **Obturator sign :** hip flexion and internal rotation cause pain in the hypogastrium (the obturator test).

- **Cutaneous hyperaesthesia** may be demonstrable in the right iliac fossa





Two clinical syndromes of acute appendicitis:

**1- acute catarrhal (non-obstructive) appendicitis**

**2- acute obstructive appendicitis:**

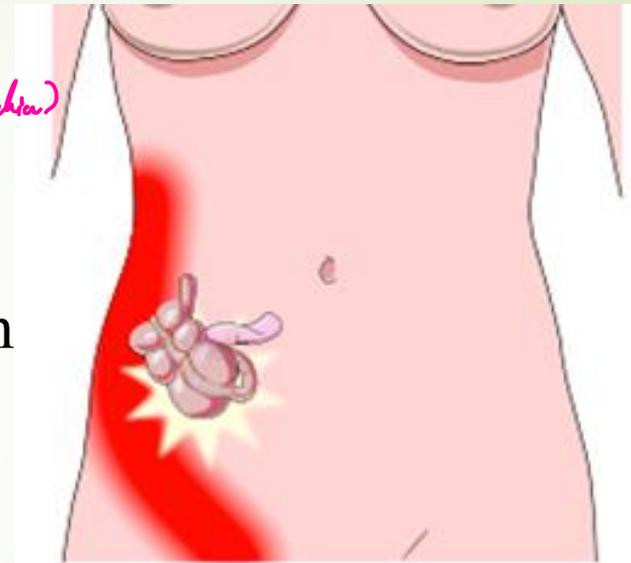
- more acute course(abrupt)
- generalised abdominal pain from the start.
- Temperature normal
- vomiting common.

# Special features, according to position of the appendix

## 1-Retrocaecal appendicitis

only psoas sign  
+  
diarrhea (Not constipation)

- Rigidity is often absent
- Application of deep pressure may fail to elicit tenderness (silent appendix)
- Deep tenderness is often present in the loin and rigidity of the quadratus lumborum.
- Psoas spasm leading to flexion of the hip joint. Hyperextension of the hip joint may induce abdominal pain (**Psoas sign +ve**).



## 2-Pelvic appendicitis

- psoas + obturator sign +ve
- +
- Diarrhea
- pain<sup>+</sup> in Rectal Exam

- More common in **children**

- **Early diarrhoea** (inflamed appendix in contact with the rectum).

- Complete absence of abdominal rigidity

- Tenderness over McBurney's point is also lacking.

- Deep tenderness can be made out just above and to the right of the symphysis pubis.

- **Rectal examination reveals tenderness in the rectovesical pouch or the pouch of Douglas**, especially on the right

side.

- **+ve psoas and obturator signs.**

- **Frequency of micturition** (inflamed appendix in contact with the bladder).

*Irritation for Bladder*

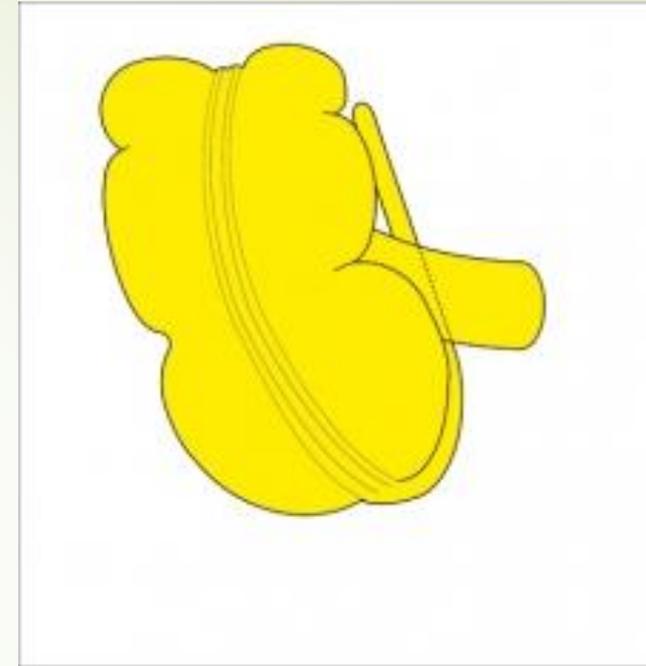
### 3-Postileal appendicitis

- No shifting pain
- Retching<sup>+</sup>

The inflamed appendix lies behind the terminal

Ileum (difficult to diagnose)

- Pain may **not shift**
- **Diarrhea** is a feature
- Marked **retching**
- Tenderness, if any, is ill defined, although it may be present immediately to the right of the umbilicus.



# Special features, according to age

## Infants

- Rare in infants under 36 months of age. نکته ستادونی
- The patient is unable to give a history. **Diagnosis is often delayed.** → weak ms wall
- **Higher incidence of perforation** and postoperative morbidity than older children.
- **Diffuse peritonitis** can develop rapidly because of the **underdeveloped greater omentum.**

## Children بدرجہ و ما یوگی

- **Vomiting** is more common.
- complete **aversion** to food.

# The elderly

(Bowel wall weak so No symptoms)

- **Gangrene and perforation** occur much more frequently .
- **The abdominal clinical picture is not obvious** even in the presence of gangrenous appendicitis (lax abdominal walls or obesity)
- Clinical picture **may simulate subacute intestinal obstruction.**
- **Higher mortality**  
(coincident medical conditions plus the previous factors)

# The obese

- Obesity can **obscure and diminish all the local signs** of acute appendicitis.
- **Midline abdominal incision** *Not McBurney point*  
(Delay in diagnosis + technical difficulty of operating in the obese)
- **Laparoscopy** is particularly useful in the obese.

# Pregnancy

Appendicitis is the most common extrauterine acute abdominal condition in pregnancy.

- **Delay in presentation** (early non-specific symptoms are often attributed to the pregnancy).
- The **physiologic leukocytosis** of pregnancy (high as 16,000 cells/mm<sup>3</sup>).

Obstetric teaching has been that the caecum and appendix are progressively pushed to the right upper quadrant of the abdomen as pregnancy develops during the second and

third trimesters.

*Because of enlarged uterus*

*برفمه لنوق*

- **Pain in the right lower quadrant** of the abdomen remains the cardinal feature of appendicitis in pregnancy.
- **Fetal loss** occurs in 3–5 per cent of cases, increasing to 20 per cent if perforation is found at operation.

*2ed trimester is best time for surgery*

# Differential diagnosis

## Children

### 1- Acute gastroenteritis and mesenteric lymphadenitis:

the pain is diffuse, and tenderness is not as sharply localized and cervical lymph nodes may be enlarged.

### 2- Meckel's diverticulitis:

signs may be central or left sided.

history of antecedent abdominal pain or intermittent lower gastrointestinal bleeding.

### 3- Intussusception:

Appendicitis is uncommon before the age of two years, whereas the median age for intussusception is 18 months.

A mass may be palpable in the right lower quadrant,

#### 4- Henoch–Schönlein purpura

preceded by a **sore throat** or respiratory infection.

Abdominal pain can be severe.

**ecchymotic rash**, affecting the extensor surfaces of the limbs and on the buttocks.

The face is usually spared.

Microscopic **haematuria** is common.



#### 5-Lobar pneumonia and pleurisy, especially at the right base

Abdominal tenderness is minimal,

**pyrexia** is marked

**+ve pleural friction rub** or altered breath sounds on auscultation.

A **chest radiograph** is diagnostic.



# Adults

## 1- Terminal ileitis

- a doughy mass of inflamed ileum may be felt.
- history of abdominal cramping, weight loss and diarrhoea.

The ileitis may be non-specific, due to Crohn's disease or *Yersinia infection*.

- serum antibody titres are diagnostic, and treatment with intravenous tetracycline is appropriate.

## 2- Ureteric colic:

Urinalysis should always be performed, and the presence of red cells → supine abdominal radiograph. Renal ultrasound or intravenous urogram is diagnostic.

## 3- Right-sided acute pyelonephritis

increased frequency of micturition.

tenderness confined to the loin, fever (temperature 39°C) and possibly rigors and pyuria.

## 4- perforated peptic ulcer

the duodenal contents pass along the paracolic gutter to the right iliac fossa.

- history of **dyspepsia**
- very **sudden** onset of pain that starts in the epigastrium and passes down the right paracolic gutter.
- rigidity is usually greater in the **right hypochondrium**.
- rigidity and tenderness in the right iliac fossa
- erect chest radiograph → **gas under the diaphragm** in 70 %.
- abdominal (**CT**) examination in difficult cases.

## 5- Testicular torsion (teenage or young adult male)

Pain can be referred to the right iliac fossa, and shyness on the part of the patient may lead the unwary to suspect appendicitis unless the scrotum is examined in all cases.

## 6-Acute pancreatitis

should be considered in the differential diagnosis of all adults suspected of having acute appendicitis and, when appropriate, should be excluded by serum or urinary amylase measurement.

## 7- Rectus sheath haematoma

- relatively rare
- acute pain and localised tenderness in the RIF
- after an episode of strenuous physical exercise.
- Localised pain without gastrointestinal upset is the rule. Occasionally, in an elderly patient, particularly one taking anticoagulant therapy, a rectus sheath haematoma may present as a **mass and tenderness** in the right iliac fossa after minor trauma.



# Adult female

pelvic disease in women of childbearing age most often mimics acute appendicitis.

A careful gynaecological history should be taken in all women with suspected appendicitis, concentrating on:

- menstrual cycle
- vaginal discharge
- possible pregnancy .

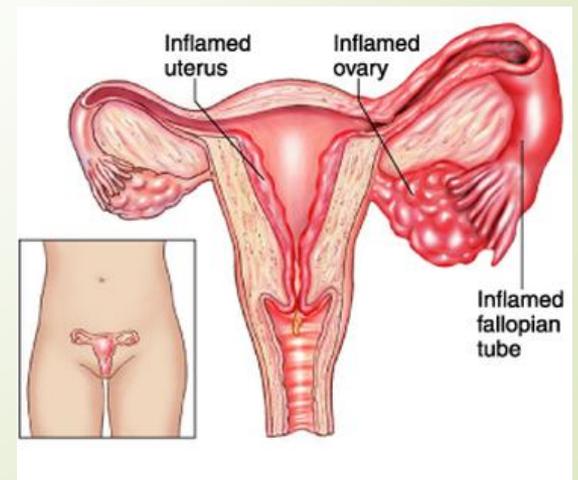
The most common diagnostic mimics are

pelvic inflammatory disease (PID), Mittelschmerz, torsion or haemorrhage of an ovarian cyst and ectopic pregnancy.

# 1-Pelvic inflammatory disease

(salpingitis, endometritis and tubo-ovarian sepsis)

- The pain is **lower** than in appendicitis and is **bilateral**.
- history of **vaginal discharge**, **dysmenorrhoea** and **dysurea** .
- vaginal examination → adnexal and cervical tenderness .
- High vaginal swab & culture → *Chlamydia trachomatis* and *Neisseria gonorrhoeae*.
- gynaecologist opinion should be obtained.
- Transvaginal ultrasound
- diagnostic laparoscopy

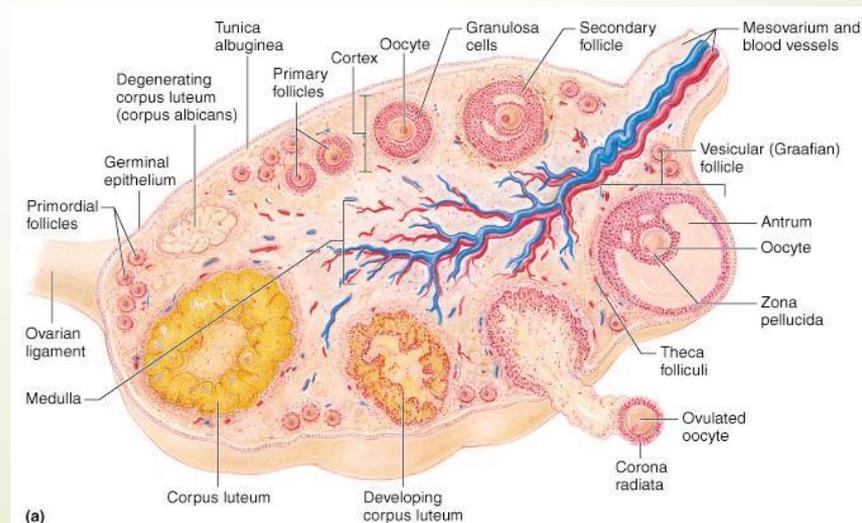


## 2- Mittelschmerz

Midcycle rupture of a follicular cyst with bleeding produces **lower abdominal and pelvic pain**, typically **midcycle**.

- No systemic upset
- Pregnancy test is negative
- Symptoms usually subside within hours.

Occasionally, diagnostic laparoscopy is required. Retrograde menstruation may cause similar symptoms.



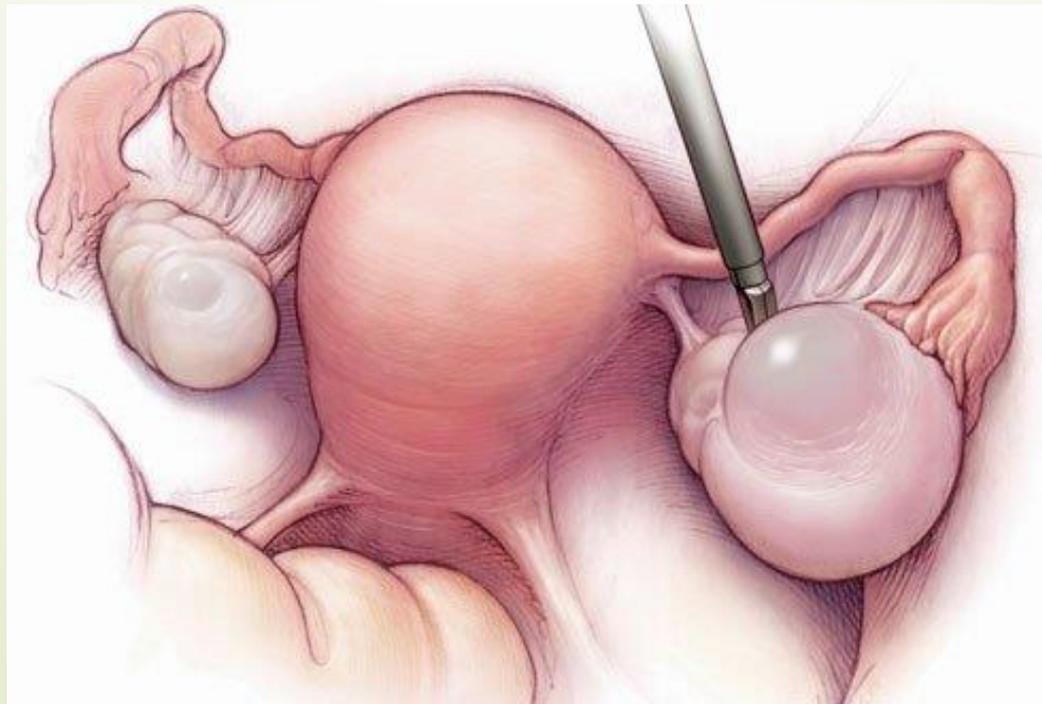
(a)

### 3- Torsion/haemorrhage of an ovarian cyst

(difficult differential diagnosis)

pelvic ultrasound and a gynaecological opinion should be sought.

If encountered at operation → untwisting of the involved adnexa and ovarian cystectomy should be performed.

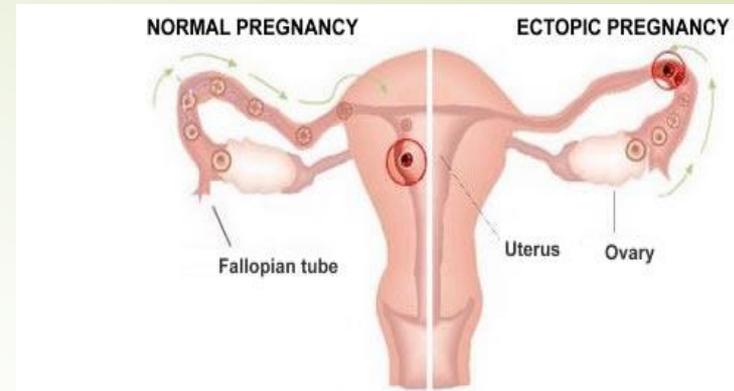


## 4- Ectopic pregnancy

- Ectopic preg. → signs of haemoperitoneum
- right-sided tubal abortion or right-sided unruptured tubal pregnancy.

Right-sided unruptured tubal pregnancy :

- pain commences on the right side and stays there.
- pain is severe.
- history of a missed menstrual period
- Signs of intraperitoneal bleeding with referred pain in the shoulder.
- cervical excitation test positive
- urinary pregnancy test may be positive.
- Pelvic ultrasonography.

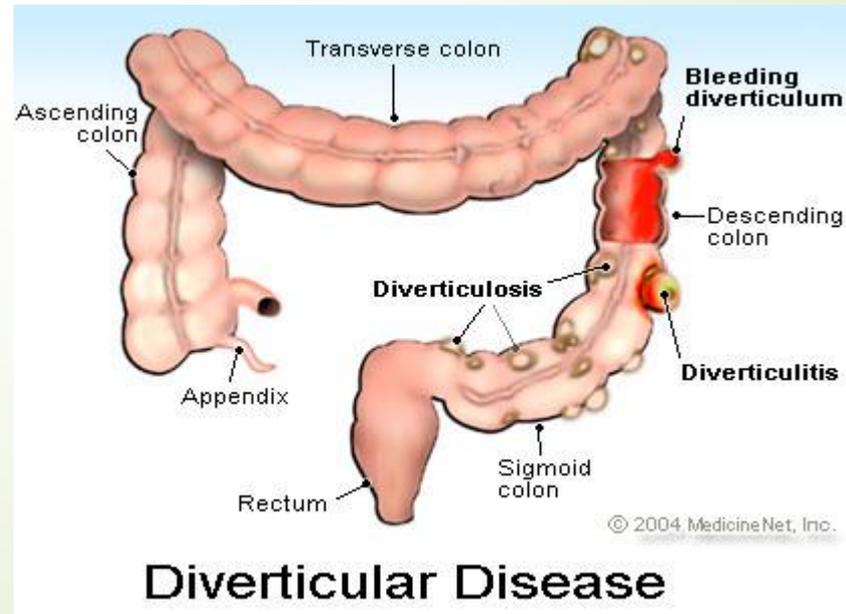


## Elderly

### I- Diverticulitis

Abdominal CT scanning is particularly useful and should be considered in the management of all patients over the age of 60 years.

Right-sided diverticulitis is unusual and may be clinically indistinguishable from appendicitis.

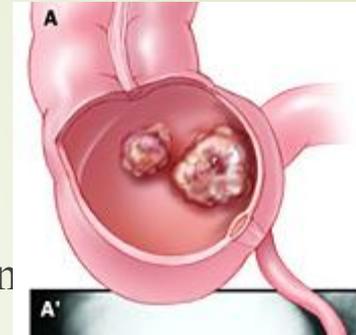


## 2-Intestinal obstruction

In **elderly**, occasionally, it may be difficult to differentiate IO from acute appendicitis

### 3-Carcinoma of the caecum

- Carcinoma of the caecum when **obstructed** or locally **perforated**, may mimic obstructive appendicitis in adults.
- history of antecedent **discomfort**, **altered bowel habit** or unexplained **anaemia**.
- **mass** may be palpable and an **abdominal CT scan** diagnostic.



# *Rare differential diagnoses*

**1-Preherpetic pain** of the right 10th and 11th dorsal nerves.

- no shift of pain
- marked hyperaesthesia.
- no intestinal upset, no rigidity.

The herpetic eruption may be delayed for 3–8 hours.

**2-Diabetic crises.** *DKA*

**3-Spinal conditions** include tuberculosis of the spine, metastatic carcinoma, osteoporotic vertebral collapse and multiple myeloma.

**4-porphyrria and diabetes mellitus**

**5-Typhlitis or leukaemic ileocaecal syndrome**

*↳ inflammation of cecum*

# Investigation

The diagnosis of acute appendicitis is essentially clinical

## ➤ Routine

Full blood count → WBC > 10,000

Urinalysis → hematuria/ pyuria due to irritation of nearby ureter/ urinary bladder

## ➤ Selective

طالعہ ماہیستنیہ سا ار ارنیٹیکٹیٹنڈی فلامج ناملہو/US/CT

Pregnancy test

Urea and electrolytes

Supine abdominal radiograph

Ultrasound of the abdomen/pelvis

Contrast-enhanced abdomen and pelvic computed tomography scan

# Diagnostic Scoring

- Diagnosis is essentially clinical;
- A number of clinical and laboratory-based scoring systems have been devised to assist diagnosis.
- The most widely used is Alvarado score.

سنت

# The Alvarado (MANTRELS) Score

	Score
Symptoms <ul style="list-style-type: none"><li>• <b>M</b>igratory RIF pain</li><li>• <b>A</b>norexia</li><li>• <b>N</b>ausea and vomiting</li></ul>	1 1 1
Signs <ul style="list-style-type: none"><li>• <b>T</b>enderness (RIF)</li><li>• <b>R</b>ebound tenderness</li><li>• <b>E</b>levated temperature</li></ul>	2 1 1
Laboratory <ul style="list-style-type: none"><li>• <b>L</b>eucocytosis</li><li>• <b>S</b>hift to the left (segmented neutrophils)</li></ul>	2 1
<b>TOTAL</b>	<b>10</b>

1-4: Very unlikely

5-6: Possible

7-8: Very probable

9-10: Definite

بدخل عملت عايل  
بدون ما عملت عايل  
عادي

- < 5 is strongly against a diagnosis of appendicitis
- **7 or more is strongly predictive of acute appendicitis**
- In patients with an equivocal score of 5 or 6, abdominal USG or contrast-enhanced CT scan is used to further reduce the rate of negative appendicectomy

**Table 1** Appendicitis Inflammatory Response (AIR) score, 0–12 points

Item	Scoring point
Vomiting	1
Pain in right inferior fossa	1
<i>Rebound tenderness or muscular defence</i>	
Light	1
Medium	2
Strong	3
Body temperature $\geq 38.5$ °C	1
<i>White blood cell count</i>	
10.0–14.9 * 10 <sup>9</sup> /L	1
$\geq 15.0$ * 10 <sup>9</sup> /L	2
<i>Proportion polymorphonuclear leucocytes</i>	
70–84%	1
$\geq 85\%$	2
<i>C-reactive protein concentration</i>	
10–49 mg/L	1
$\geq 50$ mg/L	2

Seven variables are assessed and scored accordingly. After the revision proposed in this report a score 0–3 points suggest low probability, a score 4–8 medium probability and a score 9–12 high probability

Abdominal ultrasound is useful in:

- children and thin adults
- if gynaecological pathology is suspected, with a diagnostic accuracy >90 %.

Contrast-enhanced CT scan is most useful in:

- diagnostic uncertainty + older patients
- acute diverticulitis, intestinal obstruction and neoplasm suspected.

elderly Dx

cecum CA

# Appendicectomy

- no unnecessary delay
- short period of intensive preoperative preparation:

1- NPO *Nothing By mouth*

2- Intravenous fluids

(catheterisation is needed only in the very ill)

3- IV antibiotics *(gram-ve and Anaerobic لازم تختارهم)*

In the absence of purulent peritonitis give single preoperative dose of antibiotics .

When peritonitis is suspected, therapeutic intravenous antibiotics to cover Gram negative bacilli, as well as anaerobic cocci, should be given.

# Appendicectomy

- general anaesthetic

- patient supine on the operating table.

- When a laparoscopic technique is to be used, the bladder must be empty (ensure that the patient has voided before leaving the ward).

palpated for a mass prior to preparing the entire abdomen with an antiseptic solution. (mass → conservative)

Draping of the abdomen

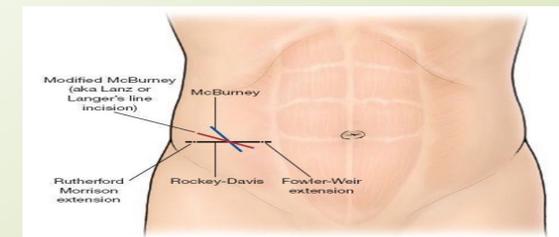
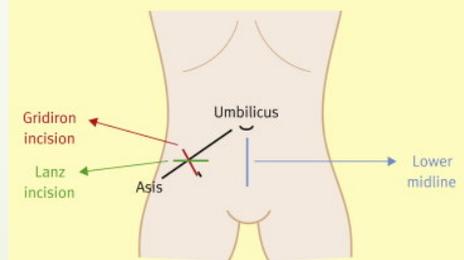
*open Appendectomy Not in Endoscopic*

Incisions used:

- 1- The gridiron incision (most common)
- 2- Rutherford Morrison incision (muscle cutting)
- 3- Transverse skin crease (Lanz) incision
- 4- lower midline abdominal incision (doubtful diagnosis)

*McBurney's point*

Incisions for open appendicectomy



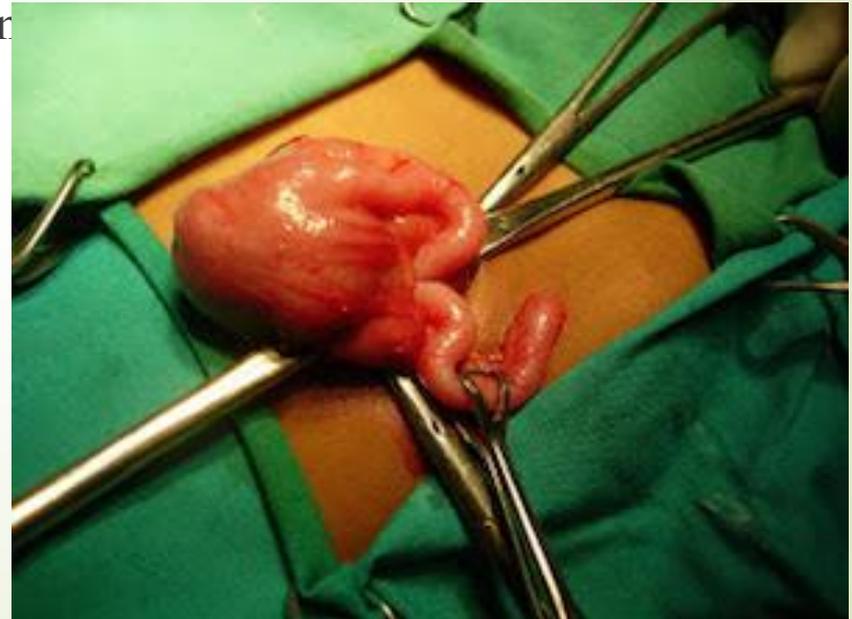
1- The caecum is identified by the presence of taeniae coli and is withdrawn.

2- Appendix may be felt at the base of the caecum.

3- Inflammatory adhesions must be gently broken with a finger, the appendix delivered into the wound.

4- Mesoappendix divided between ligature, the base of appendix ligated and divided.

5- Purse-string to invaginates the stump of the apper



# Laparoscopic appendicectomy

Laparoscopy is diagnostic tool(esp. in female) and therapeutic.

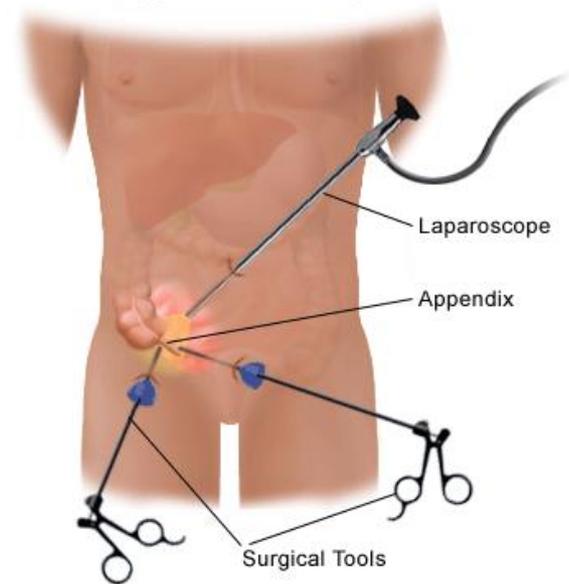
## Used more in:

- Female (child bearing age)
- in obese patients
- early pregnancy

## Advantages:

- less postoperative pain
- Early discharge from hospital
- Early return to daily activities

Laparoscopic Appendectomy  
(Appendix Removal)





# NOTES

## Natural Orifice Transluminal Endoscopic Surgery



# Problems encountered during appendicectomy

ببدا من اسباب ثانية  
وبسببها من افاتج فاتج

## 1-A normal appendix is found

- exclude other possible diagnoses, particularly terminal ileitis, Meckel's diverticulitis and tubal or ovarian causes in women.
- remove the appendix (avoid future diagnostic difficulties)

## 2-The appendix cannot be found.

ما لقتها

The caecum should be mobilised, and the taeniae coli should be traced to their confluence on the caecum before the diagnosis of 'absent appendix' is made.

### 3- An appendicular tumour is found.

→ Below 2cm Tumor → Appendectomy

→ Above 2cm Tumor → Appendectomy + Acinndig colon cut  
(Rt Hemicolectomy)

Small tumours (under 2.0 cm in diameter) can be removed by appendectomy.

Larger: right hemicolectomy (Acinndig colon + Appendix) cut

### 4- An appendix abscess is found and the appendix cannot be removed easily.

Preoperatively diagnosed abscess → Percutaneous drainage of the abscess and intravenous antibiotic.

At operation → drain the abscess + intravenous antibiotics.

Frankly necrotic appendix (very rarely) → caeectomy or partial right hemicolectomy.

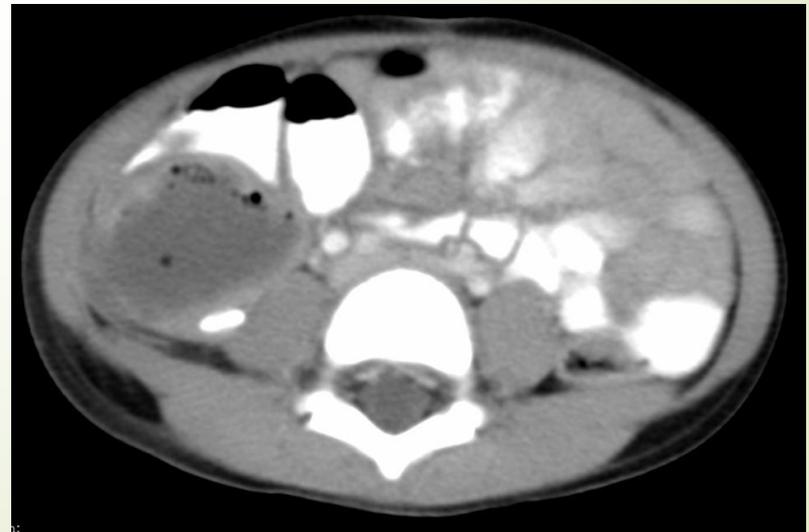
# *Appendix abscess*

Failure of resolution of an appendix mass or continued spiking pyrexia usually indicates that there is pus within the phlegmonous appendix mass.

Treatment :

Ultrasound or abdominal CT scan percutaneous drain.

If unsuccessful → laparotomy through a midline incision is indicated.



Appendicolith

# Pelvic abscess

- an occasional complication of acute appendicitis.
- Presented with spiking pyrexia several days after appendicitis
- **Pelvic pressure or discomfort**
- loose stool or tenesmus is common.
- Rectal examination → mass in the pelvis.

Pelvic ultrasound or CT scan confirm.

## Treatment:

- Radiologically guided percutaneous drainage
- Transrectal drainage under general anaesthetic.

# Postoperative complications

## **1- Wound infection**

most common postoperative complication

usually presents with pain and erythema of the wound on the 4th or 5th postoperative day.

Treatment: wound drainage + antibiotics.

## *2- Intra-abdominal abscess*

presented with **spiking fever**, malaise and anorexia developing **5–7 days** after operation .

Sites of collection:

**Interloop, paracolic, pelvic and subphrenic**

**Abdominal ultrasonography and CT scanning** diagnostic and allow **percutaneous drainage**.

**Laparotomy** in intra-abdominal sepsis without localised collection.

### ***3- slipped ligature***

internal bleeding, hypotension, tachycardia → reoperate

### ***4- Ileus***

Ileus persisting for more than 4 or 5 days + fever → continuing intra-abdominal sepsis  
→ investigation.

### ***5- Respiratory***

- rare
- Adequate postoperative analgesia and physiotherapy reduce the incidence.

### ***6- Venous thrombosis and embolism***

- rare after appendicectomy
- more in elderly and in women taking the oral contraceptive pill and prophylactic measures should be considered.

## 7- Portal pyaemia (pylephlebitis) Abscess on Liver Due to portal vein

- rare
- complication of gangrenous appendicitis
- high fever, rigors and jaundice.
- caused by septicaemia in the portal venous system → intrahepatic abscesses (multiple).

Treatment: systemic antibiotics + percutaneous drainage of hepatic abscesses.

screen for underlying thrombophilia

## ***8- Faecal fistula***

- Rare
- leakage from appendicular stump.
- More in appendicectomy in Crohn's disease.

Treatment: Conservative management with low-residue enteral nutrition.

## ***9- Adhesive intestinal obstruction***

This is the most common late complication of appendicectomy.

# Management of an appendix mass

## Conservative **Ochsner–Sherren** regimen;

A nonoperative programme but to be prepared to operate should clinical deterioration occur . This includes:

Careful recording of the patient's condition

- 1- Temperature and pulse rate should be recorded 4-hourly
- 2- Fluid balance record
- 3- The abdomen regularly reexamined.
- 4- The extent of the mass should be made (mark the limits of the mass on the abdominal wall using a skin pencil)
- 5- A contrast-enhanced CT examination of the abdomen
- 6- Antibiotic
- 7- An abscess, if present, should be drained radiologically.

# Criteria for stopping conservative treatment of an appendix mass *And start surgical*

- \_ A rising pulse rate
- \_ Increasing or spreading abdominal pain
- \_ Increasing size of the mass

Clinical deterioration or evidence of peritonitis is an indication for early laparotomy.

If the mass resolve, Patients over the age of 40 should have colonoscopy and follow-up imaging to ensure resolution and exclude appendicular or colonic malignancy.



# *Recurrent acute appendicitis*

- not uncommon
- attacks vary in intensity and may occur every few months.
- majority of cases ends in severe acute appendicitis.

The appendix in these cases shows fibrosis indicative of previous inflammation.



# *Neoplasms of the appendix*

# 1-Carcinoid tumours

Rarely metastasize

Argentaffin tissue (Kulchitsky cell of crypts of Lieberkühn)  
Stained By chromogranin B

- arise in argentaffin tissue (Kulchitsky cells of the crypts of Lieberkühn)
- most common in the vermiform appendix.
- appendix removed because of symptoms of subacute or recurrent appendicitis.
- frequently in the distal third of the appendix.
- moderately hard , yellow tumour
- the intact mucosa .
- Microscopically → characteristic pattern using immunohistochemical stain for chromogranin B .
- rarely gives rise to metastases.



Source: J Med Case Reports © 1999-2013 BioMed Central Ltd

Appendicitis + Rt hemicolectomy ای ماسی فوق 2cm بتعلی

Appendicitis only ای ماسی تحت 2cm بتعلی

## Treatment:

- Appendectomy .

اقل 2cm

- Right hemicolectomy is indicated if:

- caecal wall involvement .
- 2 or more in size.
- Involved lymph nodes.

**2- Goblet cell carcinoid tumour**

**3- Primary adenocarcinoma of the appendix**

extremely rare, presented as appendicitis

treated by right hemicolectomy

کلی پول

# Mucinous cystadenoma

Delay presentation Due to pseudomyxoma peritonei that mimic Ascites (so misDiagnosed)

- A mucin-secreting adenoma of the appendix
- rupture into the peritoneal cavity , seeding it with mucin-secreting cells.
- delayed presentation with gross abdominal distension as a result of pseudomyxoma peritonei, which may mimic ascites .

## Treatment

radical resection of all involved parietal peritoneal surfaces and aggressive intraperitoneal chemotherapy.



***Thank you***