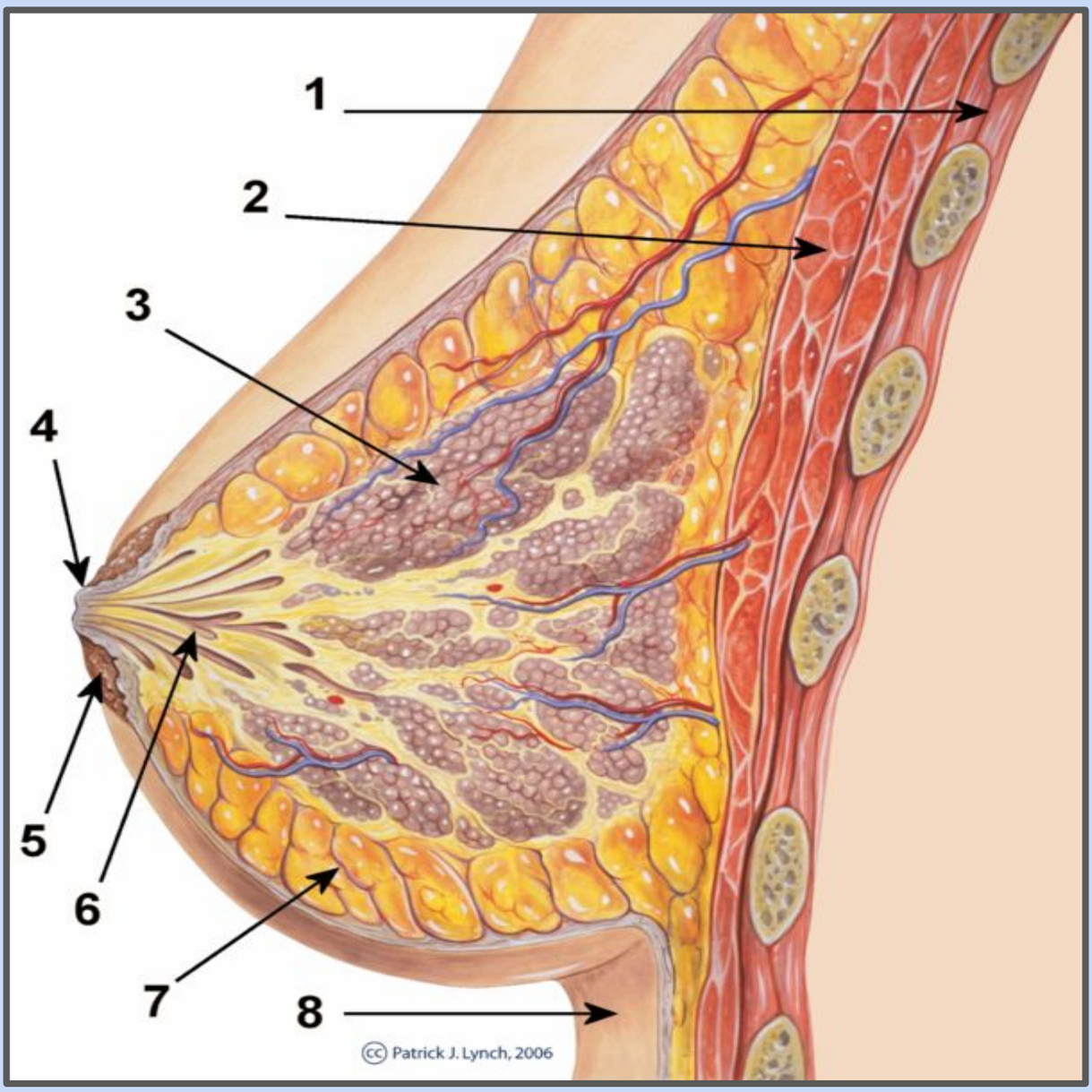
PLABABLE

GEMS

VERSION 1.0

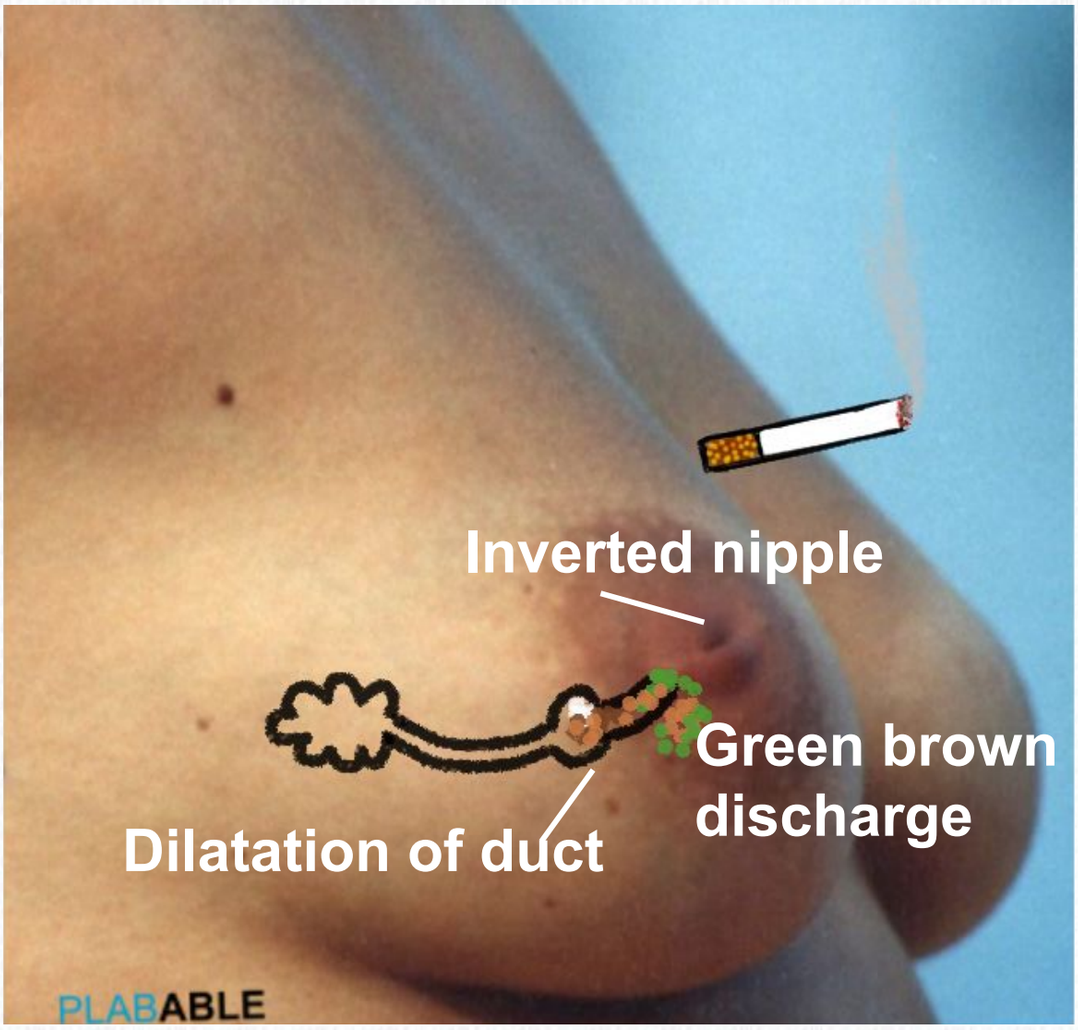
GENERAL SURGERY

Breast Anatomy



1. Chest wall
2. Pectoralis muscles
3. Lobules
4. Nipple
5. Areola
6. Milk duct
7. Fatty tissue
8. Skin

Duct Ectasia



- **Green or brown** nipple discharge
- Due to dilation of **breast ducts**
- Associated with smoking
- Retracted nipple due to scaring

Presenting age: 20-30 years

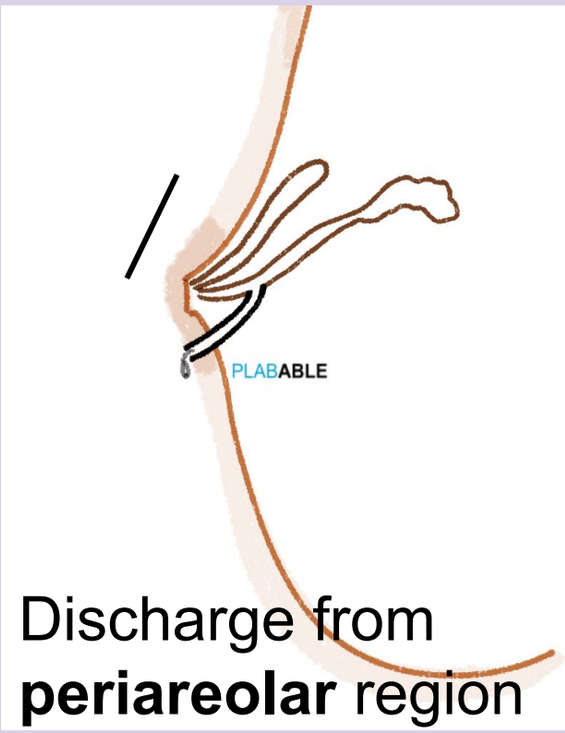
Galactogram can be performed

Duct (Mamillary) Fistula

It is a sequence or the end result of mammary duct associated inflammatory disease.

Presentation

- Pain around areola
- Swelling
- Redness
- Fever (may present)



Discharge from **periareolar** region

- Can occur following spontaneous rupture of subareolar abscess or incision and drainage of a non-lactating abscess

Associated with

- Smoking
- Periductal mastitis

Treatment

Fistulectomy with antibiotics cover

Mastalgia

Cyclical

- Bilateral breast pain occurring in relation with menstruation
- Most common in younger age group
- Supportive measures

Non-cyclical

- Pain not related to menstrual cycle
- Most common after 40 years of age
- May be unilateral / bilateral
- Supportive measures

- Caffeine increases mastalgia
- Primrose oil massages helps to relieve the pain

Mastitis & Breast Abscess

Mastitis:
Inflammatory condition of the breast with or without infection

Breast abscess:
Localised **collection of pus** within the breast
Severe complication of mastitis

Both entities present similarly

Presentation

- Painful breast
- Fever
- Swollen and tender hard area in the breast
- Area is usually wedge shaped (for abscess)
- Commonly associated with lactation
- Most common organism associated is *Staphylococcus aureus*

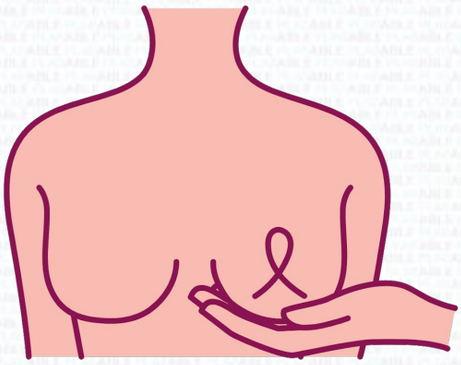
Management:

Mastitis: Antibiotics (per sensitivity) or flucloxacillin
If with penicillin allergic, erythromycin/clarithromycin

Lactating woman with breast abscess:

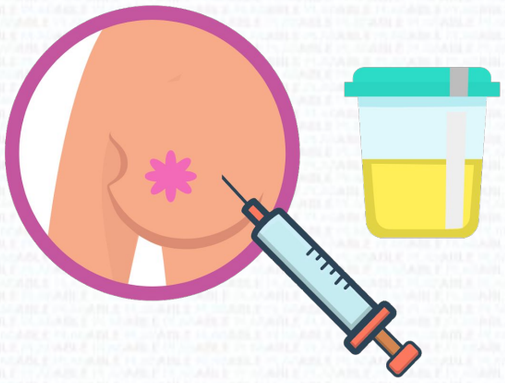
- Refer to general surgeon for USG, drainage of abscess and culture of fluid from abscess
- Continue breastfeeding

Triple Approach For Breast Disorders



Examination

Mammography or USG



FNAC or trucut biopsy

USG : Preferred at young age

Mammography : Preferred at older age

Mammogram

Every 3 years for all women between 50-70 years

Every 1 year for women with high risk

(F/H or BRCA +ve) between 40-70 years

Fibroadenoma

Benign!
Most common in **young**, adolescent age group
Develops from a breast lobule

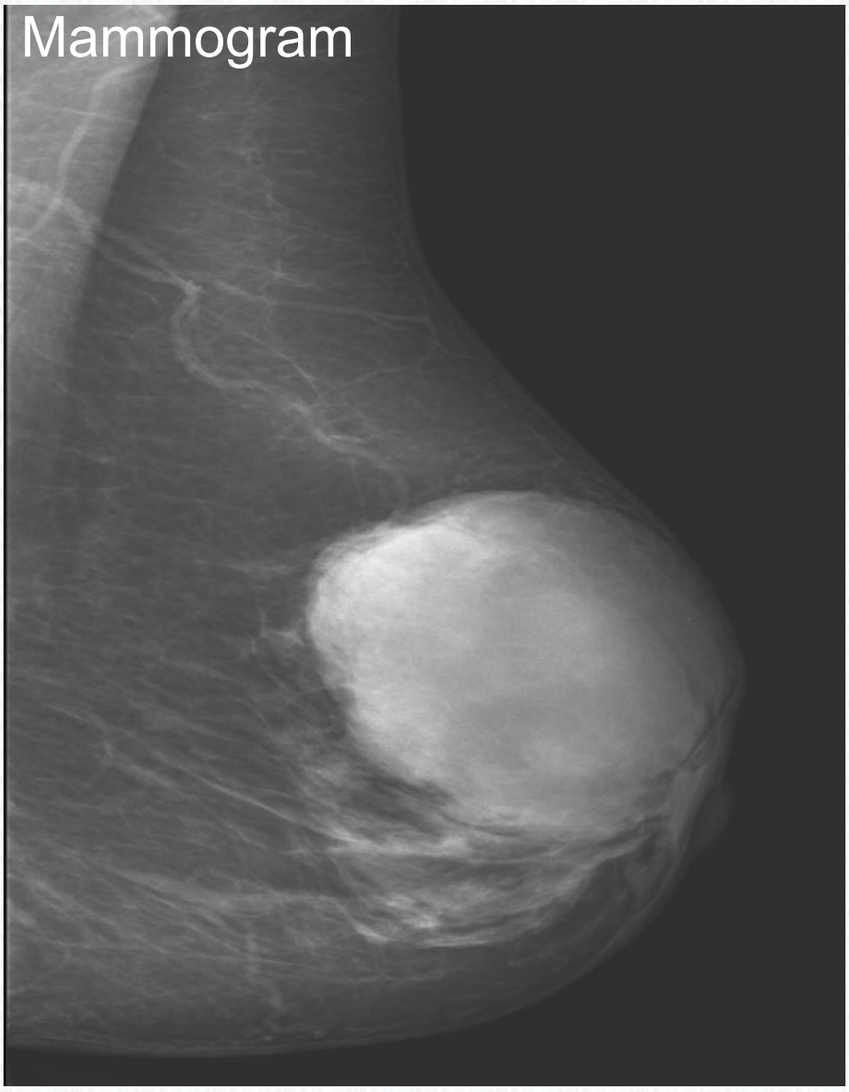
- Firm, well circumscribed
- Non-tender
- Highly mobile (breast mice)
- Upper outer quadrant

Diagnosed with **triple approach**

- Clinical examination,
- USG,
- FNAC (if required)

Histology
Clear margins, separate from the surrounding fatty tissue

Phyllodes Tumour



- Elderly age group
- Benign, fibro-epithelial tumour
- Fast growing
- Large size

Prophylactic Mastectomy

Can be performed for patients with:

- Strong family history
- BRCA mutation positive
- H/O breast cancer in one breast
- Biopsy suggestive of lobular carcinoma in situ or atypical hyperplasia

Post mastectomy complications

- Upper limb **lymphoedema**→ Due to removal of axillary lymph nodes
- Adhesive capsulitis of shoulder (**Frozen shoulder**)→ Due to reduced shoulder movement
- Scar tissue **cording** in the armpit→ Due to larger scars

Management

- Range of motion exercises
- Compression bandaging for lymphoedema
- Scar mobilisation for cording

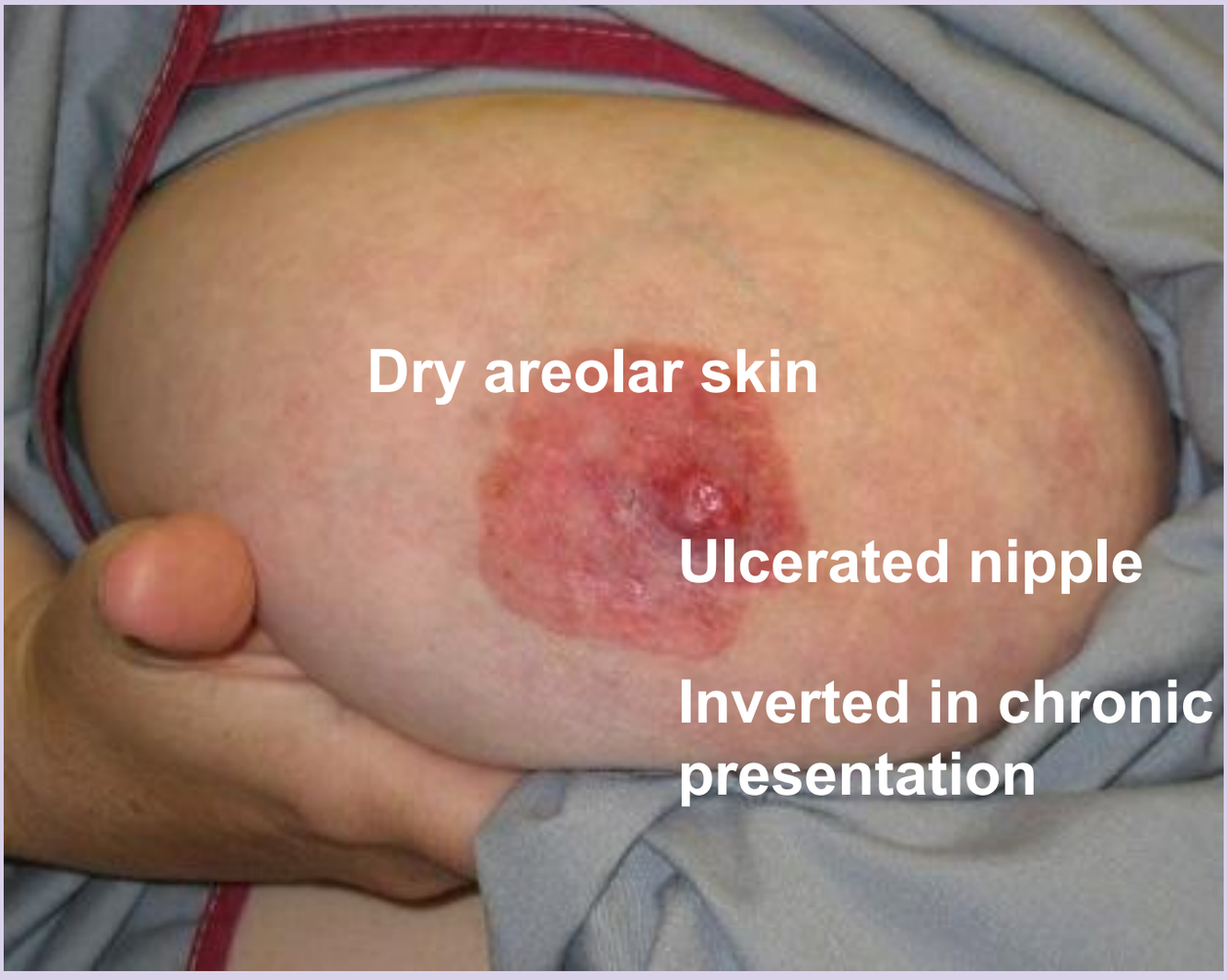
Paget's Disease

Features

- Blood stained nipple discharge
- Dry areolar skin causing itching
- Ulcerated nipple
- Inverted nipple due to scaring (long term)

Investigation

- Skin punch biopsy



Fat Necrosis

- Usually with history of trauma to breast
- Redness or bruises around the palpable lump
- Felt as firm, round lump

Histopathology of Breast Conditions

- **Fibroadenoma** → Proliferation and expansion of the stromatolites with low cellularity
- **Fibrocystic changes** → Cystic formations with mild epithelial hyperplasia
- **Hamartoma** → Encapsulated adipocytes within a fibrotic stroma
- **Paget's disease** → In situ carcinoma of nipple epidermis

Intraductal invasive carcinoma → Most common breast cancer

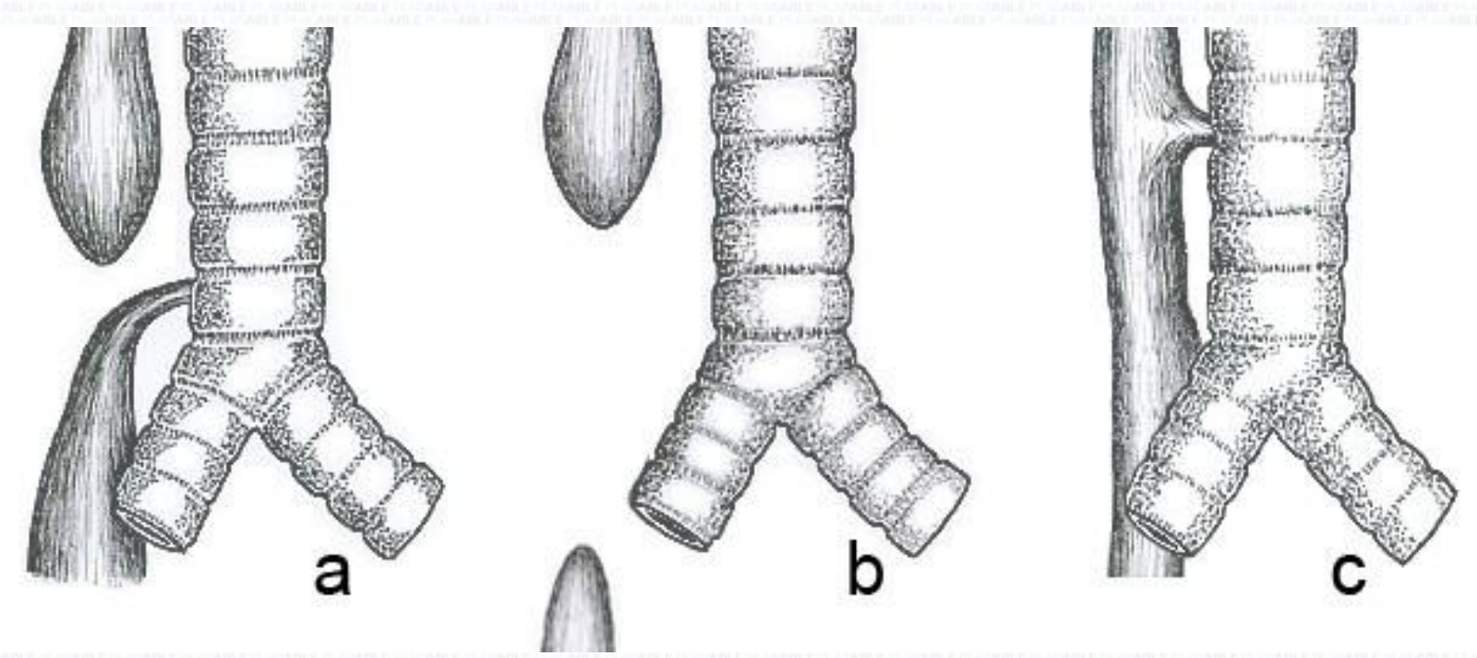
Oesophageal Atresia

Presentation

- Polyhydramnios
- Absent gastric bubble on antenatal USG scan
- Diagnosed after 26 weeks of gestation
- Associated with VACTERL defect

Complications

- Aspiration pneumonia
- Gastric distension at birth



a) Oesophageal atresia with distal tracheoesophageal fistula
b) Isolated esophageal atresia without tracheoesophageal fistula
c) H-type tracheoesophageal fistula

Atresia Comparisons

No Bubble	Oesophageal atresia
Single Bubble	Gastric atresia
Double Bubble	Duodenal atresia
Triple Bubble	Jejunal atresia

Pharyngeal Pouch (Zenker's Diverticulum)

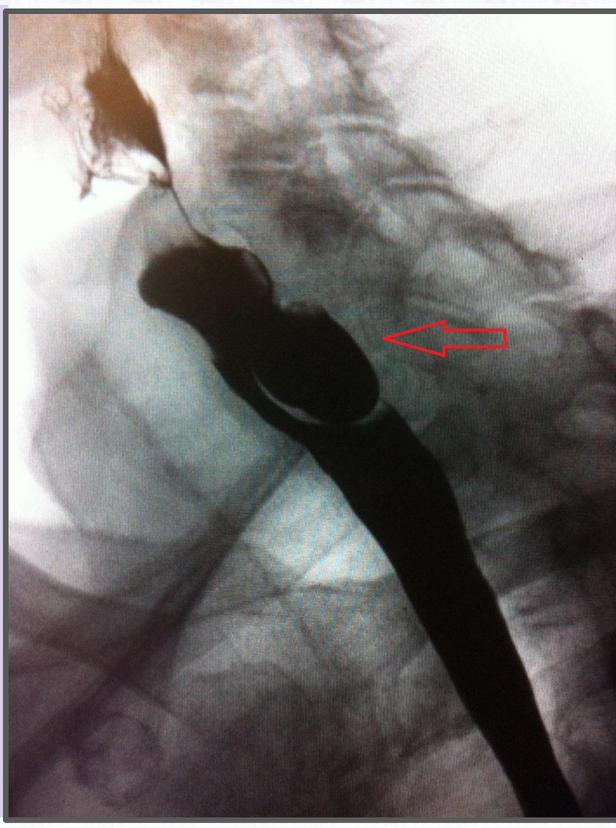
Herniation between thyropharyngeus and cricopharyngeus muscles

Presentation

- Dysphasia
- Regurgitation of **old eaten food**
- Halitosis
- Chronic cough
- Progressive weight loss

Investigation

- Avoid endoscopy (fear of rupture)
- Barium swallow may show residual pool of contrast within the pouch



Management

Surgical (minimal invasive surgery)

Oesophageal Carcinoma

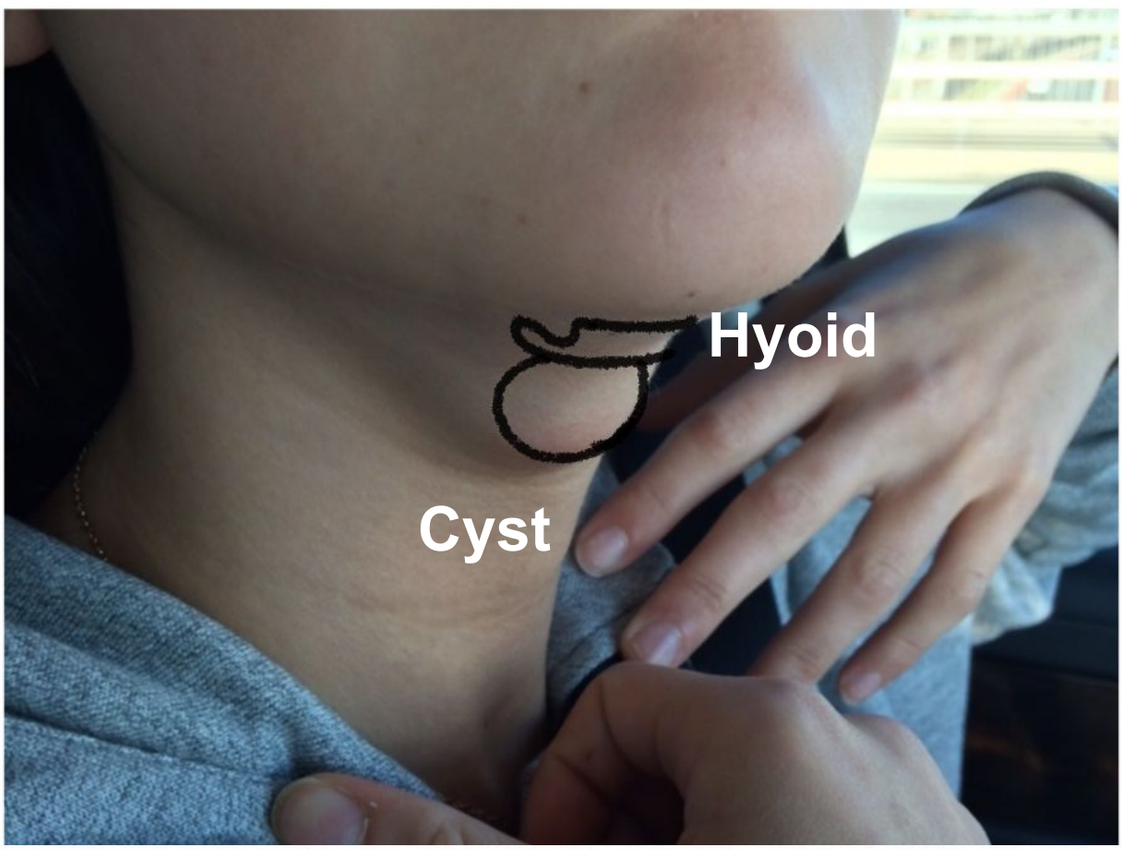
Presentation

- Old age
- Gradually worsening dysphagia
- Long standing gastric reflux
- Weight loss

The commonest type → **Adenocarcinoma**

Thyroglossal Cyst

- Formed from **persistent thyroglossal duct**
- Midline neck swelling which **moves with tongue protrusion**
- Accounts for 75% of midline neck swellings in children
- Asymptomatic, benign
- Fluid filled



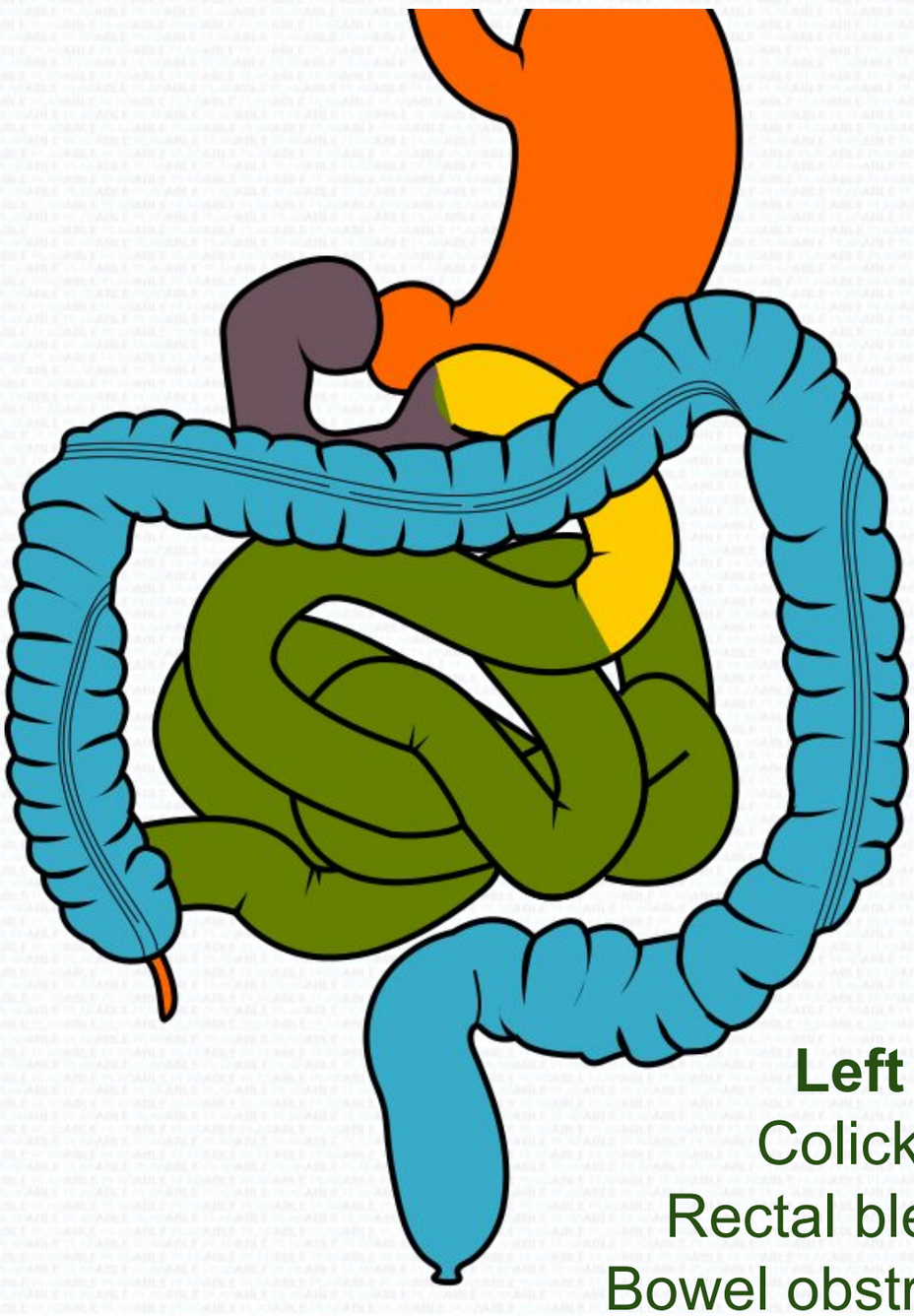
Diagnosis

- USG (first-line & investigation of choice)
- Rarely requires MRI or CT scan
- To rule out ectopic thyroid tissue in wall→Tc-99m scan

Colorectal Cancer

Risk factors

- Family history
- Inflammatory bowel disease
- Polyposis syndrome
- Meat rich diet, sedentary lifestyle



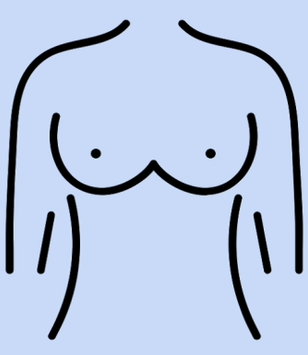
Right colon
Weight loss
Blood loss
Mass in RIF

Left colon
Colicky pain
Rectal bleeding
Bowel obstruction
Change in bowel habits
(Tenesmus)

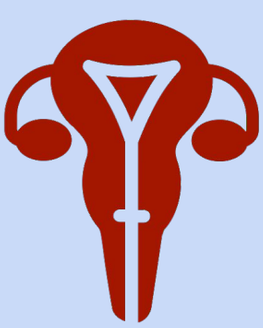
Tumour Markers

Tumour marker	Associated cancer
CA 125	Ovary
CA 19-9	Pancreas
CA 15-3	Breast
Prostate specific antigen (PSA)	Prostate
Carcinoembryonic antigen (CEA)	Colon, Rectum
Alpha-fetoprotein (AFP)	Liver, Teratoma
Lactate dehydrogenase (LDH)	Testis (Seminoma)

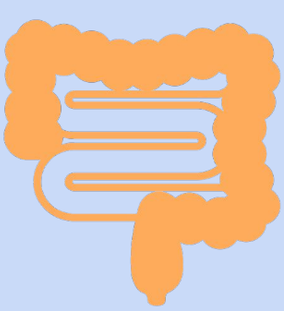
Screening is available in UK for everyone:



Breast cancer



Cervical cancer



Colon cancer

Cancer Screening

Colorectal Cancer

- Fecal immunochemical test (**FIT**) → detect blood in stools
- Every 2 years, from age 60 to 74 years
- Home testing kits are sent by post

Breast Cancer

- **Mammogram**
- Every 3 years, from age 50 to 70 years
- For high risk → from age 40 to 70 years

Cervical Cancer

- **PAP smear** with cytology and HPV testing
- Every 3 years, from age 25 to 49 years
- Every 5 years, from age 50 to 64 years

Colon

	Mesenteric ischemia	**Ischemic colitis**
Onset	Acute	Gradual
Features	**Embolic**: sudden total loss of blood supply (to a segment of bowel)	**Multifactorial**: transient loss of blood supply
Treatment	**Urgent** surgery: To restore blood supply To remove necrotic tissue	**Conservative**: Medications Or Surgical

Acute Mesenteric Ischaemia

Brain trainer:

A man presents with acute onset of severe, persistent abdominal pain. His bowel is distended and silent on auscultation. He has atrial fibrillation. What is the most likely cause?

➔ **Acute mesenteric ischaemia**

Perianal Abscess

Presentation

- Lump near anal opening
- Throbbing pain (on sitting)
- Constipation
- Fever, local rise of temperature
- Erythema around swelling

Common with

- Diabetes
- Immunocompromised status
- With Crohn’s disease

Treatment

- Incision and drainage (definitive)
- Antibiotics

Perianal Abscess

Perianal **haematoma** can get infected and become abscess. Haematoma can be treated **conservatively** with analgesics.

Anal Fistula

Abnormal communication between the anal canal and perianal skin

Symptoms

- Pain
- Pus, Serous discharge
- Itching

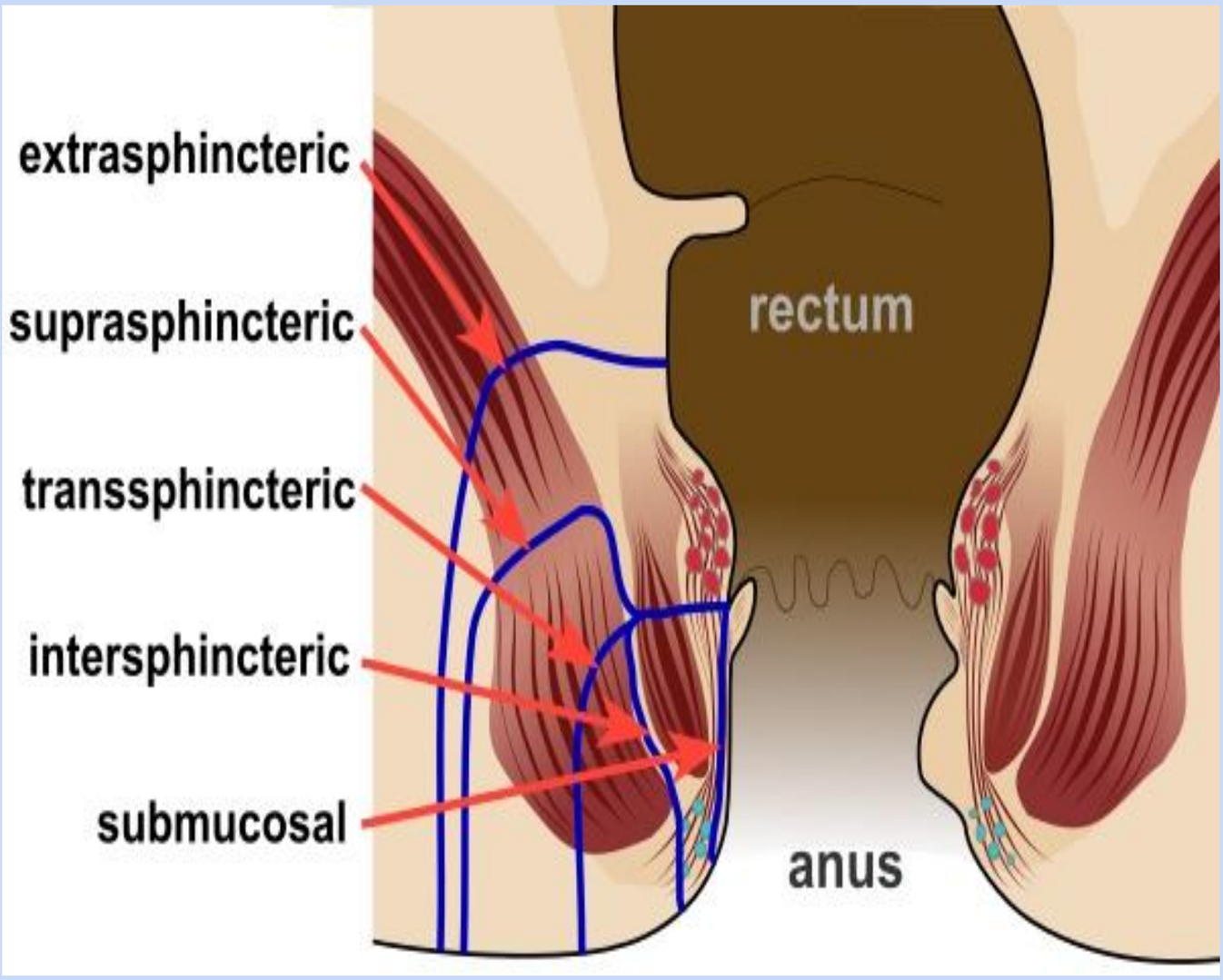
Predisposing factors

- Previous history of fistula
- Inflammatory bowel disease
- Diverticulitis

Treatment

- **High/ complex fistula**: Seton suture, ligation
- **Low/ simple fistula**: Lay open

Anal Fistula



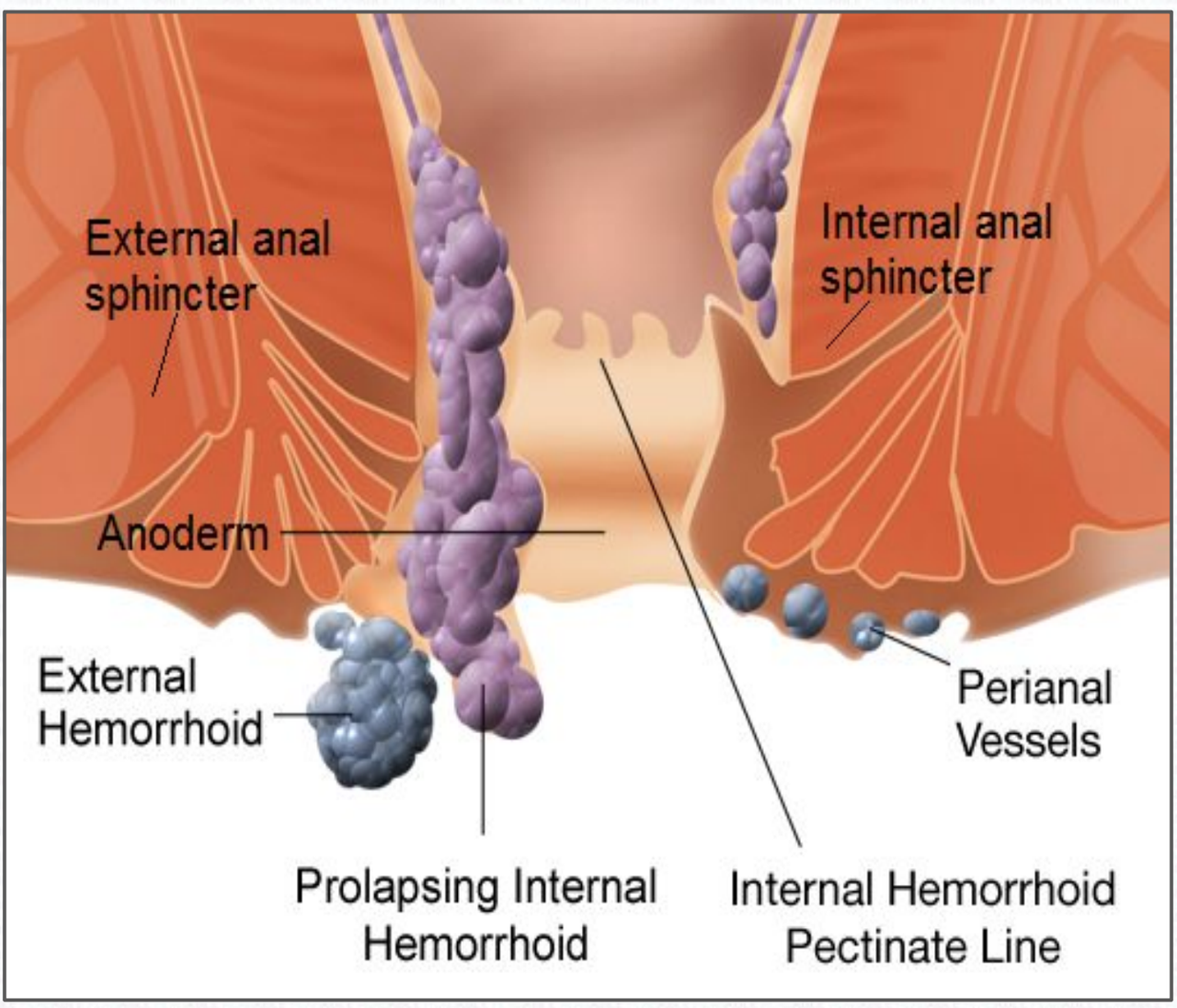
Avoiding injury to anal sphincters is important.
Otherwise it can lead to faecal incontinence

Haemorrhoids (Piles)

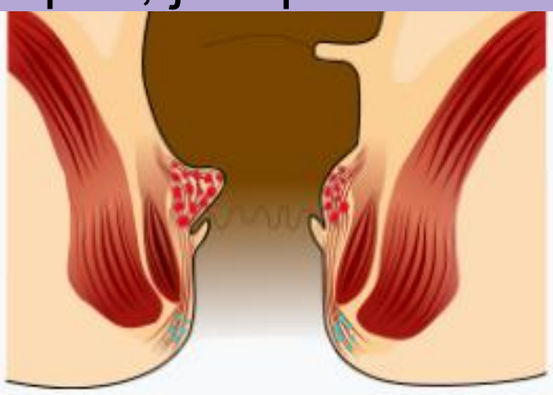
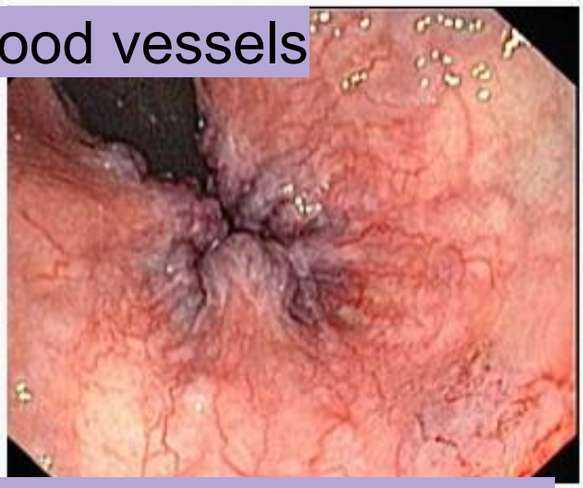
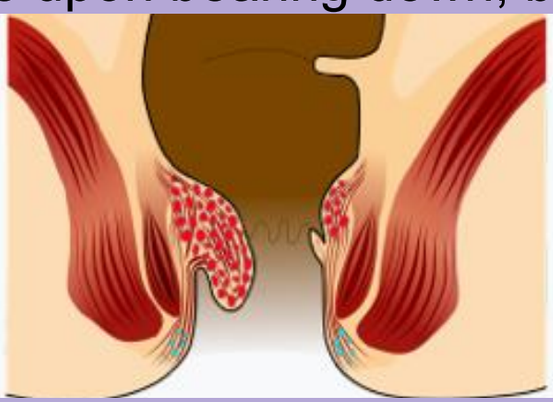
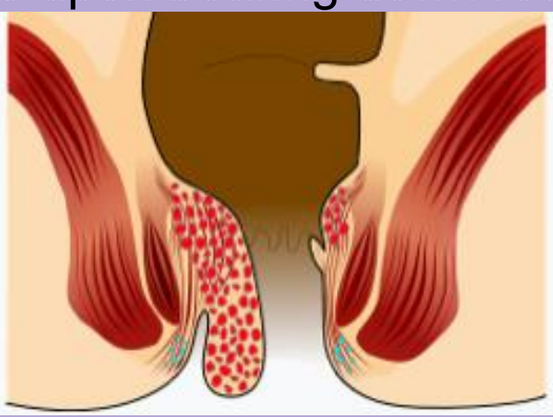
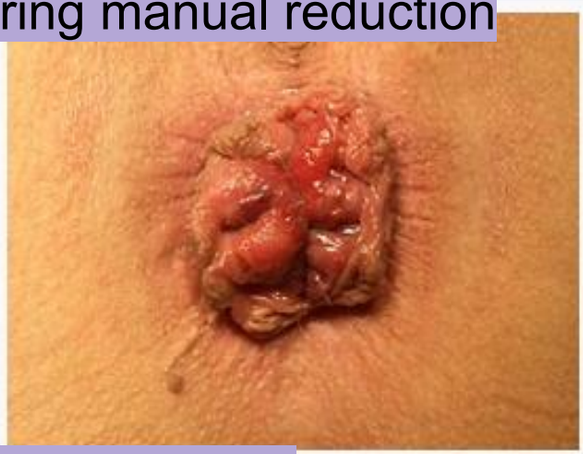
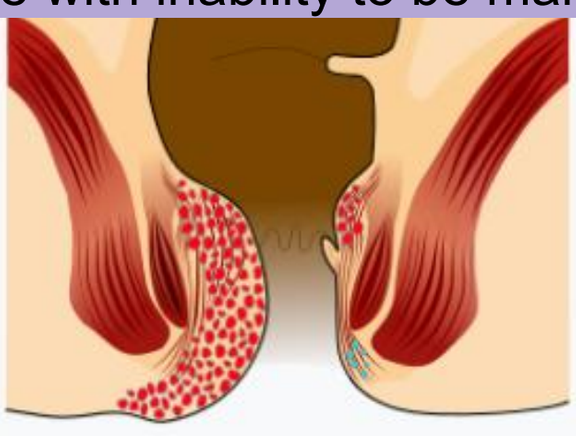
- It is **perianal excess tissue** which consists of normal endow all cushion
- Excess tissue contains mucosa + submucosa + blood vessel pedicles

- Internal haemorrhoids → Upper anal canal
- External haemorrhoids → Lower anal canal

Anal canal is marked by pectinate line



Internal Haemorrhoids

Grade	Diagram	Picture
1		
No prolapse, just prominent blood vessels		
2		
Prolapse upon bearing down, but spontaneous reduction		
3		
Prolapse upon bearing down requiring manual reduction		
4		
Prolapse with inability to be manually reduced		

Haemorrhoids (Piles)

Presentation:

- Young age
- Post defection bleed
- Bright red, splash like, streaks on toilet paper
- Constipation associated
- Pain→ only with external haemorrhoids

Internal haemorrhoids covered by columnar epithelium.
Not painful unless strangulated or infected

External haemorrhoids are covered proximally with anoderm and distally by skin.
Therefore they are painful

Investigation:

- Proctoscopy
- Rigid sigmoidoscopy
- If suspicion of cancer, flexible sigmoidoscopy/ colonoscopy

Haemorrhoids (Piles)

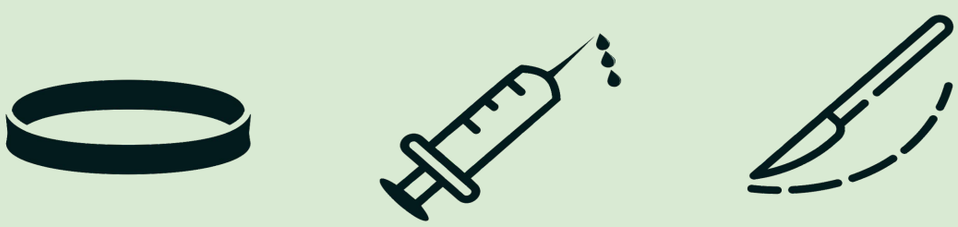
Treatment:

Conservative

- Laxatives, bulking agents to avoid constipation
- Local anaesthetic creams for pain
- Digital replacement of prolapsed haemorrhoids

Surgical

- Sclerotherapy
- Banding
- Stapling
- Haemorrhoidectomy



Oesophageal Cancer

Symptoms

- Worsening dysphagia (Solid first, liquids later)
- Weight loss
- Heartburn

Associated with

- Smoking
- GORD
- Alcohol
- Iron deficiency anaemia

Investigations

- Upper GI endoscopy
- Barium swallow → Irregular narrowing + Proximally dilated segment
- Biopsy

Gastric Cancer

Symptoms

- Dyspepsia
- Weight loss, dysphagia
- Anaemia
- Epigastric mass

Troisier's sign → Lump in **left supraclavicular region**
indicative of gastric cancer

Associated with

- Hepatomegaly
- Ascites

Risk factors

- H. pylori infection
- Smoking
- Familial risk
- Blood group A

Management:

- Screen for nutritional deficiency
- Partial or total gastrectomy

Carcinoma

Brain trainer:

A 60 year old man presents with a lump in the left supraclavicular region. He complains of reduced appetite and he has lost 7 kg in the last two months. What is the most probable diagnosis?

➔ **Gastric carcinoma**

Paralytic Ileus

It is cessation of gastrointestinal tract motility.

Seen after:

- Prolonged abdominal surgery
- Electrolytic disturbances
- Anticholinergic or opiate use
- Immobilisation

Features:

- Nausea, vomiting
- Abdominal distension
- **Absent bowel sounds**

Conservative management

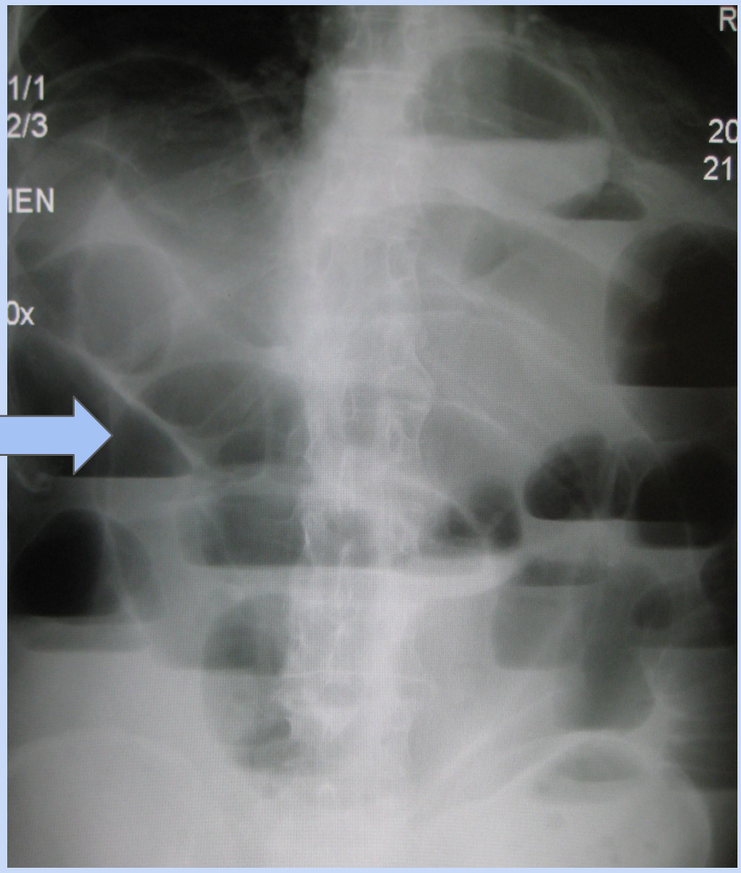
- **Drip and Suck** method
- Drip→ Intravenous fluid
- Suck→ Empty stomach with NG tube from fluid and gas
- Correct electrolyte imbalance

Imaging

Abdominal X-ray= air/fluid filled loops of small and/or large bowel

Paralytic Ileus

Multiple air-fluid level



Generalised distension of bowel

Intestinal obstruction :

- Similar features as paralytic ileus. Here, **bowel sounds are present**
- Urgent surgical reference is required

Intestinal obstruction is noisy ileus is not!

Pancreatic Cancer

Symptoms

- Abdominal, back pain
- Abdominal distension
- Tenderness
- Weight loss, loss of appetite
- Obstructive jaundice
- Abnormal LFT

Risk factors

- Smoking/ alcohol
- Obesity
- Family history
- Diabetes mellitus

Usually recognised in later stages

Management:

- Without metastasis → Whipple's resection
- With metastasis → Palliative ERCP with stent

Hernia

Incisional hernia: Hernia through surgical site

Umbilical hernia: Hernia of fatty tissue or part of bowel through umbilicus.
Most commonly congenital

Hiatus hernia: Hernia of part of the stomach in chest cavity through diaphragmatic opening

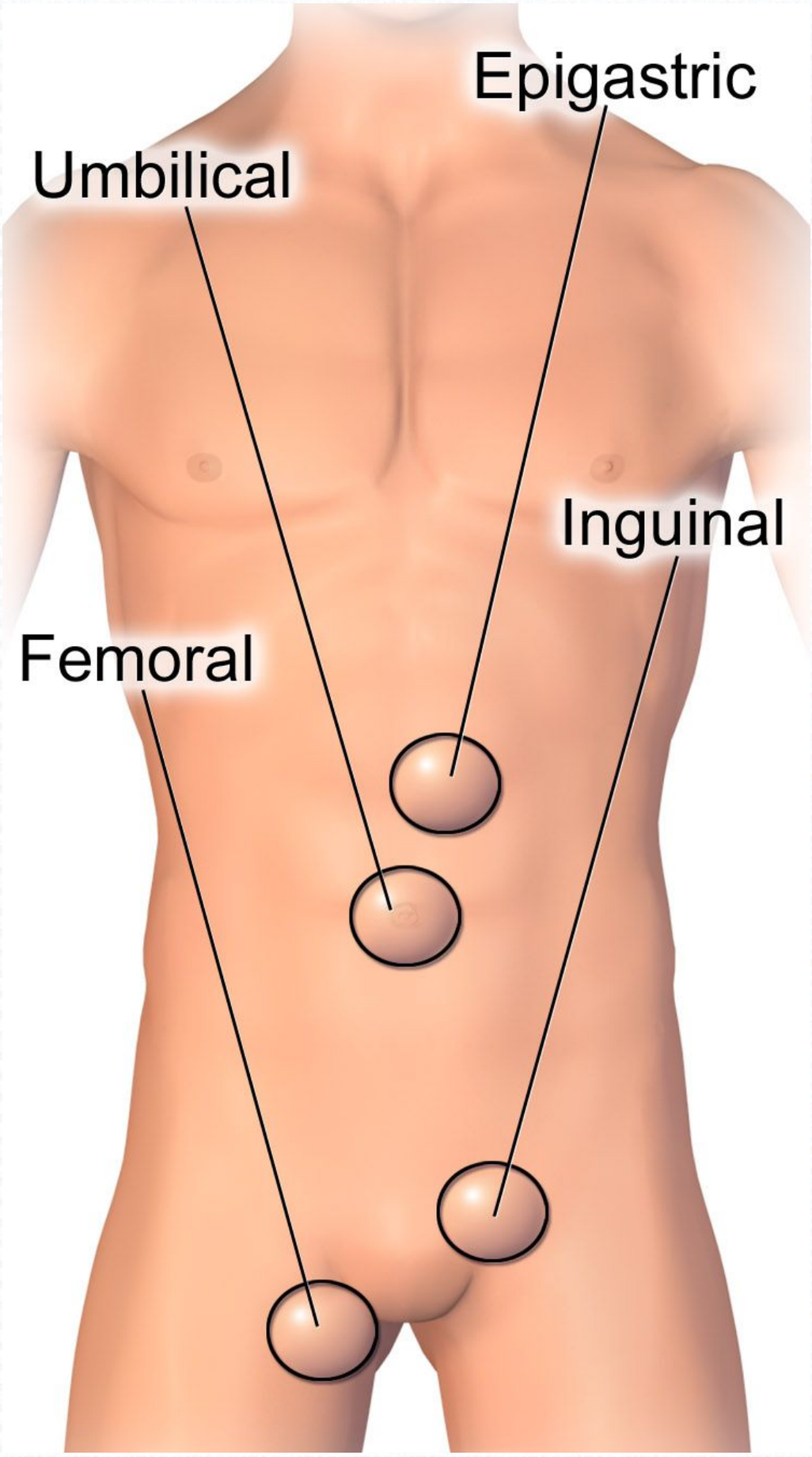
Diaphragmatic hernia: abdominal organs protrude through diaphragm (not necessarily through opening)

Spigelian hernia: When part of the bowel protrudes through lateral abdominal muscles below umbilicus

Inguinal hernia: most common in men, indirect hernia can protrude till scrotum

Femoral hernia: Part of bowel protrudes in femoral canal, more common in females

Hernia



Hernia

Inguinal hernia

Direct inguinal hernia: Passes through the posterior wall of inguinal canal

Indirect inguinal hernia: Passes through the superficial inguinal ring to deep inguinal descending to scrotum

Management

- Asymptomatic and reducible: No surgery
- Symptomatic: Surgical repair with prosthetic mesh
- Symptomatic and irreducible: Surgical emergency to avoid strangulation

Femoral hernia always needs to be repaired

Appendicitis

Risk factors

- 10- 20 years old
- Male
- Frequent use of antibiotics
- Smoking

Complications

- Appendix perforation
- Generalised peritonitis
- Appendix mass or abscess or adhesions
- Sepsis

Symptoms

- Abdominal pain
- Anorexia, nausea
- Constipation
- Vomiting
- Fever

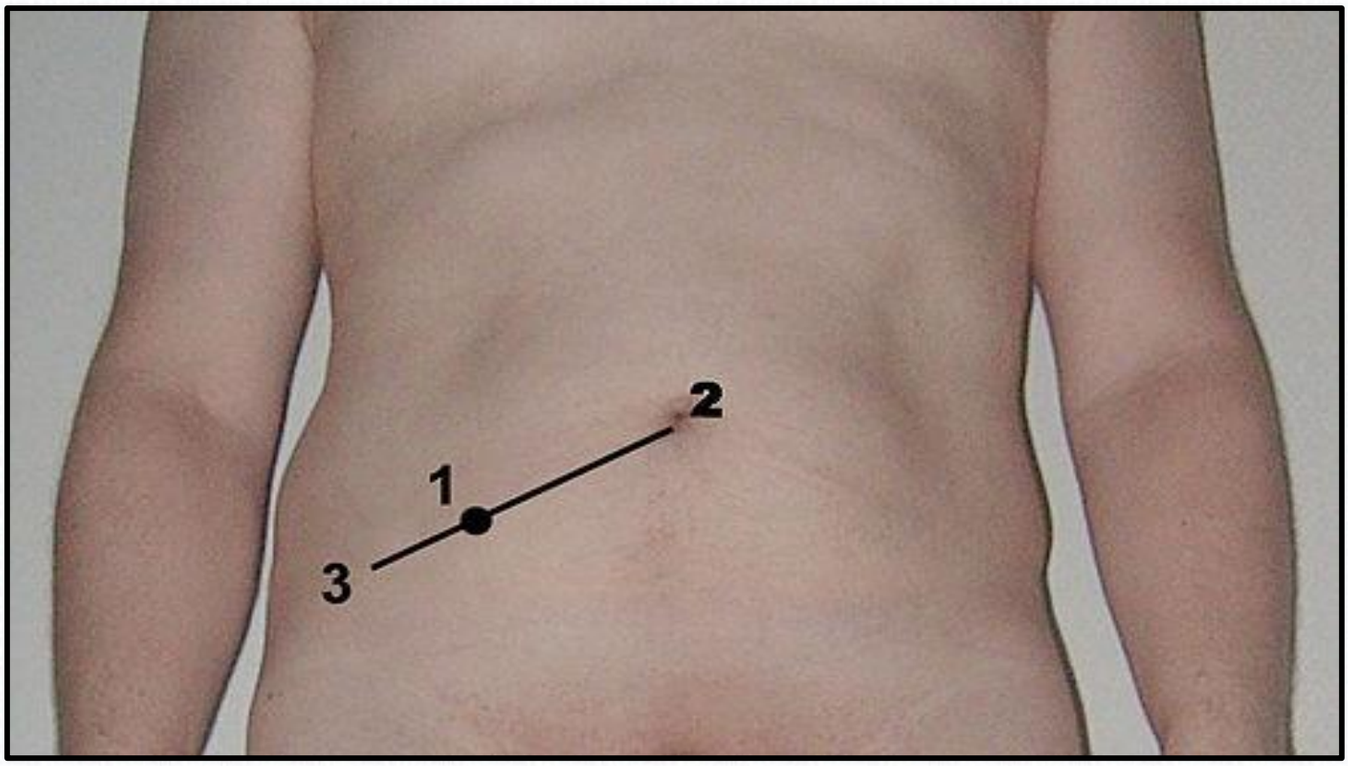
Investigations:

- Full blood count, CRP, r/o UTI
- CT scan is more sensitive test than USG

Management:

- Urgent admission
- Surgery

Appendicitis



Location of McBurney's point (1), located two thirds the distance from the umbilicus (2) to the right anterior superior iliac spine (3)

Cholecystitis

Inflammation of gallbladder. Most common cause is gallstones (cholelithiasis)

Predisposing factors:

- Women
- Obesity
- Increasing age
- Diabetes mellitus
- Use of oral contraceptives

Fat Female in Forties

Presentation

- Right upper quadrant pain
- Anorexia, nausea/ vomiting
- Fever
- Jaundice
- **Murphy's sign**= Inspiration is difficult due to pain when examiner is palpating abdomen near right costal margin
- Referred pain to shoulder or interscapular region

Management

- Urgent admission
- USG, WBC, CRP, Sr Amylase
- Antibiotics +/- surgery

Biliary Colic

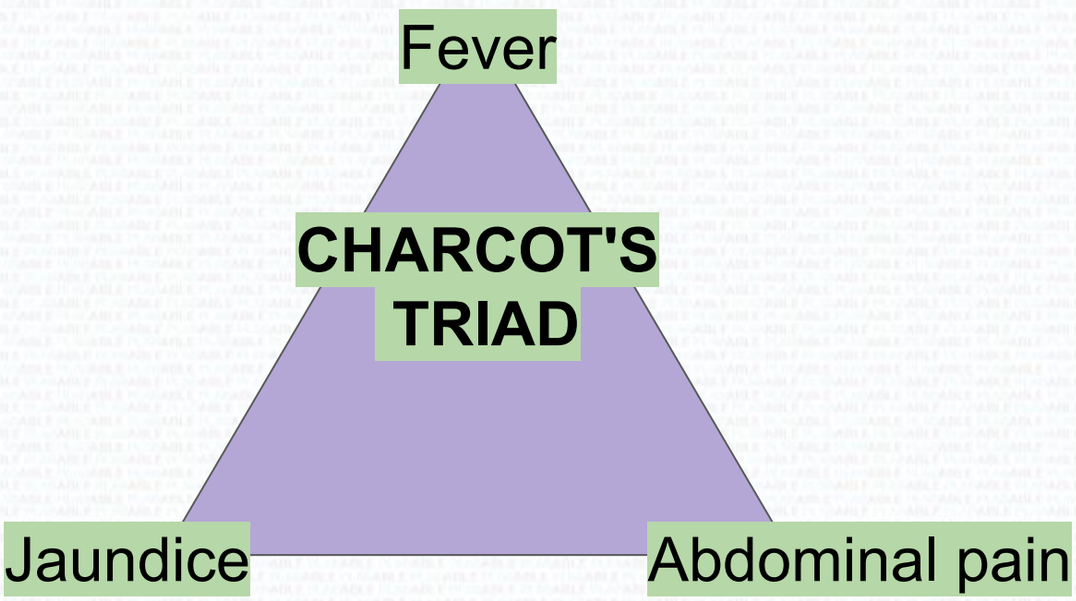
- Sudden pain due to gallstones blocking the cystic duct temporarily
- Usually after heavy fatty meal
- At right upper quadrant of the abdomen
- Repeated attacks are common

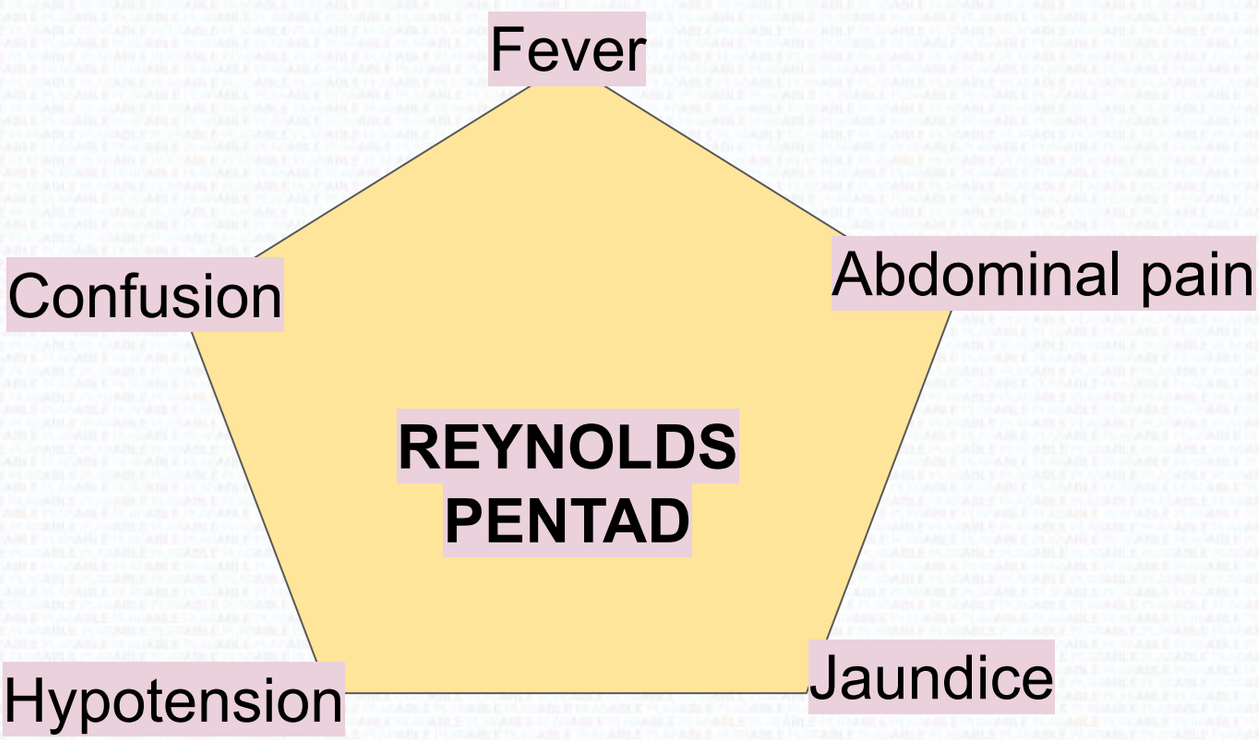
Ascending Cholangitis

Infection due to obstruction biliary system

Management:

- Antibiotics
- ERCP (remove obstruction)





Linea Alba

Brain trainer:

What anatomical structure is pierced during a midline port insertion during a laparoscopic cholecystectomy?

➔ **Linea alba**

Laparoscopy

Brain trainer:

What anatomical structure(s) is pierced during insertion of a port at the midway point between umbilicals and anterior superior iliac spine during laparoscopy?

➔ **Internal oblique muscle and external oblique aponeurosis**

Drain Insertion

Brain trainer:

What is the SINGLE most likely anatomical structure to be pierced when inserting a drain in the mid-axillary line?

➔ **Intercostal muscles**

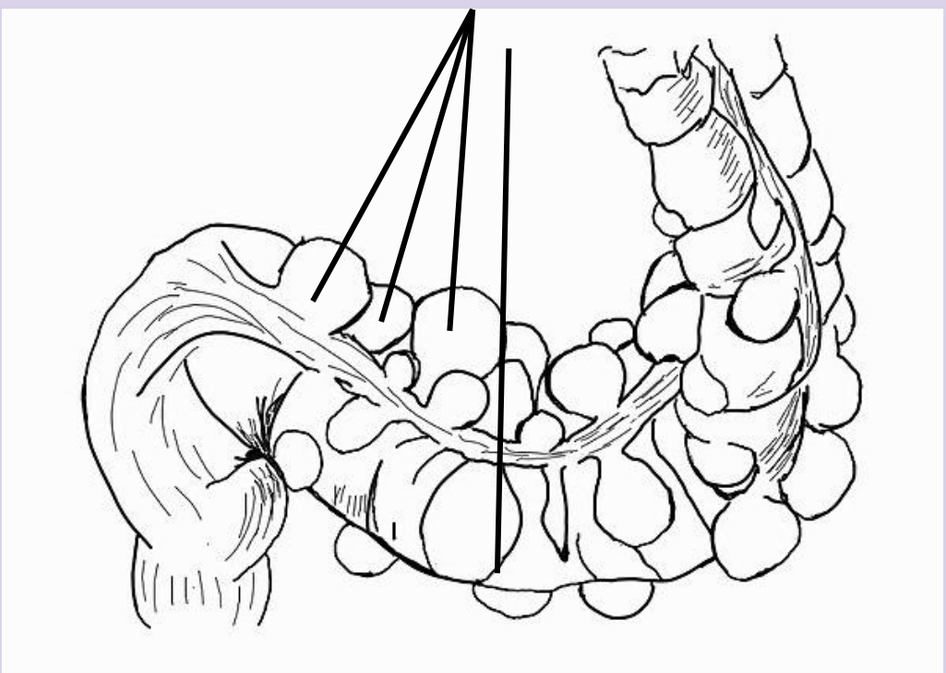
Diverticulosis

- Multiple pouches (diverticula) in the colon that are not inflamed
- Sigmoid colon is most commonly affected
- Asymptomatic
- If infected, called as diverticulitis Which can cause fever, abdominal pain, bleeding or rupture in severe cases

Risk factors

- Old age
- Low fibre intake
- Genetic

Multiple diverticula



Diverticulitis

Diverticula becomes inflamed and infected

Presentation

- Severe lower abdominal pain
- Fever
- General malaise
- Occasionally rectal bleeding
- **Uncomplicated** diverticulitis: **Localized** diverticular inflammation that does not extend to the peritoneum
- **Complicated** diverticulitis: Diverticulitis associated with **complications** like abscess, peritonitis, fistula, obstruction, or perforation

Investigations

- USG abdomen, pelvis
- CT to confirm diagnosis, extent of severity
- Urgent colonoscopy in acute scenario

Management

- Antibiotics
- Analgesia
- Surgical exploration according to severity

Diabetes Before Surgery

Patients on insulin for elective major surgery

Day before surgery: Give rate controlled infusion of 80% of total once daily long-acting insulin analogue + other insulin as usual

During intraop period: Give rate controlled infusion 80% of total once daily long-acting insulin analogue, **stop** other insulin

Alongside **start** on iv infusion of KCl + glucose + NaCl to avoid hypoglycemia

Continue until patient starts taking orally.

- Aim to achieve and maintain glucose concentration within the usual target range (6–10 mmol/litre; up to 12 mmol/litre is acceptable)
- Infusing a constant rate of glucose-containing fluid as a substrate, while also infusing insulin at a variable rate.

Diabetes Before Surgery

Patients on oral hypoglycaemic

For surgery requiring missing one meal: Continue same medications

For longer surgeries or with uncontrolled DM: Need to shift on insulin and monitor sugar levels

Emergency surgery

For all patients:

Check blood-glucose, blood or urinary ketone concentration, serum electrolytes and serum bicarbonate before surgery

R/O ketoacidosis

Haemoglobin Before Surgery

Elective surgery:
<100 → Postpone the surgery + investigate for anaemia
<80 → Blood transfusion + postpone the surgery

Emergency surgery:
<100 → Go ahead with the surgery
<80 → Blood transfusion + surgery

History of MI → No elective surgeries for at least 6 months after an episode of MI

Postpone Surgery

Brain trainer:

A patient is admitted for elective herniorrhaphy. What is a reason to delay this operation?

➔ **Myocardial infarction within last 6 months**

Postpone Surgery

Brain trainer:

A man is about to undergo an elective inguinal hernia surgery. HIs haemoglobin is 82 g/L. What is the most appropriate action?

➔ **Investigate and postpone the surgery**

For elective surgery if haemoglobin is below 100 g/L you must postpone surgery and investigation.

Surgical Haemorrhage

Primary haemorrhage: Intraoperative, on table

Reactive haemorrhage: Within 24 hours of operation

Secondary haemorrhage: Within 7-10 days

Post tonsillectomy bleed:

Within 24 hours: Due to inadequate haemostasis, displacement of suture: Return to theatre may be required

After 24 hours within 10 days: Due to vessel erosion secondary to infection: Admit for iv antibiotics

Reactive Haemorrhage

Brain trainer:

After thyroidectomy a patient is found hypotensive with blood dripping from the drain. What type of haemorrhage?

➔ **Reactive haemorrhage**

Anastomotic Leak

- Feared complication after hemicolectomy
- Usually occurs 5 to 10 days after surgery
- Severe abdominal pain and tenderness at site of anastomosis
- Fever
- Reduced bowel sounds

Stoma Complications

If there is a development of painful **swelling** at stoma site + **fever**, consider the formation of an abscess

→ Local exploration may be required

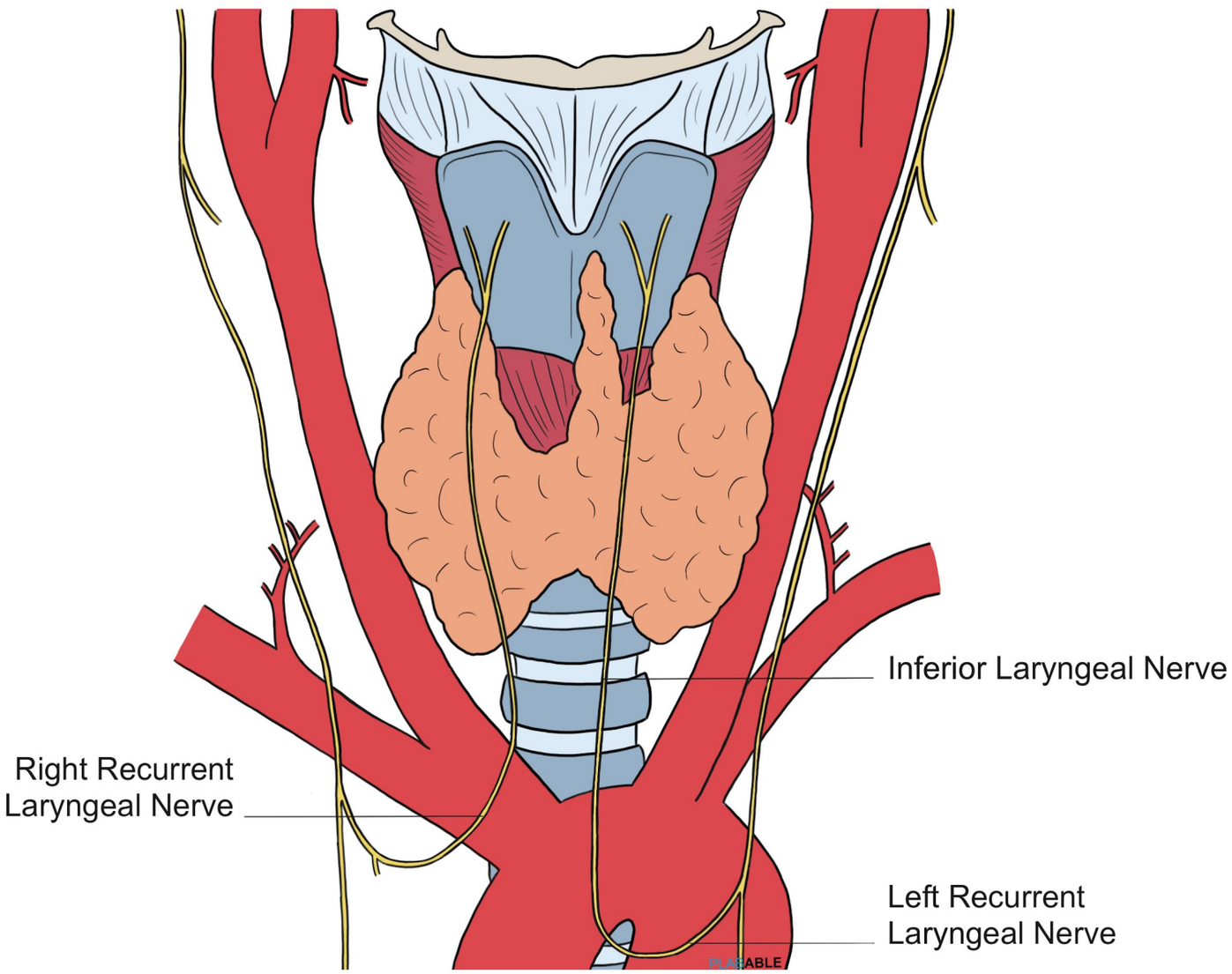
Nerve Injuries in Thyroidectomy

Unilateral injury to recurrent laryngeal nerve

- Hoarseness of voice

Bilateral injury to recurrent laryngeal nerve

- Aphonia
- Airway obstruction



Recurrent Laryngeal Nerve

Perianal Fistula Management

Superficial, simple, low fistula

- Lay open (fustulotomy)

Deep, complex, high fistula

- Ligation of inter-shincteric fistula tract

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