Oesophagus / Esophagus

L1

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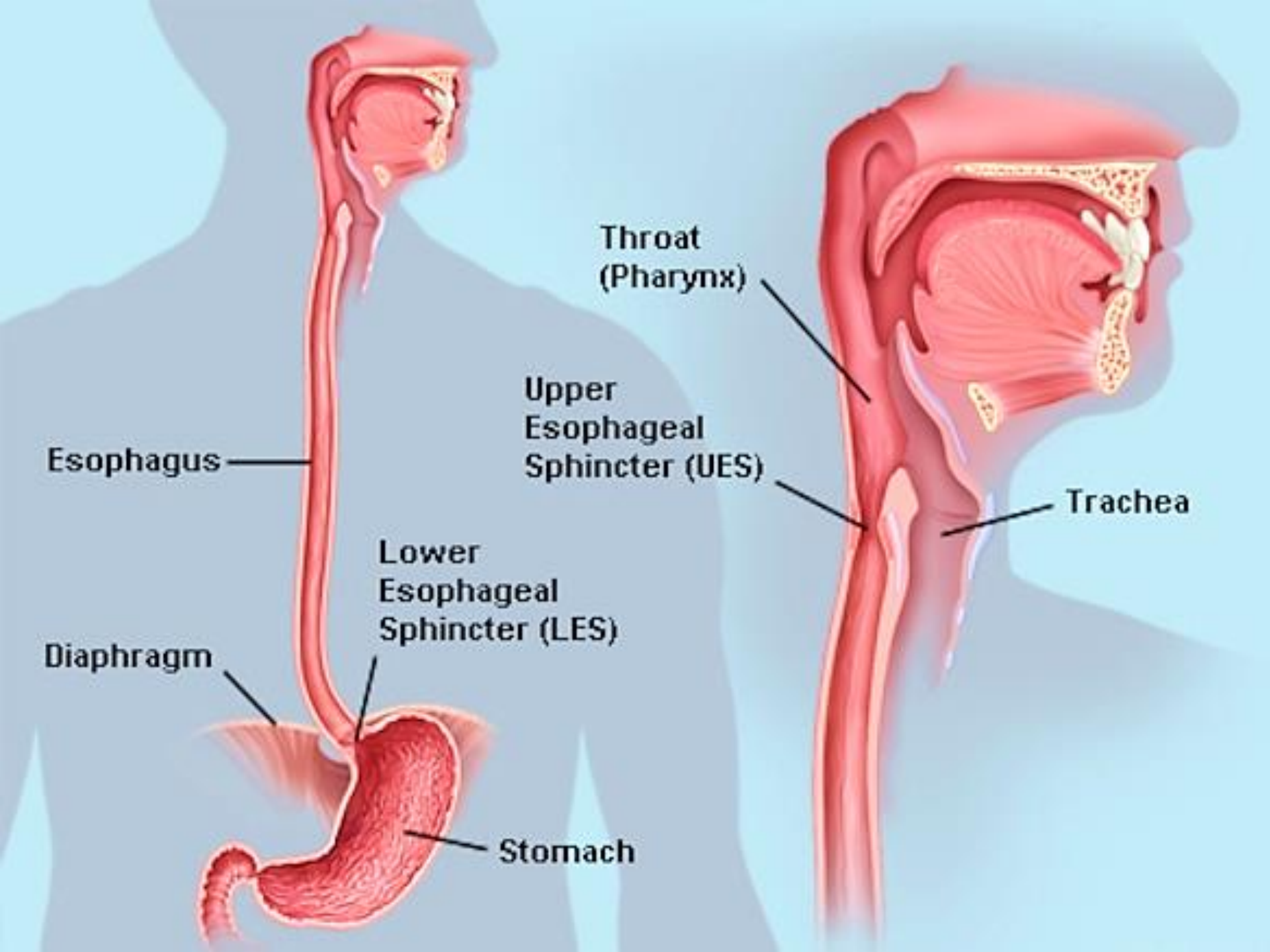
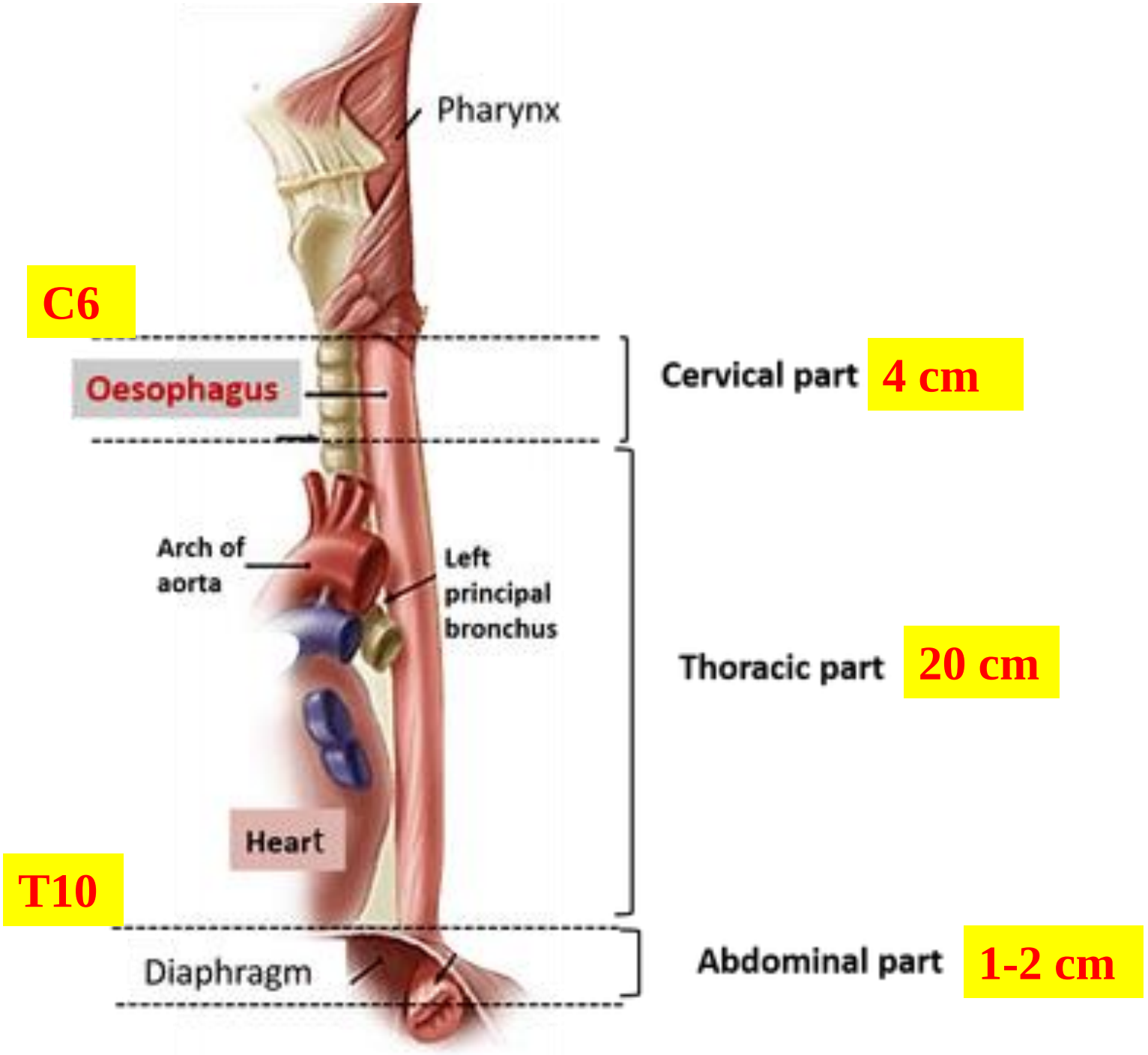
الثلاثاء ١١ / ١٠ / ٢٠٢٢

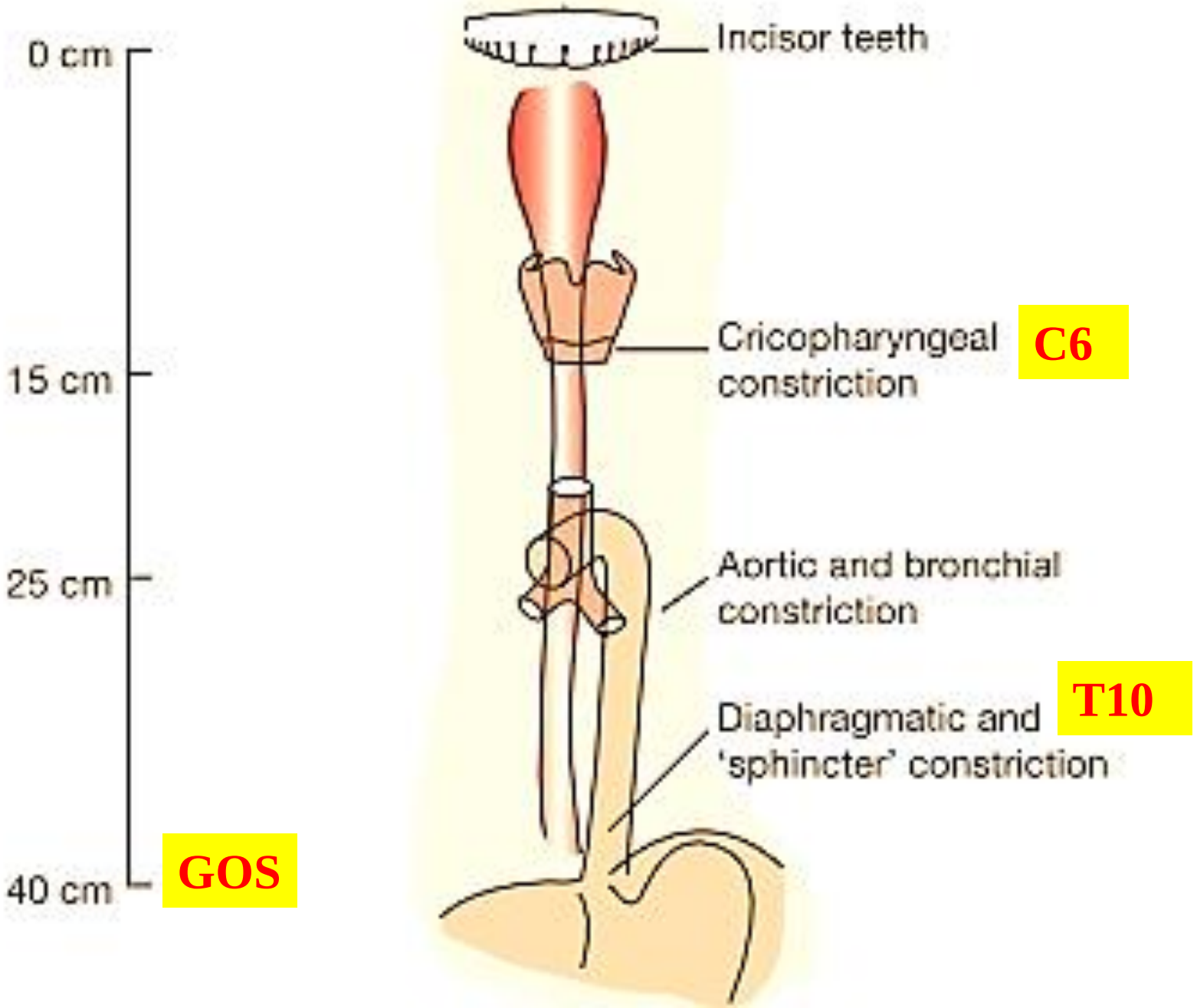
Bailey & Love's Short Practice of Surgery, 27th Edition . CH 60 .
Browse's Introduction to The Symptoms and Signs of Surgical Disease , 4th Edition.

Objectives :

- Upon completion of this lecture, you will be able to:
- Describe the classical history and physical examination findings for the Oesophagus
- Discuss the advantages and limitations of the different radiologic studies utilized in the diagnosis of Oesophagus.
- Describe the treatment priorities for the Oesophageal diseases and injuries.
- Know surgical operations regarding Oesophageal conditions.
- Manage emergent Oesophageal states.


Throat
(Pharynx)
Upper
Esophageal
Sphincter (UES)
Trachea
Esophagus
Lower
Esophageal
Sphincter (LES)
Diaphragm
Stomach


Pharynx
C6
Oesophagus
Cervical part
4 cm
Arch of aorta
Left principal bronchus
Thoracic part
20 cm
Heart
T10
Diaphragm
Abdominal part
1-2 cm


0 cm
15 cm
25 cm
40 cm
Incisor teeth
Cricopharyngeal constriction
C6
Aortic and bronchial constriction
Diaphragmatic and 'sphincter' constriction
T10
GOS

Clinical Anatomy

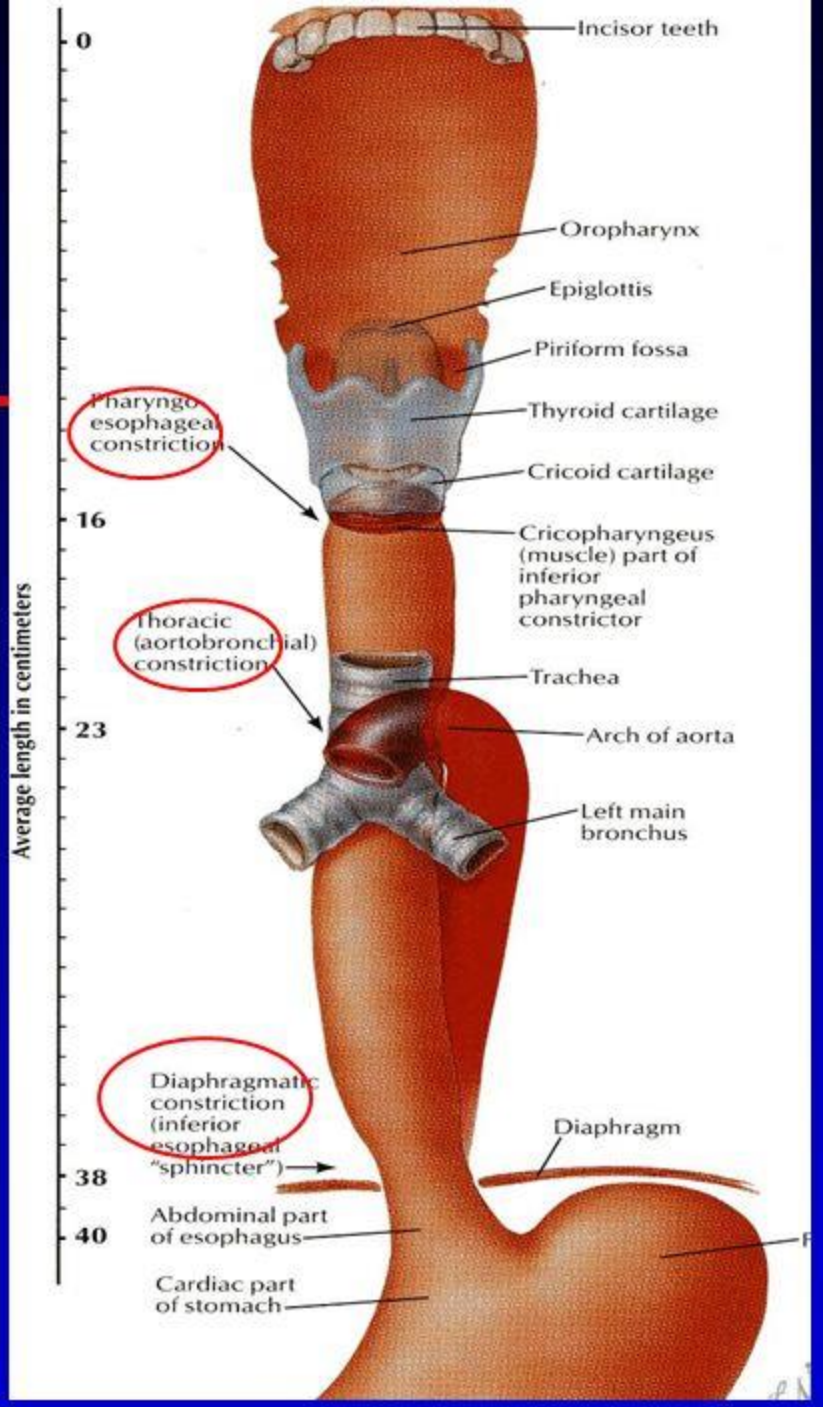
- Three indentations.
- The normal LOS is 3–4 cm in length and has a pressure of 10–25 mmHg.
- Nasogastric tube.
- Endoluminal Ultrasonography and Cardiac doppler.
- O.G.D.
- Assessment for lesions (imaging (Contrast study & E.LU.)).
- Localization of the lesion (pain, dysphagia).

Clinical Physiology

- Oesophageal sphincters (Upper and Lower).
- The normal LOS is 3–4 cm in length and has a pressure of 10–25 mmHg.
- G.O.R.D.
- Motor activities and wave contractions (Coordination and rhythmicity).

ESOPHAGEAL CONSTRICTIONS

- **The esophagus has 3 anatomic constrictions.**
- **The first** is at the junction with the pharynx(pharyngeoesophageal junction).
- **The second** is at the crossing with the aortic arch and the left main bronchus.
- **The third** is at the junction with the stomach.
- **They have a considerable clinical importance.**
- **Why?**



Clinical Pathology

- Intraluminal, Inramural (mucosa & muscularis) & Extramural.
- Injuries & Diseases (ulcer, mass, Ca, Crohn's disease, …).

Symptoms

- Dysphagia (DDx oropharyngeal).Localization.
- Odynophagia (reflux oesophagitis , infective oesophagitis & chemical injury) .
- Regurgitation and Reflux. (Reflux is the passive return of gastroduodenal contents to the mouth
- Loss of weight, anaemia, cachexia, change of voice due to refluxed material irritating the vocal folds, and cough or dyspnoea due to tracheal aspiration may all accompany regurgitation and/ or reflux.
- Hematemesis +/- Melena .
- Chest pain.(gastro-oesophageal reflux and motility disorders) DDx M.I..

Symptoms

Summary box 62.1

Symptoms of oesophageal disease

- Difficulty in swallowing described as food or fluid sticking (oesophageal dysphagia): must rule out malignancy
- Pain on swallowing (odynophagia): suggests inflammation and ulceration
- Regurgitation or reflux (heartburn): common in gastro-oesophageal reflux disease
- Chest pain: difficult to distinguish from cardiac pain

Investigations

- Radiology (Imaging):
  - Plain X Ray , Contrast Study (Barium swallow) and double contrast.
  - CT scan.
  - M.R.I.
- Endoscopy.(flexible video gastroduodenoscopy).
- Endosonography.

Investigation

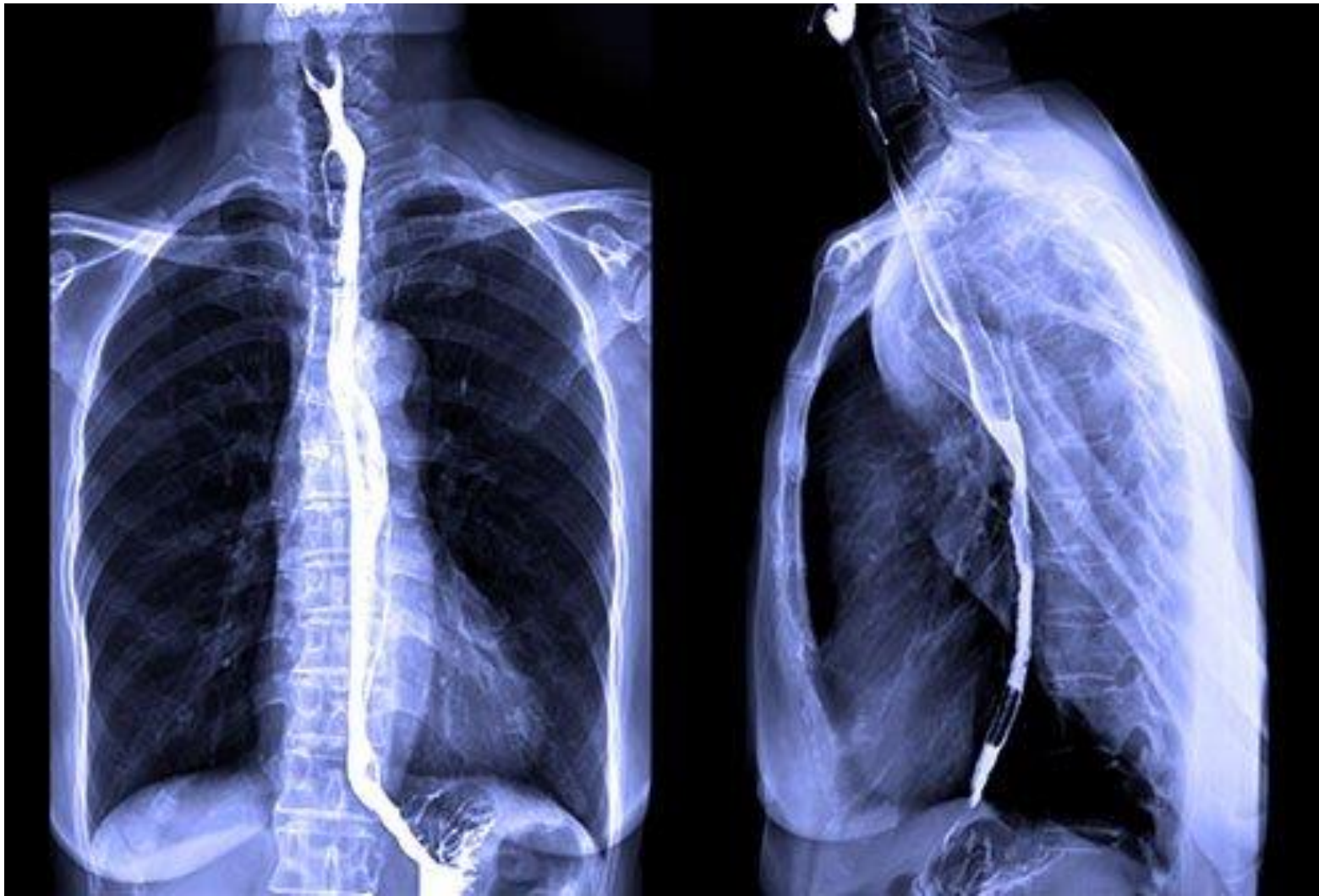
- Radiography (Plain (F.B.)/ Contrast study (Ba swallow (GORD, Ulcer, Ca, Motility diorders, stricture, T.O. fistula)/ (Contrast CT scan Ca, perforation) .
- Endoscopy Diagnostic procedure (+/- biopsy { ulcer}/

  (Theraputic procedure) .hemostasis, dilatation (Balloon),

  F.B.,Thermal recanalization
- Endosonography.
- Oesophageal manometry.
- PH and Impedance recording.

Barium swallow Contrast Study

- Contrast Study.
- Diagnostic



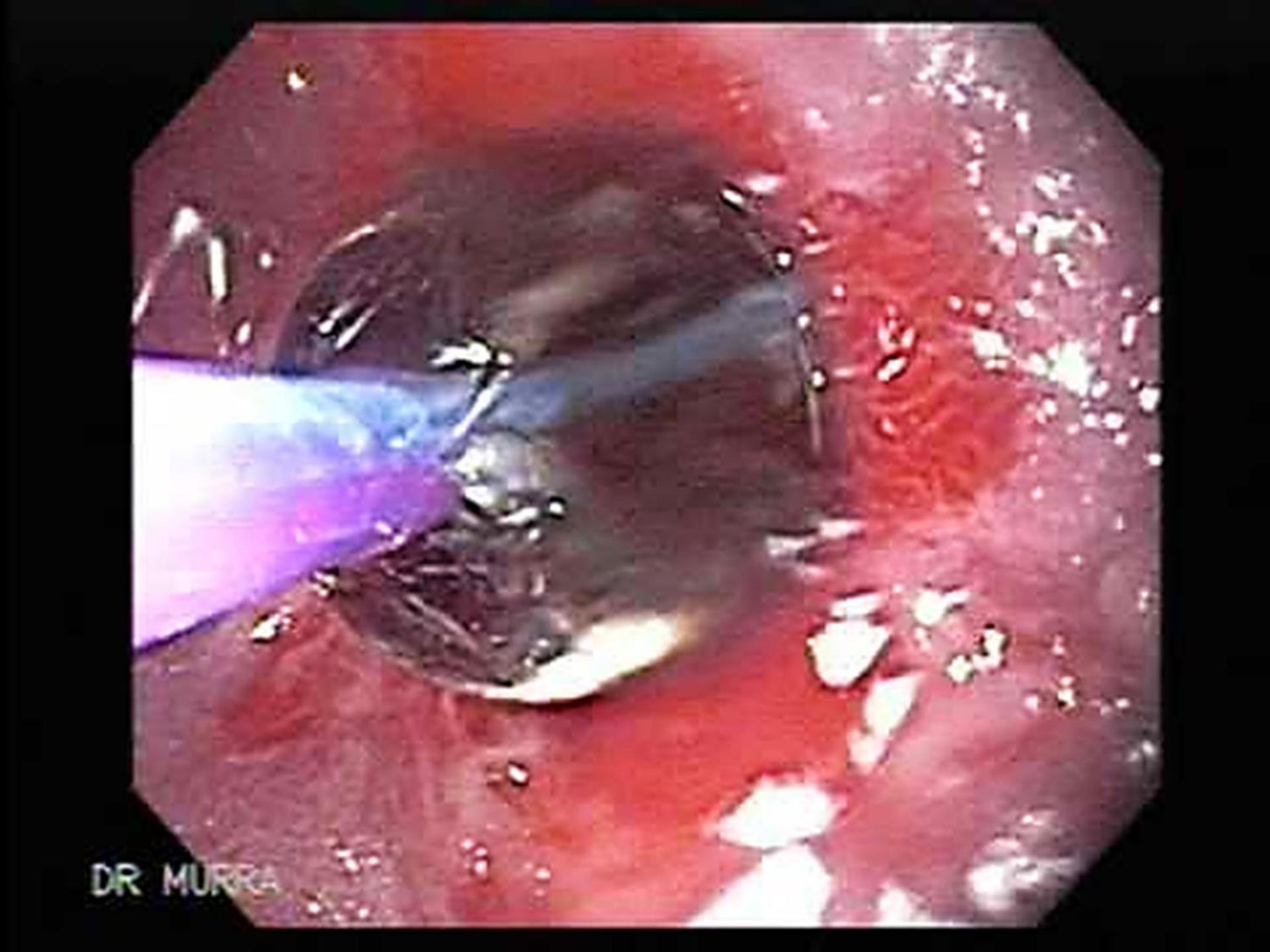
Endoscopy

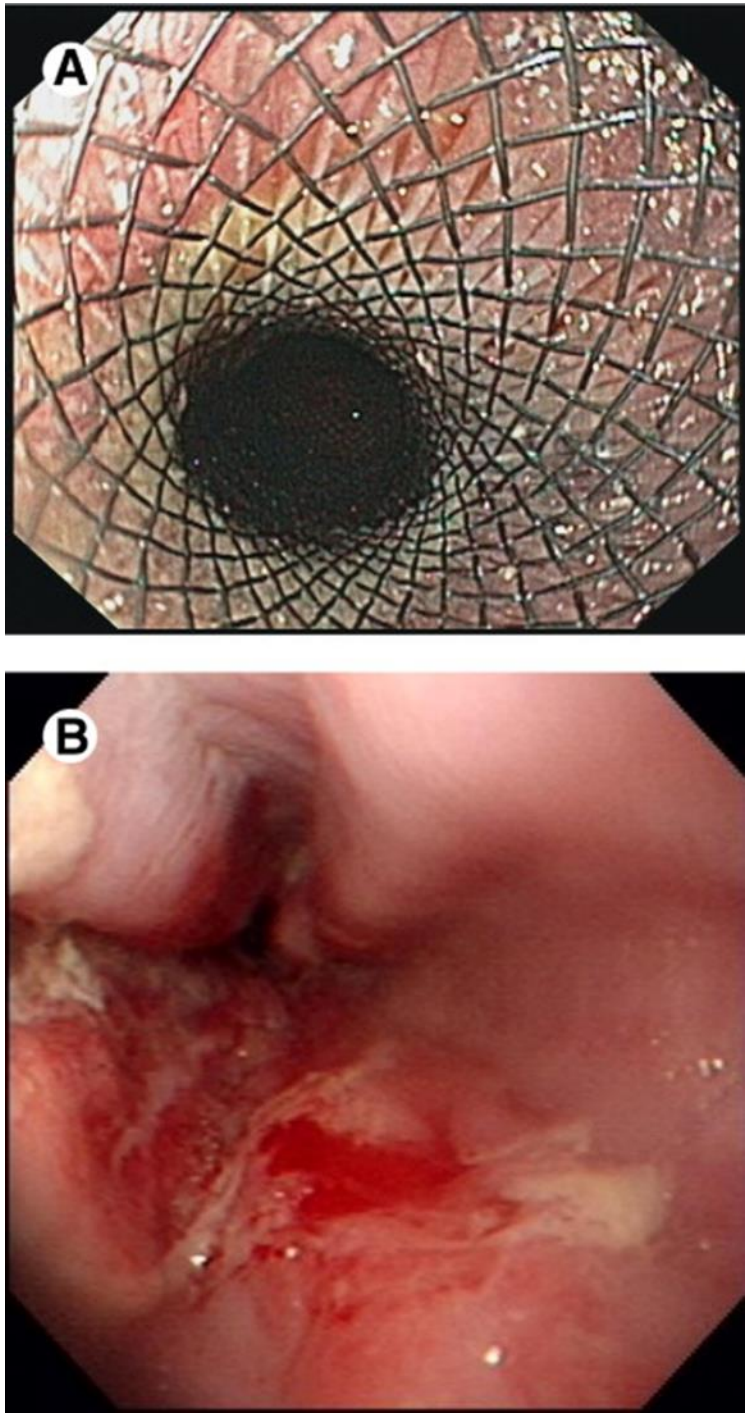
- Diagnostic.(+/- Biopsy)
- Therapeutic:

  - Stent : Cancer

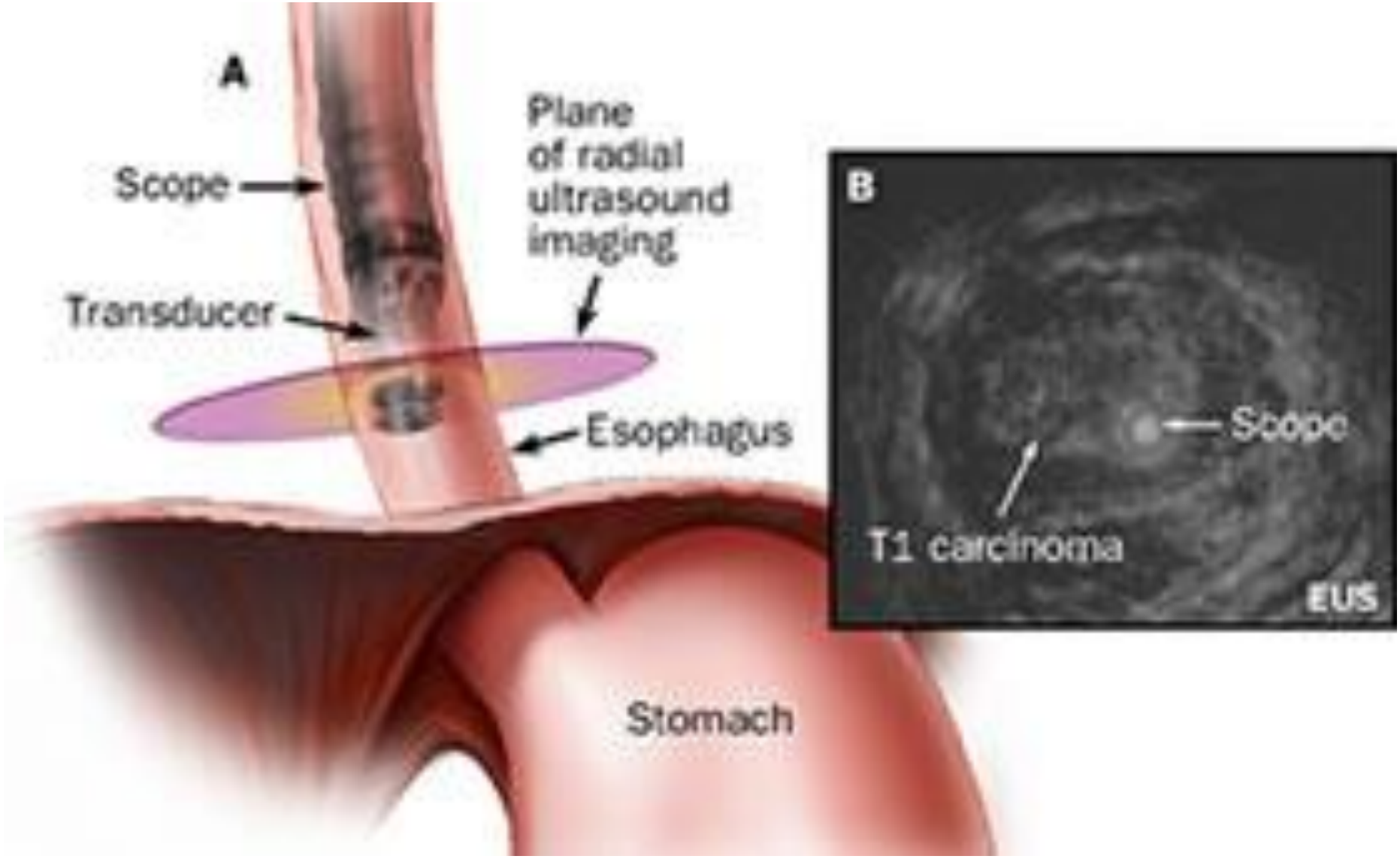
  - Dilatation of strictures : (achalasia).

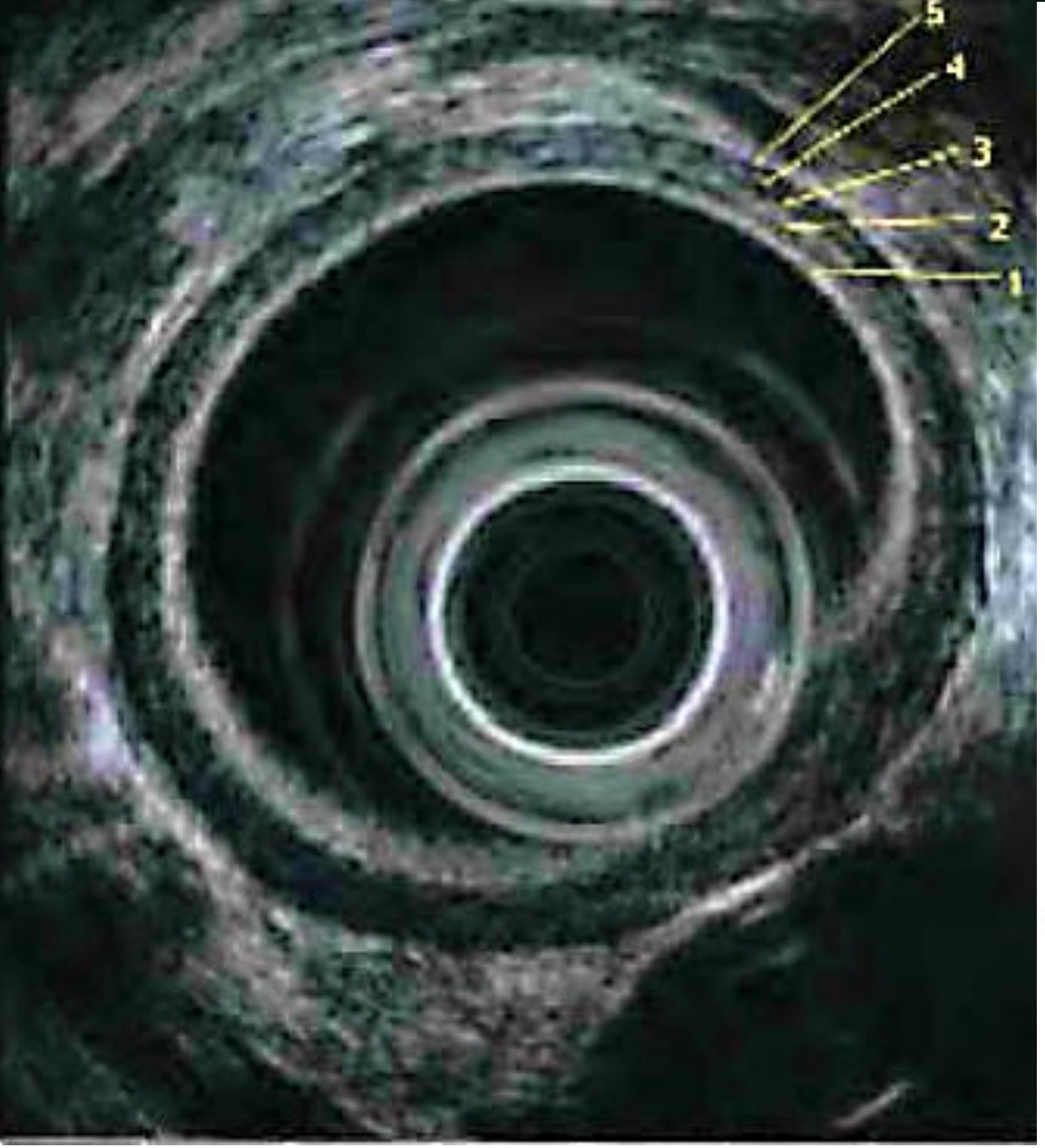
  -Thermal recanalisation (Various types of laser (mainly Nd–YAG), bipolar diathermy, injection of absolute alcohol or argon-beam plasma coagulation have all been used successfully to ablate tissue in order to recanalise the oesophagus.

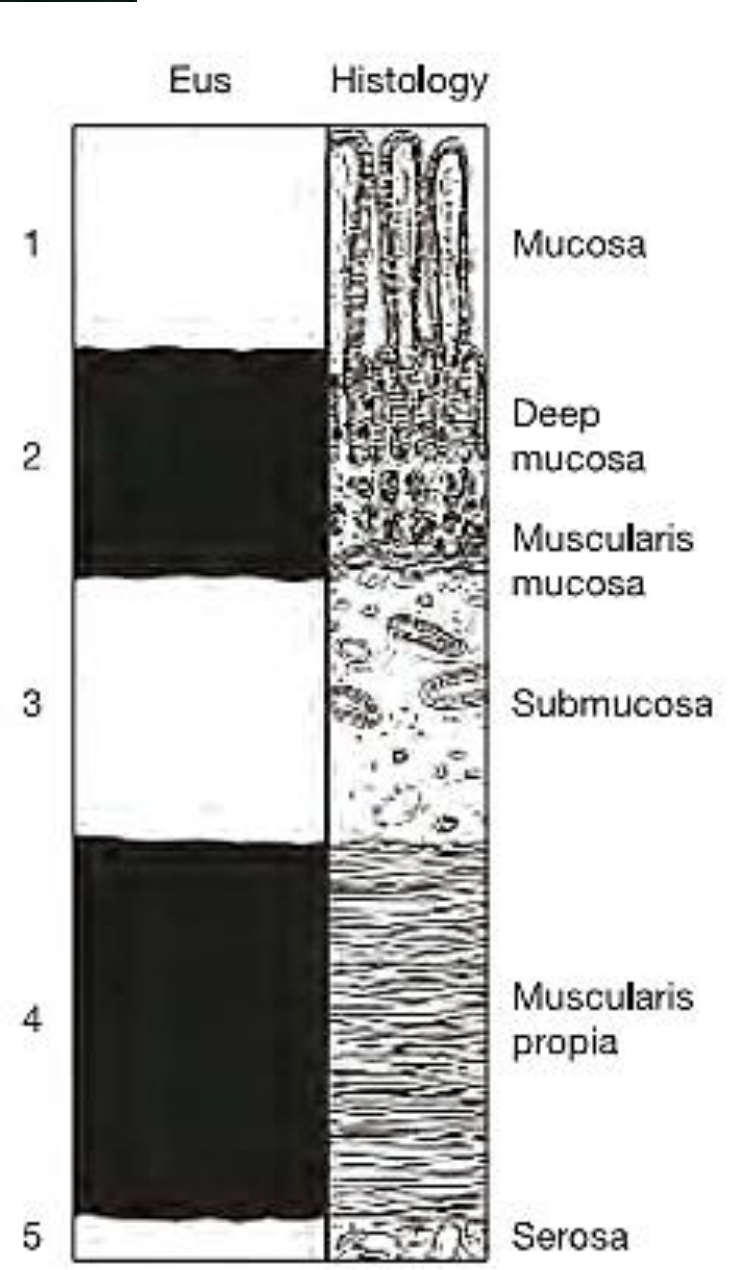

DR MURRA


A
B

Endosonography

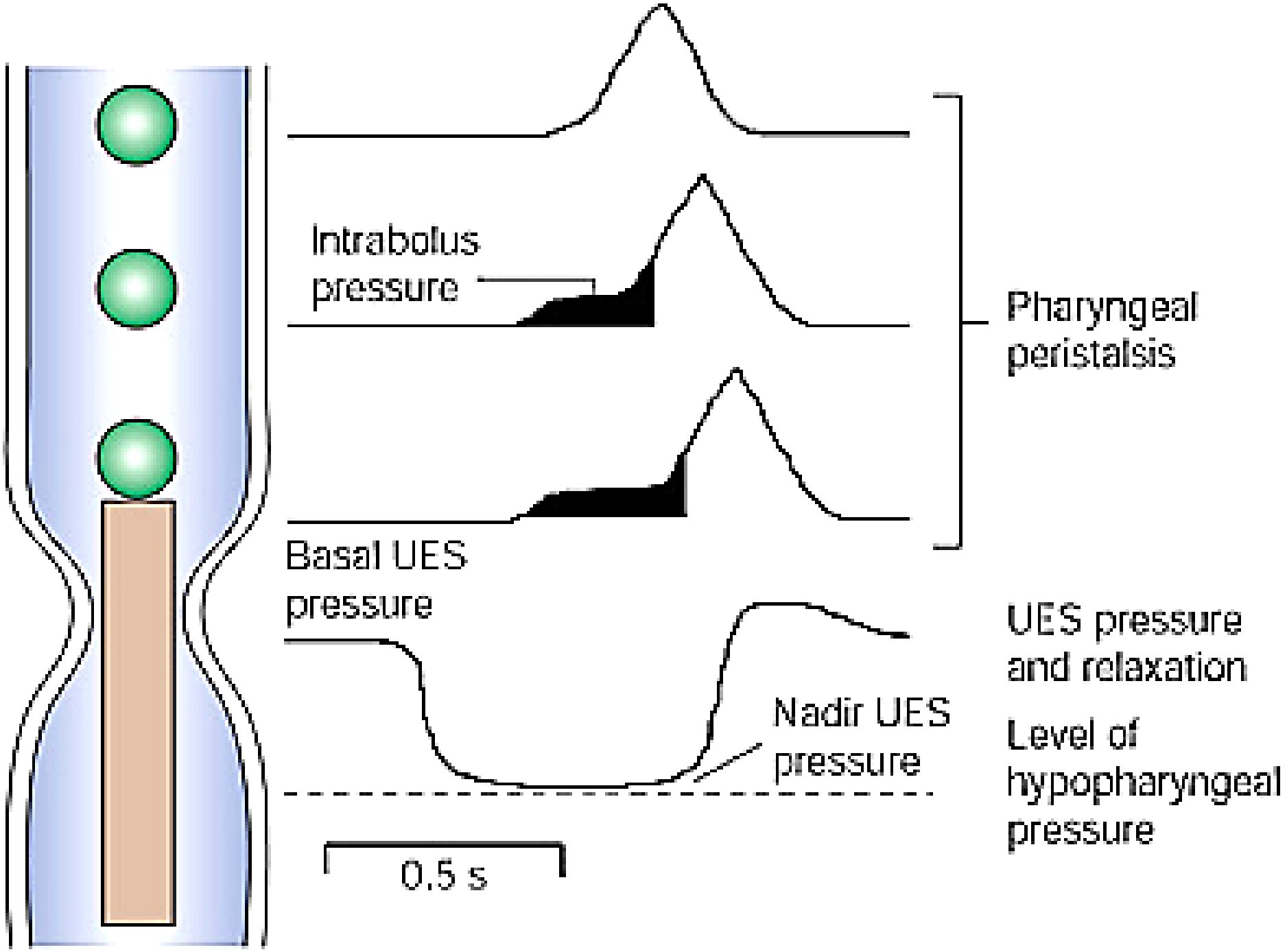

A
Plane
of radial
ultrasound
imaging
Scope
Transducer
Esophagus
Stomach
B
Scope
T1 carcinoma
EUS

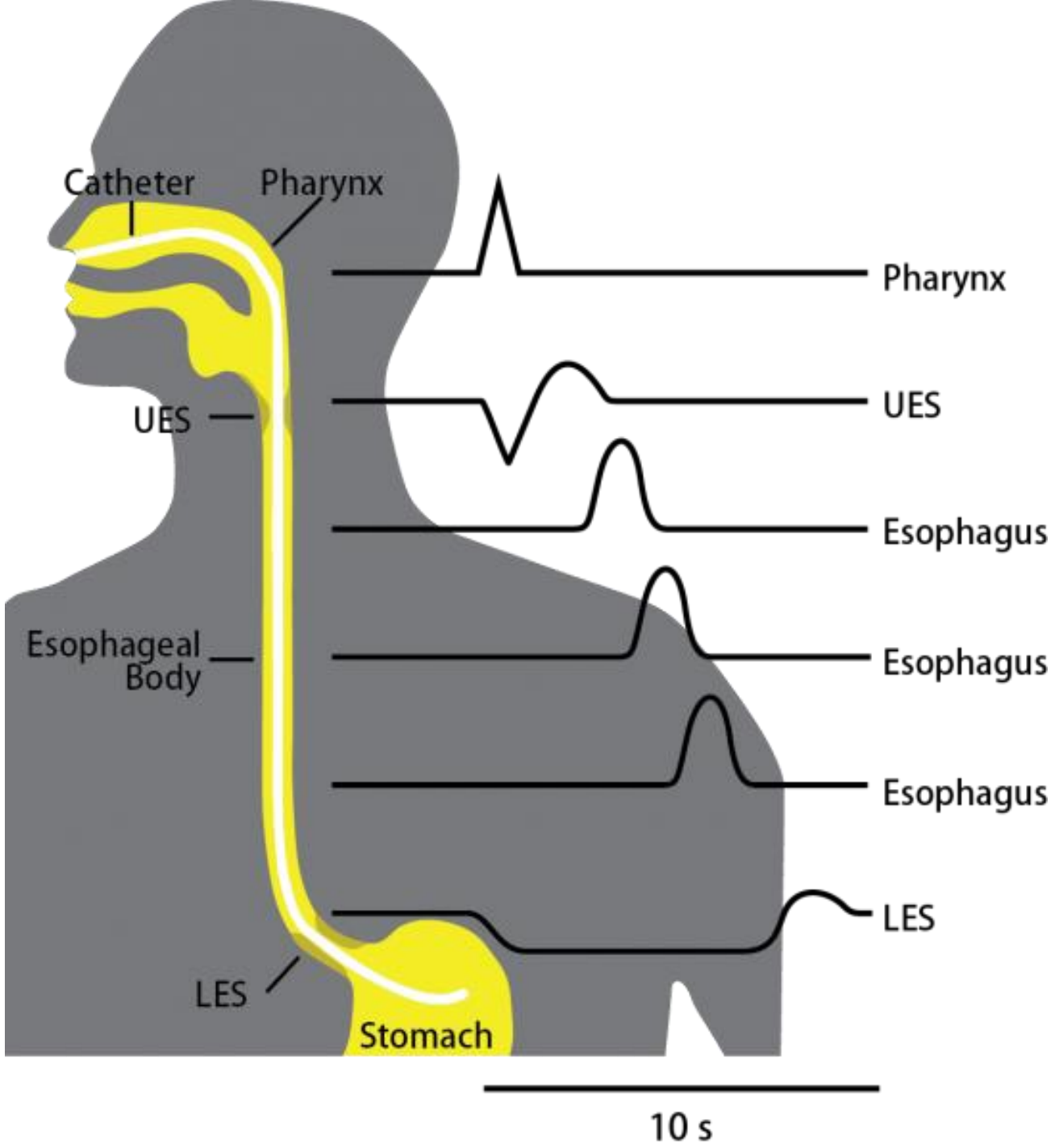




Hyper- and hypoechoic bands.

Manometry


Intrabolus
pressure
Pharyngeal
peristalsis
Basal UES
pressure
UES pressure
and relaxation
Nadir UES
pressure
Level of
hypopharyngeal
pressure
0.5 s


Catheter
Pharynx
UES
Esophageal Body
LES
Stomach
Pharynx
UES
Esophagus
Esophagus
Esophagus
LES
10 s

Twenty-four-hour pH and combined pH-impedance recording

Diseases and Injuries

- **Congenital abnormalities.**
- **Foreign bodies.**
- **Perforation(spontaneous Barotrauma),Pathological,Penetrating injury, Foreign body,Instrumental) (Chemical, Physical , mechanical and Ca.,.**
- **Mallory Weiss Syndrome.**
- **Corrosive Injury.**
- **Drug induced Injury.**
- **G.O.R.D.**
- **Barrett's Oesophagus.**
- **Hiatus Hernia.**
- **Neoplasm (Benign and Malignant).& post cricoid tumor.**
- **Motility disorders and diverticulae. (Achalasia, Webs,**
- **Infections (candida, Chagas disease)**
- **Crohn's diseae.**
- **Plummer vinson disease (Sideropenic Dysphagea).**
- **Vascular abnormality.**
- **Varicose vein.**
- **Mediastinal fibrosis.**

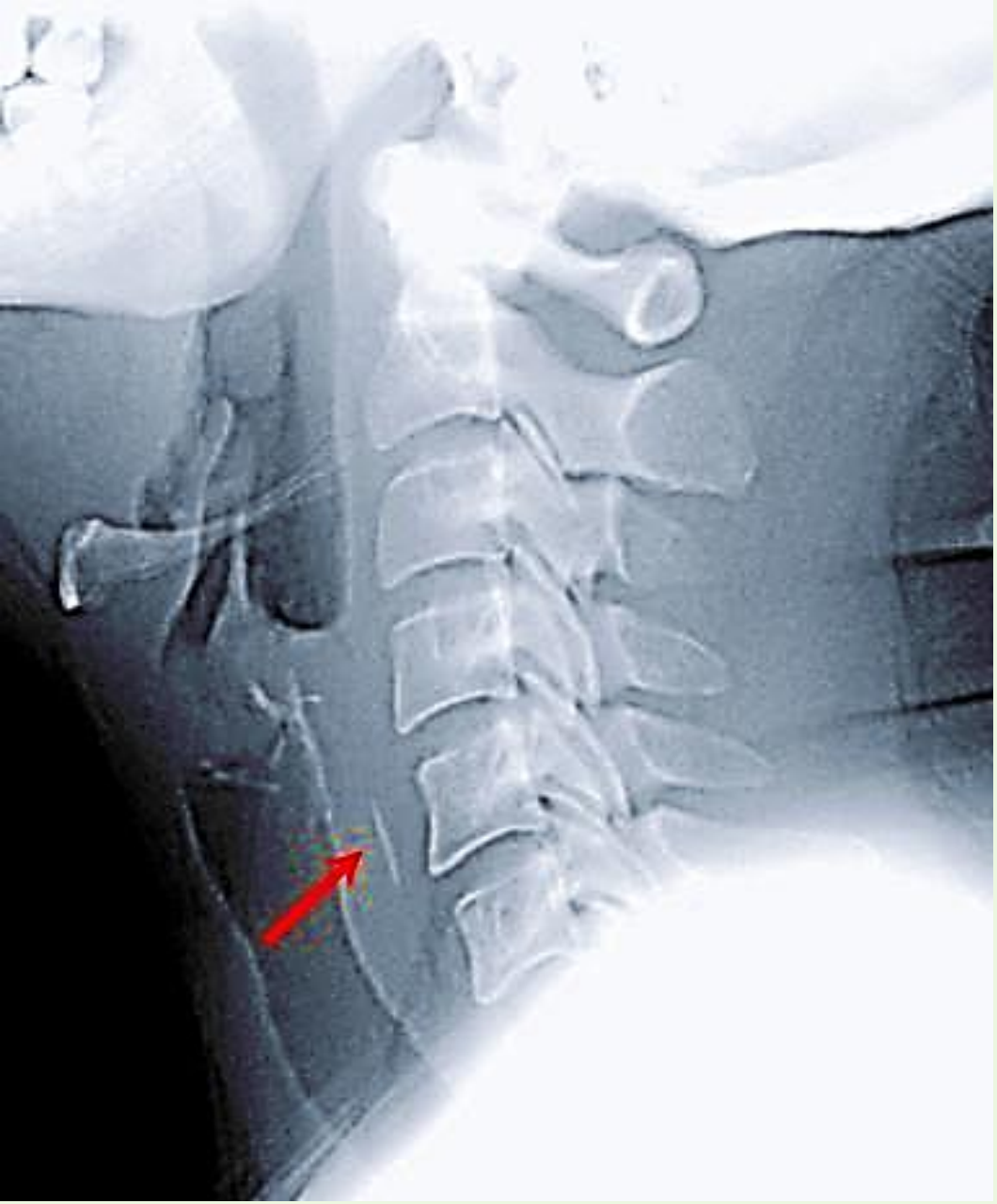
Foreign Bodies

- Children :Button and battery.
- Adult : Impacted food bolus (above significant pathological site.
- Rx: Flexible Endoscopy :

- (grasper, snaring or basket).An Overtube can be used to withdraw the F.B. through it.

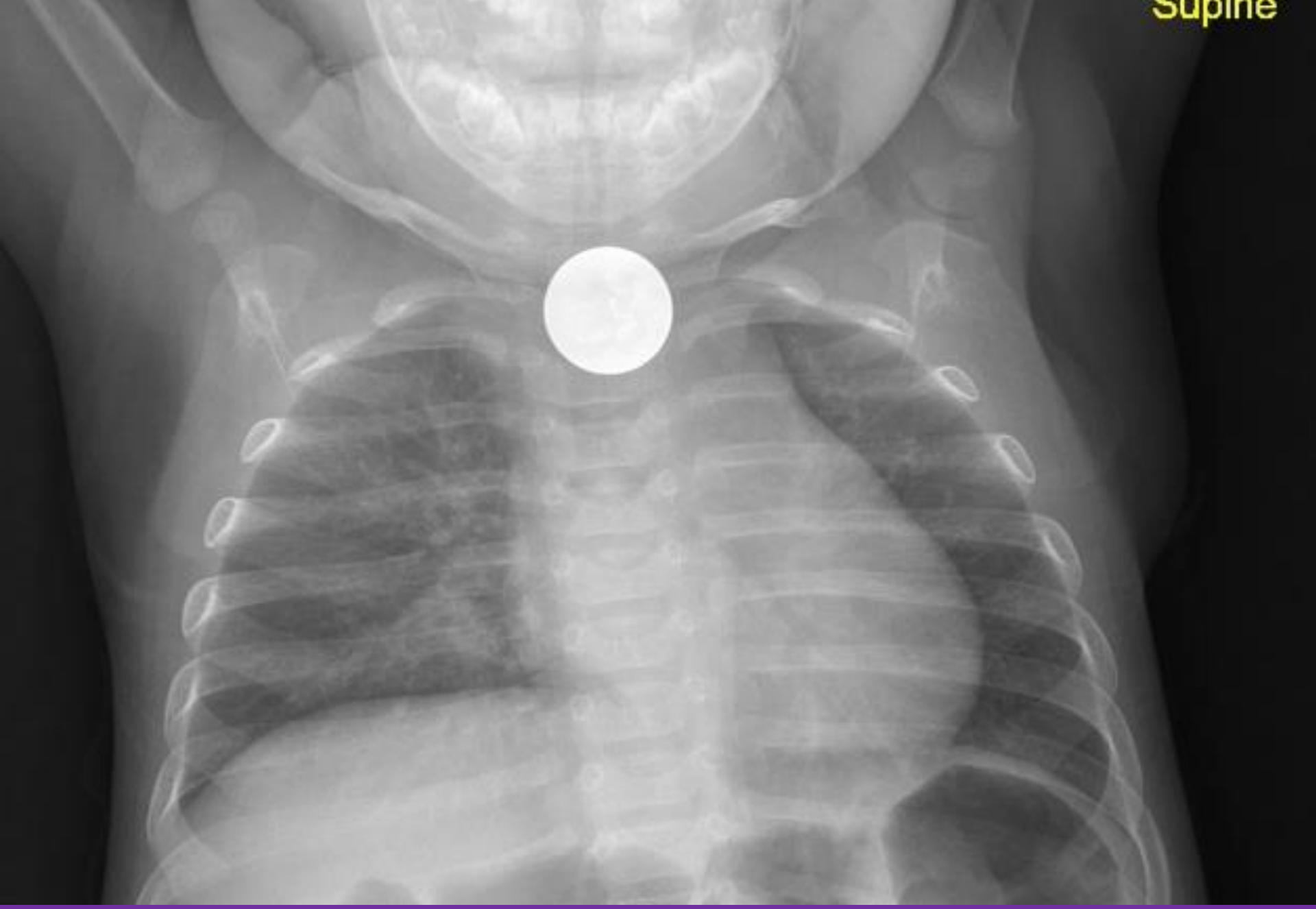
- A Multiwire retrieval basket for battery removal.

- Impacted food bolus can be broken up or extracted.



Impacted Foreign Body.

Lateral radiograph of the neck demonstrates a linear density in the region of the proximal esophagus (red arrow) consistent with an impacted foreign body--in this case, a chicken bone. There is no air in the soft tissues and no soft tissue swelling is identified to indicate the presence of a retropharyngeal abscess.



- A circular metallic density in keeping with a coin projects over the thoracic outlet.
- It lies in coronal plane. Lungs are clear with no atelectasis.

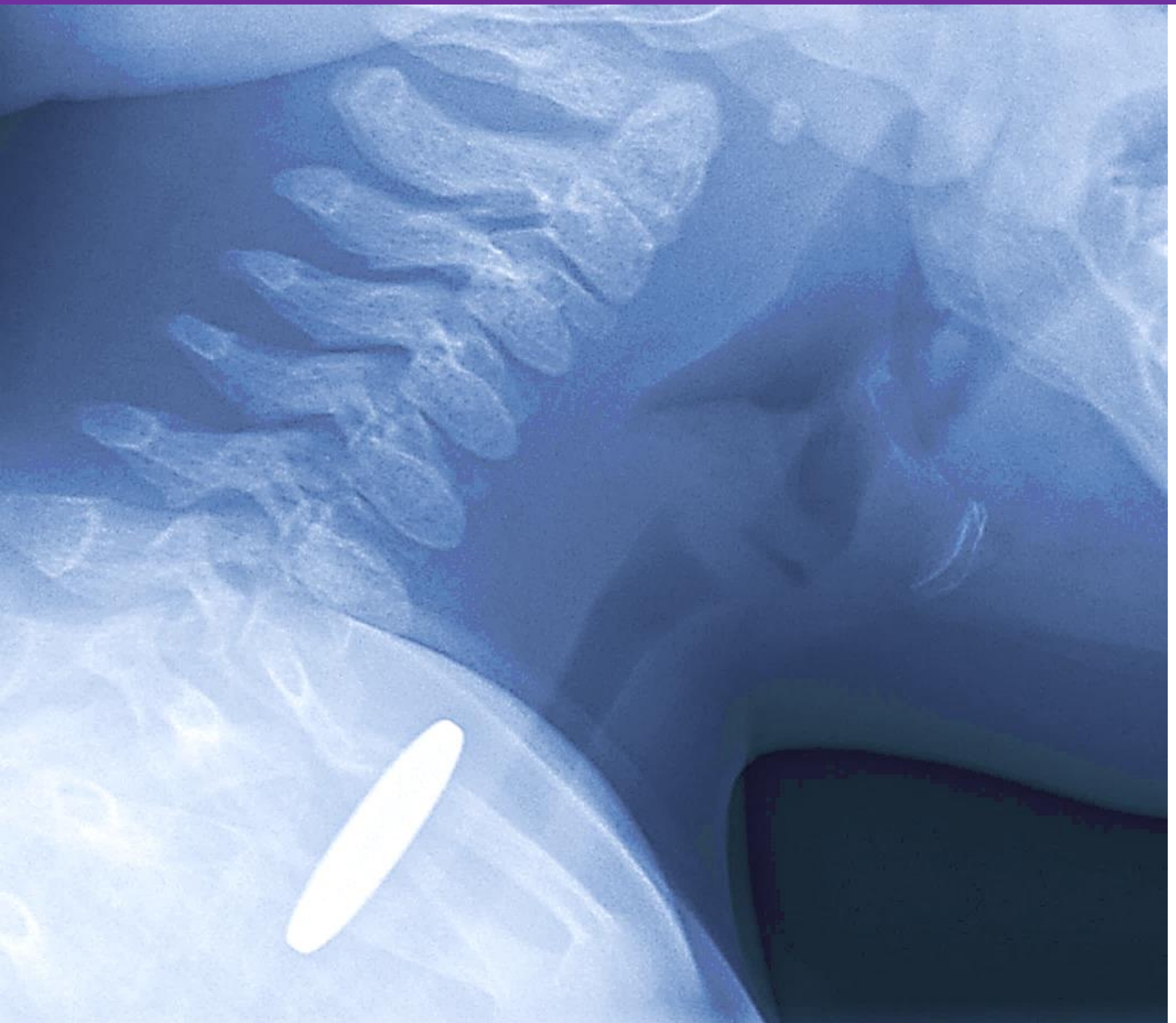
Presentation
Ingested coin. No respiratory distress.

Case Discussion

- coins lying in the oesophagus tend to lie in the **coronal** plane,
- whereas coins lying in the trachea lie in the **sagittal** plane.

associated features of airway foreign bodies include atelectasis or hyperinflation as well as respiratory distress

Soft tissue neck confirms coin lies in the oesophagus, posterior to the trachea.



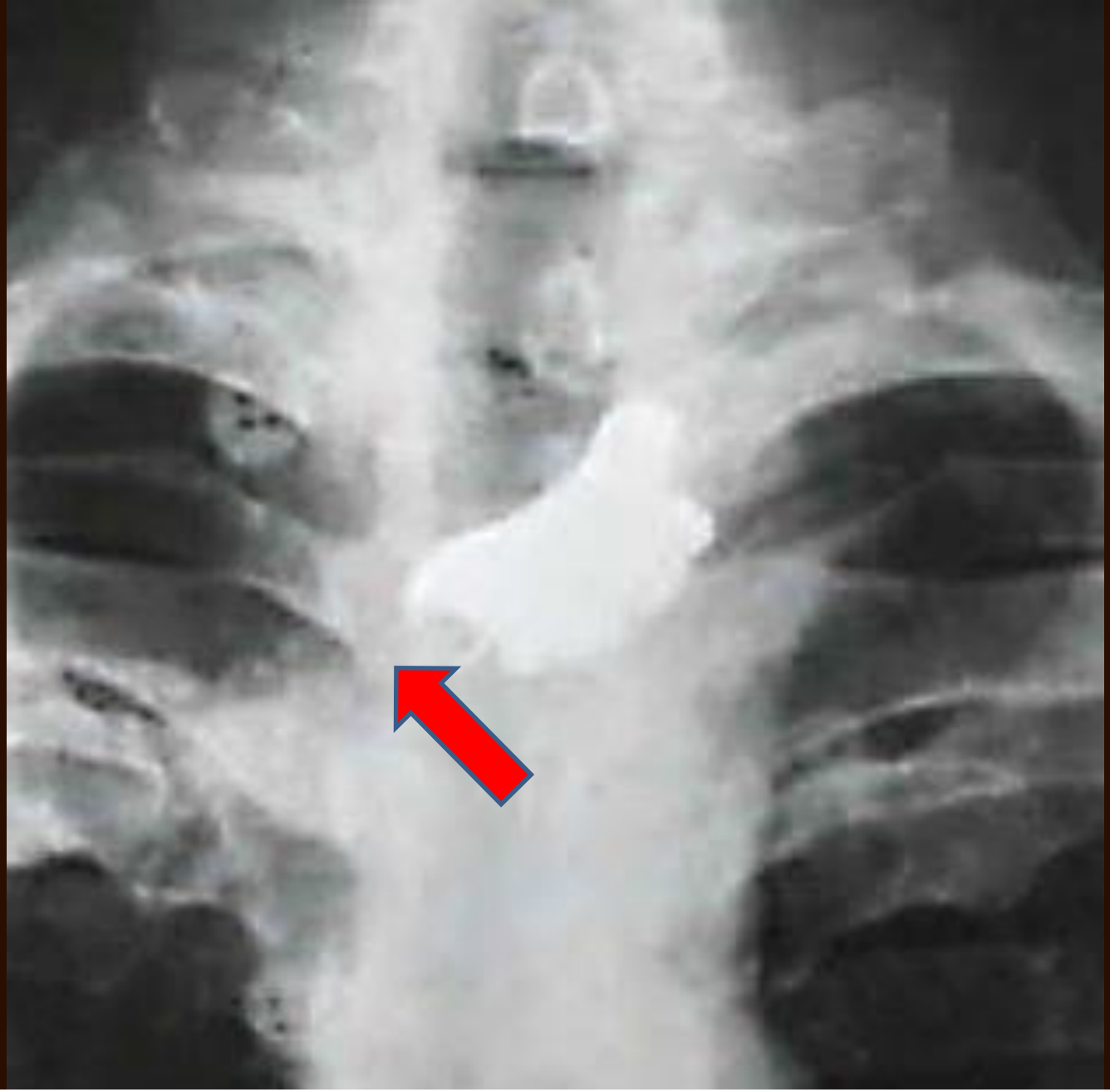


Figure 62.7 False teeth impacted in the oesophagus. (Note: modern dentures are usually radiolucent.)

Figure 62.8 An impacted meat bolus at the lower end of the oesophagus. This may be the first presentation of a benign stricture or a malignant tumour.

- **Congenital abnormalities.**
- **Foreign bodies.**
- **Perforation,(spontaneous Barotrauma),Pathological,Penetrating injury, Foreign body,Instrumental) (Chemical, Physical , mechanical and Ca.,.**
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- **Vascular abnormality.**
- **Varicose vein.**
- **Mediastinal fibrosis.**

- Iatrogenic (Instrumental)
- Spontaneous

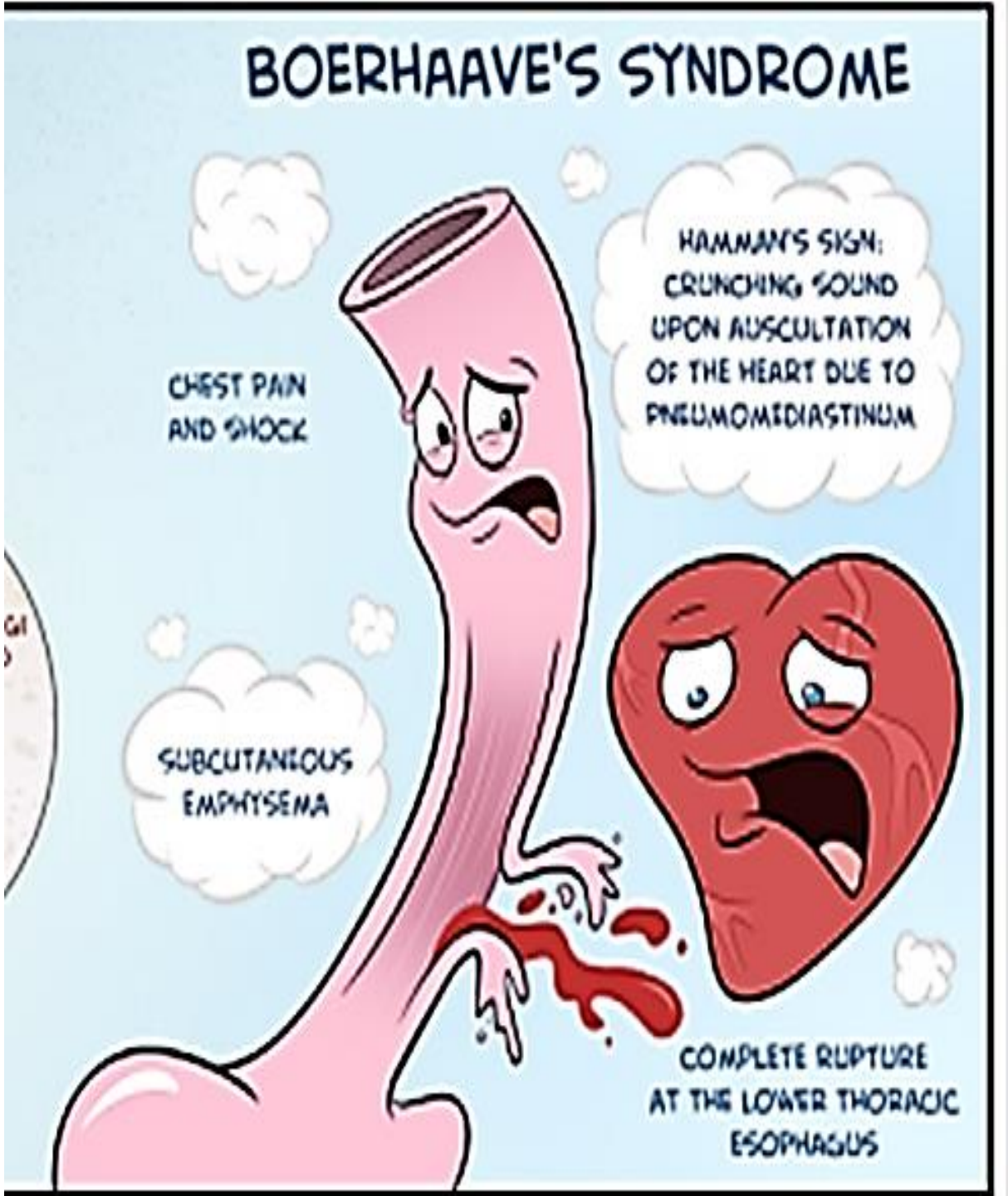
Summary box 62.3

Perforation of the oesophagus

- Potentially lethal complication due to mediastinitis and septic shock
- Numerous causes, but may be iatrogenic
- Surgical emphysema is virtually pathognomonic
- Treatment is urgent; it may be conservative or surgical, but requires specialised care

Spontaneous (Boerhaave's) Perforation

- Vomiting (or Straining) against closed glotis.
- Burst at lower 1/3rd .
- Chemical mediastinitis +/- pluritis.
- S+S: Chest pain and dyspnea.
- Imaging : Pneumomediastinum, Pneumothorax or pneumoperitonium. Pleural effusion>upper abdominal rigidity.
- Rx : Surgery.


BOERHAAVE'S SYNDROME
CHEST PAIN AND SHOCK
HAMMAN'S SIGN: CRUNCHING SOUND UPON AUSCULTATION OF THE HEART DUE TO PNEUMOMEDIASTINUM
SUBCUTANEOUS EMPHYSEMA
COMPLETE RUPTURE AT THE LOWER THORACIC ESOPHAGUS

- **Pathological Perforation : Tumor**

(Adjacent structure pleura, trachea and great vessels).

.Penetrating Injury (stab).

Foreign Body.

Instrumental Perforation (OGD).

Figure 62.9 Computed tomography scan showing the site of perforation in the lower oesophagus.

TABLE 62.1 Management options in perforation of the oesophagus.

Factors that favour non-surgical management	Factors that favour surgical repair
Small septic load	Large septic load
Minimal cardiovascular upset	Septic shock
Perforation confined to mediastinum	Pleura breached
Perforation by flexible endoscope	Boerhaave's syndrome
Perforation of cervical oesophagus	Perforation of abdominal oesophagus

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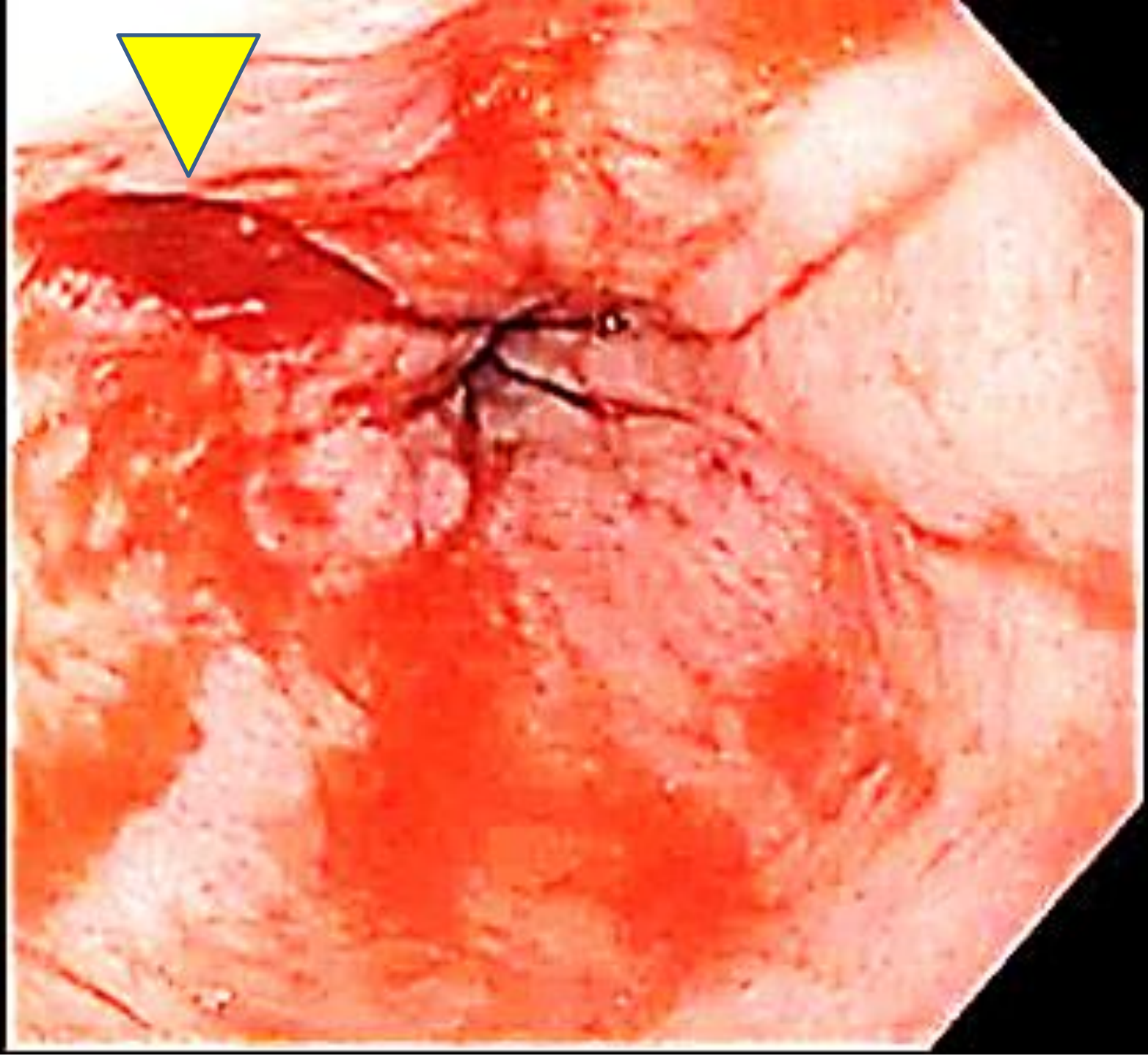
Mallory Weiss Tear

- It is a longitudinal tear a long GO Junction.
- It is due to strenuous and repetitive vomiting.
- Associated (+ / -) hematemesis.
- Endoscopy.
- Upper Longitudinal gastrotomy looking for the tear doing under running suture.



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Corrosive Injury

Corrosive Injury

- Suicidal attempts .
- Accidental . (Children)
- Alkalis : liquefaction and saponification of fat, dehydration, blood vessels thrombosis leading to fibrous scaring.
- Acids : Coagulative necrosis with eschar formation, limiting the penetration to the deeper layers of the esophageal wall .
- Associated with gastric injury.
- Mx: Early endoscopy

  Minor Injury: Redness and edema. (Conservative).

  Severe Injury: Deep ulcer, black eschar & penetrating lesion (Feeding jejunostomy).
- Scheduled Endoscopy to assess stricture formation (Balloon dilatation, resection or replacement by colon).

DRUG-INDUCED INJURY

- Many medications, such as antibiotics and *potassium preparations*, are potentially damaging to the oesophagus, because tablets may remain for a long time, especially if taken without an adequate drink.
- Acute injury : dysphagia and odynophagia, which may be severe. The inflammation usually resolves within 2–3 weeks .Treatment is conservative .If stricture is diagnosed, esophageal dilatation is required .

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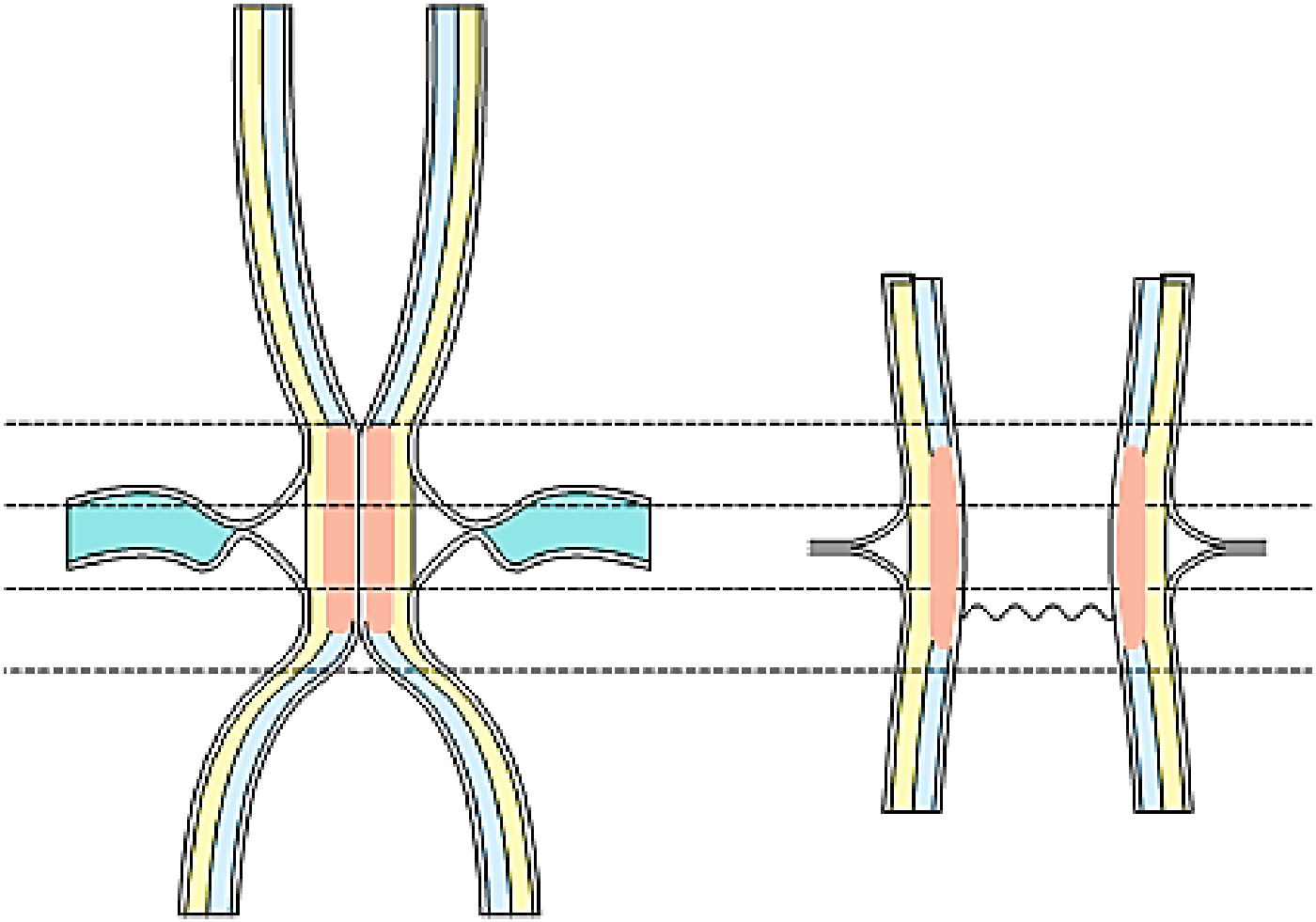
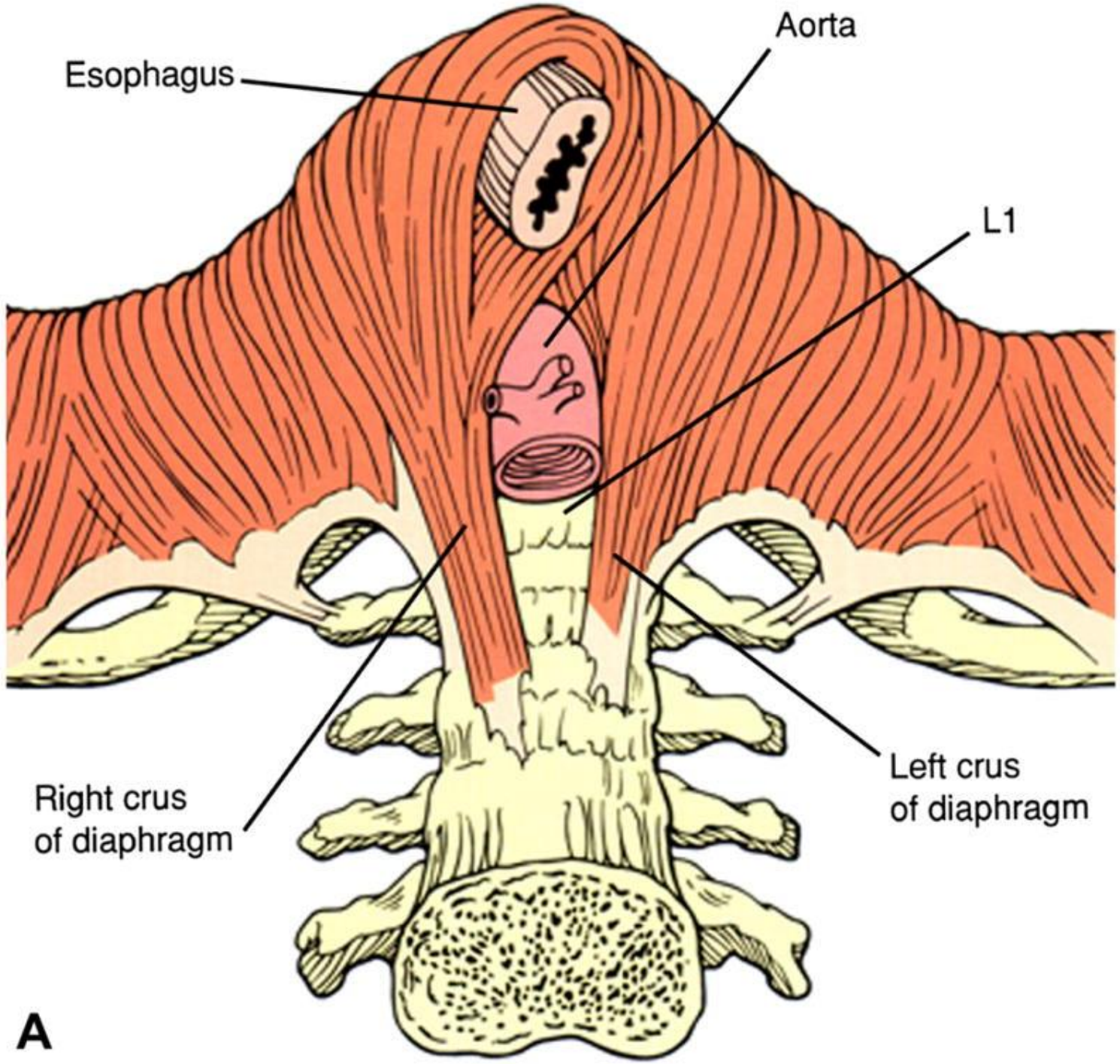
G.E.R.D. / G.O.R.D.

CHEST
- VE

ABDOMEN
+VE




Esophagus
Aorta
L1
Right crus
of diaphragm
Left crus
of diaphragm
A

- Incompetent G.O.S.
- Change in G.O. pressure gradient.
- Heart burn, Epigastric pain and reflux.
- If dysphagia (stricture).
- Ix : Endoscopy+biopsy.

(normal esophagus, esophagitis , H.H. , Barrett’s esophagus).

- 24 hrs PH recording and esophageal manometry.

- Medical management
- PPIs.
- Simple measures that are often neglected include advice about weight loss, smoking, excessive consumption of alcohol, tea or coffee, the avoidance of large meals late at night and a modest degree of head-up tilt of the bed.

- Endoscopic : Plication angle of His, RFA+ polymer injection in LOS
- Surgical:Anti-Reflux surgery

Summary box 62.8

GORD

- Is due to loss of competence of the LOS and is extremely common
- May be associated with a hiatus hernia, which may be sliding or, less commonly, rolling (paraoesophageal)
- The most common symptoms are heartburn, epigastric discomfort and regurgitation, often made worse by stooping and lying
- Achalasia and GORD are diagnostically easily confused
    - Dysphagia may occur, but a neoplasm must be excluded
    - Diagnosis and treatment can be instituted on clinical grounds
- Endoscopy may be required and 24-hour pH is the 'gold standard'
    - Management is primarily medical (PPIs being the most effective), but surgery may be required; laparoscopic fundoplication is the most popular technique
    - Stricture may develop in time

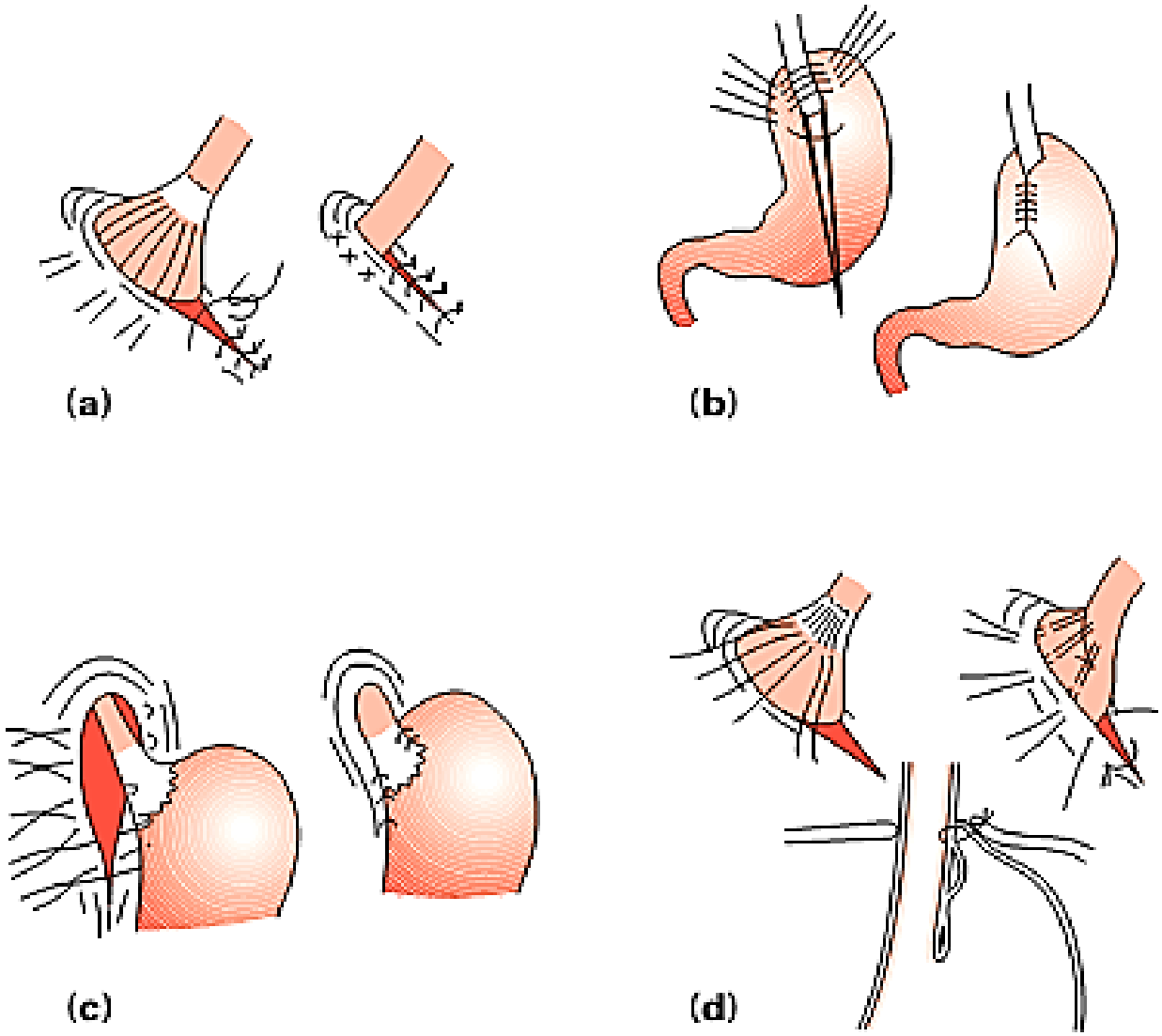


Figure 62.21 Various operations for the surgical correction of gastro-oesophageal reflux disease. (a) The original Allison repair of hiatus hernia (this is ineffective and is no longer done); (b) Nissen fundoplication; (c) Hill procedure; (d) Belsey mark IV operation.

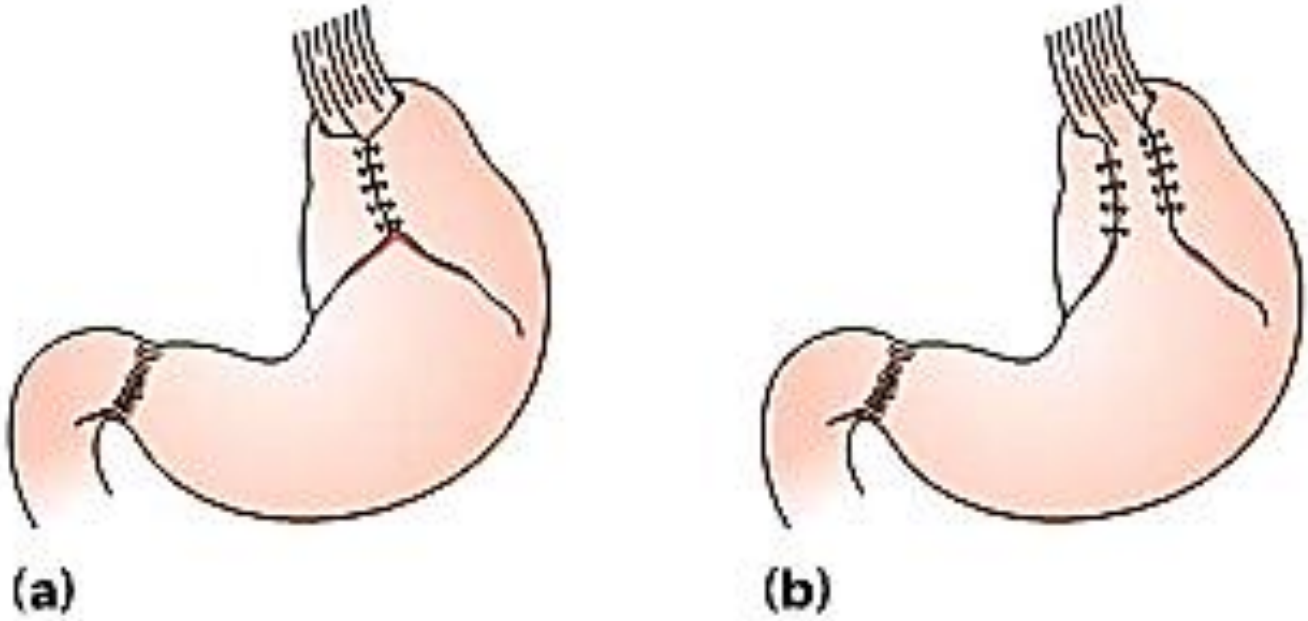


Figure 62.23 (a) Total (Nissen) fundoplication; (b) partial fundoplication (Toupet).

Complication of G.O.R.D.

- **Stricture.Dilitation**
- **Shortening.(Collis gastroplasty)**

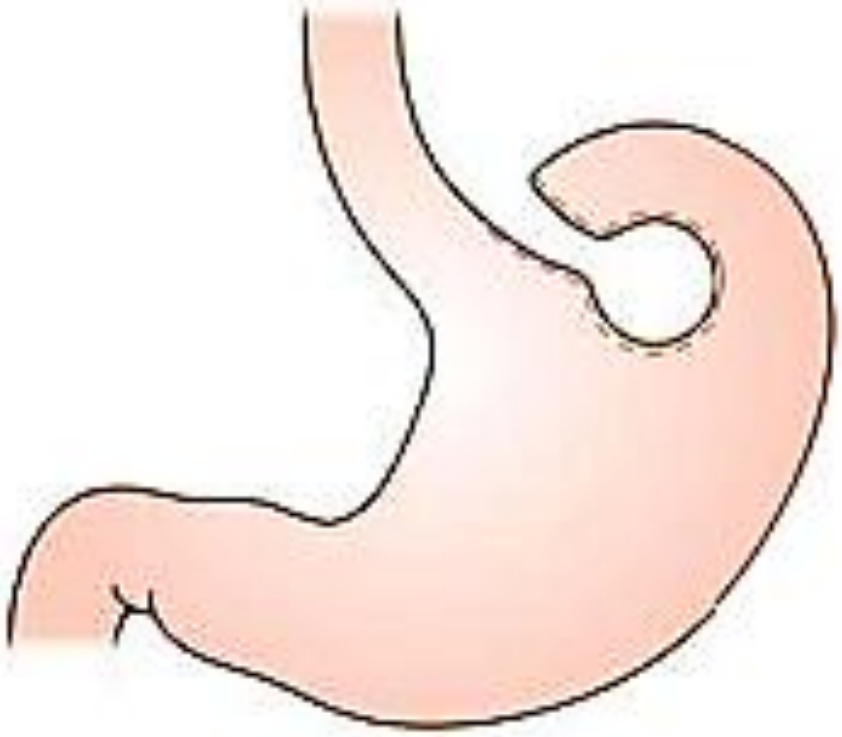


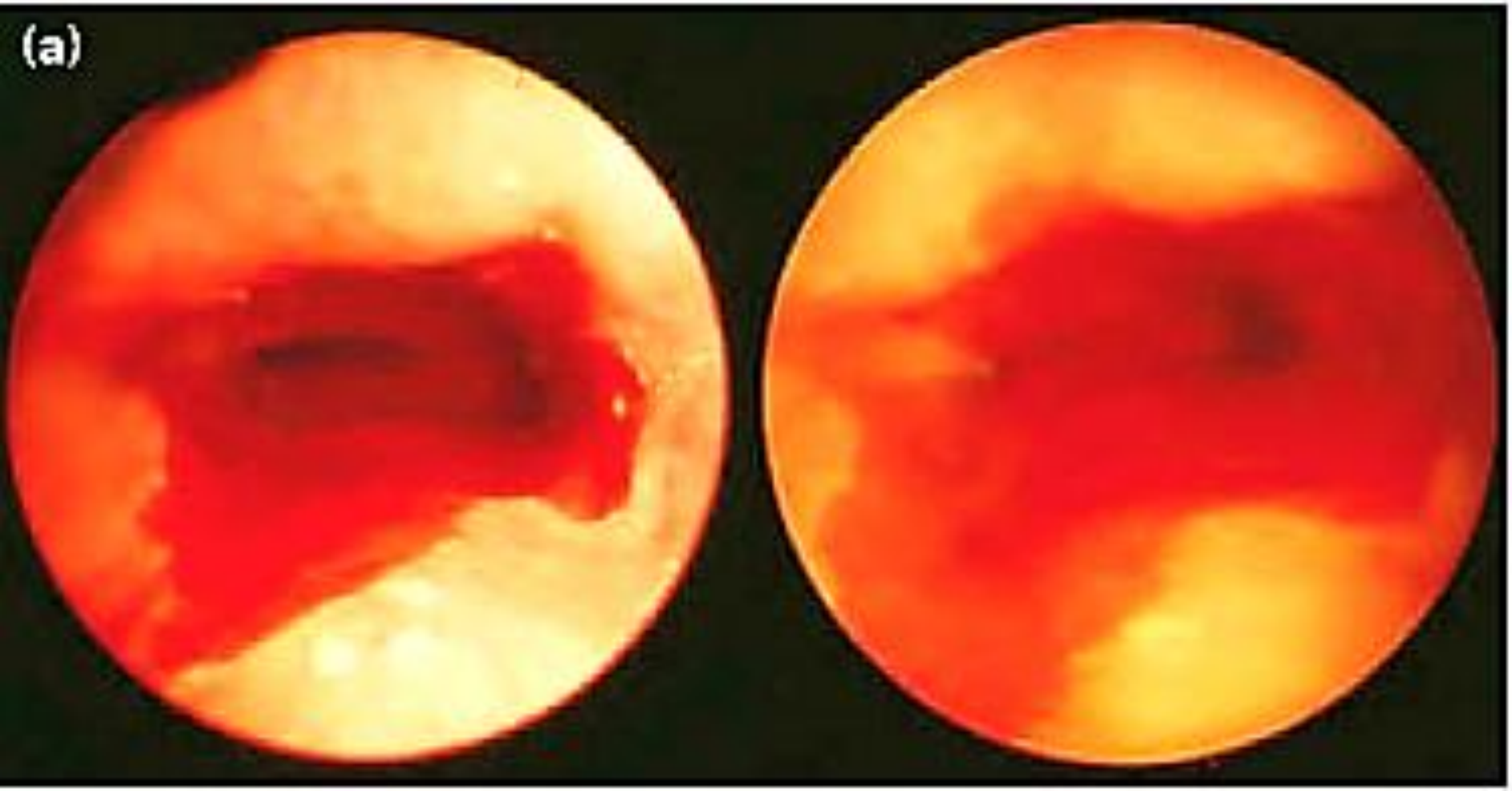
Figure 62.24 Collis gastroplasty to produce a neo-oesophagus around which a Nissen fundoplication is done. The operation may be performed by a laparoscopic as well as an open approach, using circular and linear staplers.

Barrett's Esophagus

- Diagnosed if there was at least 3 cm of columnar epithelium in the distal oesophagus. With the better appreciation of the importance of intestinal metaplasia.
- Do not confuse Barrett's ulcer with oesophagitis
- GORD +/- H.H.
- Precancerous (Dysplasia). adenocarcinoma .
- Endoscopy + Biopsy.
- PPI.
- Mucosal ablation (laser, photodynamic therapy, Argon beam plasma coagulation, R.F. A. and E.M.R.

The relative risk of cancer rises with increasing length of abnormal mucosa. The following terms are widely used:

● Classic Barrett's (≥3 cm columnar epithelium);
● Short-segment Barrett's (<3 cm of columnar epithelium);
● Cardia metaplasia (intestinal metaplasia at the oesoph-agogastric junction without any macroscopic change at endoscopy).


(a)

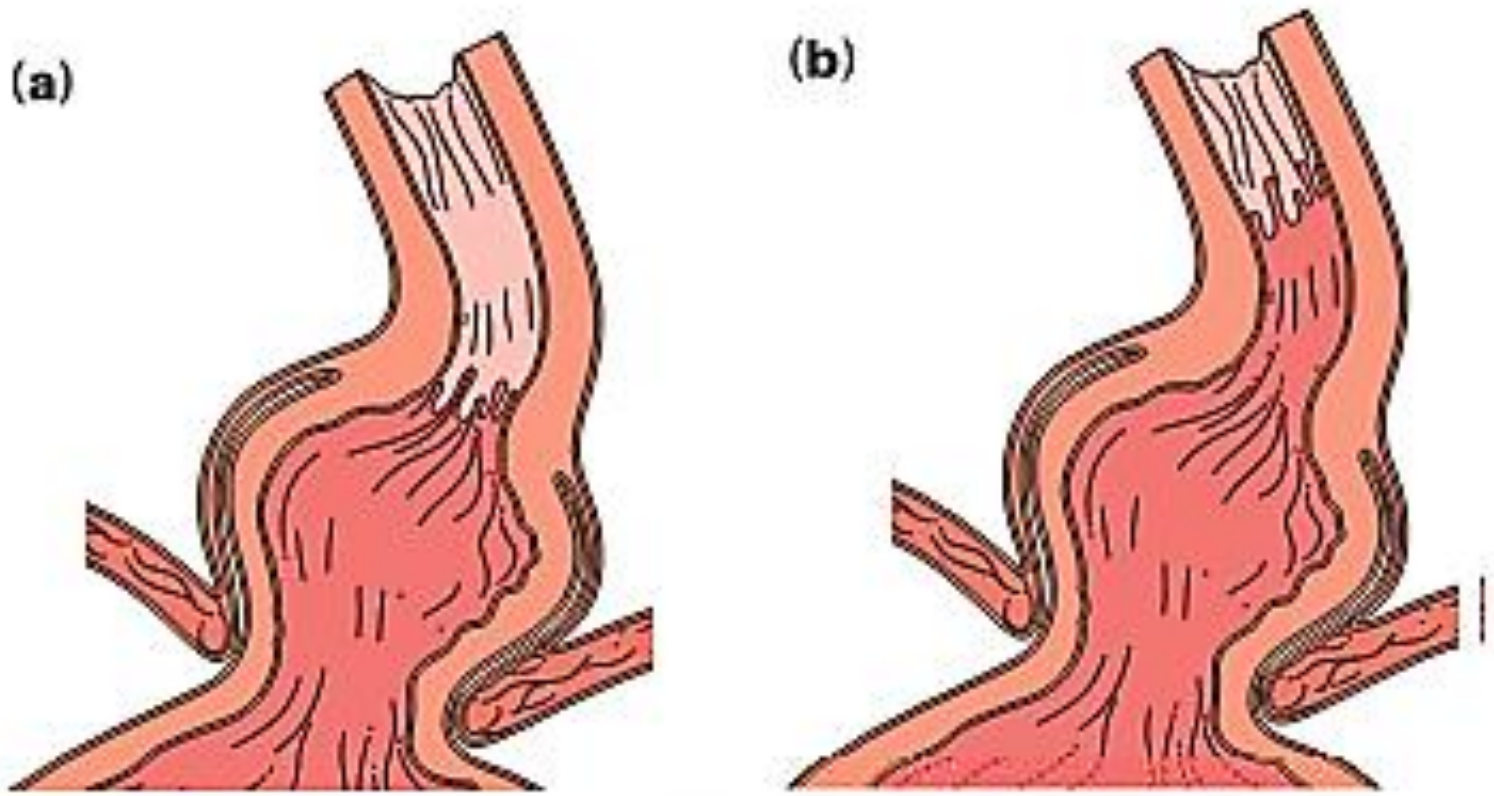


Figure 62.26 (a) The interrelationship of the lower oesophageal sphincter, the squamocolumnar junction and the diaphragm in sliding hiatus hernia. (b) Barrett's oesophagus and sliding hernia.

تم بتوفيق الله