DISEASES OF OESOPHAGUS

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LEARNING OBJECTIVES

To understand:

- The anatomy and physiology of the oesophagus and their relationship to disease.
- The clinical features, investigations, and treatment of benign and malignant disease with particular reference to the common adult disorders.

TOPICS

- Surgical anatomy
- Physiology
- Symptoms
- Investigations
- Congenital lesions: TOF and Atresia

Benign tumours.

Cancer of oesophagus

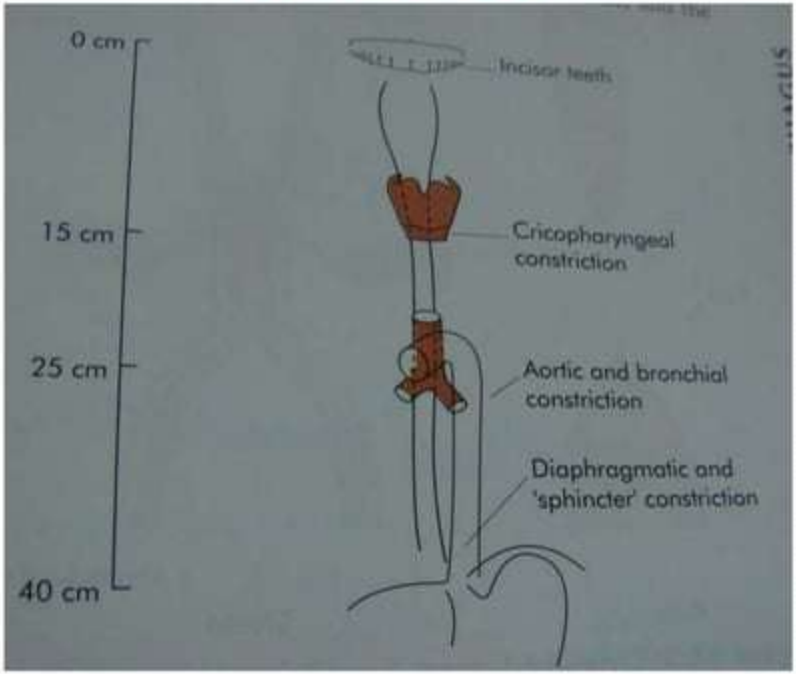
Others.

- Foreign bodies.
- Oesophageal perforation.
- Gastro-oesophageal reflux diease.
- Hiatal hernia.
- Oesophageal motility disorders: achalasia and diffuse spasm.
- Oesophgeal diverticula.

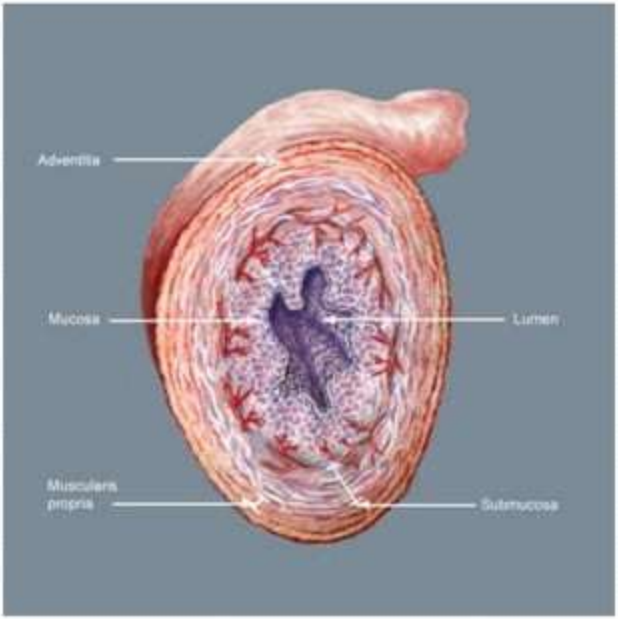
SURGICAL ANATOMY

- The oesophagus is a fibromuscular tube 25 cm long.
- Occupying the posterior mediastinum.
- Extending from the cricopharyngeal sphincter to the cardia of the stomach.
- 4 cm of this tube lies below the diaphragm.
- The musculature of the upper one third is mainly striated, giving way to smooth muscle below.
- It is lined by squamous epithelium except the lower 3 cms which are lined by specialized mucosa.

ANATOMY


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

Wall of Oesophagus



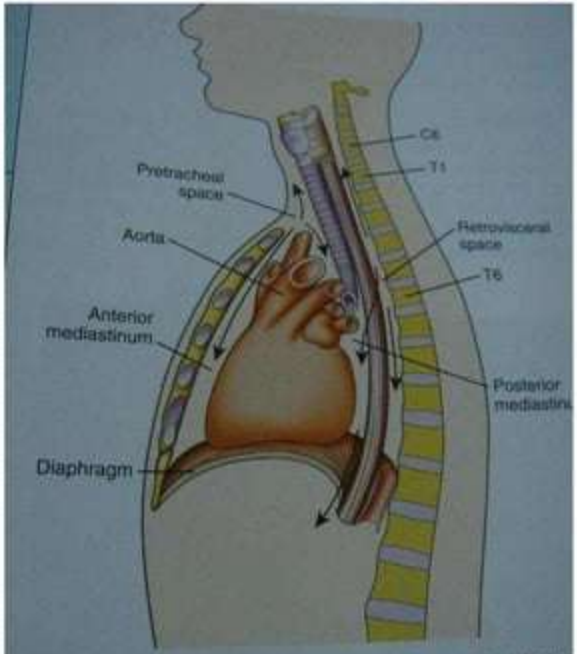


FIGURE Diagram showing pathways for spread of infection the mediastinum and pleural cavities after cervical or thoracic esophageal perforation.

PHYSIOLOGY

- To transfer food from the mouth to the stomach.
- Sequential contraction of oropharyngeal musculature + simultaneous closure of nasal and respiratory passages+ opening of the cricopharyngeal sphincter.
- Involuntary peristaltic wave in the body of oesophagus then sweeps food bolus downwards.
- Through a relaxed gastro-oesophageal sphincter zone into the stomach.
- The upper sphincter is normally closed at rest to prevent regurgitation. Failure of it to relax on swallowing may cause propulsion diverticulum.

PHYSIOLOGY

- At the lower end of the oesophagus there is a physiological sphincter which together with other anatomical mechanisms prevent reflux of gastric acid and bile.
- The tone of this sphincter is influenced by gastrointestinal hormones, anti-cholinergic drugs and smoking.
- The displaced sphincter loses its tone and permits reflux to occur.
- The normal GOJ is 3-4 cm long and has a pressure of 30 cm H_2O.

SYMPTOMS

- Difficulty in swallowing described as food or fluid sticking (oesophageal dysphagia). Must rule out malignancy.
- Pain on swallowing (odynophagia). Suggest inflamation and ulceration.
- Regurgitation or reflux (heartburn). Common in gastro-oesophageal reflux disease (GORD).
- Chest pain; difficult to distinguish from cardiac pain.
- Loss of weight, anaemia, cachexia and change of voice are other important symptoms.

INVESTIGATIONS

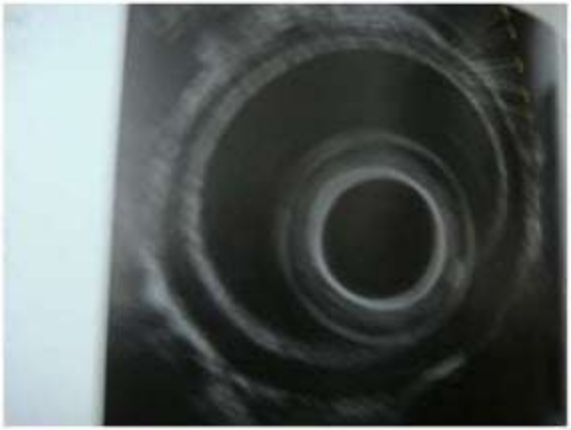
- Radiography.

  plain CXR, contrast oesophagography (barium or gastrographin swallow) and CT scan of chest.
- Endoscopy: rigid and flexible oesophagoscopy.
- Endosonography: endoscopic ultrasonography.
- Oesophageal manametry: to diagnose oesophageal motility disorders.
- 24-hour pH monitoring: the most accurate method for the diagnosis of gastro-oesophageal reflux.

BARIUM SWALLOW

BARIUM SWALLOW

ENDOSONOGRAPHY

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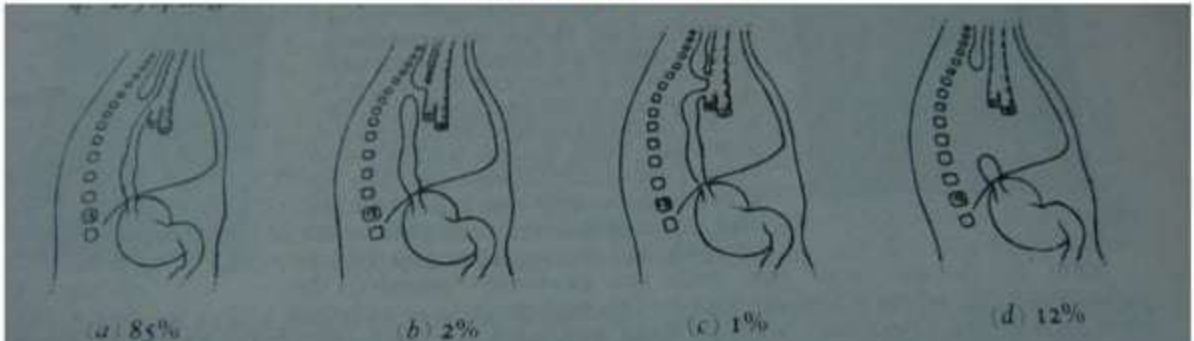
RIGID OESOPHAGOSCOPY

CONGENITAL ABNORMALITIES

- Atresia with or without tracheo-oesophageal fistula.
- Stenosis-rare.
- Short oesophagus with hiatus hernia.
- Dysphagia lusoria (compression by an abnormal artery).

TYPES OF TOF



784.—*Congenital* oesophageal atresia. (*a*) Lower segment opens into the trachea. (*b*) Upper ment opens into the trachea. (*c* Both segments open into the trachea. (*d*) Both segments end blindly and the mid-oesphagus is absent.

IT SHOULD BE SUSPECTED IN ALL CASES OF HYDRAMNIOS, A CONDITION WHICH IS PRESENT IN 50% OF CASES OF ATRESIA.

RECOGNITION WITHIN FORTY-EIGHT HOURS OF BIRTH, AND SUBSEQUENT SURGICAL CORRECTION, IS THE ONLY HOPE OF SURVIVAL.

CONGENITAL TRACHEO-OESOPHAGEAL FISTULA

IG. 785.—Tracheo-oesophageal fistula—radiographs in which excess dionosil was injected t
e oesophageal catheter. Note the air and dionosil in the stomach, which indicates the pres
a lower oesophageal segment.
(Courtesy of Raymond Hurt.)

perhaps tinged with bile.

FOREIGN BODIES IN OESOPHAGUS

- Adults as well as children are prone to ingest FBs.
- Varieties of FBs have been encountered. The most common impacted material is food.
- Dysphagia, odynophagia and drooling of saliva.
- Plain X- ray +_ contrast study to confirm diagnosis.
- Removal should be done as early as possible.
- Complications: perforation of oesophagus, aspiration, fistula formation with aorta.
- Removal is by rigid or flexible oesophagoscopy. Surgery may be needed for sharp or impacted FBs which fail to be extracted by endoscopy.

SWALLOWED FOREIGN BODIES

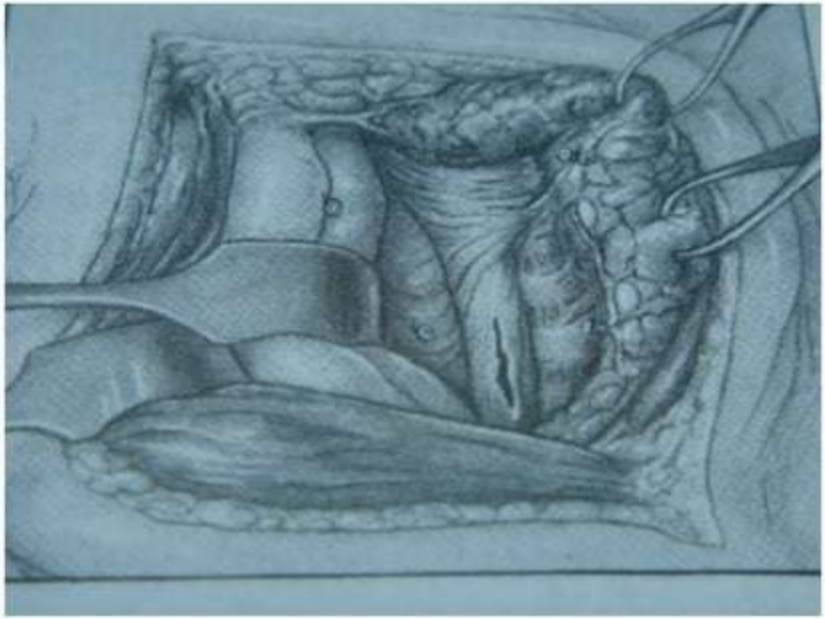
PERFORATION OF OESOPHAGUS

- 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 specialized care.
- May be spontaneous (due to barotrauma): Borehaave syndrome; is the most serious form of perforation because of large volume of material that is released under pressure into the mediastinum and pleura. It is caused by vomiting against a closed glottis, sometimes following labour or weight lifting. The tear is in the weakest point in the lower third.

PERFORATION OF OESOPHAGUS

- Instrumentation is by far the most common cause of perforation.
- Diagnostic upper GI endoscopy has a rate of 1: 4000 perforation rate.
- Therapeutic endoscopy has a rate of 1: 400 perforation rate.
- Diagnosis is based on clinical features, plain x-ray, contrast study and CT scan.
- Prompt and thorough investigations is the key to management.

PERFORATION OF CERVICAL OESOPHAGUS



Management Options in Perforation of the Oesophagus

Factors that favour non-operative management

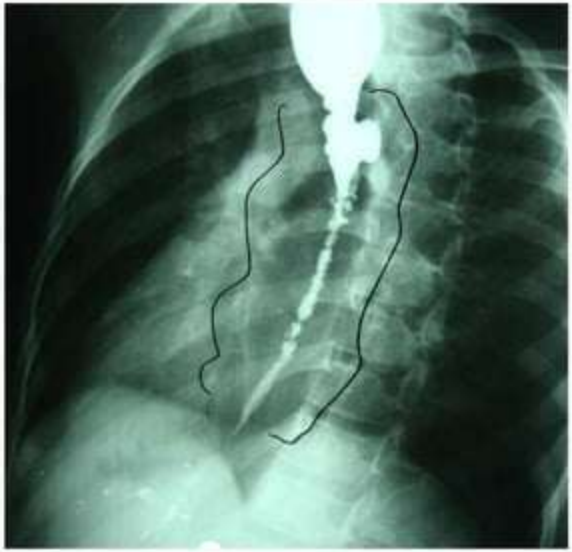
- Small septic load.
- Minimal cardiovascular upset.
- Perforation confined to mediastinum.
- Perforation by flexible endoscope.
- Perforation of cervical oesophagus.

Factors that favour operative Repair

- Large septic load.
- Septic shock.
- Pleura breached.
- Boerhave,s synrome.
- Perforation of abdominal oesophagus.

INGESTION OF CORROSIVE AGENTS

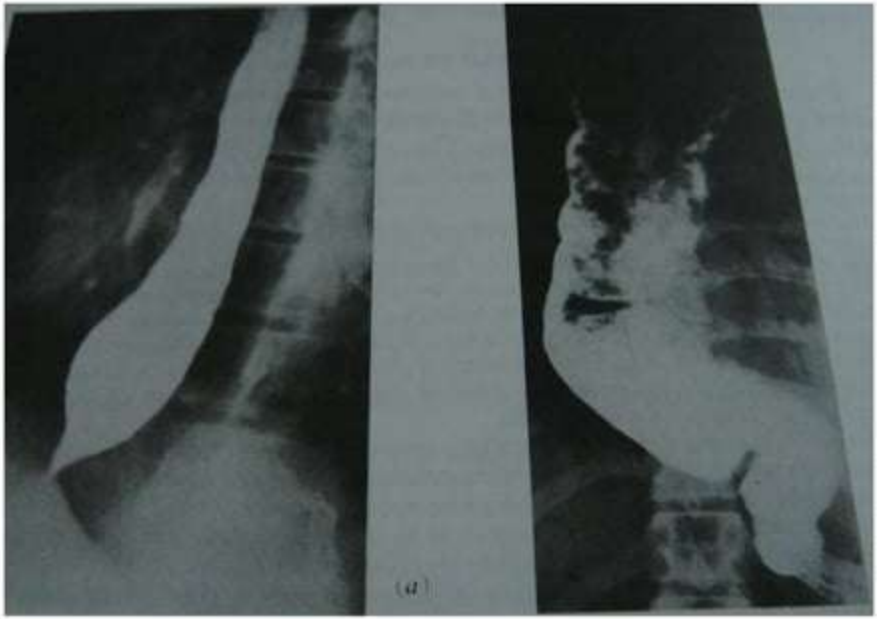
- Corrosives such as sodium hydroxide (caustic soda) or sulphuric acid may be ingested accidentally or intentionally causing chemical burn of oesophagus.
- Severe strictures may develop.



MANAGEMENT

- The management in the acute stage is controversial.
- Nothing by mouth, steroids to reduce fibrosis and parenteral nutrition. Followed by careful oesophagoscopy.
- Dilatation may be helpful for short strictures.
- Long strictures are better managed surgically.
- Surgical options include: replacement of oesophagus by stomach, colon or jujenum.

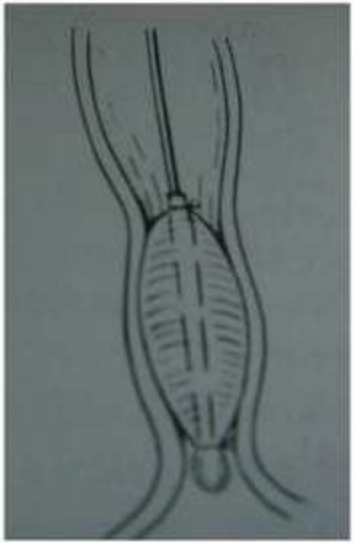
ACHALASIA CARDIA



MANAGEMENT

HELLER,S OP

DILATATION



TOPICS

- Oesophageal Diverticulae.
- Gastro-oesophageal reflux diease.
- Hiatal hernia.
- Benign tumours.
- Cancer of oesophagus

BENIGN TUMOURS

- **Leiomyomas.**
- **Benign intraluminal tumours:**
  - **Mucosal polyps**
  - **Lipomas**
  - **Fibrolipomas**
  - **Myxofibromas**

Leiomyomas

- Account for two thirds of all benign tumours of the oesophagus.
- Symptoms: dysphagia occurs when leiyomyomas exceed a diameter of 5 cm as they grow within the muscular wall, leaving the overlying mucosa intact.
- Diagnosis: Dysphagia, barium swallow and oesophagoscopy.
- Biopsy is contraindicated.

Leiyomyoma

The characteristic radiographic finding of an esophageal leiyomyoma on barium esophagogram, a smooth concave filling defect, created by a well- defined lesion, with sharp, intact mucosal shadow with abrupt angle where the tumour meets the normal esophageal wall.

Surgical treatment

- **Enucleation: in symptomatic patients, the tumour is enucleated from the oesophageal wall without violating the mucosa.**

- **A limited oesophageal resection is indicated if the tumour lies in the lower oesophagus and can not be enucleated.**

Benign intraluminal tumours

- Oesophagoscopy is performed to confirm the diagnosis and to rule out malignancy.
- Surgical treatment:

  Oesophagotomy, removal of the tumour, and repair of the oesophagomyotomy.

Endoscopy should not be used to remove these tumours because of the possibility of oesophageal perforation.

Malignant Tumours

- **Incidence:**
- in the US, the incidence of oesophageal carcinoma ranges from 3.5 in 1 million for whites to 13.5 in 100,000 for blacks.
- The highest incidence of oesophageal carcinoma is noted in the Hunan Chinese population with as many as 130 in 100,000 inviduals affected.

Aetiology

- The exact cause is unknown.
- Associated factors are:

  tobacco use, excessive alcohol ingestion, nitrosamines, poor dental hygiene, and hot beverages.
- Premalignant conditions:

  Achalasia

  Barrett,s oesophagus.

Pathology

- Squamous cell carcinoma is the most common form.
- Adenocarcinoma, the next commonest, is the type that occurs in patients with Barrett,s oesophagus.
- Rare tumours include mucoepidermoid carcinoma and adenoid cystic carcinoma.
- Tumour spread: direct invasion, lymphatic and haematogenic spread.

DIAGNOSIS

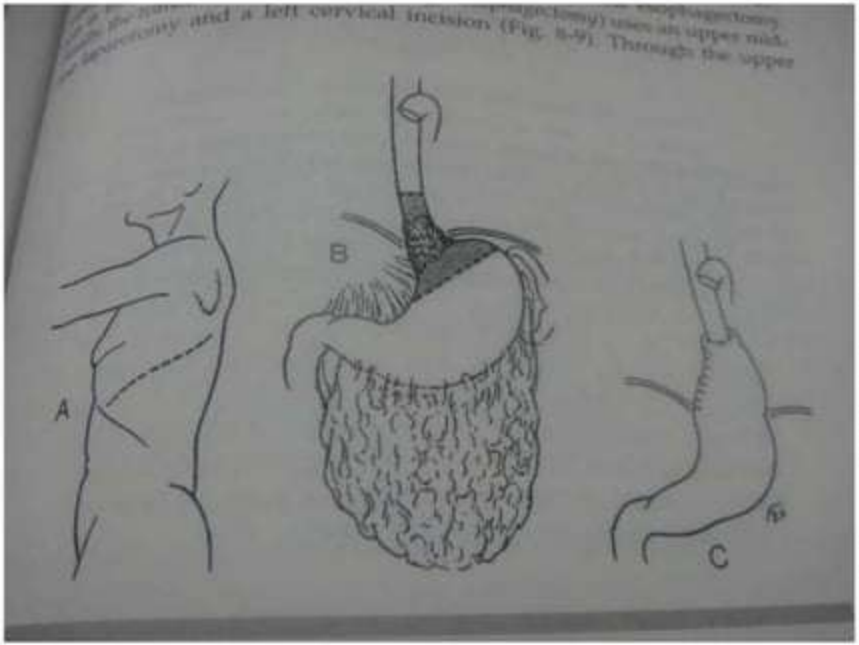
- History: dysphagia and weight loss.
- Contrast study.
- CT: depth of invasion, lymphatic spread and distant metastases.
- Oesophagoscopy: for tissue diagnosis.
- Endoscopic ultrasonography: depth of invasion and staging.
- Bronchoscopy: for proximal lesions to exclude invasion of the bronchial tree.

TREATMENT

- Surgery provides the only cure.
- Operative mortality is less than 5%.
- Types: Ivor-Lewis op.
  Transhiatal oesophagectomy.
  Left thoraco-abdominal approach.

Radiotherapy and chemotherapy: either as adjuvant to surgery or as a primary treatment option.

Paliative Treatment for inoperable cases: stenting.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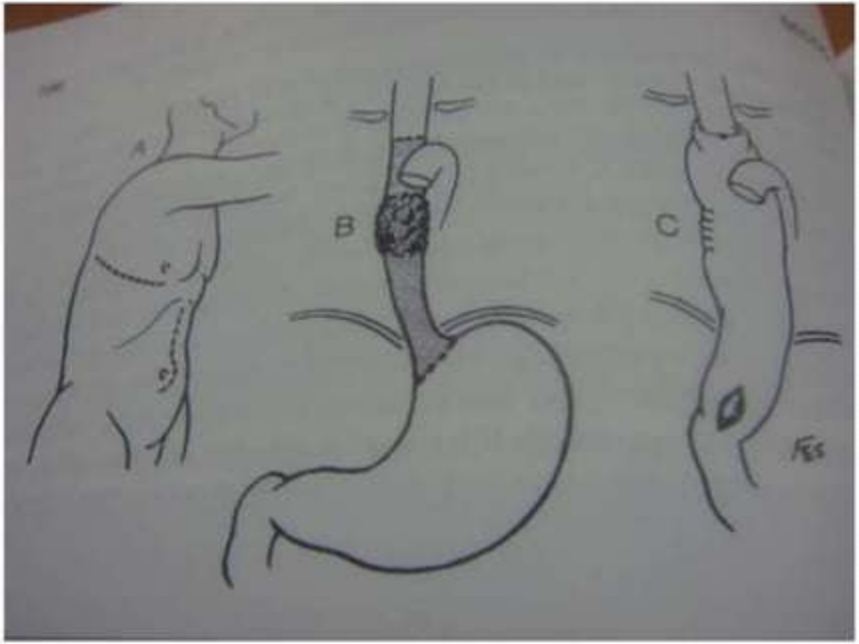
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GASTRO-OESOPHAGEAL REFLUX

- This is a common condition affecting 80% of population.
- LES is a physiological sphincter normally has an intra-abdominal position. Loss of LES pressure results in gastric reflux.
- Oesophageal motility causes refluxed secretions to be cleared by oesophageal peristalsis.
- Gastric secretions, gastric acid, pepsin and bile reflux produce severe oesophagitis.

DIAGNOSIS

- Symptoms: substernal pain, heartburn and regurgitation.
- Manometry: decreased LES pressure.
- Oesophagoscopy: oesophagitis.
- 24-hr pH monitoring: increased acidity.
- Cineradiography: correlates the amount of reflux via motion pictures.

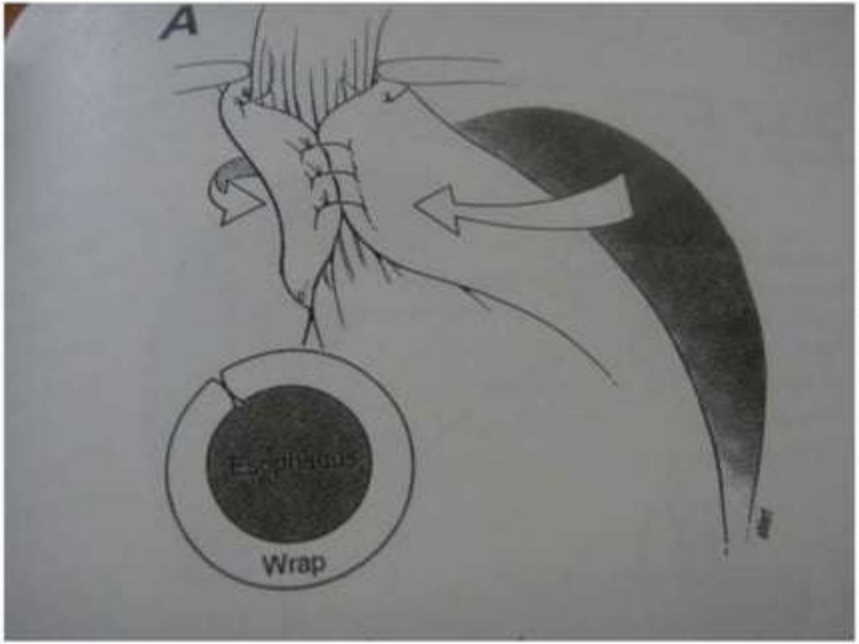
TREATMENT

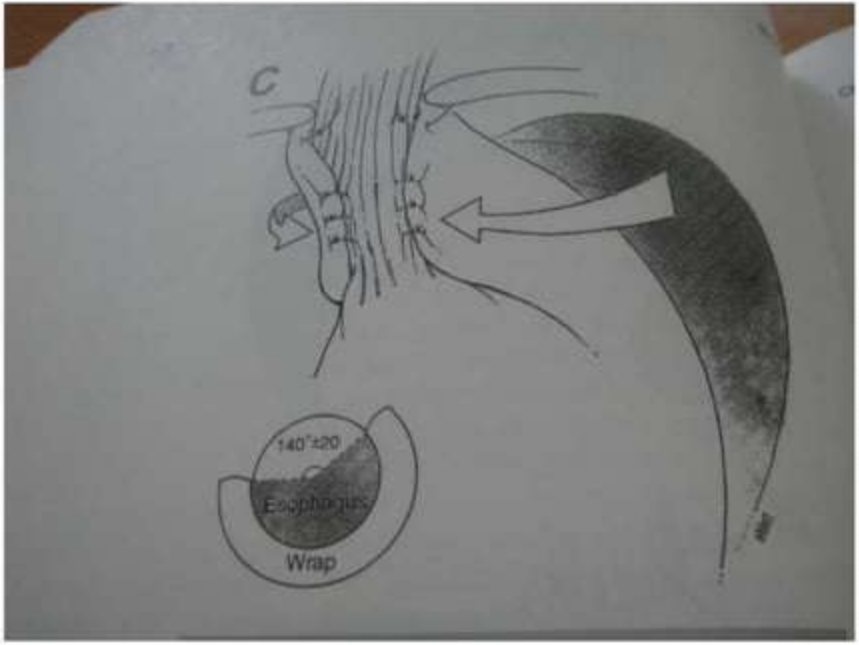
- MEDICAL:

PPI, H2- receptor antagonists, cisapride and metoclapramide increasing rate of gastric emptying, antacids, weight reduction, abstinence from smoking and alcohol and elevation of the head of bed at night.

SURGERY:

Antireflux operations: Nissen fundoplication, Belsey Mark IV op and Hill repair.


A
Esophagus
Wrap


C
140°±20°
Esophagus
Wrap