

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 disease.

- Hiatal hernia.

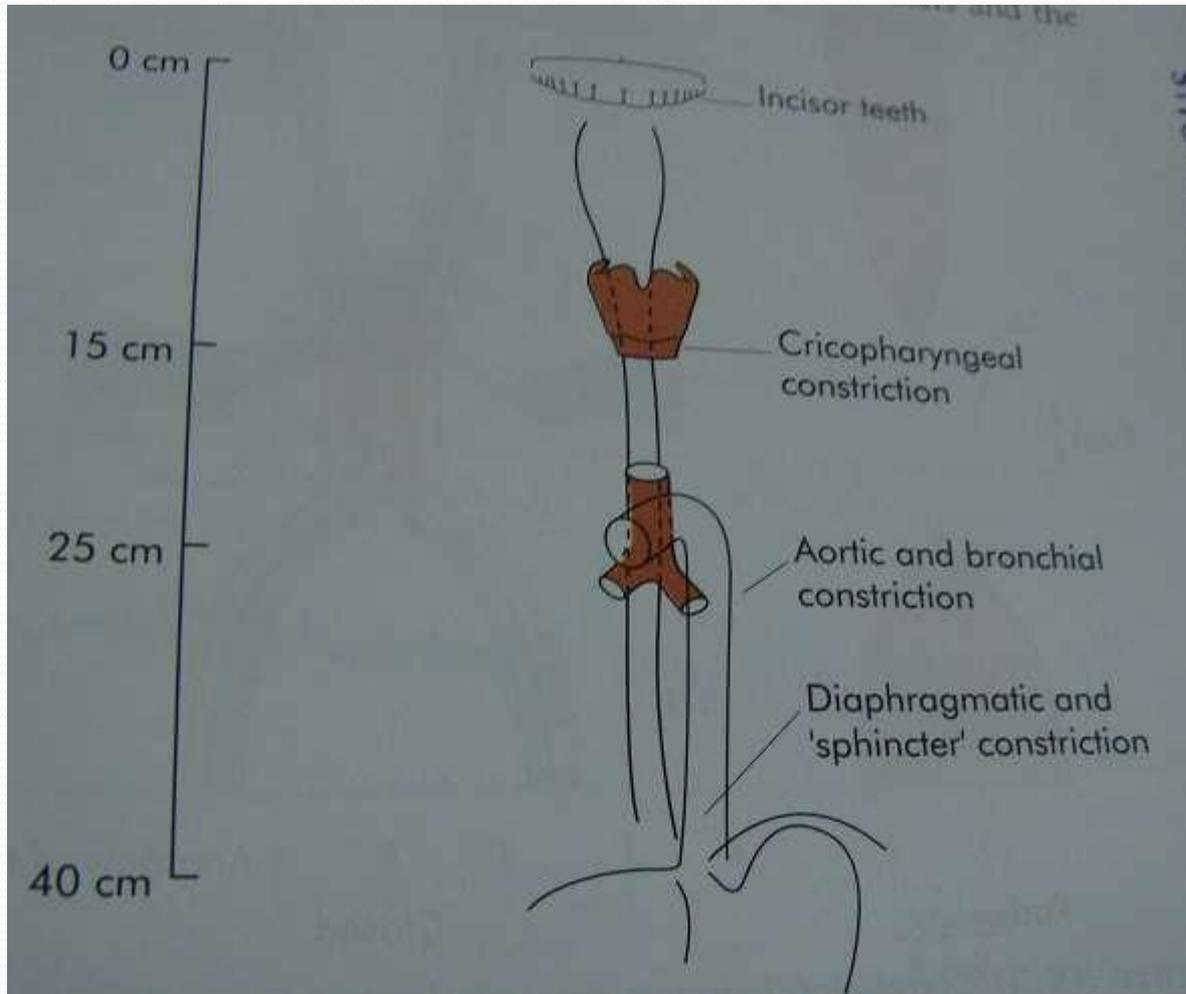
- Oesophageal motility disorders: achalasia and diffuse spasm.

- Oesophageal diverticula.

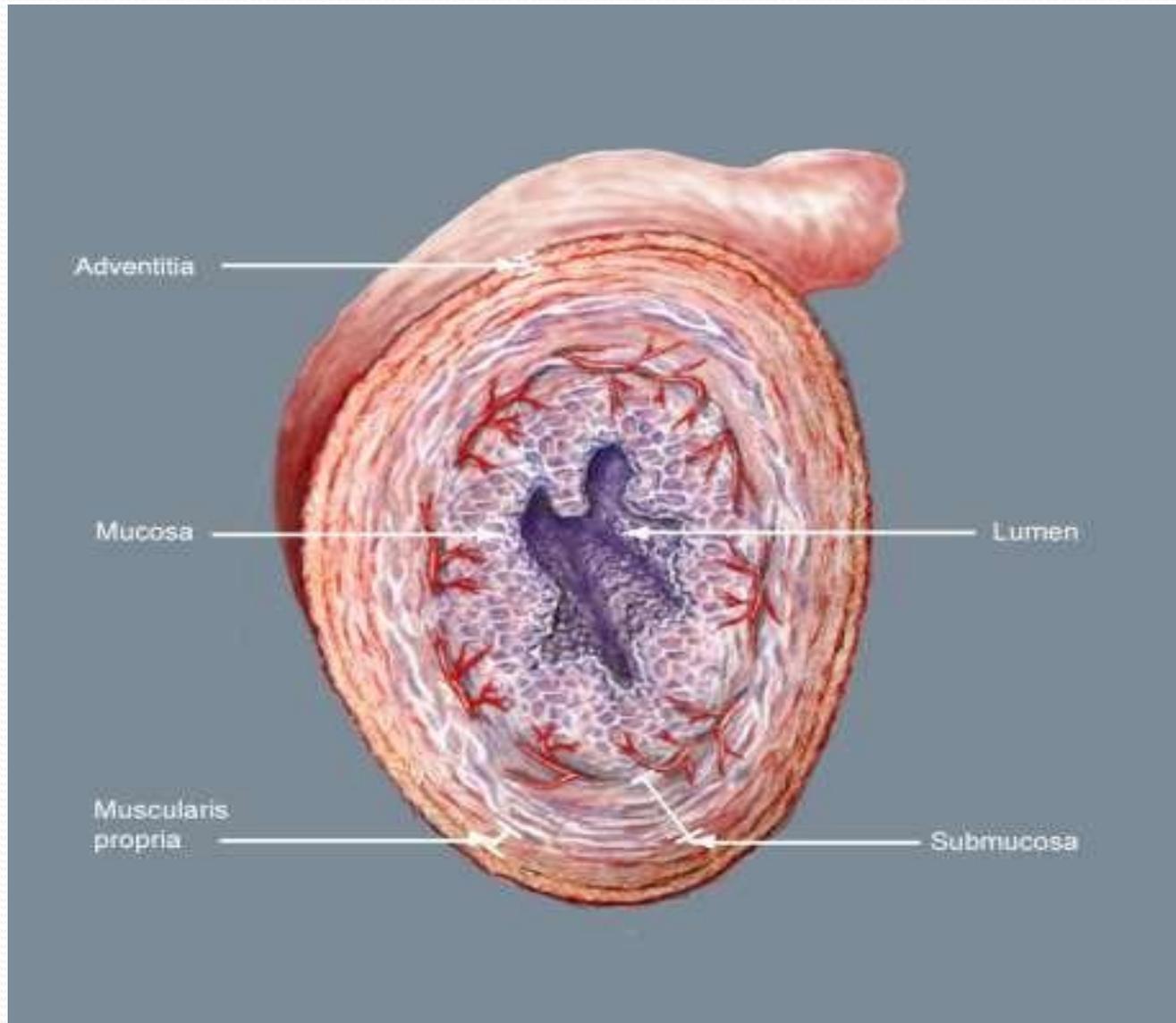
SURGICAL ANATOMY

- 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



Wall of Oesophagus



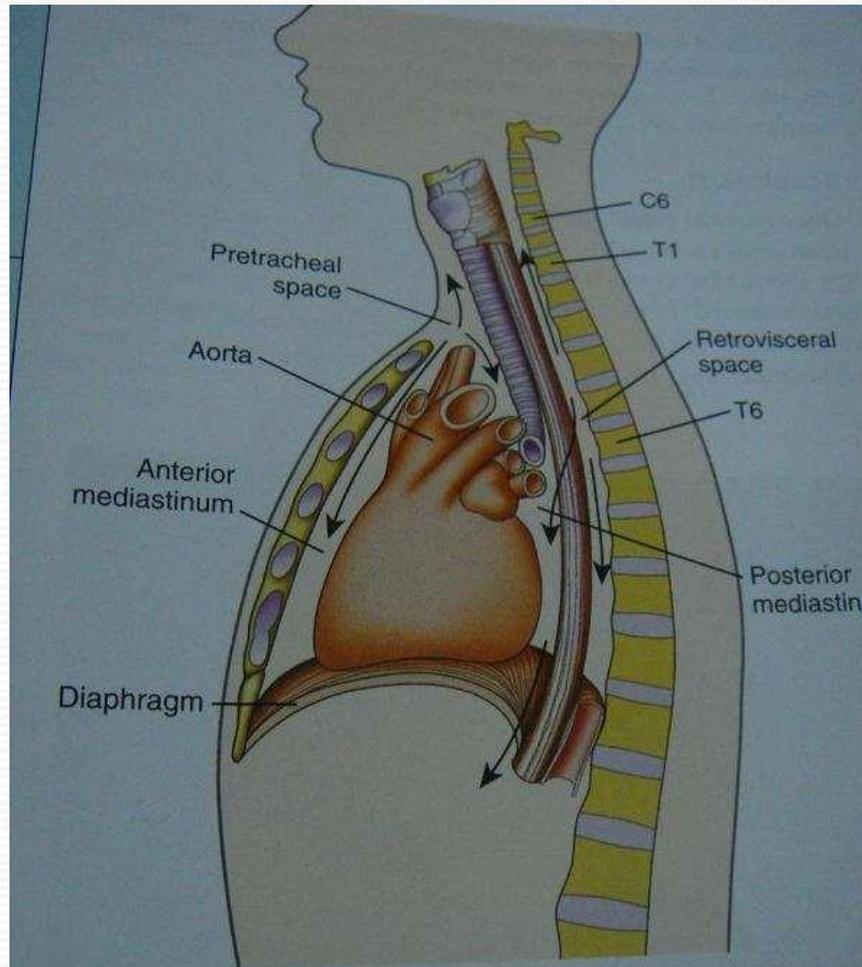


FIGURE [] Diagram showing pathways for spread of infection the mediastinum and pleural cavities after cervical or thoracic esophageal perforation.

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 H₂O.

SYMPTOMS

- Difficulty in swallowing described as food or fluid sticking (oesophageal dysphagia). Must rule out malignancy.
- Pain on swallowing (odynophagia). Suggest inflammation 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.

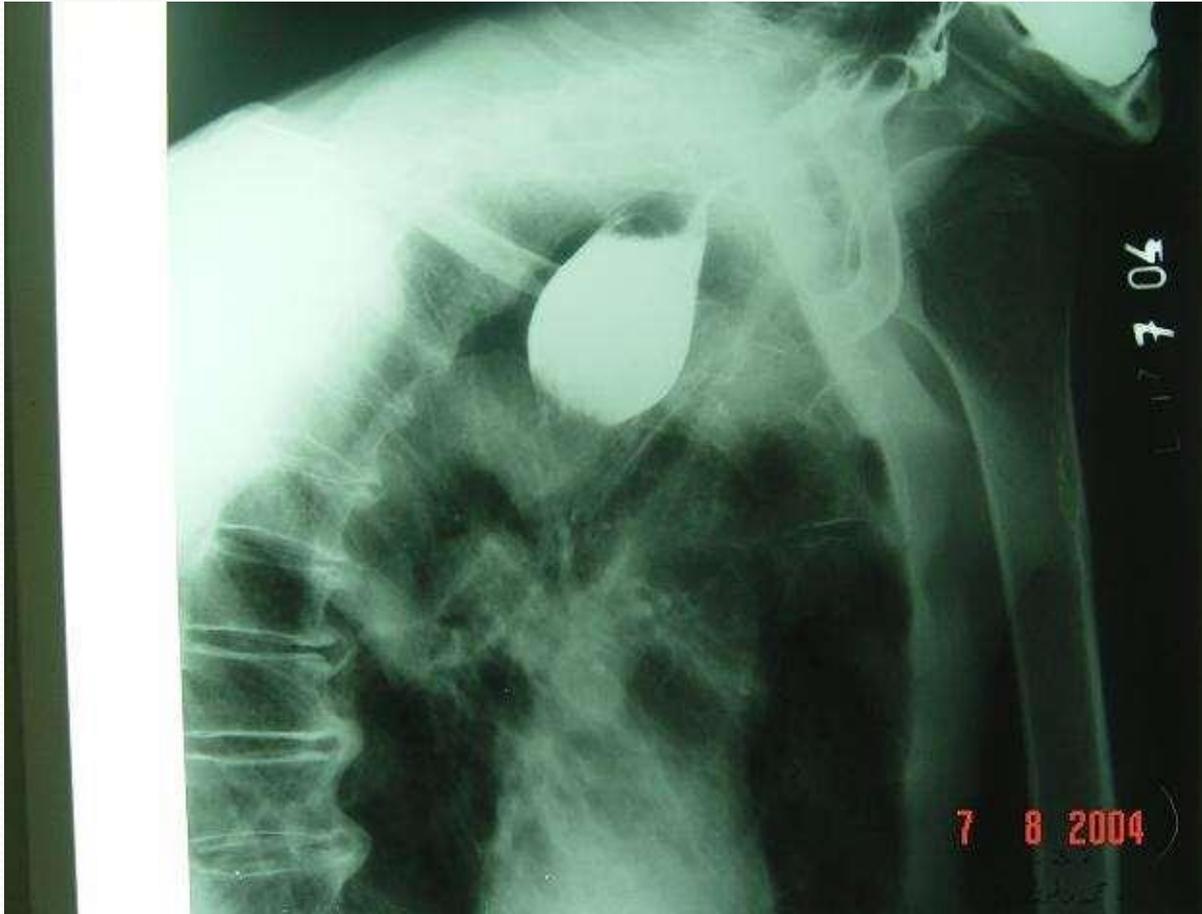
- Endoscopy: rigid and flexible oesophagoscopy.

- Endosonography: endoscopic ultrasonography.

- Oesophageal manometry: 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

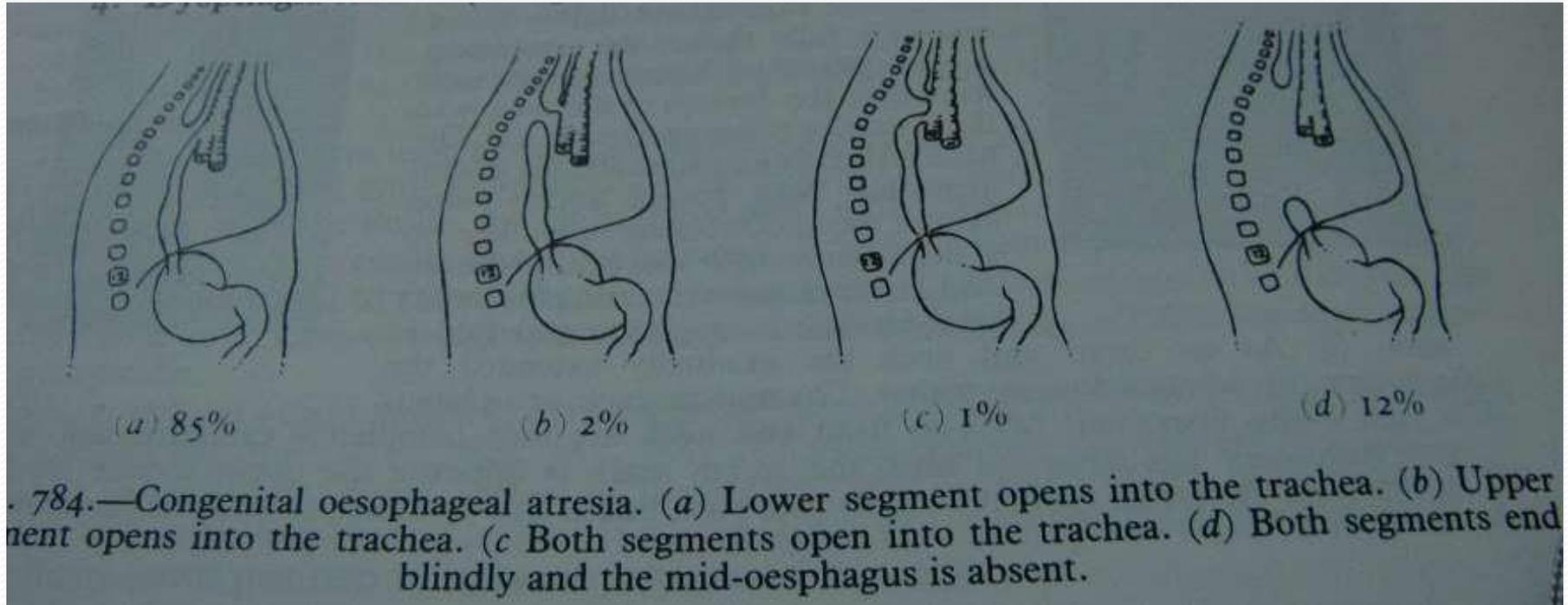




CONGENITAL ABNORMALITIES

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

TYPES OF TOF



**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



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

On inspection the mouth is frothy mucus, 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



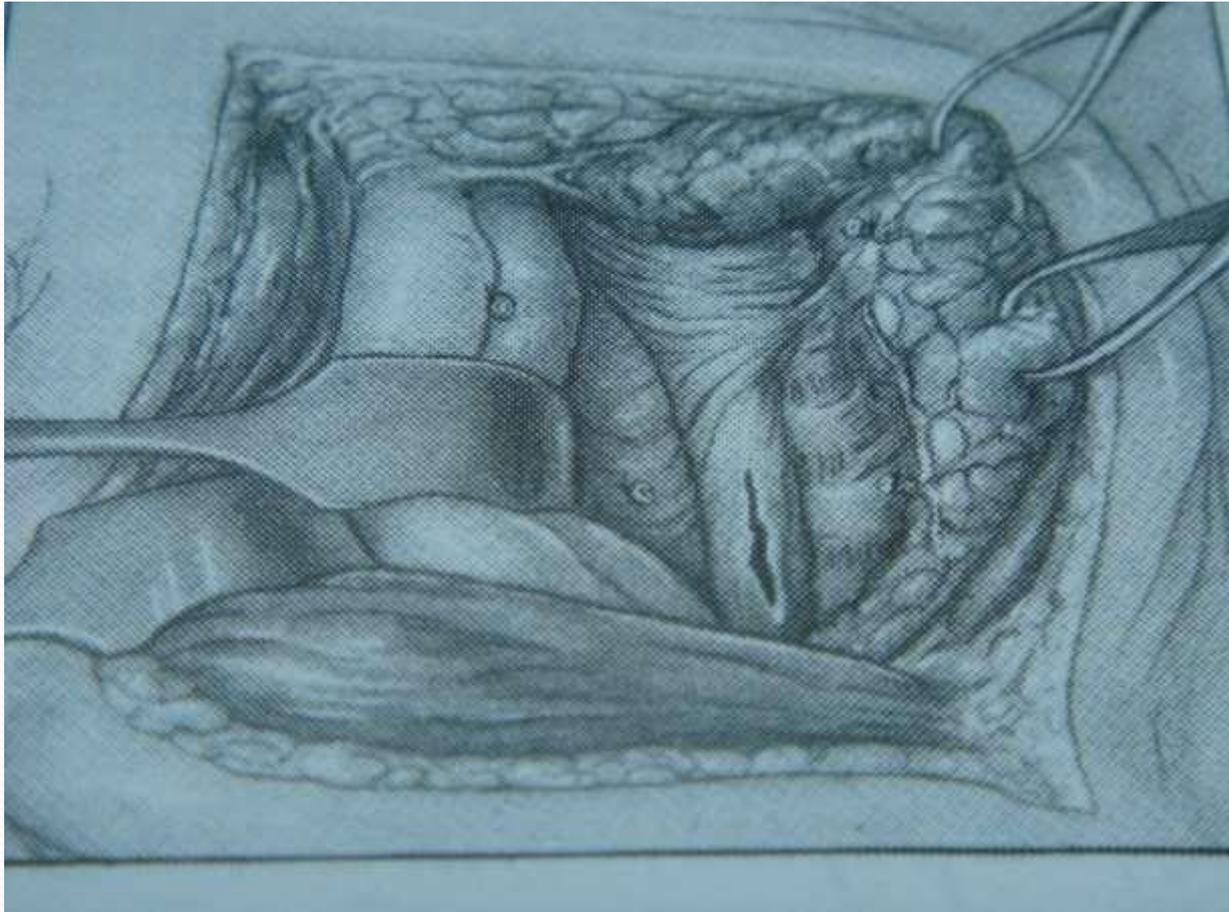
PERFORATION OF OESOPHAGUS

- 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): Boerhaave 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 CTscan.
- 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

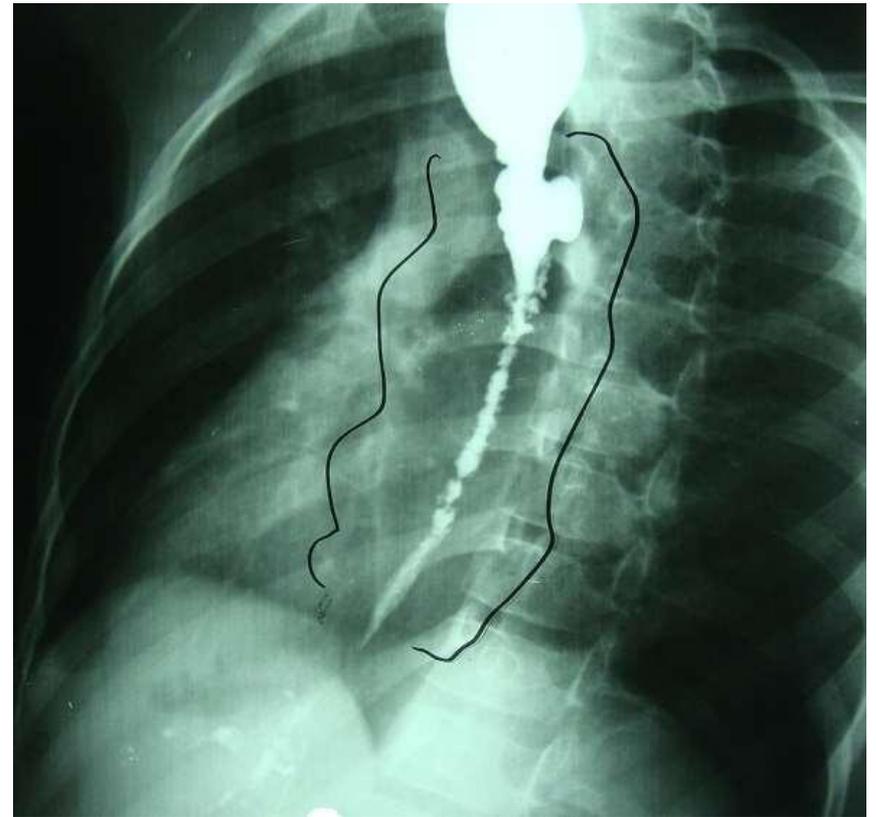
- Small septic load.
- Minimal cardiovascular upset.
- Perforation confined to
 - mediastinum.
- Perforation by flexible endoscope.
- Perforation of cervical
 - oesophagus.

Factors that favour operative Repair

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

INGESTION OF CORROSIVE AGENTS

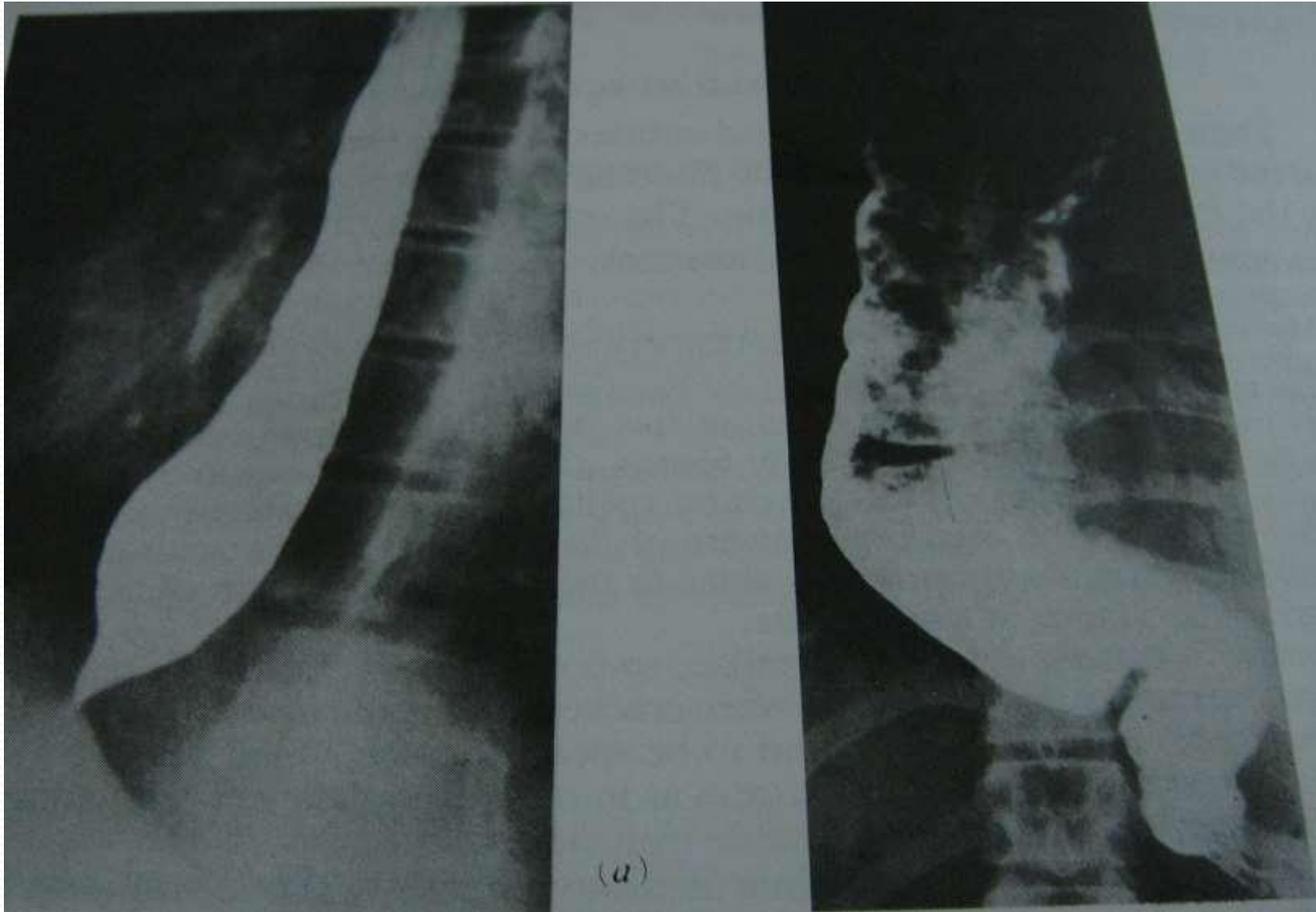
- Corrosives such as sodium hydroxide (caustic soda) or sulphuric acid may be ingested accidentally or intentionally causing chemical burn of oesophagus.
- Severe strictures may develop.



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 jejunum.

ACHALASIA CARDIA

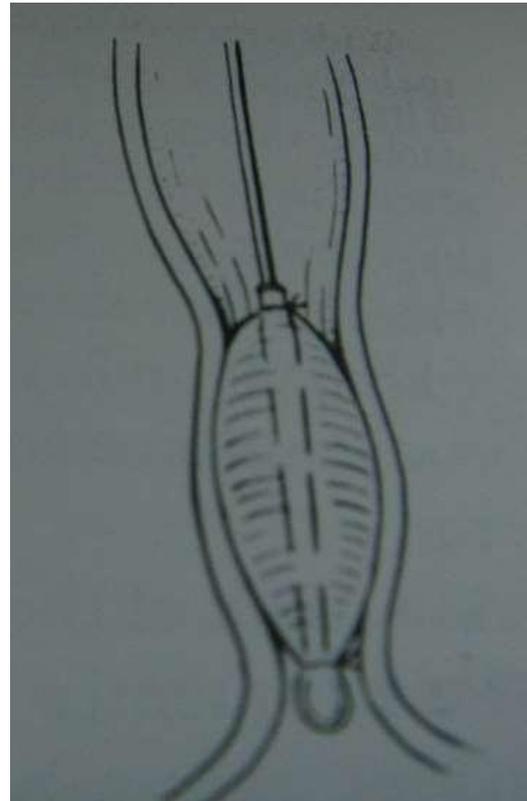


HELLER,S OP



GEM

DILATATION



TOPICS

- Oesophageal Diverticulae.**
- Gastro-oesophageal reflux disease.**
- 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 leiomyomas 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.

Leiomyoma



The characteristic radiographic finding of an esophageal leiomyoma 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 individuals 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.

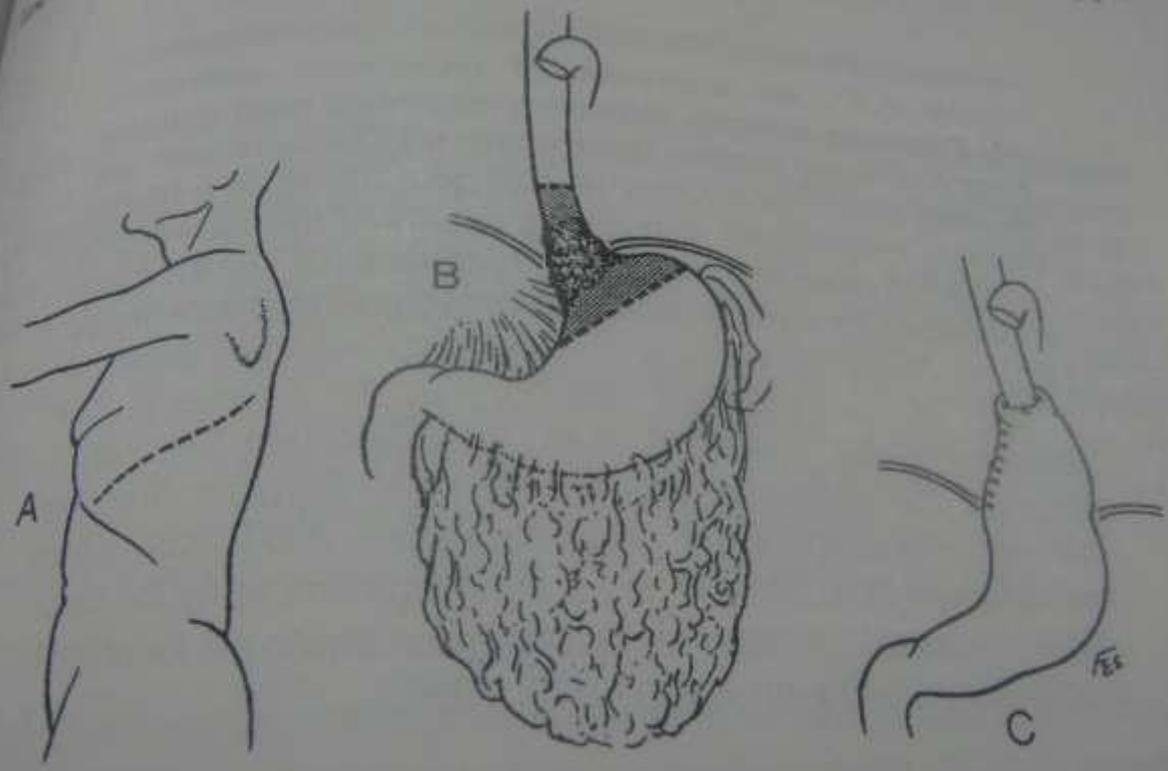
Transhiatal oesophagectomy.

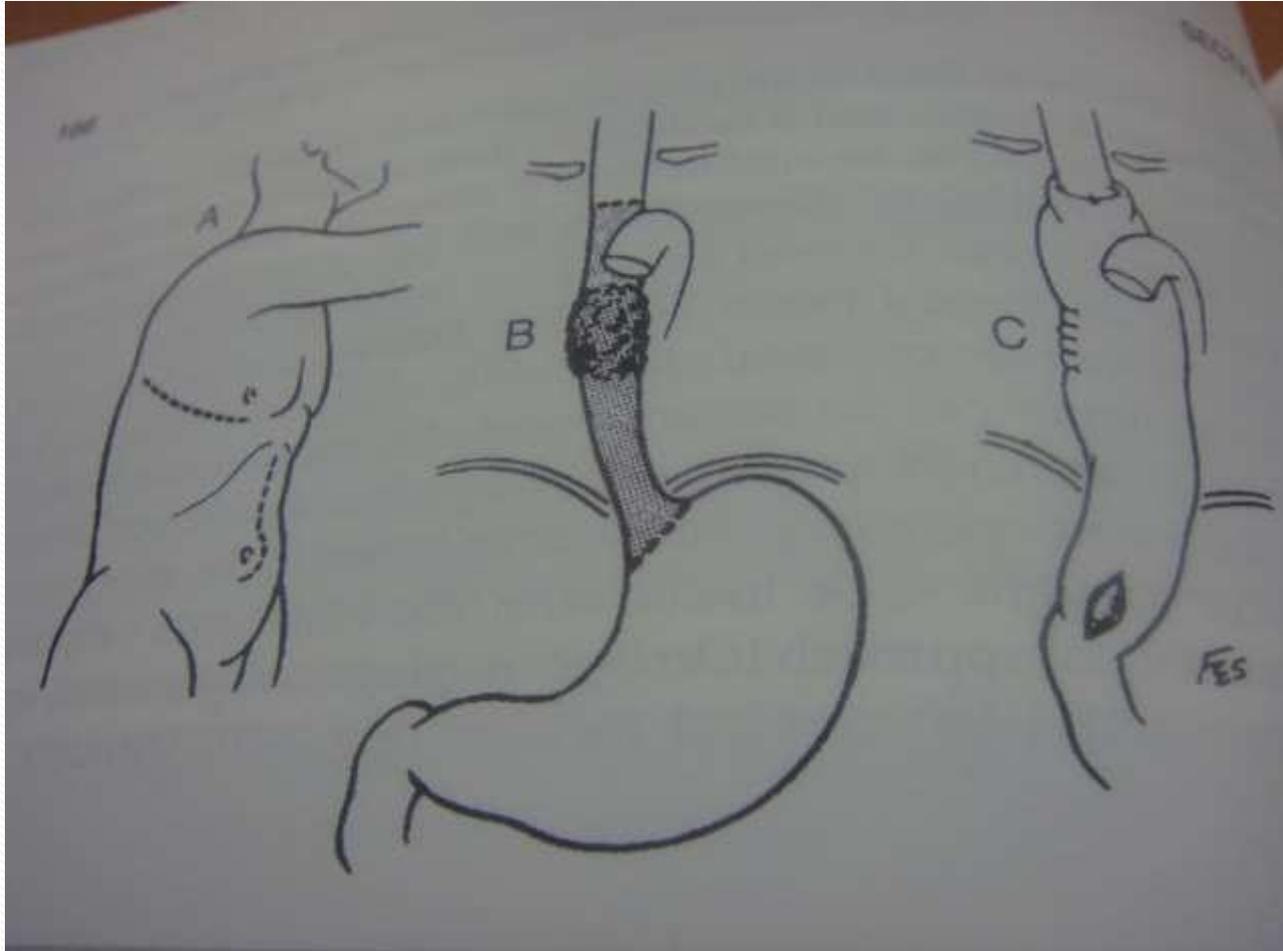
Left thoraco-abdominal approach.

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

Paliative Treatment for inoperable cases:stenting.

... is the trans...
... usually the trans...
... laparotomy and a left cervical incision (Fig. 8-9). Through the upper
... esophagectomy.
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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 metoclopramide 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.

