

Anatomy of Esophagus

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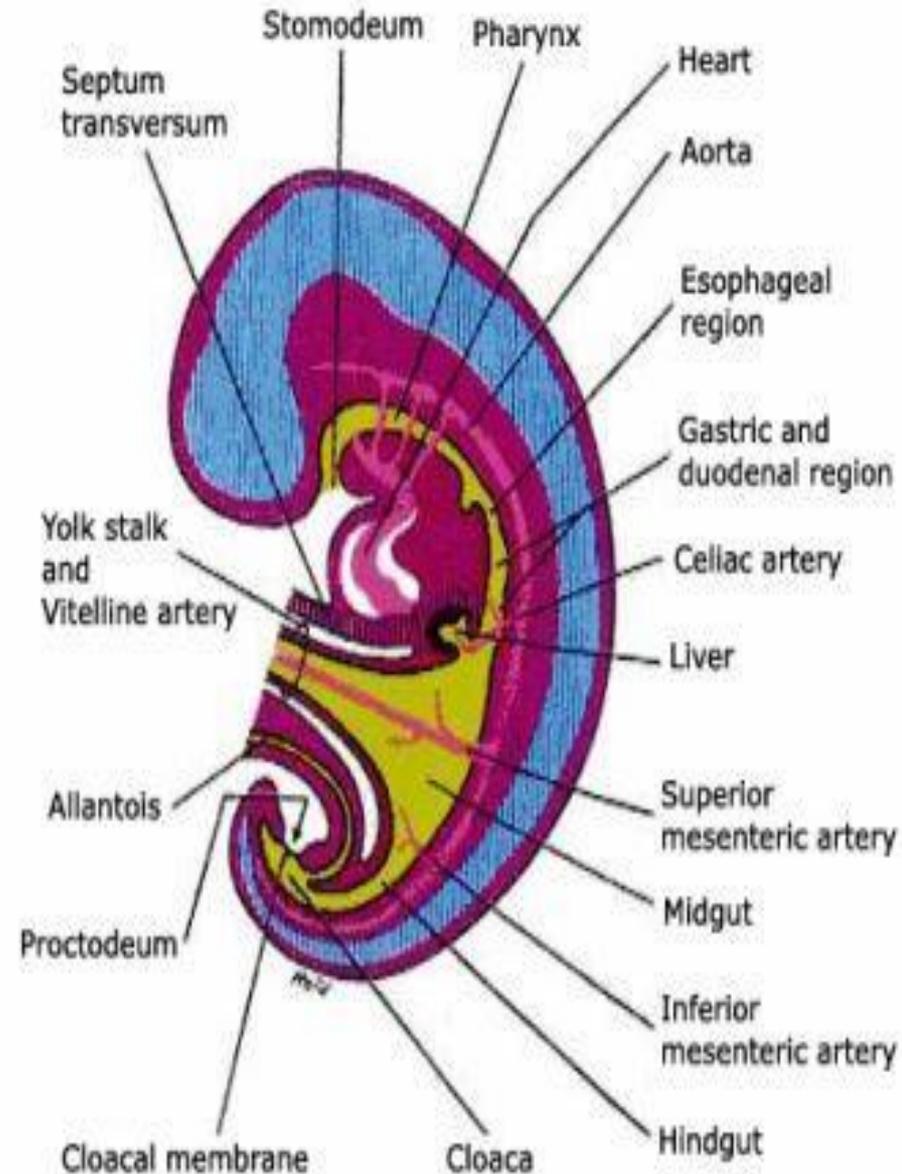
Anbar medical college

Esophagus

The esophagus is a part of the alimentary tract. It is a muscular tube approximately 25 cm long extending from the pharynx to the stomach. The esophagus begins at the lower margin of the cricoid cartilage opposite the sixth cervical vertebra and enters the gastric orifice at the level of the twelfth thoracic vertebra.

Development of the oesophagus

At a very early period the stomach is separated from pharynx by a mere constriction from primitive pharynx. This constriction is future esophagus.

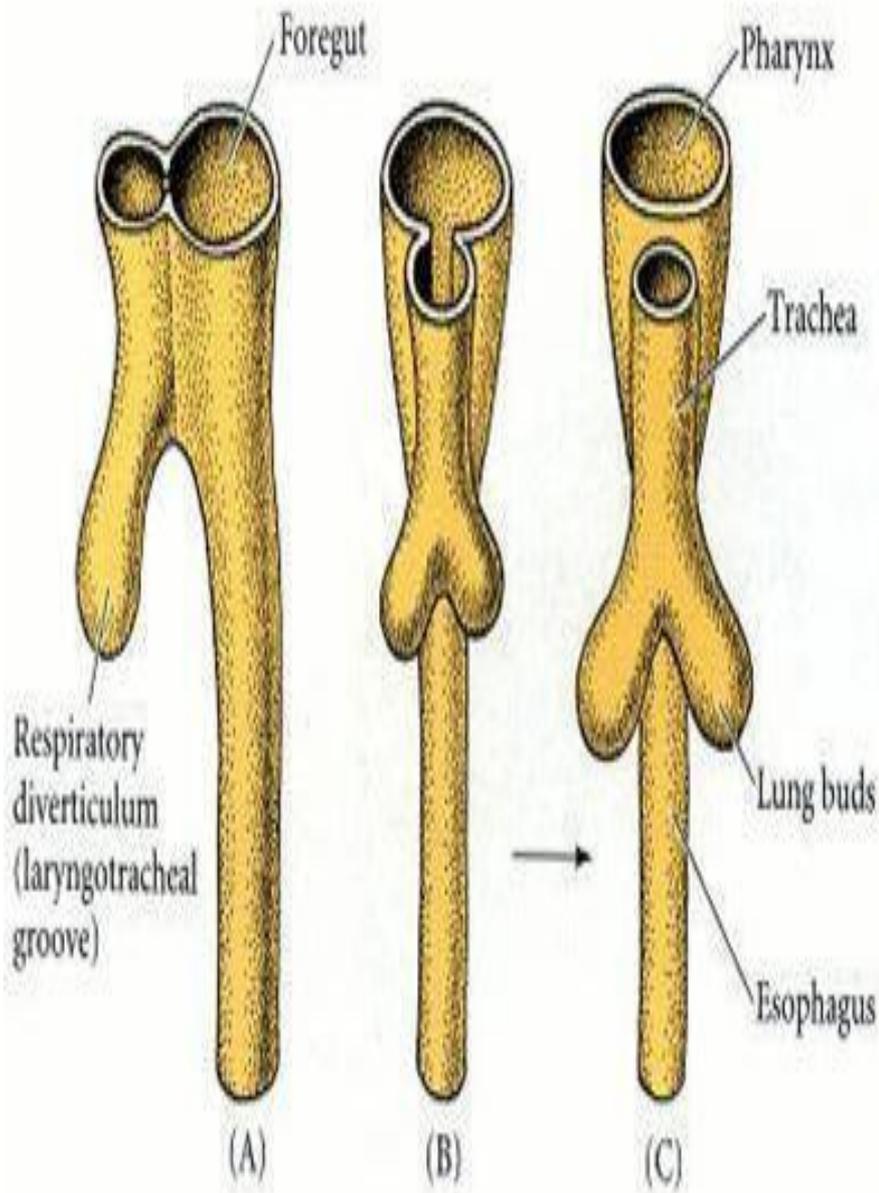


Previous to this elongation the trachea and oesophagus form a single structure.

This becomes divided into two by the in growth of two lateral septa, which fuse giving rise to trachea in front and oesophagus behind.

At this stage the oesophagus becomes converted into a solid rod of cells, losing its tubular nature.

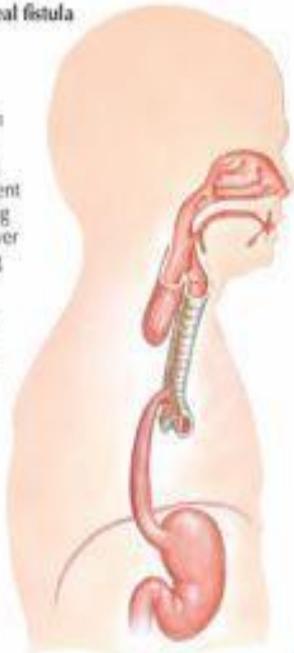
This eventually becomes canalised to form a tube.



Common Congenital Tracheo-esophageal anomalies

A. Tracheoesophageal fistula

Most common form (90% to 95%) of tracheoesophageal fistula. Upper segment of esophagus ending in blind pouch; lower segment originating from trachea just above bifurcation. The two segments may be connected by a solid cord



B. Variations of tracheoesophageal fistula and rare anomalies of trachea

Upper segment of esophagus ending in trachea; lower segment of variable length

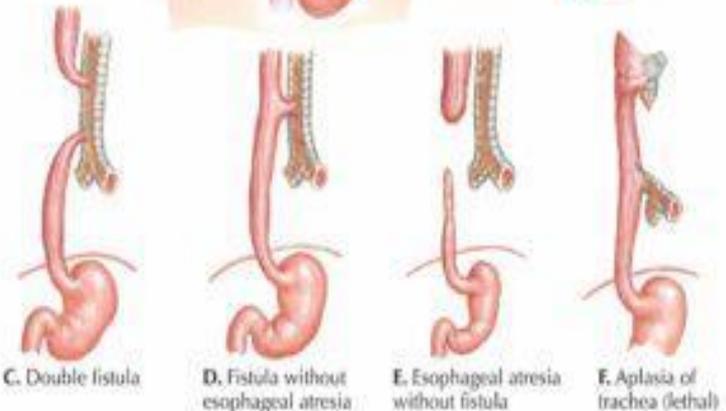


Oesophago-tracheal fistula

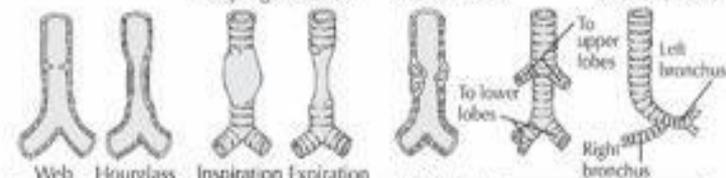
Commonest type

Newborn has violent fits of vomiting & coughing on swallowing

Polyhydramnios



C. Double fistula
D. Fistula without esophageal atresia
E. Esophageal atresia without fistula
F. Aplasia of trachea (lethal)



G. Stricture of trachea
H. Absence of cartilage
I. Deformity of cartilage
J. Abnormalities of bifurcation

Partial Obstruction of Oesophagus

Stricture

Atresia

newborn salivates excessively, becomes cyanotic and vomits

Oesophagus

- A muscular tube; 25 cm in length
 - Collapsed at rest,
 - Flat in upper 2/3 & rounded in lower 1/3
- Commences at the lower border of the cricoid cartilage.(C6).
- Descends along the front of the spine, through the posterior mediastinum, passes through the Diaphragm, and, entering the abdomen, terminates at the cardiac orifice of the stomach, opposite the eleventh dorsal vertebra.
- In the newborn **Upper limit** at the level of 4th or 5th Cer. Vertb. and it ends at 9th Dorsal

Length at birth: 8-10 cm, end of 1st Yr:
12cm, 5th Yr.:16cm 15th: 19cm

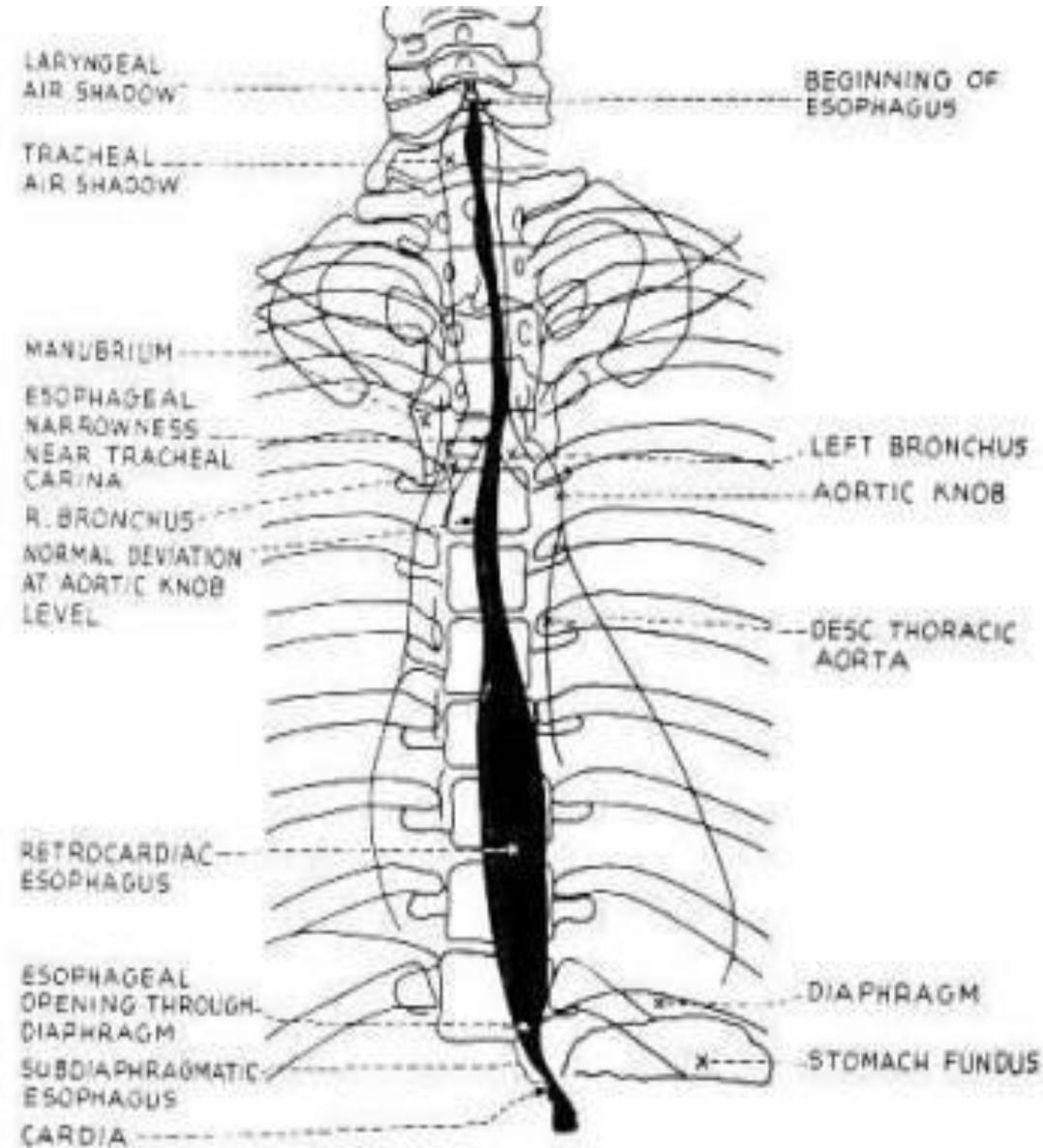
Diameter: Varies whether bolus of
food/ fluid passing thru or not.

At rest in adults 20 mm but can
stretch up to 30 mm

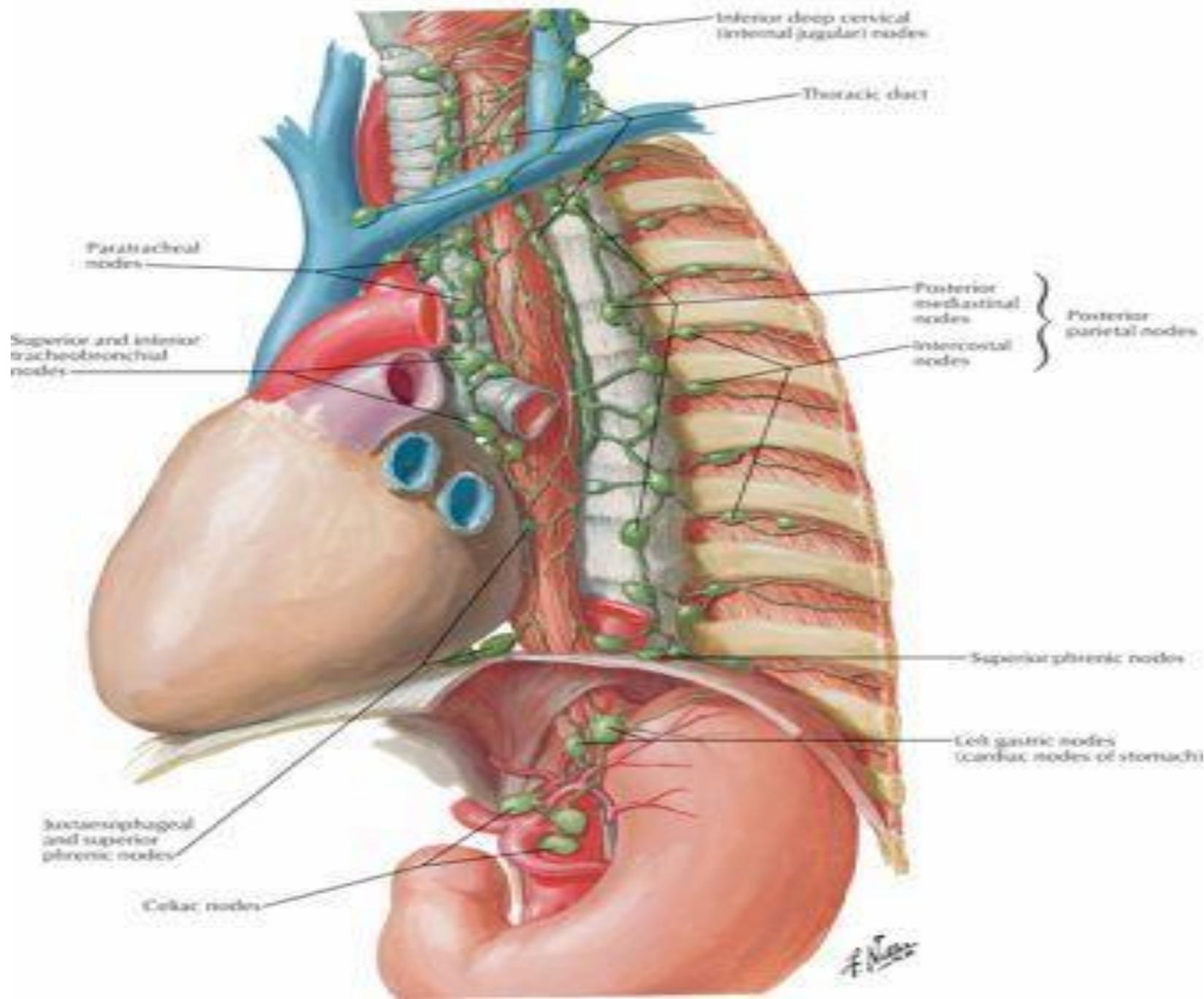
At birth it is 5mm at 5 yrs it is 15mm

General direction of the oesophagus is vertical

- Presents two or three slight curvatures
- At commencement, in the median line
- Inclines to the left side at the root of the neck
- Gradually passes to the middle line
- Again deviates to the left



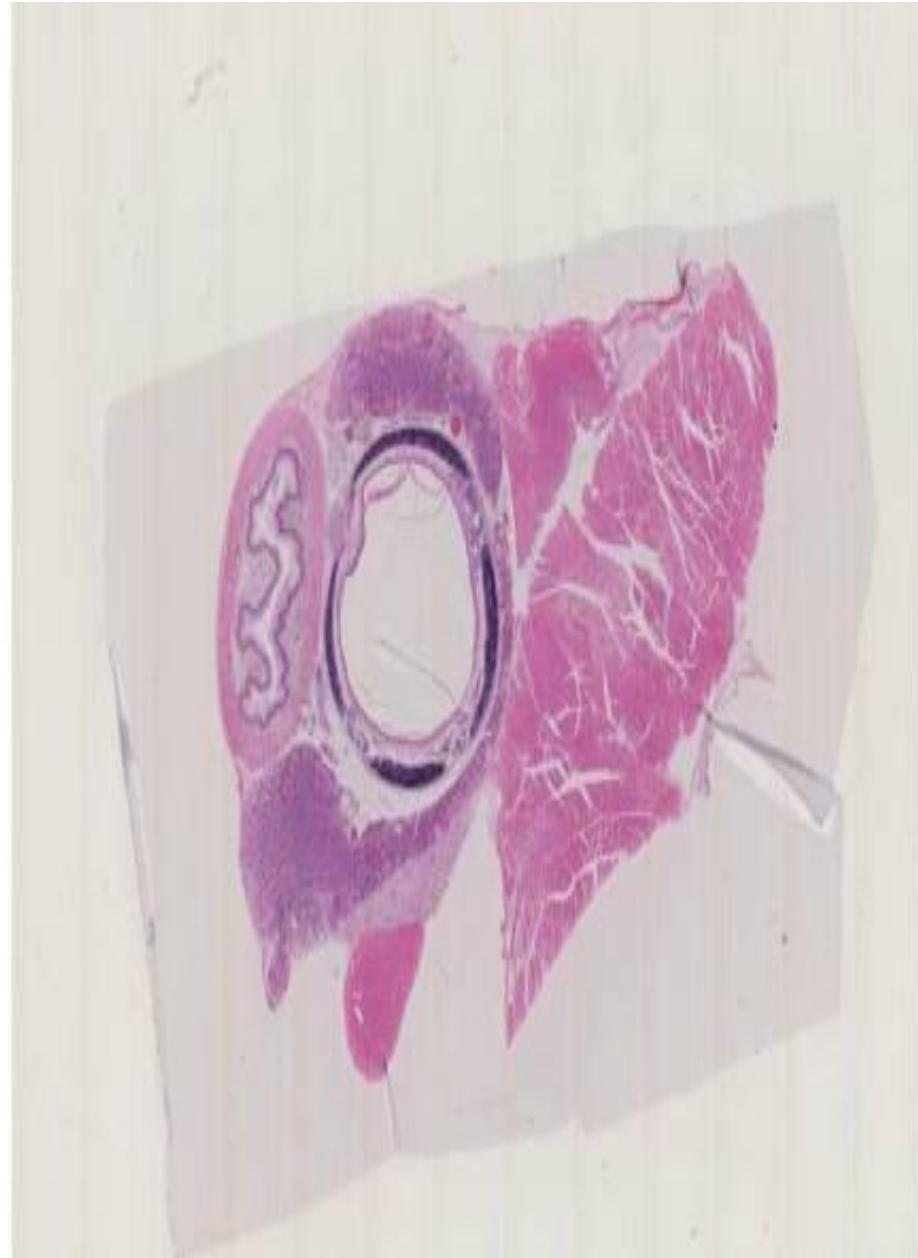
Lymph Vessels and Nodes of Esophagus



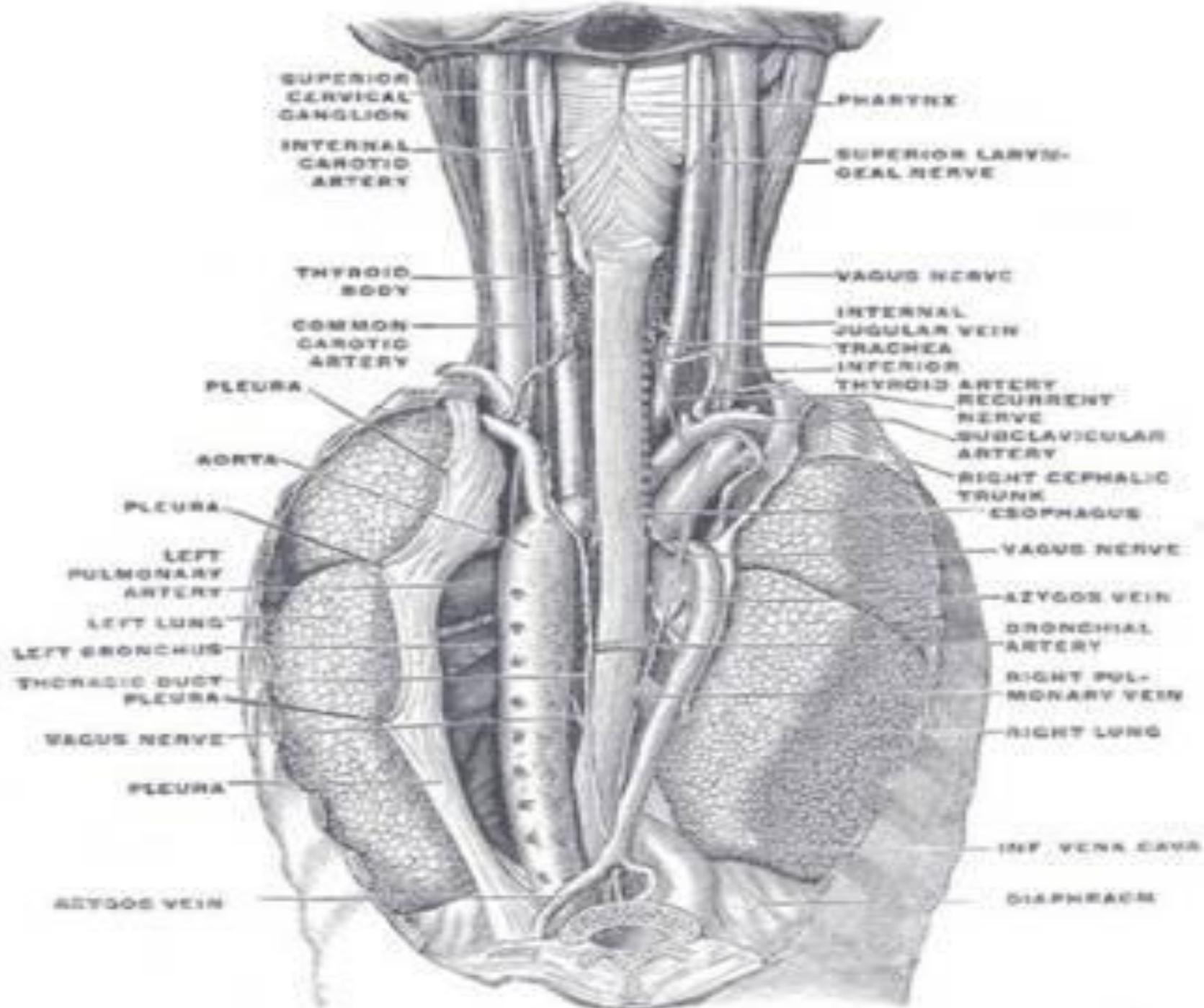
The oesophagus also presents an **antero-posterior flexure**, corresponding to the curvature of the cervical and thoracic portions of the spine.

It is the narrowest part of the alimentary canal, being most contracted at its commencement, and at the point where it passes through the Diaphragm.

- In the neck**, the oesophagus is in relation,
- **in front**, with the trachea; and, at the lower part of the neck, where it projects to the left side, with **the thyroid gland and thoracic duct**;
 - **behind**, it rests upon the **vertebral column** and Longus colli muscle; on each side, it is in relation with the **common carotid artery** (especially the left, as it inclines to that side), and part of the lateral lobes of the thyroid gland; the **recurrent laryngeal nerves** ascend between it and the trachea.



In the thorax, it is at first situated a little to the left of the median line: it passes across the left side of the transverse part of the aortic arch, descends in the posterior mediastinum, along the right side of the aorta, until near the Diaphragm, where it passes in front and a little to the left of this vessel, previous to entering the abdomen.



Surgical Anatomy

The relations of the oesophagus are of considerable practical interest to the surgeon, as he is frequently required, in cases of stricture of this tube to dilate the canal by a bougie

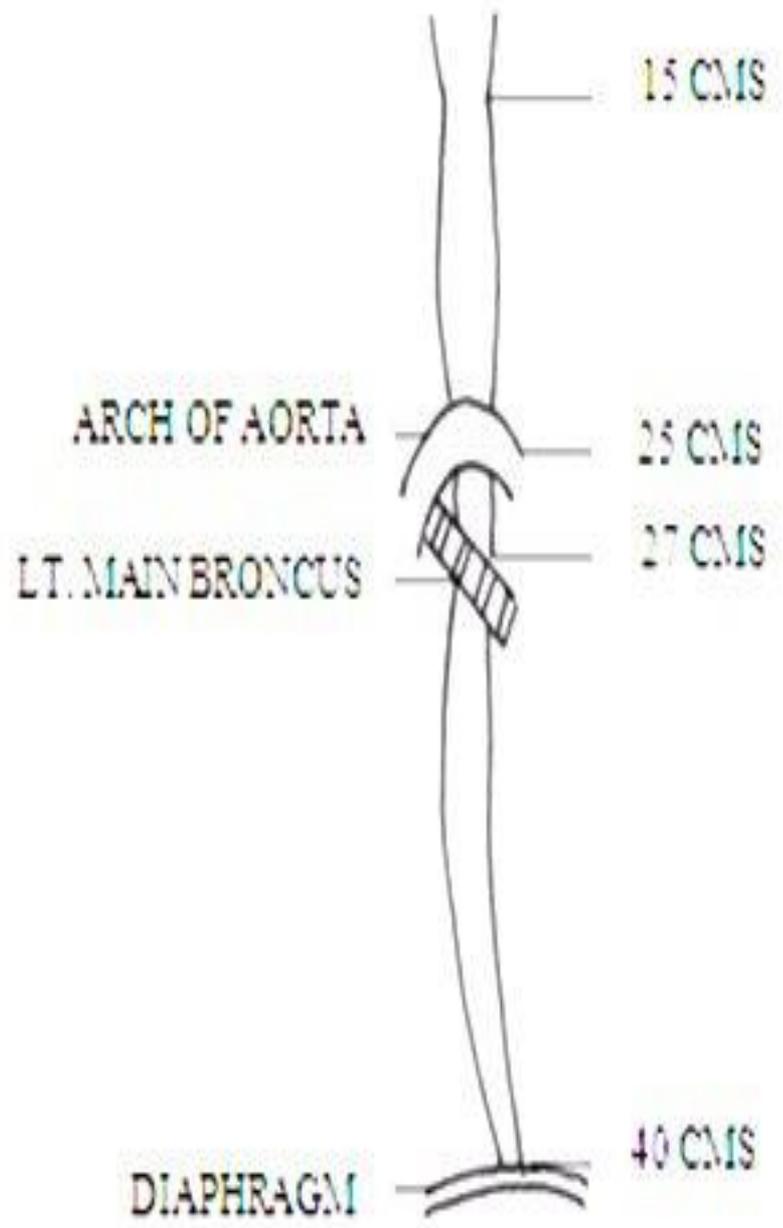
In cases of malignant disease of the oesophagus,, the greatest care is requisite in directing the bougie through the strictured part, as a false passage may easily be made, and the instrument may pass into the mediastinum, or into one or the other pleural cavity, or even into the pericardium

Oesophagus is the narrowest region of alimentary tract except vermiform appendix. During its course it has three indentations.

At 15 cm from incisor teeth is crico-pharyngues sphincter (normally closed) (UES)

At 25 cm aortic arch and left main bronchus

At 40 cms where it pierces the diaphragm where a physiological sphincter is sited (LES)



**These areas are where most oesophageal
foreign bodies become entrapped.**

The most common site of oesophageal impaction is at the **((thoracic inlet))**

Defined as the area between the clavicles on chest radiograph, this is the site of anatomical change from the skeletal muscle to the smooth muscle of the oesophagus. The cricopharyngeus sling at C6 is also at this level and may "catch" a foreign body.

About 70% of blunt foreign bodies that lodge in the oesophagus do so at this location.



Another 15% become lodged at the **mid oesophagus**, in the region where the aortic arch and carina overlap the oesophagus on chest radiograph.

The remaining 15% become lodged at the lower oesophageal sphincter (**LES**) at the gastroesophageal junction.



The esophagus is a very thin-walled organ, measuring about 2 mm wide

The oesophageal wall has four layers: From within outwards:

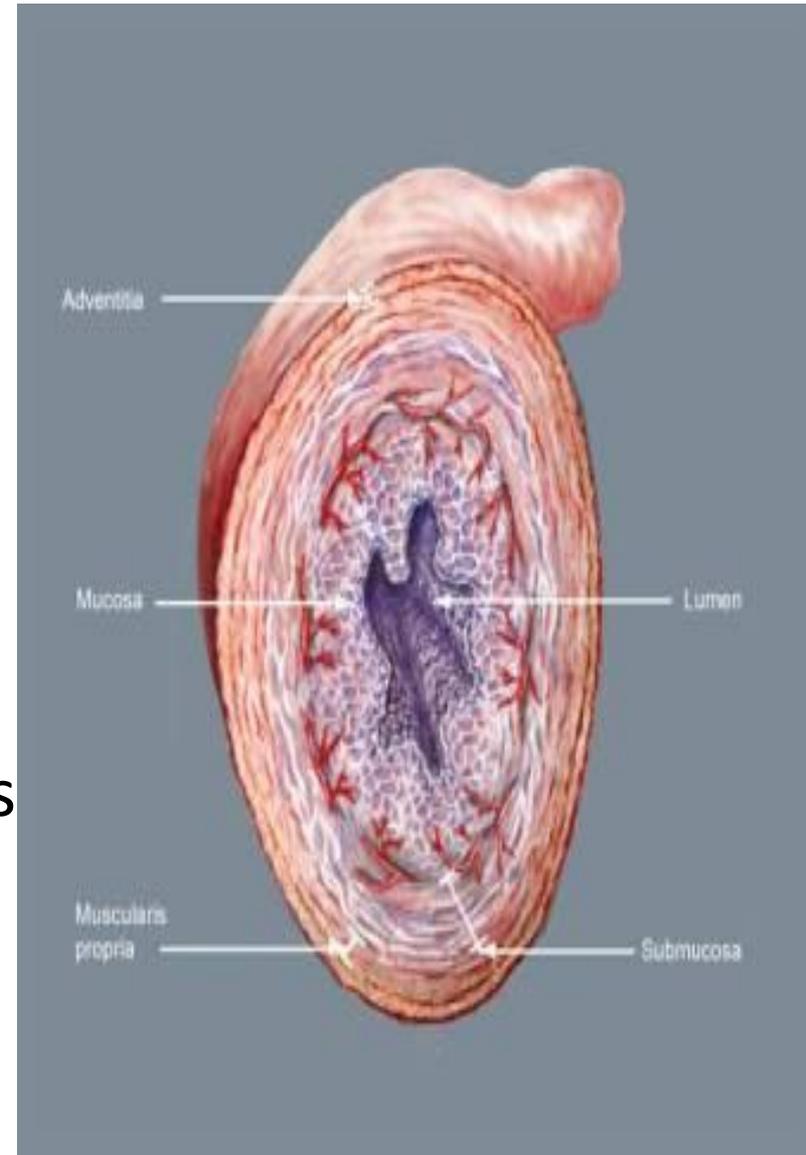
1-Mucous Membrane,

2-Sub-mucosa,

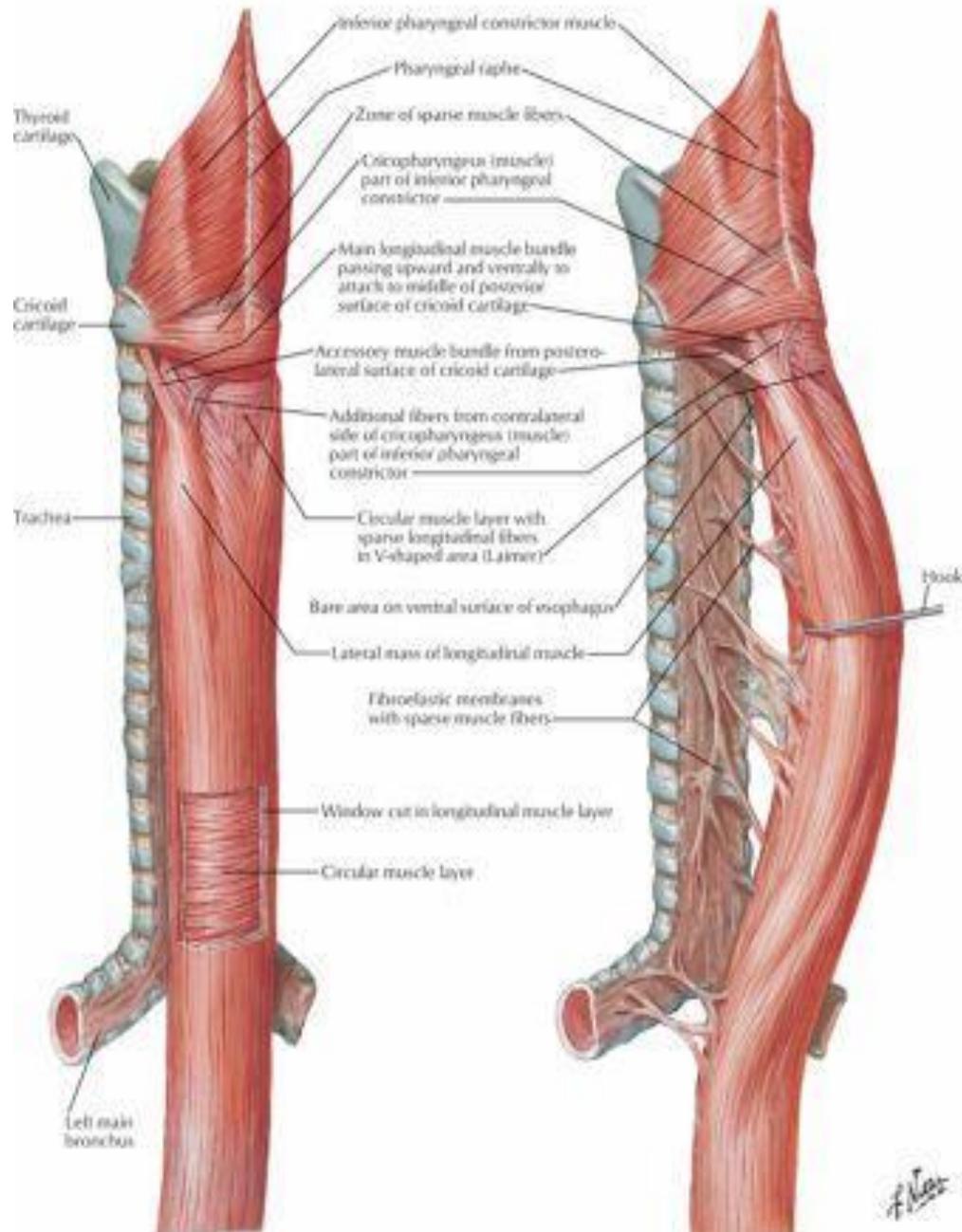
3-Muscle coat and

4-Outer most fibrous layer.

Unlike other areas of the gut, it does not have a distinct serosal covering, but is covered by a thin layer of loose connective tissue



Musculature of Esophagus



Outer longitudinal and inner circular

Laimer's dehiscence/ A triangular area in the wall of the pharynx between the oblique fibers of the inferior constrictor muscle, and the transverse fibers of the cricopharyngeus muscle through which the Zenker's diverticulum occurs.

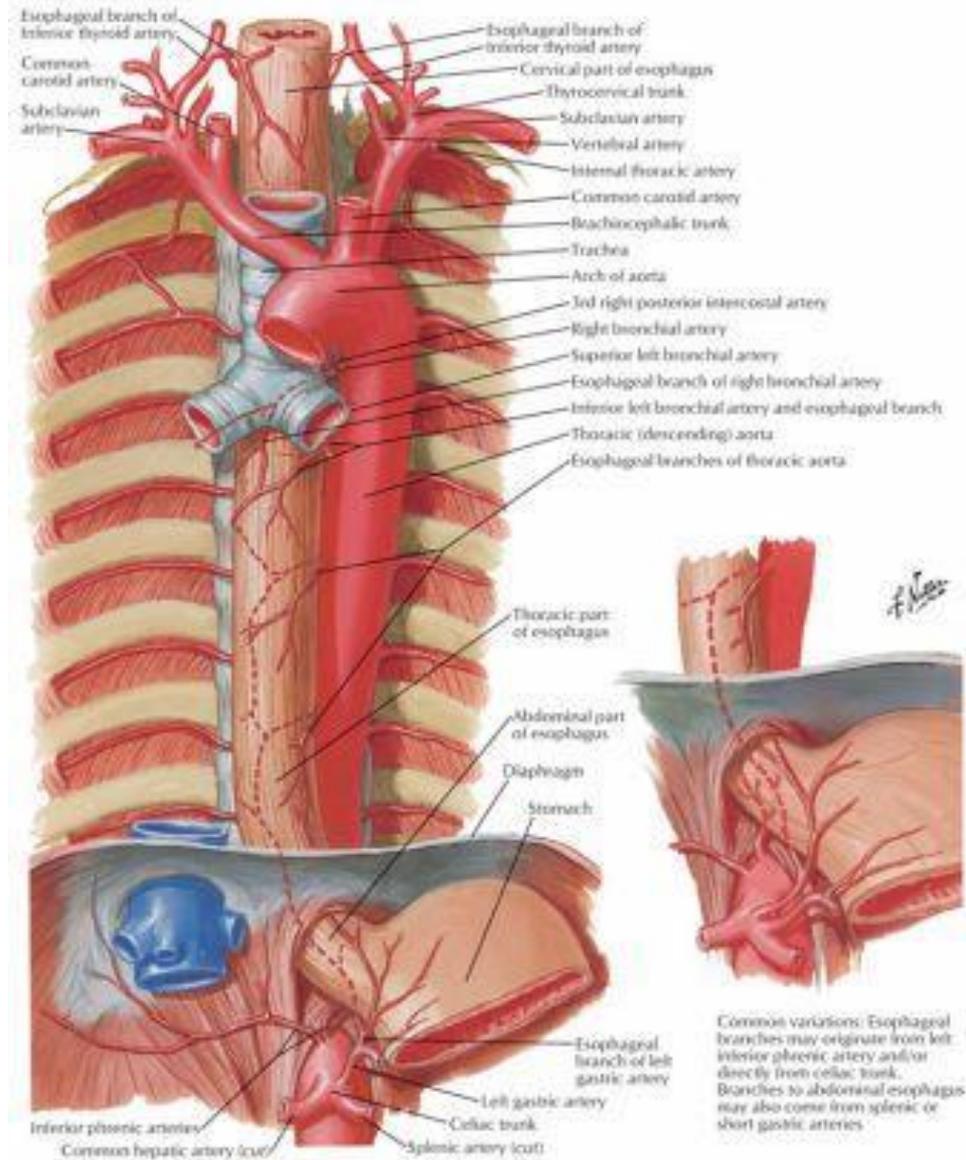
Oesophagus divided into functional sphincters

Upper Oesophageal Sphincter: It is a 2-3 mm zone •
of elevated pressure between pharynx &
oesophagus. It relates to cricopharyngeal muscle

Lower Oesophageal Sphincter: The LES is located
at the junction between the esophagus and
stomach, usually localized at or just below the
diaphragmatic hiatus. Despite its distinct
physiological function, it is not easily distinguished
anatomically.

Unusual! Arterial supply derived from vessels feeding mainly other organs – thyroid, trachea & stomach

Arteries of Esophagus

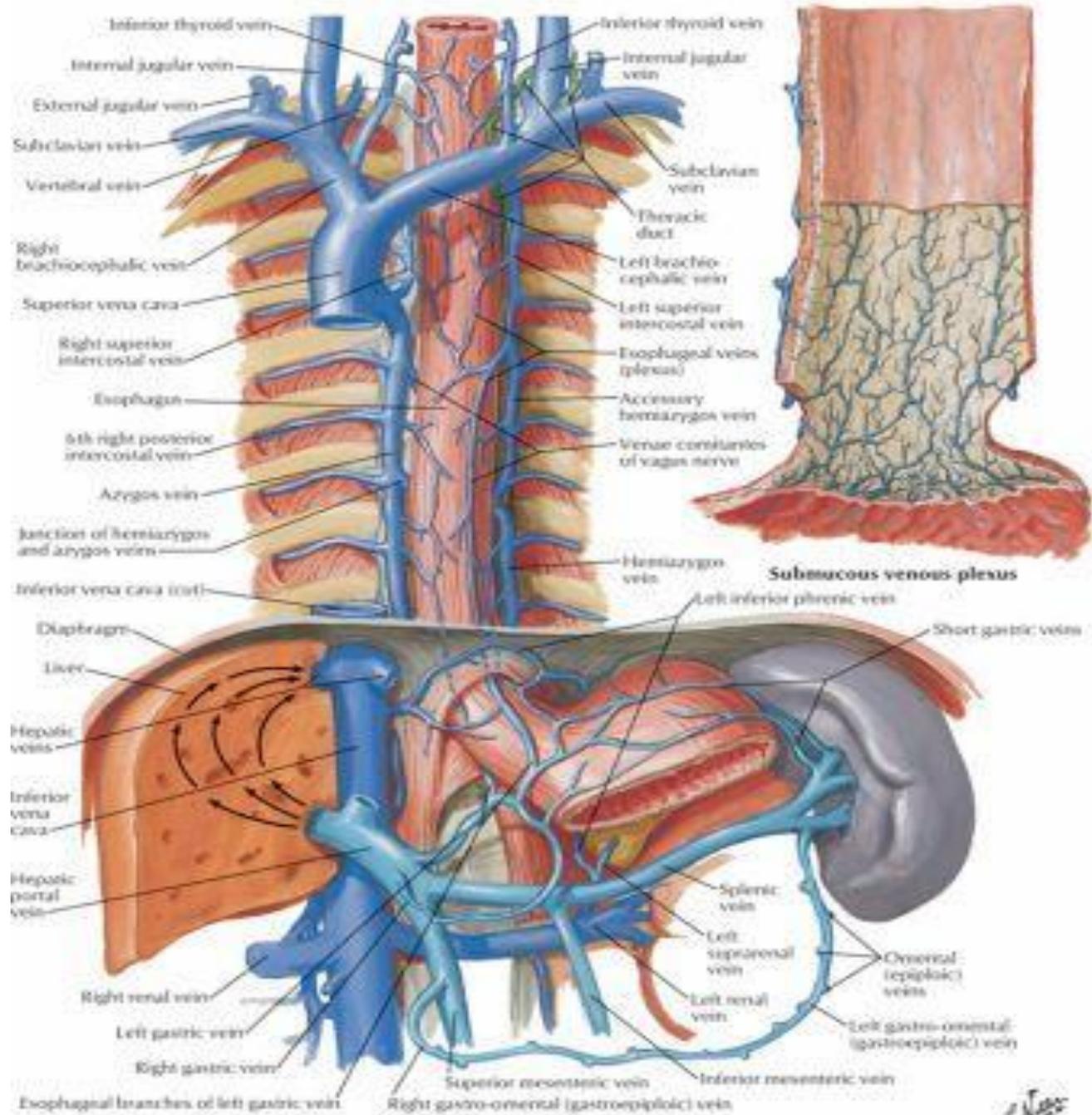


Cervical Oesophagus: Right & Left superior & inferior thyroid arteries.

Thoracic Oesophagus: Up to tracheal bifurcation Right & Left inferior thyroid Artery direct supply from aorta (tracheo-bronchial tree)

Abdominal Oesophagus 11 branches off L gastric artery and Branches of splenic artery posteriorly.

Veins of Esophagus



Venous Relations

Intra-oesophageal (Intrinsic) Drainage

Longitudinally arranged in Submucosa

Distal end – portal anastomoses

Extra-oesophageal (Extrinsic) Drainage

into locally corresponding veins

Inf. thyroid (into innominate vein),

Azygos, hemiazygos

Lt gastric & splenic

- The venous supply is also **segmental**.

From the dense submucosal plexus the venous blood drains into the superior vena cava. The veins of the proximal and distal esophagus drain into the azygous system. Collaterals of the left gastric vein, a branch of the portal vein, receive venous drainage from the mid-esophagus.

- The submucosal connections between the portal and systemic venous systems in the distal esophagus form esophageal varices in portal hypertension. These submucosal varices are sources of major hemorrhage in conditions such as cirrhosis.

In the proximal third of the esophagus, lymphatics drain into the deep cervical lymph nodes,

In the middle third, drainage is into the superior and posterior mediastinal nodes.

The distal-third lymphatics follow the left gastric artery to the gastric and celiac lymph nodes

There is considerable interconnection among these three drainage regions.

Poorly understood

Important for tumour spread

Bi-directional spread

Tracheal bifurcation important landmark

Of Surgical Interest

Sub mucosal lymphatics explain why tumours may extend long distance before obstructing lumen

May also explain high recurrence rates

Bidirectional lymph flow may explain retrograde tumour seeding if flow is blocked

Nerve Supply

Parasympathetic

Vagus – motor to muscular coats & secretomotor to glands

Sympathetic

From cervical & thoracic sympathetic chain

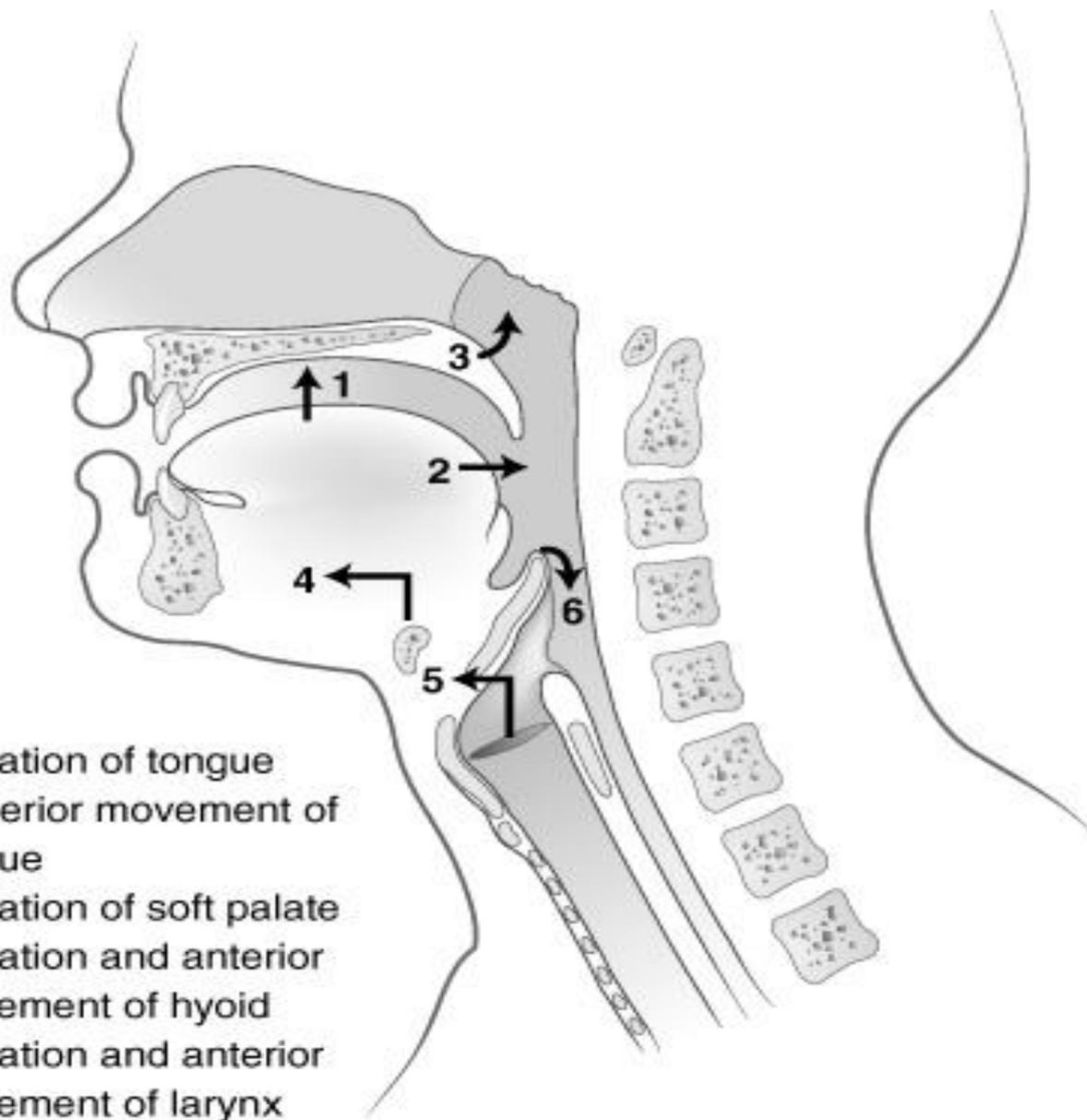
Contraction of sphincters, wall relaxation, peristalsis

Intramural

Combination of all innervation from plexuses & ganglia

In muscular layers (myenteric or Auerbach's plexus)

In submucosa (Meissner plexus)



1. Elevation of tongue
2. Posterior movement of tongue
3. Elevation of soft palate
4. Elevation and anterior movement of hyoid
5. Elevation and anterior movement of larynx
6. Tilting of epiglottis

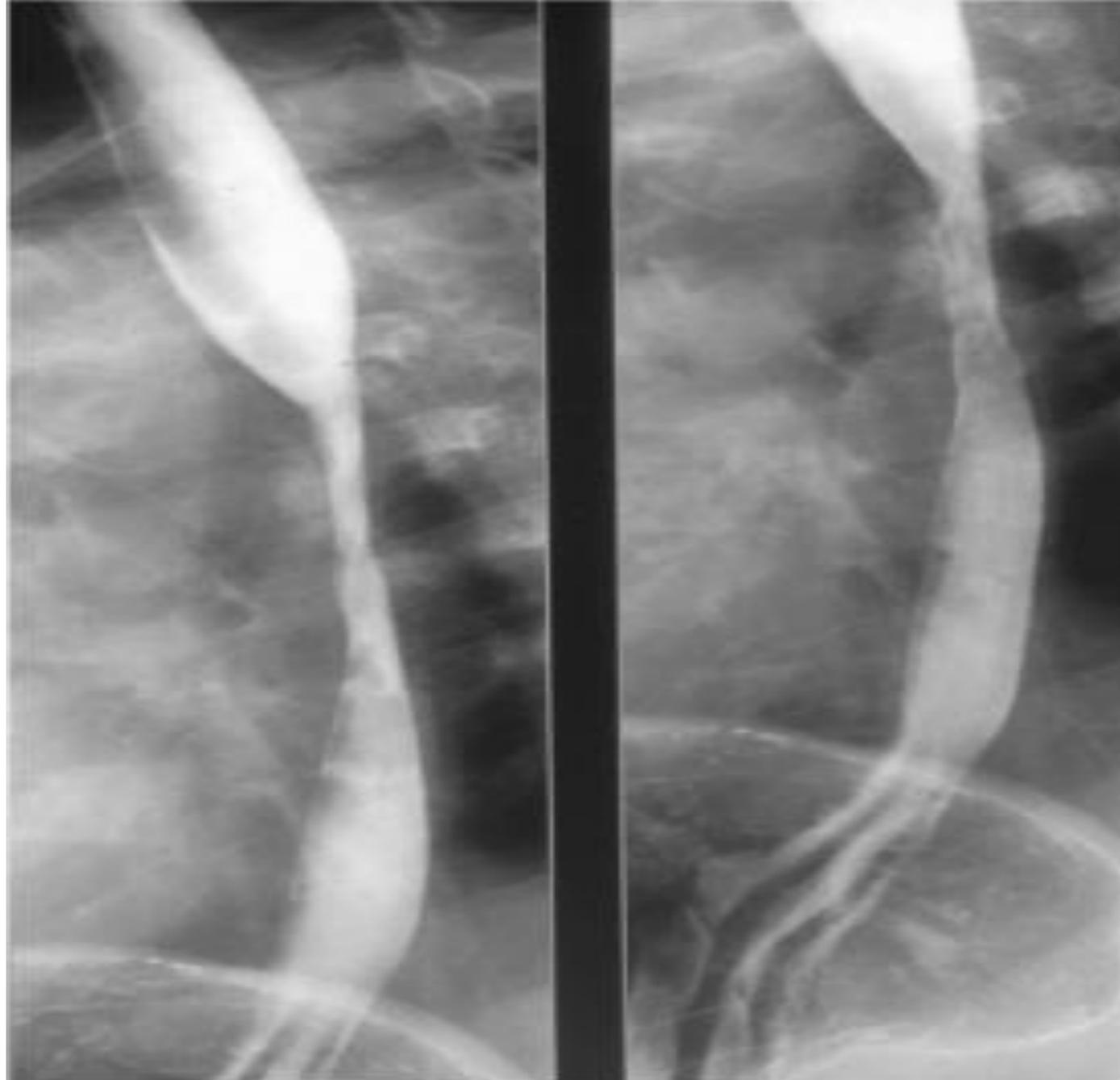
EVALUATION OF ESOPHAGEAL FUNCTION

Radiographical Evaluation

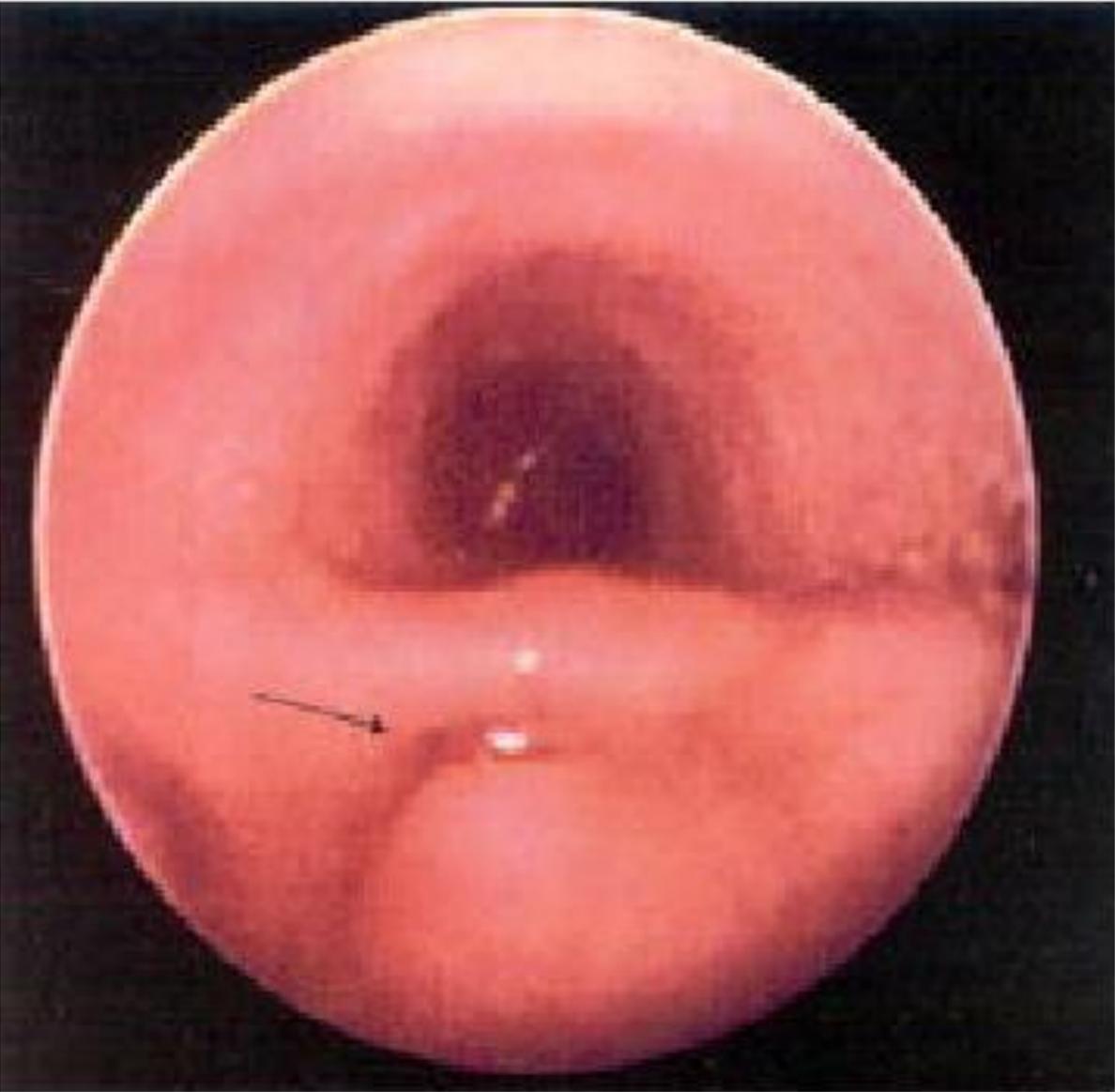
Endoscopic Examination

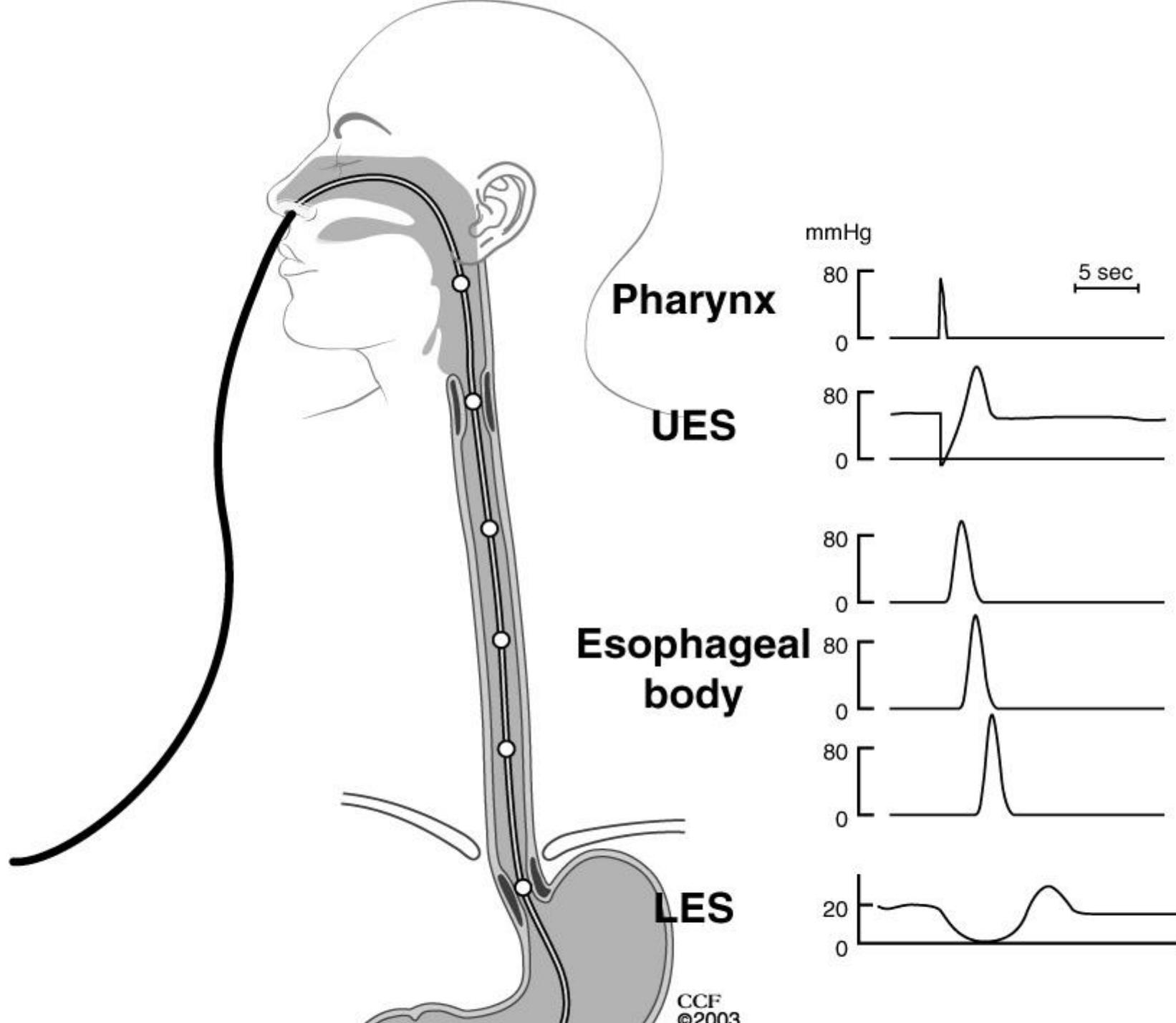
Esophageal Manometry

Ambulatory 24-Hour pH Monitoring



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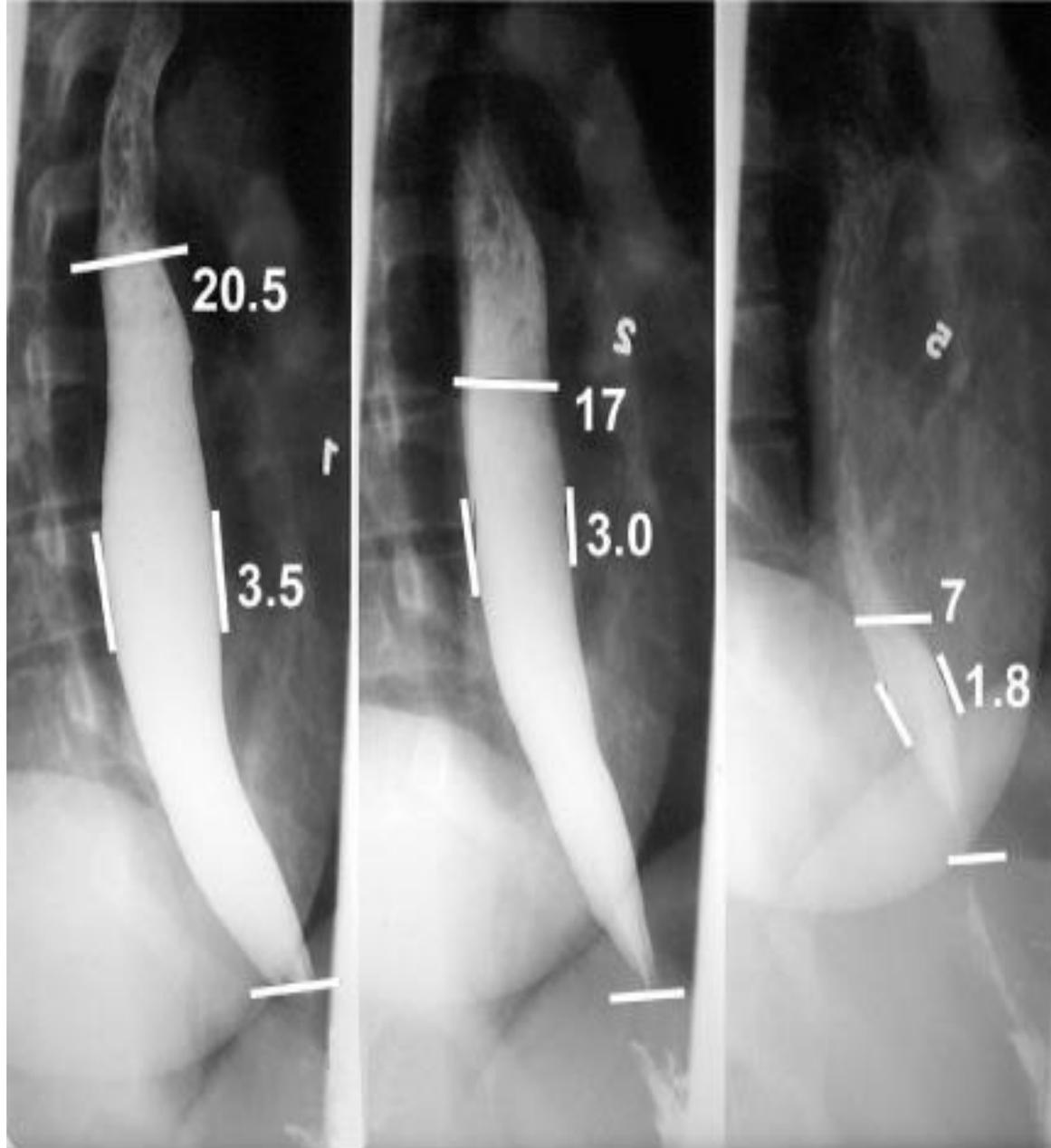


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Tracheo-esophageal fistula

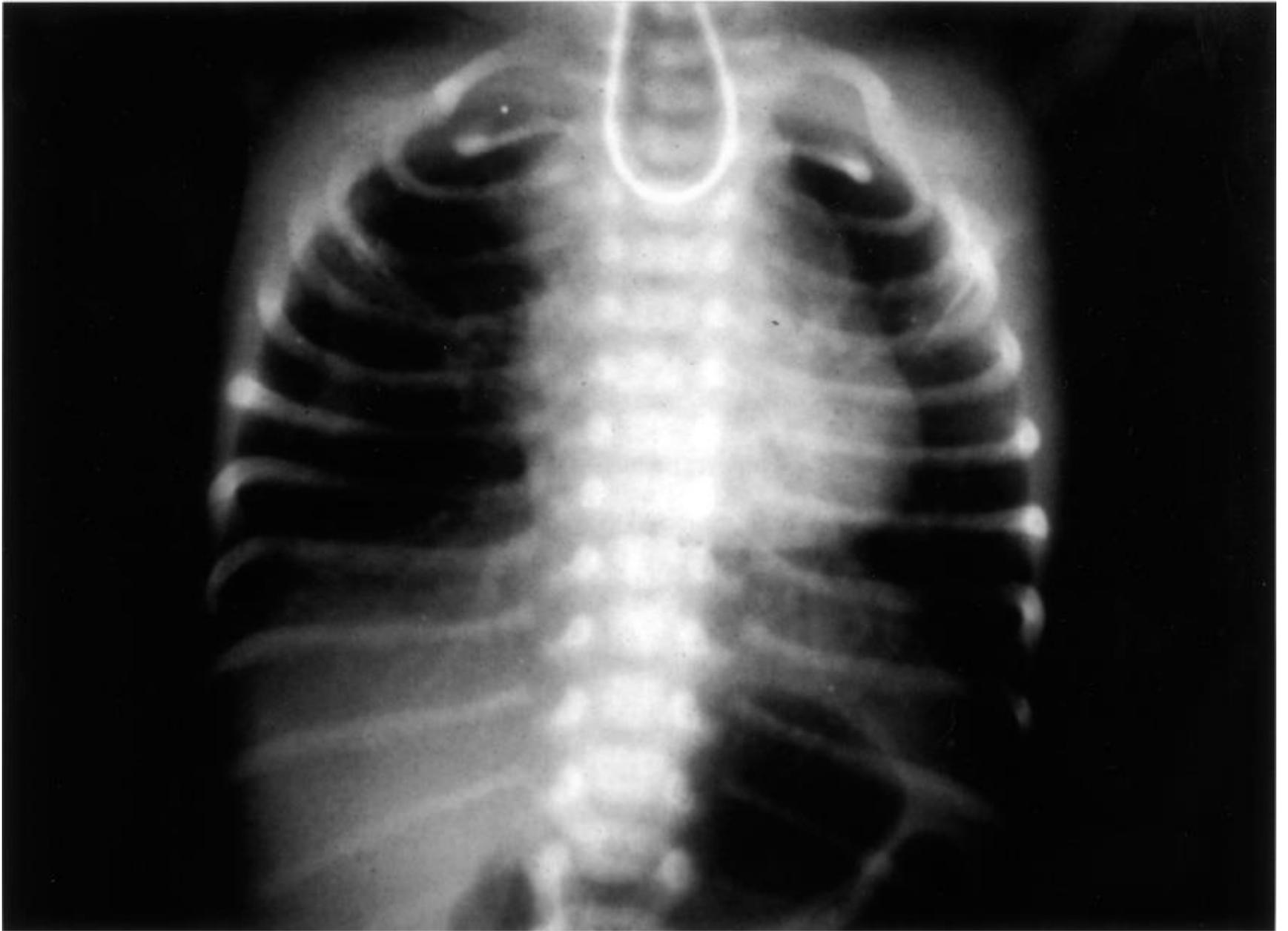
1-types.

2-c/f.

3-diagnosis.

4-management.

5-prognosis after surgery.



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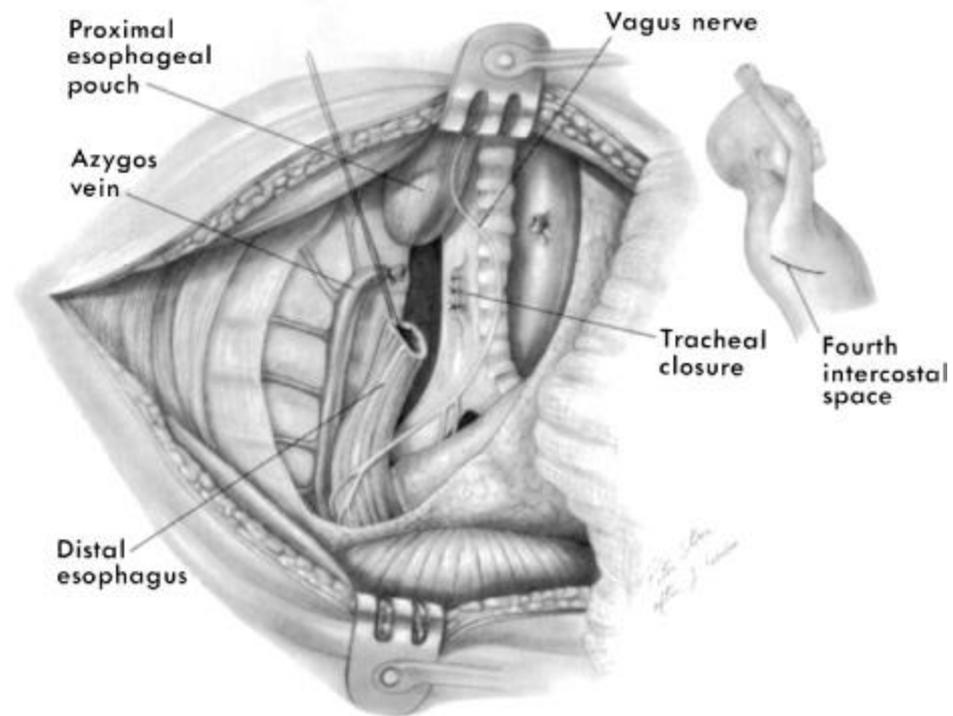
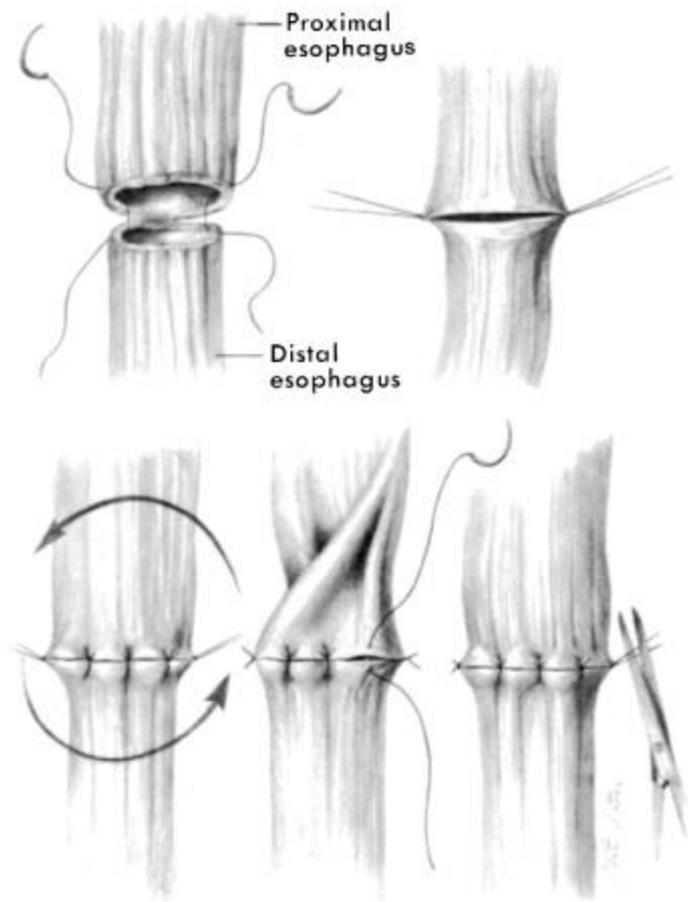
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esophagoscopy

Diagnostic •

Evaluate symptoms of esoph. Disease •

Confirm rad. Abn •

Asses established esoph. Pathology •

Asses post op. leake •

therapeutic

f.b removal•

Dilatation•

interventional•

complications

Major •

Perforation •

Minor •

Laceration •

Teeth dislodgement •

Pharyngeal laceration •

Esophageal conditions

1-Organic disorders. •

2-Functional •
(motility)disorder

Achalasia



Achalasia is a degenerative esophageal disease culminating in aperistalsis of the esophageal body and abnormal relaxation of the lower esophageal sphincter





- Barium swallow.
- Achalasia (Dilated esophagus with smooth tapering end).

esophagoscopy is essential to exclude pseudoachalasia (secondary esophageal obstruction secondary to malignancies), which may be clinically indistinguishable from primary achalasia. Biopsy during esophagoscopy is necessary to assess the esophageal mucosa



- Barium swallow.
- Achalasia (Hen's peak appearance).

Important Q. on Achalasia

Q.1 : Describe radiological findings ??

** barium swallow shows marked smooth narrow of lower esophagus , the level of narrowing at or below diaphragm , e dilatation of esophagus , & smooth tapering end (parrot peak or hen's peak appearance)

Q.2 : Other radiological signs in this condition ??

- * absent gastric air bubble
- * trapped air bubbles in esophagus due to retained fluid
 - * widening mediastinum
- * pneumonia due to aspiration

Q.3 : Type of patients ??

- * common in young adult female with emotional liability

Q.3 : C\P of achalasia??

- * Dysphagia (intermittent , of long duration , more to fluid than solid)
 - * regurgitation
 - * retrosternal fullness
- * complications (Wt. loss , inhalation pneumonia , cancer)

Q.4 : Other investigations ??

- * esophagescopy
- * esophageal manometry
- *biopsy

Q.5 : D.D ???

Other causes of Dysphagia :

- *cancer
- *F.B
- * Traumatic (instrument , corrosive)
- * inflammatory (P.U)
- *scleroderma
- *Chagas disease

Q.6 : TTT ???

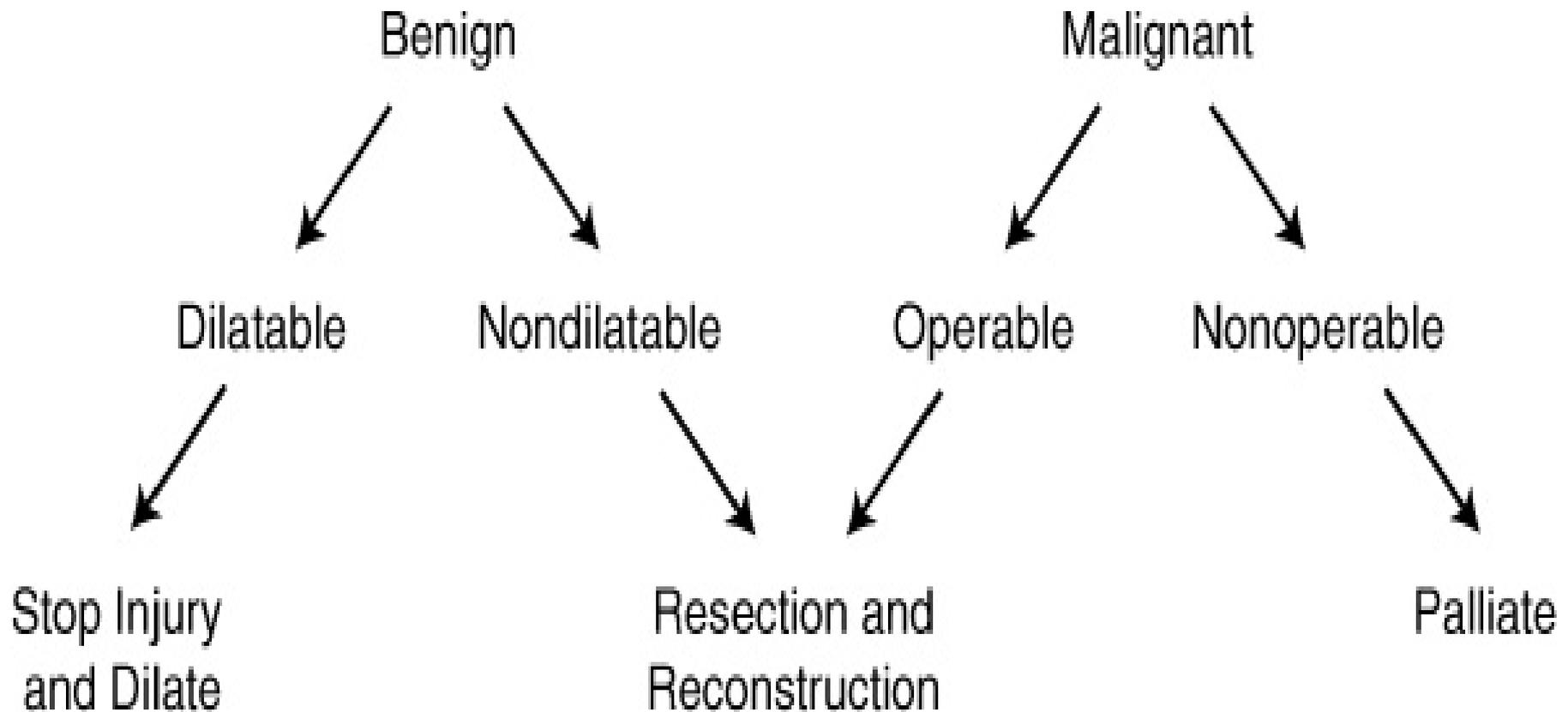
- *Ryle
- * hydrostatic dilatation
- * Heller's operation (esophago-cardiomyotomy)

Treatment

- 1-medical therapy. •
- 2.pneumatic dilatation. •
- 3.botulinium injection •
- 4.surgery •

**BENIGN
ESOPHAGEAL
DISEASES AND THEIR
TREATMENT**

Section 1 ■ Thoracic



Esophageal Injuries

Strictures

1=Strictures:-

Erosive or corrosive injury, trauma, or malignancy can result in a fixed esophageal stenosis that subsequently restricts swallowing and produces dysphagia.

2=Corrosive Injuries

Corrosive injuries of the esophagus are caused by the ingestion of strong acid or alkali.

The ingestion of **strong acid** produces coagulation necrosis, which may limit the depth of injury.

Ingestion of **viscous alkali** produces liquefaction necrosis and an increased depth of injury.

MANAGEMENT OF CORROSIVE INJURIES

Early Management

Obtaining a history of the estimated amount and the nature of the ingested agent is critical to directing treatment.

Patients with first-degree injuries require no specific treatments.

Patients with second- and third-degree burns are at increased risk of early mortality and late complications. The esophagus should be allowed to re-epithelize; early dilation may increase stricture formation and increase the risk of perforation.

Late Management

Dilation of caustic strictures should begin about 8 weeks after injury.

Although retrograde dilation has been proposed as the safest technique, it requires gastrostomy.

Prograde guided bouginage or balloon dilation has been successful.

Short strictures not responding to initial dilation may benefit from local steroid injection followed by repeat dilation

3=Perforation:-

Perforation of the esophagus results in a chemical and infectious mediastinitis, which is lethal unless treated early and effectively. Iatrogenic injury is the most common cause of perforation. Trauma and spontaneous (barogenic) rupture are the next most common cause of perforation. The esophagus is normal in about 50% of perforations. Pathological changes in the remaining cases include benign strictures in 25% of patients, diverticula in 15%, carcinoma in 10%, and achalasia in 5%.

4=Esophageal Foreign Bodies impaction

The majority of ingested foreign bodies occur in toddlers. In younger adults, ingested foreign bodies are usually associated with drug or alcohol use or psychiatric illness. In older adults, with either dentures or esophageal pathology, a food bolus may serve as the impacted foreign body. The site of impaction is invariably at a physiological or pathological area of narrowing. Plain film and contrast radiography are diagnostic in the majority of patients. Most small blunt objects pass into the distal GI tract without difficulty. Blunt impacted foreign bodies may be removed with a esophagoscope and balloon catheters or baskets

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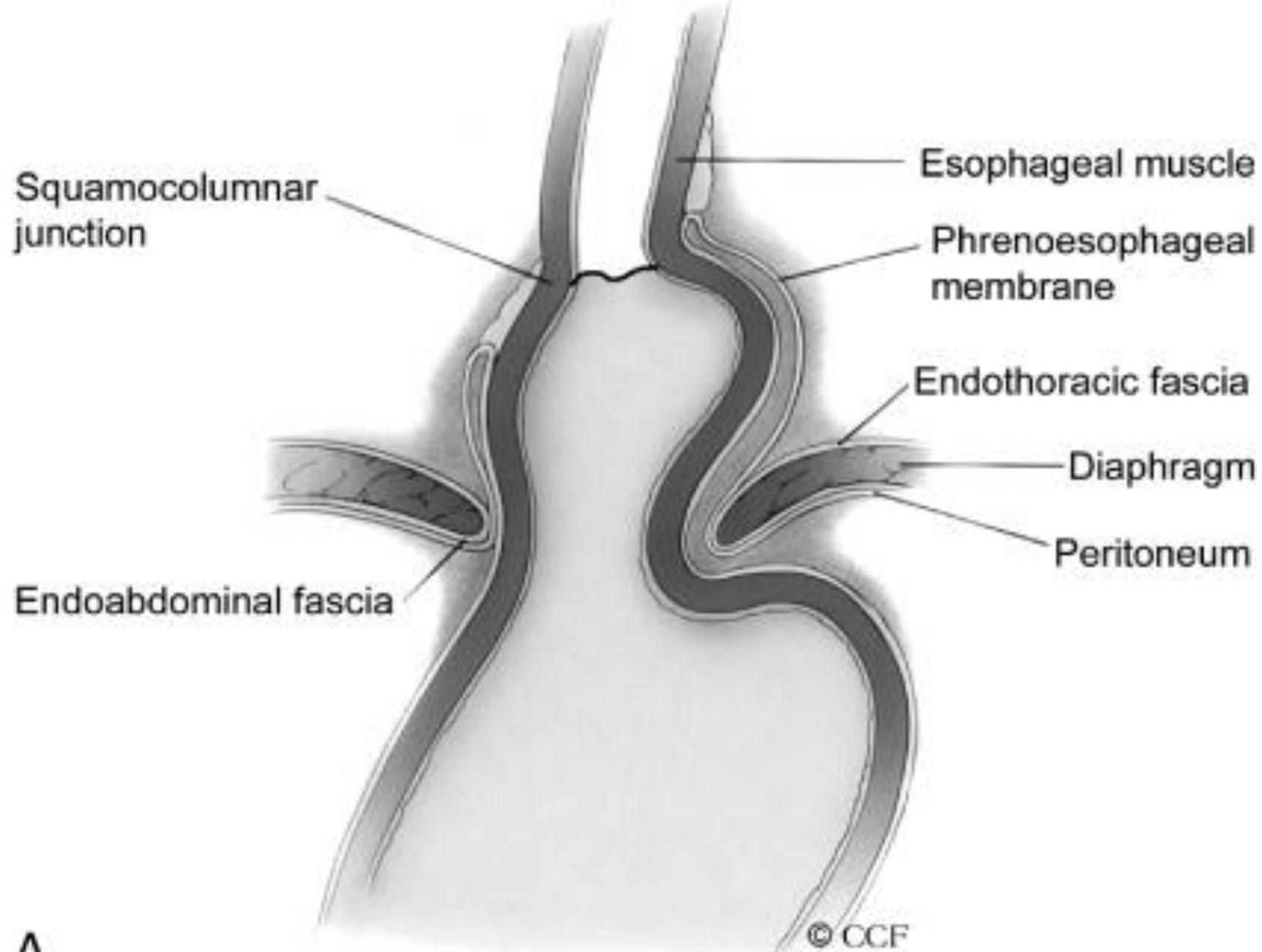
Hiatus Hernia:-

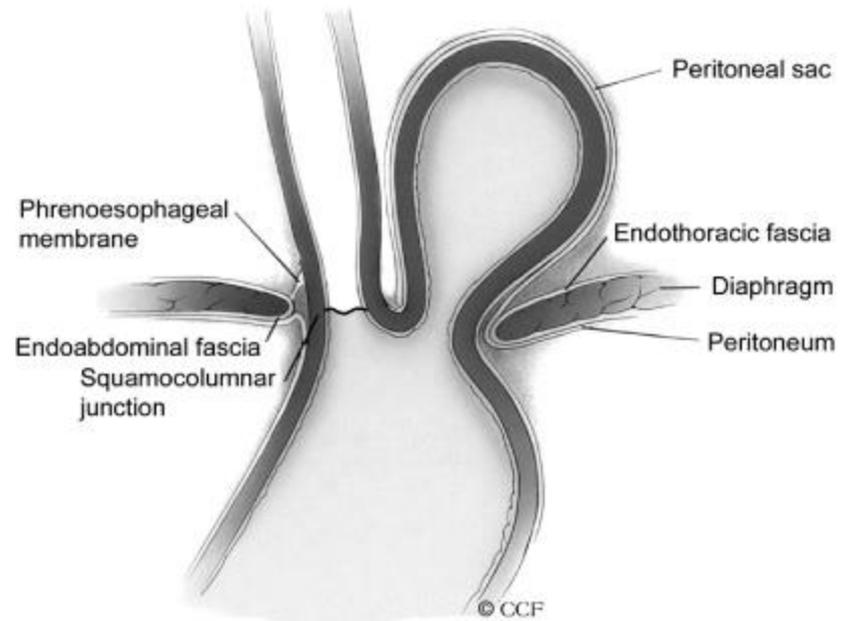
Herniation of abdominal contents through the esophageal hiatus is a common occurrence.

With provocative maneuvers that increase intra-abdominal pressure, 55% of patients undergoing barium esophagram were found to have Herniation of the stomach into the chest.

Type I:- or sliding hiatal hernia, is the most common type.

Type II hiatal hernias, or rolling hiatal hernias, are very uncommon They result from a defect in or isolated weakness of the phrenoesophageal ligament, allowing a portion of the stomach to herniate through the hiatus while the esophagogastric junction remains anchored in the abdomen.





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Gastroesophageal Reflux Disease

Transient LES relaxation, a normal occurrence typically after meals, results in reflux of gastric contents into the esophagus that is rapidly cleared. However, failure of the antireflux barrier produces acid reflux of pathological proportions, GERD. The LES and diaphragmatic hiatal mechanism are the major components of the reflux barrier

Treatment:-

Medical Successful control of symptoms with proton pump inhibitors (PPIs) is an excellent clinical confirmation of suspected GERD.

Surgical treatment directed toward re-positioning & fixing the intra-abdominal stomach and preventing upward herniation. 1-narrowing the diaph. Hiatus, 2-fixation the stomach below the diaphragm, 3-esophageal elongation in cases of shortening to prevent pull-up stomach again.

TUMOURS OF THE ESOPHAGUS

Benign tumors:- Benign tumors of the esophagus are rare, constituting only 0.5% to 0.8% of all esophageal neoplasms. They may be classified broadly into two groups-mucosal and extramucosal (intra-mural)

Malignant tumors'. •

TABLE 26–5. Classification of Benign Esophageal Tumors

- I. Epithelial Tumors
 - A. Papillomas
 - B. Polyps
 - C. Adenomas
 - D. Cysts
- II. Nonepithelial Tumors
 - A. Myomas
 - 1. Leiomyomas
 - 2. Fibromyomas
 - 3. Lipomyomas
 - 4. Fibromas
 - B. Vascular Tumors
 - 1. Hemangiomas
 - 2. Lymphangiomas
 - C. Mesenchymal and other tumors
 - 1. Reticuloendothelial tumors
 - 2. Lipomas
 - 3. Myxofibromas
 - 4. Giant cell tumors
 - 5. Neurofibromas
 - 6. Osteochondromas
- III. Heterotopic Tumors
 - A. Gastric mucosal tumors
 - B. Melanoblastic tumors
 - C. Sebaceous gland tumors
 - D. Granular cell myoblastomas
 - E. Pancreatic gland tumors
 - F. Thyroid nodules

Leiomyomas

Leiomyomas are the most common benign tumors of the esophagus. They are intramural, typically occur between 20 and 50 years of age, have no clear-cut gender preponderance, and are multiple in 3% to 10% of patients.

More than 80% occur in the middle and lower thirds of the esophagus They vary greatly in size but *seldom cause symptoms when less than 5 cm. in diameter*. Larger tumors cause *dysphagia, vague retrosternal pressure, and pain*.

Obstruction and regurgitation may occur when these tumors virtually encircle the esophageal lumen, and bleeding is a more common symptom of the malignant form of the tumor, leiomyosarcoma. The potential for malignant degeneration of benign leiomyomas is apparently quite low.

The characteristic appearance of an esophageal leiomyoma on barium swallow examination is a *smooth concave defect with intact mucosa and sharp borders and abrupt sharp angles where the tumor meets the normal esophageal wall* esophagoscopy is indicated to rule out carcinoma, but if a leiomyoma is suspected, a biopsy of the mass should not be performed so that subsequent intramucosal resection is not complicated by scarring at the biopsy site.



Figure 26–54. Esophagogram showing a typical leiomyoma.

TREATMENT :-

1-As a general rule, excision of *symptomatic* leiomyomas or those greater than 5 cm. is advised. *Asymptomatic or smaller tumors discovered incidentally* on a barium swallow examination can be observed and followed with periodic barium esophagograms and esophageal ultrasonography has provided yet another means of diagnosing leiomyomas.

1- Esophageal resection may be required for either giant leiomyomas of the cardia that involve the adjacent stomach or for leiomyomatosis, although multiple enucleations may be performed if possible for the latter condition.

Polyps of the Esophagus (Pedunculated Intraluminal Tumors)

Benign esophageal polyps are rare but dramatic in their presentation, generally arising in the *cervical esophagus*, gradually developing progressively longer pedicles, and intermittently extruding into and even out of the mouth. They are *composed of* vascular fibroblastic tissue with varying degrees of associated fat

The barium swallow examination may be nondiagnostic if the polyp is not seen, or a huge polyp may be misdiagnosed as carcinoma, a foreign body, or even as achalasia if it has caused marked esophageal dilation. Esophagoscopy similarly may fail to demonstrate the polyp

TREATMENT:-

esophageal polyps have been removed endoscopically by electro coagulating the pedicle, the a lateral cervical esophagomyotomy, delivering the polyp from the esophagus, and resecting the mucosal origin of the pedicle under direct vision.

MALIGNANT TUMORS OF THE ESOPHAGUS AND CARDIA

Malignant tumors of the esophagus and cardia are among the most dismal of visceral tumors, owing to their generally advanced stage at the time of diagnosis.

Basically, esophageal squamous cell carcinoma is a disease of men. It occurs two to five times more frequently in men than in women in the sixth and seventh decades of life,

Etiology

The etiology of esophageal carcinoma is unknown, but as indicated earlier,

certain **nutritional factors** and potential carcinogens have been incriminated: alcohol, tobacco (The combination of smoking and drinking exerted a multiplicative rather than an additive effect), zinc and molybdenum deficiency, nitrosamines, malnutrition, vitamin deficiencies, anemia,

poor oral hygiene and dental caries, previous gastric surgery, human papilloma virus, and chronic ingestion of hot foods or beverages.

Pathology

Histologically, approximately 95%, of esophageal cancers worldwide are

squamous cell carcinomas. Endoscopically, carcinoma in situ most often presents as a slightly raised, granular, reddish plaque like lesion Microscopically, early esophageal carcinoma is either intraepithelial (carcinoma *in situ*), intramucosal (no deeper than the lamina propria), or invading submucosa;

Adenocarcinomas constitute 2.5% to 8% of primary esophageal cancers. They occur most commonly in the distal third of the esophagus, in the sixth decade of life, Esophageal adenocarcinoma may have one of three origins: (1) malignant degeneration of metaplastic columnar epithelium (Barrett's mucosa), (2) heterotopic islands of columnar epithelium, or (3) the esophageal submucosal glands. Gastric cancer may also involve the esophagus secondarily.

Esophageal cancer is notorious for its aggressive biologic behavior, infiltrating locally, involving adjacent lymph nodes, and metastasizing widely by hematogenous spread.

Lack of an esophageal serosal layer tends to favor local tumor extension.

Upper- and middle-third tumors tend to involve the tracheobronchial tree, aorta, and left recurrent laryngeal nerve as it loops around the aortic arch, whereas lower-third tumors may invade the diaphragm, pericardium, or stomach.

EARLY DETECTION

Most patients with esophageal carcinoma present with locally advanced or metastatic disease AND their survival rates are dismal.

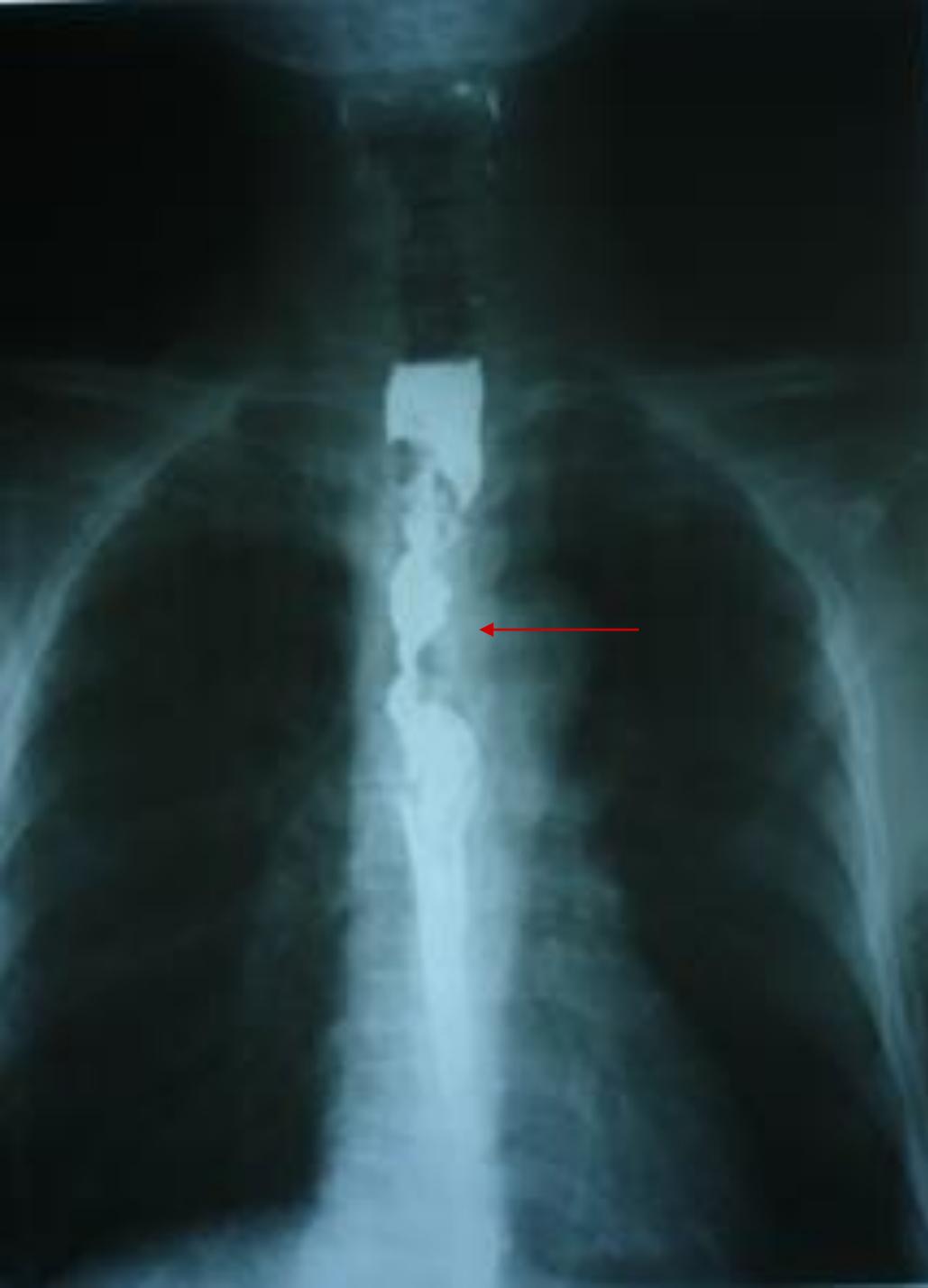
. Screening is more reasonably directed toward groups of patients at high risk for esophageal carcinoma. There is consensus that cytologic screening is both reliable and cost effective. Abrasive cytology has been used with good results.

Clinical Presentation and Diagnosis

- 1-*insidious* onset, beginning as nonspecific retrosternal discomfort or indigestion
- 2-dysphagia becomes progressive and the predominant symptom, with weight loss, regurgitation, aspiration, odynophagia,
- 3-chest pain (Persistent chest pain or discomfort unrelated to meals is an ominous sign that may indicate mediastinal penetration),
- 4- hematemesis (may be due to erosion of an adjacent vessel) , and tracheoesophageal fistula may occur.
- .

Diagnosis

barium esophagogram (more helpful if *double contrast*) and esophagoscopy to rule out carcinoma. The combination of esophageal biopsy and brushings for cytologic evaluation establishes a diagnosis of carcinoma in 95% of patients with malignant strictures. • The barium esophagogram, particularly using air contrast radiographic technique irregular mucosal filling defects, distortion of the esophageal lumen, or annular constrictions **esophagoscopy and biopsy** to establish the diagnosis are mandatory in every patient with an esophageal stenosis. CT or MRI can determine the anatomic location and enlargement of the mediastinal, perigastric, or celiac lymph nodes.



Barium swallow. shows •
long irregular filling
defect in middle
esophagus e no
dilatation

Diagnosis : •
Cancer middle third
esophagus (no
dilatation).



Barium swallow •
shows long
irregular filling
defect in middle
esophagus e
minimal dilatation

Diagnosis: •
Cancer middle third
esophagus.



- Barium swallow shows long irregular filling defect in middle esophagus e no dilatation

- Diagnosis : Cancer middle third esophagus (no dilatation).



Barium swallow •
shows long irregular
filling defect in
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Diagnosis : •
Cancer middle third
esophagus.



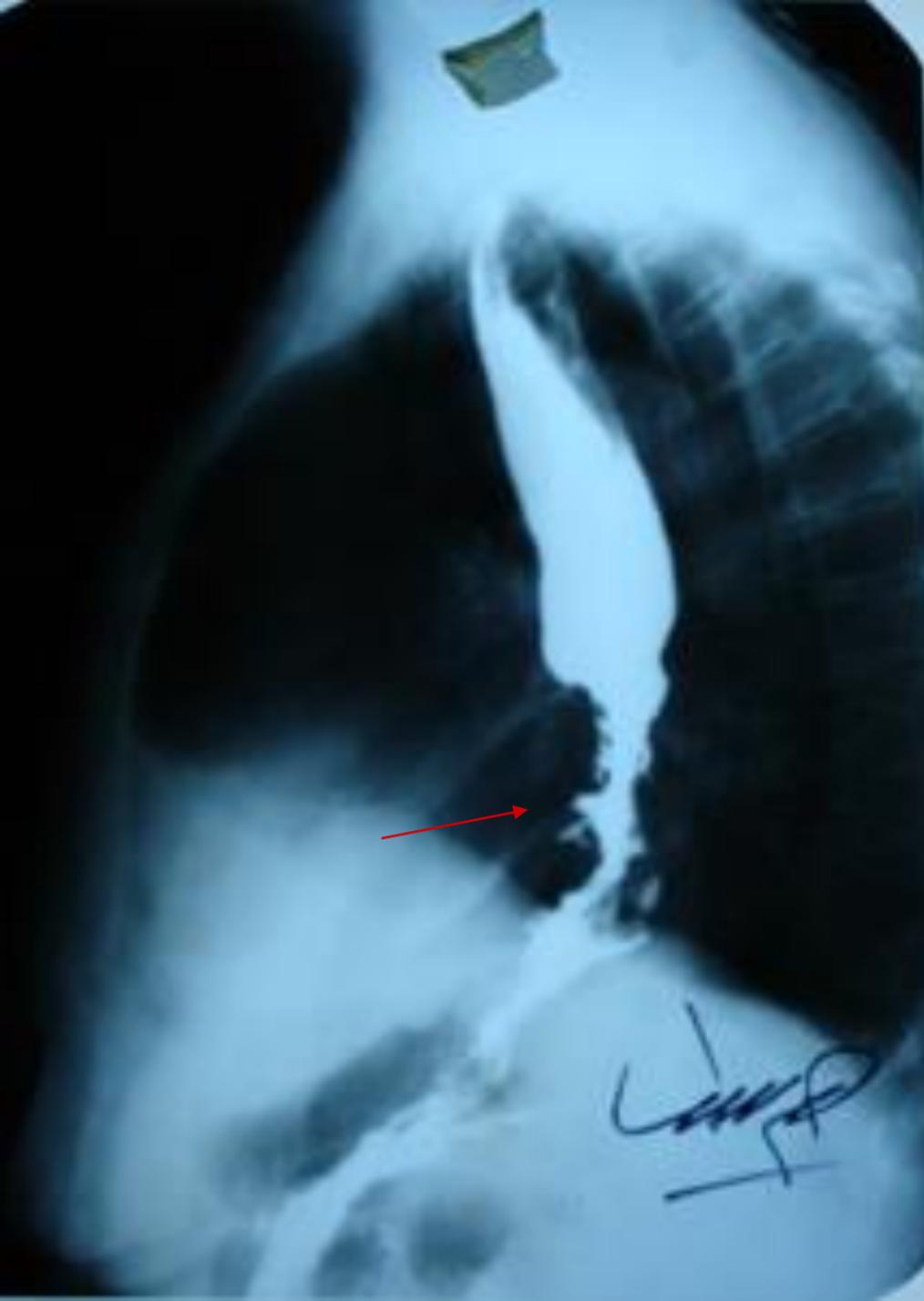
Barium swallow shows long irregular filling defect in middle esophagus and minimal dilatation

Diagnosis: Cancer middle third esophagus.



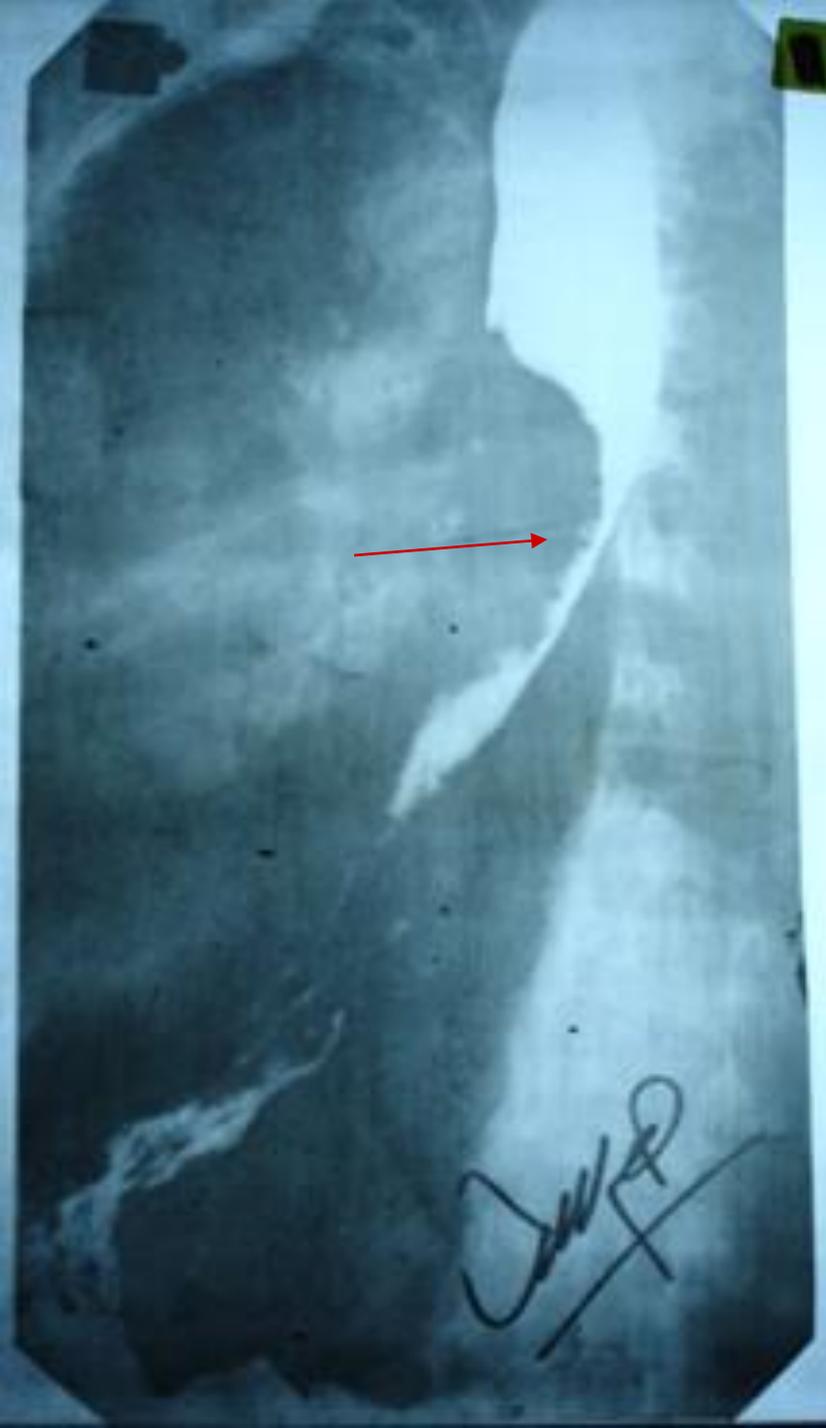
Barium swallow shows •
long irregular filling
defect in middle
esophagus e no
dilatation

Diagnosis : •
Cancer middle third
esophagus (no
dilatation).



Barium swallow shows •
long irregular filling
defect in lower
esophagus e
shouldering , minimal
dilatation e stricture
& narrowing above level
of diaphragm
(rat tail appearance)

Diagnosis : •
Cancer lower third
esophagus (rat tail
appearance).



Barium swallow Lateral view) •
shows long irregular filling
defect in lower esophagus e
shouldering , minimal
dilatation e stricture
& narrowing above level of
diaphragm
(rat tail appearance)

Diagnosis : •
Cancer lower third esophagus
(rat tail appearance.



** barium swallow shows long irregular filling defect in lower esophagus e shouldering , no dilatation e stricture & narrowing above level of diaphragm

Diagnosis : •
Cancer lower third esophagus (no dilatation).

Clinical approach to carcinoma of the esophagus and cardia

The selection of a curative versus a palliative operation for esophageal carcinoma is based on the *location of the tumor, the patient's age and health, the extent of the disease, and intraoperative staging.*

Factors that make surgical cure unlikely

- 1-a tumor >8 cm. in length.
- 2-abnormal axis of the esophagus on barium swallow.
- 3-enlarged lymph nodes on CT.
- 4-weight loss >20%.
- 5-loss of appetite

Treatment

Therapy for esophageal carcinoma is influenced by the knowledge that *in the vast majority of these patients, local tumor invasion or distant metastatic disease precludes cure.*

Depending on the perceived life expectancy,

palliation includes:

1. *dilatation*
2. *intubation*
3. *photodynamic therapy*
4. *radiotherapy*, with or without *chemotherapy*
5. *surgical bypass*
6. and/or *laser therapy*

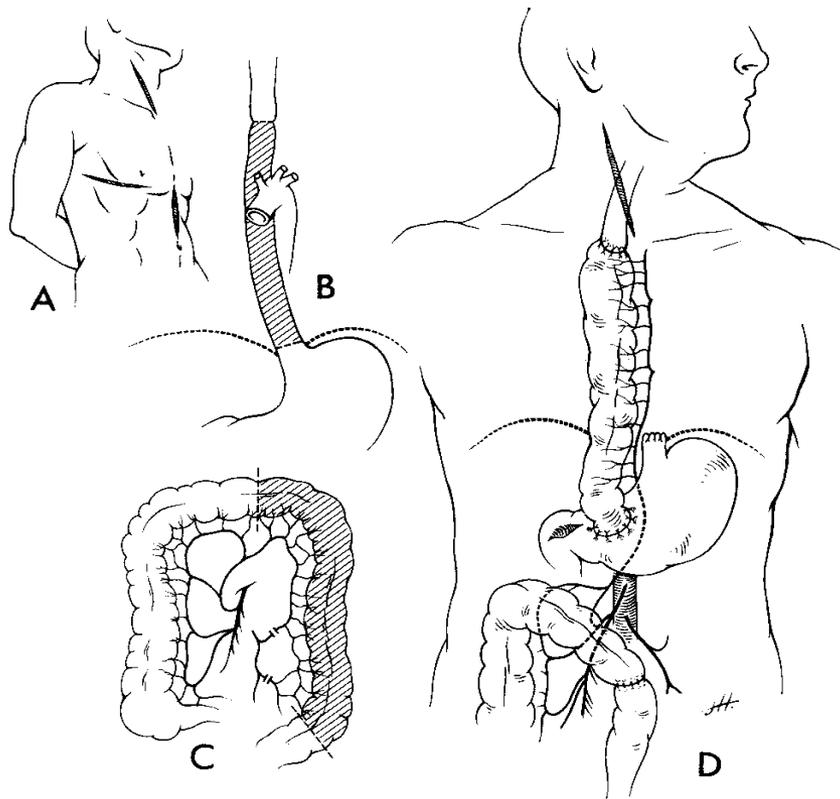


Figure 26-62. Use of the colon for esophageal replacement or bypass. *A*, Incisions: cervical, right thoracic, and abdominal. *B*, Length of esophagus resected (shaded area). If resection of the tumor is not possible, the cervical esophagus can be divided as shown and the distal end oversewn in preparation for a substernal colonic bypass. *C*, Segment of left colon mobilized for esophageal replacement (shaded area.) The ascending, transverse, or descending colon may be used, depending on the adequacy of the blood supply to the mobilized segment. *D*, Completed operation. The colon may be positioned retrosternally if the esophagus is unresectable or in the posterior mediastinum in the original esophageal bed if resection is possible. A gastric drainage procedure is performed to prevent postvagotomy pylorospasm. (From Payne, W. S., and Ellis, F. H., Jr.: *Esophagus and diaphragmatic hernias*. In Schwartz, S. I. [Ed.]: *Principles of Surgery*. New York, McGraw-Hill Book Company, 1979, pp. 1081-1125.)

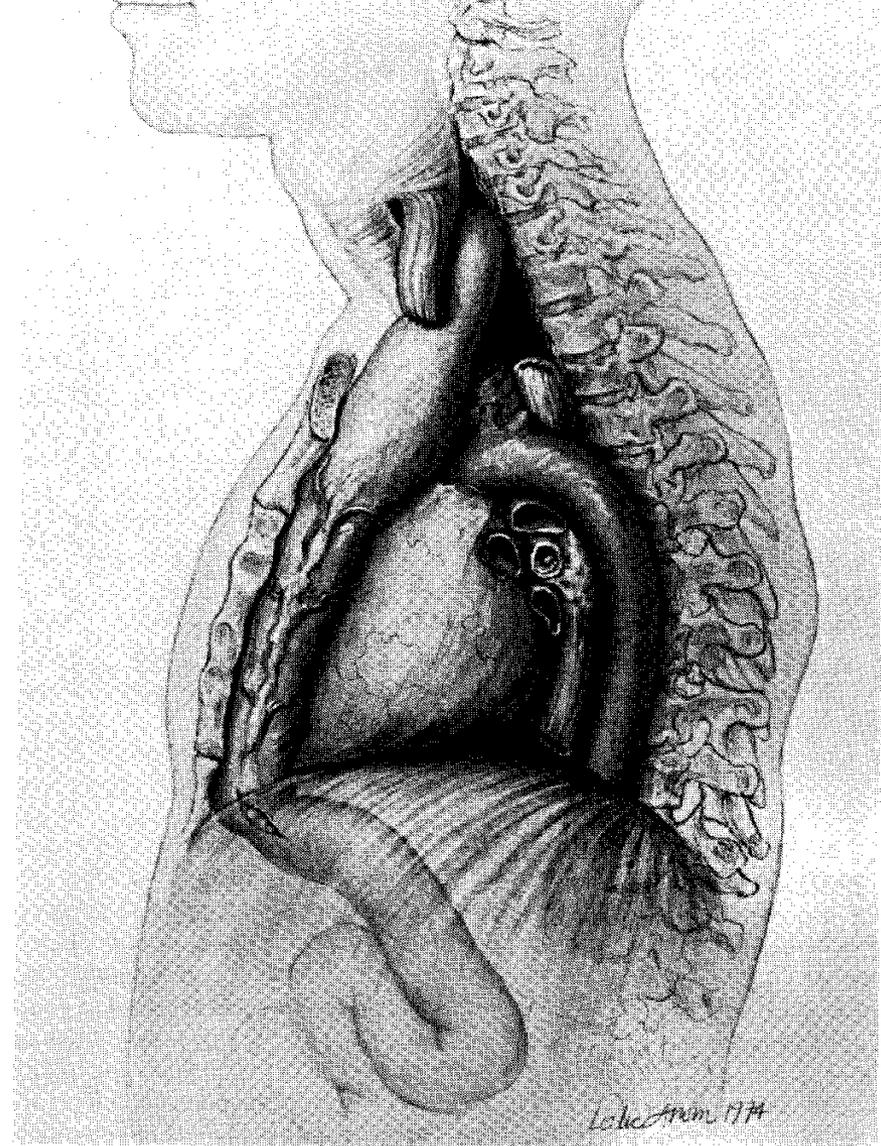


Figure 26-63. Lateral view showing substernal gastric bypass of the excluded thoracic esophagus. The gastric fundus is suspended from the cervical prevertebral fascia, the anastomosis is on the anterior gastric wall, and the esophagus with its unresectable tumor is excluded in the posterior mediastinum. This technique is now seldom used, because complications from the excluded thoracic esophagus are appreciable and survival after bypassing such an unresectable tumor averages only 6 months. (From Orringer, M. B., and Sloan, H.: Substernal gastric bypass of the excluded thoracic esophagus for palliation of esophageal carcinoma. *J. Thorac. Cardiovasc. Surg.*, 70:836, 1975.)

Curative treatment

There are 4 types of esophagectomy:-

1. Trans thoracic
2. En block thoraco-abdominal approach.
3. Transhiatal.
4. Video assisted.

Transthoracic esophagectomy entails a midline laparotomy for mobilization of the stomach and a right thoracotomy for proximal esophageal lesions with high intrathoracic esophagogastric anastomosis (as proposed by Ivor Lewis) or a left thoracotomy and intrathoracic esophag-ogastric anastomosis for distal lesions . Sometimes, a thoracoabdominal incision is used instead of the separate thoracic and abdominal incision.

En block esophagectomy involves complete resection of the thoracic esophagus with a two-(chest and abdomen) or three-field (chest, abdomen and neck) lymph node dissection using a midline laparotomy, right thoracotomy and a cervical incision for the proximal anastomosis of the stomach tube to the cervical esophageal remanent. An envelop of normal tissue is removed along with the spleen, celiac nodes, posterior pericardium, azygos vein, thoracic duct, and adjacent diaphragm.

Transhiatal esophagectomy requires a cervical incision to mobilize the esophagus and perform the proximal anastomosis then a midline laparotomy to to mobilize the esophagus and stomach.

Video-assisted esophagectomy uses laparoscopy to mobilize the stomach, VATS to mobilize the esophagus, and a cervical incision for the anastomosis of the stomach tube to the cervical esophageal remanent

Q.5 : Other investigations ??

* esophagoscopy * biopsy * U\S , C.T MRI

Q.6 : D.D of ca esophagus??

Other causes of Dysphagia (Dysphagia in male above 50y > 2W. Considered as cancer esophagus until proved otherwise):

*Achalasia *F.B * Traumatic (instrument , corrosive) * inflammatory (P.U)

*scleroderma *Chagas disease

Q.7 : TTT ???

a) operable cases :

* radical surgery : - upper 1\3 >>> total esophagectomy
- middle or lower 1\3 >>>> partial esophagectomy

b) inoperable cases :

* palliative radiotherapy

* palliative surgery:

(eg . Gastrotomy , colon bypass, esophago-jejunostomy , gastric tube)

A number of esophageal lesions are pre-malignant:-

associated with an increased incidence of late carcinoma:

(1)achalasia.

(2)reflux esophagitis (chronic), and hiatal hernia.

(3)Barrett's (columnar epithelial-lined) esophagus.

(4)irradiation esophagitis.

(5)caustic burns (usually of the squamous cell type).

(6)Plummer-Vinson syndrome.

(7)leukoplakia.

(8)esophageal diverticula.

(9)ectopic gastric mucosa.