INTRODUCTION

Esophageal cancer is one of the least studied and deadliest cancers worldwide. During the past three decades, important changes have occurred in the epidemiologic patterns associated with this disease. Recent advances in the diagnosis, staging, and treatment of this neoplastic condition have led to small but significant improvements in survival ***(Enzinger and Mayer, 2003).***

Nutritional deficiencies including low level of vit. A, C, riboflavin, mineral elements Such as selenium, zinc, molybdenum and high levels of nitrates, nitrites which are converted to N-nitrosamines, alcohol and tobacco use are predisposing conditions, also achalasia, caustic injuries, ptylosis, Plummer-Vinson syndrome, Barrett's metaplasia, gastroesophageal reflux, obesity, H.pylori infection contribute to the pathogenesis of esophageal carcinoma ***(Lin and Iannettoni, 2007).***

History of irradiation has been linked to an increased risk of esophagel carcinoma. The first report that linked radiation therapy with cancer of the esophagus appeared in the early 1960s, when several case reports described cases of esophageal cancer after regional radiation treatment for primary cancers of the head, neck, and chest ***(Parker and Enstrom, 1988).*** More recently, several reports described case series observed in various hospitals around the world ***(Micke et al., 1999).***

Dysphagia, usually for solids, is the most common presenting feature of esophageal carcinoma. It can progress to dysphagia for liquids and odynophagia. Weight loss inevitably follows and is an adverse prognostic factor. Regurgitation, retrosternal pain, and hoarseness might also occur. Direct invasion of the airway presenting as a tracheoesophageal fistula or invasion into the aorta with fulminant bleeding, although rare, can occur with local progression. Common sites of metastases include the liver, lung, bone, peritoneum, and nonregional lymph nodes. The brain is an uncommon site for spread ***(Weinberg et al., 2003).***

The physical examination is usually unremarkable. Lymphadenopathy, particularly in the left supraclavicular fossa (Virchow's node), hepatomegaly, and a pleural effusion are all common indicators of metastatic disease. An esophagogram (i.e., a barium-swallow examination) is usually the initial diagnostic study obtained and typically shows a stricture or ulceration of the esophagus. Upper endoscopy reveals a friable, ulcerated mass. A computed tomographic (CT) scan of the chest, abdomen, and pelvis with intravenous contrast medium should be obtained to detect metastatic disease. Patients with esophageal cancer that is thought to be restricted to the esophagus may benefit from further evaluation with the use of endoscopic ultrasonography ***(Van Dam, 1997).***

Small and localized tumors are treated surgically with curative intent. Larger tumors tend not to be operable and hence cannot be cured; their growth can still be delayed with chemotherapy, radiotherapy or a combination of the two. In

some cases chemo- and radiotherapy can render these larger tumors operable. Prognosis depends on the extent of the disease and other medical problems, but is fairly poor ***(Enzinger and Mayer, 2003).***

Cervical Esophageal Cancer Ong and Lee first described the procedure of pharyngo-laryngo-esophagectomy (PLE) as a one stage, three phase operations which involved cervical, abdominal incisions and a thoracotomy ***(Ong and Lee, 1960)***. Tumors involving the hypopharyngeal and upper cervical esophageal region were resected together with the whole esophagus,and the stomach was delivered via the posterior mediastinum to the neck for pharyngogastric anastomosis ***(Law et al., 2000)***.The need to sacrifice the larynx does make surgical resection an unattractive and chemoradiation has been used up-front in many series, with surgery reserved for salvage ***(Burmeister et al., 2000)***.

Intrathoracic Esophageal Cancer, for tumors in the upper thoracic esophagus, obtaining a sufficient proximal resection margin dicates an anastomosis placed in the neck. For this reason resection is best carried out by a three phase esophagectomy or the Mckeown approach ***(Mckeown, 1976)***.

Abdominal Esophagus and Gastric Cardia Tumors, an abdominal-right thoracic approach as in a Lewis-Tanner esophagectomy is one option, with the proximal stomach also resected in order to gain an adequate distal resection margin. When the proximal stomach is involved by tumor, a total gasterectomy with Roux-en-Y reconstruction is preferred by many ***(Law and Wong, 2007).***

AIM OF THE WORK

This work aims to review the updates in management of oesophageal carcinoma

Chapter (1)
ANATOMY OF THE ESOPHAGUS

The esophagus is about 25 cm in length. The most useful reference point is the upper incisors, which are about 15 cm above the pharyngoesophageal junction; if the external nares are included, 2-3 cm must be added. In denning the esophagus, it is adequate to divide it into cervical, thoracic, and abdominal segments ***(Skandalakis et al., 2009)*.**

Between swallows the esophagus is collapsed but the lumen can distend to approximately 2 cm in the anterior-posterior dimension and up to 3 cm laterally to accommodate a swallowed bolus ***(Long and Orlando, 2002)*.**

The esophagus connects the pharynx to the stomach. Beginning in the neck, at the pharyngoesophageal junction (C5-6 vertebral interspace at the inferior border of the cricoid cartilage), the esophagus descends anteriorly to the vertebral column through the superior and posterior mediastinum. After traversing the diaphragm at the diaphragmatic hiatus (T10 vertebral level) the esophagus extends through the gastroesophageal junction to end at the orifice of the cardia of the stomach (T11 vertebral level) ***(Kuo and Urma, 2006)***.

Two high-pressure zones prevent the backflow of food: the upper and lower esophageal sphincter. These functional zones are located at the upper and lower ends of the esophagus

but there is not a clear anatomic demarcation of the limits of the sphincters ***(Kuo and Urma, 2006).***

Upper Esophageal Sphincter

The upper esophageal sphincter (UES) is a high-pressure zone situated between the pharynx and the cervical esophagus). The UES is a musculocartilaginous structure composed of the posterior surface of the thyroid and cricoid cartilage, the hyoid bone, and three muscles: cricopharyngeus, thyropharyngeus, and cranial cervical esophagus. Each muscle plays a different role in UES function ***(Sivarao and Goyal, 2000).***

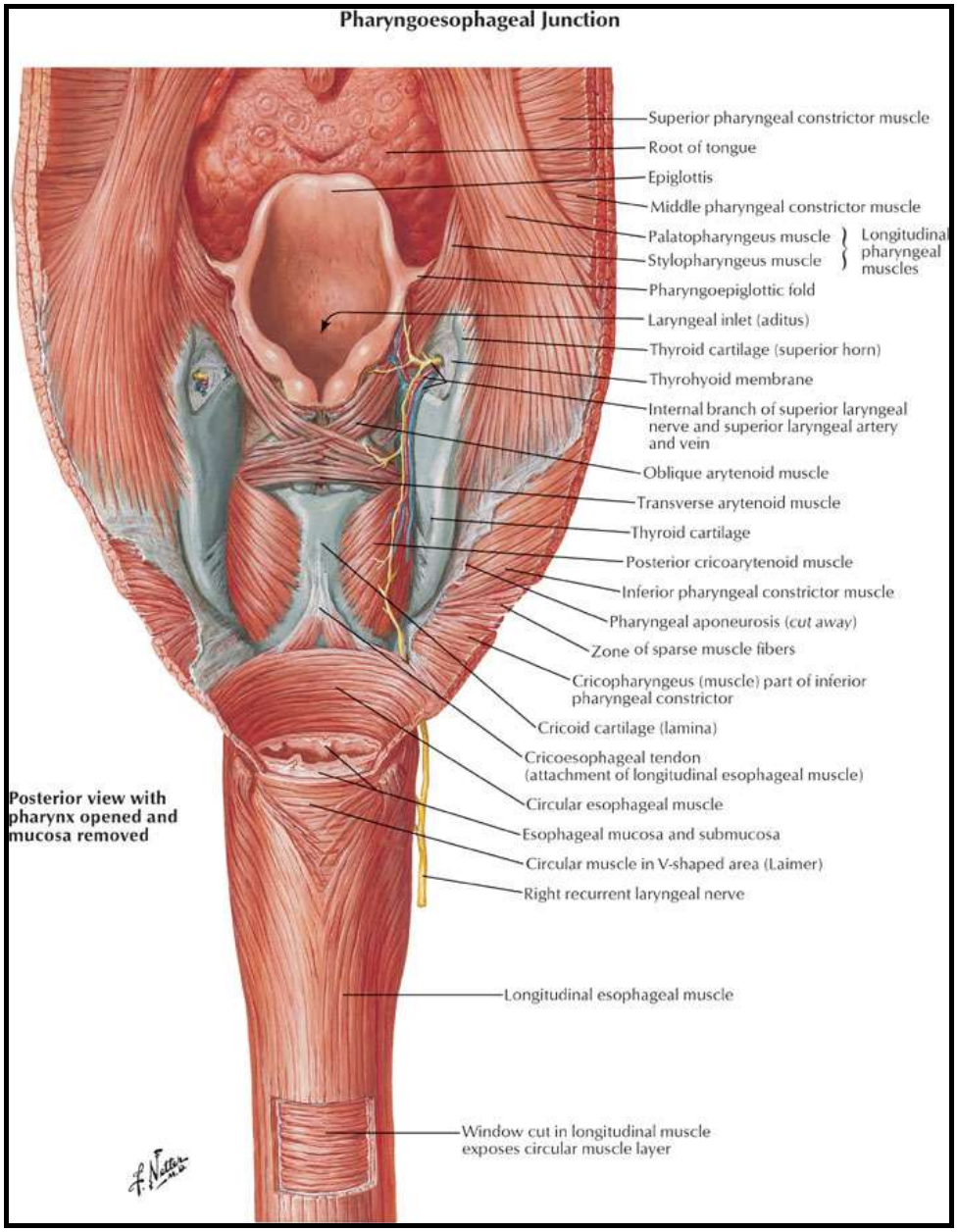

Fig (1): Upper esophageal sphincter and upper esophageal musculature ***(Kuo and Urma, 2006).***

Lower Esophageal Sphincter

The lower esophageal sphincter is a high-pressure zone located where the esophagus merges with the stomach). The LES is a functional unit composed of an intrinsic and an extrinsic component. The intrinsic structure of LES consists of esophageal muscle fibers and is under neurohormonal influence. The extrinsic component consists of the diaphragm muscle, which functions as an adjunctive external sphincter that raises the pressure in the terminal esophagus related to the movements of respiration. Malfunction in any of these two components is the cause of gastroesophageal reflux and its subsequent symptoms and mucosal changes ***(Delattre, 2000)*.**

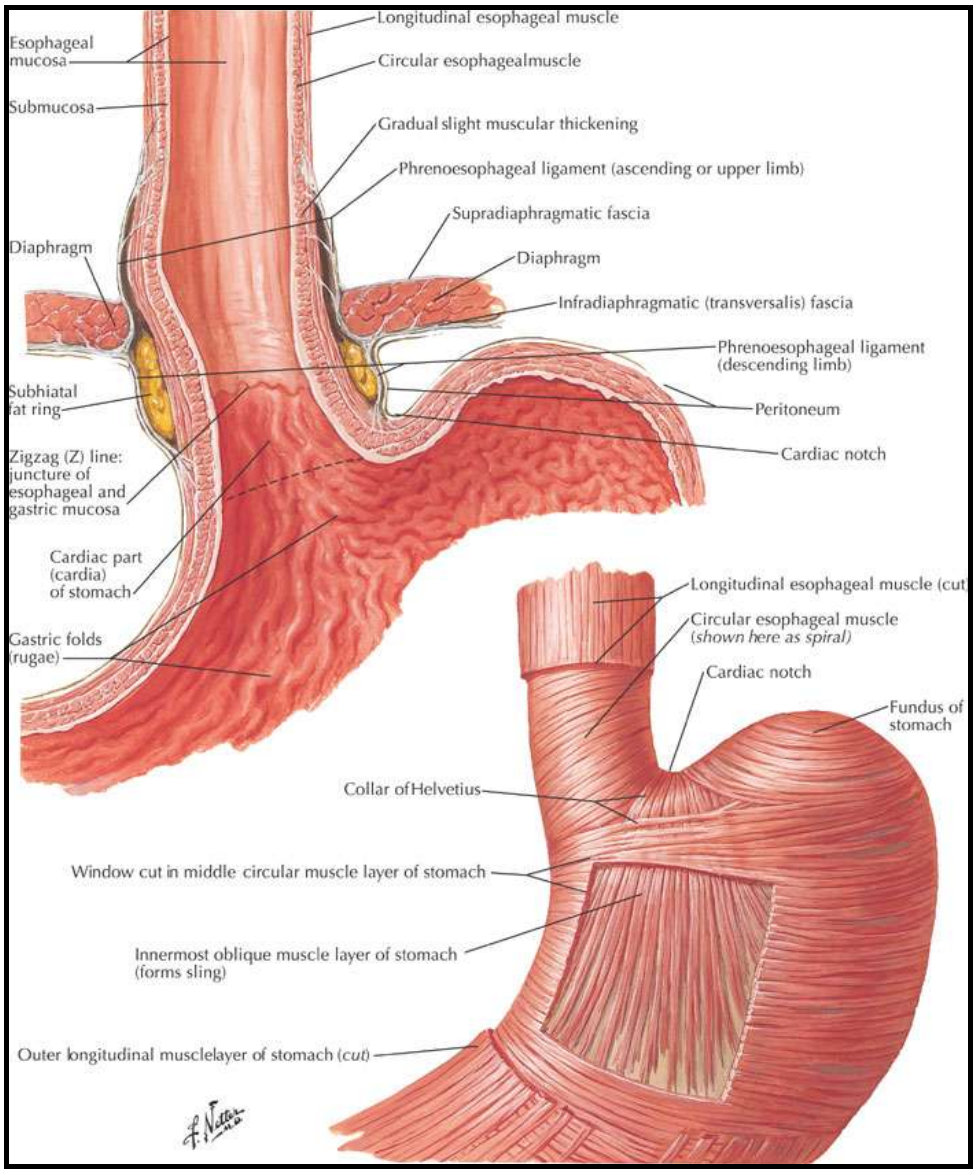

Fig (2): Gastroesophageal mucosal junction and muscular arrangement at the lower esophagus ***(Kuo and Urma, 2006)*.**

Structurally, the esophageal wall is composed of four layers: innermost mucosa, submucosa, muscularis propria, and adventitia. Unlike the remainder of the GI tract, the esophagus has no serosa ***(Kuo and Urma, 2006).***

On endoscopy, the esophageal lumen appears as a smooth, pale pink tube with visible submucosal blood vessels. The transition from esophageal to gastric mucosa is known as the Z-line and consists of an irregular circumferential line between two areas of different colored mucosa. The gastric mucosa is darker than the pale pink esophageal mucosa. Peristaltic waves can be seen during endoscopic examination ***(Kuo and Urma, 2006).***

Constrictions of the Esophagus

Major Constrictions

There are three major constrictions:

- The cricopharyngeal or pharyngoesophageal constriction (diameters 1.7 x 2.3 cm).
- The bronchoaortic constriction. Anatomically there are two separate constrictions: the aortic at the level of T4 with diameters of 1.9 x 2.3 cm, and the bronchial at the level of T5 with diameters of 1.7 x 2.3 cm.
- The diaphragmatic constriction at the level of T9 or T10 with a diameter of 2.3 cm.

These constrictions define two regions of dilatation: superior (between the cricopharyngeal and bronchoaortic constrictions) and inferior (between the bronchoaortic and diaphragmatic constrictions)

Minor Constrictions (Seen Occasionally)

A retrosternal constriction may lie between the pharyngoesophageal and the aortic constrictions.

- A cardiac constriction may lie behind the pericardium and is produced if right atrial enlargement is present, as in mitral stenosis.
- A supradiaphragmatic constriction may be produced by a tortuous, arteriosclerotic aorta **(Skandalakis et al., 2009).**

Curves of the Esophagus

The esophagus has three gentle curves: in the neck, behind the left primary bronchus; below the bifurcation of the trachea; and behind the pericardium. In terms of vertebral levels, the esophagus is to the left of the midline at Tl, to the right at T6, and to the left again at T10.

Remember the three Cs: three constrictions and three curves. Most esophageal pathology (e.g., lodgment of foreign bodies, burns from caustic chemicals, and cancer) is located at or close to these constrictions. The bronchoaortic constriction is the most frequently involved ***(Skandalakis et al., 2009).***

Topography and Relations of the Esophagus

The tubercle of the cricoid cartilage is the single constant landmark of the upper esophageal opening.

Pharyngoesophageal Junction

The muscular pharyngeal wall is formed by three overlapping muscles: the superior, middle, and inferior pharyngeal constrictors. The inferior constrictor muscle blends inferiorly with the sphincterlike transverse cricopha-ryngeal muscle, which blends with the circular, muscular esophageal wall. Between the two parts of the cricopharyngeal muscle is the weak area (triangle) of Killian. There is another weak area between the lower transverse and the muscular coat of the esophagus. These weak areas may become the site of acquired pulsion diverticula (Zenker's, above; Laimer's, below). They also are the sites of possible perforation by an esophagoscope.

Two anatomical entities at this point contribute to narrowing of the esophageal lumen: internally, the hypopharyngeal fold, and externally, the cricopharyngeal muscle. At this location perforation by instruments, lodging of foreign bodies, spasm, and neoplasms tend to occur.

The cricopharyngeal muscle and the lower border of the cricoid cartilage demarcate the end of the pharynx and the start of the esophagus. The so-called inferior constrictor of the pharynx, the cricopharyngeal muscle, originates from the

thyroid and cricoid cartilages. It is composed of two parts, the upper oblique and the lower transverse; the lower transverse is probably the cricopharyngeal sphincter.

Logically, a diverticulum above the transverse portion of the cricopharyngeal muscle should be recognized as pharyngeal, and one originating below as esophageal, but in the literature this distinction is not always made. For example, a diverticulum originating above the junction, which should be called Zenker's, may instead be referred to as pharyngoesophageal or esophageal, causing confusion ***(Skandalakis et al., 2009).***

Cervical Esophagus

The cervical esophagus is approximately 5—6 cm long and extends from C6 to Tl, or from the cricoid cartilage and cricopharyngeal muscle to the thoracic inlet at the level of the sternoclavicular joints. The carotid tubercle (of Chassaignac), which is the palpable anterior tuberosity of the transverse process of C6, is a good anatomical landmark. It projects somewhat to the left of the trachea, and incisions are commonly made on this side to approach the esophagus

Anteriorly, the cervical esophagus is covered by the larynx and trachea.

Ante rotate rally, there are four anatomical entities related to the esophageal wall on each side. From the periphery

inward they are: the carotid sheath, the inferior thyroid artery, the lobe of the thyroid gland, and the recurrent laryngeal nerve. Also related to the distal cervical esophagus on the left side is the thoracic duct.

Posteriorly, the cervical esophagus is related to: the alar fascia, the preverte-bral fascia, the longissimus cervicis muscle, and the vertebrae.

Between the alar fascia and the prevertebral fascia is the retrovisceral space, the so-called danger space that extends down the mediastinum and ends approximately at the level of T4 ***(Skandalakis et al., 2009).***

Pretracheal Space

The space in front of the trachea is not related directly to the esophagus. It is related clinically, however, since perforations of the anterior esophageal wall may open into the pretracheal space and therefore the mediastinum, producing a serious or even fatal mediastinitis ***(Skandalakis et al., 2009).***

Thoracic Esophagus

This portion of the esophagus extends from the level of Tl to T10 or T11.

Successful esophageal surgery requires knowledge of the anatomy of the mediastinum. We remind the reader that the thoracic esophagus is located in the superior and posterior

mediastinum. The key structure of the superior mediastinum is the aortic arch. The posterior mediastinum displays venous structures on the right, arterial structures on the left.

The anterior relations of the thoracic esophagus from above downward consist of the following structures: trachea and aortic arch, right pulmonary artery, left main bronchus, esophageal plexus below the tracheal bifurcation, pericardium and left atrium, anterior vagal trunk, esophageal plexus and esophageal hiatus.

The posterior relations of the thoracic esophagus are: vertebral column, longus colli muscle, right posterior intercostal arteries, left thoracic duct obliquely from T7 to T4, right pleural sac, azygos vein, hemiazygos vein, accessory hemiazygos vein, anterior wall of the aorta, esophageal plexus of the vagus nerve below the tracheal bifurcation, and sometimes the posterior vagal trunk.

The lateral relations on the right are: mediastinal pleura, azygos vein, right main bronchus, root of right lung, right vagus nerve, and esophageal plexus.

The lateral relations on the left are: aortic arch, left subclavian artery, left recurrent laryngeal nerve, left vagus nerve, thoracic duct from T4 to C7, pleura, and descending thoracic aorta.