

**NEW TRENDS IN THE SURGICAL
TREATMENT OF CANCER ESOPHAGUS**

ESSAY

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Introduction

INTRODUCTION

Although cancer of the esophagus is uncommon in Egypt, it is of great surgical interest because it is one of the most difficult malignancies to cure. The aim of this work is to review the world literature about carcinoma of the esophagus.

The geographical distribution of the disease shows marked variation in the different parts of the world, in addition certain environmental and dietary factors are important in the aetiology of the disease.

It is predominately a disease of elderly males and the majority of cases may be inoperable when first seen.

In the last 20 years much progress was made, in diagnosis, selection of patients for operations and improvement of surgical results.

In some countries, such as Japan in which the incidence of esophageal carcinoma is very high, survival rates have been improved by mass screening programs utilising endoscopy and cytology which result in earlier diagnosis of the disease.

Review of Literature

Surgical Anatomy

Anatomy of the esophagus :

The esophagus is a muscular tube which extends from the lower border of the cricoid cartilage, at the level of the 6th cervical vertebra to the cardiac orifice of the stomach which lies at the level of tenth thoracic vertebra and the left seventh costal cartilage (Last, 1981).

The length of the esophagus is about 25cm. in women the range is 20-26cm, its diameter has been recorded at its beging 2.3cm on transverse, 1.7cm sagittal, at hiatus 2.3cm transverse, 2.4cm. sagittal.

Davis (1969) stated that the general direction of the esophagus is vertical, but it presents two slight curves in its course. The esophagus is placed in the median plane, but it inclines slightly to the left side at the root of the neck, gradually passes again to the median plane, which it reaches at the level of the fifth thoracic vertebra, and again at the level of the seventh thoracic vertebra, deviates to the left and then passes forward to the esophageal opening in the diaphragm.

The esophagus generally follows the curves of the vertebral column antero posteriorly, except in the lower portion where it curves anteriorly as it deviates to the left to the hiatus, (Postlethwait, 1979).

The narrowest parts of the esophagus are :

- a) at its commencement, 6 inches from the incisor teeth.
- b) where it is crossed by the aortic arch, 9 inches from the incisor teeth.
- c) where it is crossed by the left main bronchus, 11 inches from the incisors.
- d) Where it pierces the diaphragm, 15 to 16 inches from the incisors.

These sites are important clinically with the passage of instruments and retained foreign bodies.

The esophagus is arbitrarily divided into 3 parts, cervical, thoracic and abdominal part, from the surgeon's point of view, the esophagus consists of 3 segments

- 1) Upper third above the aortic arch.
- 2) middle third behind the hilus of the lung, extending

from the arch of the aorta down to the pulmonary veins.

- 3) lower third extending from the inferior pulmonary vein down to and including the gastroesophageal junction.

But the upper third can be divided into cervical part, supraaortic part, the middle third consists of an upper retroaortic and lower retrobronchial segments and the lower third includes the supradiaphragmatic portion as well as the gastroesophageal junction.

The cervical part is posterior to the trachea. The recurrent laryngeal nerve lies in the groove between the esophagus and trachea. Posteriorly the esophagus rests on the vertebral column and the longus colli muscles. On the leftside, the carotid sheath, the lobe of the Thyroid and inferiorly the thoracic duct. The left inferior thyroid artery is a little nearer the esophagus than the right.

On the right side, there are the carotid sheath, the lobe of the thyroid.

It is bounded anteriorly by the pretracheal fascia, posteriorly by the prevertebral fascia and laterally by the prevertebral sheath of fascia forming the medial wall of the carotid sheath.

The buccopharyngeal fascia extends from the skull posterior to the pharynx and the esophagus.

There are two potential spaces around the esophagus, between it and pretracheal fascia anteriorly and the other between it and buccopharyngeal fascia posteriorly which are of surgical importance in esophageal perforation.

The thoracic part as described by Davis (1969) is at first situated in the superior mediastinum between the trachea and the vertebral column, a little to the left of the median plane. Then it passes behind and to the right of the aortic arch and descends in the posterior mediastinum along the right side of the descending thoracic aorta. Below, as it inclines to the left, it crosses in front of the aorta, and enters the abdomen through the diaphragm.

The esophagus is related in front from above down wards with the trachea, right pulmonary artery, left main bronchus, the pericardium and the diaphragm. Behind, it rests on the vertebral column, longus colli muscles, the right posterior intercostal arteries, the thoracic duct, the azygos vein and the terminal parts of the hemiazygos and accessory hemiazygos vein.

On the left side, in the superior mediastinum, the terminal part of the aortic arch, the left subclavian artery, the thoracic duct, the left pleura while in the posterior mediastinum, it is in relation with the descending thoracic aorta and the left pleura.

On the right side, it is related to the right pleura, the azygos vein. Below the roots of the lungs, the vagus descend in close contact with it, the right vagus chiefly behind and the left in front of it. In the lower part of the posterior mediastinum, the thoracic duct lies behind and to the right of the esophagus, higher up, it is placed behind it.

The abdominal part of the esophagus is very short, averaging about half an inch. It is invested by peritoneum which passes from its anterior surface to the diaphragm in continuity with the upper part of the lesser omentum on the right side and upper part of greater omentum on the left side. The posterior wall is rather shorter than the anterior because the esophageal hiatus lies very nearly vertical. It is related anteriorly to the posterior surface of the left lobe of the liver, posterior to it, are the crura of the diaphragm. The left vagus lies in front of it while the right vagal fibres lie in the back of it, as

it passes through the diaphragm, (Davis , 1969).

The esophageal opening of the diaphragm :

The thoracic esophagus ends by piercing the right crus of the diaphragm one inch to the left to the middle line, oppoite the body of the tenth thoracic vertebra, this level is opposite the seventh left costal cartilage.

Through this opening passe, the following structures the two vagal trunks, the esophageal branches of the left gastric artery with the accompanying veins.

The esophageal sphincter :

Plessis (1975) reported that normally gastric contents cannot regurgitate into the esophagus because the mechanism at the cardia preventing this. Continence of the cardia depends on muscular and mucosal factors which operate together. The inferior esophageal sphincter is not apparent on dissection but there is a functional sphincter as seen in pressure recording at the level where the esophagus traverses the hiatus in the diaphragm. He added that the diaphragm give additional external support to the sphincter during standing. The inferior esophageal sphincter is supported also by mucosal folds at the cardia which plug the orifice to make a water-tight seal.