Evaluation of Balloon Dilatation in Cases of Cardiac Achalasia

Thesis submitted for partial fulfillment of the M.Sc. Degree in General Surgery

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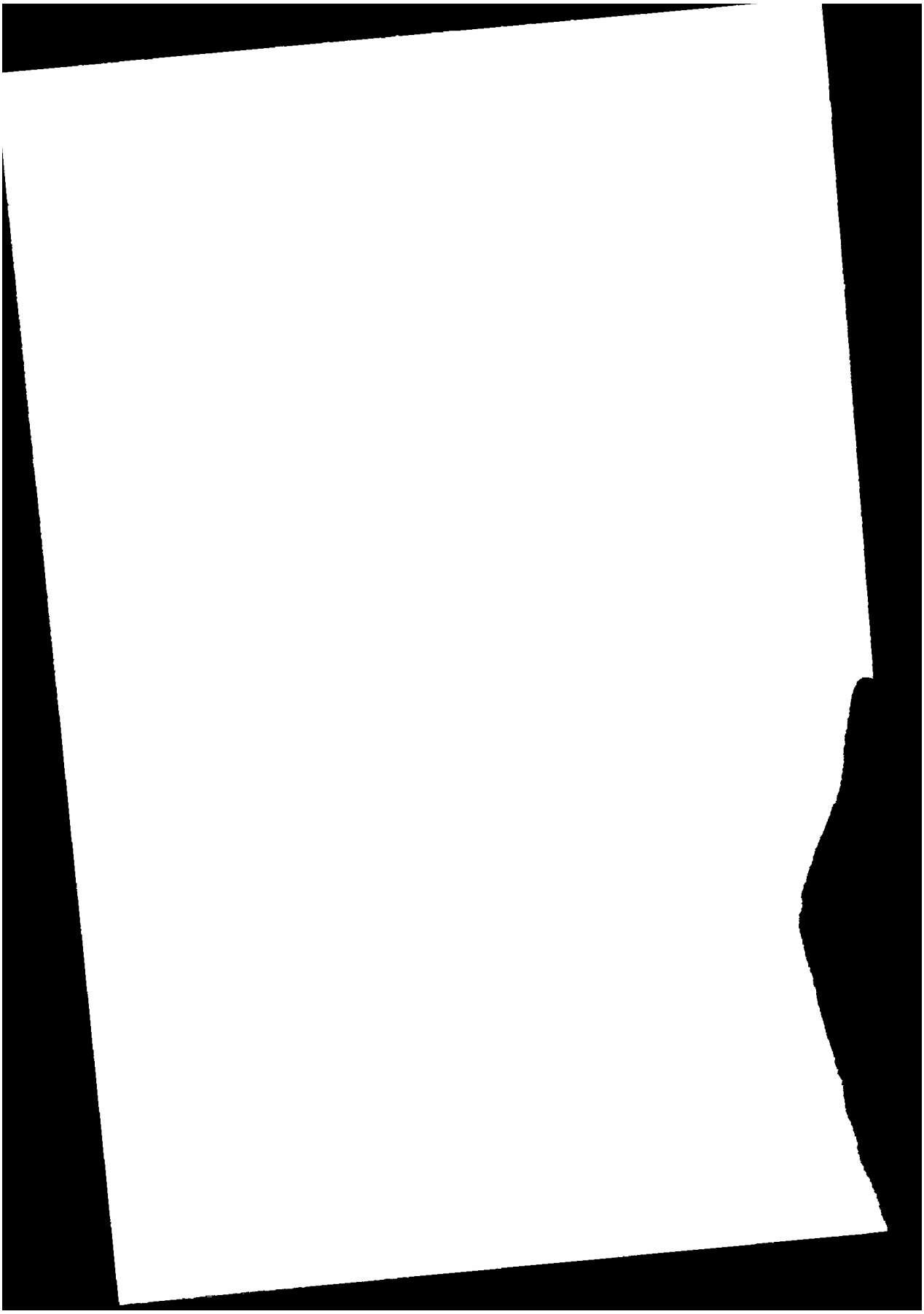

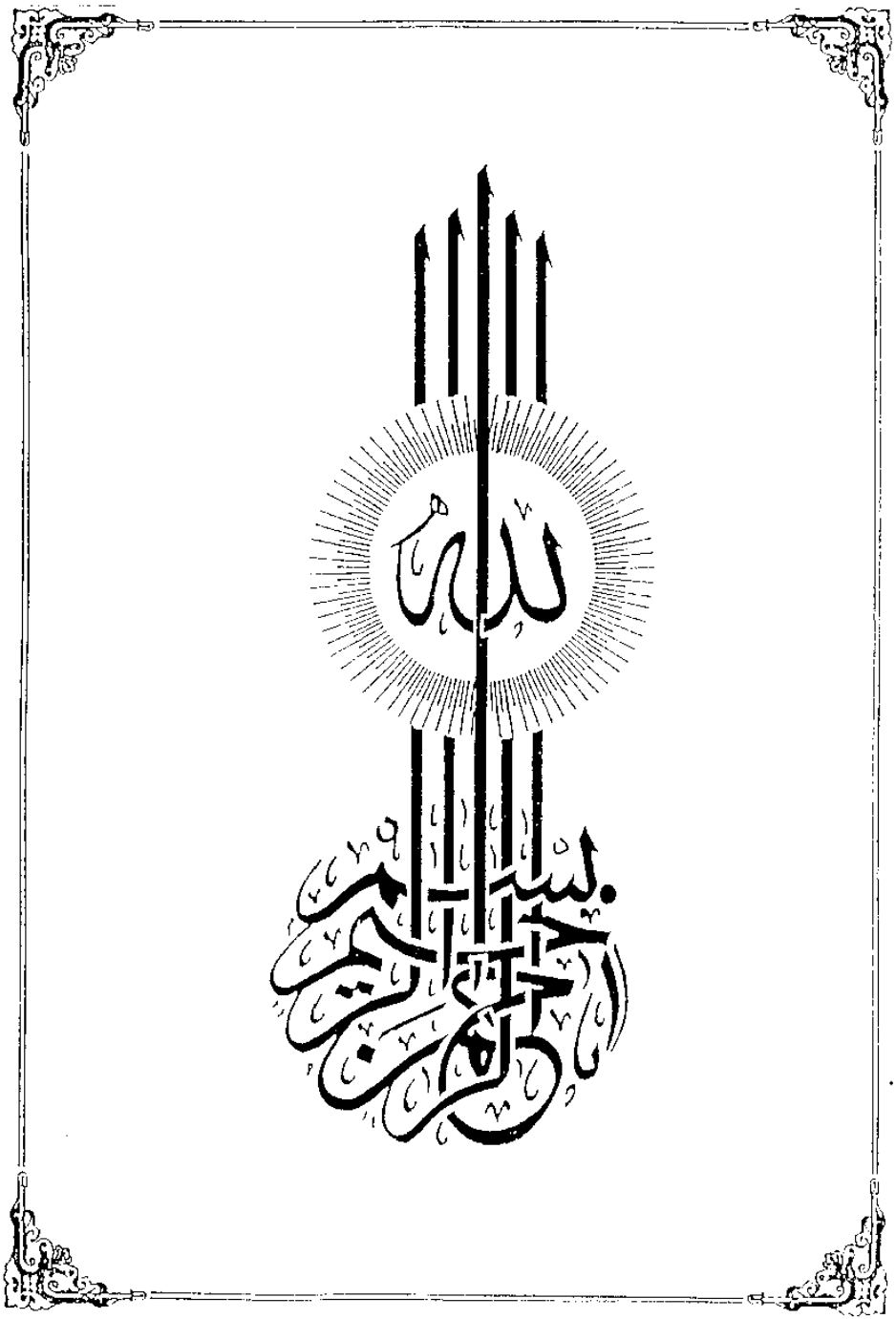

ERRATA

Page number	Line number	Error	Correction
8	17	upper superior and inferior thyroid arteries.....	inferior thyroid arteries.....
85	1	in this study 26 dilatations	in this study 24 dilatations .....
107	25	Shapiro ..... (1950)	Shapiro ..... (199

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This functional disorder with time results in anatomic alteration seen on radiographic studies as dilated esophagus with tapering and peaking, narrowing of the distal end ***(Peters and Demeester, 1994).***

Manometric evaluation is mandatory in suspected cases. Findings include absence of peristalsis, incomplete or abnormal relaxation of LES, elevated LES pressure and elevated intraluminal esophageal pressure ***(McFadden and Zinner, 1997).***

Aim of the Work

The aim of this work is to assess the effect of endoscopic balloon dilatation in cases of achalasia of the cardia in Ain Shams University Hospitals.

Review of Literature

ANATOMY OF THE ESOPHAGUS

CONFIGURATION:

The esophagus is the narrowest tube of the intestinal tract. It ends by widening into its most voluminous part, the stomach. At rest, the esophagus is collapsed and forms a soft muscular tube that is flat in its upper part and middle parts with a presenting diameter of 2.5x1.6 cm. The lower esophagus is rounded, and its diameter is 2.5x2.4 cm (fig. 1).

Compression by adjacent organs, vessels or muscles causes narrowings, which can be visualized by means of fluoroscopy and endoscopy. The cricopharyngeal narrowing is identified at a site of 15 cm from the incisors. The aortic compression, which is left sided and anterolateral, is caused by the crossing of the aortic arch and the left main bronchus at a location fo 22 cm form the incisors. The third narrowing is not constant and is located at or about 44 cm from the incisors. There are two functional constrictions; the upper and the lower esophagus sphincters. They can be defined manometrically at the esophageal sphincters. They can be defined manometrically at the esophageal opening, between 14 and 16 cm from the incisors, and at the entrance into the stomach, between 40 and 45 cm from the incisors ***(Postlehwait, 1987)***.

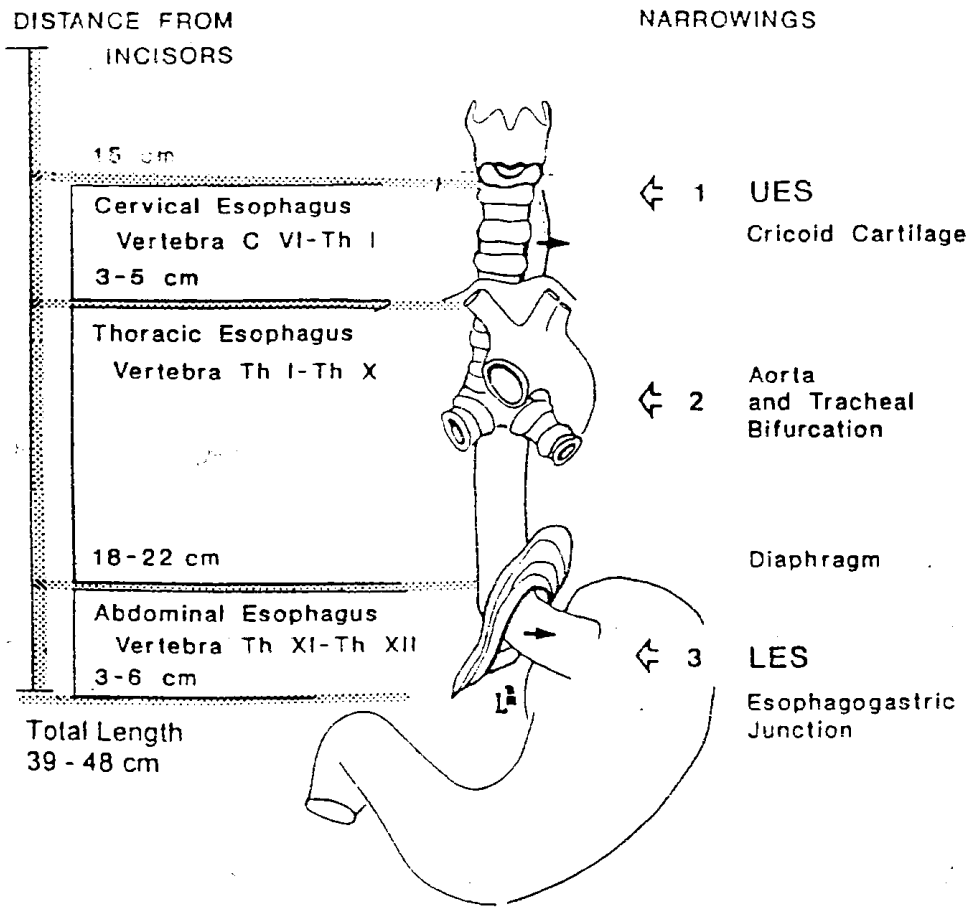

Figure (1): Classical division of the esophagus and its topographic relationship to the cervical (c)and thoracic (Th) vertebrae. The approximate length of each segment is given and the three narrowings are shown (UES= upper esophageal sphincter, LES= lower esophageal sphincter) (Demeester et al, 1996).

THORACIC ESOPHAGUS

Between the thoracic inlet and the tracheal bifurcation, at the level of the fifth thoracic vertebra, the esophagus retains its relationship to the trachea ventrally and to the prevertebral fascia posteriorly. On the right, in close contact with the esophagus is the mediastinal pleura, the lung hilus, and vessels originating from the aortic arch and the right vagus nerve. Lateral to the esophagus is the thoracic duct and the azygos vein which arches over the right main bronchus to end in the superior vena cava. Surgical access to a safe removal of the esophagus is usually through the right chest, where the azygos vein must usually be divided before the esophagus can be dissected free (fig. 1).

Left of the esophagus lies the subclavian artery and posteriorly, the left pleura and thoracic duct. At a slightly lower level the aortic arch and the left main bronchus cross over the anterolateral side of the esophagus. The left recurrent laryngeal nerve is found in the tracheoesophageal groove on that side after it emerges from under the aortic arch. Below the tracheal bifurcation, the pericardium, together with the underlying left atrium and the left vagal trunk, forms the close antero-lateral limits of the esophageal wall. Dorsally and toward the right, the azygos vein, the thoracic duct and the right vagus nerve lie parallel to the esophagus. The thoracic duct crosses from the right to the left just above the arch of the azygos at the T_{4-5} level. The descending aorta and hemiazygos veins are dorsal and to the left. The

pleura on the left side of the mediastinum may occasionally extend behind the esophagus. Both vagi accompany the esophague while it passes through the hiatus at the level of the tenth thoracic vertebra.

ABDOMINAL ESOPHAGUS

Part of the left lobe of the liver lies ventral to the esophagus. Both diaphragmatic crura are lateral and posterior. The inferior vena cava is lateral to the right crus, whereas the aorta is found posterior to the left crus. The cranial pole of the spleen is in close relationship to the terminal esophagus ***(Rothberg et al, 1989).***

Arterial Supply

Three principal sources of the arterial blood supply to the esophagus-one in the neck, one at the aortic arch level and one at the cardia (fig. 2).

IN THE NECK:

The upper superior and inferior thyroid arteries send small arteries to the cervical esophagus. Immediate branching reduces the diameter of these vessels that are already minute when seen in the periesophageal tissues before they enter the esophageal wall.