TUMOURS OF THE HYPOPHARYNX AND MOUTH OF THE OESOPHAGUS

ESSAY

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By

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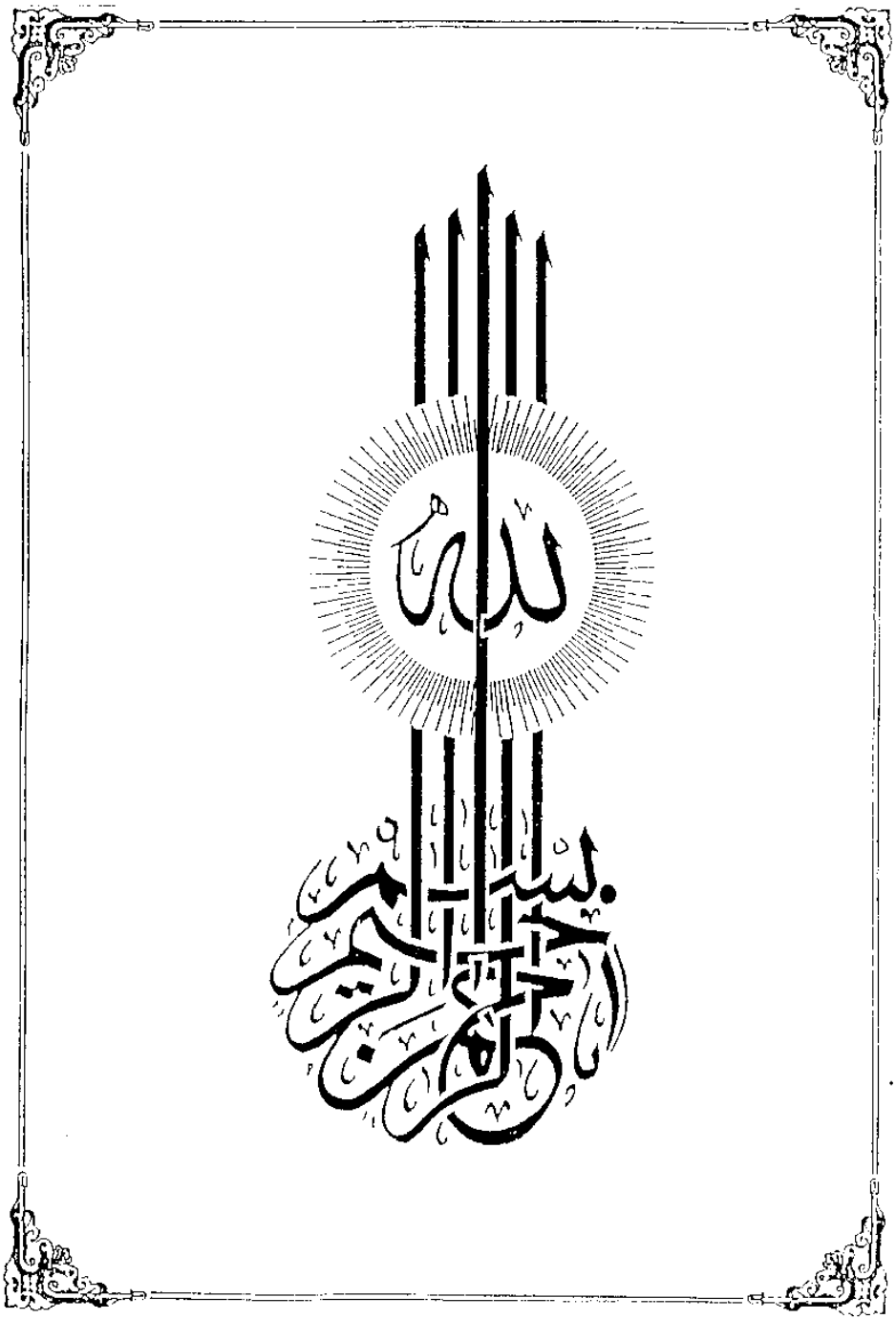

Introduction

Tumours of the hypopharynx and mouth of oesophagus are considered one of the important problems that may face the otolaryngologist. The hypopharynx extends from the level of the hyoid bone superiorly to that of the lower border of the cricoid cartilage inferiorly, and consists of three parts, the post cricoid area, the pyriform fossae, and the posterior pharyngeal wall. Tumours of the post-cricoid area behave like upper oesophageal tumours, so the later must be included in studying tumours of the hypopharynx. Benign tumours of this region are virtually unknown. Although malignant diseases of the hypopharynx and mouth of oesophagus are uncommon, their ultimate importance lie in the fact that they usually present themselves in a late stage. Therefore, one in each four cases is inoperable. However, operable cases are likely to face the problem of reconstruction of the deglutatory mechanism following surgery. The use of transposed viscus, colon or stomach, was a tremendous step forward. Another achievement was the use of deltopectoral skin flaps,this has been followed by the development of myocutaneous flaps.

Embryology

EMBRYOLOGY:

The pharynx is the cranial end of the foregut, and the branchial arches and pharyngeal pouches play an important role in its development. The part of the foregut caudal to the pharynx remains as a splanchnopleuric tube which elongates to form the oesophagus. Towards the end of the first month, at the 10-14 somite stages, the foregut comes to lie dorsal to the developing heart tube, and to the developing septum transversum. Its anterior end is at this stage shut off by the buccopharyngeal membrane. At about the 20 somite stage the buccopharyngeal membrane ruptures and the ectodermally-lined stomatodaeum becomes continuous with the foregut. The oesophagus lengthens rapidly at the time of the caudal migration of the developing heart and respiratory system (Warwick and Williams, 1973)

Anatomy

The pharynx consists of three parts: nasal, oral and laryngeal (hypopharynx).

Here we are concerned with the hypopharynx:

* THE HYPOPHARYNX

It extends from the cranial border of the epiglottis to the caudal border of the cricoid cartilage, where it is continuous with the oesophagus. Its anterior wall presents from above downwards, the inlet of the larynx, the posterior surfaces of the arytenoid cartilages and cricoid cartilage.

From the surgical point of view, the hypopharynx is divided into three sites: the posterior pharyngeal wall, the piriform sinus and the postcricoid space.

The posterior pharyngeal wall extends from the level of the hyoid bone above to the crico-arytenoid joints below.

The piriform sinus is bounded superiorly by the pharyngo-epiglottic fold, laterally by the inner surface of the thyroid cartilage, medially by the posterior surface of the ary-epiglottic fold and the arytenoid and cricoid cartilages, and inferiorly it extends to the upper edge

INTERIOR OF THE PHARYNX (FROM BEHIND)

(Atlas of Anatomy, 1972)

of the oesophagus. (Beneath the mucous membrane of the piriform fossa lie the branches of the internal laryngeal nerve after they have pierced the thyrohyoid membrane).

The postcricoid region extends from the level of the arytenoid cartilage and its connecting folds to the inferior surface of the cricoid cartilage.

Posteriorly the hypopharynx lies opposite the third (lower part), fourth, fifth and sixth (upper part) cervical vertebrae.

- Structure:

The pharynx is usually described as being composed of three tissue laminae from within outwards-mucous, fibrous and muscular, external to the last being the thin buccopharyngeal fascia, which covers the external surface of the constrictor muscles and extends forwards over the pterygomandibular raphae on to the buccinator.

The mucous membrane in the oral and laryngeal regions of the hypopharynx is lined by stratified squamous epithelium. The fibrous intermediate layer lies between the mucous and muscular layers.

* THE MUSCLES OF THE PHARYNX

They are arranged into longitudinal and circular laryers. The circular layer comprises: the superior, middle and inferior constrictor muslces.

The longitudinal muscle layer includes the stylopharyngeus and palatopharyngeus muscles.

- The Inferior Constrictor Muscle:

It arises from the oblique line of the thyroid cartilage, side of the cricoid cartilage and the fascia covering the posterior part of the cricothyroid muscle. The upper fibres ascend obliquely upwards to be inserted into the pharyngeal raphe (thyropharyngeus). The transverse fibres are continuous with the circular fibres of the oesophagus (cricopharyngeus). This part plays an important role in the pharyngo-oesophageal sphincter mechanism and is normally in tonic contraction. In the triangular interval between the middle and inferior constrictors and the thyrohyoid muscle anteriorly, the internal laryngeal nerve and artery pierce the thyrohyoid membrane. The recurrent laryngeal nerve passes upward beneath the lower edge of the inferior constrictor behind the cricothyroid articulation.

- Stylopharyngeus muscle:

It arises from the medial side of the base of the styloid process and it is inserted into the superior and posterior border of the thyroid cartilage.

- Palatopharyngeus Muscle:

It arises from the pharyngeal aponeurosis and from the posterior border of the thyroid cartilage. The muscle fibres pass almost vertically upwards to the palate in the palatopharyngeal fold. As it passes forwards, it divides into two strands. One strand is inserted into the palatal aponeurosis and the other blends with its fellow of the opposite side.

* THE BUCCOPHARYNGEAL FASCIA:

This fascia forms a thin fibrous layer on the external surface of the muscular coat. Posteriorly the fascia is loosely attached to the prevertebral fascia. At the sides it is loosely connected to the styloid process and its muscles, and to the carotid sheath.

* BLOOD SUPPLY

The blood supply of the pharynx is derived from the ascending pharyngeal artery, the ascending palatine branch of the facial and the greater palatine branch of the maxillary artery.

In addition to small twigs from the dorsalis linguae, the tonsillar artery and the artery of the pterygoid canal.

The ascending pharyngeal artery arises from the medial side of the external carotid artery just above its origin. It passes upwards behind the carotid sheath and immediately against the pharyngeal wall.

The veins are arranged in two well-defind plexuses, an internal submucous and an external pharyngeal, with numerous communicating branches forming extensive networks. These networks communicate with the veins of the dorsum of the tongue, the superior laryngeal veins, the oesophageal veins, and with the external laryngeal plexus. The latter drains to the internal jugular vein and the anterior facial vein. The pharyngeal plexus is also closely connected to the cavernous sinus through emissary veins.

* THE LYMPHATIC DRAINAGE

The lymphatic vessels of the pharyngeal wall can be divided into three groups: superior, middle and inferior. The superior vessels drain into the retropharyngeal and upper deep cervical nodes. The middle group vessels pass to the jugulodigastric nodes of the upper deep cervical group. The inferior group of vessels pass to the inferior deep cervical nodes.

* THE NERVE SUPPLY

The motor and sensory nerve supply of the pharynx is derived from the pharyngeal plexus. This is formed by the pharyngeal branches of the vagus nerve, branches of the glossopharyngeal nerve and sympathetic fibres. The pharyngeal branch of the vagus carries the main motor supply. These fibres (branchiomotor) arise from the cranial root of the accessory nerve and join the vagus at the level of its superior ganglion.

The sympathetic fibres arise from the superior cervical ganglion. This plexus supplies all the muscles of the pharynx except the stylopharyngeus, which is supplied directly by the glossopharyngeal nerve. In addition, a twig from the recurrent laryngeal nerve supplies the inferior constrictor. (Warwick and Williams, 1973)