NON-NEOPLASTIC SALIVARY GLANDS DISEASES

THESIS

Presented

By

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"FIRST AND FORMOST, THANKS ARE DUE TO GOD ,
THE BENEFICENT AND MERCIFUL"

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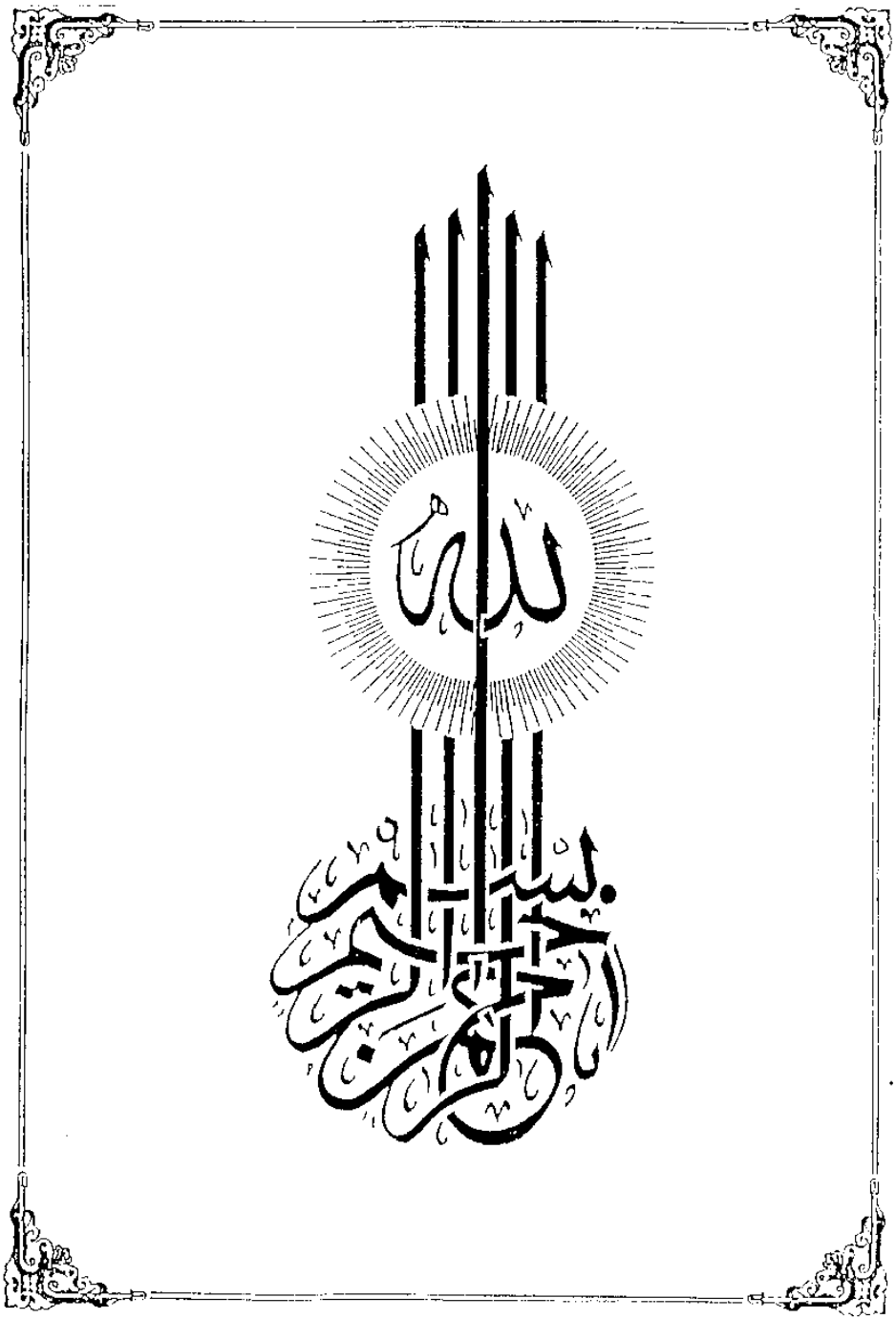

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Preface

The diseases of salivary glands is becoming more and more of particular concern to the otolaryngologist specially with the increasing trend to have the head and neck surgery as a special entity.

Differentiation between a neoplastic or non-neoplastic disorders may be difficult even for the experienced clinician . History, physical findings and radiologic studies may suggest an etiology, but, usually a mass occuring in a major salivary gland must be removed for definitive diagnosis.

The aim of this essay is to study the non-neoplastic disorders of the salivary glands.

DEVELOPMENTAL ANATOMY OF THE SALIVARY GLANDS

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Both the major and minor salivary glands arise in the same fashion, that is, by the proliferation and ingrowth of the oral epithelium as a solid cord of cells into the underlying mesenchymal tissues. As development progresses, these cords undergo extensive branching, enlarge in girth, and acquire lumens. The terminal ducts dilate to form the secretory acini (Fig. 1). The proximal portion of the original primordium becomes the gland's main duct. The surrounding mesenchyme divides the glands into lobules and envelopes it to form a capsule.

There is some debate over the question of germ cell origin of the major salivary glands. The stomodeal plate is the dividing point in the primitive oral cavity, demarcating ectoderm anterior and endoderm posterior to this structure. The exact position of this plate is uncertain. It is generally felt that the glands are ectodermal in origin, but the parotid originates close to the the stomodeal plate and some embryologists arque that it is of endodermal origin. The frequent finding of sebaceous glands in the parotid suggests an ectodermal origin. Although the cell of origin is a matter of debate, it is still an important point to be considered in the histogenesis

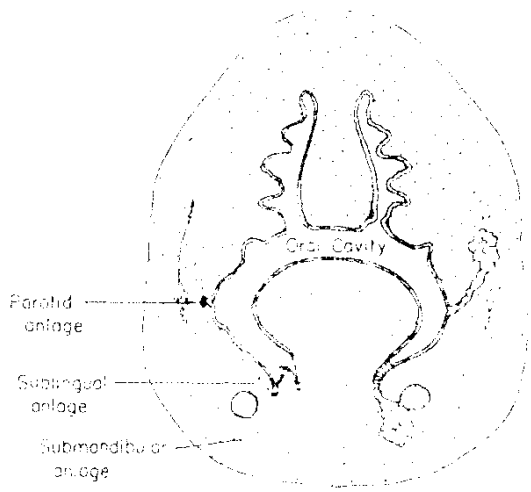

Fig. (1)

Schematic illustration of the embryologic development of the major salivary glands. Composite drawing showing the development at 8 weeks on the left and a later stage on the right. (From Johns, 1977).

of salivary gland neoplasms and needs to be clarified. The minor salivary glands are found in the entire oral cavity except over the alveolus of the jaws and the rostromedial portion of the hard palate. Some of the minor glands are ectodermal and some endodermal in origin. As was previously mentioned, the development of the minor salivary glands is the same structurally as for the major salivary glands.

At about the fourth to the sixth week (or the 10 mm stage) of development, the parotid is the first of the major salivary glands to make its appearance as an epithelial ingrowth near the angle of the mouth on the inner surface of either cheek. As it grows rapidly back ward toward the ramus of the mandible, it becomes a hollowed tube and, at this level, branches extensively into the primordial ducts and acinar cells.

The submandibular gland begins its development late in the sixth week as paired primordia arising near the midline under the tongue. It grows back along the floor of the mouth toward the angle of the mandible, turning inferiorly and superficially posterior and lateral to the mylohyoid muscle. Here the primordia begins to branch freely to form the body of the gland.

The sublingual glands arise in the eighth week as an independent row of small glands with individual ducts. The secretory portions of the gland are confluent with each other in a common connective tissue capsule. They originate as 10 to 20 primordia from the floor of the mouth under the tongue, but are arranged laterally along the course of the submandibular primordia.

GROSS ANATOMY OF THE SALIVARY GLANDS

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The salivary glands may be divided into two groups: the paired major salivary glands - parotids, submandibulars, and sublinguals, and the minor salivary glands. The major salivary glands are located outside the oral cavity proper and are connected to it by a complex ductal system. The minor salivary glands are situated beneath the mucosa of the oral cavity and empty their secretions directly through short rudimentary ducts. Structurally the major salivary glands are compound tubuloacinar in type; the minor salivary glands are simple tubular and tubuloacinar. The parotid gland is the largest of the salivary glands and occupies the space immediately in front of and beneath the external ear. The submandibular gland is next largest in size and largely fills the submandibular triangle. The smallest of the major salivary glands is the sublingual gland, which is located under the anterior portion of the floor of the mouth (Fig. 2). The minor salivary glands are composed of collections of secretory acini scattered throughout the lining of the buccal cavity, palate, and tongue and are also found, to a lesser extent, in the nasopharynx, nasal cavity and paranasal sinuses.

Parotid Gland :

The parotid gland, serous in its secretion and the largest salivary glands, is yellowish, lobulated and roughly wedge-shaped with superficial, postero-medial and antero-medial surfaces.

Its **superficial-surface**, roughly triangular, overlaps sternomastoid posteriorly, extends forwards below the zygomatic arch, thins out over the posterior part of masseter and tapers to an inferior end about the angle of the mandible where the gland overlaps the posterior belly of digastric and is separated from the submandibular gland merely by the stylo-mandibular ligament, a thickening of the cervical fascia ensheating the gland. From the upper anterior part of the gland the parotid duct runs forwards across masseter and, between the duct and the zygomatic arch, lies the most anterior part of the gland, sometimes detached as the acessory parotid (Fig. 2). The superficial surface, subcutaneous but not palpable, is tightly bound down by the investing sheath of cervical fascia to the zygoma above, sternomastoid posteriorly and the mandible and masseter anteriorly.

The **postero-medial** surface is moulded to the sternomastoid, the mastoid process, the external acoustic meatus,

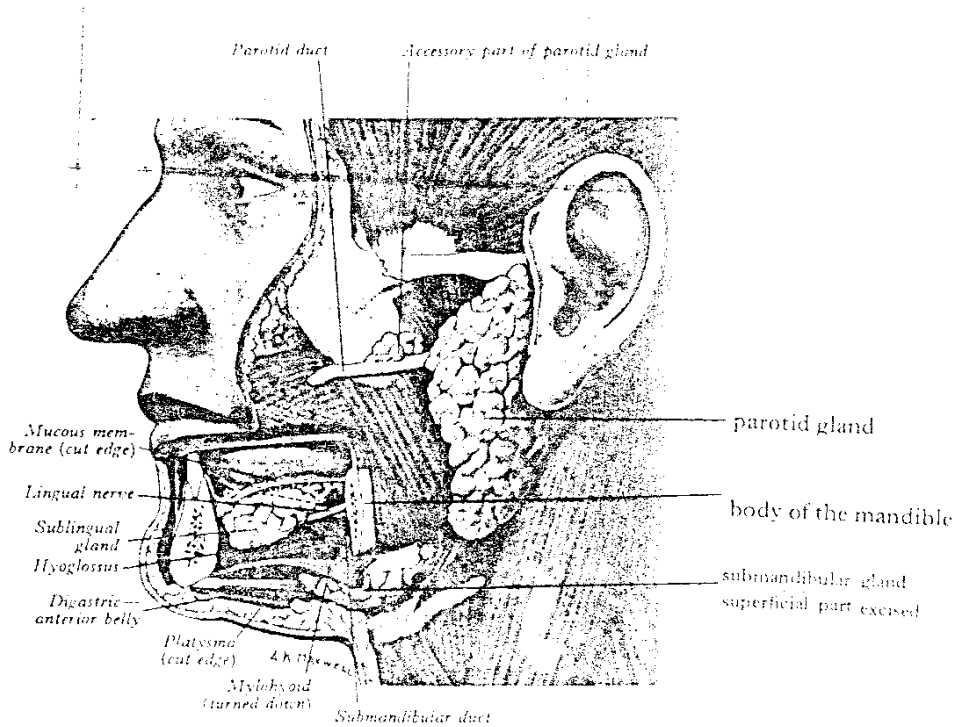

Fig. (2)

A dissection showing the salivary gland of the left side. The cranial region of the superficial part of the submandibular gland has been excised and the cut mylohyoid has been turned down to expose a portion of the deep part of the gland (From Warwick & Williams, 1980).

the posterior belly of digastric, the styloid process and muscles, and related on a still deeper plane to the internal jugular vein, internal carotid artery and the last four cranial nerves, the vein intervening between the gland and the cervical vertebrae (Fig. 3).

The **antero-medial** surface (Fig. 4) is moulded to masseter, the posterior border of the ramus of the mandible including the temporomandibular joint and the medial pterygoid muscle, a small process of the gland projecting between the mandible and the sphenomandibular ligament. These two surfaces of the gland meet in a medial border which may sometimes extent medially in front of the styloid process towards the pharynx.

Structures traversing the parotid gland :

The external carotid artery enters through the posteromedial surface of the parotid gland, and divides into its terminal branches within its substance. One of these branches the maxillary artery emerges from the anteromedial surface, and runs forwards medial to the neck of the mandible, while the other - the superficial temporal artery - gives off its transverse facial branch, and then ascends to exist from the upper limit of the gland. The posterior auricular artery may start from the external carotid artery within