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STUDY OF NASOPHARYNGEAL MASSES IN ADOLESCENTS AND ADULTS

Thesis
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In partial fulfilment of the requirements of
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Otolaryngology

By

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2001

بسم الله الرَّحمن الرَّحيم(١)

الحمد لله رب العلمين (٢) الرَّحمن الرَّحيم(٣) مالك

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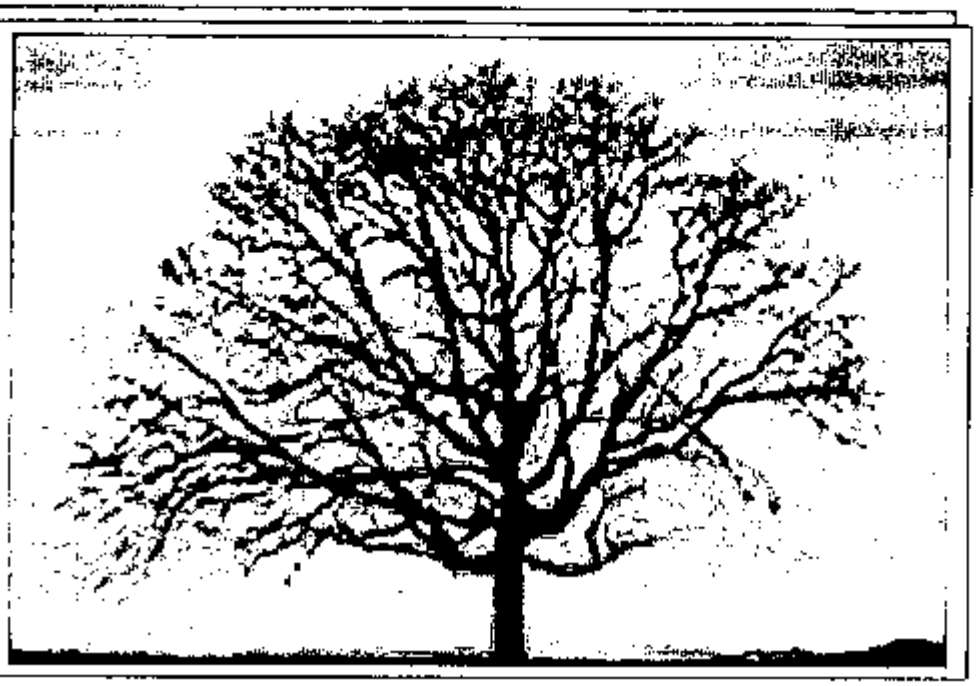
آمين



To **Mohammed** *my beloved brother...*

To **every patient** *who thanks and loves* **Allah** *even though he is suffering…*

So as to be with what in the hands of **Allah** *more trusting than that in the hands of your own.*

In the name of ALLAH

Acknowledgment

Thank is to Allah, I thank him and ask him for his forgiveness, help, guidance, and protection from my sins. I witness that our master Mohamed is the profit of Allah, delivered his message, advised his nation and left it on the right way, that only a loser will leave it.

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Embryology:

The human nasopharynx, develops from the cephalic part of the primitive foregut at the end of the first month of intrauterine life [1]. The primitive foregut, "Fig. 1. ", develops by cephalocaudal folding of the embryo with incarceration of a part of the endoderm-lined yolk sac. Now the primitive foregut is separated from the stomatodeum by the buccopharyngeal membrane [2].

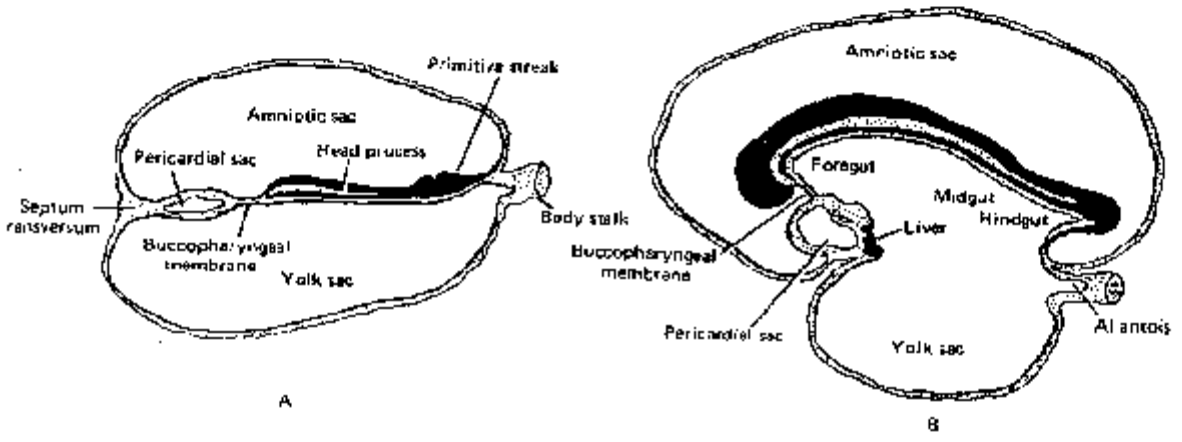

Fig 1. Longitudinal sections of the embryonic disc before (A) and after (B) the formation of the head and tail folds" reversal of the septum transversum". As a result the dorsal part of the yolk sac is incorporated into the embryo, forming the foregut anteriorly, the hindgut posteriorly, and the midgut, which communicates through a vitello-intestinal isthmus with the extraembryonic part of the yolk sac. Quoted from [2].

The anterior pituitary gland develops form Rathke's pouch, which appears at the roof of stomatodeum as an ectodermal growth and then migrates towards the fetal brain [2].

At the 5th week of intrauterine life, development of the pharyngeal arches occurs" Fig. 2". They are 5 in number, namely first, second, third, fourth and sixth, as the fifth arch is not well developed in human embryos [3].

Each arch is a mesenchymal growth, marked on the outer ectoderm by a bulge, and separated from the other arch by a pharyngeal cleft. It is also marked on the inner endoderm by another bulge that is called the pharyngeal pouch [3]. From the aforementioned structures, (pharyngeal arches, pouches and clefts) the following develops.

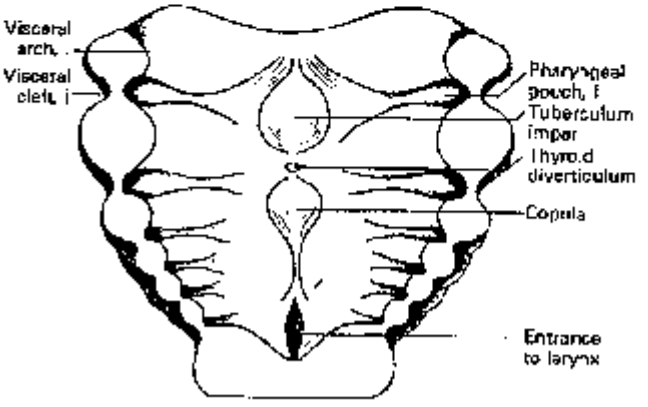

Fig 2. Visceral arches and clefts, and pharyngeal pouches. Quoted from ***Gray R. F., Hawthorne M.*** (1992): Surgical anatomy In: Synopsis of otolaryngology. Fifth edition, chapte1, p. 3.Butter worth and Heinemann

The First pharyngeal arch forms the maxillary process and Meckele's cartilage from which, the maxilla, premaxilla, zygomatic bone, temporal bone, mandible, incus and stapes develop by ossification of mesenchymal cartilages. The musculature of the first arch develops the muscles of mastication namely temporalis, masseter, medial, and lateral pterygoids, the anterior belly of digastric, the tensor tympani and tensor palati muscles. The mandibular nerve supplies all these muscles [3]. The endodermal aspect of this arch forms the lateral wall of the nasopharynx in front of the orifice of the eustachian tube [3].

The fourth pharyngeal arch develops the constrictors of the pharynx [3].

The first pharyngeal pouch, develops with adjacent pharyngeal wall and a part of the dorsal portion of the second pharyngeal pouch the tubotympanic recess " Fig. 3". This recess comes into contact with the ectodermal epithelial lining of the first pharyngeal cleft, thus forming distally the external auditory canal, and the middle ear cavity whereas the proximal end forms the eustachian tube [3].

The Second pharyngeal pouch forms, as stated above, a part of the eustachian tube with the first pouch. The palatine tonsils develop from the second pouch by proliferation of the endothelium lining this pouch. This endothelium becomes invaded by mesodermal tissue and then the lymphocytes either develop in situ or migrate to it from the blood [3]. The adenoids develop by a similar invagination of dorsal endothelium of the dorsal pharyngeal wall by lymphatic tissue, and in the same way the lingual tonsils develop [4]. The posterior pharyngeal wall develops also from this pouch [1].

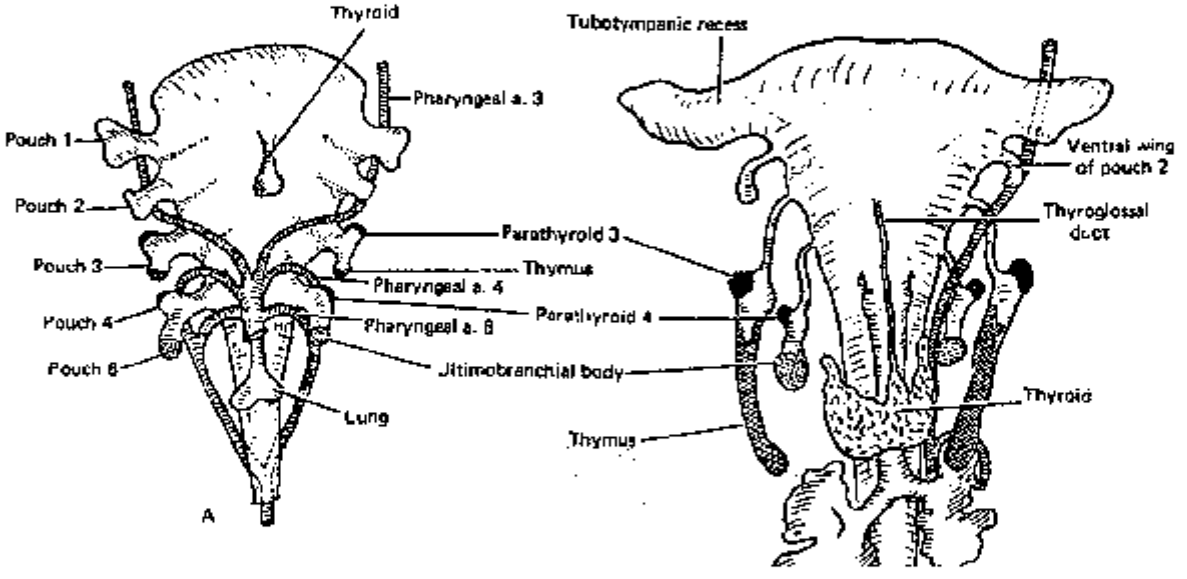

Fig 3. Ventral views of the pharyngeal pouches at two stages. The first and second pouches (in A) became incorporated into the tubotympanic recess (middle ear and Eustachian tube). In B. the parathyroids are shown in black. The thymus (cross-hatched areas) arises from the ventral wing of the third pouch. Quoted from [2].

The first pharyngeal cleft develops the external auditory meatus by invading the underlying mesoderm to meat the tubotympanic recess and shares in the formation of the tympanic membrane [3].

Anatomy of the Nasopharynx:

The nasopharynx "Fig.4" is a transient place that exists between the nose and oropharynx. It is almost cubical in shape, measuring about 4 cm in both side to side and superoinferior dimensions, and 3cm in the anteroposterior dimension. The posterior wall is 8cm from the pyriform aperture along the nasal floor [5].

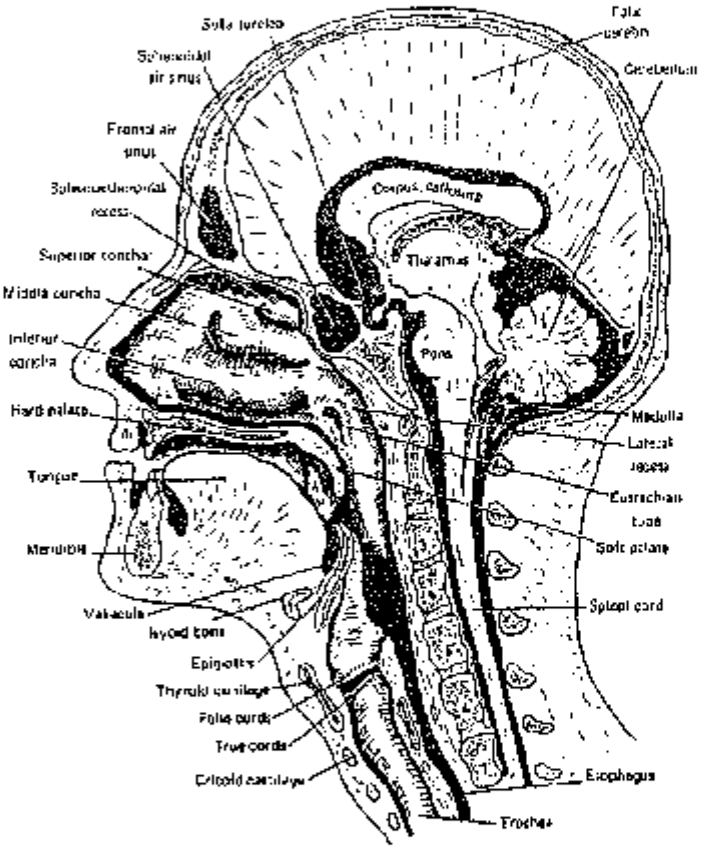

Fig. 4 Sagittal section through the adult head showing, in particular, the nasal cavities and pharynx. Quoted from [2].

Anteriorly, the nasopharynx opens in the nose through the choanal orifices. It is bounded in the midline by the vomer, superiorly, by the articulation of vomer with the vaginal process of medial pterygoid plate, laterally by the vertical plate of palatine bone, and below by the horizontal process of palatine bone [2].

The floor is formed by the upper surface of the soft palate and nasopharyngeal isthmus. The body of sphenoid, the basiocciput, and first 2 cervical vertebrae bound the roof and posterior wall to the level of soft palate [3].