MAXILLARY SWELLINGS

Essay

Submitted For Partial Fulfilment Of The

Master Degree In Oto_Rhino_Laryngology

By

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(M.B.,B.CH)

Under Supervision Of

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Professor Of Oto.Rhino.Laryngoloy

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Lecturer Of Oto.Rhino .Laryngoloy

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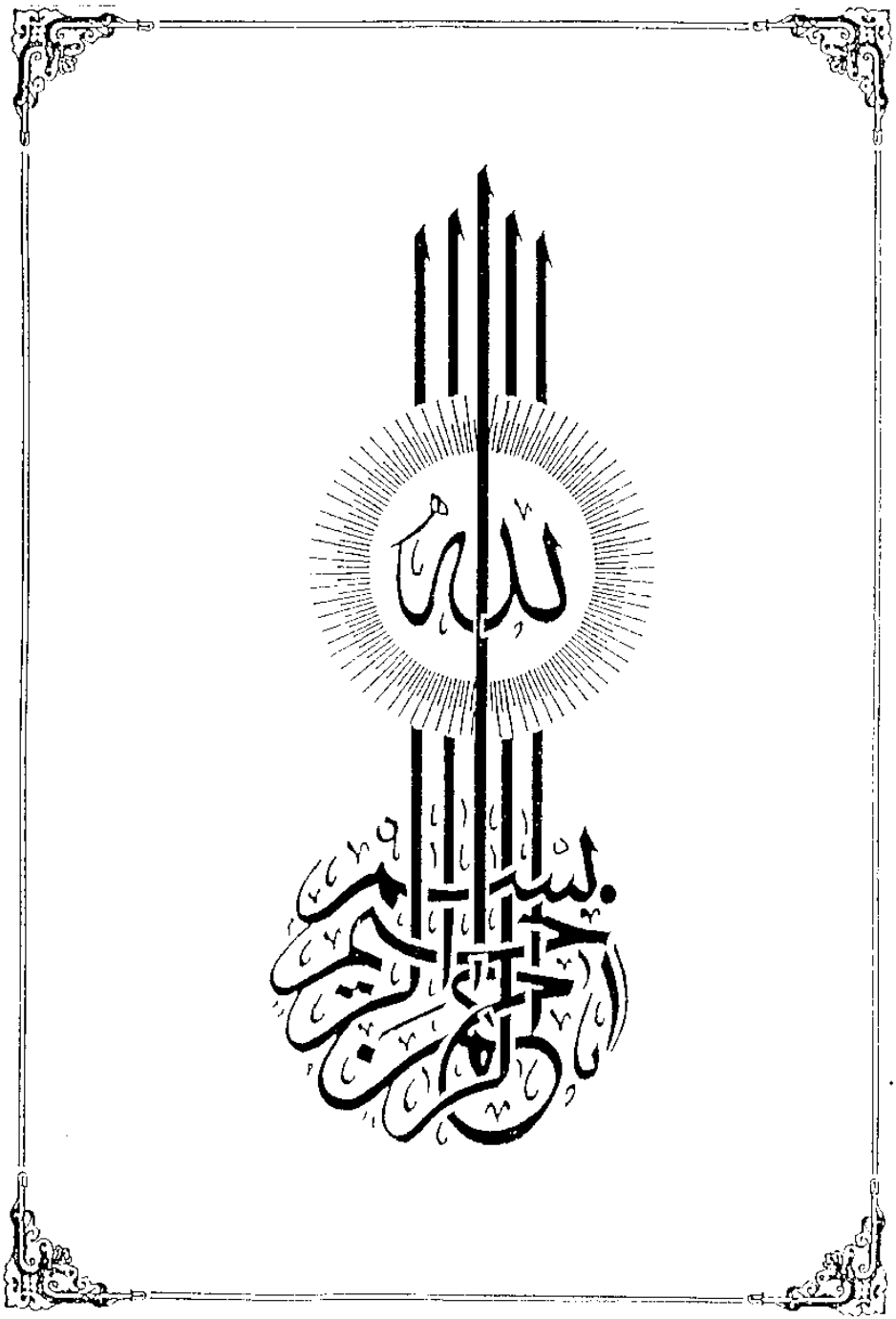

Acknowledgment

I would like to express my deep thanks and gratitude to Dr. Mamdouh El Gohary, Professor of Oto-Rhino-Laryngology, Faculty of Medicine, Ain Shams University, for giving me the privilege of working under his supervision, for his encouragement, his patience and fruitful guidance throughout the whole work.

I am deeply indebted to Dr. Hisham Yehia El Sherbiny, Lecturer of Oto-Rhino-Larygology, Faculty of Medicine, Ain Shams University, for his valuable guidance, supervision and encouragment.

I am also very gratefull to every one who had helped me in this work.

Emad Mahmoud Hamdy Sleet

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Introduction

Maxillary swellings combine many entities of diverse nature. The most important-from the clinical point of view- are the malignant swellings.

Maxillary sinus malignancy constitutes 85 percent of all paranasal sinus malignancy with reported incidence of 0.2 percent or less of all human cancers (Tabb & Barranco, 1971 ; Mundy et al., 1985).

As the diagnosis is usually late, due to early clinical silence or misleading signs and symptoms which allow considerable local extension before their discovery and as accurate delineation of the tumor extent is difficult, the results of treatment and prognosis of such cases are still relatively not good.

Many attempts have been made to classify maxillary swellings to provide guidelines as to which patients would make better candidates for treatment.

Treatment of maxillary sinus malignancy is a challange for the surgeon and patient. Although this

has been called a depressing disease to treat, a pessimistic approach may deprive the patient of the chance for survival and comfort.

Earlier diagnosis should lead to earlier treatment and in general, a better prognosis.

* * *

Aim Of The Essay

The objective of this work is to review the literatures dealing with maxillary swellings with the purpose of clarifying the following points:

- Appreciation of the various swellings of maxilla with emphasis on the more common swellings.

- Methods of early diagnosis.

- Methods of ideal treatment.

* * *

DEVELOPMENT AND ANATOMY OF MAXILLA

A- DEVELOPMENT OF MAXILLA

The first indication of development of the nose is the appearance of two epithelial thickenings known as nasal placodes on the infralateral sides of the head region in embryos of 28 - 30 days (Streeter, 1945). The placodes are convex but with the proliferation of the surrounding mesenchyme, accompanying the formation of the medial and lateral nasal folds, the placodes soon come to lie in depression which ultimately deepen sufficiently to form the olfactory pits. The medial nasal folds fuse to form a central elevated part known as the frontonasal process. With further growth of the nasal folds, each olfactory, or nasal pit becomes deeper, forming a nasal sac (Streeter, 1948).

The maxilla is derived from the first branchial arch, which develops during the first embryonic mouth into a maxillary process (Tobin, 1973).

As the nasal folds develop, the maxillary processes grow forwards from the mandibular region.

The maxillary process grows medially underneath the

developing eye and eventually comes into contact with the lateral nasal process. With further growth, the maxillary process spreads medially so that the olfactory pit now becomes the primitive nasal cavity. Then the tissues for development of the alveolar process of the maxilla are formed. After the overgrowth of maxillary mesoderm, the free lower surface of the fronto-nasal process forms the primitive palate. During the growth of the palate the primitive nasal cavity extends upwards. On its lateral surface a series of ectodermal elevations appear. These fuse to form three main elevations into which mesenchyme migrates and later differentiates into osteogenic tissue. The three elevations become the superior, middle and inferior turbinates.

The maxillary sinus is the first paranasal sinus to appear and is initially represented as a depression in the nasal wall below the middle turbinate. The depression rapidly becomes a groove, grows laterally and invades the body of the maxilla. It may begin in the early postnatal period but usually occurs in late fœtal life (Tobin, 1973; Hamilton & Harrison, 1979).

At birth, the horizontal (transverse and anteroposterior) diameter of the maxilla are both greater than the vertical. The tooth sockets reach almost to the floor of the orbit.

Until late in the fourth fœtal month, the developing maxillary sinus remains internal to the nasal capsule as

a shallow oblong pocket at the inferolateral surface of the ethmoid infundibulum. During the fifth fœtal month, the shallow primordium of the maxillary sinus grows beyond the nasal capsule into the spongy bone mass of the maxilla (Blitzer et al., 1985). It expands into the maxilla during the first five to ten years of life (Tobin, 1973).

In adults the vertical diameter is the greatest, owing to the development of the alveolar process and the increase in the size of the sinus (Suenaga, 1980).

The growth of the maxillary sinus governs the eruption of the permanent molars, rotating them as it develops. It reaches its full size after the time of eruption of permanent dentition (Fawcett, 1952 ; Hamilton & Harrison, 1979).

The maxillary sinus does not evolve as an adaptation to something but is a residual space which is morphologically left over by the evolution of the surrounding organs (Negus, 1958).

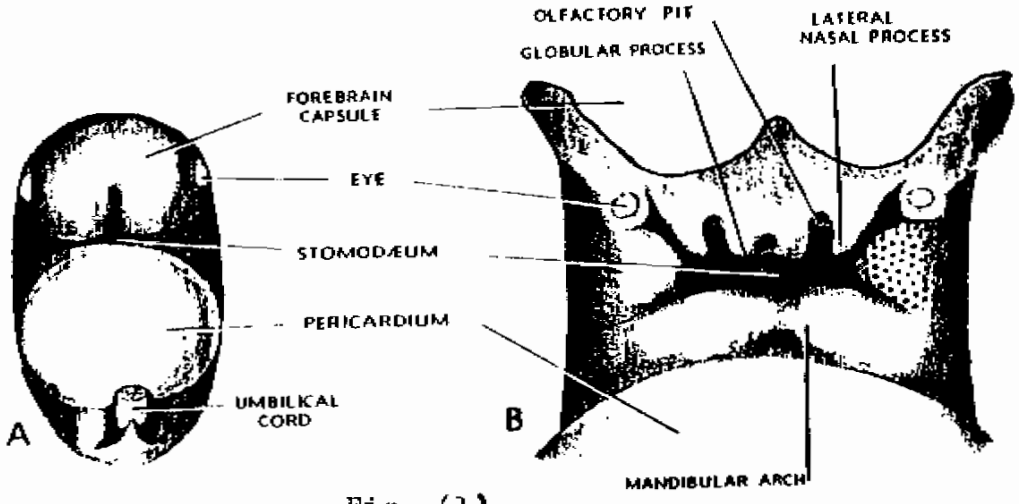

Fig. (1)

A. Ventral view of an early embryo, after the formation of the head fold. The slit-like stomodaeum appears between the forebrain capsule and the pericardium.

B. Ventral view of the stomodaeum at the next stage. From the forebrain capsule the frontonasal process grows down, it is divided by a pair of olfactory pits into a median and two lateral nasal processes. The median nasal process is divided by a midline pit into the globular processes. The stomodaeum is separated from the pericardium by the mandibular arch, from each side of which a maxillary process grows.

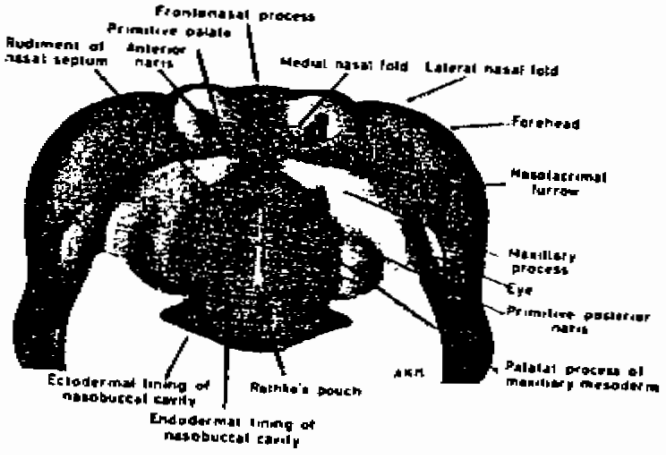

Fig. (2)

The roof of the stomatodaeum of a 13.5 mm. human embryo .
(Hamilton & Harrison, 1979).

B-ANATOMY OF MAXILLA

The maxillae are the largest bones of the face, excepting the mandible, and by their union form the whole of the upper jaw. They form most of the roof of the mouth, the floor and lateral wall of the nasal cavity, and the floor of the orbit, they also enter into the formation of the infratemporal and pterygopalatine fossae, and the inferior orbital and pterygo-maxillary fissures. Each maxilla consists of a body and four processes: zygomatic, frontal, alveolar and palatine.

THE BODY OF THE MAXILLA:

It is roughly pyramidal, it has four surfaces:

1) Anterior
2) Infratemporal (or Posterior)
3) Orbital
4) Nasal

these surfaces enclose a large cavity, the maxillary sinus.

* The Anterior Surface

Is directed forwards and laterally. Its lower part displays a number of slight elevations, which overlie the roots of the upper teeth. Above those of the incisor teeth there is a slight depression, the incisive fossa.

Lateral to the incisive fossa there is a larger and deeper depression, named the canine fossa; it is separated from the incisive fossa by the canine eminence, which correspons to the socket of the canine tooth.

Above the canine fossa is the infra-orbital foramen, the anterior end of the infra-orbital canal, it transmits the infra-orbital vessels and nerve.

Above the foramen a sharp border marks the junction of the anterior and orbital surfaces.

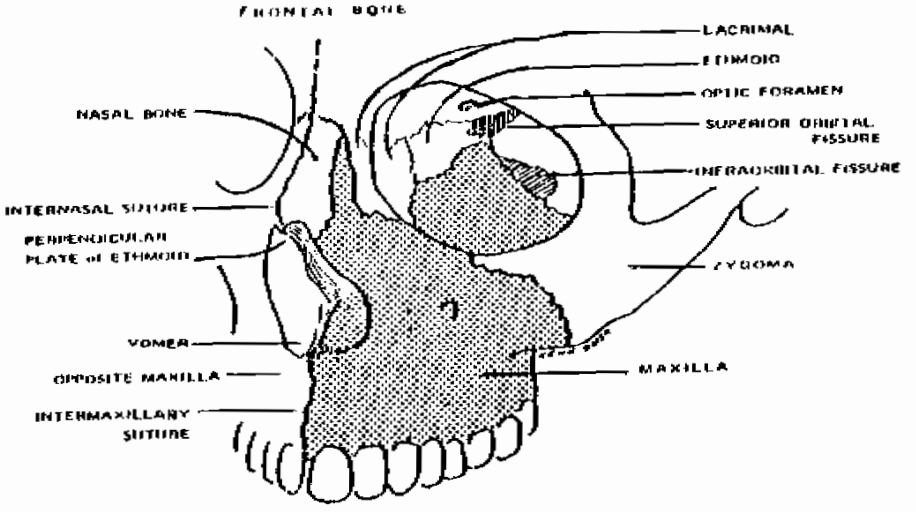

Fig. (3)

The maxilla, looking anteromedially. Articulation with seven other bones of the skull is shown: the lacrimal, ethmoid, frontal, nasal, vomer, zygomatic, and opposite maxilla.
(Baredes et al., 1985).

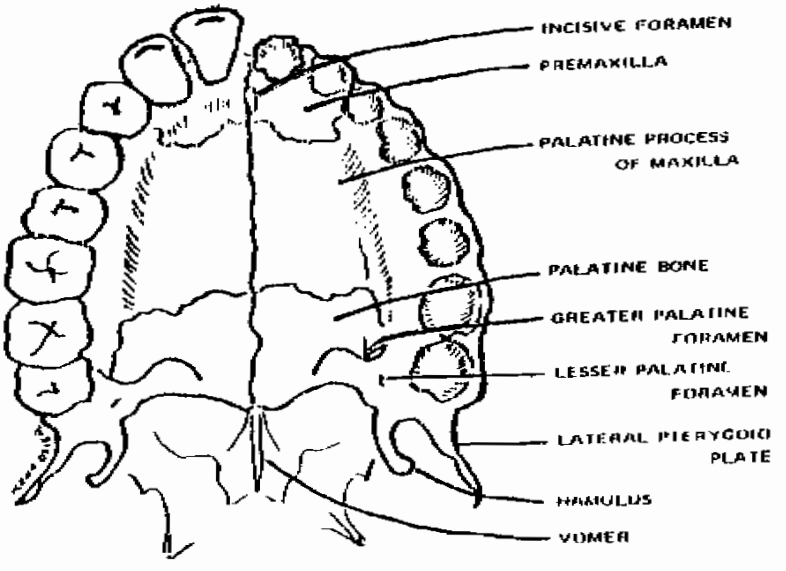

Fig. (4)

The palate. The articulation of the maxilla with the palatine bone, the premaxilla, and the opposite maxilla is shown.

(Baredes et al., 1985).

Medially the anterior surface terminates at a deeply concave border, the nasal notch, ending below in a pointed process which, with the corresponding process of the opposite maxilla, forms the anterior nasal spine.

* The Infratemporal Surface:

Is convex, directed backwards and laterally, and is the anterior wall of the infratemporal fossa.

It is separated from the anterior surface by the zygomatic process and by a ridge which runs upwards to that process from the socket of the first molar tooth.

It presents near its centre the apertures of two or three alveolar canals, which contain the posterior superior alveolar vessels and nerves.

At the lower and posterior part of this surface there is a round eminence, the maxillary tuberosity, which is roughened on the upper part of its medial aspect where it articulates with the pyramidal process of the palatine bone.

Above this a smooth surface forms the anterior boundary of the pterygopalatine fossa and is grooved by the maxillary nerve, the groove for this nerve is directed laterally and slightly upwards and is continuous with the intra-orbital groove on the orbital surface.

* The Orbital Surface:

Is smooth and triangular, and forms the greater part of the floor of the orbit. Its medial border presents a depression anteriorly, the lacrimal notch, behind which it articulates from before backwards with the lacrimal bone, the orbital plate of the ethamoid and the orbital process of the palatine bone. Its posteior border is smooth and rounded; it forms most of anterior margin of the inferior orbital fissure. Its anterior border forms a small part of the circumference of the orbital opening and is continuous medially with the lacrimal crest

the frontal process.

The infra-orbital groove, for the passage of the infra-orbital vessels and nerve, begins at the middle of the posterior border, where it is continuous with the groove near the upper edge of the posterior surface; it passes forwards and ends in the infra-orbital canal.

* The Nasal Surface:

Displays postero-superiorly a large, irregular opening, the maxillary hiatus which leads into the maxillary sinus.

At the upper border of this aperture there are parts of air sinuses, which are completed by the ethmoid and lacrimal bones.

Below the maxillary hiatus a smooth concave surface forms part of the inferior nasal meatus, and behind it there is a rough surface for articulation with the perpendicular plate of the palatine bones.

In front of the maxillary hiatus a deep groove, continuous above with the groove on the lacrimal bone, constitutes about two-thirds of the circumference of the nasolacrimal canal.

Anteriorly, the bone has an oblique ridge, the conchal crest, for articulation with the inferior nasal concha. The shallow concavity below this ridge forms part of the inferior meatus, and the surface above the ridge, part of the atrium of the middle meatus.

THE PROCESSES OF MAXILLA:

* The Zygomatic Process:

Is an irregular, pyramidal projection , where the anterior, infratemporal and orbital surfaces converge.

* The Frontal Process:

Projects upwards and backwards between the nasal and lacrimal bones. Its lateral surface is devided by a vertical ridge, the