بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

"Accuracy of Intraoral Digital Radiography in Assessing Maxillary Sinus-Root Relationship Compared to CBCT "

Thesis

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Esraa Ahmed Hassan

Dedication

To my great mother and father

For their endless affection,

encouragement and prays

To my precious sister

For being in my life

To my beloved husband

For his immeasurable support

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
ADC	Analog to Digital Converter
CBCT	Cone Beam Computed Tomography
CCD	Charged-couple-device
CMOS	Complementary metal oxide semiconductor
CT	Computed Tomography
MPR	Multiplanar Reconstruction
MS	Maxillary sinus
MSF	Maxillary sinus floor
PSP	Photostimulable phosphor plate
SPP	Storage phosphor plate
2D	Two-dimensional
3D	Three-dimensional

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INTRODUCTION AND REVIEW OF LITERATURE

♣ ***Maxillary sinus development and anatomy***

The maxillary sinuses ***(MS)*** are one of the four paired sets of the paranasal sinuses and the first to develop in fetal life. In the second month intra-uterine, an invagination starts to form in the lateral wall of the nasal fossa in the middle meatus[1]. By the third to fourth months intra-uterine, the sinus develops into a pouch and extends into the maxillary bone [2]**.**

At birth, it resembles a small sac, no more than 8 mm in length in the antero-posterior dimension[3]. Over time, these air-filled pyramid-shaped cavities bilaterally extend further laterally and inferiorly as the maxilla becomes more pneumatized[4]. When pneumatization involves the alveolar process, the cavity appears to develop around the roots of the maxillary teeth[1]. The MS continues growing until eruption of the permanent teeth[2]**.**

The adult sinus is variable in its extension, in half of the cases it extends into the alveolar process forming an alveolar recess. In these instances, the maxillary sinus floor ***(MSF)*** comes in close proximity to the roots of the maxillary posterior teeth. With the loss of the posterior teeth, the sinus can extend further inferiorly into the alveolar bone, even reaching the alveolar ridge in some cases[5].

The roof of the MS forms the orbital floor which is a thin bone wall with the infraorbital neurovascular bundle in its center. The anterior wall of the sinus contacts the canine fossa of the maxilla, while the posterior wall separates the sinus from the contents of both the infratemporal and

pterygomaxillary fossae. The MSF is formed by the maxillary alveolar process and the hard palate[5] (**Fig.1**).

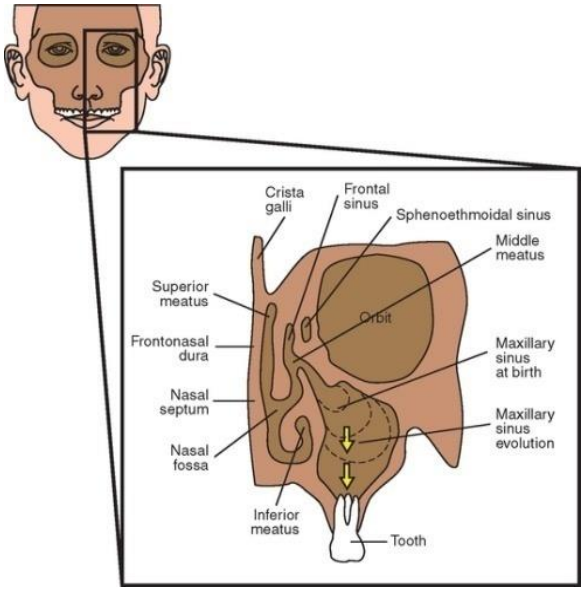

Figure (1): *Diagram of MS showing the shape, walls and development during the different growth stages*[6].

If the MS is extensively pneumatized, the MSF will appear to drape around the roots of the teeth or to be superimposed over them, giving the appearance of the roots penetrating the sinus. In these cases, the lamina dura of the maxillary posterior teeth may form a portion of the MSF[1] ***(*Fig.2*)***. The presence of radiopaque lines within the sinus may be folds or septa of cortical bone projecting from the walls and floor of the MS[7].

MS communicates with the nasal cavity through a complex known as the ostiomeatal complex. This complex is a functional entity of the anterior ethmoid bone and it is the common pathway for drainage and ventilation of not only the MS, but also the frontal and anterior ethmoid sinuses[8] (**Fig.3**).