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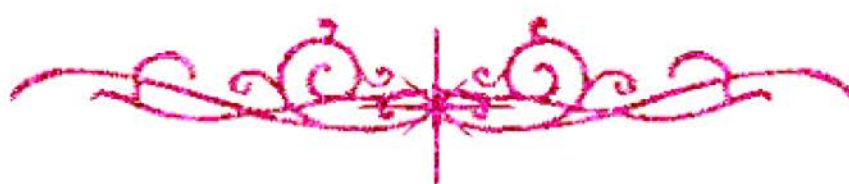
بسم الله الرحمن الرحيم



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شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

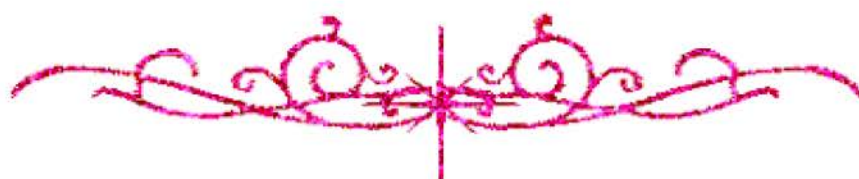
قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



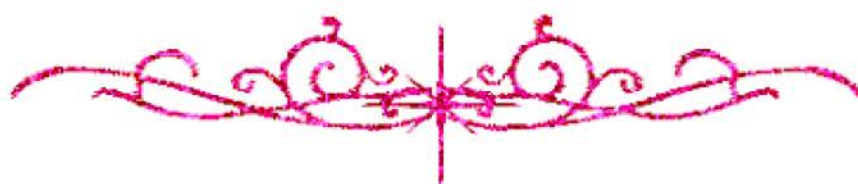
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شبكة المعلومات الجامعية



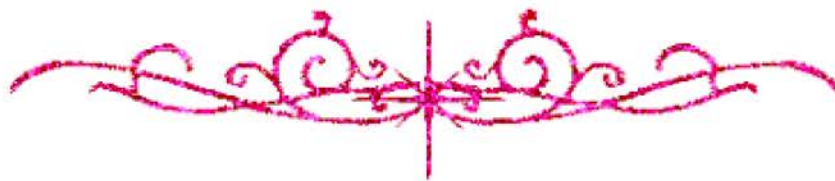
بعض الوثائق الأصلية تالفة



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بالرسالة صفحات
لم ترد بالأصل



B 18497

**EVALUATION OF THE ROLE OF CT IN DIAGNOSIS OF
PATIENTS WITH CHRONIC NON-SPECIFIC SINUSITIS**

Thesis

Submitted to the Faculty of Medicine
University of Alexandria,
in Partial Fulfilment
of the requirement of the degree of

Master of Radiodiagnosis

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INTRODUCTION

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Chronic non specific sinusitis is an inflammatory disease of the paranasal sinuses whether precipitated by infection or by allergy.

The clinical diagnosis of sinusitis is usually based on symptoms indicating maxillary or frontal sinus involvement. The maxillary and frontal sinus affection is more frequently than the ethmoid sinuses. Conventional paranasal sinuses radiographs can usually demonstrate such maxillary or frontal sinus disease but incompletely delineate ethmoid sinusitis.⁽¹⁾

CT scan with coronal and axial views, bone and soft tissue windows allows accurate assessment of complication of sinusitis and aids in planning for the surgical treatment.⁽²⁾

Development and Anatomy of the Paranasal Sinuses

All of the paranasal sinuses originate as evaginations from the nasal fossa. They are lined by a pseudo-stratified columnar ciliated epithelium, the mucosa is loosely adherent to the bony walls of the sinuses.^(3,4)

The frontal sinuses are the only paranasal sinuses to be absent at birth, and they start to develop only after the second year of life. The final adult proportions are reached only after puberty.^(4,5)

The ethmoid sinuses begin formation in the fifth foetal month, when numerous separate evaginations arise from the nasal cavity. These cells continue to grow and honeycomb the ethmoid bone until late puberty. These cells are grouped as anterior, middle and posterior according to the location of their ostia.^(5,6,7)

The sphenoid sinus emerges in the fourth foetal month as evaginations from the posterior nasal capsule into the sphenoid bone. The degree of pneumatization is variable. The sinus starts its major growth in the third year of life and by age of 10 to 12 years, the sinus obtains its adult configuration.⁽⁸⁾

The maxillary sinus is the first of the paranasal sinuses to form. At approximately the seventeenth day of gestation, a small ridge develops just above the inferior turbinate which marks the future uncinate process. At birth, a sedimentary sinus approximately 7 x 4 x 4 mm is present with its longest dimension in the antero-posterior axis.⁽⁹⁾

The ostium of the antrum is on the highest part of the medial wall and is approximately 4 mm in diameter. The channel of the infundibulum is approximately 5 mm long and is directed upward and medially via the hiatus semilunaris opens into the nasal cavity.^(10,11,12) **(Figure 1).**

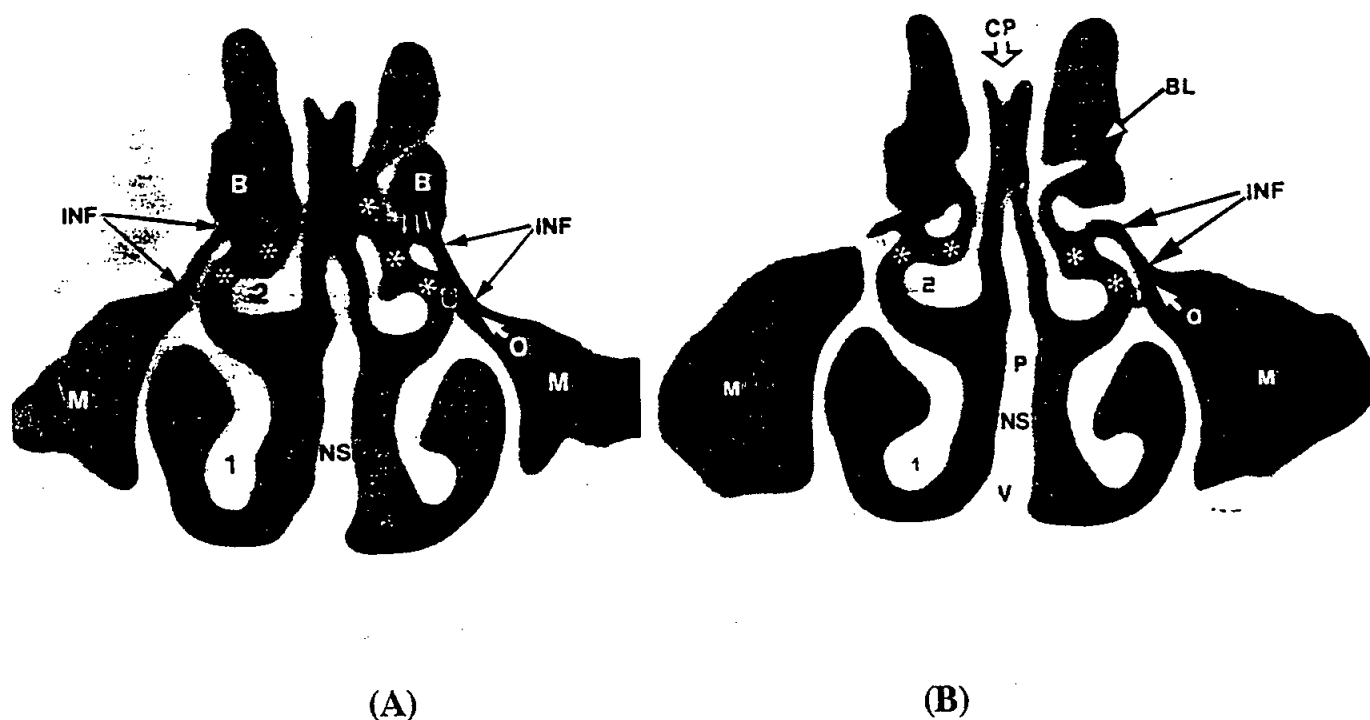


Figure I: Diagrams for: Normal anatomy of the ostiomeatal unit as seen on CT:

- A) The infundibulum (INF) is delimited inferiorly by the maxillary sinus ostium (O), medially by the uncinate process (U), superiorly by the ethmoidal bulla (B) and laterally by the inferomedial orbit. The air space surrounding the ethmoidal bulla infero-posteriorly is the hiatus semilunaris (small arrow).
- B) The middle turbinate (2) has dual attachments: A high vertical one to cribriform plate (CP) and a horizontal one to the lamina papyracea, the basal lamella (BL). The air containing space between the uncinate process (U) and the middle turbinate is the middle meatus (*)(13)

RADIOGRAPHIC TECHNIQUE TO EVALUATE THE PARANASAL SINUSES

I. Plain Films:

For routine examination of the paranasal sinuses; there are four projections, Caldwell view, Waters view, submentovertex view and lateral view.

The lateral film is taken either as a cross-table lateral film with a horizontal beam or with the patient erect. The film allows any free fluid present to be clearly identified as an air-fluid level.

Supplemental views may include the oblique projection (Rhese view), other craniocaudal angulations of the frontal projection (transorbital, posteroanterior projections). Towne views, the Granger view and the modified waters view.^(6,14)

II. Sectional Imaging Techniques:

Plain films will underestimate the extent and presence of soft tissue disease and bone erosion, whenever fine mapping of a disease is required, some form of tomographic examination is indicated. Three modalities can provide this information.

A) Multidirectional Tomography:

It was the traditional tomographic tool prior to the early 1970 s. It provides fine bone detail and gross assessment of soft tissue masses.

Direct coronal studies, lateral (sagittal) studies are easily obtained, while base (axial - transverse) projections are difficult for the patient because positioning is uncomfortable.⁽¹⁴⁾

B) Computed Tomography CT:

Prior to CT scanning, disease extending beyond the bony boundaries of the sinuses into the adjacent soft tissues, including the orbits and brain, was difficult to assess.

The improvement in contrast resolution that C.T. offers over plain films and pluridirectional tomography, allows for the evaluation of subtle changes of the soft tissues, bones and air containing spaces.^(14,15)

Technique:

The basic CT scanning protocol should include all of the paranasal sinuses, hard palate, and maxillary teeth, skull base, orbits, and nasopharynx. The study is performed with the patient supine with the patient's sagittal plane in a vertical position and the inferior orbitomeatal