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內文：

**Abstract :**

This paper presents a case of maxillary sinus unilateral aplasia, an uncommon condition in adults, diagnosed as an incidental finding during cone-beam computed tomography (CBCT) examination for an endodontic case analysis

**Introduction :**

**CBCT**

- Cone-beam computed tomography (CBCT) examination is one of the possible radiographic analyses available for assessment in clinical endodontics .
  1. diagnosis of pathosis, dental resorption evaluation
  2. differential diagnosis of diseases of non-endodontic origin
  3. assist determination of canal morphology
  4. pre-surgical assessment before root end surgery
- Evaluation of the maxillary sinus in dentistry can be required for implant site assessment , endodontic surgery planning and in the diagnosis of maxillary inflammation of dental origin and oroantral fistulae .

**Incidental finding**

- Incidental findings have been defined as ‘findings that appear unrelated to the scan’s original purpose’
- those involving CBCT frequently involve sinus pathologies. Their incidence in CBCT tests for dental assessment procedures, including implant, orthodontic, endodontic and temporomandibular joint (TMJ) disorder patients has been found to be 24.6%
- For endodontic patients in particular, the occurrence of findings without direct significance to the original treatment has been found to be 33% and mainly involving the airways
- A 56.3% prevalence of pathology was detected in one or both sinuses using CBCT scans, which had been prescribed mostly for implant assessment and trauma or secondarily for extraction, orthodontic treatment planning, neoplasia or sinus analysis

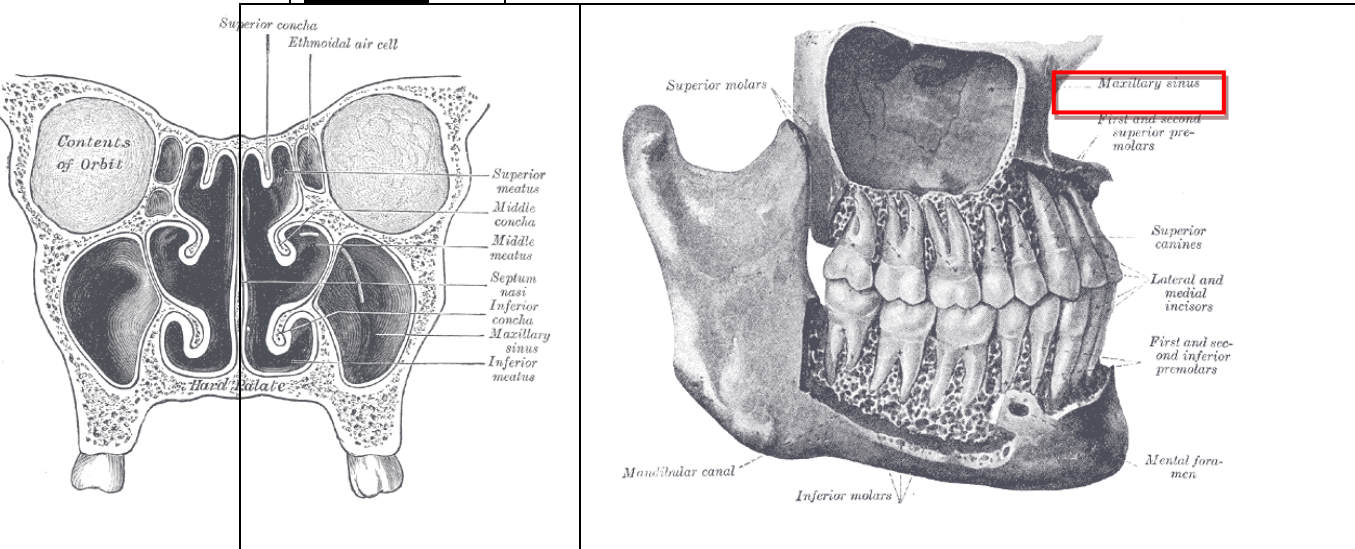
**Maxillary sinus**

- The maxillary sinus is normally the largest of the paranasal sinuses with a volume of approximately 6–8 cm<sup>3</sup> although their size varies depending on the individual and their age

<b>Mesial</b>	part of the <u>lateral part of the nose and the apex extends into the zygomatic process of the maxilla</u>
<b>Roof</b>	<u>floor of the orbit</u>
<b>Floor</b>	<u>alveolar process and part of maxillary palatine process and is related to the upper posterior teeth root apices</u>

**Anterior and posterior**

facial wall and infratemporal surface of the maxilla respectively.



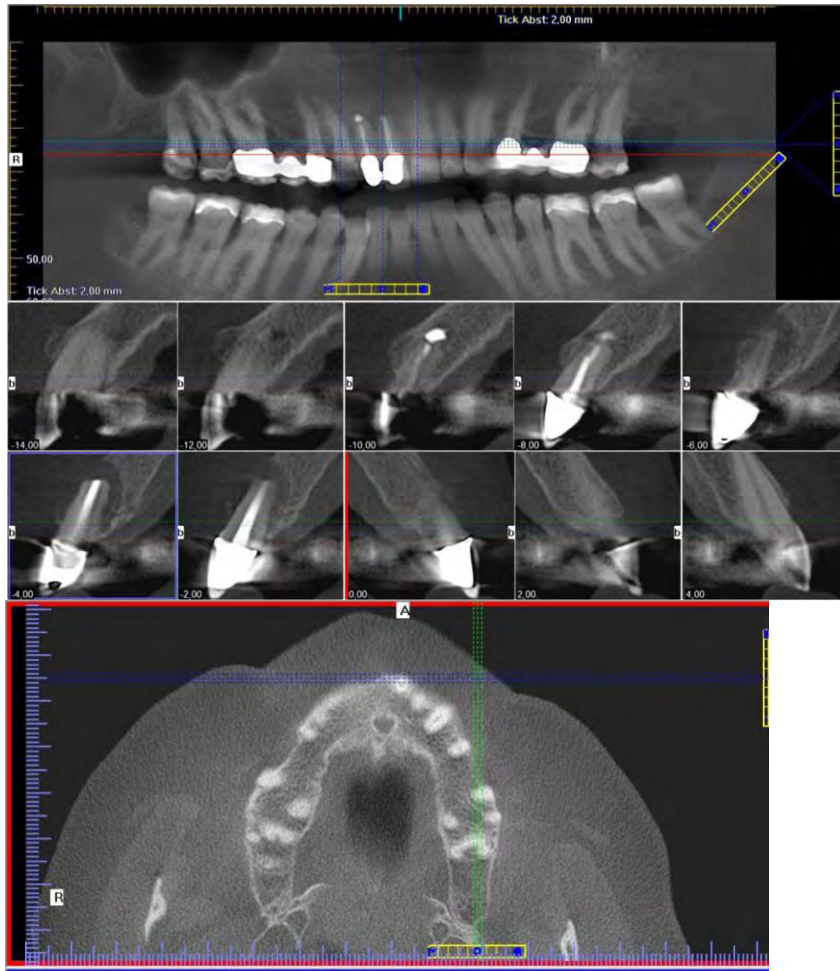
- Maxillary sinus aplasia is a failure of sinus development and it presents as only a shallow cleft in the lateral nasal wall, an extremely rare condition
- The precise aetiology is uncertain though it has been suggested to be related to abnormalities in intrauterine development or reduced nasal ventilation due to sinusitis in the first year of life
- The aim of this paper is to present a case report highlighting maxillary sinus absence encountered as an incidental finding during radiographic examination using CBCT prescribed for endodontic case analysis purposes

**Case report :**

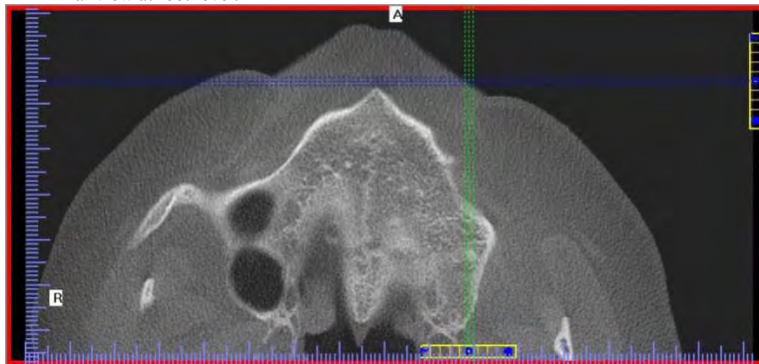
- A 58-year-old Caucasian female with no significant medical background was referred to an endodontic practice for management of her maxillary right central incisor
- The patient's chief complaint was a 2-year history of recurrent swelling and purulent discharge associated with this tooth and a concurrent history of recurrent and severe otitis media; A preoperative periapical radiograph of the upper right anterior teeth shows that the incisors have root canal fillings and resected roots; an apical radiolucency is associated to the central incisor



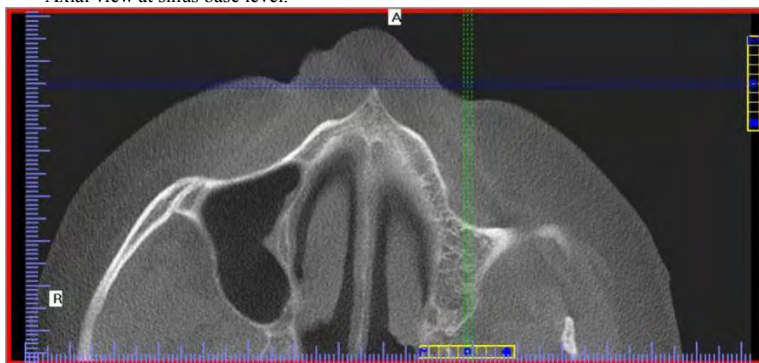
- The patient was referred to a local radiography center for a CBCT scan; an i-CAT scanner (Imaging Sciences International, Hatfield, PA, USA) was used. CBCT scans (panoramic reconstruction and axial slices) showed a total lack of pneumatisation of the left maxillary antrum (Figs 2–7) leading to the diagnosis of maxillary sinus aplasia



Axial view at root level.



Axial view at sinus base level.



Axial view at mid-sinus level.



Axial view at mid-sinus level superior.

**Discussion :**

	CT,MRI	CBCT
Soft tissue discrimination	Higher	Lower
Visualisation of the bone and sinus	The same	
Radiographic dosage	Higher	Lower

- Paranasal sinuses may have a great diversity of anomalies involving **most frequently the frontal sinus** and less often the other sinuses; the agenesis of the maxillary sinus is a very rare anomaly

**Compared to previous**

- Literature on maxillary sinus aplasia is presented mainly by case reports using CT evaluation. To the best of our knowledge, no case report has previously been reported in the literature involving the use of CBCT

**Radiological differential diagnosis**

- developmental abnormalities of the antra can be misdiagnosed as sinusitis or neoplasm
- Planar films are considered unreliable to differentiate these entities and tomographic examinations are required to contribute to a more accurate diagnosis It is necessary to draw attention to the fact that is often difficult to differentiate between severe hypoplasia and aplasia though CBCT and CT imaging can prove useful for this purpose
- In our case report, the scan is not extended to show the area where the left antrum would have been on its most superior aspect; therefore, definitive diagnosis of aplasia or hypoplasia cannot be confirmed. It is worth noting that there is some degree of overlap in terminology as an authoritative classification of maxillary hypoplasia describes its type III as ‘a profoundly hypoplastic, cleft-like sinus’, which is similar to the definition of aplasia used by Güven *et al*

**Field of view**

- This is of particular relevance in case a CBCT scan with a larger field of view (FOV) than required or ideal is obtained, to ensure that nothing is overlooked in the areas of non-dental interest and the patient gains the maximum advantage from the scan
- Sinus aplasia is a developmental variant and requires no treatment; therefore, communication of the findings was considered sufficient in this case. Flattening of the malar region is usually indicative of an underlying maxillary deficiency in the midface region. The radiographic analysis confirmed the clinical findings; flattened appearance of the overlying soft tissues in the region of left maxillary deficiency subsequent to sinus aplasia, when compared to the contralateral side
- In this case, a medium FOV size scan was used; however a small volume FOV,

with high resolution, would have better suited the scan's original purpose. This FOV was used because the local imaging centre only offered this image size since at the time, only a 'classic' i-CAT scanner model was available there

- CBCT examinations should use the smallest volume size compatible with the clinical situation in order to provide the minimal possible radiation dose to the patient as the dose received is strongly correlated to FOV size

**Summary,**

- this report presents a case of unilateral maxillary sinus aplasia, an uncommon condition in adults, diagnosed as an incidental finding during CBCT examination as part of an endodontic case analysis. This highlights the importance of the fact that scans should be interpreted by adequately trained and experienced radiologists or dentists, in order to provide the maximum benefit to the patient

1	拔除下列哪一顆牙齒時，最容易造成上顎竇(Maxillary sinus)穿孔的問題？
	(A) 上顎第一大白齒 (B) 上顎第一小白齒 (C) 上顎犬齒 (D) 上顎正中門齒
答案(A)	出處：Contemporary Oral and Maxillary Sugery Fifth edition p.390
題號	題目
2	上顎竇(Maxillary sinus)開口位於鼻腔何處？
	(A) 上鼻道 (B) 中鼻道 (C) 下鼻道鼻咽腔 (D) 鼻咽腔
答案(B)	出處：Contemporary Oral and Maxillary Sugery Fifth edition p.383-p384