Osteoma or antrolith of the maxillary sinus

A case report and review of the literature

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Abstract

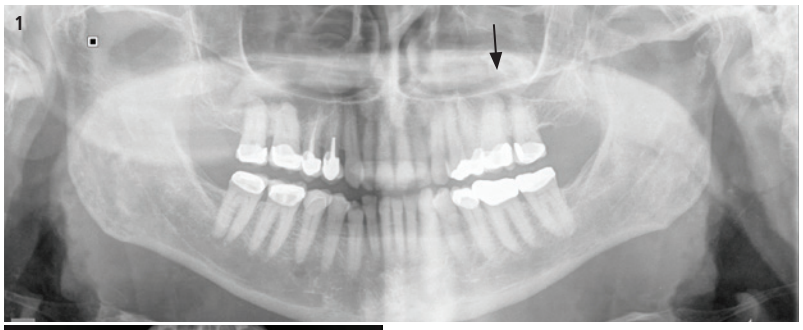
German: Osteome sind der Definition nach gutartige und langsam wachsende Knochentumore, die sich häufig im Unterkiefer und weniger im Oberkiefer entwickeln. Wenn allerdings Osteome im Oberkiefer gefunden werden, dann befinden sich diese eher in der Stirn- als in der Kieferhöhle.[1] Hier muss eine Unterscheidung von Patienten mit multiplen Osteomen, so wie sie beim Gardner-Syndrom vorkommen, getroffen werden.[2] Antrolithen (aus dem Englischen: „antrolith") hingegen kommen ebenfalls selten in der Kieferhöhle vor und bestehen aus einem dystrophisch verkalkten Nidus von Fremdmaterial. Antrolithen können entweder exogenen oder endogenen Ursprungs sein und sind häufig mit einer chronischen Sinusitis assoziiert. Endogene Nidusse treten häufiger auf, sind in vielen Fällen das Ergebnis einer periapikalen Zahnentzündung und können Schleim, Eiter oder Blut enthalten. Der Nidus exogenen Ursprungs ist eher seltener und wird durch Fremdkörper wie Schnupftabak oder Papier verursacht.[3] In diesem Artikel wird über den recht seltenen Fall eines älteren männlichen Patienten mit einer verkalkten Masse in der linken Kieferhöhle berichtet. Diese wurde röntgenologisch entdeckt, nachdem der Mann aufgrund eines Sturzes eine Fraktur des linken zygomatischen Komplexes erlitten hatte.

English: Osteomas are defined as benign slow growing bone tumours which frequently develop in the mandible and less in the maxilla. However, osteomas of the head if found are more frequent in the frontal sinus and rarely in the maxillary sinus.[1] This must be distinguished from patients with multiple osteomas as is found in Gardner's syndrome.[2] Antroliths on the other hand, are also rare in the maxillary sinus and are composed of a nidus of foreign material that has undergone dystrophic calcification. Antroliths can be either of exogenous or endogenous origin and are often associated with chronic sinusitis. Endogenous niduses are more common and are frequently the result of periapical dental inflammatory origin. These can consist of mucus, pus, or blood whilst less commonly the nidus of exogenous origin and is as a result of foreign bodies such as snuff or paper.[3] This report is of a very rare case of an elderly male patient with a calcified body in the left maxillary sinus which was detected radiographically when he sustained a left zygomatic complex fracture due to a fall.

Case report

The patient was a 79-year-old male patient who sustained a fracture of the left side of the face following a fall at home which rendered him temporarily unconscious. He did not seek medical advice nor had he been seen by an emergency unit after the accident. The author, a Maxillofacial Surgeon, was the first to examine him. No neurosurgical observation for the episode was undertaken as the fall had occurred more than 24 hours before he was initially seen. His past medical history revealed that he was on medication for high blood pressure which was controlled. He was also on medication for elevated cholesterol and for the prevention of kidney stones.

Extra-oral examination of the patient revealed that he had circum-orbital oedema and swelling of the left orbit. The left eye was almost closed and no subconjunctival haemorrhage was found at that stage, but it subsequently developed. There was anaesthesia on the left face in the distribution of the infra-orbital nerve which extended over the left cheek, the left side of the nose and as far as the midline of the upper lip. Although he had swelling of the left side of the face as the incident had occurred more than 24 hours previously, one



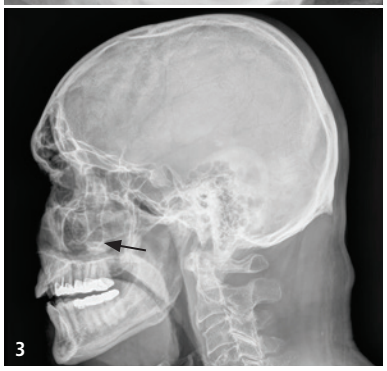


Fig. 1: Orthopantomograph of the patient showing the fractured left maxillary sinus and a poorly defined radiopacity within the sinus. – **Fig. 2:** The submentovertical view showing the fractured left zygomatic complex. – **Fig. 3:** The lateral radiograph showing the foreign body within the left maxillary sinus.

could still see that the left side of the face was flat as compared to the right and there was also a clinical suspicion of a fractured zygomatic arch resulting in limited mouth opening. He appeared to have full eye function and there was no drop of pupillary level, but owing to the gross oedema, this was difficult to evaluate.

On intra-oral examination, the occlusion seemed relatively normal, but the patient complained of some disocclusion on the left side and that his teeth were not meeting correctly. There was anaesthesia of all the maxillary teeth on the left side from the midline to the second molar. This corresponded to the damage to the infraorbital nerve which he had sustained. The dentition was almost complete except for the wisdom teeth and there appeared to be no mandibular fracture. There was tenderness and a mild haematoma in the upper left buccal sulcus when palpated. At the initial consultation no radiographs were available and these were ordered for the patient. This included an orthopantomograph, plain and CT images. The orthopantomograph showed a poorly defined radiopaque body in the left maxillary antrum (Fig. 1). The plain radiographs in the submentovertical view showed the fractured left zygomatic arch (Fig. 2). The foreign body within the left maxillary sinus was clearly seen on the lateral skull radiograph (Fig. 3).

The CT scans were taken in all three dimensions, namely axial, coronal, and sagittal as well as reconstructions. The report from the radiologist confirmed a fracture of the left zygomatic complex and arch. It also noted the presence of a distinct radiopaque body within the fractured left maxillary sinus. This was well visualised in the sagittal (Fig. 4), axial (Fig. 5) and coronal views (Fig. 6). The fracture itself was also well seen and there appeared to be a cloudy radiopacity of the whole left sinus possibly due to haemorrhage into the sinus. None of the views showed conclusively that the radiolucent body was attached to the medial wall, floor, roof or lateral wall of the sinus. There also appeared to be a mild cloudy radiopacity of the right sinus which could be associated with sinusitis. The radiographic

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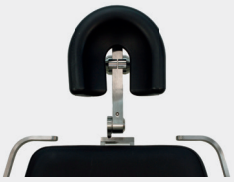
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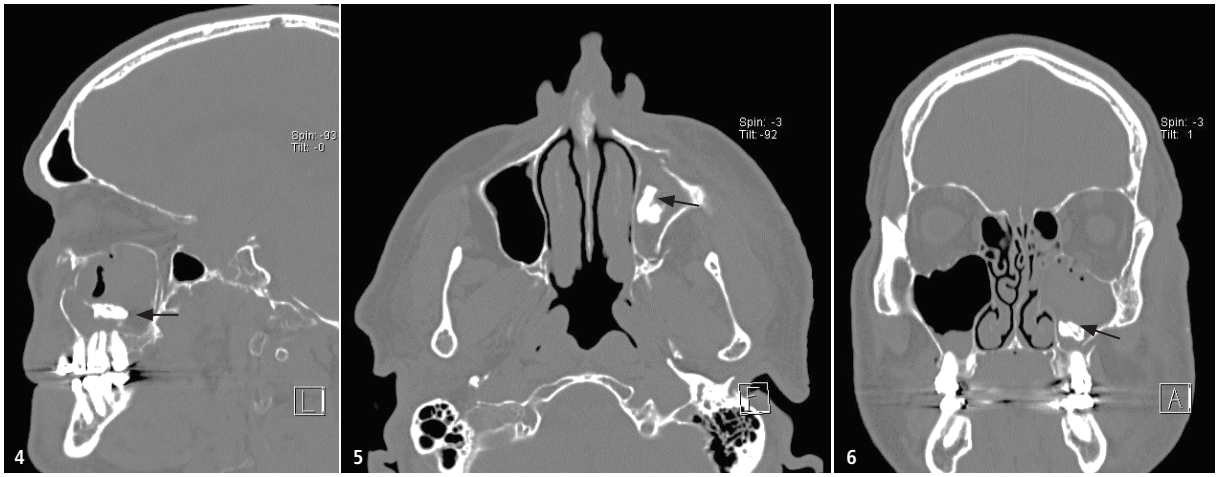

Figs. 4–6: Sagittal, axial and coronal CT views showing the fractured left maxilla and the intra sinus radiopacity.

differential diagnosis for the foreign body included a displaced tooth, antrolith or osteoma.

At operation the foreign body was removed from the left sinus by means of a Caldwell-Luc approach using the existing fractures and enlarging these (Fig. 7). The foreign body was approximately 25 x 15 x 10 mm and removed in two pieces to facilitate removal through the approach. It was dark in colour and hard in consistency. Thereafter the sinus was well debrided and irrigated. The fractures were treated using an open reduction and a BIPP antral pack which was left *in situ* and removed at a later stage. The fractured zygomatic arch was treated using a Gillies approach. The areas were closed using resorbable sutures. The foreign body as well as the antral contents were sent for histopathological examination.

Histology

The specimen consisted of two irregular masses of hard tissue 25x15x10 mm and 5x4x3 mm (Fig. 8). There were also irregular fragments of soft tissue. The hard tissues were decalcified. The microscopic examination of the hard tissues showed superficial cortical bone with isolated osteocytes in lacunae. The bone also contained reversal lines indicating a process of resorption and subsequent deposition of bone. The adjacent trabecular bone was acellular. The soft tissue showed antral mucosa lined with a respiratory epithelium and polypoid structures containing a chronic inflammatory cell infiltrate indicating a chronic sinusitis (Fig. 9). The histology showed cortical bone with reversal lines is usually associated with a chronic inflammation and a periostitis with underlying irregular trabecular bone as seen in Garre's periostitis. The aetiology of the osteoma could have been due to the presence of a long-term sinusitis with the development of an intra-sinus periostitis.

Discussion

The accidental finding of a body in the maxillary sinus of this patient raised some questions as to its origin. The incidental finding of a hard tissue mass in the left maxillary sinus associated with the fractured maxilla and zygomatic complex was initially thought to be a displaced tooth, osteoma or an antrolith. The histology revealed that the mass consisted of cortical bone with irregular trabecular bone, indicating that this had the appearance of an osteoma and was unlikely to be an antrolith. There was an associated chronic sinusitis. The radiographic views as well as the CT views were not conclusive as to the origin of the osteoma as there was no attachment to any of the sinus walls. The possibility was considered that the osteoma had been fractured from the sinus walls due to the trauma.

Rawlins confirmed that the osteoma was rarely found in the maxillary antrum.[4] Furthermore, he stated that "an osteoma is more or less an encapsulated bony tumour attached to the bone from which it arises." In this particular case the calcified body was not attached to any bone. On some of the CT scans the outline of an osteoma may have been related to the medial wall, but it was definitely not attached to it. In the coronal view, the radiopaque body appeared possibly to be related the floor of the sinus but not attached to the medial wall at all. Viswanatha defined osteomas as "benign tumours characterised by the proliferation of compact or cancellous

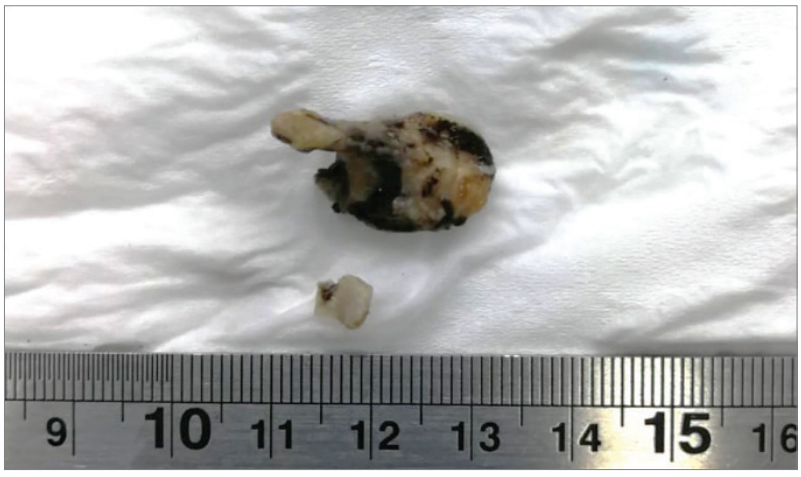

Fig. 7: The foreign body hard tissue from the left maxillary sinus measuring 25x15x10 mm and a smaller fragment of hard tissue.

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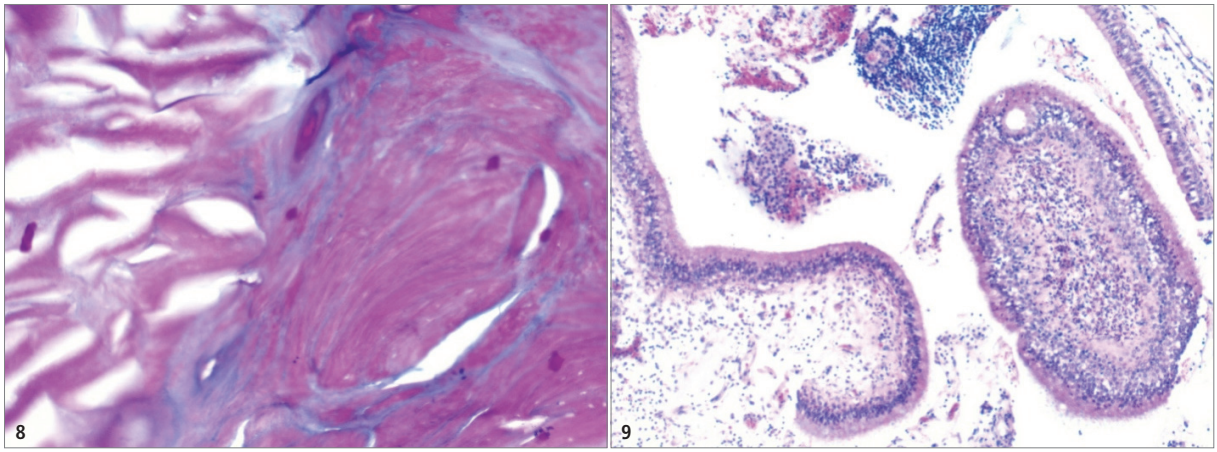

Fig. 8: The histology of the decalcified hard tissue showing cortical bone and adjacent regular trabecular bone (200x). – **Fig. 9:** The soft tissues from the left maxillary sinus showing polypoid structures and a chronic sinusitis (200x).

bone."[5] In this particular case, most of the lesion was composed of cancellous bone. It is for that reason that the orthopantomograph radiograph did not show the osteoma clearly in the left sinus.

In the report by Erlangovan and Srinivasa the maxillary antrolith was described as very rare and its origin could be either intrinsic or extrinsic.[6] They stated that larger ones presented with symptoms such as sinusitis, pain and nasal discharge and rarely epistaxis. In this case there was a degree of sinusitis reported in the left maxillary sinus and the right maxillary sinus also had radiological findings of a sinusitis. However, the patient did not complain of a sinusitis or any pain prior to the accident. Epistaxis was noted only after the accident and was presumably due to the accident itself. The central core of an antrolith could be endogenous in origin and could include tooth, bony fragments, mucous and fungi.[6] The central body in this case appeared to be of bony origin, and did not include any teeth, blood or pus. It is therefore entirely possible that it was an antrolith with a bony nidus and not a true osteoma. Bezerra et al. said that the radiological appearance could also suggest the possible presence of a root which had been displaced into the maxillary antrum.[7] This could have happened years beforehand when the wisdom teeth were removed, but this was not found on histological examination and basophilic material highly suggestive of bone was found.

Both osteomas and antroliths were rare conditions often found on radiology alone. When radiopaque bodies were found in the maxillary antrum, as seen in this case, removal was by means of a Caldwell Luc approach. This is internationally recognised as the operation of choice for the removal of these bodies as described by Das et al.[8] Not only could the Caldwell Luc approach be used to remove the foreign body, but it is also could be used to close oroantral fistulas, osteonecrosis of the jaw and epistaxis control. Hence the removal of the foreign body in our case followed international accepted norms and procedures.

Conclusion

The presence of a root of a displaced tooth was considered in the differential diagnosis but this was not found. There was no attachment either of the foreign body to any of the walls of the maxillary sinus as is seen in osteoma formation although the radiological and histological features suggested it. It is possible that an osteoma could have been the original pathology with this being dislodged in the accident. It is also possible that an antrolith formed with the nidus being of bony material and not of mucous or tooth bearing material as is often found. Whatever the origin of the foreign body, be it an osteoma or antrolith, the lesion was removed by means of Caldwell Luc operation. The patient has healed well with no sequelae.

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Conflict of interest

There is no conflict of interest.

References

All references (1–8) can be accessed in the electronic form of this paper and via the following link: qr.oemus.com/9181

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