Massive maxillary radicular cyst presenting as facial fracture and abscess, a case report

Amos MJ¹, Dalghous A¹, Alkhabuli J² and Mizen KD¹
(1) Oral & Maxillofacial Surgery, Pinderfields Hospital, Aberford Road, Wakefield, West Yorkshire
(2) Faculty of Dentistry, Sharjah University, UAE.

Abstract: Radicular cysts arise from non-vital teeth. They are inflammatory in nature and are the most common cystic lesion found in the jaw. We present a case of a massive maxillary radicular cyst in a 20 year-old man, diagnosed following an alleged assault and facial fracture. Subsequent abscess formation was initially thought to be infection secondary to haematoma due to fracture, but further investigation showed that it was to be due to a massive cyst.

Introduction
Fractures of the facial bones are commonly found after physical fights. Fractures with no displacement of the zygomatico-orbital complex are often treated conservatively with oral antibiotics. This case report describes a patient who initially presented with what was suspected of being this type of fracture. Subsequent abscess formation led to further investigation and diagnosis of an unusually large radicular cyst extending throughout the entire left side of the maxilla. The cyst was thought to have arisen from a non-vital tooth, but despite a good root filling it was able to grow due to inadequate radiographic follow-up.

The clinician is reminded of the guidelines regarding radiographic follow-up of endodontically-treated teeth, and the vital role of general dental practitioner (GDP) in detecting early signs of cystic change. Initial presentation can appear to be routine, however, a pre-existing pathology may complicate the diagnosis. This patient illustrates a case of an unusually large radicular cyst and the role of the GDP in monitoring root-filled teeth.

Case report
History; A 20-year old man was referred to the maxillofacial department following a single alleged punch to the left side of the face. He complained of swelling and parasthesia of his left cheek, left lateral nose and upper left gingivae.

Clinical findings; On examination he had gross swelling of the left side of the face, but there was no bony deformity or bony tenderness. A fracture of the left lateral wall of the maxillary sinus was diagnosed on the basis of the occipito-mental (OM) radiographs (Fig.1) and he was treated conservatively with oral antibiotics. One week after his injury, a small haematoma was noted on the left cheek. He was advised to massage the haematoma to decrease its size and to return to the outpatient clinic in one week. Two days later he presented with increased oedema. On examination he was found to have a 3-cm x 3-cm fluctuant erythematous swelling of the external left cheek. He underwent incision and drainage of the suspected infected haematoma under general anaesthesia. More than 50 ml of purulent fluid was drained and the patient was discharged two days later.

An orthopantomograph (OPG) was taken to rule out dental abscess. The OPG (Fig. 2) showed radiolucency in the left side of the maxilla extending from the upper right central incisor to the upper left first molar, which had not been clear on the previous occipito-mental views.

Treatment: A computed tomography (CT) scan showed an extremely large lobulated lesion with a relatively well defined border extending from the upper right lateral incisor to the upper left first molar (Fig. 3). The lateral wall of the antrum was perforated. Due to the massive size of the lesion and its multi-lobulated nature on the CT scan, the diagnosis of an odontogenic keratocyst was suspected, but ameloblastoma could not be ruled out.

Following the OPG and CT results, a biopsy was performed at two sites under local anaesthesia. Histopathology reports indicated this was a cystic cavity lined with stratified squamous epithelium showing some hyperplasia. The wall of the cyst consisted of dense fibrous connective tissue with abundant chronic inflammatory cells, few mast cells, and eosinophils. The condition was diagnosed as a radicular cyst.

The cyst was enucleated by a Caldwell-Luc approach and was found to extend through the entire maxilla on the left side into the antrum, and distally to the second molar tooth. The postoperative course was uneventful. The patient required long-term follow-up to check for recurrence. He was referred to his GDP for thorough investigation and treatment of non-vital teeth.

Discussion
A radicular cyst is an odontogenic cyst of inflammatory origin preceded by a chronic periapical granuloma and stimulation of cell rests of Malassez found in the periodontal membrane. Rests of Malassez are remnants of Hertwigs’ root sheath. Although the source of the epithelium is usually a rest of Malassez, other sources, such as crevicular epithelium, sinus lining, or epithelium lining of fistulous tracts, have been suggested.
Radicular cysts are classified as epithelial-lined, inflammatory, odontogenic cysts (Table 1), and they account for approximately 70% of all jaw cysts [1]. They are always associated with non-vital teeth and develop from a proliferation of the cell rests of Malassez. They form within a chronic apical granuloma secondary to chronic inflammatory stimuli, commonly associated with necrotic pulp [1]. As in this case, they often remain asymptomatic even when very large. In the medical literature we found only three cases of radicular cysts involving the entire maxillary sinus [2, 3, 4], and only one causing facial infection [5]. We found no other cases of a radicular cyst presenting as facial fracture.

Table 1 Classification of epithelial lined cysts of the jaws (% of total) based on WHO classification

| Non-Odontogenic (10%) | Odontogenic (90%) |
|-----------------------|-------------------|
| Nasopalatine (5-10%)  | Inflammatory:     |
| Nasolabial (<1%)      | Radicular (70%)   |
| Globulomaxillary (<1%)| Paradental (3-5%) |
| Median (<1%)          | Developmental:    |

The diagnostic dilemma in this case was complicated by the presentation following an assault. Fracture of the lateral wall of the maxillary sinus was diagnosed on the OM views, and was assumed to be a routine case. The shadowing on the OM view was consistent with soft tissue swelling. A blood filled sinus was initially thought to be the result of the maxillary wall fracture (Fig. 1). The resulting infection was suspected to have arisen from the haematoma secondary to the fracture. In fact, the trauma may have been a factor causing infection of the existing cyst.

The patient’s teeth were mostly well maintained. The radicular cyst may have arisen from a previous upper right lateral incisor filling. The GDP has an essential role in investigating the vitality of all other teeth in order to be certain that no other cause has been overlooked. This case highlights the need to take serial radiographs to follow-up endodontically treated teeth in order to detect cystic change at early stages [6].

Conclusions
This case highlights the following points:
Radicular cysts are the most common cysts of the jaw. They are usually an incidental finding on radiograph, but rarely grow to extend to the entire maxilla.

- Root filled teeth should be assessed radiographically at least once a year following treatment to check for apical healing [6].
- Patients sometimes present with co-existing pathology, and clinicians should always be alert for other signs and symptoms.

References

1. Soames, JV. Southam J C. Oral Pathology. 3rd ed. pp73-77. Oxford: 1998
2. Gibson, GM. Pandolfi, PJ. Case Report: A large radicular cyst involving the entire maxillary sinus. Gen Dent. 2002 Jan-Feb; 50 (1): 80-1
3. Gadient, SE. Cina, MT, Ford, CN. Large radicular cyst in maxillary sinus. Journal of Wisconsin Dental Ass. 1976 Oct; 52 (10): 468-9
4. Rees, JS. Conservative management of a large maxillary cyst. Int. Endod. J 1997 Jan; 30 (1): 64-7
5. Hirvonen, TP. Ertama, L. An infected radicular cyst – a rare cause of facial cellulitis. Duodecim 1998; 114 (17): 1734-6
6. FGDP(UK) Good Practice Guidelines. Selection criteria for dental radiography. 2nd ed. 2004. Publication No: ISBN: 0 9543451 1 8