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Keratocystic Odontogenic Tumor- A Rapidly Growing and Painless Tumor: A Case Report

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Case Study

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ABSTRACT

The cyst known as an "odontogenic keratocyst" (OKC) has a dental origin and exhibits aggressive clinical characteristics, such as a high recurrence rate. After observing its biological behaviour and genetic anomalies such as neoplastic growth, a keratocystic odontogenic tumour (KCOT) has been classified as a "tumour." In order to distinguish the lesion from the orthokeratinizing variety, which is currently known as an OKC, the WHO working group recommended the term KCOT in 2005. This article emphasizes the clinical features, radiological features as well as treatment methods of OKC.

Keywords: Aggressive, Higher Recurrence Rate, Keratocystic, Odontogenic, Tumor.

Introduction

"Keratocystic odontogenic tumour" refers to the odontogenic keratocyst (OKC), a clinically aggressive cyst with a high incidence of recurrence and mitotic activity. The majority of KCOTs are single lesions. The mandibular molar area surrounding an unerupted tooth is the most frequent location. It is thought that changes in the dental lamina's cell rest results in the development of KCOT. In KCOT, a male predominance has been noted. Contrarily, few studies have indicated a predilection for women. A wide age range has seen

reports of KCOT, with the second and third decades showing the highest incidence. About 65-83% of KCOTs include the mandible, which is more frequently affected than the maxilla and mostly the posterior region. Odontogenic keratocysts typically appear on radiographs as a single radiolucency with well-defined sclerotic boundaries but they may also appear as a multilocular radiolucency. The bifid-rib basal cell nevus syndrome or Gorlin syndrome typically shows the presence of several keratocysts. KCOTs if not treated in earlier stages have been known to develop into ameloblastoma or primary intraosseous carcinoma (PIOSCC).[1,2]

Case Report

A 26-year-old male patient reported to the department of Oral Medicine and Radiology with a chief complaint of pus discharge and numbness in the lower front tooth region for 2 months. The patient was apparently asymptomatic 2 months back, then he noticed pus discharge along with mild pain in the lower front tooth region and also mentioned discomfort in the same region. According to the patient, the pain was localised, intermittent, and dull type. The patient also gave a history of extraction of the primary tooth in the lower front tooth region due to mobility by a dental practitioner, 7 years back. The patient's medical history was non-contributory.

On extra oral examination, no gross facial asymmetry was noted. Intraoral examination revealed that vestibular obliteration and sinus tract are present with respect to the 32,34 region (**Figure1b**). There is a missing 33 along with spacing with respect to lower anterior teeth (**Figure 1a**). Mobility was also present irt 34 and no tooth showed positive tender on percussion.

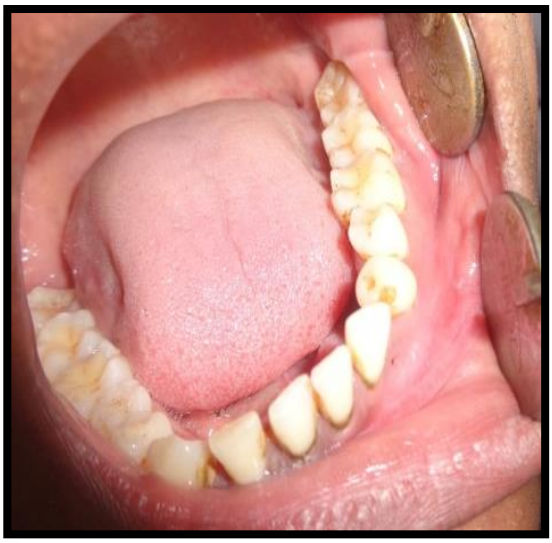

Figure: 1 (a)

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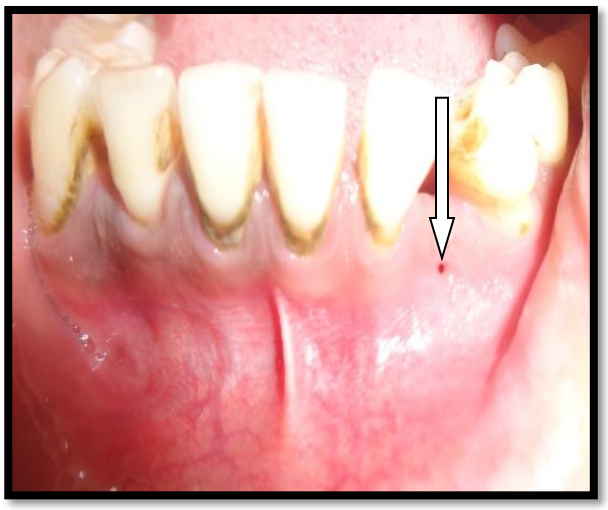

Figure: 1 (b)

For investigation, OPG was advised and it revealed a large well-defined multilocular radiolucency with a scalloped border involving the left posterior mandibular region and crossing the midline. The radiolucency was well-defined in shape and approximately 10x4 cm in diameter, extending anteroposteriorly from the left ramus of the mandible from the distal root of 38 to the right body of the mandible ie; with a distal root of 46 crossing the midline and superoinferiorly from 1cm below the upper border of the mandible till 0.5cm above the lower border of the mandible. Within the radiolucency, the presence of internal septa is evidently giving it a multilocular appearance. The radiolucent lesion shows evidence of an impacted tooth ie; 33 and the tooth is pushed at the lower border of the mandible due to the pressure exerted by the lesion. OPG revealed the lesion compresses the mandibular nerve and demolishes some parts of the mandibular canal. No root resorption or tooth displacement was seen in the radiograph. (**Figure.2**)

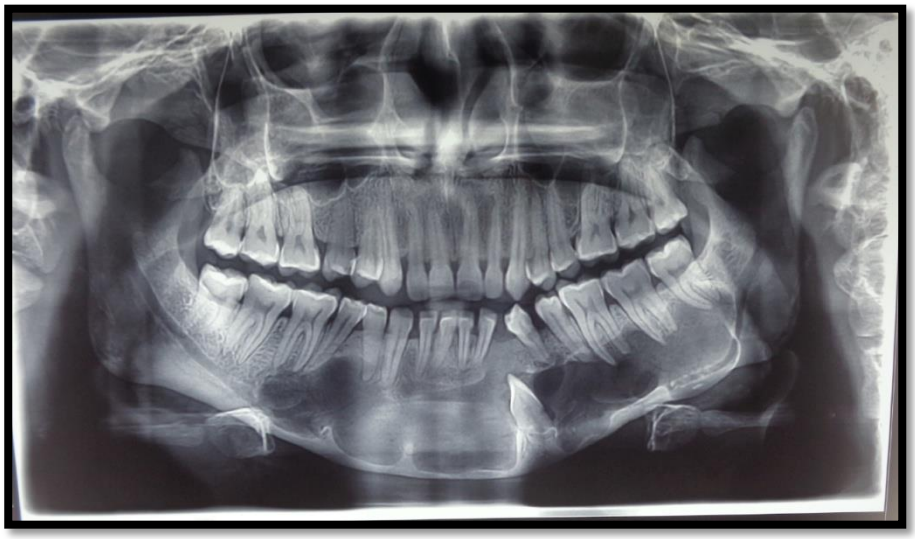

Figure: 2

After co-relating the clinical findings with the radiological findings, the provisional diagnosis was made as "Odontogenic Keratocyst". Differential diagnosis was given as "Dentigerous cystsirt 33" and "Ameloblastoma".

Later Fine Needle Aspiration Cytology (FNAC) was carried out. FNAC of the lesion yielded a yellow- coloured fluid mixed with blood which on cytological examination revealed inflammatory cells. Later the patient was sent for histopathological investigation and the final diagnosis of "Odontogenic Keratocyst" was given based on the histopathological report.

Discussion

Odontogenic keratocysts are typically believed to have originated from either the basal cell layer of the surface epithelium or the epithelial remains of the tooth germ. Due to its relatively high recurrence rate and frequent occurrence in the second and third decades, OKC is one of the most aggressive odontogenic cysts. Clinical characteristics include the possibility of local damage and its propensity for multiplicity, particularly when it is associated with Nevoid Basal cell Carcinoma or Gorlin-Goltz syndrome. Aside from several KCOTs, NBCCS is distinguished by bifid ribs, multiple epidermoid cysts, nevoid basal cell carcinomas, calcification of the falxcerebri, and frontal bossing. Due to their distinctive histopathologic characteristics, aggressive and infiltrative activity, and propensity to recur, keratocystic odontogenic tumours are of great interest in clinical practice and demand special care. A few variables that contributed to the keratocyst's reclassification as KCOT include 1. The KCOT shows extremely recurring and locally damaging activity. 2. In contrast to the orthokeratinized version observed in OOC, KCOTs have parakeratinized epithelium. KCOT exhibits numerous mitotic patterns and budding of the basal layer into the connective tissue. 3. The tumour suppressor gene PTCH is inactivated in the presence of KCOTs.[1,2,3,4]

In KCOT, a male predominance has been noted. Contrarily, few studies have indicated a preference for women. A wide age range has seen reports of KCOT, with the second and third decades showing the highest incidence. About 65-83% of KCOTs include the mandible, which is more frequently affected than the maxilla. It favours the back of the jaw in both the maxilla and the mandible. Most of the cases are unintentionally discovered during normal dental examinations. Swelling, discomfort, and paresthesia are the most typical indications and symptoms which is similar to this case. Discharge, abscess, trismus, and cellulitis may be seen if there is a secondary infection.[1,5,6,7]

Small, radiolucent, oval, or spherical spots with distinct sclerotic edges are how OKCs appear. Many are smooth-edged unilocular radiolucencies. Due to their scalloped margins, some unilocular lesions are mistaken for multilocular lesions. Because of the lesion's multilocular appearance in some cases caused by internal septa, it may sometimes be mistaken for ameloblastoma but ameloblastoma has a soap bubble or honeycomb pattern. A KCOT and a dentigerous cyst may not be able to be distinguished when the lesion is in the pericoronal position. If the cyst outline is attached to the tooth at a place apical to the cementoenamel junction, the lesion is most likely a KCOT. The radiological features of KCOT include 1. Radiolucency that is unilocular or multilocular and has clearly corticated borders, is frequently present with scalloping as seen in this case. 2. Minimal enlargement, particularly on the lingual (medial) side, and growth particularly medullary which is seen in this case. 3. A radiolucent lumen, which can seem hazy on conventional radiography, is visible and this hazy appearance is suggestive of keratin. 4. Extrusion of erupted teeth, separation of growing teeth or less frequently, resorption of the roots of erupted teeth.[3,8,9]

Some authors have classified KCOTs as parakeratotic or orthokeratotic subgroups histologically. These classifications relate to the lining's histologic features and the kind of keratin that is produced. The orthokeratotic subtype produces keratin that is more similar to the normal keratin produced by the skin than the parakeratotic subtype. The epithelium is classified as corrugated parakeratinized epithelium and has 6–8 cell layers with wavy parakeratotic epithelial cells. Palisaded hyperchromatic columnar to cuboidal cells in

the basal layer with keratinaceous material in the cystic cavity are frequently seen and referred it as a "picket fence" or "tombstone" appearance.[10,11,12,13]

The surgical treatment options for KCOT are divided into two categories such as aggressive and conservative. Enucleation, either with or without curettage, or marsupialization, is an example of conservative treatment. Although conservative treatments protect anatomical structures, they carry a higher risk of recurrence. Usually, aggressive therapy includes en bloc resection, chemical curettage with Carnoy's solution, or peripheral ostectomy.[14,15]

Conclusion

It is difficult to make a firm diagnosis of KCOT based on clinical and radiological features. However, with modern imaging techniques, we may strongly suspect this entity and can treat it on time. The best way to diagnose KCOTs is to correlate all the clinical, radiological, and histopathological characteristics in order to provide proper treatment modalities and so avoid recurrences. A long-term follow-up is crucial in such cases to avoid any recurrences.

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