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## **Keratocystic odontogenic tumour of maxilla and mandible – A case report**

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### **Abstract**

Keratocystic odontogenic tumor (KOT) is a benign odontogenic tumor with a potentially aggressive and infiltrative behavior. KOT most commonly occurs in mandible and demonstrates a unilocular, round, oval, scalloped radiolucent area, while large lesions may appear multilocular. An important characteristic feature of KOT is its propensity to grow in an antero-posterior direction within medullary cavity of bone causing minimal expansion. Definitive diagnosis relies on histological examination.

The lesion described later, was removed surgically via an intraoral approach under general anesthesia and histologically reported as a Keratocystic Odontogenic Tumour.

**Keywords:** Odontogenic cysts, computed tomography, x-ray, keratocystic odontogenic tumour

### **1. Introduction**

Cyst is a pathologic cavity which may or may not be lined by epithelium containing semisolid, liquid or gaseous material but without accumulation of pus<sup>[1]</sup>. The cyst that is derived from the remnants of the dental lamina, with the biologic behavior similar to benign neoplasm, with a distinctive lining of 6-10 cells in thickness, and that exhibits a basal cell layer of palisaded cells and a surface of corrugated parakeratin can be termed as Odontogenic Keratocyst, which ultimately was reclassified as Keratocystic odontogenic tumour (kot) in the year 2005<sup>[1]</sup>.

Keratocystic odontogenic tumor (KOT) is a benign odontogenic tumor that is potentially aggressive and infiltrative in nature<sup>[2]</sup>. KOT most commonly occurs in ramus and angle region of the mandible and demonstrates a unilocular, round, oval, scalloped radiolucent area, while large lesions may appear multilocular.

KOT accounts for almost 11% of all cysts in the maxillofacial region. There is a gradual predilection of it being unilocular, than multilocular.

### **2. Case report**

#### **2.1. History**

A 27-year-old male reported with the chief complain of deviation of jaw and bilaterally asymmetrical face with no other complaints. The patient was advised routine investigation, Orthopantomogram, suspecting deviation of the jaw due to cystic involvement. The OPG rather revealed multiple large radiolucent lesions. The teeth involved in the lesion were checked for vitality, using the electrical vitality test. The teeth involved were found out to be vital. The lesions were surgically removed via an intraoral approach under general anesthesia and histologically reported as KOT.

#### **2.2. Radiographic features**

The panoramic radiograph revealed multiple large radiolucent lesions in the upper quadrant with respect to 12-17 region; 22-26 region and in the lower quadrant with respect to 48. [Fig. 1]



**Fig 1:** Pre Operative Orthopantomogram of the patient showing the lesion

### 2.3 Histological features

H & E stained section showed cystic cavity lined by epithelial lining and fibrous connective tissue wall. Cystic epithelial lining showed corrugated parakeratinized stratified squamous epithelium 5-7 cell layer thick uniform in thickness and flat epithelial-connective tissue interface. There was evidence of folding of epithelial lining at places. Basal cell layer was prominent with hyperchromatic nucleus away from the basement membrane resembling Tombstone appearance. Underlying connective tissue showed mature collagen fibres, associated fibroblasts, areas of extravasation, focal collection of chronic inflammatory cell infiltrate, chiefly lymphocytes and plasma cells and satellite cysts. Numerous variable sized blood vessels diffusely scattered throughout the section were noted. Few areas showed numerous keratin flecks.

### 2.4 Surgical procedure

The surgical procedure was done under general anesthesia maintaining all the aseptic conditions. The patient was shifted to the Operation Theatre. Submental intubation was done in the patient, followed by which, painting and draping was done. After the patient was adequately anesthetized, Intra-oral crevicular incision was given in maxillary buccal gingiva. Modified wartz incision was given in right third molar region. Extraction of 48 was done and enucleation and curettage of cyst in 48 region. Carnoy's solution was prepared. Carnoy's solution is a mixture formed by 60% ethanol, 30% chloroform, 10% glacial acetic acid and 1 gram ferric chloride and placed in the region for 4 minutes. A window was prepared in the maxillary region for aggressive removal of cystic lining followed by enucleation and curettage with right and left sides. Impacted teeth removed from right and left maxillary region. Carnoy's solution was again placed on both the cavities and removed later after 4 minutes. Suturing was done with all the cavities.



**Fig 2:** Preparation of window for enucleation and curettage

known as the Odontogenic Keratocyst (OKC), which was later changed considering its neoplastic nature. It is a benign developmental odontogenic tumor. KOT has a tendency to grow along the internal aspect of the jaws that accounts for an important behavioral pattern of this entity [3]. Some characteristic features of this entity are: potentially locally destructive behavior, quite high recurrence rate and is usually found to be present in consistently nevoid basal cell carcinoma syndrome also known as the Gorlin syndrome [3]. The KOT arises from dental lamina and represents between 4–12% of all odontogenic cysts. The lesion occurs over a wide age range with a peak in the age group of 20 to 30 years old and demonstrates a predilection for white males [3, 4]. The mandible is more commonly involved with roughly one-half originating at the angle of the mandible [3, 5]. Since this entity is usually asymptomatic, it is usually detected incidentally during review of routine dental radiographs. Smaller lesions show unilocular radiolucencies with well-demarcated sclerotic margin, while larger lesions may become multiloculated with scalloped borders. CT scans and MRI scans may be useful in assessing the cortical perforation and soft tissue involvement. The factors that may lead to recurrence of KOT include: differences in the locations of the cysts, presence or absence of infection, associated teeth, involvement of mucosa, size of the lesion, and association with the Gorlin Syndrome. Its recurrence rate may be as high as 17–56% with simple enucleation, and if an adjunctive treatment is added, such as the application of Carnoy's solution [fig 2] or decompression before enucleation, the recurrence rate is reported to be between 1 and 8.7% [3, 6]. In this case Carnoy's solution, composed of 3 ml of chloroform, 6 ml of absolute ethanol, 1 ml of glacial acetic acid, and 1 g of ferric chloride, was used as an adjunctive treatment. The application of Carnoy's solution promotes a superficial chemical necrosis and is intended to reduce recurrence rates [7].

The differential diagnosis for KOT includes ameloblastoma, central giant cell granuloma, odontogenic myxoma, calcifying epithelial odontogenic cyst, and dentigerous cyst. The tendency for multiplicity associated with a gene level disturbance of chromosome 9 as in nevoid basal cell carcinoma syndrome, also referred to as Gorlin-Goltz syndrome. It is transmitted as an autosomal dominant trait [8]. Cysts like KOT can be adequately diagnosed by radiographic and histopathological investigations. Due to its recurring nature and neoplastic characteristics, a long term clinical and radiographic follow up of 3-4 years along with must be done.



**Fig 3:** Application of Carnoy's Solution

### 3. Discussion

The Keratocystic Odontogenic Tumor (KOT) was earlier

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