



IJCRR
Section: Healthcare
ISI Impact Factor
(2019-20): 1.628
IC Value (2019): 90.81
SJIF (2020) = 7.893

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Odontogenic Keratocyst of the Mandible - A Case Report

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ABSTRACT

Introduction: The odontogenic keratocyst (OKC) is a unique type of developmental odontogenic cyst. In addition to having aggressive nature and a high recurrence rate, it also exhibits specific histopathologic characteristics. OKC tends to develop in an antero-posterior direction inside the marrow cavity of the bone without noticeably enlarging the bone. In 1956, OKC was first described by Phillipsen.

Case Report: This case study discusses an odontogenic keratocyst that affected the mandible in a 35-year-old patient.

Conclusion: Due to its unique histopathologic characteristics and clinical behaviour, the developmental odontogenic cyst known as the odontogenic keratocyst merits special attention.

Key Words: Odontogenic keratocyst, Recurrence, Developmental odontogenic cyst, Mandible, Dentigerous cyst, Radicular cyst

INTRODUCTION

An odontogenic cyst lined with keratinized stratified squamous epithelium was initially referred to as a “odontogenic keratocyst” in 1956. In contrast to the Dentigerous cyst and Radicular cyst, which are more frequent, this cyst has a unique growth process and biologic behavior.

The term “odontogenic keratocyst” was initially used by the World Health Organization (WHO), which is synonymous with “primordial cyst,” to describe benign cysts having a definable histological appearance that are of odontogenic origin in 1992.

However, in 2005, the WHO classified this condition as a benign keratocystic odontogenic tumor due to its high risk of recurrence, aggressive clinical history, mutations in the tumor suppressor gene (PTCH1), the presence of satellite cysts, and the relationship with the Gorlin-Goltz syndrome (KCOT).^{2,7}

Jaw cysts make for roughly 17% of intra-oral pathology. Periapical, dentigerous and odontogenic keratocysts are the

three most common forms of odontogenic cysts. OKCs are most prevalent in the 2nd and 3rd decades, and they predominantly occur in males.

The latest WHO classification depicts odontogenic keratocyst as a growing, non-inflammatory odontogenic cyst that develops from the dental lamina's cell remnants.²

CASE REPORT

A 35-years-old female patient, had reported to the Department of oral maxillofacial surgery at the D.Y. Patil deemed to be university, School of Dentistry, Nerul, Navi Mumbai with the complaint of a painless swelling affecting the right aspect of the lower jaw since 1 year without any evidence of discharge.^{1,6} The swelling was asymptomatic and slowly growing, which was initially small and slowly attended the present dimension.

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ISSN: 2231-2196 (Print)

ISSN: 0975-5241 (Online)

Received: 17.12.2020

Revised: 16.01.2021

Accepted: 18.02.2021

Published: 10.03.2021

No relevant previous medical and dental history. A right facial asymmetry and a widespread enlargement on the right side of the mandible's body was seen on extra oral inspection, but there was no sub-mandibular lymphadenopathy. The enlargement was not painful when palpated.

Additionally, the mandibular body bulging (teeth 45-47), and bundle bone thinning typical of periapical cysts were discovered.

During an intraoral examination, it was found that the labial vestibule was completely obliterated by a swelling and a buccal cortical plate expansion that involved the mandibular alveolar ridge and was roughly 2 to 3 cm in dimension [Fig-1]. No apparent swelling or lingual cortical plate expansion. Paresthesia was not noticed.



Figure 1: Preoperative image.

On radiography, a large, unilocular radiolucency involving the right mandibular ramus involving the coronoid process with sparing of the condylar process was noted. The margin of the lesion was corticated and scalloped.[Fig -2]



Figure 2: Radiography revealed a large unilocular radiolucency with scalloped and corticated border distal to the 47 region.

A provisional diagnosis of odontogenic keratocyst was made after taking into account the patient's medical history, clinical complaints and radiological results.

Following a routine blood analysis (which revealed no abnormalities), the patient gave their informed consent before a cystic enucleation and curettage was carried out under general anesthesia. The Department of Oral Pathology received a biopsy specimen for histopathology diagnosis.

Macroscopic examination revealed multiple bits of soft tissue specimen, brownish white in color, irregular in shape, with the largest specimen measuring about 3.0x1.7x1.0cm and smallest measuring about 0.8 x 0.3 x 0.1 cm in dimension. [Fig-3]



Figure 3: Macroscopic examination of tissue.

Microscopic analysis revealed the presence of fibro-cellular connective tissue capsule that were lined by odontogenic epithelial lining of 3-5 cell layers thickness, but in few areas it was 6-7 layer thickness. [Fig-4]

The cystic epithelial lining showed tall columnar epithelial cells which exhibit hyperchromatic nuclei palisaded in the basal epithelial layer. [Fig-4] [Fig-5]

The fibro-cellular connective tissue was composed of fine collagen fibers and intense chronic inflammatory cell infiltration, engorged blood vessels and extravasated RBCs.

Peripheral areas show bony trabeculae. Based on the histological features, the confirmed diagnosis of "Odontogenic Keratocyst" was made.⁷

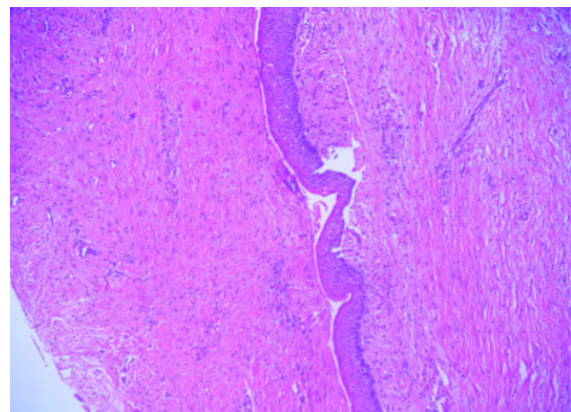


Figure 4: Lower magnification showing stratified squamous epithelium with areas of focal thickening. No corrugation was noted.

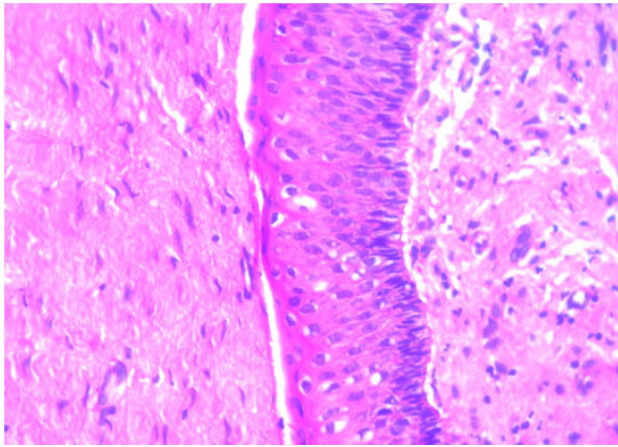


Figure 5: Higher magnification displays several layers of the thick epithelium with palisaded basal cells that resemble a tombstone fence.

DISCUSSION

The epithelial remnants of the tooth germ or the basal cells of the surface epithelium are commonly thought to have been the origin of odontogenic keratocyst. Odontogenic keratocysts can develop in either the upper or lower jaw, however, they are more frequently found in the mandible, namely in the ramus and the angle of the mandible. The most frequent symptom is a small, asymptomatic swelling; others include teeth shifting and spontaneous cyst discharge into the oral cavity. OKCs can have a variety of radiographic characteristics, such as multilocular radiolucency or an unilocular radiolucency with scalloped and distinct corticated borders, or a soap-bubble or honeycomb radiolucency.³

In the current instance, a 35-year-old female patient had an odontogenic keratocyst that included the posterior jaw and extended to the coronoid process of the mandible.

Asymptomatic swelling or swelling that is accompanied by pain, trismus, sensory impairments, infection, or drainage are the signs of OKC. Growth occurs mostly in the antero-posterior dimension, and lesions can grow to impressive sizes without noticeably deforming the jaw skeleton.

This propensity for rapid development is brought on by increased hyperkeratotic scale deposition in the cyst lumen and prostaglandin's chemicals increased osteolytic activity in the cystic lining's cells population, which results in a larger discrepancy in hydrostatic pressure.

The patient in this instance reported a gradually growing, painless swelling without even any preceding discharge.

On radiography, it appears as a distinct, unilocular or multilocular radiolucent lesion with smooth, typically corticated edges, unless they have acquired secondary infection. The bifid-rib basal cell nevus syndrome typically has several keratocysts (Gorlin syndrome).^{4,7}

In the current case, a unilocular, extensive radiolucent lesion with scalloped corticated edge was revealed.

The histological diagnosis was made in accordance with the WHO criteria, which included a keratinized stratified squamous epithelial lining that was typically between 5 to 8 cells thick layer, devoid of rete pegs, and a thin fibrous capsule.⁵

OKCs was histologically divided into 3 groups: parakeratinized, orthokeratinized, or either a hybrid of the 2 types. The majority (86.2%) of people had parakeratinization, 12.2% had orthokeratinization, and 1.6% had both orthokeratin and parakeratin characteristics.^{8,9}

There have been several suggested and discussed therapeutic options for odontogenic keratocysts. Both "conservative" and "aggressive" therapy philosophies have supporters.

CONCLUSION

Due to its unique histopathologic characteristics and clinical behaviour, the developmental odontogenic cyst known as the odontogenic keratocyst merits special attention. Conducting a thorough clinical examination and detailed imaging to evaluate the fundamental traits of the lesions and their margins, as well as their internal architecture and their interactions with neighboring anatomical structures, are essential for arriving at a correct diagnosis. These specifics, together with confirmation of the histology diagnosis, will allow the best-personalized therapy approach to be chosen.

ACKNOWLEDGEMENT

Authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors / editors / publishers of all those articles, journals, and books from where the literature for this article has been reviewed and discussed.

Conflict of Interest: None.

Source of funding: Self

Authors' Contribution: All authors contributed equally towards the data collection, data analysis & compilation

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