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Odontogenic Keratocyst of the Mandible -A Representation of Four Interesting Cases

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Abstract

Odontogenic keratocyst (OKC) is a cyst of odontogenic origin with an unique and hostile behavior, having high recurrence rate, We describe four clinically interesting cases of odontogenic keratocysts. We report the surgical modalities that is enucleation and curettage along with modified carnoy s solution proved to be a conservative technique which preserves the adjacent anatomical structures, particularly in the case of large odontogenic cysts, but requires prolonged clinical and radiological follow up, Due to the genuine approach towards diagnosis, and detailed histopathological findings, and appropriate therapeutic procedures, this method is proved to be effective among these cases.

Keywords: Odontogenic keratocyst, Enucleation ,Curettage, modified Carnoy s solution,orthopantomogram

Abbreviations: Odontogenic keratocyst(OKC) ,orthopantomogram(OPG),post operative (post op), fine needle aspiration cytology(FNAC)

Introduction

According to 4th edition of the World Health Organization's Classification of Head and Neck Tumours published in January of 2017 reported that the keratocystic odontogenic tumor is back as odontogenic keratocyst.[1] OKCs transpires with a frequency of 5-10%, or 12-14% according to some authors.[2] Odontogenic Keratocyst can occur in a range from infancy to old age with highest occurence between the second and fourth decades of life.[3] with highest predilication towards males.[4] The most common location is mandible and it commonly involves posterior body and ascending ramus. Large Odontogenic Keratocyst can be accompanied with pain, swelling, or drainage.[4] Odontogenic Keratocysts tend to grow in an anteroposterior direction within the medullary cavity of the bone without producing bone expansion as the resistant levels within medullary bone is lesser compared to cortical bone.

Materials And Methods

Case Report

Case 1: A 48 yrs old male patient complains of swelling in his left lower one third of his face since 3months,which was initially small in size and gradually progressed to current size,no associated pain with respect to this case ,On extra oral examination the swelling is non tender,hard in consistency,left submandibular lymph nodes palpable which is non tender and mobile,On intra oral examination the swelling is palpable on left buccal vestibule, non tender,hard in consistency approximately measuring of about 2x3cm in size extending from 44 to 48 region,Buccal and lingual cortical expansion noted with respective to the swelling. The teeth in the mandibular arch were non vital,Panoramic radiograph (OPG) revealed a well-defined multilocular radiolucency involving the left half of the mandible upto 48 region which is horizontally impacted (figure 1) Incisional biopsy was carried out and histopathological report suggested of odontogenic keratocyst,root canal treatment was carried out from 42 upto 37 and patient was taken under general anesthesia for the Enucleation and curettage, ,horizontally impacted 38 was sectioned and removed using elevator ,white chessy material was removed and cystic lining as well,apicectomy was done from 42 to 37,modified carnoy s solution(composed of 6ml of absolute alcohol,1ml of glacial acetic acid,1gm of ferric chloride) was placed in the cystic cavity for 3 minutes using ribbon guaze(figure 3) and retrograde filling using glass ionomer cement was carried out,excised specimen was submitted for histopathological examination which revealed fragments of fibrous cyst wall lined by 6-7layers of uniform stratified squamous epithelium,stroma infiltrated by chronic inflammatory cells suggestive of okc,systematic work through done for 2 years,no recurrence noted

Figure1: Pre operative OPG (case no.1)

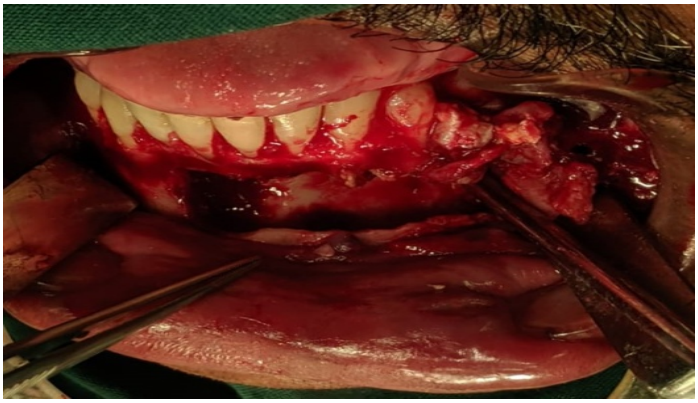

Figure 2: Removal of cystic lining

Figure 3: Application of modified carnoys solution.

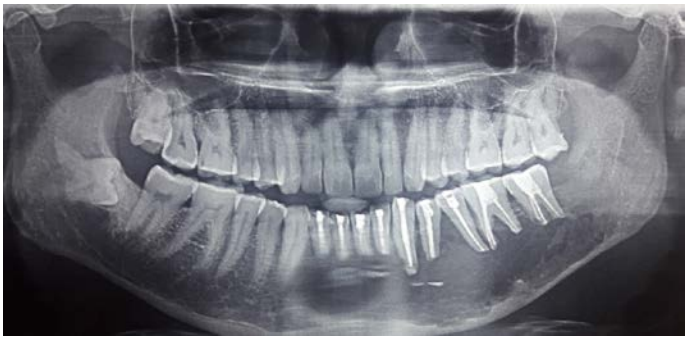

Figure 4: Post operative OPG (case no.1)

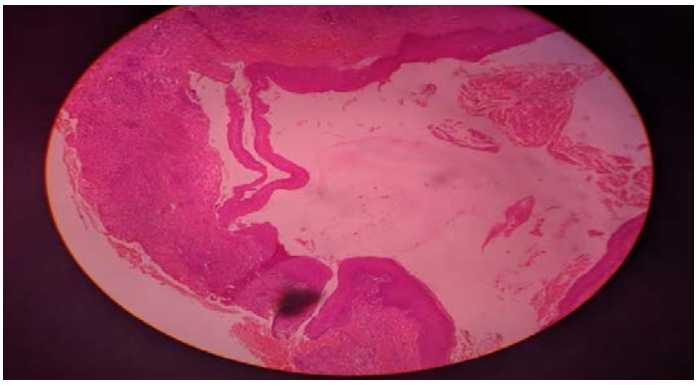

Figure 5: Histopathological picture.

Case 2: A 18yrs old female patient complains of swelling in her lower left back tooth region since 2months On examinatiation no neurosensory deficit was elicited, left submandibular lymph nodes were palpable, on intra oral examination 3rd molars of all quadrants were clinically missing,There was no obliteration of the buccal and lingual vestibule with respective to 3rd quadrant molar region and the mucosa appeared intact.On palpation tenderness noted with respective to 3rd quadrant molar region,Panoramic radiograph (OPG) revealed a well-defined unilocular radiolucency involving the left angle and ramus regions of the mandible. The radiolucency measured approximately 1.5 cm × 2 cm in its largest dimensions and was irregular in shape with well corticated scalloped borders with deeply seated impacted 38(figure 6),on fine needle aspiration cytology straw colored fluid obtained suggestive of dentigerous cyst/radicular cyst, Incisional biopsy was carried out and histopathological report suggested of odontogenic keratocyst and the patient was taken under general anesthesia enucleation and curettage was done along with removal of offending tooth and application of modified carnoys solution and the excised specimen was sent for histopathological studies which revealed odontogenic keratocyst of mandible,follow up opg was taken post operatively and at 6month and at 1st year(figure -7 to 9)

Figure 6: Pre op OPG (case no.2)

Figure 7: Immediate post op

Figure 8:Follow up OPG (6months post op)

Figure 9: Follow up OPG (1 year post op)

Case 3: A 35 -year-old woman was referred to the Oral and Maxillofacial Surgery, with the chief complaint of swelling in her left back tooth region since 4 months ,Extraoral examination revealed no significant asymmetry

of the face ,Intraoral examination showed obliteration of the left posterior mandibular buccal vestibular region and missing third molars, On palpation, the swelling was firm in consistency, non-tender, and non-pulsatile,Orthopantomograph showed the presence of a unilocular radiolucency involving the left angle and ramus region with impacted 38 with well-corticated smooth margin measuring of about 0.5 x 1.5cm, on fine needle aspiration cytology cheesy white colored fluid obtained suggestive of OKC,enucleation and curettage was done along with removal of offending tooth .

Figure 10: Pre op OPG (case no: 3)

Figure 11: post op OPG(case no.3)

Case 4: A 38 yrs old male patient visited with swelling in his lower one third of his since 2months ,on intra oral examination 3rd molars of all quadrants were clinically missing,There was mild obliteration of the buccal and lingual vestibule with respective to 3rd quadrant molar region and the mucosa appeared intact,On palpation tenderness noted with respective to 3rd quadrant molar region,Panoramic radiograph (OPG) revealed a well-defined unilocular radiolucency involving the left angle and ramus regions of the mandible. The radiolucency measured was about 1 cm × 2 cm in its largest dimensions and was irregular in shape with well corticated scalloped borders with deeply seated impacted 38, Enucleation and curettage was done along with removal of impacted third molar and application of modified carnoys solution and the excised specimen was sent for histopathological studies which revealed odontogenic keratocyst of mandible.

Figure 12: Pre op OPG(case no:4)

Figure 13:post op OPG(case no:4)

Discussion

According to the recent WHO classification, the preferred term remains odontogenic keratocysts due to the lack of evidence of its neoplastic nature [5] OKCs are strictly diagnosed only by histological examination, there are some radiological and other features that can be of help in approaching the diagnosis, with an indication that these features are not pathognomonic for odontogenic keratocysts.[5] For example, the most habitual localization of OKC is the posterior part of mandible(angle and the ramus) [4] as in above discussed four cases and the anterior maxilla followed by posterior maxilla is the most common

localization in the upper jaw [6]. Four of our above described cases were localized in the posterior mandible,all the four cases were associated with impacted third molars , OKC may be misdiagnosed as other odontogenic and nonodontogenic cysts and ameloblastoma [5]. In case no 1 multilocular lesions noted in relation to impacted tooth which can be diagnosed as odontogenic keratocyst,whereas in case no 2,3,4 Unilocular lesions noted in relation to impacted teeth which can look like dentigerous cysts but can be confirmed by fine needle aspiration cytology(FNAC) or accurately by incisional biopsy,In case no 1and 3 FNAC yielded cheesy white material which confirmed it to be odontogenic keratocyst whereas in case no 2 and 4 FNAC yielded straw colored fluid which was more likely diagnosed as dentigerous cyst but confirmed as OKC by incisional biopsy, Characteristic radiographic features of KCOT are 1. Unilocular or multilocular radiolucency with marked corticated borders and often scalloped too 2. Expansion towards the bucco lingual direction is lesser when compared to growth along the length of the mandible ,3. A radiolucent lumen filled with keratin giving it a hazy appearance in conventional radiography,4. Displacement of teeth and resorption of the roots are commonly noted [7] Characteristic histopathological features reveals that the epithelium is uniformly thin consisting of six to eight cell layers and does not demonstrate rete ridges. The superficial luminal surface of the epithelium exhibit wavy parakeratotic epithelial cells; hence known as corrugated parakeratinized epithelium, A prominent palisaded basal layer of hyperchromatic columnar to cuboidal cells are often described as having “picket fence” or “tomb-stone” appearance [8] with keratinaceous material in the cystic cavity [7] OKCs have been classified into parakeratotic and orthokeratotic subtypes [9] based on histological characteristics of the lining and the type of keratin produced. The orthokeratotic subtype does not contain nuclei and produces normal kind of keratin while the parakeratotic subtype has a more disordered production of keratin. The parakeratotic subtype contains nuclei and is the most frequent (80%) and has a aggressive nature of clinical presentation than the orthokeratinized variant[10]Morgan and colleagues classified the surgical treatment methods for OKC as conservative and aggressive.Conservative treatment includes enucleation, with or without curettage, or marsupialization. Conservative Conservative treatments preserve the anatomical structures, but have a risk of recurrence.[11] Aggressive treatment includes peripheral ostectomy, chemical curettage with Carnoy’s solution,or *en bloc* resection.[12] Irrespective of the type of treatment long-term follow-up of 5-10 years is mandatory [12] Some KCOT linings may have the characteristics of epithelial dysplasia or show features of ameloblastoma because of which follow up is must.

Conclusion

Definite diagnosis of OKC is not possible on a clinical and radiographic basis. But with appropriate and advanced imaging modalities, we can strongly suspect this entity, The OKC has been the content of argument over the last few decades with regards to its origin, its growth, and treatment modalities, long term follow up required to prevent recurrence.

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