

A Case Report on Surgical Management of Odontogenic Keratocyst

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Abstract: Odontogenic keratocysts (OKCs) are benign, they are often locally destructive and tend to recur after conservative surgical treatment. They must therefore be distinguished from other cysts of the jaw. Keratocysts possess outpouchings and microscopic daughter cysts from which recurrences may arise. Histologic examination is essential for diagnosis since the appearances on roentgenograms and at operation usually do not reveal the true nature of the lesion.

Key words: Gorlin Syndrome • Odontogenic Keratocyst • Benign Cystic Neoplasm • Radicular Cyst

INTRODUCTION

The odontogenic keratocyst (OKC) is a cystic lesion of odontogenic origin, which is classified as a developmental cyst derived from the dental lamina. This lesion was first described in 1956 by Phillipson [1]. It is one of the most aggressive odontogenic cysts of the oral cavity. OKC is known for its rapid growth and its tendency to invade the adjacent tissues including bone. It has a high recurrence rate and is associated with the basal cell nevus syndrome [2].

The distribution between sexes varies from equality to a male to female ratio of 1.6:1, except in children. OKCs may occur in any part of the upper and lower jaw, with the majority occurring in the mandible, most commonly in the angle of the mandible and ramus [2]. The OKC involves approximately 11% of all cysts in the jaws and is most often located in the mandibular ramus and angle. This lesion can be associated, although not in all cases, with an impacted third molar. Radiographically, it appears as a unilocular or multilocular lesion with a scalloped contour [8]. Radiographically, OKCs demonstrate a well-defined unilocular or multilocular radiolucency with smooth and often corticated margins. OKCs tend to grow in an anteroposterior direction within the medullary cavity of the bone without causing obvious bone expansion. Displacement of teeth adjacent to the cyst occurs more frequently than resorption [10].

OKCs of the maxilla are smaller in size compared to those of the mandible. When they are large, they tend to expand bone. No difference in site distribution was seen between unilocular and multilocular cysts [3]. These lesions are also present as a small and oval radiolucency between teeth, simulating a lateral periodontal cyst. They can also appear as a radiolucency simulating radiographic presentation of the residual apical periodontal cyst [10].

Histologic features of these cysts were subsequently described by Shear and by Pindborg and Hansen. The keratocysts are classified as a developmental epithelial cyst and comprise approximately 11% of all cysts of the jaws. The age distribution appears to be bimodal. Ahlfors. Found a mean age of 41 years at the time of diagnosis in 255 patients. There appeared to be two incidence peaks between 25 and 34 years and 55 and 64 years of age [11]. The histologic features of OKCs include a thin epithelial lining, usually consisting of fewer than six cell layers in a corrugated tissue composed of thin, irregular bundles of collagen and often contain islands of epithelium that may represent daughter cysts. In many cysts, there is a tendency for the epithelium to separate from the underlying cyst wall [6]. Histopathologically, they are typically provided with thin, friable wall, which is often difficult to enucleate from the bone in one piece and have small satellite cysts within fibrous wall.



Fig 1: Pre operative



Fig 4: Exposing the affected site

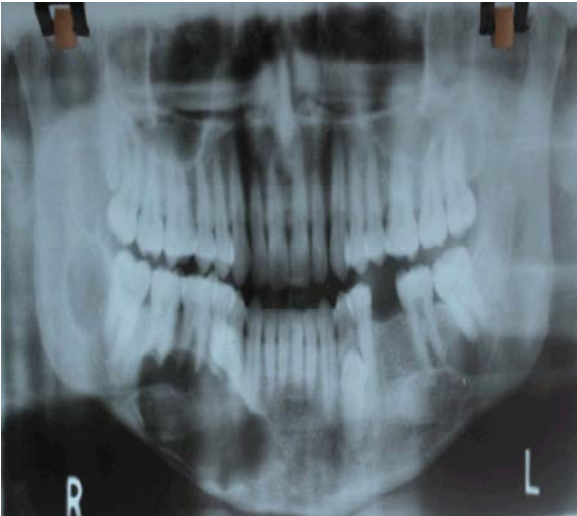


Fig 2: orthopantomogram



Fig 5: Resection of mandible



Fig 3: Incision



Fig 6: Resected Mandible

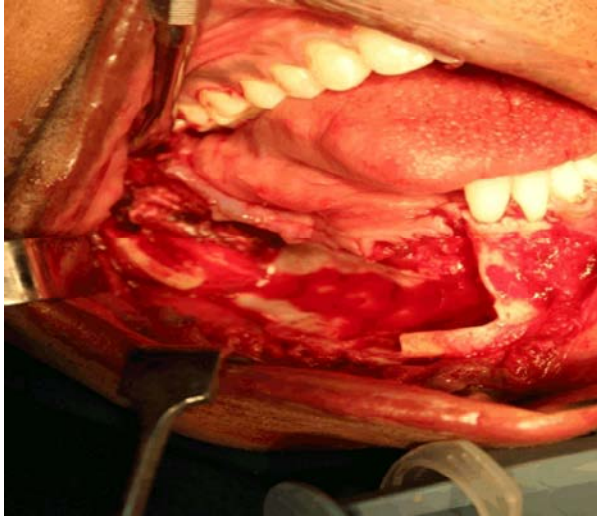


Fig 7: Resection done

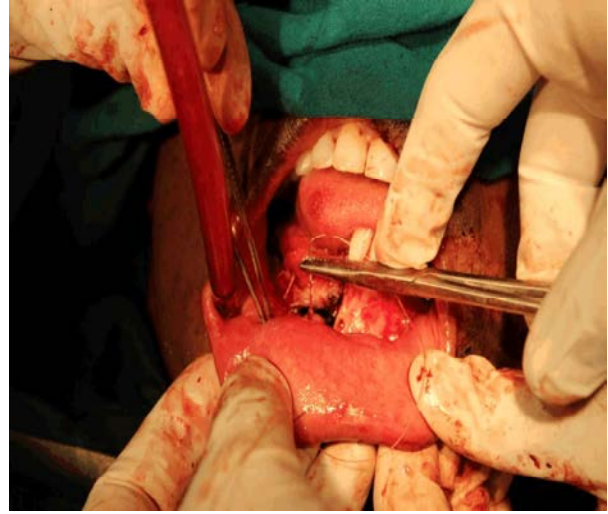


Fig 10: wound closure done



Fig 8: Reconstruction Plate



Fig 11: Post operative



Fig 9: wound closure



Fig 12: Intra oral post operative

Case Report: A 29-year-old patient reported to the Department of oral and Maxillofacial Surgery, with chief complaint of painless swelling in the right side of lower jaw along with difficulty in opening mouth. He was diagnosed as a case of Odontogenic Keratocyst right side of mandible after an incisional biopsy from the right molar region. Personal history revealed absence of any deleterious oral habits. On general physical examination, the patient was moderately built and nourished, with normal gait and posture and well oriented to time and place. Orthopantomogram taken for localizing the lesion and to assess its precise extent and formulating the treatment plan. Orthopantomogram showed a multilocular radiolucency extending from the right premolar region to the right angle of the mandible.

Under all aseptic precautions in the operation theatre, surgery was performed under general anaesthesia, with nasotracheal intubation. Intraoral incision has been given. Resection of the mandible was carried out extending from the 43 region to the right angle of the mandible. Reconstruction plate was placed in the defect region. Haemostasis was achieved; closure was done using 3-0 vicryl sutures.

DISCUSSION

The treatment of the OKC remains controversial. Treatments are generally classified as conservative and aggressive. Conservative treatment generally includes simple enucleation, with or without curettage, using spoon curettes or marsupialisation. Aggressive treatment generally includes peripheral ostectomy, chemical curettage with Carnoy's solution and resection. Some surgeons believe that the cyst can be properly treated with enucleation if the lesion is removed intact. However, complete removal of the OKC can be difficult because of the thin, friable epithelial lining, limited surgical access, skill and experience of the surgeon, cortical perforation and the desire to preserve adjacent vital structures. The goals of treatment should involve eliminating the potential for recurrence while also minimizing the surgical morbidity. There is no consensus on adequacy of appropriate treatment of this lesion [9]. Recurrence occurs due to the following reasons. The first reason involves incomplete removal of the original cyst's lining. Secondly, it involves growth of a new OKC from small satellite cysts of odontogenic epithelial rests left behind by the surgical treatment. The third reason involves the development of an unrelated OKC in an adjacent region of the jaws, which is interpreted as a recurrence. Marx and Stern believe that

the two most common reasons for recurrence are incomplete cyst removal and new primary cyst formation [9].

The majority of cases of recurrence occur within the first 5 years after treatment. Because of the problematic nature of these cysts, many attempts have been made to reduce the high recurrence rate by improved surgical techniques. Bramley recommends the use of radical surgery with resection and bone transplantation [5]. Decompression or marsupialisation seems to be more conservative options in the treatment of OKC. Marsupialisation was first described by Partsch in 1882 for the treatment of cystic lesions. This technique is based on the externalization of the cyst through the creation of a surgical window in the buccal mucosa and in the cystic wall. Their borders are then sutured to create an open cavity that communicates with the oral cavity. This procedure relieves pressure from the cystic fluid, allowing reduction of the cystic space and facilitating bone apposition to the cystic walls [1].

Currently, treatment involving careful and aggressive enucleation with close follow-up has been advocated for the OKC. John and James described the use of enucleation in conjunction with a chemical cauterizing agent and excision of overlying mucosa as a means of reducing recurrence [3].

Because the lining of the OKC is characteristically thin and friable, removal of the cysts in one piece may be difficult. Great care must therefore be taken to ensure complete removal of the cyst lining, without leaving behind remnants attached to the adjacent bone or soft tissue. The high recurrence rate associated with OKCs is a result of satellite cysts confined to the fibrous walls of the OKCs. It should be emphasized that if the fibrous capsule is completely removed, no satellite cysts will be retained to serve as a nidus for recurrence. In view of the possible recurrence of the cysts from basal cell proliferation and because of the fragility of the cyst wall and the presence of satellite cysts, the osseous walls of the defect are abraded with coarse surgical or acrylic burs to ensure that residual peripheral cystic tissue is removed. Enucleation is not always easy because the lining may be extremely thin and friable and access in the depths of the mandible may be limited. Multilocular cysts with bony trabeculae present special problems, in as much as it is difficult to remove the lining in one piece [6].

A number of authors advocated the use of tanning with Carnoy's solution (absolute alcohol, chloroform, glacial acetic acid and ferric chloride) before enucleation of the cysts. This procedure is often followed by excision of the overlying mucosa in continuity with the lesion [6].

CONCLUSION

The OKC has been the subject of much debate over the last 50 years with respect to its origin, its growth and treatment modalities. The obvious advantages of our treatment techniques are as follows:

- Eradication of the pathologic lesion,
- Reduction of the potential for recurrence

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