

Conservative therapy for odontogenic keratocyst: Decompression as the definitive treatment

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SUMMARY

Odontogenic keratocyst (OKC), is a lesion with aggressive behavior and different descriptions of treatment modalities. It most frequently occurs in the posterior region of the mandible, in men in the second and third decades of life. Among the treatments proposed, the great challenge is to reduce the morbidity of the procedure and maintain a low risk or recurrence. The aim was to relate case of patient with OKC located in the mandible and treated by means of decompression only. The case concerned an eight-year-old patient, female gender, presenting with a OKC from teeth permanent mandibular right canine to permanent mandibular left first molars. Assistance was provided with the eruption of permanent mandibular left first and second pre-molar, and patient has been followed up for two year. Conservative treatments offer reduced morbidity and the need for recovery, particularly in the cases of patients who are still growing, or those who are systemically compromised.

Keywords: bone cysts, decompression, odontogenic cysts.

INTRODUCTION

Odontogenic keratocyst (OKC) is a lesion of odontogenic origin, with an aggressive and infiltrative behavior (1). OKCs occur from the first up to the ninth decades of life, and more frequently affects men than women (2, 3).

The treatment for a OKC lesion is varied, and this requires special attention to its clinical and histological characteristics. Conservative treatment generally includes simple enucleation, marsupialization or decompression (2). The latter two treatments are recommended for diminishing the size of the lesion and removing it from important structures such as the teeth, inferior alveolar nerve, maxillary sinus, nasal cavity, thereby reducing the change of a future pathological or extensive bone discontinuity (4). Afterwards, when the vital structures have been covered by bone, and these structures are at

lower risk of being damaged, a second enucleation procedure may be performed (5). Aggressive treatment includes resection (2).

This article reported one case of extensive OKC treated by means of decompression only.

CASE REPORT

Patient, 8 years of age, mulatta, female, was referred by the orthodontist to the Oral Maxillo-Facial Surgery service of the University Hospital Lauro Wanderley. On physical exam, the patient presented with an increase in intra-oral volume in the anterior region of the mandible, crowding of teeth permanent mandibular left central and lateral incisive and permanent mandibular left canine (Figure 1). On radiographic exam, she presented with an extensive unilocular radiolucent lesion with a radiopaque halo, extending from the basilar cortical to the alveolar ridge, and from the region between teeth permanent mandibular left first molars to permanent mandibular right canine; presenting displacement of the tooth germ permanent mandibular left canine to the basilar region; lateral displacement of the tooth germs mandibular left first and second pre-molar and root resorptions in primary teeth primary mandibular left canine, primary mandibular left first and second molars (Figure 2). The

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patient was submitted to incisional biopsy under local anesthesia. When performing puncture aspiration, a citrine yellow liquid containing keratin scales was aspirated. Tooth permanent mandibular left canine was visualized, loosely adhered; was removed, and the opportunity was taken to insert a silicone drain for the purpose of performing decompression (Figure 03). The drain was removed after six weeks. During the decompression period, the patient performed irrigations with 0.12% chlorhexidine digluconate for 14 days. After this period, 0.9% physiological solution was used, due to the adverse effects of long term use of chlorhexidine. The anatomopathological exam was conclusive for OKC. After six months of decompression, a device was inserted to perform traction of tooth mandibular left first pre-molar and spontaneous eruption of tooth mandibular left second pre-molar was verified (Figure 04). In this same procedure, part of the remaining tissue involving the premolar crowns was sent for a new biopsy and presented no histological characteristics of OKC. The patient has been clinically and radiographically followed-up for two year (Figure 05).



Fig. 1. Preoperative intraoral view. Observe swelling in the vestibular cortex in anterior region and crowding of teeth permanent mandibular left central and lateral incisors and primary mandibular left canine.

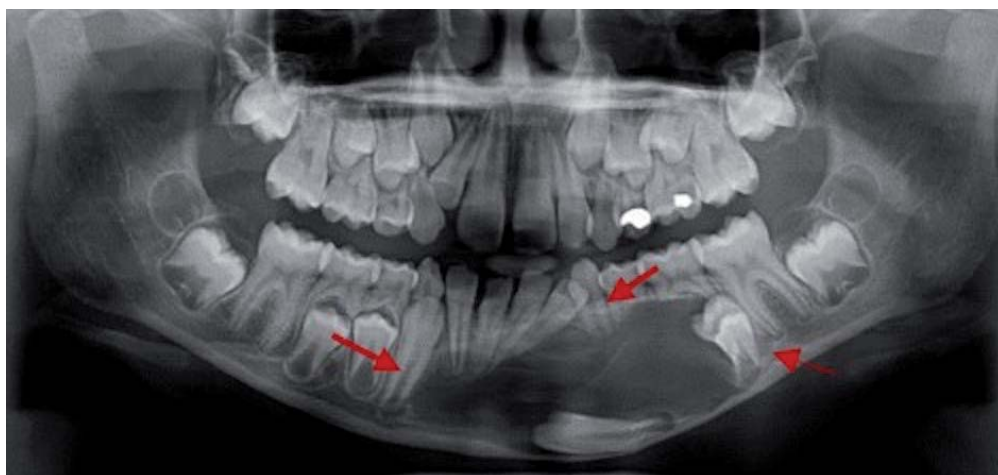


Fig. 2. Panoramic radiograph showing extensive unilocular osteolytic cystic lesion with sclerotic border. Observe the lateral displacement of the roots of permanent mandibular left central and lateral incisors and the dental germ of permanent mandibular left canine for the basilar region, overlap of dental germs of mandibular left first and second pre-molar and root resorption in primary mandibular left canine, primary mandibular left first and second molars.

DISCUSSION

OKCs are frequently asymptomatic, and are frequently diagnosed by chance during the second and third decade of life. They are rare in pediatric patients, such as in the case, and affect men more than women, differently from the case in this report (2, 3).

OKC is a fast-growing lesion, believed to be due to the greater activity of the epithelial cells of the cystic lining which, by means of the production of growth factors, such as prostaglandin, stimulate osteolytic activity, and the accumulation of hyperkeratotic scales in the lumen of the cyst, thereby increasing the osmotic pressure (6). This rapid growth associated with the absence of symptomatology, may result in lesions of large dimensions, whose treatment may result in great morbidity and esthetic defects.

Several treatments for OKC have been described in the literature, ranging from simple enucleation to resections in bloc with safety margins. In spite of

the recurrence rates being null, these more aggressive treatments present a high degree of morbidity with frequent sacrifice of teeth, and need for later reconstructions (2, 7). The choice of a treatment that presents an acceptable recurrence rate allied to admissible morbidity continues to be the reason for the debate about this lesion. More conservative treatments, such as simple enucleation, present recurrence rates from 20.7 to 51.0%, and are not used to a large extent nowadays (8, 9, 10). Complementary treatments of the surgical recess, such as cryotherapy, use of Carnoy solution and peripheral ostectomy have been described, as a way to reduce these rates (11, 12).

Although the literature presents diverse studies about the recurrence rate of OKCs in relation to the treatment modality, their credibility is questionable due to some limitations. The majority of studies do not mention whether the lesion was ortho or parakeratinized; they do not describe the details of the surgical technique or present short periods of follow-



Fig. 3. Installation of modified silicone drain



Fig. 4. Follow-up postoperative panoramic radiograph after one year. Observe tooth mandibular left second pre-molar in position for eruption and tooth mandibular left first pre-molar in the process of traction.

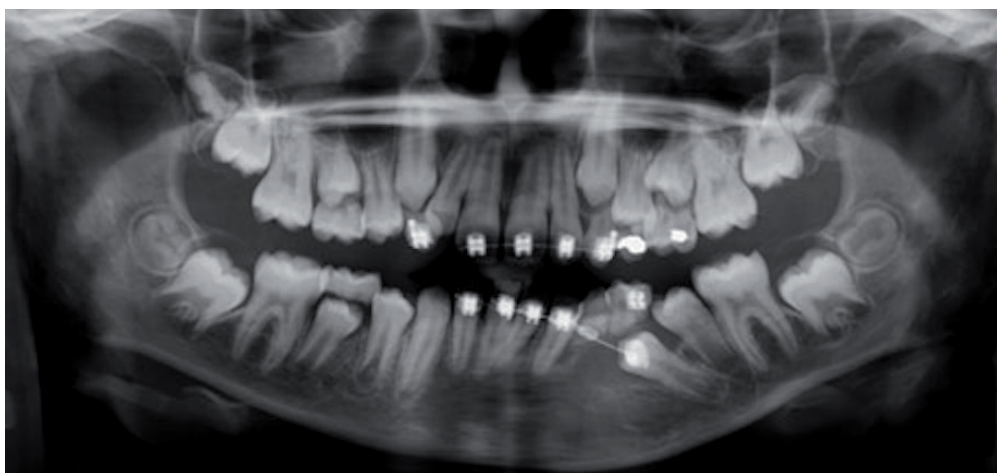


Fig. 5. Intraoral view after decompression showing spontaneous eruption of tooth mandibular left second pre-molar

up, making it difficult to evaluate them. In 2012, Kaczmarzyk *et al.* conducted a systematic review about this topic, and out of 1568 potentially relevant studies, only two retrospective reviews were included in the final analysis (10). In 2013, Johnson *et al.* conducted another study of and out of 2736 articles, only eight met the inclusion criteria (13). This limited number of articles has led to many surgeons choosing the treatment modality based on their personal convictions rather than on the scientific substrate.

The treatment of a lesion must not represent greater damage than that which it would cause (14). Benign lesions such as the OKC do not originate metastases, and the recurrences do not present a higher degree of aggressiveness than their initial lesions. Depending on the treatment modality chosen, the lesion now aggressive, may be transformed into a more indolent, orthokeratinized lesion (15, 16). Decompression diminished the osmotic pressure within the lumen and diminished the epithelial cell proliferation, and was capable of modifying the aspect of the fragile fibrous capsule, making the cystic lining thicker, more similar to the oral epithelium and easier to enucleate

(4, 16, 17). The change in the epithelial lining is a gradual process, involving decompression time intervals longer than nine months, but the mechanism of this phenomenon is still unknown (16). In the case, the time of decompression was 10 months thus favoring this epithelial modulation.

Resolution of the OKC with decompression only has been related in the literature (11, 18) but further studies with case series showing the resolution of OKC with decompression, and long term follow-up are needed to help with the choice of more conservative treatments. In the case, the purpose of decompression was to preserve the permanent teeth and their vitality, and thereby assure the harmonious develop-

ment of the mandible and its alveolar process. This choice resulted in great positive effects considering the phonetic and masticatory functions and esthetics of this patient. Spontaneous eruption of tooth mandibular left second pre-molar was observed with the need for inserting a traction device on tooth mandibular left first pre-molar. There are studies, such as those of Fujii *et al.*, and Yahara *et al.*, which analyzed the following factors that would interfere in the spontaneous eruption of mandibular premolars associated with marsupialized/decompressed dentigerous cysts, based on panoramic findings: patient's age, cuspid depth, angulation of the axis of the tooth, interdental space, size of the impacted tooth (19, 20). There are no studies that analyze the predictability of eruption of impacted teeth associated with OKC. However, if more aggressive treatment were performed, patients would require more extensive reconstruction procedures for their definitive rehabilitation, which would be postponed until they stopped growing. Another advantage is that decompression frequently does not require hospitalization and general anesthesia, thereby reducing costs, making the cost-benefit one of

its great advantages (11). In this case, the procedure was performed in an out-patient environment, under local anesthesia, thereby diminishing the costs, and avoiding hospitalization.

CONCLUSIONS

The authors were able to conclude that the choice of treatment must be individualized. With special

reference to treatment by decompression, this treatment was convenient, especially in relation to patients who were still growing, or those with systemically comprised conditions, thereby reducing the morbidity and need for recovery. Whenever possible, conservative treatments must be considered as the first treatment option, provided there is control of the variety of factors that depend on the lesion and patient, and that influence the prognosis.

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Received: 15 04 2020
Accepted for publishing: 21 06 2024