SURGICAL DESCOMPRESSION TREATMENT FOR A DENTIGEROUS CYST IN A PEDIATRIC PATIENT: A CASE REPORT

TRATAMENTO DE DESCOMPRESSÃO CIRÚRGICA PARA CISTO DENTÍGERO EM PACIENTE PEDIÁTRICO: RELATO DE CASO

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ABSTRACT

Introduction: This case report presents a one-year follow-up of the treatment of a dentigerous cyst in a pediatric patient, treated with a conservative decompression technique. Case Description: The patient presented with discomfort, swelling and redness in the right maxilla and radiography showed a unilocular radiolucent lesion involving teeth 13. Diagnosed as a dentigerous cyst, the intervention included extraction of the deciduous canine, decompression with installation of a drain and one-year follow-up. Outcome: The result was complete regression of the lesion and preservation of the tooth. Conclusion: This case demonstrates that surgical decompression is a viable alternative treatment for dentigerous cysts in pediatric patients and offers a safe approach for eliminating the lesion and preserving the impacted permanent tooth.

KEYWORDS: Dentigerous Cyst; Treatment; Decompression; pediatric patient.

RESUMO

Introdução: Este relato de caso apresenta o acompanhamento de um ano do tratamento de um cisto dentígero em um paciente pediátrico, tratado com uma técnica conservadora de descompressão. Relato de caso: O paciente apresentou desconforto, edema e vermelhidão na maxila direita e a radiografia mostrou uma lesão radiolúcida unilocular envolvendo o dente 13. Diagnosticado como cisto dentígero, a intervenção incluiu a extração do canino decíduo, descompressão com instalação de dreno e acompanhamento de um ano. Resultado: O resultado foi a regressão completa da lesão e a preservação do dente. Conclusão: Este caso demonstra que a descompressão cirúrgica é uma alternativa viável de tratamento para cistos dentígeros em pacientes pediátricos e oferece uma abordagem segura para eliminar a lesão e preservar o dente permanente impactado.

PALAVRAS-CHAVES: Cisto dentígero; Tratamento; Descompressão; Paciente pediátrico.

1. INTRODUCTION

The dentigerous cyst (DC), also known as a follicular cyst, is a type of odontogenic cyst that occurs when fluid accumulates between the reduced enamel epithelium and the crown of an unerupted tooth. It is the second most common type of odontogenic cyst, accounting for 27.5% of all odontogenic cysts[1,2]. They are more common in males and in the second to fourth decades of life. The anatomical region of preference is the mandible, with the third molar and premolars being the most affected teeth. Although less common in the maxilla, the canine is the most affected tooth[3].

Radiographically, the DC presents a well-defined, unilocular radiolucency located at the cementoenamel junction of the impacted tooth, with a thin, radiopaque or sclerotic border. Histologically, DCs are characterized by having a non-keratinized stratified squamous lining epithelium without palisade basal cells[4]. They usually develop slowly and are asymptomatic, unless they become inflamed, generating pain and discomfort. On palpation, the swelling has a hard, fluctuating bony consistency and an eggshell-like crackle[1].

The condition is not self-limiting and requires intervention to prevent complications such as pathological fractures, bone destruction, and damage to adjacent structures. Among the therapeutic options available, enucleation or resection is associated with an increased risk of morbidity, including nerve damage and infection. Decompression and marsupialization aim to minimize the associated risks and preserve anatomical structures[5]. In treatment with decompression, studies suggest that it can be a complete procedure in a single session or combined with subsequent enucleation, depending mainly on the histopathological findings[6,7].

This study describes a 1-year follow-up of a case treated conservatively for a dentigerous cyst in a pediatric patient. The case includes a complete clinical and radiographic examination, aspiration puncture,

culminating in the decompression of a large cyst in the right maxillary region.

2. CASE REPORT

This case report follows the CARE guidelines (case report guidelines). An informed consent form was obtained from the child's parents to ensure the data could be published. This case report was considered not to require ethical approval.

An 11-year-old female patient, A.J.G.O., presented to the Pediatric Dentistry Clinic at the School of Dentistry, Federal University of Goiás (UFG), with a history of discomfort and edema in the right maxillary region for the past three months. The patient had no relevant medical, family, or genetic history, and no previous intervention had been performed for the condition. The initial symptoms began three months before the first consultation, according to the history collected during the interview. The patient underwent an initial clinical evaluation, which revealed pain, swelling, and localized gingival inflammation in the right maxillary region, near tooth 53 (Figure 1).

Figure 1. Increased volume in the right maxillary region, associated with the initial signs reported by the patient.

The panoramic radiograph revealed a well-defined, unilocular, radiolucent lesion involving the crown of tooth 13, a characteristic suggestive of a dentigerous cyst (Figure 2).

Figure 2. Radiographic image showing a large, well-defined osteolytic lesion, including an impacted canine.

Furthermore, the patient presented clinical conditions such as caries in deciduous teeth with extensive coronal destruction diagnosed in teeth 54 and 64. At the second appointment, a therapeutic intervention was performed, involving the collection of material for histopathological examination and the installation of a drain. The aspirative puncture ruled out the presence of vascular content. The histopathological examination of the collected fragments was conclusive for a dentigerous cyst. The radiographic and clinical findings also corroborated the final diagnosis of dentigerous cyst.

The treatment of the dentigerous cyst included a conservative approach using cystic decompression. After antisepsis, local anesthesia, and aspiration puncture with a 20 ml syringe to rule out vascular injury (Figure 3), tooth 53 was extracted with forceps, followed by the installation of a drain made from a fragment of a disposable and sterile saliva aspirator (Figure 4).

Figure 3. Aspiration puncture with a 20 ml syringe to rule out vascular injury.

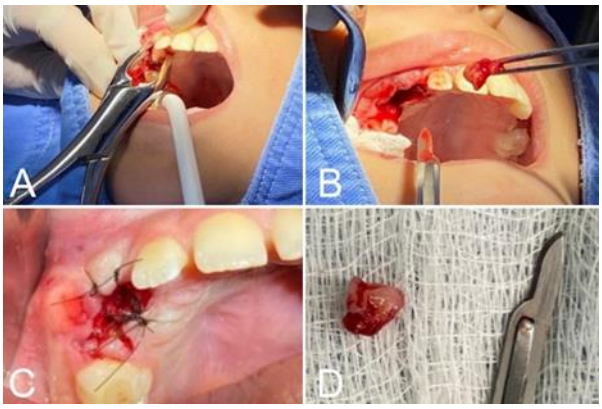

Figure 4. A. Surgical extraction of tooth 53 with forceps. B. Curettage of the cystic lesion. C. Drain installed and fixed with 4-0 nylon suture. D. Cystic content sent for histopathological examination.

The drain was secured with a 4-0 nylon suture and allowed for continuous drainage of the cystic content. The patient received detailed instructions on oral hygiene and daily intralesional irrigation with 0.9% saline solution, using a 20 ml syringe under pressure, to maintain the drain opening and control the internal pressure of the lesion. Post-operative medications were prescribed, including antibiotics, analgesics, and anti-inflammatories for pain control, edema, and infection risk. The histopathological examination suggested a secondary infected dentigerous cyst. The histological sections revealed connective tissue, sometimes myxoid, sometimes fibrous, with areas of lymphoplasmacytic

infiltrate. In some areas, hyperplastic stratified epithelium and some odontogenic islands were observed. The patient returned after 7 days with a new panoramic radiograph to assess the position of the installed device (Figure 5).

Figure 5. Confirmation of the drain's position in the cystic cavity 7 days after decompression surgery.

The patient's parents were instructed to irrigate the cavity daily with saline solution using a syringe. After a month, the decompression drain was removed. During the follow-up appointments, the drain was monitored and, after a month, removed. Teeth 54 and 64 were extracted in separate surgical procedures.

Clinical and radiographic follow-up was conducted up to a year. The result was considered satisfactory after the postoperative control radiograph showed complete regression of the lesion and preservation of element 13, which began to erupt spontaneously (Figures 6 and 7).

Figure 6. 1-year follow-up. Panoramic radiograph revealing complete bone remodeling of the area, without cyst recurrence.

Figure 7. 1-year follow-up. Oral clinical photograph showing complete regression of the lesion.

The patient demonstrated excellent adherence to the guidelines for intralesional irrigation and oral hygiene maintenance, crucial factors for the treatment's success. No adverse events or unexpected complications were observed during the follow-up. The result reinforces the effectiveness of the conservative approach adopted.

3. DISCUSSION

The present study reported a case of DC located in the maxilla of a pediatric patient. The primary clinical aspects that highlight the case involve the progression time, including the emergence of signs and symptoms, as well as the radiographic behavior observed. Moreover, the study reinforces the importance of staged therapeutic planning in the pursuit of conservative treatment, thereby facilitating the eruptive process while minimizing bone loss.

The dentigerous cyst is one of the most common benign odontogenic cysts, with a higher incidence of involvement in the second decade of life and a greater predilection for males[8,9]. However, the case presents a discrepancy with the literature, involving an 11-year-old female child. When dealing with the prevalence of dentigerous cysts in pediatric patients, the literature emphasizes a low percentage, considering them rare in childhood[10,11]. The teeth most frequently affected are the lower third molar, upper canine, and lower second premolar[12]. This anatomical incidence is likely due to the higher probability of impaction of these teeth. In the presented case, the permanent upper canine was affected, corroborating the anatomical predisposition described in the literature. Moreover, in accordance with the literature, dental displacements are frequently observed in the presence of the lesion[9]. In the presented case, it was possible to identify a displacement of the deciduous tooth 53 and the adjacent permanent tooth 12, the lateral incisor.

The presence of symptoms is uncommon, with the diagnosis in most cases being made due to the delayed eruption of the affected tooth or after routine radiographic evaluation. However, in inflammatory cases like the one presented, symptoms such as pain, swelling, and asymmetry may be present[1,8.] In the reported case, the patient noticed the increase in volume about three months prior, but only sought medical attention after experiencing pain upon palpation, suggesting a possible local inflammatory exacerbation. Thus, this study reinforces the importance of early diagnosis and appropriate treatment to prevent complications, such as pathological fractures and displacement of involved teeth[13,14].

The differential diagnosis based on imaging should consider lesions such as odontogenic keratocyst, unicystic ameloblastoma, adenomatoid odontogenic tumor, lateral periodontal cyst, and radicular cyst. However, knowledge of the manifestations and clinical and radiographic characteristics can aid in identification[15]. The definitive diagnosis is established by biopsy, which reveals the presence of non-keratinized squamous cells with a smooth interface between the epithelium and the connective tissue, as well as the possible presence of mucous cells, ciliated columnar

cells, and adipocytes in the DC epithelium[14,16]. The radiographic examination in this report revealed the presence of a well-defined unilocular radiolucent lesion associated with the crown of tooth 13, compatible with a DC. After the histopathological examination, the histological sections revealed myxoid or fibrous connective tissue, with areas of lymphoplasmacytic infiltrate. These characteristics, along with the physical and radiographic examination, confirmed the diagnosis of inflammatory DC.

When it comes to treatment, among therapeutic techniques, enucleation involves the complete removal of the cystic capsule. It is the treatment of choice for small and well-defined cysts, especially when the preservation of the associated tooth is not possible. However, it has disadvantages, such as the risk of damage to adjacent anatomical structures[17]. More conservative therapeutic alternatives include marsupialization, which involves creating an opening in the cyst wall and suturing the oral mucosa to the cyst lining, and decompression, which involves creating an opening in the cyst wall and inserting a device (such as a tube or stent) to keep it open[5,6]. Since it is a lesion with a less aggressive biological behavior, controlled size, and proximity to noble structures in a pediatric patient, the chosen treatment type was cystic decompression using a disposable and sterilized fragment of a saliva aspirator.

Decompression is considered a variant of marsupialization, being the ideal choice for high surgical risk cases, with possible loss of permanent teeth, and pediatric cases[18]. The choice of decompression results in lower morbidity, including less pain, swelling, and a reduced risk of infection, as well as minimizing the risk of damage to crucial adjacent structures[19]. Post-treatment eruption is a concern when considering the preservation factor, and the decompression approach has been shown to have a high success rate in the spontaneous eruption process[8,18]. The follow-up of the case allowed for the confirmation of surgical success and the spontaneous eruption of the upper canine.

Regarding the disadvantage of the approach, it involves the need for prolonged follow-up with multiple consultations to monitor the reduction of the cyst. Postoperative follow-up enables the assessment of healing and possible signs of complications through clinical examination and radiographs. This evaluation assesses the decompression and repositioning of the involved teeth[4,8,20]. In this report, the postoperative follow-up lasted one year, a with no recurrence, and the patient's cooperation was essential, particularly in maintaining oral hygiene.

The indicators of treatment success include the reduction of the cyst, bone formation, and the eruption of the tooth, as well as the absence of pain and swelling[19]. In the reported case, the combination of age, available space, and incomplete root formation ensured the success of the treatment and the spontaneous eruption of tooth 13.

4. CONCLUSION

This case report presents a case with manifestations and clinical characteristics divergent from those commonly reported in the literature, while also reinforcing that the treatment of DC in pediatric patients through conservative surgical decompression with drain placement is an effective technique for treating this type of lesion. After one year of treatment, the tooth was preserved, maintaining pulp vitality, without recurrence.

5. REFERENCES

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