International Journal on Oral Health

Surgical Treatment of a Large Residual Cyst Followed by Implant Rehabilitation: A Case Report

Case Report

Volume 3 Issue 1- 2023

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Article History

Received: June 16, 2023 Accepted: June 19, 2023 Published: June 20, 2023

Abstract

A cyst is defined as a pathological cavity, which may be fluid-filled, with well-defined boundaries lined by an epithelium. Although it is usually asymptomatic, it can cause pain through secondary infectious processes or when an increase in volume of the fluid causes local nerve compression. The diagnosis is made through correlation of clinical and imaging findings and confirmed by histopathology. Depending on its features, the treatment methods range from endodontic treatment of the involved teeth to its surgical enucleation. Marsupialisation is a surgical technique indicated for large cystic lesions or cystic lesions close to noble structures. It involves connecting the cystic wall and the oral cavity; this causes decompression and regression of the cyst allowing enucleation. This study aims presents the satisfactory outcomes of a residual inflammatory cyst treated by the conservative technique of marsupialisation with subsequent enucleation, followed by rehabilitation with implants at the regeneration site.

Keywords: Cyst; Residual; Surgical; Enucleation; Marsupialisation

Introduction

Residual inflammatory cysts, which account for about 10% of all odontogenic cystic lesions, remain in position even after removal of the associated tooth. Although a cyst is characterised as an asymptomatic lesion, it can cause pain through cortical bone expansion, invagination into the antrum of the maxillary sinus, or compression of the lower alveolar canal. On radiographic examination, it appears as a well-defined rounded or oval radiolucent area. Old lesions have dystrophic calcification, giving the lesion a more radiopaque appearance [1].

The therapeutic approach for cystic lesions ranges from endodontic treatment of the involved teeth to enucleation of the lesion, depending on its characteristics. Surgical treatment is indicated when the lesion does not regress after endodontic treatment. For residual cysts, surgery is the only option since this lesion is not associated with a tooth [2]. Residual cysts treated improperly can cause significant destruction in the region of the mandible and maxilla, causing fragility, which can lead to pathological fractures [3].

Placement of implants in regenerated areas after enucleation of cysts in the mandible is an efficient procedure well documented in the literature. However, there are instances where enucleation of a cyst may put anatomical structures at risk of damage; therefore, these cysts requiring conservative treatment techniques such as marsupialisation. Although marsupialisation is an effective alternative for treatment of these cases, there are few reports of this procedure in the literature [4].

Herein, we present a case report of implants placed after marsupialisation of a cystic lesion in the mandible, demonstrating the effectiveness of the treatment.

Case Report

A 55-year-old black male patient with systemic diseases, including diabetes and arterial hypertension, both of which were controlled, consulted with a maxillofacial surgery service for increased volume in the left mandible body and pain. An extraoral examination showed no volumetric change or facial asymmetry. However, an intraoral examination revealed an increase in volume in a region between the left

first premolar and second molar. There was no tenderness on local palpation. He had no dental elements in any of the quadrants of the arches. Radiography revealed a well-defined unilocular radiolucent area, measuring about 3 x 2 cm close to the lower alveolar nerve canal and the root of the tooth 34, involving the left mandible body; this had a positive result for a vitality test (Figure 1). A positive aspiration puncture revealed 20 mL of bloody yellow fluid. Based on the clinical and radiographic findings, the diagnostic hypothesis was residual cyst. Considering the lesion's extent and location, an incisional biopsy followed by marsupialisation of the lesion was ascertained to be the appropriate treatment plan.

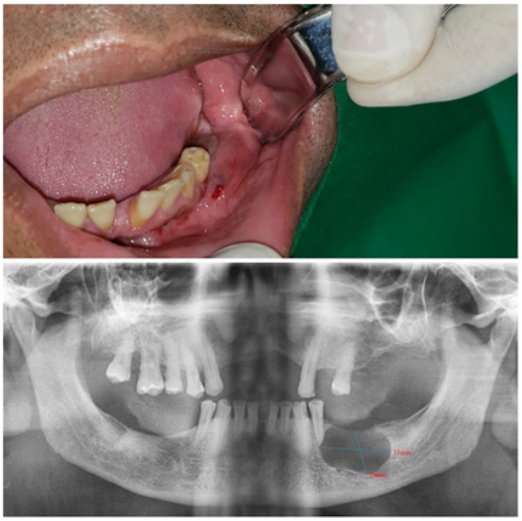

Figure 1: (A) Clinical appearance of the lesion region showing an increase in the volume in the alveolar mucosa of the bottom portion of the groove of the lower left first premolar and second molar. (B) Radiographic image showing a well-delimited, unilocular radiolucent area measuring about 30 x 20 mm close to the lower alveolar nerve canal and root of tooth 34, involving the left mandibular body.

Biopsied samples of the lesion were sent for histological analysis, which confirmed the diagnostic hypothesis of residual cyst. Clinical imaging follow-up was conducted for six months. The lesion gradually reduced, allowing enucleation via curettage under local anaesthesia during this period. Three months after the enucleation, radiography revealed an absence of radiolucency in the lesion (Figure 2), which was confirmed by computed tomography. Four 4 mm × 10 mm implants were inserted in the lower first and second molar regions on the left and right sides of the mandible. Bone formation in the buccal and lingual aspects of the bone defect was satisfactory and resulted in excellent primary stability of the implants. Four months later, the implants were uncovered, and prostheses were made for the implants. During the 12-month postoperative period after placement of the implants, the patient did not present with hypoesthesia or any signs of lesion recurrence and reported improved chewing and phonation (Figure 3).

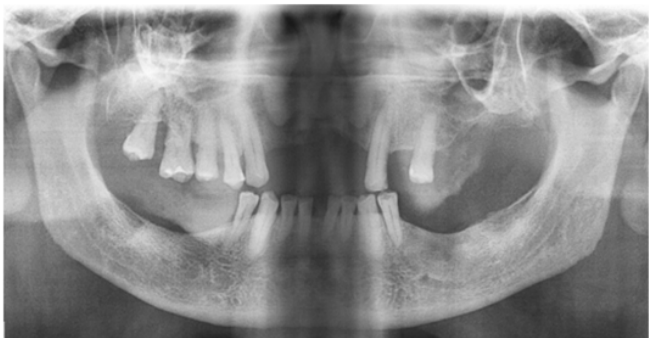

Figure 2: Panoramic radiography six months after marsupialisation of the lesion showing a radiopaque area in the lesion site, characteristic of the tissue repair process.

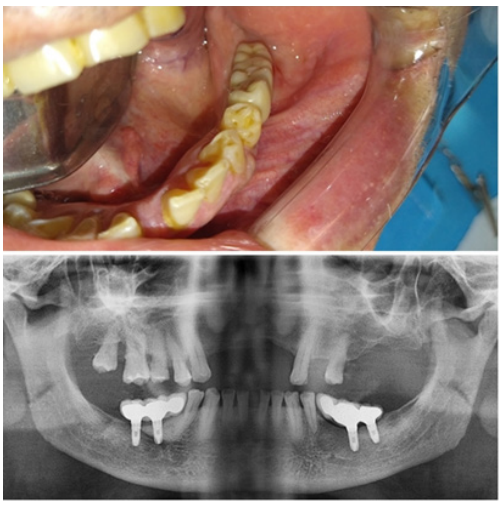

Figure 3: (A) Clinical image of the prosthesis on the left side. (B) Panoramic radiograph showing the osseointegration of the implants at the lesion regeneration site.

Discussion

Although residual cysts are often asymptomatic, they can cause pain through secondary infections or when an increase in cystic volume causes local nerve compression [1]. In the current case, the patient presented with pain in the absence of an infection. It can be assumed that due to the size of the lesion and its proximity to the lower alveolar nerve, it caused compression thereby producing pain.

The choice of treatment used in this case was based on the lesion's size and proximity to the mandibular, which required a conservative treatment approach such as marsupialisation. This technique has the advantages of low morbidity, absence of serious complications such as infection and pathological fracture, and preservation of important anatomical structures. The disadvantages of this method are the prolonged healing period and patient discomfort [5].

The diagnosis of residual cyst is made through correlation of clinical and imaging findings and confirmed by histopathology. In the present case, the mandibular molars on the left side were extracted several years prior, and the radiographic examination revealed a unilocular radiolucent image circumscribed by a radiopaque halo. During the aspiration puncture, a yellow citrus fluid was collected, followed by a bloody red exudate. Given these findings, the presumptive diagnosis was of a residual cyst. Histopathological analysis revealed a stratified squamous epithelial tissue, which was thick in some parts with a loose arrangement. Areas of intense haemorrhage and predominantly lymphoplasmacytic chronic inflammatory infiltrates were observed in the middle of a fibrous stroma, characteristic of a residual inflammatory cyst (Figure 4).

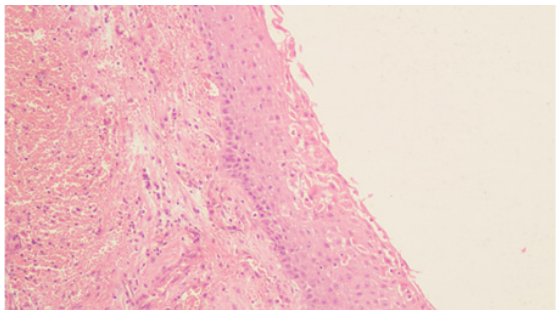

Figure 4: Histological image. Microscopic sections show a stratified squamous epithelial tissue, which is thicker and has loos arrangement in some parts. Intense haemorrhage and predominantly lymphoplasmacytic chronic inflammatory infiltrates are observed in the middle of a fibrous stroma, characteristic of a residual inflammatory cyst.

The use of graft materials before the placement of osseointegrated implants in areas with large bone defects is controversial. Karamanis, et al. [4] reported that placing a small amount of a bone substitute in a cystic defect after marsupialisation/enucleation is more advantageous than autograft procedures. However, McCullagh, et al. [6]. reported the resolution of a large bone defect caused by an odontogenic keratocyst without using bone grafting. The literature shows that the appropriate time for implant placement after removing a large cyst is usually decided according to the imaging findings [4,6]. Isler, et al. reported a clinical case of odontogenic keratocyst where implants were placed shortly after the lesion's enucleation, obtaining satisfactory results. The surgical requirements recommended by them for immediate implant placement include eliminating all pathological material and providing good primary stability [7]. This technique has the advantages of reducing alveolar bone resorption, shorter rehabilitation time, and avoiding a second surgical intervention [8]. In our case, computed tomography revealed adequate bone regeneration for implant placement 9 months after the initial surgery. A satisfactory tissue regeneration result was obtained even without the performance of any bone grafting procedure, which suggests that major defects caused by cysts can be resolved without using materials that stimulate bone repair.

Final Considerations

The importance of the present case lies in the fact that the patient had systemic disorder, the lesion was large, and adequate bone regeneration was attained without using any graft material and long-term follow-up. This case shows the advantages of performing enucleation after marsupialisation of the cystic lesion; it also highlights the importance of using histopathological examination for correctly identifying the type of the lesion and choosing an appropriate management method for the different types of odontogenic cysts. The reported case shows the advantages of the conservative surgical method with implant placement for treating a large inflammatory residual cyst in the mandible. Furthermore, this case showed that surgical sites of large bone defects do not always require bone grafting procedures to attain adequate bone regeneration for implant rehabilitation. Considering the limited number of clinical studies with long-term follow-up of implants placed in areas that were treated for large cysts, each new case can contribute to improving our understanding of method for rehabilitation after treatment for this defect.

Conflict of Interest

None

References

1. Youth A, Nair RG, Kapoor M, Sharma N, Kundendu A (2012) Localization of a peripheral residual cyst: diagnostic role of CT scan. Case Rep Den, pp: 1-6.
2. Canassa BC, Pavan AJ (2014) Inflammatory odontogenic cysts: a brief literature review. Journal of Surgical and Clinical Dentistry 2(1): 20-28.
3. Lin LM, TJ Huang G, Rosenberg PA (2007) Proliferation of epithelial cell rests, formation of apical cysts, and regression of apical cysts after periapical wound healing. J Endod 33(8): 908-916.
4. Karamanis S, Kitharas TH, Tsoukalas D, Parissis N (2006) Implant placement after marsupialization of a dentigerous cyst. J Oral Implantol 32(6): 313-316.
5. Cakarer S, Selvi F, Isler SC, Keskin C (2011) Decompression, enucleation, and implant placement in the management of a large dentigerous cyst. J Craniofac Surg 22(3): 922-924.
6. McCullagh JJ, Searson LJ, Hopper C, Watt-Smith S (1999) Osseointegrated implants in postsurgical prosthodontic rehabilitation. Br Dent J 186(10): 498-501.
7. Isler SC, Demircan S, Can T, Cebi Z, Baca E (2012) Immediate implants after enucleation of an odontogenic keratocyst: an early return to function. J Oral Implantol 38: 485-488.
8. Peñarrocha M, Uribe R, Balaguer J (2004) Immediate implants after extraction. A review of the current situation. Med Oral 9(3): 234-242.