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(CASE REPORT)

Bone defect reconstruction after radicular cyst enucleation with bovine bone graft and protein rich plasma: A case report

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Abstract

Background: Radicular cyst enucleation and reconstruction with bone graft is a surgical procedure used to remove a cyst that has formed around a tooth root. The procedure involves making an incision in the gum tissue to expose the cyst, removing the cyst and any affected bone, and then filling the resulting defect with a bone graft. The bone graft is typically taken from the patient's own body, such as from the chin or the iliac crest, and is used to promote new bone growth and help stabilize the surrounding teeth. After the procedure, the gum tissue is sutured back into place, and the patient may be prescribed pain medication and antibiotics to help manage any discomfort or infection. The success of the procedure depends on the size and location of the cyst, as well as the patient's overall oral health.

Purpose: To aim management of cyst enucleation and reconstruction bone defect with bovine bone graft and protein rich plasma (PRP).

Case(s): A female 19 years old with the chief complaint of the patient have caries io the lower left jaw tooth. The patient complains of frequent oedemmon left cheek site. On panoramic radiologic examination, a radiolucent lesion with a radiopaque border was found in the apical region of tooth 36.

Case Management: The patient underwent enucleation of cyst and bone defect reconstruction with general anaesthesia. After 14 days, the sutures were removed and the wound were healed.

Conclusion: This case of radicular cyst can be used for guideline with enucleation of radicular cyst and bone defect reconstrtion

Keywords: Cyst; Radicular; Enucleation; Apex resection; Bone graft

1. Introduction

Radicular cysts are a type of jaw cyst that develops at the apices of teeth with infected or necrotic pulps. These cysts can cause pain, swelling, and tooth mobility, and if left untreated, can lead to tooth loss. The treatment for radicular cysts varies depending on the size and location of the lesion, as well as the bone integrity of the cystic cavity. Surgical enucleation, which involves removing the cyst and any affected bone, is often necessary when the cyst is in close proximity to important structures. In some cases, decompression, which involves creating a window into the cystic cavity, may be used as a more conservative approach. After the cyst is removed, a bone graft can be placed to promote

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bone regeneration of the resulting defect. This graft can be an osteoconductive material, such as allograft, which stabilizes the blood clot and enhances the migration of osteoprogenitor cells, promoting new bone growth.

2. Case(s)

The patient came with a complaint of a swelling on the left lower jaw for the past 4 months. The complaint began with pain in the lower left molar. The swelling started small and grew larger. The swelling then shrank and grew again. The patient had experienced the discharge of a salty fluid from the mouth. Currently, there is no pain. The patient denied a medical history of diabetes mellitus, hypertension, asthma, and allergies.

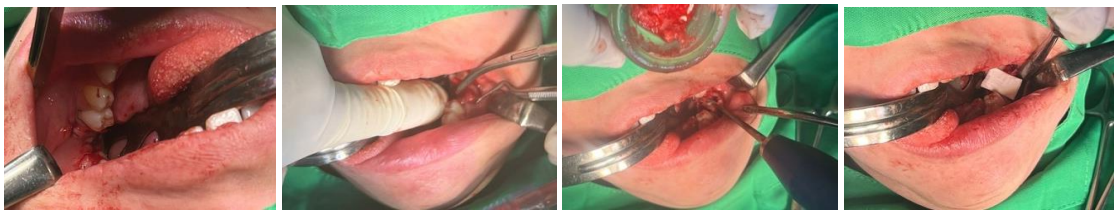
Figure 1 Extra Oral Clinical Appeareance

Figure 2 Intra Oral Clinical Appeareance

Figure 3 Panoramic and Cone Beam-Computed Tomography Radiology

3. Case management(s)

The patient underwent surgery under general anesthesia. Thirty minutes before the surgery, the patient had 30cc of blood drawn and underwent centrifugation to obtain PRP. After the patient was anesthetized, an incision was made on the 36 flap trapezium region. The bone on the buccal side of tooth 36 was reduced using a round bur. Tooth 36 was extracted. After extraction, enucleation of the cyst was performed using a curette. After curettage, irrigation with a saline solution was performed. Then, bone graft and PRP were applied to the bone defect. After that, the bone defect was closed with Vicryl 4.0.



a b c d

Figure 4 a) insision in 36 region, b)cyst enucleation, c) bone graft and PRP aplication, d) application with pericardium membran

4. Discussion

The treatment of jaw cystic lesions involves a multidisciplinary approach, including cyst enucleation, bone grafting, and the use of platelet-rich plasma (PRP) and pericardium membranes. This review aims to provide an overview of the current understanding of these techniques and their applications in dentistry[1].

Cyst enucleation is a surgical procedure that involves the removal of the cystic lesion, and bone grafting is often performed to promote bone regeneration and reconstruction[1]. The effectiveness of bone grafts in jaw cystic lesions is still a topic of debate, with some studies suggesting that the superiority of bone grafts is not evident[1]. However, bone grafting is widely accepted as a means of accelerating bone regeneration and is suitable for rapid recovery of bone quality[11]. The preservation of periosteum during cystectomy is essential for bone regeneration, and the surrounding bone walls provide a solid basis for blood clots, which can create a suitable physical environment for bone regeneration[2].

PRP has been used in dentistry for over 15 years, with studies demonstrating its reliability and stability as a sole graft material[4]. PRP has been used in various applications, including implantology, sinus lift, socket preservation, and bone regeneration/augmentation. The use of PRP in combination with other biomaterials has also been explored, with studies showing improved bone regeneration and peri-implant bone density[5].

The use of pericardium membrane in dentistry is a relatively new development, with studies suggesting its potential in guiding bone regeneration (GBR) reconstruction of extensive alveolar bone defects due to infected radicular cyst enucleation[6]. The pericardium membrane is used to provide a scaffold for bone growth, promoting the regeneration of bone tissue[7].

In conclusion, the treatment of jaw cystic lesions involves a combination of cyst enucleation, bone grafting, and the use of PRP and pericardium membranes[8]. While the effectiveness of bone grafts is still debated, PRP has been shown to be a reliable and stable graft material, and pericardium membranes have been used to guide bone regeneration[9]. Further research is needed to fully understand the role of these techniques in dentistry and to develop more effective treatments for jaw cystic lesions[10].

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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