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Case Report

Multidisciplinary approach in management of cyst: A unique case report

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ABSTRACT:
A cyst is a pathological cavity in a bone or soft tissue. A cyst is managed by various modalities that include enucleation, marsupialization, and chemical cauterization,etc.In this case,a Platelet rich fibrin in the cavity, which has a good prognosis in terms of marked tissue resolution after the enucleation. Post op radiographs and long-term follow brought keen and clear perspective on the surgical outcome and the chances of recurrence being almost remote. Newer innovations, on-table surgical presence, and a multidisciplinary approach leads best outcomes and the best possible prognosis.
Keywords: Cyst, Management, Multidisciplinary, Surgery.

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INTRODUCTION

A cyst is a pathological cavity in the bone or soft tissue, with an outer wall of connective tissue and an inner wall composed of epithelium. The interior of the cystic cavity is filled with cystic content, which may be watery, colloidal, or semisolid. Management of cysts should focus on selecting the best modality that carries the lowest possible risk of recurrence and minimum morbidity. Management options can broadly be divided into conservative treatment and radical management[1]In 1965, Fickling [2] enumerated the methods used in treatment of cysts as follows:Enucleation and closed by suture: Enucleate the cyst lining completely and close the intra-oral incision. This is ideal, but closure should only be carried out when the operator is clinically certain that enucleation has been completed. This is also called Partsch I [3].Enucleation and packed open: Enucleate the cyst and open widely to the mouth. This is indicated when enucleation has proved so difficult that it might be incomplete or when the cyst is so large that, even with antibiotics or space-filling materials, breakdown might occur if the wound is closed. The resulting cavity fills quite rapidly.Lining left, cavity saucerized (Marsupialization): Uncover the cyst by removing the oral bony wall over a wide area and leave the lining. This is the operation described by Dowsett [4] who added the suture of the buccal wall to the remaining lining. Although less popular now, this method goes some way to avoiding damage to the maxillary sinus, nasal floor, or mandibular nerve and teeth and causes very little constitutional disturbance in elderly patients or in those with intercurrent disease that might lead to poor healing. This is also called Partsch II [5].Lining left, small opening maintained by cyst plug: Make a relatively small opening, leave the lining, and employ a cyst plug to maintain the opening until regression

has occurred. This is especially suitable for large cysts in sites that cannot be saucerized or opened widely, such as those at the tuberosity and ramus. It is a valuable procedure, especially when combined with delayed enucleation as a two-stage operation.Opened into antrum or nose, mouth closed: Open a maxillary cyst widely into the antrum and nose, perform a nasal antrostomy, and close the oral incision. This is especially valuable for cysts that can be demonstrated to be leaking into the nose and for antral cysts. The resulting cavity tends to be dependent but should regress in size; not all remains free from some antral symptoms.Enucleated by extra-oral approach, wound sutured: Make an extra-oral approach by a submandibular incision, which implies enucleation and closure.Cyst left alone: Leave the cyst alone, a technique of nonintervention indicated, rarely, in the very aged or infirm, which should be remembered by every surgeon.Two-stage operation [6]: In the two-stage operation, a carefully shaped cyst plug should be worn for at least 1 year. After that time, enucleation is much simplified, and the cavity can either be closed if suitable flaps can be prepared or packed and allowed to granulate.Apicoectomy in addition to one of the above methods: The preservation of involved teeth by apicoectomy in addition to one of the above methods is applied for the treatment of cyst. .

CASE REPORT

Patient complains of pain and swelling in upper front tooth region for past1year.Slow growing swelling associated with dull aching pain for the past 1 year, which is gradual in onset; pain aggravates on mastication and is relieved with medication. Presence of intraoral swelling in relation to 21,2,23 measuring 2*3cm which is erythematous. Presence of palatal swelling in relation to 21,22,23 measuring about 4*5cm which is erythematous, extending from the midpalatineraphe to the mesial side of 24.Pre-op intraoral image. It was diagnosed ads Chronic periapical cyst in relation to 21 22 23. IOPA elicited a well defined radiolucency involving the apical third of 21,22,23 with a corticatedborder extending from the mesial surface of the root of 21 to the distal surface of the root of 23 measuring more than 1.6cm suggestive of a periapical cyst.Root canal treatment was planned. Access opening was done through the crown of 21 22 23 as it was intact. Working length was determined: 21-23.5mm,22-22mm,23-27mm. respectively .Cleaning and shaping were done using Protaper [Gold] up to F3.Obturation was done using Gutta Percha [F3] with AH Plus root canal sealer. GIC entrance filling was done. Flap raised using suture ties and curettage done.Trapezoidal flap was raised by making a crevicular incision along the gingival crevices of 13 to 23 with a vertical relieving incision at the distal aspect of 13 to the mesial aspect of 23.However, blunt dissection was carried out to the anterior superior margin. A bony window was created to expose the root apices of 21 22 23.Apicoectomy was carried out on 21 22 23 using a diamond bur, 3mm of the apex was resected. This was followed by retrograde filling with MTA in relation to 21 22 23. During the procedure, the patient had about 10 mL of venous blood drawn. This blood was collected in two sterile, 5-mL vacutainer tubes without the use of an anticoagulant. These tubes were run through a tabletop centrifugation machine for nearly 10 minutes at a constant speed of 3,000 rpm. In its final form, it takes the shape of the following three layers: the first being the yellowish straw-colored layer that contains cellular plasma; the second layer consisting of the fibrin clot; and a redder third layer that contains red blood cells. After separating the red blood cells and plasma, the fibrin clot (PRF) was collected. More significantly, because it contains high concentrations of platelets, the intersecting layer between fibrin and cellular plasma was preserved meticulously.PRF {platelet-rich fibrin}, prepared from the patient's blood, was utilized during periapical surgery to promote healing and tissue regeneration. The surgical procedure included enucleation of the cyst, apicoectomy, and retrograde filling. (FIGURE 1) Clinical and radiographic assessments at follow-up visits revealed successful healing with no signs of inflammation or discomfort. The use of PRF demonstrated favorable outcomes in enhancing wound healing and maintaining a favorable environment for tissue remodeling. This case underscores the potential of PRF as an effective biomaterial in periapical surgery, advocating for its integration into dental therapeutic strategies for its regenerative properties, and continuous suturing was done to close the flap. (FIGURE 2) On comparing the pre op radiograph and post op radiograph, the resolution of the cystin the periapical region resolved into a trabecularpattern that is pronounced over a 6 months down the line. The formation of normal bone that encapsulates the periapical region is very much evident.Accentuated effects with PRF in the periapical region and marked resolution are found on the follow-up.up. (FIGURE 3) Pre-opradiograph, Immediate Post op radiograph, Long-term follow-up.

Figure 1: Clinical & Surgical Images

Figure 2: Post-Operatve Image

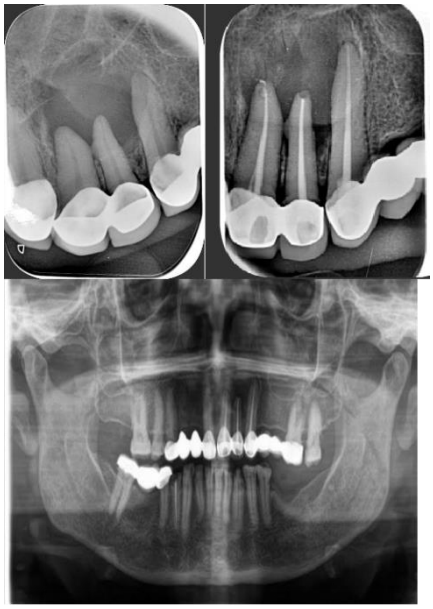

Figure 3: Radiographic Images

DISCUSSION

Periapical cysts form gradually when an inflammatory process stimulates Malassez's epithelial cell rests, and cystic fluid containing cholesterol crystals develops promptly surrounding the apex. Expansion of cysts can occur as a result of an increase in cystic fluid or infection [7]. Cysts account for 15% of all periapical lesions, and periapical cysts are remarkably the more frequent type, accounting for 52.3-70.7% of all odontogenic cysts [8].The treatment option is determined by many factors, including the lesion's origin and extent, its association with vital structures, clinical characteristics, systemic status, and compliance of the patient [9]. Endodontic therapy is a common conservative treatment option for small lesions among dentists. In our situation, multiple

visits of endodontic treatment were done with intracanal medication using calcium hydroxide to reduce microbial levels. Calcium hydroxide dressings serve as a supplementary aid to instrumentation and irrigation solutions in decreasing bacterial load, leading to more effective disinfection in areas such as ramifications and dentinal tubules. The hygroscopic properties of calcium hydroxide are highly effective in reducing exudate in clinical settings. According to previous research, calcium hydroxide medication must be applied for at least two weeks to have an effective antimicrobial action [10]. However, in the case of large-sized periapical lesions, conservative root canal treatment will not completely eradicate the bacteria, so marsupialization/decompression or even enucleation can be performed [11]. An epoxy resin-based sealer was selected as it has greater antimicrobial activity against endodontic pathogens than other root canal sealers available. PRF, alongside promoting healing, has been shown to decrease postoperative hematomas owing to its affirmative sealing capability with fibrin adhesive [12]. The successful outcome of PRF application depends exclusively on the time required for the collection of blood and immediate transfer to the centrifugation machine. When blood comes in proximity to non-anticoagulant tubes, it coagulates, and centrifugation only takes a short time to extract concentrated fibrinogen from the tube's middle and upper parts [13]. The only practical way to acquire a clinically useful PRF is by immediate manipulation. Longer centrifuging and blood collection times will render the process ineffective. The tube presents with fibrin showing diffuse polymerization, which will result in the production of a small amount of fibrinogen lacking uniformity [14].Dr Aravinth et.al found insightful surgical approach in toto removal of cyst and fibroma with modification to the crevicular and trapezoidal incision with lazy curve extension enhances drainage and tissue approximation[18]. When used as a retrograde filling material, Biodentine demonstrated significantly higher sealing capability than mineral trioxide aggregate (MTA) and intermediate restorative material [16]. According to a systematic review conducted in 2020, Biodentine has a higher sealing ability than MTA during the first 24 hours, but both materials are equal after one week [15]. Regarding mechanical properties, Biodentine outperforms MTA in clinical applications. Furthermore, Biodentine has shown reduced setting time and ease of use but has poor radiopacity, which limits the visualization of the retrograde obturation [17].

CONCLUSION

Newer innovations and a multidisciplinary approach are eventually helpful in bringing about the best possible prognosis. Here in this case report,the usage of PRF produced a marked difference and pronounced results in the prognosis. Recurrence of the cyst is also remote, which adds value to the insightful usage of PRF. Revolutionary pragmatic surgical practice and on-table surgical presence are the key elements for successful management, and it's the need of the hour.

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