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Case Report

Endo-Surgical Management of Radicular Cyst in Anterior Maxilla Approaching To Nasal Floor- A Case Report

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Abstract

Radicular cyst is the most common odontogenic cystic lesion of inflammatory origin. It is also known as periapical cyst, apical periodontal cyst, root end cyst, or dental cyst. It arises from epithelial residues in the periodontal ligament as a result of inflammation. This condition is usually asymptomatic but can result in a slow-growth tumefaction in the affected region. Radiographically, the archetypal description of the lesion is a round or oval, well circumscribed radiolucent image involving the apex of the infected tooth. In the management of these lesions the endodontic treatment only is not sufficient and it should be associated with surgical management. This paper presents a case of endodontics cum surgical management of large radicular cyst in the maxillary anterior region with complete resorption of maxillary nasal floor.

Keywords: periapical cyst, periodontal ligament, maxillary nasal floor.

INTRODUCTION

Radicular Cysts are thought to be formed from epithelial cell rests of Malassez (ERM), which are remnants of Hertwig's epithelial root sheath, present within the periodontal ligament. Proliferation of these epithelial cell rests is frequently associated with stimuli from periapical periodontal inflammation secondary to pulpitis [1]. During periapical inflammation, host cells in the periapical tissues release many inflammatory mediators, proinflammatory cytokines, and growth factors which induce proliferation of the ERM in all directions to form a three-dimensional ball mass [2, 3]. As the epithelial mass grows, the central cells move further away from their source of nutrition and undergo necrosis and liquefaction degeneration, forming central cystic cavity lined by epithelial wall. Following its formation, radicular cysts grows by periapical bone resorption mediated by prostagladins and cytokines. It is interesting to note that most inflammatory mediators which induce proliferation of epithelial cell rests also mediate bone resorption in inflammatory periapical lesion [4-9]. Smaller periapical cysts can often be treated conservatively by nonsurgical endodontic therapy. Proper endodontic therapy of the involved teeth removes irritants in the canals by chemomechanical instrumentation. As the root canal is completely sealed, all cell components participating in inflammatory reaction gradually resolve [10]. Most common location is apices of involved non-vital tooth, however other times it may be present on the lateral aspect of the root. These cysts can be seen at any age and can occur in periapical area of any teeth [11]. Shear [12] reported that they have particularly high incidence in the maxillary anterior region with male predilection. Non-surgical endodontic therapy is the first line treatment for the management of these lesions [13]. Oztan and Kalaskar *et al*., [14, 15] have confirmed that large periapical lesions including cysts can respond favourably to nonsurgical treatment using calcium hydroxide paste. But when root canal treatment is either not possible or fails, periapical surgery can be considered as a predictable option [16]. Hyun-Kyung *et al*., [17] in their retrospective observational study found that the most frequent management method for the radicular cyst was enucleation with apicectomy. This article reports a case of large radicular cyst associated

with central in incisor with close proximity with nasal floor.

Case Description

A male Patient aged 17 years reported with a chief complaint of pain, swelling and pus discharge in upper left front region of mouth since 3 to 4 months. On radiological examination, there was large periapical radiolucency in relation to 11, 12 and 13. On probing and radiograph examination there was extensive bone loss in relation to the same teeth (Fig-1). Vitality testing by heat test with a hot gutta-percha stick and electric pulp testing revealed no response in these teeth. Affected teeth 11 and 12 were slightly tender on percussion and showed grade 1 mobility. There was a presence of swelling on labial vestibular region and obliteration of naso-labial fold was also appreciated. Facial asymmetry was evident. Swelling was approximately 3 cm in diameter. After obtaining informed consent from the patient non-surgical endodontic treatment was initiated and root canal treatment was performed in 11 and 12(upper right central and lateral incisor). After endodontic therapy surgical phase was carried out. Bilateral infraorbital and nasopalatine nerve block was given with lignocaine with 1:80,000 adrenaline and a full thickness mucoperiosteal flap was raised from 21 (Upper Maxillary left Central Incisor) to 23 (Upper Maxillary right Canine) (Fig-2). On flap reflection the cystic lesion was evident at the apical end of 11 along with dehiscence along the length of the root (Fig-3). Cystic enucleation was done in toto by packing wet gauze to separate the cyst from the bone (Fig 3 & 4). However due to absence of buccal bone support and due to tight adherence of cystic lining on the lingual aspect, enucleation led to minimum bone overage to 11. There was extensive outstretch of cyst within the maxilla reaching supero-posteriorly to the nasal base. During surgical enucleation nasal mucosa was adhered with the cystic lining. With our best surgical technique and experience cyst was completely removed. The apicectomy was done with ultrasonic tips in relation to 11and 12 and the cavity filled with MTA (Fig 4 & 5). Patient was kept under observation for the healing of the cystic space.

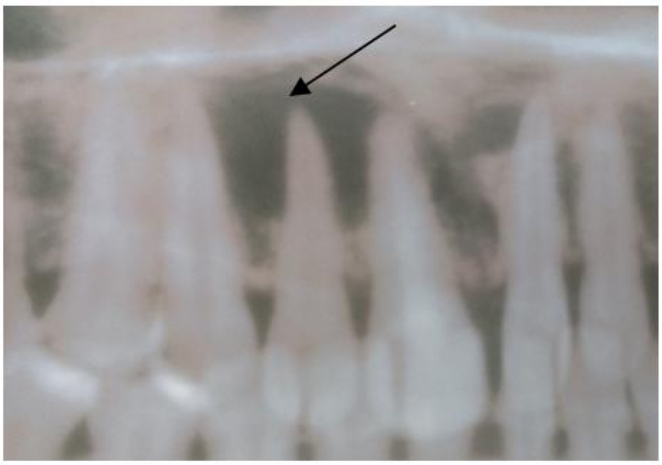

Fig-1: Radiograph showing radicular cyst 3x3.5 cm

Fig-2: Trapezoidal flap design for exposure

Fig-3: Mucoperiosteal flap elevated and cystic lining visualized

Fig-4: Cystic enucleated space in maxilla. Apicectomy done on 11and 12

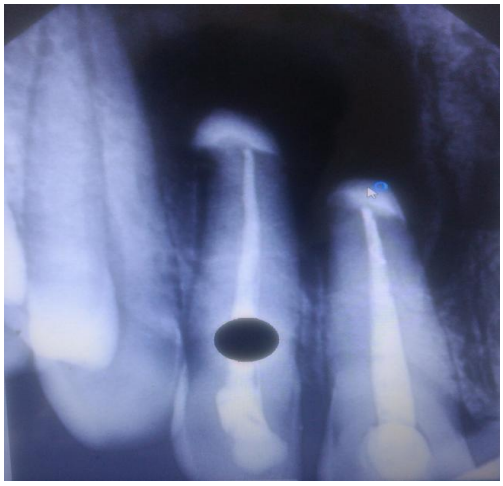

Fig-5: Post op radiograph root canal treated 11and 21 with root end closure with MTA

DISCUSSION

Radicular cyst is an odontogenic cyst of inflammatory origin preceded by a chronic periapical granuloma and stimulation of cell rests of Malassez. Although the source of the epithelium is cell rest of Malassez, other sources can be crevicular epithelium, sinus lining, or epithelium lining of fistulous tracts, have been suggested [18]. Radicular cysts are inflammatory lesions leading to bone resorption and can reach great dimensions and become symptomatic when infected or with great size due to nerve compression [19, 20] enucleation whereas most of others go for conservative endodontic technique [21]. However case selection for endodontic technique is limited to smaller cysts only and for bigger size cyst decompression, marsupialisation or even enucleation is advocated [22, 23]. The advantage of enucleation is the immediate rehabilitation resulting in fewer control appointments, which makes it a good choice for patients with poor compliance [24]. Disadvantages are the large defect and possible damages to adjacent structures owing to the surgical procedure. Another aspect is the higher risk of wound infection [25].

CONCLUSION

In the present case due to the presence of a swelling and also the lesions size and extent a surgical procedure was introduced. After endodontic therapy, complete enucleation of cyst was done followed by apicoectomy and retrograde filling with MTA.

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