



## RADICULAR CYST REMOVAL UNDER GENERAL ANESTHESIA: A CASE REPORT

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### ABSTRACT

**Background:** The radicular cyst is considered to be an inflammatory odontogenic cyst. The radiographic findings, present a well circumscribed, round or teardrop-shaped radiolucent area. Final diagnosis should be based on histopathological examination. The objective of this paper is to report a classic case of radicular cyst located in the anterior region of maxilla. **Methods:** A 24 years male patient complained of gingival and palatal swelling in the region of 11, 12, 13 and 14. Radiographic examination revealed a single well circumscribed radiolucency with approximately 2 cm diameter. **Results:** A total enucleation of the lesion was performed. Histological examination revealed that the lesion was "radicular cyst of inflammatory origin". **Conclusions:** The treatment of choice is surgical removal and subsequent histological evaluation to confirm the diagnosis. Relapses are infrequent.

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## INTRODUCTION

A radicular cyst develops from a pre-existing periapical granuloma, which is a focus of chronically inflamed granulation tissue located at the apex of a non-vital tooth [1]. These granulomas are initiated and maintained by the degradation products of necrotic pulp tissue. Stimulation of the resident epithelial rests of Malassez occurs in response to the inflammation which further leads to cyst formation. Breakdown of cellular debris within the cyst lumen raises the protein concentration, increasing osmotic pressure and resulting in fluid transport across the epithelial lining into the lumen from the connective tissue side. Fluid ingress assists in outward growth of the cyst. With osteoclastic bone resorption, the cyst expands. Other bone resorption factors such as prostaglandins, interleukins, and proteinases permit additional cyst enlargement (2).

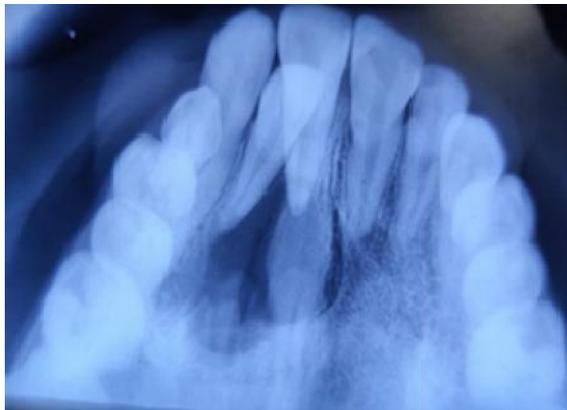
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## CASE REPORT

A 24 years male old patient reported to our department with swelling in anterior palate for past 1 month. On clinical examination, intraorally, the swelling in the anterior palate measured about 2\*3 cm extending from 11, 12, 21 and 22, which was merely soft in consistency. Discoloration of 11, palatally placed 12, and Ellis class 1 fracture in 11, 12, and 23 was present. Retained deciduous tooth 53 was also detected. There was a diffuse erythematous oval shaped swelling seen in the attached gingiva of 11, 12 and 13. On palpation, soft thin consistency of swelling was detected. No pus discharge has been noted. Tender on percussion was present in the following teeth - 11, 12, 13, 21 and 53. Investigation with IOPA, occlusal radiographs and Cone beam CT revealed that it was a single, large, well defined, radiolucent lesion with smooth borders located apical to 11, 12, 13, and 14 regions (Figures 1 & 2). The lesion was contacting the inferior portion of the incisive canal and canal could not be traced at this site. Superiorly the lesion in the maxilla was extending till the floor of the nasal cavity but not breaching through, but it is slightly pushing the floor of the nasal cavity in the superior direction.



**Fig 1. Antero-superior view (CBCT)**



**Fig. 2. Occlusal view radiograph**



**Fig. 3. Surgical Enucleation**



**Fig. 4. Specimen**

At the apex of 21 it showed a small well defined radiolucent lesion of less than 5 mm. Pulp vitality test is conducted in 11, 12, 21 and 22, detected with no response under pulp vitality test, 13 showed a delayed response. The above findings, indicative of a radicular cyst in relation to 11, 12, 13 and 14, and a periapical granuloma in relation to 21. Treatment plan comprised of Root Canal Treatment and surgical cyst Enucleation under general anaesthesia. The consent has been made with patient. Root Canal Treatment was performed in 11, 12, 21 and 22 under Local Anaesthesia (Lignocaine2%). Complete mechanical debridement of canals done with filling the root canals with 6% taper Gutta percha resin with Zinc Oxide sealants. Cyst enucleation procedure: General Anaesthesia administered with Oral intubation. Patient was painted and draped under aseptic protocol. Local anaesthesia with adrenaline infiltration administered from premolar to premolar region (14 to 24). Creviceular incision was made from 14 to 22 and mucoperiosteal flap was elevated. Lesion was identified after elevation of flap, followed by Cyst lining excavation along with its content, which left a large gaping palatal bone defect which measured 2 \* 3 cm. Curettage was done thoroughly. Apicoectomy (i.e., Apical end resection) done in relation to 13, 11, 21 and Intermediate Restorative Material (IRM) placed. Extraction of tooth 12 and 53 done. Gel form was placed and flap approximated with 3-0 Vicryl suture. Dynaplast compression dressing was placed over the upper lip. Specimen sent for histopathological examination which confirmed Radicular Cyst. Patient extubated uneventfully and kept for an observation of 2 days.

## DISCUSSION

Periapical cyst occur in patients over a wide age range, with peak in the third and fourth decade. It is rare for such cyst to develop in the deciduous dentition. They are more common in the anterior maxillary region [3]. Clinical findings may include tenderness, pain, swelling, and pus drainage. Typically patients have no symptoms unless there is an acute inflammatory exacerbation. In addition, if the cyst reaches a large size, the swelling and mild sensitivity may be noted. Movement and mobility of the adjacent teeth are possible if the cyst enlarges in size. The tooth from which the cyst originated does not respond to thermal and electric pulp testing. Pathogenesis of radicular cysts has been described as comprising of three distinct phases: the phase of initiation, the phase of formation and the phase of enlargement. The histopathological features of all the three types are similar. The cyst is lined by stratified squamous epithelium, which may demonstrate exocytosis, spongiosis, or hyperplasia. The cyst lumen may be filled with fluid and cellular debris. On occasion, the lining epithelium may demonstrate linear or arch shaped calcification known as Rushton bodies. The wall of the cyst consists of dense fibrous connective tissue often with an inflammatory infiltrate containing lymphocytes variably intermixed with neutrophils, plasma cells, histocytes, and mast cells. Dystrophic calcification, cholesterol clefts with multinucleated giant cells, red blood cells and areas of hemosiderin pigmentation may be present in the lumen, wall or both. Intramural islands of odontogenic epithelium that closely resemble squamous odontogenic tumour rarely have been noted in some cases, which could be misdiagnosed as neoplastic process.

A periapical cyst is treated as same as periapical granuloma. When clinical and radiographical features indicate a periapical inflammatory lesion, extraction or conservative non-surgical endodontic therapy is performed. Large lesions associated with restorable teeth have been treated successfully with endodontic therapy combined with biopsy, marsupialization, decompression, or fenestration [4]. As with any periapical inflammatory lesions, minimal follow up at 1 and 2 years is advised strongly. Biopsy is indicated to rule out other pathologies, because any number of odontogenic and non-odontogenic cysts or tumour can mimic the appearance of the periapical cyst. In such cases the cyst is to be removed surgically and all the inflammatory foci to be excised surgically to avoid further recurrence. In some instances lateral radicular cyst are removed before testing the vitality or periodontal evaluation for an adjacent focus of infection (5).

## CONCLUSION

Cyst treatment without recurrence is still under discussion. Various treatment options have been suggested depending on the size, type, and location of the cyst. While in large lesions endodontic treatment is followed by surgical enucleation, however, some authors propose nonsurgical management of small lesions. This case report discusses about the successful surgical management of a large cyst along with endodontic treatment of the cyst-involving tooth.

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