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**Management of a residual cyst in anterior maxilla - enucleation to prosthetic rehabilitation**

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**ABSTRACT**

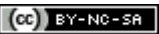
Residual cysts are inflammatory odontogenic cysts that are usually asymptomatic and present on a post-extraction site. Mostly incidentally detected on imaging, or expansion of affected region, or pain and drainage, these cysts may arise from inflammatory fibrous and granulation tissue at the apex/ periapical region of a tooth not curetted at the time of dental extraction. A 50-year-old Iranian man complaining of absence of tooth in the upper front jaw region. Radiograph revealed the presence of a well-defined well-corticated radiolucent lesion in the area underlying the edentulous ridge, suggestive of a residual cyst. Presentation, diagnosis and management of the lesion followed by prosthetic rehabilitation are discussed.

**Keywords:** Residual cyst, Edentulous ridge, Prosthetic rehabilitation

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## INTRODUCTION

A cyst is a sac lined by epithelium containing fluid or semisolid material. [1] The epithelial cells first proliferate and later undergo degeneration and liquefaction, thus formation of a cyst. Equal pressure is there on the walls of the cyst from inside which is applied by the liquefied material due to which the cyst grows spherical in shape. But in some cases the shape changes due to unequal resistance produced by the surrounding structures. This may also lead to displacement of teeth. Sometimes even the cortical bone may get perforated by the pressure produced during the expansion of the cyst. Cysts in oro-facial region can be grossly classified as odontogenic cysts and non-odontogenic cysts. The origin of odontogenic cysts can occur from the epithelium of the developing teeth, the enamel organ; the reduced enamel epithelium, the remnants of the dental lamina or the cell rests of Malassez. A residual cyst arises from the necrotic pulp remnants [2] or from the remnants of the periapical granuloma of an extracted tooth [3, 4] which proliferates by an inflammatory process that is no longer present. Very often, the teeth which need to be extracted have periapical cysts that go undetected. This leads to the extraction of the teeth without removal of the cyst, leading to origin and growth of residual cysts.

The commonest cystic lesions involving the maxilla and mandible region are the inflammatory cysts, which constitute 50-75% of all oral cysts.[5] The residual cysts are the most common bone destructing lesions of the maxilla and mandible. These belong to the inflammatory group of odontogenic cysts. The residual cyst is usually asymptomatic and most of the times detected incidentally on clinical examination or on routine radiographic examination of an edentulous area. [6] The extra-bony presentations of radicular cysts are rare and commonly seen in the elderly individuals. [7] The radiographic features usually show well-defined round to ovoid radiolucency lined by a radiopaque border which will be present in an edentulous area. Over the years, the cyst may regress, remain static or grow in size. Unless infected, it is rare to find symptomatic residual cysts which will result in clinical signs or symptoms that will concern the patient enough to seek treatment. Here a case of residual cyst treated by enucleation followed by prosthetic rehabilitation has been presented. [8]

**Case Report:** A 50 year old female patient reported to the private clinic with a chief complaint of poor looks due to a missing left upper front tooth since the past few months. She gave history of an uneventful extraction of same tooth four months

back at some private dental clinic as it was decayed and caused pain. There was no other relevant history. Extra-oral examination revealed no significant finding. On intra-oral examination, it was found that the left maxillary incisor (21) was missing with normal alveolar height and mild tender overlying mucosa. A fixed prosthesis was planned for the patient according to her wish. So an intra-oral periapical radiograph of maxillary anterior (teeth 21) region was taken to assess the periodontal status of adjacent teeth to be used as abutment. The IOPAR revealed a well-defined, round to ovoid homogenous radiolucency with sclerotic borders in missing 21 region overlapping the apical third of root of 22, approximately 8 mm in diameter (**Fig. 1**).

On further questioning, the patient gave a history of some vague discomfort in the area overlying the lesion which she had ignored it. As the left lateral incisor (22) was found vital with delayed response using electric pulp tester a provisional diagnosis of residual cyst was made. The patient was informed about the presence of the cyst and a plan was made for surgical enucleation of the cyst followed by histopathological evaluation. Routine blood investigations were performed and an antibiotic coverage was instituted two days prior to the procedure. Prior to surgery, local infiltration anesthesia was administered along with a naso palatine nerve block, using lignocaine with adrenaline (LOX 2% lignocaine with adrenaline 1:200000).

A trapezoid flap was raised extending from the distal part of the left canine to the distal part of the central incisor. Since the bony cortex overlying the lesion was intact, overlying bone was removed till the cystic lining was visible. After enucleation of the cystic lining (**Fig. 2 & 3**), extensive curettage was done and the cavity was irrigated with normal saline. Following this, the flap was repositioned and the edges were sutured with 3-0 silk. The cyst lining was preserved in formalin and sent for histopathological evaluation, which confirmed the diagnosis of the residual cyst. Post operatively, the patient was placed on oral antibiotics along with analgesics for three days. The healing was uneventful and sutures were removed after seven days. Endodontic therapy was done following this, for the central incisor (#11), the lateral incisor (#22) and the canine (#23). Following endodontic treatment, parallel prefabricated, serrated, steel vented posts (Para Post System, Coltene) were placed in the central incisor and the lateral incisor. Core was prepared with light-cure composite material (Tetric N-Ceram, Ivoclar Vivadent) and crown reduction was done for the central incisor, lateral incisor and canine. Provisional restorations

were placed during the time required for laboratory procedures for prosthesis fabrication. The finished 4 unit bridge was cemented in place with Glass Ionomer Cement (Type 1) (GC Gold Label Glass Ionomer, GC Corporation). Patient was highly satisfied following the prosthetic rehabilitation (Fig. 4).

## DISCUSSION

Residual cysts are usually stumbled on during routine examinations since most of them are reported to be asymptomatic. It arises as consequence of an improper or incomplete surgical elimination of a radicular or other inflammatory or developmental cyst. Clinical and histological characteristics are identical to those of a radicular cyst. Radiologically it will be seen as a radiolucency of variable size at the site of a previous tooth extraction. [9] Patients are generally unaware that they have such cysts. Most of the residual cysts are asymptomatic according to previous reports and are more common in maxilla than mandible and occur more often in men than women and the average year of diagnosis is 52 years old (5). The presented case in this study was a 50-year-old female. However, they may influence the prognosis of prosthesis if left in place, especially if the planned abutment teeth are involved. Thus, in such cases, it is better to remove the cystic lining. Slight mobility may be present if the lesion involves the abutment teeth, but gradually this may be found to decrease as supporting bone formation proceeds. In this case, the patient came with a desire for fabrication of prosthesis for better aesthetics. Radiographs revealed the presence of the radiolucent lesion. Under local anesthesia, a flap was raised and the lining of the lesion was curetted gently and removed. Following healing of the soft tissue wound, endodontic treatment was performed for the abutment teeth and a four unit bridge was

cemented in place. In histologic examination, dystrophic calcifications may be seen. Cholesterol crystals in our case were similar to report of Sridevi *et al.* [10]. High *et al.* reported cholesterol crystals in the cystic fluid [11]. They reported that the major source of cholesterol could be due to disintegrating red blood cells which were crystallized in the tissues and accumulation of serum in the tissues, because of inability of normal lymphatic drainage to get access to this extravasated serum. Also, disintegration of plasma cell, lymphocytes, macrophages and circulating plasma lipids were another reason. Upon deposits of cholesterol crystals within fibrous capsule, they would be recognized as foreign bodies, which causes foreign body giant cell reaction. These crystals become dissolved and clefts become surrounded by multinucleated giant cells. Although odontogenic keratocyst and ameloblastoma were in differential diagnosis, when the residual cyst shows calcifications as our case, other lesions with mixed radiopaque-radiolucent appearance should be considered in differential diagnosis, such as odontoma, periapical cemento-osseous dysplasia, adenomatoid odontogenic tumor and pindborg tumor.[12]

## CONCLUSION

Restoring the smile of a patient with pathology is a challenging endeavor. However, with proper diagnosis, detailed communication, optimum and gentle tissue handling and proper planning of the lengthy delicate procedures involved, satisfactory rehabilitation of the teeth along with treatment of the pathology and healing by normal tissue can be achieved with a good prognosis of the case.

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**Fig 1. Preoperative IOPAR reveals a well defined, well-corticated cystic lesion.**



**Fig 2. Intraoperative photo: Cystic lining identified.**



**Fig 3. Intraoperative photo: Cystic lining removed.**    **Fig 4. Post-prosthetic rehabilitation patient profile.**

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