

Surgical enucleation of radicular cyst using operating microscope: A case report & overview on use of microscope.

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ABSTRACT

This article presents a case report of radicular cyst associated with maxillary anterior teeth with accompanying labial expansion. Cystic sac was removed surgically under local anesthesia under an operating microscope. This article will also discuss the pros and cons of using endodontic microscope.

Key Words: Operating Microscope; Radicular Cyst; Enucleation

INTRODUCTION

Periapical radiolucencies are commonly seen associated with non-vital teeth. Sometimes they are large enough to be diagnosed as cyst radiographically but clinically resemble a periapical abscess with discharging sinus.

Differential diagnosis with periapical granuloma, radicular cyst or other pathologies is mandatory and necessitates tissue biopsy; as periapical presentations of the lesion may confuse a practitioner.¹

CASE REPORT

A 35-year-old female reported to the Department of Conservative Dentistry and Endodontics on 15 January 2009. She presented with severe pain and a large swelling on the upper lip. The patient experienced recurrent episodes of such complaints for last two months along with a gradual increase in swelling.

Detailed patient's history revealed that she had

sustained trauma to her anterior teeth, during a vehicular accident two years back. Since there was no associated bleeding or pain at the time of trauma, no treatment was undertaken for the same.

During examination it was found that the patient was in good general and physical health. Thorough intraoral examination was carried out which revealed a well defined fluctuant swelling with smooth surface, extending from right canine to the left canine. The swelling was approximately 6 × 2cm in dimensions. Vitality testing of the teeth revealed except for the maxillary canines all the anteriors were non-vital. The left central incisor had grade one mobility.

Radiographs revealed radiolucency extending from the roots of left maxillary canine to right maxillary lateral incisor. Radiographs revealed maxillary right lateral incisor to have a calcified canal. From history and clinical examination a provisional diagnosis of infected radicular cyst was made? It was decided to surgically enucleate the

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lesion after endodontic treatment of the required teeth.

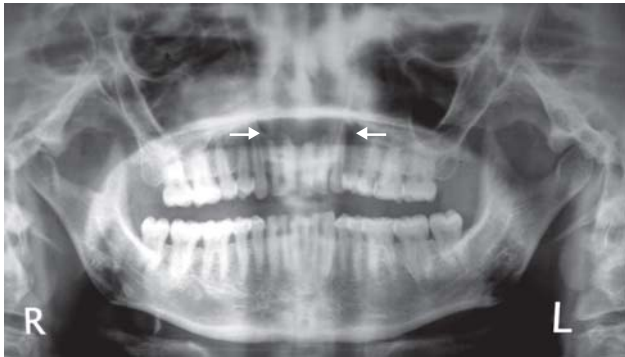


Fig 1: Ortho pantomogram showing radiolucency.



Fig 2: Intra oral periapical radiograph of right side showing calcified lateral incisor and extent of radiolucency.



Fig 3: Intra oral periapical radiograph of left side showing extent of radiolucency.

Antibiotic and anti-inflammatory was prescribed to control the presenting complaints. The patient was explained the line of treatment and an informed consent was taken. Single sitting root canal treatment was scheduled for the next day with both the maxillary central incisors, right lateral incisor and right canine followed by surgical enucleation of the cyst, apicectomy and retrograde fillings of the involved teeth.

Endodontic treatment was completed for the maxillary central incisors, right lateral incisor and right canine and post root canal treatment radiographs were taken. An intraoral approach by

raising a trapezoidal flap extending from left maxillary canine to right maxillary lateral incisor and the cystic site was exposed, which showed a large bony cavity with missing buccal plate, filled with the cyst. Cystic enucleation was carried out under the endodontic microscope and the cyst was removed in-toto. On examination of the bony cavity under the microscope it was found the lesion had caused middle palatal vault resorption and the underlying mucosa could be palpated.

Closure was done following hemostasis. Post surgical period was uneventful. The cystic sac was submitted for histopathological examination. Histopathological features were consistent with the clinical diagnosis of radicular cyst.



Fig 4: Post root canal treatment intra oralperiapical radiograph showing maxillary central incisors, right lateral incisor.



Fig 5: Post root canal treatment intra oral periapical radiograph showing right maxillary lateral incisor & right canine.



Fig 6: Trapezoidal flap being raised.



Fig 7: Bony cavity after cyst enucleated (picture taken with operating microscope)



Fig 8: Enucleated cyst

DISCUSSION

Radicular cysts are commonly seen in anterior region following a history of trauma. They are slow growing and may cause bony expansion as well as involvement of the adjacent teeth and root resorption.

Histopathologically it shows cystic lumen, lined with a thin epithelial lining supported by a fibrocellular connective tissue stroma, showing dense chronic inflammatory cell infiltrate with few cholesterol clefts.

In the present case the radicular cyst had involved maxillary central incisors, right lateral incisor and right canine, therefore enucleation along with retrograde filling with glass ionomer cement to obtain better seal.

The introduction of any new tool or equipment has led to misconceptions and misinterpretations. Dental microscopes are essentially otodaryngology

microscope with minor modifications for use in dentistry. It is a major piece of equipment and its use is becoming popular as visualization is increased. It is costly and its integration into practice needs many changes in instrumentation and procedures. The surgeon and staff needs to learn new handling and assisting techniques. Also the quality of optics, the engineering of the components and the choice of operation greatly affects the long term visual and physical well being and comfort of users.²

The major requirement of the operating microscope is optic stability and maneuverability. Optics is very difficult to assess. Maneuverability is important as the patient's head moves frequently. To adjust position the head of the microscope should be light. Mechanical stability is second important factor as it needs to be frequently repositioned during procedure to accommodate changes in patient's head. It is also important that the microscope stops moving immediately after being repositioned.

Though microscope increases the visualization of the field the usable power is restricted as increasing magnification will decrease the depth of field and narrow its size. Literature has suggested that magnification above 30× is of little value in periapical surgery because slightest movement of the patient including breathing throws the field out of focus and repeated recenter, refocus causes unnecessary eye fatigue.²

The use of microscope during this case helped to get a better view of the extent of defect. The cyst was removed in-toto and the apices were observed clearly. Bevel was placed on the apices; over extended gutta-percha was cut with hot instrument

and condensed and GIC placed in the apical area.

The use of microscope gave better visibility and cleaner field; but caused increase in the operation time along with operator and patient fatigue. Incorporation of operating microscope in procedure needed a well trained assistant with a good knowledge of the procedure.

Thus use of an operating microscope has its pros and cons along with it. Its use is a cumbersome procedure but with good knowledge of the equipment and its routine use will lend a hand in overcoming its limitations.

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