

# Management of Infected Radicular Cyst by Marsupialization

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## ABSTRACT

Cystic lesions are frequent in the oral cavity. They are defined as a pathologic cavity with or without fluid or semifluid material. Radicular cysts are the most common odontogenic cystic lesions of inflammatory origin affecting the jaws. They are most commonly found at the apices of the involved teeth. This case report presents the successful surgical management of large infected radicular cyst involving entire body region of right side of mandible. We illustrate the possibility of healing of cystic periapical lesions with conservation of vital structures.

**Keywords:** Odontogenic cyst, Periapical pathology, Marsupialization.

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## INTRODUCTION

Radicular cysts are the most common (52-68%) cystic lesions affecting the jaws. They are most commonly found at the apices of the involved teeth, however they may also be found on the lateral aspects of the roots in relation to lateral accessory root canals.<sup>1</sup> Their prevalence is highest among patients in their third decade of life, among men than women. The natural history begins with a nonvital tooth which remains *in situ* long enough to develop chronic periapical pathosis.<sup>2</sup>

Most cases of periapical lesion do not present any symptom unless an exacerbated inflammatory response is present out of the infection. In the X-ray it appears as regular periapical transparencies circumscribed by a well-defined radiopaque line with loss of the hard lamina at least in the periapical region and possible root resorption. To confirm the diagnosis it is necessary an incisional or excisional biopsy, which should be preceded by a puncture and aspiration.<sup>3</sup>

Cystic lesions can receive endodontic (conservative) or surgical (enucleation, marsupialization and decompression) treatments.

This case report presents the successful surgical management of large infected radicular cyst.

## CASE REPORT

A 58-year-old male patient was referred to our department with the chief complaint of painful swelling of 1 week duration in right side of lower jaw along with pus discharge.

Patient gives a history of recurrent swelling and pus discharge since 6 months which got relieved on taking medications. Patient revealed the history of extraction of mandibular right second premolar (45) and mandibular right first molar (46) 4 months back.

On extraoral examination, diffuse swelling was present in the mandibular right posterior region extending antero-posteriorly from body region up to angle region and supero-inferiorly from external oblique ridge to the lower border of mandible (Fig. 1). There were no sign and symptoms of paresthesia seen. Intraoral examination revealed a unilateral, diffuse swelling with obliteration of the vestibule in association with mandibular right canine (43) to mandibular right second molar (47) region (Fig. 2). On palpation the



Fig. 1: Initial preoperative photograph with buccal swelling



Fig. 2: Clinical view with obliteration of vestibule in relation to 43 and 47

lesion was approximately 3 × 3 cm, soft to firm in consistency.

Orthopantomogram (OPG) X-ray revealed a well-defined radiolucency in relation to the roots of 43 and 47 and approaching till lower border of mandible (Fig. 3). Occlusal radiograph showed a dark, dense oval shaped radiolucent lesion approximately 5 × 3 cm in dimension present on right body region (Fig. 4).

A fine needle aspiration of the swelling showed a discharge containing pus and blood. Based on history and clinical examination a provisional diagnosis of infected radicular cyst was made and cyst marsupialization was planned under local anesthesia. Complete blood count and other routine investigation were under normal limit. Histopathology of aspirated fluid showed RBC's and inflammatory cells indicating inflammatory exudates thereby favoring our diagnosis as infected radicular cyst.

Incision was made over the alveolar crest region of edentulous area so that flap lies on the sound bone and there is good accessibility. Bone is removed to expose the underlying cystic lining. The underlying cyst lining is gently eased away from the cavity and specimen was sent for histopathological examination. Extraction of the offending tooth was also performed. All the vital structures were preserved. Bleeding points were arrested with the help of pressure pack and gelfoam. Cystic cavity was irrigated with normal saline and povidone-iodine solution. The cavity was then packed with half inch width ribbon gauze impregnated with iodoform glycerin paste (Figs 5 and 6). Histopathological examination of marsupialized tissue confirmed the diagnosis as infected radicular cyst with cystic lumen lined by stratified squamous epithelium showing an arcading pattern.

Postoperative instructions were given to the patient and patient was kept under antibiotics and analgesics. The dressing was changed after every 15 days.

OPG were repeated at 1, 3, 6 and 12 months which revealed progressively decrease radiolucent area of cystic space and evidence of new bone formation was seen (Fig. 7). The extraoral swelling caused by expansion of the buccal cortical plate also disappeared completely (Fig. 8).

## DISCUSSION

Radicular cysts are thought to arise from epithelial cell rests of Malassez in the periodontal ligament, and they are believed to proliferate as a result of periapical inflammation caused by infection of the root canal system.<sup>4</sup>

Apical periodontal 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. Histopathologically it shows cystic lumen, lined with a thin epithelial lining supported by a fibrocellular

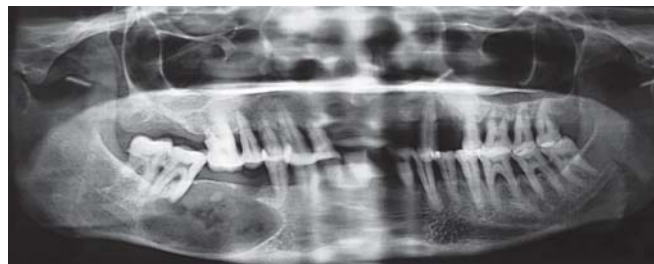


Fig. 3: Preoperative orthopantomogram showing a large well-defined radiolucent lesion



Fig. 4: Occlusal radiograph showing expansion of buccal and lingual cortical plates



Fig. 5: Clinical view of cavity packed with iodoform dressing

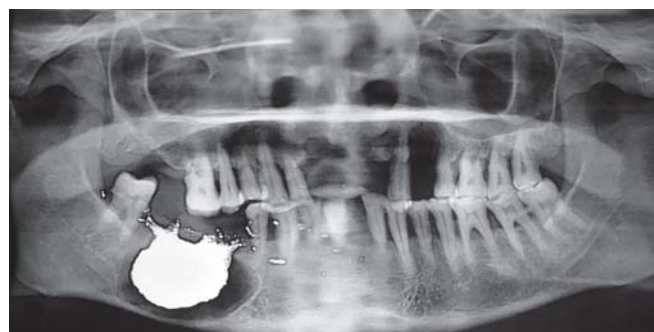


Fig. 6: A panoramic radiography showing iodoform dressing completely filling the defect



**Fig. 7:** One year follow-up orthopantomogram suggesting satisfactory bone radiopacity and neoformation



**Fig. 8:** One year follow-up photograph with no buccal swelling

connective tissue stroma, showing dense chronic inflammatory cell infiltrate with few cholesterol clefts.<sup>5</sup>

There are two main theories regarding the formation of the cyst cavity. The nutritional deficiency theory<sup>6,7</sup> is based on the assumption that the central cells of the epithelial strands become removed from their source of nutrition and undergoes necrosis and liquefactive degeneration to form the cyst cavity lined by stratified epithelium. The abscess theory<sup>6,7</sup> postulates that proliferating epithelium lines an abscess cavity formed by tissue necrosis and lysis because of the innate nature of the epithelial cells to exposed + connective tissue surfaces.

The treatment of these cysts is still under discussion and many professionals opt for a conservative treatment by means of endodontic technique. However, in large lesions the endodontic treatment alone is not efficient and it should be associated to a decompression or a marsupialization or even to enucleation.<sup>8,9</sup>

In the present case due to the patient's apprehension regarding the presence of a swelling and also the lesions size and extent along with the bone integrity of the cystic wall and its proximity to vital structures surgical procedure of

marsupialization was adopted allowing new bone to fill the defect, leading to substantial reduction in the size of the cystic cavity. It shows lower morbidity compared to enucleation in terms of preservation of important anatomical structures, such as the adjacent teeth and the inferior alveolar nerve.

Endoscopically assisted enucleation is an innovative alternative method that can be as conservative as marsupialization, allowing preservation of important surrounding structures, with the greater advantage of one-step treatment, reduced healing period and very low morbidity.<sup>10</sup>

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