



## Effective Management of a Large Radicular Cyst with Surgical Enucleation

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### ABSTRACT

Radicular cysts are inflammatory jaw cysts at the apices of teeth with infected and necrotic pulps. A radicular cyst arises from the epithelial residues in the periodontal ligament as a result of inflammation, usually following death of the pulp. Some authors propose that radicular cysts must be totally enucleated surgically to remove all epithelial remnants. In this article, a case report of radicular cyst and its treatment is discussed in regard to current literature.

**Keywords:** Enucleation, Inflammatory jaw cysts, Radicular cyst.

**How to cite this article:** Kumar JA, Achuthan N, Loganathan K, Augustine D. Effective Management of a Large Radicular Cyst with Surgical Enucleation. Oral Maxillofac Pathol J 2014;5(1):459-461.

**Source of support:** Nil

**Conflict of interest:** None

### INTRODUCTION

Radicular cyst is one of the most common odontogenic cystic lesions of inflammatory origin, arising from epithelial residues in periodontal ligament as a result of inflammation.<sup>1</sup> The lesion is not clinically detectable when small but most often is discovered as incidental finding on radiographic survey. Two techniques can be used in clinical practice for surgical removal of cysts enucleation and marsupialization. In this article we present a large maxillary radicular cyst in a 20-year-old woman which was treated by enucleation.

### CASE REPORT

A 20-year-old female patient visited the oral surgery department with a chief complaint of a swelling on the right side of face since 1 month with discoloration of tooth 11 and 12 (Fig. 1). There was no associated pain. Patient had a history of trauma in relation to 11 while playing 5 years ago.

On extraoral examination a diffuse swelling was present involving the right side of the face. On intraoral examination a diffuse swelling was observed extending from 11 to 14, measuring 4 × 2 cm. There was no mobility of the involved teeth. No surface discharge was present. Electrical pulp testing revealed that 11 and 12 were nonvital, 13 and 14 were asymptomatic and responded normally to electric pulp testing.

Radiographic examination showed a well-defined unilocular radiolucency in relation to the right maxilla from the 11 to 14 region.

A provisional diagnosis of radicular cyst was made.

Root canal treatment was carried out in relation to 11 and 12.

The surgical procedure was carried out under local anesthesia (infraorbital nerve block, nasopalatine nerve block and local infiltration).

Vestibular incision was placed with releasing margins and a mucoperiosteal flap was raised. A plane of cleavage was established between cystic epithelial lining and surrounding bone. The whole cystic lesion was enucleated

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**Fig. 1:** Swelling seen in the right maxillary alveolus since 1 month with discoloration of tooth 11 and 12

and curettage was done (Fig. 2). Primary closure of the cystic cavity was done with black silk through simple interrupted suturing. Iodoform pack was placed as drain in the buccal region with the help of sutures.

The drain was placed which was removed after 48 hours. Wound healed uneventfully and the patient was followed up regularly for 3 weeks. A postoperative OPG was taken after root canal treatment of 11 and 12 (Fig. 3).

The excised tissue was sent for histopathological examination which showed a lining epithelium, a cystic cavity and a fibrous capsule. The lining epithelium was stratified squamous and non-keratinized. The connective tissue was fibrous with dense infiltrate of inflammatory cells. The diagnosis of radicular cyst was confirmed (Fig. 4).

## DISCUSSION

The radicular cyst is most common odontogenic cyst also called as periapical cyst, apical periodontal cyst and root end cyst. These cysts comprise about 52 to 68 % of all the cysts affecting the human jaw.<sup>2</sup> The usual etiology is an infected tooth, leading to necrosis of the pulp. Simon discovered two distinct types of radicular cysts, namely those containing cavities completely enclosed in epithelial lining or true cysts, and those containing epithelium-lined cavities that are open to the root canals.<sup>3</sup> Most radicular cysts develop slowly and do not become very large cavities. Patients do not experience pain unless inflammatory exacerbation is present. Large cysts may lead to mobility and not respond to electrical pulp test in affected tooth.<sup>4</sup>

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



Fig. 2: Intraoperative procedure—enucleation being carried out

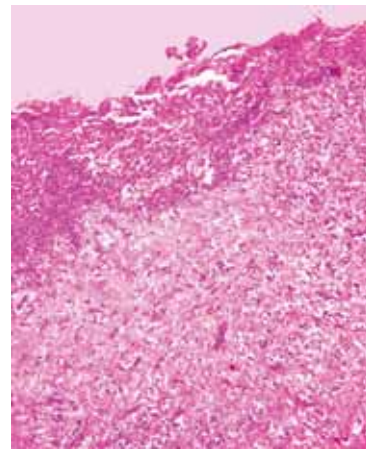


Fig. 3: H&E 10x view showing a lining epithelium which is stratified squamous and non-keratinized. The connective tissue is fibrous with dense infiltrate of inflammatory cells

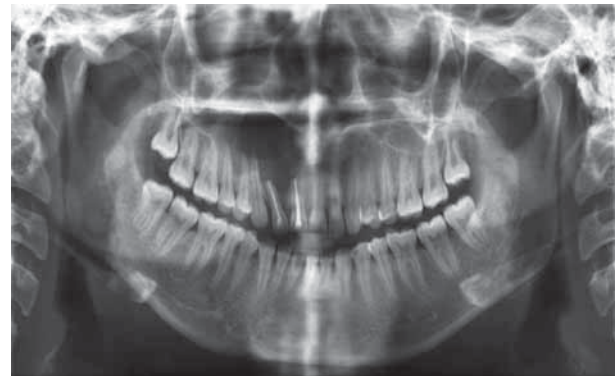


Fig. 4: Postoperative OPG after root canal treatment of 11 and 12

radicular cyst had involved maxillary central incisors, right lateral incisor and right canine, therefore enucleation along with retrograde filling was done to obtain better seal. The result of histopathological examination was performed after surgery confirmed that it was a radicular cyst.

The surgical approach to cystic lesions of the jaws is either marsupialization or enucleation. Enucleation is defined as a complete removal of the cystic lining with healing by primary intention while marsupialization is synonymous with Partsch's operation, and is the conversion of a cyst into a pouch, it requires considerable after care and patient cooperation in keeping the cavity clean whilst it resolves and heals by relieving the internal pressure, it is indicated when cyst is in close proximity to vital structures and where there is significant risk of injury with enucleation.<sup>5</sup>

The treatment of choice is dependent on the size and localization of the lesion, the bone integrity of the cystic wall and its proximity to vital structures. Cysts are usually enucleated, where the cystic lining is separated from its inner

bony surface and removed and the cavity allowed filling with blood clot. Alternatively the cyst may be marsupialized to relieve the internal pressure.<sup>6</sup>

Radicular cysts heal spontaneously after root canal treatment or extraction. Some authors propose that radicular cyst must be totally enucleated surgically to remove all epithelial remnants.<sup>7</sup> We had carried out a surgical enucleation and root canal therapy in relation to 11 and 12.

## CONCLUSION

Although, small cystic lesions frequently heal simply with endodontic therapy, larger lesions may need additional treatment. Untreated cysts may expand causing local tissue destruction and deformities. In this article a large maxillary radicular cyst in a 20-year-old woman has been presented which was treated by surgical enucleation.

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