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ENUCLEATION AND APICOECTOMY IN THE TREATMENT OF RADICULAR CYSTS: CLINICAL INSIGHTS

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Abstract

Radicular cysts are the most common inflammatory odontogenic cysts, typically arising from epithelial remnants in response to pulpal necrosis and periapical inflammation. While many are asymptomatic and discovered incidentally on radiographs, larger lesions may cause swelling, displacement of adjacent structures, and cortical plate expansion. Treatment modalities vary depending on size, location, and response to endodontic therapy.

This case report describes the management of a radicular cyst in the anterior maxilla, on an 18years old patient, apicotomy and endo-filling with biocompatible material.

Clinical and radiographic evaluation revealed a persistent periapical radiolucency consistent with a radicular cyst. An apicoectomy was performed with complete enucleation of the cystic lesion. The apical portion of the root was resected, and a biocompatible filling was placed. Histopathological examination confirmed the diagnosis of a radicular cyst. Postoperative follow-up over six months demonstrated satisfactory healing with no signs of recurrence.

Apicoectomy combined with cyst enucleation is an effective surgical approach for managing persistent radicular cysts unresponsive to conventional endodontic treatment. Early

Histologically, radicular cysts are characterized by a fibrous connective tissue wall lined by non-keratinized stratified squamous epithelium. Chronic inflammatory infiltrates are usually present, and in longstanding lesions, cholesterol clefts, Rushton bodies, and dystrophic calcifications may be observed (9). A recent institutional series also reported diverse histopathological features including mucous cell metaplasia and ciliated cells, reinforcing the variable morphology of these lesions (10). The inflammatory nature of these cysts underscores the importance of early endodontic or surgical intervention to eliminate the source of infection and prevent further progression (3).

Management strategies for radicular cysts vary depending on the size and extent of the lesion. Small lesions may resolve following conventional root canal therapy, while larger cysts often necessitate surgical procedures such as enucleation, marsupialization, or decompression (11). A case report demonstrated successful periapical microsurgery in which vitality of adjacent teeth was preserved over a 4-year follow-up (11). Prognosis is generally favorable with appropriate treatment, although untreated cysts may enlarge progressively and compromise surrounding bone and dentition (1,11).

Given their high prevalence, characteristic clinical and radiographic presentation, and potential to involve vital maxillofacial structures, radicular cysts of the maxilla represent an important diagnostic entity in oral pathology and maxillofacial surgery. A comprehensive understanding of their epidemiology, pathogenesis, histopathology, and management is therefore essential for clinicians to ensure accurate diagnosis and effective treatment, minimizing complications and recurrence.

Etiology of Radicular Cysts

Radicular cysts, also called periapical cysts, are inflammatory odontogenic cysts that arise as a sequela to pulpal necrosis. Their development is closely associated with chronic periapical inflammation following infection of the pulp and periapical tissues (3,10).

The main etiological factors include:

1. Dental Caries

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Case Presentation

An 18-year-old male patient reported to the Department of Oral Surgery and Implantology at the PHI USKC Sveti Pantelejmon in Skopje with the chief complaint of a painless swelling in the anterior maxillary region for the past 3 months. The patient gave a history of trauma to the upper front tooth several years ago, followed by gradual discoloration and loss of vitality.

Clinical Examination revealed a diffuse, firm, non-tender swelling in the labial vestibule adjacent to tooth 12, causing mild labial cortical expansion. The overlying mucosa appeared normal. The tooth was non-vital on pulp vitality testing.

Radiographic Examination (periapical radiograph and CBCT) showed a well-defined, unilocular radiolucent lesion measuring approximately 1.5 cm × 1 cm in diameter, located at the periapical region of tooth 12, with a thin radiopaque margin. Mild displacement of the roots was evident, but no root resorption was observed.

Provisional Diagnosis: Radicular cyst Differential Diagnosis: Periapical granuloma, odontogenic keratocyst, nasopalatine duct cyst

Local infiltration (plexus) anesthesia was given in the anterior maxilla (labial vestibule region of tooth 11) (fig1) and palatal anesthesia using 2% lidocaine with epinephrine 1:80,000.A full-thickness mucoperiosteal flap is raised to access the cyst (fig2).Using a round bur in a straight handpiece under copious saline irrigation, a bony window is created over the cystic lesion.

Figure1

Figure2

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non-resorbable 4-0 sutures (fig8) and a pressure pack was applied to minimize postoperative edema and bleeding.

Figure 7

Figure 8

Analgesics and antibiotics were prescribes and the patient was instructed to maintain oral hygiene, avoid trauma to the surgical site, and use warm saline rinses after 24 hours.Sutures were removed after 7 days.

Pathohistology findings indicated a presence of inflamatory radicular cyst (fig 9)

МЕДИЦИНСКИ ФАКУЛТЕТ,
ИНСТИТУТИ , ИНСТИТУТ
ЗА ПАТОЛОГИЈА

НАОД: 1273811

ХИСТОПАТОЛОШКИ НАОД

CYSTIS RADICULARIS INFLAMMATA

Figure 9

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