TREATMENT OF AN INFLAMMATORY PERiapical CYST OF ENDODONTIC ORIGIN
— with surgical endodontic therapy

Dr. Mehmet Kalcay, Turkey

---

**Introduction**

Periapical cysts are defined as inflammatory and non-neoplastic lesions of the jaw. Approximately 15–20% of periapical lesions are diagnosed as periapical cysts. The localized inflammatory proliferation of epithelial cell rests in the periodontal ligament results in the formation of periapical cysts. These lesions are usually seen in the maxillary anterior region. These pathologies are generally asymptomatic and are diagnosed during routine radiographic examinations. Periapical cysts are generally seen in patients aged between 30 and 40 and predominantly in men. The purpose of this case report is to present the diagnosis, treatment and postoperative findings of previously treated maxillary anterior teeth affected by an inflammatory periapical cyst.

**Case report**

A 25-year-old male patient presented to the Department of Endodontics, Gazi University, Faculty of Dentistry, Ankara, Turkey, with a swelling at the palatal mucosa of the maxillary anterior region. A detailed dental history revealed that the swelling had also occurred four months ago and was left untreated, with a prescription of antibiotics. Extraction had been advised by the previous general dentist. A dental panoramic tomogram was taken for initial radiographic examination. A large radiolucent periapical lesion was observed associated with teeth #21 and 22 (Fig. 1). Clinical examination found a swelling at the palatal mucosa that was painful on palpation. Cone beam computed tomography (CBCT) images were used to gather more information on the size and association of the lesion with the surrounding anatomical structures (Fig. 2). CBCT images were taken of the maxillary anterior region axially and coronally with 1 mm spaces between the slices. These images showed a radiolucent lesion associated with the roots of teeth #21 and 22 that was lytic and of 11 × 16 mm in size and had a regular border. The lesion had perforated the palatal cortex and was in close proximity to the nasal cavity and the incisive canal. The preliminary radiographic diagnosis was an inflammatory periapical cyst.

Root canal therapy was initiated for teeth #21 and 22 to relieve the patient of acute symptoms. During the retreatment of tooth #21, an open apex led to the extrusion of some gutta-percha into the periapical lesion. Pus and exudate drainage was achieved via the root canals. The root canals were vigorously irrigated with physiological saline until the drainage stopped. The cavities were then temporarily restored with glass ionomer cement. The patient was prescribed antibiotics and nonsteroidal anti-inflammatory drugs and was recalled the next day.

Acute symptoms had been alleviated by the time of the recall. The temporary restorations were removed and the root canals were irrigated with 5% sodium hypochlorite. There was no drainage of exudate; therefore, calcium hydroxide was introduced into the root canals after preparation. Another appointment was set up.
15 days later. The root canals were further prepared and shaped with manual hand files. The dentinal walls of tooth #21 were very thin; therefore, chemical disinfection with ultrasonic activation was performed. This prevented further thinning of the dentinal walls and mechanical weakening of the tooth itself. After preparation, the root canals were obturated by the merging of three #80 gutta-percha points with adaptation to the apical third by eucalyptol (Fig. 3). Spaces at the coronal and middle third were filled with accessory points by cold lateral compaction.

After the completion of the orthograde treatment, the patient was prepared for surgery the next day. After anterior alveolar nerve block and incisive block, a mucoperiosteal flap was raised. The lesion was completely removed and the osteotomy cavity was irrigated with physiological saline. Root-end preparation at the apical third was performed using ultrasonic retrotips.

Mineral trioxide aggregate was used for retrograde filling. The resected lesion was sent to the pathology laboratory for histopathological examination for the definitive diagnosis (Fig. 4). The histopathological examination revealed that the lesion was bordered with hyperplastic, nonkeratinized stratified squamous epithelium with inflammatory cells. Definitive diagnosis was determined to be an inflammatory periapical cyst. After surgical treatment at the one-month recall, the patient was clinically asymptomatic. The six-month radiographic examination revealed new bone trabeculation around the defect (Fig. 5).

**Discussion**

Surgical endodontic therapy was selected for this particular case owing to the large borders of the lesion and its close proximity to the nasal cavity and the incisive canal. Histopathological examination is essential for definitive diagnosis. Differential diagnosis considered periapical granuloma and other odontogenic cysts. The radiographic appearance of the lesion in this case is very similar to that of these pathologies. Histopathological analysis showed that the lesion was an inflammatory periapical cyst.

In endodontics, CBCT is used for a detailed analysis of the root canal system, along with diagnosis of resorptive defects and surgical planning. In this case report, CBCT images were used for diagnosis and treatment planning and provided accurate and realistic information on the size and location of the lesion; therefore, surgical limitations could be established before surgery.

**Conclusion**

Teeth with periapical periodontitis can be treated by surgical or nonsurgical endodontic therapy. Nonsurgical endodontic therapy with optimal preparation and disinfection should be the first clinical option for treatment. However, periapical periodontitis with cyst formation should be surgically treated after endodontic therapy.

*Editorial note: A list of references can be obtained from the publisher.*