



Non-surgical endodontic treatment of large periradicular lesion with paresthesia-case report

Yağmur Kılıç, Mustafa Mert Tulgar

Department of Endodontics, Katip Çelebi University, İzmir, Türkiye

The radicular cysts are the most common odontogenic cysts affecting jaws. Paresthesia is rarely seen and associated with paresthesia is usually associated with the pressure of enlarged endodontic lesions on the mandibular nerve. This case report presents a radicular cyst in a 22-year-old healthy female patient and the treatment based on a review of the literature. The radiography showed a large radiolucency with a radiopaque margin involving the apices of the mandibular right second and third molars. The patient's complaint of paresthesia disappeared after the endodontic treatment. The patient's 4-year follow-up showed satisfactory healing with no clinical symptoms, and recovery of the periapical bone bone was observed.

Keywords: Nonsurgical endodontic treatment, Paresthesia, Radicular cyst, Large periradicular lesion.

Introduction

The radicular cysts (RC) are the most common odontogenic cysts of the oral cavity originating from Malassez epithelial remnants in inflamed periradicular tissues (1,2). Most RC develops slowly and their size rarely exceeds 1 cm. RC associated with a non-vital teeth due to caries or trauma. Patients do not experience pain unless acute inflammation is present and the lesions are often detected during routine radiographic examination (3,4). Symptoms, including swelling, mild sensitivity, paresthesia, tooth mobility, and displacement, may be observed as the cyst expands (5). Radiographically, the RC often appears as a well-defined radiolucency at the apex of a tooth. In addition, histological analyses of RC have shown the presence of highly-vascularized dense connective tissue and cholesterol crystals in the center of the cystic lesion (6-8). RC treatment can be done with several approaches, such

as nonsurgical endodontic treatment, extraction of the related tooth, and surgical approach (enucleation and marsupialization) (4,9). The treatment of choice is dependent on the age of the patient, size of the lesion, the distance of the lesion from vital structures, bone thickness and the current health of the patient, etc. Any selected treatment option should be as conservative as possible (9).

The purpose of this case report is to present a case of a 22-year-old female patient with a large periradicular lesion in mandibular molar teeth treated with a successful conservative approach.

Case Report

A 22-year-old female patient applied to the endodontics department in November 2018 with the complaint of pain and paresthesia in the right posterior region of the mandible. The patient was systemically healthy, and no facial

Cite this article as: Kılıç Y, Tulgar MM. Non-surgical endodontic treatment of radicular cyst with paresthesia-case report. Turk Endod J 2023;8:39-42.

Correspondence: Yağmur Kılıç. Department of Endodontics, Katip Çelebi University, İzmir, Türkiye.

Tel: +90 232 – 325 40 40 e-mail: yagmursati@icloud.com

Submitted: December 01, 2022 Revised: January 02, 2023 Accepted: January 26, 2023

©2023 Turkish Endodontic Society





Fig. 1. Pre-operative panoramic radiograph shows a large radiolucent lesion with a sclerotic radiopaque margin involving the root apices of teeth 47 and 48

asymmetry was seen on extraoral examination. The orthopantomography shows a large radiolucency with a sclerotic radiopaque margin involving the root apices of teeth 47 and 48 (mandibular right second and third molar), (Fig. 1). Cone-beam CT was taken to evaluate its proximity to anatomical structures of the relevant lesion (Fig. 2). The tooth 47 was detected as negative and the tooth 48 was detected positive through an electrical vitality test. The possibility of false-positive results of tooth 48 was taken into account because of immature apices. On intraoral examination, localized swelling and tenderness were seen on the lower labial mucosa.

The patient was informed about the treatments and signed informed consent. The patient first underwent root canal therapy of tooth 47. The treatment was conducted with

an inferior alveolar nerve block using lidocaine with a vasoconstrictor. After the endodontic access cavity preparation, the tooth was isolated with a rubber dam. Since there was no exudate, the canals were irrigated with 5% NaOCl (Wizard; Lider Kimya, Istanbul, Turkey) then the working length was determined and an electronic apex locator (Root ZX mini, J Morita Co, Tustin, CA, USA) using an ISO #15K type hand file (Diadent). All three root canals were prepared with ProTaper Universal sequence until ProTaper Universal F2 rotary file (Dentsply-Maillefer, Switzerland). During the preparation, 10 mL of 5% NaOCl was used as irrigant in each canal. Calcium hydroxide was placed in all root canals, and the access cavity was filled with a temporary material.

At the follow-up visit 10 days later, the symptoms of pain and swelling had regressed. Calcium hydroxide was removed using 17% EDTA and final preparation was performed with ProTaper Universal F3. The final flush was performed with 2 mL of 5% NaOCl, 2 mL of 5% EDTA, and 2 mL of distilled water. Afterward, root canals were dried with the matching paper point. The F3 gutta-percha was covered in AH plus root canal sealer (Dentsply, Konstanz, Germany) and placed into the root canal. Excess gutta-percha was removed with a heated hand instrument, and the access cavity was restored with composite resin (Fig. 3). The patient was advised to attend 6-month follow-ups.

At the 6th-month follow-up, it was decided to extract

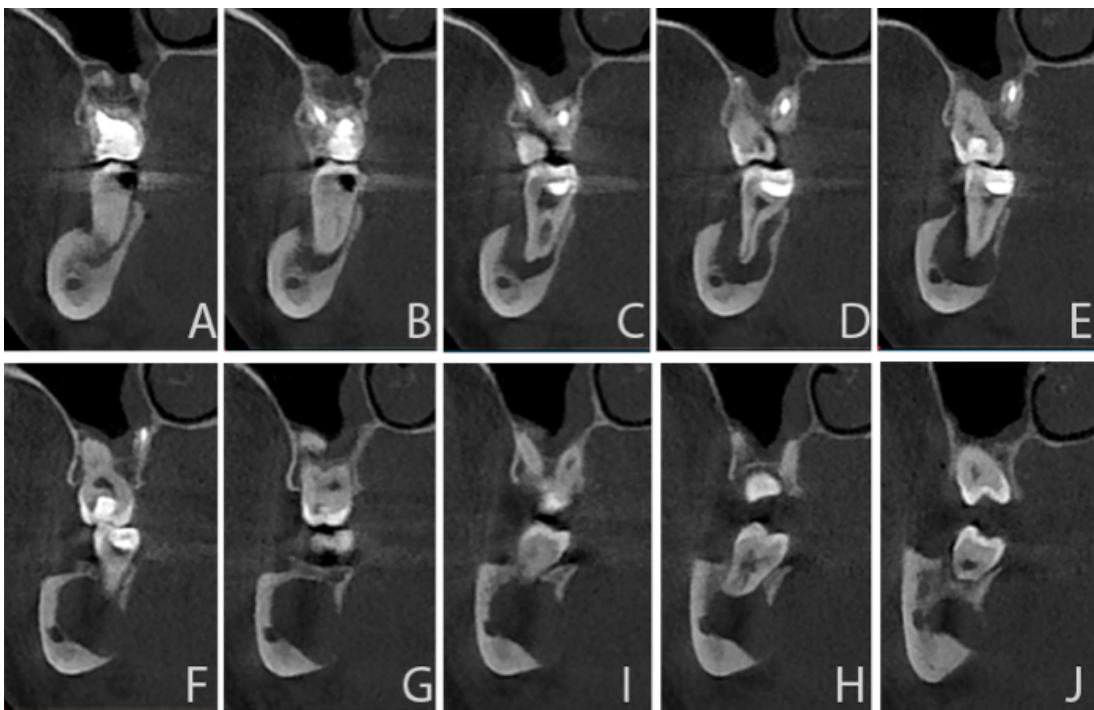


Fig. 2. Pre-operative CBCT shows a large radiolucent lesion and mandibular nerve



Fig. 3. Radiography after root canal treatment



Fig. 4. (a) The 6-month follow-up periapical radiograph. (b) The radiography after extraction of the tooth 48



Fig. 5. The 12-month follow-up radiograph



Fig. 6. The 4-year follow-up periapical radiography (a) and OPG (b)

tooth 48, which was within the lesion borders (Fig. 4). At the 12th-month follow-up, it was observed that trabeculation increased, but the radiolucent lesion area did not decrease (Fig. 5). Due to the 2019 COVID pandemic, the patient could not attend the follow-up appointments. In the follow-up at the end of approximately 4 years (August 2022), the radiolucent lesion completely disappeared, and the periapical bone was fully healed with a lamina dura

formation (Fig. 6). The patient's complaint of paresthesia disappeared. The tooth was asymptomatic, and it still functioned without a sign of any pathology radiographically.

Discussion

Radicular cysts are frequently asymptomatic and diagnosed during routine radiographic examinations. In radiography, the RC appears as a unilocular radiolucent area around the apex of the necrotic tooth (10). Symptoms such as swelling and pain may increase with the expansion of the cyst. Mechanical pressure caused by inflammatory formation, ischemia, and also toxic products of bacteria can cause paresthesia in the mandibular nerve (11). Treatment options for RC may be conventional, nonsurgical root canal treatment, or surgical treatment such as enucleation, marsupialization, or decompression (4,9). Patients should be informed about the complications and risks of each treatment option. When choosing the treatment method, the location and extent of the cystic lesion, the texture of the bone in the cystic walls, proximity to the present vital structures, and the systemic condition of the patient should be considered. In paresthesia cases, conservative approaches should be prioritized because of the adjacent relationship between the lesion and mandibular nerve (12).

In this case report, a radicular cyst has been successfully treated by endodontic treatment of tooth #47 and extraction of the associated tooth #48. Although the non-surgical endodontic approach was preferred in this case, considering the age of the patient and its proximity to the anatomical structures, it is possible that extraction of tooth 48 contributed to the reduction of pressure in the cyst cavity and accelerated healing.

Conclusion

Non-surgical approach should be considered as the first treatment of choice for large periapical lesions. Although bone recovery takes a long time in this approach, the patient is protected from surgical treatment complications. In this case, mandibular nerve paresthesia regressed with only root canal treatment without the need for a surgical approach. It is thought that the most important factor in the resolution of paresthesia is the reduction of mechanical pressure on the mandibular nerve as the inflammation dissolves.

Authorship Contributions: Concept: Y.K.; Design: Y.K.; Supervision: Y.K.; Materials: Y.K., M.T.; Data: Y.K.; Analysis: Y.K.; Literature search: Y.K.; Writing: Y.K., M.T.

Acknowledgements: The authors would like to thank Assoc. Prof. Dr. Emrah Karataşlıoğlu for the editorial assistance.

Source of Funding: None declared.

Conflict of Interest: None declared.

Informed consent: Written informed consent was obtained from patients who participated in this study.

References

1. Narula H, Ahuja B, Yeluri R, et al. Conservative non-surgical management of an infected radicular cyst. *Contemp Clin Dent* 2011; 2: 368–71. [\[CrossRef\]](#)
2. Shelke S, Tekam D, Soni NG, et al. Management of periapical cyst (radicular cyst): a non-surgical endodontic approach. *Int J Appl Dent Sci* 2022; 8: 17–22. [\[CrossRef\]](#)
3. Scholl RJ, Kellett HM, Neumann DP, et al. Cysts and cystic lesions of the mandible: clinical and radiologic-histopathologic review. *Radiographics* 1999; 19: 1107–24.
4. Sivapathasundharam B. *Shafer's Textbook of Oral Pathology*. 8th ed. New Delhi: Elsevier; 2016.
5. Neville BW, Damm DD, Allen CM, et al. *Oral and Maxillofacial Pathology*. 4th ed. Philadelphia: Saunders; 2015.
6. Mupparapu M, Shi KJ, Ko E. Differential diagnosis of periapical radiopacities and radiolucencies. *Dent Clin North Am* 2020; 64: 163–89. [\[CrossRef\]](#)
7. Galler KM, Weber M, Korkmaz Y, et al. Inflammatory response mechanisms of the dentine-pulp complex and the periapical tissues. *Int J Mol Sci* 2021; 22: 1480. [\[CrossRef\]](#)
8. Chen JH, Tseng CH, Wang WC, et al. Clinicopathological analysis of 232 radicular cysts of the jawbone in a population of southern Taiwanese patients. *Kaohsiung J Med Sci* 2018; 34: 249–54. [\[CrossRef\]](#)
9. Bodner L. Cystic lesions of the jaws in children. *Int J Pediatr Otorhinolaryngol* 2002; 62: 25–9. [\[CrossRef\]](#)
10. Deshmukh J, Shrivastava R, Bharath KP, et al. Giant radicular cyst of the maxilla. *BMJ Case Rep* 2014; 2014: bcr2014203678. [\[CrossRef\]](#)
11. Genc Sen O, Kaplan V. Temporary mental nerve paresthesia originating from periapical infection. *Case Rep Dent* 2015; 2015: 457645. [\[CrossRef\]](#)
12. Ahonen M, Tjäderhane L. Endodontic-related paresthesia: a case report and literature review. *J Endod* 2011; 37: 1460–4. [\[CrossRef\]](#)