EDUZONE: International Peer Reviewed/Refereed Multidisciplinary Journal (EIPRMJ), ISSN: 2319-5045
Volume 13, Issue 2, July-December, 2024, Available online at: www.eduzonejournal.com

Non-Surgical Management of Large Periapical Radiolucency: A Case Report of Two Cases

Dr. Karishma[1], Dr Nikita Garg[2], Dr. Ashish Sharma[3]

[1]Departmant of Endodontics, Post Graduate Institute of Dental Sciences, Rohtak
[2]MDS Endodontics, Post Graduate Institute of Dental Sciences, Rohtak
[3]General Dentist, Tarasha Dental Care, Rohini, Delhi

ABSTRACT

Periapical radiolucency is often indicative of periapical pathosis, commonly associated with chronic apical periodontitis and periapical cysts. Traditionally, surgical intervention such as apicoectomy has been considered the treatment of choice for large periapical lesions. However, recent advancements in endodontic techniques and materials have demonstrated successful healing through non-surgical approaches. This article presents a case report of two patients with large periapical radiolucencies managed conservatively through a non-surgical approach using advanced root canal treatment techniques. The cases illustrate the potential of conservative management to achieve complete resolution of periapical lesions, as demonstrated by radiographic and clinical healing over time.

INTRODUCTION

Periapical radiolucencies are commonly encountered in dental practice and may arise from pulpal necrosis, bacterial infection, or trauma, leading to periapical granulomas, abscesses, or cysts. Conventionally, larger lesions have been managed surgically, often requiring enucleation or apicoectomy. However, with improved understanding of periapical pathology and the biological potential for healing, non-surgical endodontic therapy has emerged as an effective treatment alternative.

Modern endodontic techniques, including meticulous debridement, disinfection, and intracanal medication, can promote periapical healing without surgical intervention. This article reports two cases of large periapical radiolucencies successfully managed non-surgically through root canal therapy, demonstrating radiographic resolution and symptomatic relief over time.

CASE 1

Clinical Presentation

A 42-year-old female patient reported with a history of dull pain and occasional swelling in the lower right mandibular region.Clinical examination of the tooth revealed a deep carious lesion with exposed pulp. Radiographic analysis revealed a large radiolucent lesion around the apex of the right mandibular first molar 46 (Fig-1).

Pulp sensibility test with electric pulp tester and cold test revealed negative response. Tooth was also tender on purcussion. Diagnosis of apical periodontitis with pulpal necrosis was made with respect to 46. Root canal treatment was planned as a treatment option.

Treatment

After administering local anesthesia (2% lidocaine with 1:100,000 epinephrine), the access cavity was prepared while being isolated by a rubber barrier. Using #10 and #15 K-files, root canal orifices were investigated and navigated. An apex locator (Root ZX; J Morita, Kyoto, Japan) was used to measure the working length, and radiography was used to validate it. Next, rotary endodontic files (Navigator Evo, Medin, Czech Republic) were used to prepare the root canal utilizing the crown-down approach. Using 27-G side-vented needles and 3% sodium hypochlorite (Parcan; Septodont, Maharashtra, India), irrigation was carried out sporadically.Canals were dried with paper points and CaOH dressing (RC Cal, Prime Dental, Bhiwandi, India) was placed into the canals using lentulo spirals and temporary dressing was given. After 14 days, calcium hydroxide was removed with hand filing and thorough irrigation with saline and patency was checked.

Following the last irrigation with five milliliters of 5.25% NaOCl, the root canals were obturated using zinc oxide eugenol sealer and laterally condensed gutta-percha (Meta Biomed Co Ltd, Chungcheongbuk-do, Korea) after being dried with paper points. Composite resin was used for the coronal restoration (Filtek P60; 3M ESPE, St. Paul, MN).

Outcome
At the six-month follow-up (Fig-3), the patient reported no symptoms, and the lesion showed signs of reduction. At the one-year follow-up (Fig-4), complete resolution of the radiolucency was evident on radiographs, confirming successful healing without surgical intervention.

Fig 1- Preoperative Radiograph

Fig 2- Post Operative Radiograph

Fig 3- 6 months Follow Up

Fig 4- 12 Months Follow Up

CASE 2

Clinical Presentation
A 25-year-old male patient presented with a chief complaint of pain with respect to upper right tooth. Tooth was tender on percussion, and slight extra oral swelling was also visible. Vitality test was also negative. Radiograph showed large periapical radiolucency associated with a previously initiated root canal-treated upper right central and lateral incisor (11,12) (Fig-5). The patient had a history of trauma to the region 10 years prior.

Treatment
Non-surgical retreatment was planned as a treatment option. The canal were disinfected with 5.25% sodium hypochlorite.Ensuring apical patency, canals were cleaned using K files (Mani Inc., Utsunomiya, Japan). Apical preparation was done three size larger than initial binding file.Calcium hydroxide (RC Cal, Prime Dental, Bhiwandi, India)was placed for four weeks before obturation of canals with gutta-percha and an bioceramic sealer (Ceraseal, MetaBiomed) and post endodontic restoration was done with composite resin. (Fig-6)

Outcome
Radiographic follow-up at six months (Fig-7) and one year (Fig-8)revealed gradual reduction in lesion size, confirming healing. The patient remained asymptomatic throughout the follow-up period.

Fig 5- Preoperative Radiograph

Fig 6- Post Operative Radiograph

Fig 7- 6 months Follow Up

Fig 8- 12 Months Follow Up

DISCUSSION

The successful management of large periapical lesions without surgery relies on thorough root canal debridement, disinfection, and sealing of the root canal system. Calcium hydroxide serves as an effective intracanal medicament due to its antimicrobial properties and ability to promote periapical healing. The cases presented demonstrate that even large periapical radiolucencies can heal successfully with non-surgical endodontic treatment, avoiding surgical procedures.

Factors influencing successful healing include microbial control, host immune response, presence of systemic disease and the ability of periapical tissues to regenerate.

Advances in imaging techniques, such as cone-beam computed tomography (CBCT), allow precise monitoring of healing. While surgical intervention may still be required in certain cases, a non-surgical approach should be considered as the first line of treatment when possible.

REFERENCES

[1]. Nair, P. N. R. (2004). Pathogenesis of apical periodontitis and the causes of endodontic failures. *Critical Reviews in Oral Biology & Medicine*, 15(6), 348-381.
[2]. Siqueira, J. F., & Rôças, I. N. (2008). Clinical implications and microbiology of bacterial persistence after treatment procedures. *Journal of Endodontics*, 34(11), 1291-1301.
[3]. Torabinejad, M., & Walton, R. (2009). Endodontics: Principles and Practice. Elsevier.
[4]. Lin, L. M., Huang, G. T., & Rosenberg, P. A. (2007). Proliferation of epithelial cell rests, formation of periapical cysts, and regression of periapical cysts after root canal therapy. *Journal of Endodontics*, 33(9), 908-916.
[5]. Ricucci, D., & Siqueira, J. F. (2010). Biofilms and apical periodontitis: study of prevalence and association with clinical and histopathologic findings. *Journal of Endodontics*, 36(8), 1277-1288.