



MANAGEMENT OF PERIAPICAL LESION BY SURGICAL APPROACH TO ENHANCE PERIAPICAL HEALING: A CASE REPORT

Dr. Harshita*¹, Pratibha Handa², Fatinderjeet Singh³, Harsimranjit Kaur⁴, Pratima Sharma⁵,
Amitoj Kaur Walia⁶

¹Post Graduate Student, Department of Conservative Dentistry and Endodontics, Genesis Institute of Dental Sciences and Research, Ferozepur, Punjab, India.

²Senior Lecturer, Department of Conservative Dentistry and Endodontics, Genesis Institute of Dental Sciences and Research, Ferozepur, Punjab, India.

³Senior Lecturer, Department of Conservative Dentistry and Endodontics, Genesis Institute of Dental Sciences and Research, Ferozepur, Punjab, India.

⁴Post Graduate Student, Department of Conservative Dentistry and Endodontics, Genesis Institute of Dental Sciences and Research, Ferozepur, Punjab, India.

⁵Post Graduate Student, Department of Conservative Dentistry and Endodontics, Genesis Institute of Dental Sciences and Research, Ferozepur, Punjab, India.

⁶Tutor, Department of Conservative Dentistry and Endodontics, Genesis Institute of Dental Sciences and Research, Ferozepur, Punjab, India.

*Corresponding Author: Dr. Harshita

¹Post Graduate Student, Department of Conservative Dentistry and Endodontics, Genesis Institute of Dental Sciences and Research, Ferozepur, Punjab, India.

Article Received on 28/09/2017

Article Revised on 19/10/2017

Article Accepted on 09/10/2017

ABSTRACT

Surgical approaches to the apical tissues for the relief of pain have been known since antiquity. Endodontic surgery is a safe and adequate alternative when teeth are not responding to non surgical endodontic treatment. Endodontic treatment failures can be related to: extraradicular infections such as periapical infection. The aim of surgical endodontics is to restore the integrity of the supporting tissues of a tooth with chronic pulpal or periapical disease, where non-surgical endodontics has failed. It purports the aim of removing any contents present inside the surgical cavity, such as granulation tissue.

KEYWORDS: Endodontic surgery, Periapical abscess, Endodontic failure, Granulation tissue.

INTRODUCTION

Surgical endodontics is a reliable method for the treatment of teeth with periapical lesions which do not respond to conventional root canal treatment¹. Apical surgery belongs to the field of endodontic surgery, which also includes incision and drainage, closure of perforations, apical curettage and root resections.² Apical curettage is the debridement of the apical surface of a tooth and the removal of diseased soft tissues in the surrounding bony crypt. This procedure consists on exposing the apex of the involved tooth, achieving curettage of periapical tissues. Its success rate varies from 86–92% while failure rate is 4.7%.³ This case report presents management of chronic periapical abscess through surgical approach.

CASE PRESENTATION

A thirty year old female patient reported to the Department of Conservative Dentistry and Endodontics, Genesis Dental College, Ferozepur with the chief

complaint of pus discharge through Gums and palate in left upper front tooth region since 1 year. Patient gave history of trauma 5 years back and medical history was non-contributory.

Clinical examination revealed discolored tooth and sinus opening in relation to 22 and tooth was not tender on percussion. (Fig No.1).



Fig No. 1: Discolored tooth in relation to 22.

Periapical radiograph were taken to know the extent of the lesion, which revealed an ill-defined radiolucency involving periapical region of 22. According to AAE Consensus Conference Recommended Diagnostic Terminology, a provisional diagnosis of chronic periapical abscess in 22 was made.

Treatment protocol included conventional root canal treatment followed by apical curettage of the tissue which was explained to the patient and informed consent was obtained.

In the first visit, access cavity preparation was done under rubber dam isolation without any local anesthesia,

the working length was determined using apex locator and confirmed with digital radiograph. The canal was then cleaned biomechanically by using intracanal instruments. Irrigation was done using 5ml of 3% NaOCl (Shiva Products, Waliv, Palghar, Maharashtra, India) during instrumentation. Intracanal medication of $\text{Ca}(\text{OH})_2$ (Merch India Ltd., Mumbai, India) was then placed in the canal for disinfection for 1 week and temporary restoration was done using Cavit (3M ESPE, St. Paul, MN, USA). Then, after 1 week, obturation was done by using Vertical Compaction Technique. (Fig No.2).



Fig No. 2a



Fig No. 2b

Fig No. 2: IOPA (2a) and Occlusal radiograph (2b) showing well condensed gutta percha in relation to 22.

On the day of the surgery, the patient was admitted to the our department. After administration of local anaesthesia, a full thickness mucoperiosteal (triangular) flap was raised extending from 11 to 23 with a releasing incision on 23 using Bard Parker (B.P) blade size #15 (BD, Sao Paulo, Brazil) and periosteal elevator (SS White, Lakewood New Jersey). (Fig No. 3).



Fig No. 3: Triangular Flap raised from 11 to 23.

Once the flap was raised, it was possible to view the apex of 22. Osteotomy was performed with a H161 Lindemann bone cutting bur in order to widen the cavity and gain better access to the area to be operated. Periapical curettage was later conducted in order to remove granulation tissue. (Fig No. 4).



Fig No. 4: Osteotomy performed with H161 Lindemann bone cutting bur.

A biopsy specimen was obtained at the orifice and sent for the histopathologic examination. Finally, the flap was re-positioned, and the flap was sutured with 3.0 black silk. (Fig No. 5) Post-operatively antibiotics and analgesics were prescribed to the patient along with 0.12% chlorhexidene mouth rinse for maintenance of oral hygiene. The patient was recalled after 7 days for removal of sutures and treatment evaluation. After 3 months of follow up final results were satisfactory as periapical region in relation to 22 showed healing of the lesion. (Fig No.6).



Fig No. 5: Sutures placed.



Fig No. 6: 3-months follow up.

DISCUSSION

Microbial infection that persists in the root canal system and/or the periradicular region is a major cause of periapical lesion.^[4]

Although the development or persistence of a periradicular inflammation after nonsurgical root canal treatment has been attributed to toxic filling materials (Erasquin & Muruzabal 1969), or residual necrotic pulp tissue (Sinai *et al.* 1967), recent studies appear to indicate that the important cause of periradicular inflammation of endodontically treated teeth is most nicely due to the persistence of bacterial infection in the root canal system (Nair *et al.* 1990, Sjogren *et al.* 1990, Lin *et al.* 1991).

Histologically, the inflammatory periradicular lesion is similar to healing granulation tissue, which is composed of cells which have natural and specific immunological defence capability and cooperate by means of cytokines to amplify the protective mechanisms of the host. The centre of the lesion consists of varying amounts of macrophages, lymphocytes, plasma cells, and some polymorphonuclear leukocytes accompanied occasionally with proliferation of epithelial cell rests of Malassez, and is surrounded peripherally by fibroblasts and immature collagen fibres (Langeland *et al.* 1977, Weiner *et al.* 1982).^[5]

Periradicular curettage is a surgical procedure to remove diseased or reactive tissue from the alveolar bone in the periradicular or lateral region surrounding a pulpless tooth.^[5] It is a general belief that the inflamed soft tissues present in the periradicular region of an endodontically treated tooth should be removed completely during periradicular surgery. Indications for apical curettage treatment is persistence of symptoms and presence of bone lesion.^[6]

To remove the pathological tissue, lucas curettes size #85 and #86 (Hu-Friedy, Rio de Janeiro, Rio de Janeiro, Brazil) were employed. Periapical curettage aims to remove pathological tissue in a lesion at the apical level of a tooth or foreign bodies.^[5]

Post surgical period was uneventful. Biopsy specimen revealed chronic periapical abscess. The patient was recalled after 3 months for follow up. The examinations noted an absence of symptoms, such as pus discharge and the normal function of the tooth was preserved. An IOPA after 3 months showed healing of the periapical lesion in relation to 22.

CONCLUSION

The treatment plan applied, in this case, endodontic treatment, followed by apical curettage, was appropriate for the patient. This was concluded with the help of both clinical and radiographic results.

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