ISSN: 2581-5989
PubMed - National Library of Medicine - ID: 101738774

International Journal of Dental Science and Innovative Research (IJDSIR)

IJDSIR : Dental Publication Service

Available Online at: www.ijdsir.com

Volume – 7, Issue – 1, February – 2024, Page No. : 21 - 24

Management of failed endodontically treated teeth with intentional reimplantation: A case report

[1]Dr. Rohit Kochhar, [2]Dr. Sahil Gupta, [3]Dr. Manju Kumari, [4]Dr. Navneetkaur

[1-4]ITS Dental College, Greater Noida

Corresponding Author: Dr. Sahil Gupta, ITS Dental College, Greater Noida

Citation of this Article: Dr. Rohit Kochhar, Dr. Sahil Gupta, Dr. Manju Kumari Dr. Navneetkaur, "Management of failed endodontically treated teeth with intentional reimplantation: A case report", IJDSIR- February – 2024, Volume –7, Issue - 1, P. No. 21 – 24.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Aim: Utilising Intentional replantation technique in symptomatic cases where otherwise the conventional repair was not possible

Methodology: Intentional replantation treatment is seldom used in today's dental practice however in some cases where different techniques to salvage from the situations created due to iatrogenic errors it was found to be very beneficial and clinically successful after a follow up of 2 years.

A case of apical resorption of the mesial and distal roots of mandibular molars with extruded gutta percha points in both the root apices was selected. Retreatment was an option but due to root resorption we planned to curettage the granulation tissue and perform retrograde filling using biodentine.

Conclusion: On 6 month' follow-up, the resorption was arrested and periapical healing was found to be satisfactory.

Keywords: Biodentine. Pathoses, Emdogain.

Introduction

The primary goals of endodontic treatment are the prevention and/or resolution of pulpal and periapical pathoses with the re-establishment of healthy periradicular tissues. Nonsurgical root canal treatment provides long-term survival and success rates allowing the preservation of the natural dentition. However, despite having success rates of 77%-78%[1], apical periodontitis may persist after non-surgical retreatment and healing may not occur in such cases. When a tooth has been non-surgically retreated and disease persists, options include surgical intervention or extraction followed by replacement with a dental prosthesis

One of the treatment options available is Intentional Replantation and according to Grossman it is defined as "the purposeful removal of the tooth and its almost immediate replacement with the objective of obturating the canals apically while the tooth is out of its socket".[2]

As per the systematic review and meta-analysis done in 2017 by MAINKAR[3], a survival rate of 89.1% of intentionally replanted teeth was observed.

In order to overcome the deleterious outcome like external root resorption, and for regenerative capability of PDL's and osteoblastic activity after intentional reimplantation various root surface bio modification agents are commercially available like Emdogain, PRF and Lowlevel laser therapy (LLLT) and have been a subject of research in the past.

Low level laser therapy (LLLT) with 810 nm diode offer bio stimulation, which in turn accelerates tissue regeneration and avoid risk of root resorption[4].

This may be attributed to the modulation of the inflammatory process, which in turn is vital for diminution of the external inflammatory resorption[4].

Vilela et al[5] had shown similar observations, were they found that laser irradiation to the entrance of alveolus and root surface before replantation inhibited the osteoclastic action and enhanced the synthesis of formative cells such as: fibroblasts, cement oblasts, and osteoblasts.

Case Report

Patient name Chaitanya, age 25 years, male, reported to the department of conservative dentistry and Endodontics with chief complaint of pain in lower right back tooth region since past one week" his medical history was non-contributory, no allergies or medications. Dental history included endodontic therapy on tooth #46 with a crown. Clinical examination revealed pain to percussion and palpation. No evidence of a stoma was noted. Tooth #46 was restored with a metal ceramic crown with appropriate marginal and occlusal integrity. Periodontal examination revealed no mobility, probing depths and gingival tone within normal limits. Radiographic examination revealed a large periapical radiolucency and resorption associated with the apex of tooth #46 (Fig. 1). Crestal bone levels appeared to be within normal limits.

The patient was presented with the treatment options of extraction and a dental implant or extraction with no replacement. Endodontic retreatment and implant therapy were declined by the patient. After understanding risks and benefits of all treatment options, the patient made an informed decision to have the tooth removed. Upon the patient's decision to have the tooth extracted, the treatment option of intentional replantation with associated risks and benefits was offered. The patient accepted.

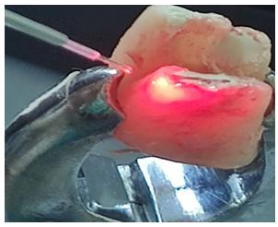
Procedure

The patient was anaesthetized with a solution of 2% lidocaine HCL with 1:100000 epinephrine. The tooth was isolated with the placement of rubber dam. An occlusal reduction was performed. A traumatic extraction was done, after extraction granulation tissue was removed along extruded GP points, retrograde cavity preparation was done after that root surface bio modification with diode laser was done at each surface of tooth for 60 second respectively followed by the socket after that retrograde filling with biodentine was done. Medication was prescribed to the patient for 1 week. Outcome measures was assessed by Clinical examination [subjective discomfort, swelling, tenderness to percussion or palpation percussion sound, mobility, periodontal probing] at regular interval. Pain was evaluated by VAS and Faces Scale. Radiographic examination (Radiolucency size, evidence of external root resorption, continuity of periodontal ligament space) was also done.

Pre Op

Post Extraction


Curttage of granulation tissue retrograde cavity

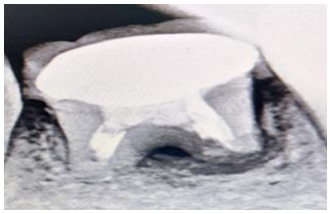
Retrograde cavity sealed with biodentine laser biostimulation1

Post Op

1 Week Follow-up

1 Month Follow-up

3 Month Follow-up



6 Month Follow Up

Discussion

Conventional Endodontic treatment is recommended as the primary choice. Before intentional replantation, feasibility of a traumatic extraction and successful root canal obturation should be assessed. Tooth characteristics like divergent and curved roots, extensive restoration, and caries may hinder replantation procedure. In this specific case, despite poor prognosis and patient's willingness to save the tooth, retreatment was performed extra orally to avoid complications. Biodentine, a biocompatible material, was used due to its physical and biological properties, comparable to MTA. Biodentine's features include fine particle size, zirconium oxide radio pacifier, purity of tricalcium silicate, absence of dicalcium silicate, and the addition of calcium chloride and hydro soluble polymer. In this case

biodentine was used as a root end filling material and could be a factor for regeneration of the periodontal apparatus. In the present case Low-Level Laser Therapy (LLLT) with a Diode laser (810 nm, 50 mW for 3 minutes) was employed to modulate external root resorption. According to literature, LLLT can enhance replanted tooth survival by reducing external root resorption, ankylosis, and promoting periodontal ligament attachment and angiogenesis. The anti-inflammatory effect of LLLT may contribute to the prevention of external inflammatory resorption6.Studies suggest that LLLT improves wound healing, fibroblast proliferation, matrix synthesis, remodelling, and angiogenesis, thereby preventing root resorption. However, no universally accepted clinical protocol for intentional replantation exists, and understanding advocated techniques and evidence is crucial. Intentional replantation is considered a reliable and predictable procedure, deserving more consideration in preserving natural dentition[6].

At 6 months follow up it was observed that the tooth was asymptomatic with no pain on palpation or percussion. No sinus formation or any deformity in the gingival margin was observed. Radiographically, besides the radiolucency which was present in the preoperative radiograph was observed in post-operative radiograph also and which is expected to resolve after 12 to 18 months.

Conclusion

The selection of intentional replantation as a treatment modality has been controversial. There are many reported indications, yet the procedure has often been considered a last resort option to retain natural teeth. As highlighted, there are several different steps in the procedure, thus the opportunity for many variations of technique and materials. This may explain the wide range in reported success rates, which are often less favorable than other treatment methods. A recent systematic review of the literature by Torabinejad et al found an overall 88% survival rate for intentionally replanted teeth, with more contemporary studies demonstrating success rates as high as 95%.

References

1. Torabinejad M, Dinsbach NA, Turman M, Handysides R, Bahjri K, White SN. Survival of Intentionally Replanted Teeth and Implant-supported Single Crowns: A Systematic Review. J Endod 2015;41(7):992-998.
2. Grossman Ll. Intentional replantation of teeth. J Am Dent Assoc1966; 72:1111-8
3. Mainkar.A Systematic Review of the Survival of Teeth Intentionally Replanted with a Modern Technique and Cost-effectiveness Compared with Single-tooth Implants. J Endod2017 Dec:43(12):1963-1968.
4. Lu CH, Lu HC, Ke JH, Lan WH. Laser assisted tooth replantation case report. Laser Ther 2011;20(4):273-7.
5. Vilela RG, Gjerde K, Frigo L, et al. Histomorphometric analysis of inflammatory response and necrosis in re-implanted central incisor of rats treated with low-level laser therapy. *Lasers Med Sci* 2012;27(3):551-557.
6. Chaniotis A, Kouimtzis TH. Intentional replantation and Biodentine root reconstruction. A case report with 10-year follow-up. Int Endod J 2021 Jun;54(6):988-1000.
7. Becker BD. Intentional Replantation Techniques: A Critical Review. J Endod2018 Jan;44(1):14-21.
8. Matos Fde S, GodolphimFde J, Correia AM, et al. Effect of laser photobiomodulation on the periodontal repair process of replanted teeth. Dent Traumatol2016;32(5):402-408.
9. Deshpande NM, Shah D, Wadekar S. Maintenance of cell viability in extraoral conditions for a case of intentional replantation to retrieve a separated endodontic instrument. J Conserv Dent 2019; 22(2): 207-212.