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Surgical Endodontic Management of Non Healing Periapical Lesion – Case Report

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Abstract
AIM- *Regeneration of soft and hard tissue following removal of periapical lesion and sealing of apical third of root dentin.*
METHODS AND MATERIALS- *One of the most common pathological condition affecting periradicular tissues is periapical lesions which can be radicular cysts, dental granulomas or abscess. Conventional endodontic treatment aims to eradicate bacteria from root canal system and establish effective barrier against root recontamination. When conventional endodontic therapy does not give favourable outcome endodontic surgery is recommended in periapical diseases treatment. Apicoectomy includes curettage of periapical lesion followed by root end resection and retrograde filling using a biocompatible material.*
CONCLUSION- *Surgical endodontic treatment is an adjunct to conventional endodontics which is an invasive procedure, reducing the time period needed for healing of periapical lesions.*
Key Words- *Apicoectomy, Root resection, Retrograde filling, Periapical lesion*

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I. Introduction

One of the most common pathological condition affecting periradicular tissues is periapical lesions[1]. Invasion of microbes and their subsequent infection of root canal system play a decisive role in the initiation and progression of periapical lesions[2].

Periapical lesions can be radicular cysts, dental granulomas or abscess. The incidence of cyst is 6%-55% among all periapical lesions, granulomas occur from 9% -87% and abscess from 28%-70% [3].

Conventional endodontic treatment aims to eradicate bacteria from root canal system and establish effective barrier against root recontamination [4]. To achieve success- cleaning, shaping and filling of the entire root canal system are essential steps in endodontic therapy.

Causes of failure of conventional root canal therapy is related to persistent infection (presence of residual bacteria) and secondary infection (reinfection in a previously disinfected canal)[5].

Endodontic surgery is recommended in periapical diseases treatment, when conventional endodontic therapy does not give favourable outcome. Indications for periapical surgery are-

1. Radiological findings of apical periodontitis and/or symptoms associated with an obstructed canal (the obstruction proved not to be removable, displacement did not seem feasible or the risk of damage was too great),
2. Extruded material with clinical or radiological findings of apical periodontitis and/or symptoms continuing over a prolonged period,
3. Persisting or emerging disease following root-canal treatment when root canal retreatment is inappropriate, and
4. Perforation of the root or the floor of the pulp chamber and where it is impossible to treat from within the pulp cavity

So the goal of endodontic surgery is soft and hard tissue regeneration by removal of lesion and sealing of apical third of root dentin [6,7].

In 11th Century AD, Abulcasis, an Arabian physician described the first case of apicoectomy in his medical encyclopaedia, Altasrif [8]. A root end resection procedure to manage a tooth with necrotic pulp and alveolar abscess was documented in 1871[9], and root end resection with retrograde cavity preparation and filling with amalgam was documented in 1890's[10]. A study of 797 apicoectomy by Nordenram and Svardstrom [11] reported a success rate of 64% with thebest results found when root filling and apicectomy were carried out at the same visit when the periapical lesion was less than 5 mm in diameter. A retrospective study by Oginni and Olusile[12] showed the success rate of apicoectomy of anterior teeth to be 71.9%.

The aim of the case report was to present the surgical endodontic management following failed non surgical treatment of 21 &22.

II. Case Report

A 28 year female reported to the department of Conservative Dentistry and Endodontics with a chief complaint of pain in upper left front teeth region for past 1 month. In past dental history, patient gives a history of undergoing endodontic treatment following trauma in relation to teeth 11, 21, 22 one and half year back related to that region.

After one year of treatment, pain and swelling in relation to teeth 21 & 22 had recurred, so retreatment of 21 & 22 was done.

Extraorally there was slight swelling and pain on palpation in relation to teeth 21 and 22 region. Intraorally there was restoration present on associated teeth 21 and 22. Maxillary left central and lateral incisor were tender on percussion and tenderness in periapical mucosa on palpation with no discharge was present.

Radiographic examination revealed teeth 11, 21 and 22 were endodontically treated with periapical radiolucency of 1.5 cm into 1 cm in diameter involving root apices of teeth 21 and 22.(Fig.No : 1B)

Diagnosis of previously treated with symptomatic apical periodontitis in relation to 21 and 22 was made.

Periradicular area of 21 and 22 was exposed after administration of local anaesthesia. A full thickness mucoperiosteal flap was raised extending from distal aspect of 12 to distal aspect of 24 using Bard Parker blade size #15 and periosteal elevator (SS White, Lakewood New Jersey).(Fig.No : 1C)

Curettage of pathological tissue was done and surgical site was irrigated with normal saline. Following the raising of flap, surgical osteotomy was performed using round bur to get access to root end. Root ends were resected about 3 mm using Lindeman Surgical bur (Brasseler USA) at shallow angle. Haemostasis was achieved in the osseous pit by means of gauze packing. Root end was prepared using round and inverted cone bur.(Fig.No : 1E)

Operative field was isolated and the cavities were filled with Pro Root MTA.(Fig.No : 1F&1H). The osseous cavity was thoroughly irrigated and flap was repositioned and approximated with moderate digital pressure and moist gauze and then sutured. .(Fig.No : 1G)

Postoperative medications and instructions were prescribed to the patient along with 0.12% Chlorhexidine mouth rinse for maintenance of oral hygiene. The patient was recalled after 7 days for removal of sutures and treatment evaluation. No tenderness, swelling and sinus were detected at follow up visit.(Fig.No : 1I). On one year follow up radiographic examination revealed periradicular bone formation.(Fig.No : 1J). Esthetic rehabilitation was done post healing.(Fig.No : 1K).

Fig No: 1

A) Pre-Op clinal

B) Preoperative radiograph

C) Full thickness flap elevation

D) Periapical lesion and bony defect

E) Root end prepation

Fig No :- 1

F) Pro root MTA Manipulation

G) Post Suturing

H) IOPA radiograph showing retrograde filling

I) 3 months follow up

J) 12 months follow up

K) Esthetic rehabilitation using PFM crown

III. Discussion

Endodontic surgery is a procedure which consists of the removal of pathological periapical tissue followed by root end resection and root end sealing. This creates a favourable condition for tissue health, regeneration and creation of new tooth structural support[13]. The use of modern surgical techniques and equipments has resulted in an increase in the success rate upto 92% for the same procedure[14,15].

Important aspect in apicoectomy is root end management, that is amount of root end resection, angle of root end resection and root end preparation and filling. Since 98% of apical canal anomalies and 93% of lateral canals system ramifications occur in the apical 3 mm, it is essential that at least 3 mm of the root end is removed. Traditionally long bevels approximately at 45 degree root end was resected needing excessive removal of root structure to include the lingual, or palatal 3 mm of the root apex. But now bevel is kept as close to 0 degree, so more root structure can be conserved, improving the crown/root ratio while meeting the objective of removing the vast majority of apical ramifications[16].

Endodontic surgery has now evolved into endodontic microsurgery. Endodontic microsurgery, combines the magnification and illumination provided by the microscope with the proper use of new microinstruments. With newer advances , now endodontic surgery can be performed with better precision and predictability[17,18].

Post root end preparation, it is very important to fill the root end with suitable material which will provide hermetic seal. An ideal root-end filling material should meet the following characteristics which includes to provide a hermetic seal, to be nonresorbable, non-toxic, non-carcinogenic, biocompatible and dimensionally stable. In this present case pro root MTA was used as a root end filling material. Mineral trioxide aggregate (MTA) was developed by Torabinejad at Loma Linda University, CA, USA in 1993. It consists of calcium and phosphorous ions, derived primarily from tricalcium silicate, tricalcium aluminate, tricalcium oxide and silicate oxide. Its pH when set is 12.5 Several dye leakage studies have demonstrated the fact that MTA leaks significantly less than other root-end filling materials[19].

IV. Conclusion

Surgical endodontic treatment (Retrograde filling) is an invasive procedure which reduces the time period needed for healing of periapical lesions. When conventional endodontic therapy proves insufficient the clinician must consider treatment alternatives. Not all failures are amenable to nonsurgical retreatment. we as clinicians need to weigh risk versus benefits and recognize that at times surgery might be in patient's best interest.

References

[1]. Karunakaran JV, Abraham CS, Karthik AK, Jayaprakash N: Successful nonsurgical management of periapical lesions of endodontic origin: a conservative orthograde approach. J Pharm Bioallied Sci. 2017, 9:246-251. 10.4103/jpbs.JPBS_100_17

[2]. Croitoru IC, CraiToiu S, Petcu CM, et al.: Clinical, imagistic and histopathological study of chronic apical periodontitis. Rom J MorpholEmbryol. 2016, 57:719-728.

[3]. Schulz M, T von Arx, Altermatt HJ, Bosshardt D: Histology of periapical lesions obtained during apical surgery. J Endod. 2009, 35:634-42. 10.1016/j.joen.2009.01.024

[4]. Kim S, Kratchman S. Modern endodontic surgery concepts and practice: a review. J Endod 2006;32:601-23.

[5]. Siqueira Jr JF. Reaction of periradicular tissues to root canal treatment: benefits and drawbacks. Endod Topics 2005;10:123-47.

[6]. Matherne RP, Angelopoulos C, Kulild JC, Tira D. Use of cone-beam computed tomography to identify root canal systems in vitro. J Endod 2008;34:87-9

[7]. Von Arx T, Gerber C, Hardt N. Periradicular surgery of molars: a prospective clinical study with a one-year follow-up. IntEndod J 2001;34:520-5

[8]. Weinburger BW. An Introduction to theHistory of Dentistry. Vol 1. CV Mosby Co, St Louis. 1948; p:71.

[9]. Smith CS. Alveolar abscess. Am J Dent Sci. 1871;5:289- 300.

[10]. Lucas CD. Root resection and apical canal filling after resection. Dent Summary. 1916;36:201-207.

[11]. Nordenram A, Svardstrom G. Results of apicectomy. SvenskTandlakaraTidskr. 1970;63:593-604.

[12]. Oginni AO, Olsuile AO. Follow–up study of apicectomised anterior teeth. S Afr Dent J. 2002; 57:136- 140

[13]. Nidhi Rani , Rajesh Kumar Gupta, Ashish Karode Surgical endodontic management after conventional root canal treatment failure: A case report

[14]. Tsesis I, Rosen E, Tamse A, Taschieri S, Del Fabbro M. Effect of guided tissue regeneration on the outcome of surgical endodontic treatment: a systematic review and meta-analysis. J Endod 2011;37(8):1039-45.

[15]. Taschieri S, Bettach R, Lolato A, Moneghini L, Fabbro MD. Endodontic surgery failure: SEM analysis of root-end filling. J Oral Sci 2011;53(3):393–6.

[16]. Cohen S, Burns RC. Pathways of the Pulp, 8th edn. St Louis: CV Mosby, 2002.

[17]. Kim S, Pecora G, Rubinstein R. Comparison of traditional and microsurgery in endodontics. In: Kim S, Pecora G, Rubinstein R, eds. Color atlas of microsurgery in endodontics. Philadelphia: W.B. Saunders, 2001:5–11.

[18]. Kim S. Principles of endodontic microsurgery. Dent Clin North Am 1997;41:481–97.

[19]. Kanchan Bhagat1, Munish Goel and Neeru Bhagat Root End Filling Materials and Recent Advances: A Review

Dr.Chandrakant Velip, et. al. "Surgical Endodontic Management of Non Healing Periapical Lesion – Case Report." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 20(01), 2021, pp. 42-45.