

Management of millers class III marginal tissue recession associated with endodontic lesion: Report of two cases managed using second-stage surgery

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ABSTRACT

Introduction: Endo perio lesions are common conditions that are often difficult to diagnose and are persistent if not treated completely. However, if the patient's history is taken carefully and thorough evaluation of all possible routes of infection is carried out, a properly done endodontic treatment is sufficient to eliminate the infection. However, wherever a secondary periodontal involvement exists, it requires specific therapy to achieve success. **Case Series:** In the first case, the involved maxillary left first premolar had a severe marginal tissue recession completely exposing the buccal root. The case was further complicated by the presence of an endodontic lesion. After successfully completing endodontic therapy, a free gingival autograft was placed to increase the zone of attached gingiva. Subsequently, a connective tissue graft was placed using pouch and tunnel technique to augment the zone further. The second case had a Millers class III recession associated with an endo perio lesion. This case was managed by using a resorbable membrane with a bone graft substitute to correct the osseous defect in the first stage after a successful endodontic therapy. The second-stage surgery was done using an envelope technique for connective tissue

grafting. In both the cases, there was an increase in width and thickness of the zone of attached gingiva following the two-step surgical procedure after a successful endodontic therapy. **Conclusion:** Successful treatment reported in both the cases can be attributed to a correct diagnosis, successful endodontic therapy and an increased zone of attached gingiva achieved using a two-step surgical technique.

Keywords: Marginal tissue recession, Endo perio lesions, Root coverage, Pouch, Tunnel

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INTRODUCTION

The relationship between periodontal and pulpal disease was first described by Simring et al. in 1964 [1]. Since then, the term 'endo perio lesion' has been used to describe lesions due to inflammatory products found in varying degrees in both periodontium and pulpal tissues. In most cases of endo perio lesions, clinical symptoms disappear following successful endodontic therapy. However, it becomes essential to correct the periodontal defect simultaneously in these cases to prevent recurrence, and to improve the functional status of the tooth [2]. Some of the most important functional goals in the treatment of mucogingival problems are arresting the progression of gingival recession and

improving the ability for plaque control in cases with healthy and diseased marginal tissues. Marginal tissue recession as a clinical entity has been documented since the last century. The earlier concept of a defined width of attached gingiva necessary to maintain oral hygiene does not hold true now [3]. It is essential to carry out root coverage surgery whenever concerns such as aesthetics, sensitivity, susceptibility to root caries, pulpal symptoms due to exposure of root, food lodgment and plaque deposition exist. Currently, accepted procedures for root coverage include coronally advanced flap, free mucosal graft, sub epithelial connective tissue graft, guided tissue regeneration and acellular dermal matrix.

CASE SERIES

Case 1: A 37-year-old male patient reported with the complaints of sensitivity, foul smell and pus discharge from the maxillary left first premolar since one month. The tooth was previously sensitive to hot and cold, and had recently developed spontaneous pain and pus discharge. He had visited various dental centers during past eight years but no definitive treatment had been done. Clinically, there was no attached gingiva in the region of 24 and the buccal root was completely exposed. An intraoral radiograph showed a periapical radiolucency (Figure 1A-C). A diagnosis of Millers class III marginal tissue recession (MTR) associated with an endodontic lesion in the maxillary left first premolar was made. After completing endodontic therapy, the first step to correct the mucogingival defect was to increase the zone of attached gingiva using a free gingival autograft from the palate (Figure 2A-D). Once the graft was successful and stable, after one month the second surgery was carried out utilizing a connective tissue graft from the palate which was placed using the pouch and tunnel technique [3] (Figure 3A-C).

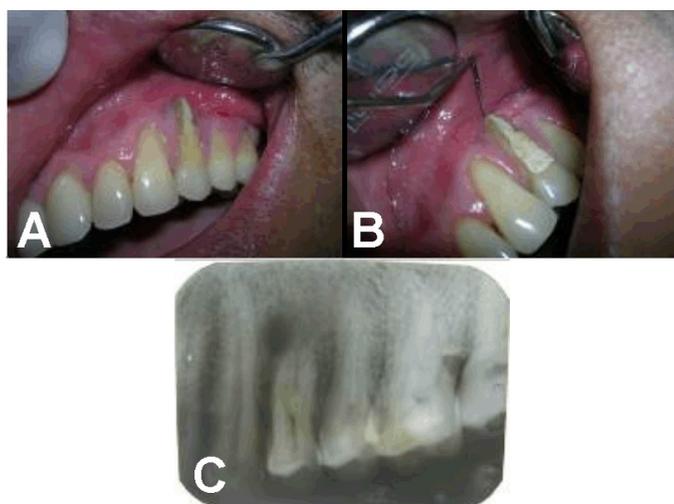


Figure 1: (A) Millers class III MTR in 24, (B) Complete exposure of buccal root beyond apex, (C) Periapical radiolucency in relation to 24.

Case 2: A 26-year-old male patient reported with complaints of pus discharge and pain in relation to maxillary left first premolar since two months. His history revealed that he had pain in the tooth since one year but was intermittently taking some medicines from the local physician. The pain would subside for some time and recur again. The pus discharge had started two months back with no relief despite taking medicines. Clinically, the area appeared inflamed. There was tenderness on probing and there was a pocket of > 5 mm on buccal, mesial and distal aspect. Radiograph revealed a periapical radiolucency and an infrabony defect on distal aspect of 24 (Figure 4A-B). This case was diagnosed as Millers class III MTR associated with a periapical lesion in 24. After a successful endodontic therapy, first surgery was carried out to correct the intraosseous defect. After debridement there was an osseous defect along the buccal root. A bone graft substitute along with a resorbable membrane was placed

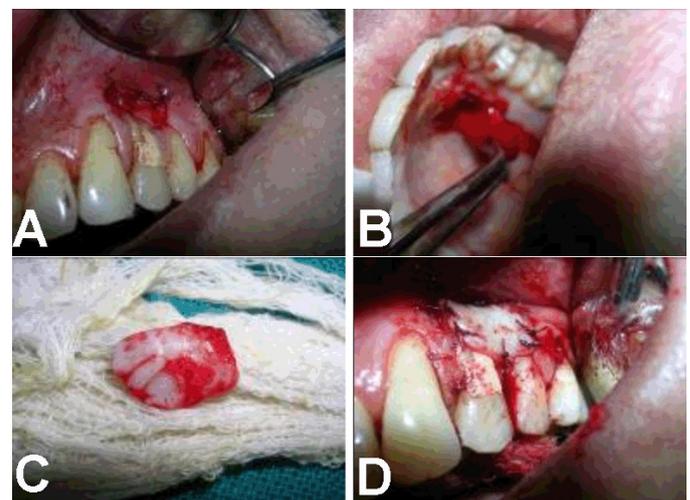


Figure 2: (A) Recipient site prepared, (B) Free autogenous graft being harvested from palate, (C) The graft, (D) Graft sutured.



Figure 3: (A) Tunnel prepared for the connective tissue graft, (B) Graft being harvested from the palate, (C) Graft sutured.

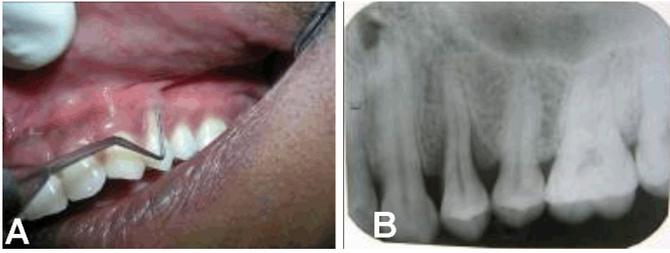


Figure 4: (A) Miller's Class III recession of 24, (B) Radiograph showing periapical lesion and infrabony defect at distal aspect.

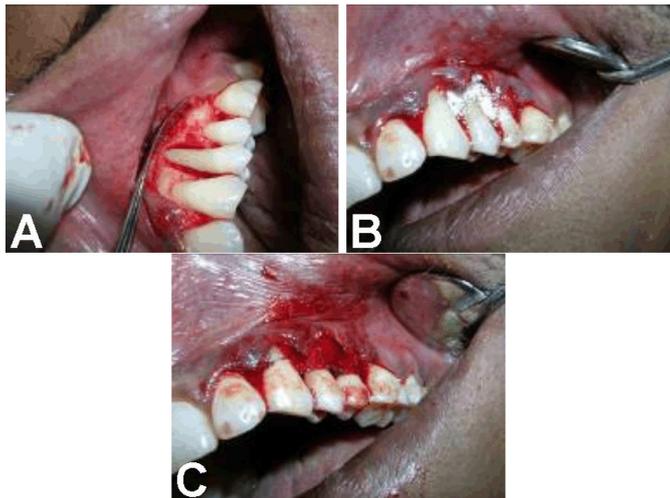


Figure 5: (A) Osseous defect surrounding buccal root, (B) Bone graft substitute placed, (C) Resorbable membrane sutured.

to cover the defect. The flap was then sutured (Figure 5A-C). At the time of review, two months later the tooth appeared healthy. However, the patient was unable to keep the tooth completely plaque free due to the recession. Therefore, a second surgery was carried out to place a connective tissue graft using the envelope technique to achieve root coverage (Figure 6A-E). In both the cases after the primary lesion was treated, the two-step surgery helped in not only creating a zone of attached gingiva but also enhancing the thickness of the attached gingiva (Figure 7A-B).

DISCUSSION

The pulp and the periodontium share a interrelationship via the apical foramen, lateral canals and dentinal tubules [1]. The inflammatory by products from the pulp can leach out and trigger an inflammatory response in the periodontium [4]. Both the cases discussed here had a primary endodontic lesion with secondary periodontal involvement [5]. The involvement was severe enough to have exposed the buccal root completely in the first case. The goal was to treat the primary infection as well as achieve functional restoration of the periodontium rather than esthetics [6].



Figure 6: (A) A vertical recession of 3 mm on 24, (B) Undermining the buccal aspect, (C) Creating an envelope, (D) Harvesting connective tissue graft, (E) Graft sutured.

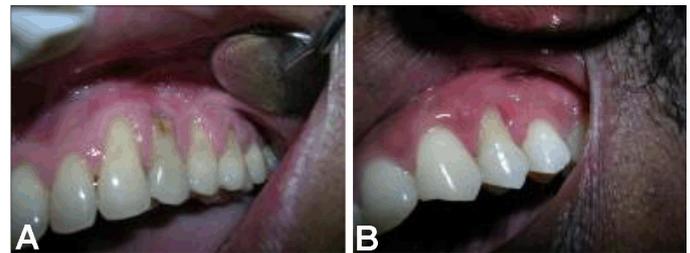


Figure 7: (A) Case 1 postoperative nine months, (B) Case 2 postoperative six months.

Marginal tissue recession requires treatment for many reasons such as impaired aesthetic appearance, root sensitivity, cervical caries or abrasion. Two surgical techniques have been described that use free gingival graft for root coverage. The technique proposed by Bernimoullin et al. involves two surgical steps. The first step consists of creating attached gingiva by means of free gingival graft and second step involved coronal positioning of grafted tissue to cover the gingival recession. This indirect technique has advantages over other techniques because it ensures development of an adequate band of attached gingiva [7]. The first case had a severe marginal tissue recession complicated by the presence of a long standing endodontic lesion. After successfully completing endodontic therapy, the first step was to place a free gingival graft from the palate at the recession site. This was important to create a zone of attached gingiva where none existed. Free gingival graft was the technique of choice because it has been documented as the most predictable method to increase the apico-coronal dimension of the keratinized mucosa despite the advent of subepithelial connective tissue graft and allogeneous grafts like AlloDerm [8]. Once the graft was successful, after four weeks a connective tissue graft from the palate was procured and placed using the pouch and tunnel technique to increase the thickness as well as achieve some root coverage in region of tooth 24. The use of tunnel procedure preserves the interdental papilla and this facilitates an early and accelerated initial wound healing. The tunneling also applies less traction and preserves the gingival height [9]. The elimination of vertical incision, which is used in

subepithelial connective tissue grafting, ensures complete coverage of the connective tissue graft by the flap thus aids in faster healing as well as excellent color matching. The pouch and tunnel procedure may be of advantage as compared to coronal repositioned flap since there is minimum trauma to the recipient site and there is predictable root coverage [10]. The second case was treated using the same approach, i.e. treating the primary lesion first and later correcting the osseous defect using a resorbable membrane with bone graft substitute. A second surgery done using connective tissue graft from the palate and placing it using an envelope technique helped in further augmenting the attached gingiva, thus ensuring long term stability of results.

The cases discussed in this case series were challenging not only because of the presence of an endo perio lesion but there was also a Grade III marginal tissue recession with complete exposure of the buccal root and absence of attached gingiva in the first case. The key was correct diagnosis, timely treatment and keeping the goals realistic.

CONCLUSION

This case series emphasizes the need for careful evaluation of complicated cases of endo perio lesion with or without marginal tissue recession and exposure of buccal root where conventional therapy fails due to incorrect diagnosis. It also highlights the fact that functional restoration of the periodontium is one of the important aims of periodontal plastic surgery.

Author Contributions

Sangeeta Singh – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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