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Interdisciplinary approach for refurbishment of compromised tooth: A case report

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Abstract

There is a significant relationship between restorative dentistry and periodontal health. Maintenance of gingival health constitutes one of the keys for tooth and dental restoration longevity. Caries, restorations, and dental fractures often invade the dentogingival junction, resulting in soft tissue inflammation and bone resorption, especially when they infringe the junctional epithelium and supracrestal connective tissue. A periodontal surgical approach is often required to allow restorative procedures and to create a supra-alveolar area that accommodates the newly-formed biological width. In such cases, an accurate diagnostic and interdisciplinary approach is necessary for obtaining improved, conservative and predictable results in esthetically compromised areas, like the anterior maxillary dentition. This case report describes the management of a carious maxillary left central incisor that underwent combined endodontic-periodontal treatment and achieved proper healing of the affected tissues.

Keywords: Interdisciplinary approach, refurbishment, compromised tooth

Introduction

Recent years have brought great advances in the field of dentistry which has provided an opportunity to maintain a functional dentition for lifetime. The increased desire of patients to retain their teeth has led to the treatment of teeth that once would have been removed. The term Interdisciplinary may be described as the mutual permeation of various specialties accompanied by expansion of the scope of each. It is pronounced by the application of perspectives, concepts and methods that overrun the limits of individual specialties [1].

There is a significant relationship between restorative dentistry and periodontal health. The purpose of restorative dentistry is to restore and maintain health and functional comfort of the natural dentition combined with satisfactory aesthetic appearance. Thus, all dental restorations should comply with established requirements for periodontal physiology and health, both with regard to surface and functional characteristics [2]. Maintenance of gingival health constitutes one of the keys for tooth and dental restoration longevity. Understanding and clinically managing the concept of biological width is the key to creating gingival harmony with dental restorations [3].

The biological width is defined as the dimension of the soft tissue which is attached to the portion of the tooth coronal to the crest of the alveolar bone. This term was based on the work of Gargiulo *et al.*, who described the dimensions and relationship of the dentogingival junction in humans: The biologic width is commonly stated to be 2.04 mm, which represents the sum of the epithelial attachment of 0.97 mm, and a connective tissue attachment of 1.07 mm [4].

Caries, restorations, and dental fractures often invade the dentogingival junction, resulting in soft tissue inflammation and bone resorption, especially when they infringe the junctional epithelium and supracrestal connective tissue. In these cases, a periodontal surgical approach is often required to allow restorative procedures and to create a supra-alveolar area that accommodates the newly-formed biological width [5].

This article describes a case involving a carious maxillary left central incisor that underwent combined endodontic-periodontal treatment and achieved proper healing of the affected tissues.

Case Report

A 37 year old male patient, reported to Yenepoya Dental College, Mangalore, with a chief

complaint of dislodged filling in relation to upper front tooth since 1 month. The patient had undergone the filling 1 year back. On examination, it was noticed that deep cervical caries was present on the mesio-facial aspect of maxillary left central incisor (Figure 1). No tenderness on percussion was felt, and the tooth was found to be non-vital when vitality test was performed.

On radiographic examination, carious lesion was found involving the pulp and an ill-defined radiolucency was noticed peripherally. Extra-oral findings were absent. After thorough clinical and radiological examination, it was diagnosed as irreversible pulpitis of maxillary left central incisor. It was decided to perform the treatment through an interdisciplinary approach of combined endodontic-periodontal treatment in order to place the restoration subgingivally without violating the biologic width. An informed consent was obtained from the patient.

Oral prophylaxis was performed initially using hand instruments and ultrasonic scalers and oral hygiene instructions were given. Patient was recalled and endodontic phase was initiated. Carious lesion was excavated; access opening was done on maxillary left central incisor by using a round diamond bur. Root canal orifice was located and working length determined radiographically. Cleaning and shaping was done using the crown-down technique. Calcium hydroxide was given as intracanal medicament. In the second appointment, as the subjective symptoms were relieved all canals were obturated using gutta-percha by cold lateral condensation technique and restored with Intermediate restorative material. (Figure 2 and 3).

The upper labial frenum was found to be attached too closely to the gingival margin, which may jeopardize the gingival health by causing a gingival recession because of the interference with the proper placement of a toothbrush or through the opening of the gingival crevice because of muscle pull, leading to increased accumulation of plaque. So a frenotomy procedure was planned for the relocation of the frenal attachment.

Frenotomy was carried out using a diode laser under local anesthesia (Figure 4). The diode laser at a wavelength of 940 nm at a power setting of 1 W in a contact mode was used. The laser fiber was applied vertically and laterally to the frenum initially causing disruption of the mucosa continuity. This easily allowed performing a deeper cut of the frenum in a horizontal dimension. No sutures were placed. Hemostasis was optimum immediately after the procedure.

An envelope flap was planned to get the access for restoration of the deep cervical defect on mesial side of left central incisor. Extraoral tissues around the surgical site was made aseptic using betadine. Local anesthesia (2% lignocaine with 1:80000 adrenaline) was administered. Intra-sulcular and interdental incisions were placed by using No. 15 B.P blade from the distal aspect of maxillary right central incisor to distal aspect of maxillary left central incisor followed by reflection of a full thickness mucoperiosteal flap on both labial and palatal aspect (Figure 5 and 6). Complete debridement was carried out using Gracey curette 1-2. The surgical site was irrigated with sterile normal saline in order to clear the debris. Margin of the carious lesions on the tooth was extending beyond the crest of bone. Therefore, it was decided to perform osteoectomy using sugarman bone file (Figure 7). After complete debridement, fiber post was placed in the cavity and was restored with flowable composite resin and care was taken to merge the margins of the restoration with the surrounding root surface without any excess or sharp

margins and was polished (Figure 8 and 9).

The flap was then approximated and sutured with 3-0 braided silk suture followed by placement of periodontal dressing (COE-PAK). Post-operative instructions were given. Antibiotics and analgesics were prescribed. A chlorhexidine gluconate mouthwash (0.2%) was prescribed to supplement the routine oral hygiene.

The patient was asymptomatic post-operatively. Patient was recalled after 1 week for suture removal, patient showed no signs of discomfort and the healing was found to be uneventful (Figure 10).

After 15 days, tooth preparation was carried out and a ceramic crown was cemented (Figure 11). Patient was reviewed at an interval of 3 and 12 months (Figure 12 and 13). There were no symptoms of any pain or signs of inflammation and exhibited appropriately positioned interdental papillae even after 12 months (Figure 14).



Fig 1: Pre-operative view



Fig 2: Post-endodontic IOPA



Fig 3: Post-endodontic



Fig 4: Frenotomy using laser



Fig 8: Fiber post placement followed by flowable composite resin restoration



Fig 5: Flap reflection – labial aspect



Fig 9: Radiograph after placement of fiber post



Fig 6: Flap reflection – palatal aspect



Fig 10: Post-operative after 1 week



Fig 7: Osteoectomy using bone file



Fig 11: After crown placement

**Fig 12:** 3 months follow up**Fig 13:** 1 year follow up**Fig 14:** Pre-operative and Post-operative

Discussion

The relationship between periodontal health and the restoration of teeth is intimate and inseparable. An adequate understanding of relationship between periodontal tissues and restorative dentistry is paramount to ensure adequate form, function and esthetics, and comfort of the dentition [3].

The practice of restorative dentistry has a reciprocal relationship with the maintenance of periodontal health. Untreated periodontal disease will compromise the success of restorative dentistry and poor restorative treatment may have adverse effects on the periodontium by increasing accumulation of plaque and inducing changes in the composition of the plaque flora [6].

An accurate diagnostic and interdisciplinary approach is necessary for obtaining improved, conservative and predictable results in esthetically compromised areas, like the anterior maxillary dentition. Periodontal health is of paramount importance for all teeth, both sound and restored [7].

A clinician is presented with three options for restorative margin placement: Supragingival, equigingival, and subgingival locations. Supragingival margin has the least impact on the periodontium. Caries, crown fractures, previous restorations, and shorter tooth preparations requiring additional retention will frequently dictate the placement of restoration margins beneath the gingival tissue crest [3].

Restorative margin placement within the biologic width is detrimental to periodontal health and acts as a plaque retentive factor. Subgingival placement of the crown and preparation margins potentially endanger biologic width and a constant inflammation is created that may worse the patient's ability to clean this area. The more common finding with deep margin placement is that bone level appears to remain

unchanged; however, gingival inflammation develops and persists on the tooth restored [8].

In our present case report, the carious lesions were involved short of the crest of alveolar bone, which couldn't be restored by placing gingival retraction cords. Hence, the gingiva was reflected from the distal aspect of maxillary right central incisor to distal aspect of maxillary left central incisor to properly place the restoration subgingivally without violating the biologic width.

High frenal attachment leads to gingival recession due to the tension which is applied onto the tissues during normal function and also it interferes with plaque control. Hence, frenotomy was performed to facilitate adequate plaque control and to prevent inflammatory periodontal destruction [9, 10].

After suture removal, the patient was followed up for 1 year. During the follow up period, the results of the periodontal therapy could be well appreciated at the treated sites showing healthy and normal contours of the marginal and papillary gingiva with the gingival zenith in harmony with the adjacent teeth, altogether giving a pleasing emergence profile that is of utmost concern especially in the anterior esthetic zone.

Conclusion

Ensuring clinical success begins with a careful discussion of treatment planning, comprehensively covering all variables in simple to complex cases. Proper treatment plan should be established before any clinical procedures which includes a thorough clinical examination and radiographic assessment. The integration of periodontal considerations with restorative planning is now the standard of care. Direct and frequent communication between the periodontist and restorative dentist is a prerequisite for predictable and satisfactory results.

References

1. Slavicek G, Makarevich A, Makarevich I, Bulatova K. Concepts, aims and drawbacks in interdisciplinary dentistry: Results of an international questionnaire. *J Interdiscip Dent.* 2013; 3(2):91-102.
2. Ramfjord SP. Periodontal aspects of restorative dentistry. *J Oral Rehabil.* 1974; 1(2):107-126.
3. Babitha Nugala, Santosh Kumar BB, Sahitya S, Mohana Krishna P. Biologic width and its importance in periodontal and restorative dentistry. *J Conserv Dent.* 2012; 15(1):12-17.
4. Gargiulo AW, Wentz FM, Orban B. Dimensions and relations of the dentogingival junction in humans. *J Periodontol.* 1961; 32:261-267.
5. Waal H, Castelucci G. The importance of restorative margins placement to the biologic width and periodontal health. Part I. *Int J Periodont Rest Dent.* 1993; 13:461-471.
6. Yap UJ, Ong G. Periodontal considerations in restorative dentistry. 1: Operative considerations. *Dent update.* 1994; 21(10):413-418.
7. Tomar N, Bansal T, Bhandari M, Sharma A. The peri-esthetic-restorative approach for anterior rehabilitation. *J Indian Soc Periodontal.* 2013; 17(4):535-538.
8. Tanikonda R, Nalluru S, Koneru S, Mannem S. Comprehensive management of subgingival caries: A minimally invasive interdisciplinary approach. *J Dr NTR Univ of Health Sci.* 2012; 1(2):130-133.
9. Lioliou E, Kostas A, Zouloumis L. The maxillary labial frenum: A controversy of oral surgeons vs. orthodontists. *Balkan Journal of Stomatology.* 2012; 16(3):141-146.
10. Mirko P, Miroslav S, Lubor M. Significance of the labial frenum attachment in periodontal disease in man. Part 1. Classification and epidemiology of the labial frenum attachment. *J Periodontol.* 1974; 45(12):891-894.