

SMILE ENHANCEMENT WITH RECONSTRUCTION OF INTERDENTAL PAPILLA– A CASE REPORT

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Abstract

One of the most difficult and elusive goals for the periodontist in the reconstructive, regenerative and aesthetic aspect of periodontal therapy is the reconstruction of the interdental papilla that has been lost from either disease or previous pocket eradication periodontal therapy. The poor aesthetic appearance in the maxillary anterior as a result of the lost papilla has been a dilemma for both the patient and the therapist. Many periodontists' have attempted to reconstruct the papilla by numerous surgical methods, but the lack of blood supply for the donor tissue in a small, restricted recipient site has been one of the limiting factors for success. Most of the surgical procedures have emphasized gingival grafting (free mucosal grafting). The loss of gingival papilla height can result in open gingival embrasures, phonetic problems, food impaction and aesthetic concerns. It is therefore important to understand the factors that influence papilla form in order to prevent papilla loss and to better understand the challenges of regenerating lost gingival papillae. This case report shows the Beagle's technique for papilla reconstruction.

Key Words: - Papilla Reconstruction, Interdental Papilla, Black Triangle, Beagle's Technique.

Introduction

Interdental papilla is the gingival portion, which occupies the space between two adjacent teeth. It not only acts as a biological barrier in protecting the periodontal structures, but also plays a critical role in aesthetics.¹ The absence or loss of the interdental papilla is one of the most concerning aspects in the decision-making process of clinicians and in gaining acceptance from the patient. There can be many reasons for loss of papilla like bone loss, previous flap surgery, surgical excision of common gingival condition like Pyogenic granuloma etc.² This condition may create esthetic impairments, phonetic problems and food impaction³.

Several conditions modify the interproximal space; as a consequence, the morphology of the interdental papilla may be impaired. Abnormal tooth shape, improper contours of prosthetic crowns or restorations, traumatic interproximal hygiene procedures, and especially periodontal diseases may cause loss of interdental papilla.³

Nordland and Tarnow (1982) proposed a classification system regarding the papillary height adjacent to natural teeth, based on three anatomic landmarks⁴ (Figure 1).

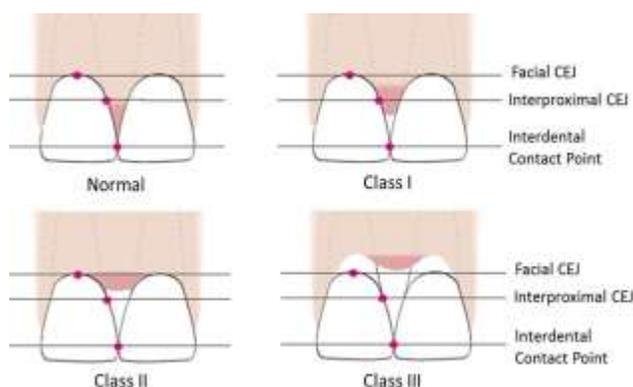


Figure 1: - Classification by Nordland and Tarnow

- The interdental contact point
- The apical extent of the facial CEJ
- The coronal extent of the proximal CEJ

Normal: the interdental papilla occupies the entire embrasure space apical to the interdental contact point/area.

- *Class I:* the tip of the interdental papilla is located between the interdental contact point and the level of the CEJ on the proximal surface of the tooth.
- *Class II:* the tip of the interdental papilla is located at or apical to the level of the CEJ on the proximal surface of the tooth but coronal to the level of the CEJ mid-buccally.
- *Class III:* the tip of the interdental papilla is located at or apical to the level of the CEJ mid-buccally.

Several efforts have been undertaken to treat and restore the missing interproximal papilla.³ Surgical techniques aiming at correcting the “black hole problem” have been used mainly with free epithelialized gingival grafts, repeated interproximal curettage, or displacement of the interproximal palatal tissue in the buccal direction.⁵

Any technique related to gingival tissue reconstruction must emphasize adequate blood supply to the surgical site. Because of the limited area that the interdental papilla occupies, any form of grafting presents a blood supply problem in the reconstruction of the papilla. It is also known from the previous studies that the long term stability of the papilla is dependent on the anatomic environment. The incisal distance from the interdental crest of the bone to the apical portion of the contact is important to maintain the papilla. In periodontally involved patients, it is the loss of bone interdentally that lengthens this distance, creating the unpredictable status for papillary reconstruction.⁶

Case Report

A healthy male patient, aged 35 years reported to the Department of Periodontics, Subharti Dental College, Meerut, with the chief complaint of loss of gums between

the upper front teeth. On examination there was a loss of papilla between the two maxillary central incisors (Figure 2). A detailed medical and dental case history was recorded followed by scaling and root planning. After phase I therapy, surgical reconstruction of papilla was performed using 'Beagle technique'.



Figure 2: Pre-operative photograph

Surgical Procedure

After anaesthetizing the area, a split thickness incision was given at the base of the palatal papilla (Figure 3) and then was elevated labially (Figure 4).



Figure 3: - Incision given on palatal side



Figure 4: - Papilla reflected

The papilla was then folded on itself, trimmed and sutured to create a new papilla (Figure 5). COE-PAC was placed on this for two weeks. Sutures were removed after two weeks and oral hygiene instructions were given. Healing was found to be satisfactory with slight inflammation of the papilla.

The patient was followed for 6 months and successful reconstruction of interdental papilla had taken place filling the entire space of the interdental area (Figure 6).



Figure 5: - Suture given



Figure 6: - Six months Post-operative photograph

Discussion

Several reasons contribute to the formation of “black triangles” between teeth such as, loss of periodontal support because of plaque associated lesions, abnormal tooth shape (highly tapered triangular tooth form), abnormal location and size of interproximal contact, improper contours of prosthetic restorations, traumatic oral hygiene procedures, previous periodontal surgery, post-orthodontic treatment, iatrogenic surgical removal tissue collapse following extraction etc.⁶

Due to the small, restricted space interdental, any form of free grafting cannot be utilized since the surface area for blood supply to the donor tissue is minimal.⁷

One of the most undesirable effects of any periodontal surgical technique involving interproximal areas is marginal tissue recession and loss of papillary tissue. This loss can occur mainly because of the blood supply discontinuation caused by the incision made in the papillary area.⁸

A human observational study correlated the presence or absence of the interproximal papilla with the vertical distance between the contact point and the crest of alveolar bone. When the tissue fills the embrasure completely, the papilla is considered to be present. When the space is visible apical to the contact point, the papilla is deemed

missing. When the vertical distance from the contact point to the crest of bone is 5 mm or less, the papilla is present almost 100% of the time. When the distance is 6mm or more, the papilla is usually missing.³

Midline interdental papilla reconstruction, independent of the dental and periodontal biotype, confirms the possibilities of such a combined orthodontic–periodontic protocol in the treatment of periodontal patients with esthetic problems following migration of the frontal teeth.⁹

Conclusion

Although more and more sophisticated approaches showing good clinical results have been proposed to restore the lost interdental papilla, the predictability of various procedures has not been completely documented. Advantages of the Beagle’s technique includes minimal invasiveness i.e. no second surgical site is required. Also, this procedure is less time consuming and surgically is a simpler technique. To be successful, the surgical technique must involve the maintenance of the integrity of the interproximal tissue. Multiple surgical procedures may be required for the full coverage of the space.

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