Papilla Reconstruction: A Case Report

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INTRODUCTION

A healthy gingiva is the one in which the embrasure space between the two adjacent teeth is completely filled by the interdental papilla.1 The gingival inflammation alters the standard contour, shape and consistency of the interdental gingival tissue resulting in swollen interdental papilla that causes overfilling of the embrasure space creating pseudo pocket but without loss of attachment.2 The interdental area in this way favors more plaque accumulation and further leads to progression of inflammation.2 Interdental papilla functions in two ways: By acting as a biological barrier, it protects the periodontium and also have an important role in esthetics.3 Subsequent migration of attachment epithelium in the interdental region results in the loss of interdental alveolar bone.1 Various non surgical and surgical techniques have been used over years for the reconstruction of the interdental papilla. Non surgical techniques included the repetitive use of curettage of the interdental papilla. Surgical techniques consisted of pedicle and free connective tissue grafts.3

CASE REPORT

A 30-year-old female patient reported to the Department of Periodontics, RUHS-CODS Jaipur, with the chief complaint of loss of gums between the upper front teeth. On examination, there was a loss of papilla between 12 and 11, 11 and 21, 21 and 22 (Figure 1). A detailed medical and dental case history was recorded followed by scaling and root planning. After phase I therapy, surgical reconstruction of interdental papilla was performed. The surgical technique used here was given by Sawai et al.1 which was a variant of ‘Beagle technique’.5

Surgical Procedure

Local infiltration anesthesia was administered, and an incision was given in a particular manner so as to raise a partial thickness flap from the attached gingiva apical to the open embrasure using two vertical and one horizontal incision. The flap was then folded upon itself to obliterate the open embrasure completely. The free end of the flap was sutured with the adjacent gingiva with 4-0 polyglycolic acid sutures so as to suspend the papilla between adjacent teeth. Periodontal dressing was applied to the labial aspect of the surgical site (Figures 2-6). Antibiotics and analgesics were administered. The dressing and the sutures were removed after 2 weeks, and oral hygiene instructions were given and healing was found uneventful.

DISCUSSION

The interdental papilla can be lost because of bone loss, previous flap surgery, surgical excision of common gingival condition like pyogenic granuloma.6 Several conditions can modify the inter proximal space that may result in alteration in the contour of the interdental papilla such as abnormal tooth shape, improper contours of prosthetic crowns or restorations, traumatic inter dental hygiene procedures, and especially periodontal diseases may cause loss of interdental

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This condition may create esthetic impairments, phonetic problems, and food impaction. Nordland and Tarnow (1982) proposed a classification system regarding the papillary height adjacent to natural teeth, based on three anatomic landmarks (Figure 7).

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

In the past, orthodontic means, repeated subgingival curettage, papilla preservation techniques, were used to change the contour of interdental tissues. Han and Takie, Azzi et al., proposed different surgical techniques to reconstruct the missing interdental papilla predictably. All these methods required a second surgical site to obtain the connective tissue graft to obliterate the open embrasure space. Beagle (1992) presented a method to reconstruct interdental papilla using the principles of Abram’s roll technique and Evian papilla preservation technique. However, this technique has certain disadvantages. There is a risk of damage to the incisive nerves and vessels and incorporation of fat in the undersurface of the flap thereby, preventing its vascularization. Furthermore, obtaining a uniform thickness of the flap from the palate and retention of periodontal dressing is difficult.

Grupe and Warren documented that any form of pedicle grafting is much more predictable if a proper donor tissue is found adjacent to the recipient site, as abundant blood supply from the base of the pedicle can be obtained for the predictable “take” of the graft. As the interdental space is narrow, the movement of gingival tissue in a pedicle like manner provides a small surface area in terms of blood supply to the donor tissue. This increases the chances of sloughing of the flap due to inadequate blood supply to form the papilla.

Tarnow et al. reported that the distance from the base of the contact area to the crest of the bone could be correlated with the presence or absence of the inter proximal papilla. When the distance between bone and contact area is 7 mm or more, the papilla was present only 27% of the times. Presence of dead space between the graft and the underlying tissues retard the vascularization and jeopardizes the success of the graft (de Waal et al. 1988).

Various techniques have been given in the past to reconstruct the papilla by surgical methods or the use of prosthetic veneers. However, very less data are available about the long-term success and predictability of these techniques. Advantages of the Beagle's technique include minimal invasiveness, i.e., no second surgical site is required, similar results were seen with the same technique in our case. Furthermore, this procedure is less time-consuming and surgically is a simpler method. To be successful, the surgical procedure must involve the maintenance of the integrity of the inter proximal tissue. Multiple surgical procedures may be required for the full coverage of the space.

**CONCLUSION**

From this case report, it was concluded that the surgical technique evaluated for reconstruction of an interdental papilla was relatively successful. However, if bone grafting techniques or connective tissue grafting techniques are used in conjunction with this surgical technique, there may be increased chances of obtaining better results so as to aid in restoring gingival esthetics, thereby, satisfying the patients.

**REFERENCES**


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