

Case Report

Papilla preservation flap: a technique for management of soft tissues in an esthetic zone

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ABSTRACT:

A periodontal therapy aimed to establish a state of periodontal health resulted in absence of inflammation, elimination of periodontal pockets and a potential for the patient to maintain the health, function and esthetics. Periodontal surgical therapy used in periodontal defects with maxillary anterior dentition in an esthetic manner is possible only when integrity of the papilla is preserved. Surgical approach to treat periodontal defects with maxillary anterior dentition in an esthetically pleasing manner is possible only when papillary integrity is preserved. Esthetics is of prime concern in today's sophisticated and modernised society. An ideal periodontal therapy must necessarily consider esthetic appearance, which means an effort to maintain gingival marginal anatomy and as much height of papilla as possible along the course of the periodontal therapy. Often, non-surgical approach is encouraged for maxillary anterior dentition. Papilla preservation flap (Takei 1985) allows maintenance of intact interdental papilla in contrast to papilla splitting technique. However, there are situations in which surgical therapy is unavoidable. This case report aims towards assessment of papilla preservation flap in the treatment of a 36 year old female with generalized chronic moderate periodontitis leading to pathological migration in anterior esthetic zone, with 6 month follow up.

Key words: Papilla preservation techniques, Interdental Papilla, esthetics

INTRODUCTION

Periodontal surgery aims at the recovery of lost tissues, which further might lead to compromised esthetics, disturbed phonetics, unpleasant appearance especially where aesthetic zone is the area of interest. An ideal periodontal therapy must confer to treat the dentition keeping the esthetic appearance in mind and this can only be done when the papillary integrity is preserved. However in certain cases where surgical therapy is unavoidable, splitting the papilla leads to its shrinkage and decrease in the height of interdental papilla exposing the interproximal embrasures. To overcome such complications "Papilla Preservation Flap" technique was advocated. Various reports in the previous years have been advocated highlighting the effectiveness of the procedure. Several surgical protocols are available to obtain primary flap closure and preserve interdental tissue such as Conventional papilla preservation technique (Takei et al., 1985), Modified papilla preservation technique (Cortellini et al., 1995), Simplified papilla preservation flap (Cortellini et al., 1996)Whale's tail technique (Bianchi and Basseti, 2009).^[1,2,3]

The first report of papilla preservation reported by Kromer in 1956 for implant therapy followed by various other authors like Intact Papilla flap by APP in 1973 retaining interdental gingiva in buccal flap (Checchi et al., 2009; Evian et al. 1973), Genon and Bender 1984.

Takei et al. (1985)^[4,5] introduced detailed version of the procedure and named it as Papilla Preservation Flap ensuring optimal interproximal coverage, facilitated placement and retention of bone graft (Corn and Rosenberg method includes :

- a) sulcular incisions around each tooth with no incision on the facial aspect of interdental papilla
- b) sulcular incision on the lingual/palatal aspect of each tooth
- c) semilunar incision along the interdental papilla at least 5 mm away from gingival margin
- d) intact elevation of the interdental tissues from the palatal aspect with the facial flap.^[6]

The first papilla preservation technique was described by Takey et al. 1985 [29] and is used to prevent soft tissue collapse and to maintain stability during the regeneration phase (Figure 1).



Figure 1: Illustration of the papilla preservation flap according to Takei et al 1985

Following are the indication for the conventional papilla preservation flap :

- 1.) Where esthetics is of concern
- 2.) Where bone regeneration techniques are attempted.

The Modified Papilla Preservation (MPPT) technique was developed to increase the space for regeneration and to achieve and maintain primary flap closure in the interdental space [30]. MPPT allows primary closure of the interdental space, resulting in better protection of the membrane from the oral environment. MMPT can be successfully applied at sites where the interdental space width is at least 2 mm in the most coronal portion of the papilla. When the interdental sites are narrower than 2mm, a different papilla preservation procedure (the simplified papilla preservation flap, SPPF) has been proposed. (Figure 2)

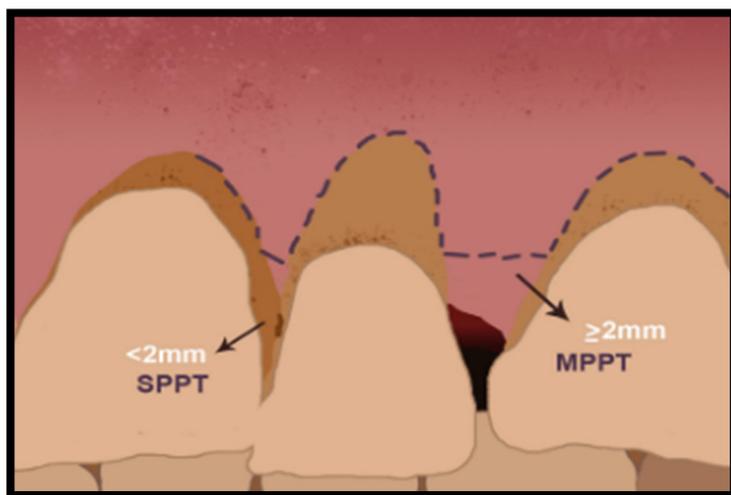


Figure 2: Incision design in case of Simplified papilla preservation flap Technique (SPPT) and Modified papilla preservation flap technique (MPPT).

“Esthetics” is the science of beauty, which is the particular detail of an animate or inanimate object that makes it appealing to the eye. Esthetic or cosmetic dentistry strives to merge function and beauty with the values and individual needs of every patient. A common finding after performing definitive pocket elimination therapy, especially in the maxillary anterior region, is the unesthetic appearance of gingiva due to a greater crown and root exposure marked by an increased spacing in the interdental region giving it a picket fence appearance.^[7]

However the presence of ample embrasure with the absence of tight contact point stands as a pre-requisite to retain tissue to retain interdental. This case report presents the case of a 36 year old female patient with generalized chronic moderate periodontitis with diastema in maxillary anterior teeth.

CASE REPORT

A 27 year old female patient reported in Department of periodontics and Oral Implantology in Government dental college and hospital, Ahmedabad with the chief complaint increased spacing of teeth in past one year with bleeding gums while brushing and generalized sensitivity to hot and cold since 4-5 months. Patient was otherwise clinically healthy with non-contributory medical history. On extra oral examination face was found to be bilaterally symmetrical, lymph nodes were non- palpable, Temporo-mandibular joint was normal with no clicking sound or deviation while opening or closing mouth. Intra-oral examination revealed bleeding on probing, moderate inflammation was also seen. Probing depth >5 mm (**Fig 4**) in the maxillary anterior region leading to pathological migration of the same. Oral prophylaxis was done, Plaque index (Loe and Silness, 1963) and gingival index (Sanivarka et al., 2010), Pocket Probing Depth (Mohamed et al., 2014) and CAL (clinical attachment loss) were recorded and re-evaluated after two weeks. Requirements for this case, arches, both an IOPR (Intra Oral Periapical Radiograph) and OPG (Ortho-Pantomogram) were recorded followed by blood investigations. Based on all the clinical findings papilla preservation flap surgery was the treatment of choice as the affected dentition showed wide interdental spacing with a broad inter-proximal gingival zone.



FIGURE 3



FIGURE 4

TREATMENT

Adequate local anesthesia with a concentration of 1:20,000 epinephrine was administered. In order to prepare the facial surface of the affected teeth, sulcular incisions were given around the maxillary anterior teeth without splitting the interdental papilla (**Fig 5**). Facially, sulcular incisions are given around each tooth without involving the interdental papilla. Palatally/lingually sulcular incisions are given continuous with a semi-lunar incision across the interdental papilla. From the line angles, papillary incision line is greater than 5mm from the gingival margin. During surgery the gingiva especially in the interdental region should be firm and free of inflammation.

The palatal flap design consisted of semilunar incision made across the interdental papilla in relation to teeth extending from 13 to 23. The semilunar incision's on the palatal aspect were made at least 5mm away from the gingival margin such that it dipped apically from the line angles of the tooth, facilitating separation and elevation of intact facial flap from the palatal aspect (**Fig 6**).



FIGURE 5



FIGURE 6

After the incision's being made, the flap was reflected and freed from the underlying bone followed by detachment of interdental tissue through the wide embrasure with the help of a periosteal elevator leaving the papilla intact. (**Fig 7**)

The reflected flap was scraped and trimmed in order to remove sulcus epithelium and granulation tissue, curettage followed by scaling and root planning to debride the flap. (**Fig 8**)

The thickness of interdental tissue was maintained in order to maintain adequate blood supply and minimize the chances of post-operative gingival recession. The facial flap preserving the papilla was approximated with the palatal semilunar incision line and secured with a horizontal mattress suture.(Fig 9)



FIGURE 7



FIGURE 8



FIGURE 9

At one day post-operative patient didn't presented any sign of extra-oral swelling, paresthesia etc. Antibiotics (Amoxicillin 500 mg three times a day (TID) for 5 days) and non-steroidal anti-inflammatory drug (NSAID) was prescribed and was instructed to rinse with 0.2% chlorhexidine mouthwash for two weeks at least two times a day. Brushing was initiated after a week of periodontal flap surgery followed by supportive periodontal therapy every month with re-enforcement of oral hygiene practices. The patient was followed up for 6 months duration

DISCUSSION

The ultimate goal of periodontal therapy is to establish a state of periodontal health evidenced by absence of inflammation, periodontal pockets and a potential for the patient to maintain the health in addition to comfort, function and esthetics. Periodontal therapy for the maxillary anterior dentition must consider esthetic appearance, which means an effort to maintain as much of the papilla as possible in the course of the periodontal therapy.

The modern periodontal paradigm is directed towards the establishment of physiological form of gingiva thereby restoring its optimal function and esthetics. Conventional papilla preservation flap method preserves the interdental papilla by incorporating the entire papilla in one of the flaps and also guarantees a result very similar to a situation preceding surgery.^[8] Therefore, while considering treatment in the esthetic zone, a flap method that preserves the anatomy of the gingival margin with optimal function and esthetics is desirable. The papilla plays a fundamental role in aesthetic and phonetic functionalities and also serves as a biological barrier to protect the attachment apparatus [9]. The papilla preservation flap incorporates the entire papilla in one of the flaps. Papillary preservation flap method not only preserves the interdental papilla but also focusses on the preservation of the soft tissues guaranteeing a result very similar to a situation preceding surgery.

In order to meet the expectations of patient, esthetics always pose therapeutic dilemmas when it comes to the selection of a proper surgical technique in the maxillary anterior region that helps prevent or minimize esthetic problems such as loss of interdental papilla etc. without compromising the main goal of periodontal surgery. Treatment in the esthetic zone, claim a flap method that preserves the anatomy of the gingival margin with optimal function ensuing desirable esthetics. The flap design epitomizes a very imperative parameter in any surgical procedure to achieve stability of the marginal tissue and optimal revascularization during early wound

healing to promote stable wound closure. Thus, flap design plays a very important role in the accomplishment of the therapy.

Observations by **Chako et al.2013** speculated that soft tissue craters did not develop in the area where papilla was spared.^[10]In accordance to various studies and aiming towards reduction of periodontal pockets and desirable esthetics, the present case utilized papilla preservation flap in the maxillary anterior dentition i.r.t teeth 13 to 23. During the course of treatment the gingival status exhibited health with interdental papilla being pyramidal in shape with no signs of inflammation or gingival bleeding. The pockets were probed at 3 and 6 months which revealed significant reduction in pocket depth (Residual probing depth 2mm) (**Fig 10**).Moreover, development of the papilla preservation flap technique particularly in this case was done due to presence of interdental spacing which was about more than 2mm, which in addition to providing an optimal interproximal coverage, claims to provide better esthetic results, especially in the anterior region of the mouth.

Therefore it is essential to appreciate and realize that preservation of papilla plays a fundamental role fulfilling not only the aesthetic concerns and phonetic functionalities of the patients but is also an integral biological barrier that helps protect the attachment apparatus. In cases where regenerative therapy is required Simplified papilla preservation flap can offer better esthetic results (Cortellini et al., 1993).^[11] Though these flap methods are technique sensitive, time consuming and have specific clinical indications, their applicability should be utilized when regenerative therapy is considered.



FIGURE 10

CONCLUSION

Notwithstanding the limits of a case report, the present study shows a specific surgical technique in the correction / preserving a periodontal defect while respecting the papillary integrity as an important aspect of the procedure, which not only helps maintain the esthetic value but also stands as a better approach for regenerative procedures with wide interproximal contacts.

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