

Case Report

Whale's Tail Technique

Doiphode Minu Vijay, PC Deepika, Manohar Sharma H

Department of
Periodontology, JSS Dental
College and Hospital,
JSSAHER Mysore,
Karnataka, India

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ABSTRACT

The aim of this case report was to describe the efficacy of modified Whale's tail technique in the treatment of wide intrabony defect in the esthetic zone. A systemically healthy 42-year-old female reported with a complaint of spacing between her upper front teeth. Intraoral examination revealed a midline diastema with a deep periodontal pocket in relation to the maxillary left central incisor and a radiographic evidence of vertical bone loss. The modified Whale's tail technique was used, and alloplastic bone graft material was placed. After 6 months, there was a reduction in pocket depth and radiographic evidence of bone fill.

KEYWORDS: *Intrabony defect, midline diastema, modified Whale's tail technique*

INTRODUCTION

A major challenge in the field of periodontology has been to obtain regeneration of the lost periodontium. Several approaches such as the use of various bone grafts with or without barrier membranes, root surface demineralization, and enamel matrix derivatives have been used throughout the years.^[1] Studies have demonstrated that the porous bone mineral matrix has the capacity to stimulate substantial new bone and cementum formation, and that this capacity is further increased when the graft is used with a resorbable collagen membrane.^[2]

Primary closure of the osseous defect is most essential to ensure predictable results in periodontal regeneration. The flap should be designed such that maximum gingival tissue is preserved and complete coverage of the regenerative material placed in the osseous defect is obtained.^[3] Specific surgical approaches have been reported to obtain primary flap closure to preserve interdental tissue, such as the papilla preservation technique, modified papillae preservation, and simplified papillae preservation flap.

Recently, a new surgical technique to regenerate wide intrabony defects in esthetic zone was described by Bianchi and Basetti, i.e. the "Whale's tail" technique. The surgical procedure involved elevation of a large flap from the buccal to the palatal side to allow access and

visualization of the intrabony defect and was created especially to perform guided tissue regeneration while maintaining interdental tissues over grafting material.^[4]

The purpose of this case report is to describe the efficacy of a modified Whale's tail technique to achieve primary closure and thereby aid in the regeneration of an interdental osseous defect between maxillary central incisors.

CASE REPORT

A healthy 42-year-old female patient was referred from the department of orthodontics for periodontal evaluation. The patient initially reported with the complaint of spacing between her upper front teeth. On clinical examination, a midline diastema was noticed. Periodontal probing revealed a 10-mm periodontal pocket in the maxillary left central incisor [Figure 1]. The tooth exhibited Grade I mobility. Clinical signs of trauma from occlusion were not evident. Intraoral periapical radiograph showed vertical bone loss in relation to the mesial aspect of the maxillary left central incisor [Figure 2]. The case was diagnosed as chronic localized periodontitis. Phase

Address for correspondence: Dr. Manohar Sharma H,
Department of Periodontology, JSS Dental College
and Hospital, JSSAHER, Mysore, Karnataka, India.
E-mail: drmanohars93@gmail.com

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I periodontal therapy including scaling and root planing was carried out and oral hygiene instructions were given. Due to the persistence of deep periodontal pocket, it was decided to surgically access the area for the management of the osseous defect.

After adequate anesthesia, two semilunar incisions were made on both sides of the frenum. The medial extensions of both the semilunar incisions excised only the base of the frenal attachment, preserving the continuity of the flap [Figure 3]. The distal extensions of the incision were continued as intrasulcular incisions on the buccal, interdental, and palatal aspects of the central incisors, separating the flap from the buccal attached gingiva and allowing the separation of a thick, broad papilla-preserving flap. The flap was elevated from the buccal to the palatal aspect visualizing the intraosseous defect with a depth of 8 mm [Figure 4]. The defect was thoroughly curetted and root planed. The defect was filled with a sterile alloplastic graft material containing nanocrystalline hydroxyapatite (Sybograf EUCARE PHARMACEUTICALS (P) LTD, Chennai, Tamil

Nadu, India), and a collagen membrane (Periocol GTR, EUCARE PHARMACEUTICALS (P) LTD, Chennai, Tamil Nadu, India) was placed [Figures 5 and 6]. The flap was repositioned and sutured without tension. The surgical area was covered with a periodontal dressing. Postoperative instructions along with suitable antimicrobials and analgesics were given. Sutures were removed 1 week after surgery. Recall appointments were performed at 1-month interval to assess postoperative healing and plaque control by the patient. At the 6-month postoperative review, it was observed that the area was free of inflammation without any gingival recession. The probing pocket depth was reduced to 5 mm [Figure 7]. Radiograph demonstrated complete fill of the defect [Figure 8]. The patient was referred to the department of orthodontics for management of the midline diastema.

DISCUSSION

An ideal periodontal therapy must necessarily consider esthetic appearance, which means an effort to maintain



Figure 1: preoperative probing depth

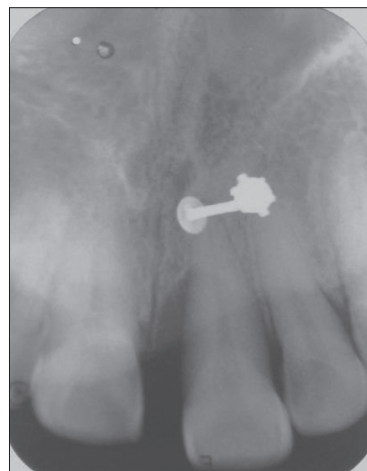


Figure 2: preoperative intraoral periapical radiograph

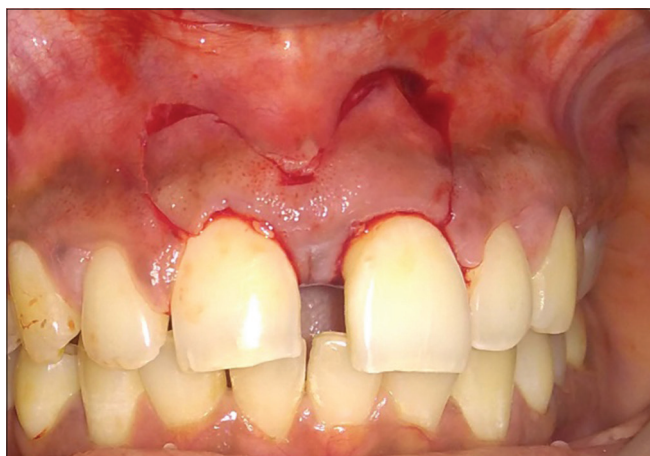


Figure 3: incisions given



Figure 4: defect visualized



Figure 5: bone graft placed



Figure 6: guided tissue regeneration membrane placed



Figure 7: postoperative probing depth



Figure 8: postoperative intraoral periapical radiograph

gingival marginal anatomy and as much height of the papilla as possible, along the course of the treatment. The papilla plays a fundamental role in esthetic and phonetic functionalities and also serves as a biological barrier to protect the attachment apparatus.^[3]

The papilla-preserving technique which retains the entire papillae covering the lesion was proposed by Takei *et al.*^[4] This technique helped to preserve the interdental soft tissues for maximum soft-tissue coverage following surgical intervention involving the treatment of proximal osseous defects. For esthetic reasons, the papilla-preserving technique is often utilized in the surgical treatment of anterior teeth. A modification of the flap design to be used in combination with regenerative procedures was described by Cortellini *et al.*^[5] This was developed to increase the space for regeneration and to achieve and maintain a primary closure of the flap in the interdental area.

Murphy explained another surgical technique for interproximal tissue maintenance, the simplified papilla preservation flap, to provide surgical access to interproximal defect, while preserving interdental soft tissues, even in narrow interdental spaces and posterior teeth.^[6]

In 2009, a new surgical technique to regenerate wide intrabony defects in esthetic zone was described by Bianchi and Basetti, the “Whale’s tail” technique.”^[7] The advantage of this technique is the systematic use of incisions distant from the defects and biomaterial margins, which reduces the percentage of flap dehiscence. Furthermore, placement of sutures distant from the regenerated defects decreases the chances of bacterial colonization of the biomaterials, which is often responsible for regenerative failures.

The classical Whale’s tail technique includes a horizontal incision which joins two vertical full-thickness incisions given from the mucogingival line to the distal margin of the tooth neighboring the defect on the buccal surface. Whereas, in the modified Whale’s tail technique, two semilunar incisions are given below the mucogingival line on the buccal surface, rather than the distinct horizontal and vertical incisions. This helps in the preservation of the soft tissues and better approximation of the flap margins.^[7]

The results of this case study have shown that with the "Whale's tail" technique, it is possible to regenerate wide intrabony defects in the esthetic zone. A probing pocket depth reduction of 5 mm was observed in this case, which was similar to the findings of Bianchi and Bassetti who reported a mean attachment level gain of 4.9 ± 1.8 mm and a probing pocket depth reduction of 5.8 ± 2.5 mm, and Damante *et al.* who reported a gain in the attachment level of 4 mm.^[8]

CONCLUSION

This technique provides good access to the defect area and placement of margins away from the regenerative material, which will prevent the inflammatory response near the regenerative material. Thus, it increases the chances of graft uptake and also provides more predictable outcomes.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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