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Surgical management of wide intrabony defect underlying midline diastema using Whale's tail flap technique: A Case Report

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ABSTRACT

INTRODUCTION: Management of wide midline diastemas accompanying an underlying osseous defect is cumbersome which sometimes yields unpredictable results. However, regenerative therapy of these highly aesthetic zones using a Whale's tail flap technique obtains a maximum papilla fill after placement of the bone graft. This case report illustrated the utilisation of Whale's tail technique of flap for a large interdental defect.

CASE PRESENTATION: A young healthy 31-year-old male patient presented with maxillary midline diastema. Probing depth of 6 mm was also noted over the mesial aspect of the same teeth with localised osseous defect radiographically which lead to a diagnosis of localized chronic periodontitis in relation to those teeth. A Whale's tail technique flap for papilla preservation was performed together with a regenerative procedure using bone graft and GTR membrane.

DISCUSSION: Midline diastema is a common reported complaint in dentistry due to both aesthetic and functional reasons. Following the treatment, 12 months postoperatively, patient had a probing depth reduction of 3 mm and a gain in clinical attachment of 2 mm. The surgical technique allowed regeneration of wide intrabony defects involving the maxillary anterior teeth with notable interdental diastemas.

CONCLUSION: This lead to significant improvement of the hard and soft tissue contour as well as it recreated a functional reattachment which was documented up to 12 months postoperatively.

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1. Introduction

The classical approach to periodontal regeneration has always been the use of bone grafts in repairing periodontal bone defects where the association of guided tissue regeneration with graft materials reported with success for many years [1].

Among various patient, site, and medical factors that influence the clinical outcomes, a critical issue in periodontal regenerative procedures in obtaining and maintaining primary closure over the treated area to ensure adequate protection of the healing events [2,3].

Different surgical procedures have been proposed to preserve the interdental papillary structure during the early and late phases of wound healing to prevent contamination of the regenerating area and subsequent wound failure [4,5]. These procedures, especially the novel minimally invasive techniques, aim to provide greater stability to the blood clot to enhance the regenerative potential [6].

However, the methods as mentioned earlier, carry a possible risk of dissection the papilla that may jeopardise the volume and integrity of interdental tissues [7].

From an anatomical point of view, incision of the defect-associated papilla entails a risk of wound failure, especially in the treatment of deep and wide bony defects that will end with a rather large area that lacks blood supply from periodontal ligament or alveolar bone [1]. In 2009, Bianchi and Bassetti described the "Whale's tail" technique, which was designed to overcome this particular risk, especially in the treatment of deep intrabony defects in the aesthetic zone [8].

This case report revisits this approach of combining a large interdental osseous defect with midline diastema by the successful application of 'the Whale's tail technique' and thereby aid in regeneration. The work has been reported in line with the SCARE criteria [9].

2. Case description

A healthy 31-year-old Indian Malaysian male reported to our institute (March 2017) with a chief complaint of spacing between his maxillary right and left central incisors as well bleeding on brushing concerning his left maxillary central incisor. A comprehensive periodontal examination using William's Periodontal

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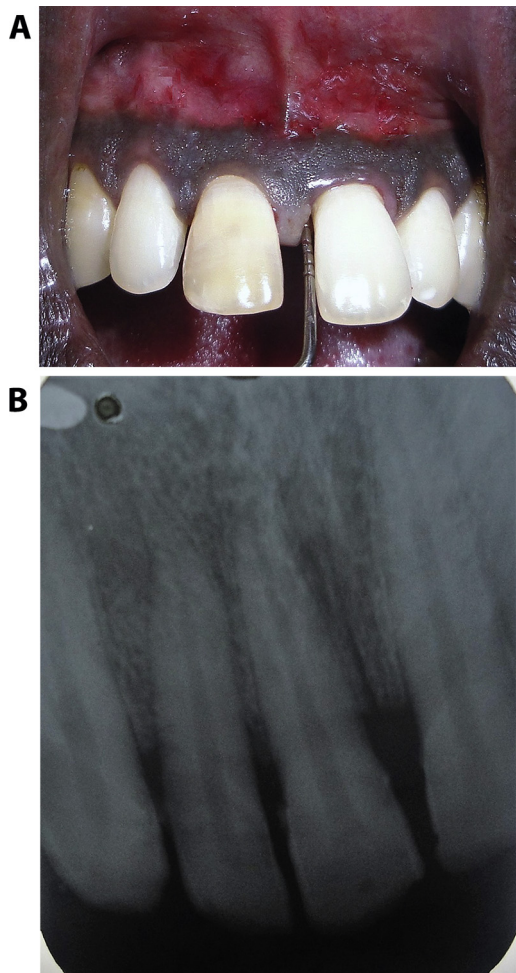


Fig. 1. (A) Clinical examination demonstrated a probing pocket depth of 6 mm 21 facial aspect. (B) Radiographic examination revealed loss of bone levels in relation to 21 and 11.

probe revealed a narrow Miller's class I gingival recession over the mid-facial surface of tooth 21 and 11. Bleeding on probing along with midline diastema as well as a gingival type frenal attachment was noted. Also, 4 mm and 6 mm probing depth were detected distal to 11 and mesial to 21 respectively along with clinical attachment loss of 8 mm (Fig. 1a). The patients had never visited a dentist before and gave no significant drug and family history. Radiographic examination revealed horizontal bone loss mesial to 21 (Fig. 1b), which gave the diagnosis of localised chronic periodontitis for 21 and 11. The treatment plan was discussed with the patient and the surgical technique opted was a Whale's tail flap procedure for 21 and 11 based on the bone defect size and the inter-papillary width. It was further decided to combine the technique with bone graft and GTR membrane for a more predictable regenerative outcome. Patient gave his informed and written consent to the same.

Two weeks after the non-surgical therapy of scaling and root planing and pre-emp antibiotic regimen of 500 mg Amoxicillin TID for 5 days, on the day of the surgery after local anaesthesia was administered, incision points were marked at 21 and 11 region, following which two vertical full-thickness incisions were made from the mucogingival line to the distal margin of the tooth neighbouring the defect on the buccal surface. Finally, a Whale's tail-shaped horizontal incision joined the apical margins of the first two incisions. Crevicular incisions were made in the mesiobuccal, interproximal, and palatal aspects of 21 and 11 (Fig. 2). A full thickness mucoperiosteal flap was reflected from the buccal to the



Fig. 2. Whale's tail full-thickness mucoperiosteal flap elevated in relation to 21 and 11.

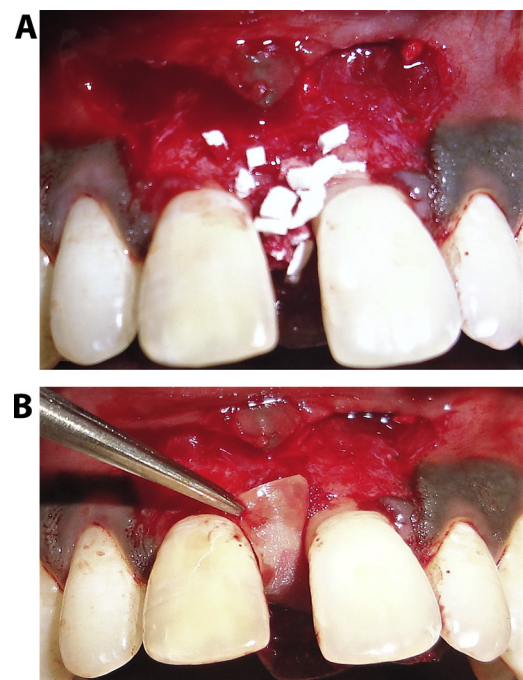


Fig. 3. (a) Management of the recipient site. Bone graft placed. (b) Management of the recipient site. GTR membrane placed.

palatal side following which complete removal of granulation tissue and scaling and root planning was done. Bone graft (Perioglas®) was placed along with GTR membrane (Healiguide®) covering the defect (Fig. 3a, b), following which flap was repositioned back. 4-0 Ethicon, non-resorbable, perimeter sutures were placed, without tension, away from the margins (Fig. 4). The periodontal dressing was placed. Postoperative instructions and prescription for 0.12% Chlorhexidine mouthrinse were given for 15 days. The patient was recalled after two weeks for suture removal, and post-op follow up to 12 months duration.

Following the treatment, six months postoperatively, probing depth reduced by 3 mm and gain in the clinical attachment of 2 mm. The result was stable and aesthetically satisfactory (Fig. 5a) until 12 months. A slight increase in bone height was also noted radiographically (Fig. 5b) when examined at 12 months post-op.

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