CASE REPORT

Segmental Edentulous Ridge Expansion Osteotomy Procedure: A Case Report

Dhishann Paturu¹, Sreenivas Nagarakanti², Vijay Kumar Chava², Sumanth Gunupati³

¹Postgraduate, Department of Periodontics, Narayana Dental College & Hospital, Nellore 524003, Andhra Pradesh, India
²Professor, Department of Periodontics, Narayana Dental College & Hospital, Nellore 524003, Andhra Pradesh, India
³Reader, Department of Periodontics, Narayana Dental College & Hospital, Nellore 524003, Andhra Pradesh, India

INTRODUCTION

Successful replacement of tooth/teeth is dependent upon adequate volume of keratinised mucosa and bone at the site. The labial/buccal alveolar bone (Fig. 1) undergoes rapid reconstruction after tooth extraction with approximately 25% decrease in volume during the first year and gradually decreases in width in the following years leading to labial/buccal cortex of bone more medial than its original position. Functional and esthetic outcomes compromise due to uneven ridge resorption. Thus augmentation of resorbed alveolar ridge is an important aspect of prosthodontics replacement therapy.

Siberts classified ridge deficiencies as class I (horizontal loss of tissue with normal vertical height), II (Vertical loss of tissue with normal ridge width) and III (combination of horizontal and vertical loss). Ridge augmentation can be achieved by guided bone regeneration, block grafting, distraction osteogenensis and alveolar ridge split/expansion with predictable outcomes either alone or in combination. Segmental ridge-split procedure was originally proposed by Simion et al.² and Scipioni et al.¹ and later discussed by Nevins and Stein.³ Segmental ridge expansion technique is ideal to augment horizontal loss of tissue with normal vertical height.

The ridge split technique consists of splitting the labial/buccal cortical plates with chisel,⁴ or rotating saws,⁵ or oscillating saws,⁶ or ultrasonic knives/peizoelectric saws⁷,⁸ and further opening the space (Fig. 2).

A proper case selection and evaluation is important to achieving a successful surgical and prosthetic outcome. In this case report, we describe a case of horizontal ridge expansion using ridge split in maxilla supplemented by multiple photographs.

CASE DESCRIPTION

A 52-year-old female patient reported to Narayana Dental College and Hospital with a chief complaint of missing upper teeth. Patient gives history of extraction 4 years back and did not get replaced since then. The patient was referred from Department of Prosthodontics to Department of Periodontics to increase the horizontal width of ridge. On intraoral examination, Kennedy's class III edentulous space with Siberts class I ridge deficiency was noticed. The patient was moderately built and nourished with no signs of any systemic illness. A complete case history with preoperative procedures consisting of a conventional orthopantamogram, study models and oral prophylaxis were done. Routine blood investigations and urine reports revealed all the values were in normal reference range.

After explaining different ridge augmentation procedures, this patient was not interested in pursuing a method that would use a secondary donor site for augmentation. After considering all clinical parameters it was decided to perform ridge split procedure in order to increase width of ridge. The complete treatment plan was explained to the patient, and duly written consent was obtained.

Surgical Procedure

The site was anesthetised using 2% lignocain 1:100,000 epinephrine. A sharp midcrestal and buccal vertical incisions were given followed by raising a full thickness flap so as to expose the ridge crest, which was approximately 4 mm bucco-palatally and it was noticed that the ridge is uneven. Palatal flap was not raised to to ensure unhindered blood supply to the bone. Simple
corticotomy was performed at crestal and lateral aspects of buccal plates and vertical cuts with rotating burs were made so that buccal plate could be expanded. The viscoelastic nature of the bone was utilized and ‘V’ shaped ridge expansion was done after green stick fracture of the base of the cortical segment using osteotomes.

The space between the two cortical plates were filled with demineralised freeze-dried bone allograft (Fig. 4). Periosteal releasing incision was performed to extend the flap coronally over the ridge so as to achieve tension free interrupted sutures for a close approximation (Fig. 5).

Postoperative instructions were advised to the patient. Antibiotics and analgesics were prescribed and chemical plaque control with 0.2% chlorhexidine mouth wash for 5 days. Sutures were removed after 7 days. Patient was periodically reviewed for 3 months and healing was uneventful (Fig. 6).

**CONCLUSION**

Among several methods of augmentation procedures ridge split procedure is advised in cases with narrow ridge. Careful patient selection and bone evaluation is important for success of the case. To have a successful prosthetic replacement therapy ridge augmentation is necessary.

**REFERENCES**


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