Bhawsar–Karandikar Stent: An Aid to Vestibuloplasty

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Abstract The loss of teeth and their replacement by artificial denture is associated with many problems. Pre-prosthetic surgical procedures are performed to provide a better anatomic environment and to create proper supporting structures for construction of dentures. Whenever inadequate vestibular depth is present in edentulous mouth, deepening of vestibule is considered to increase the retention and stability of denture. Deepening of vestibule without any addition of the bone is termed as vestibuloplasty. This article describes the ease and convenience of vestibuloplasty followed by the use of Bhawsar-Karandikar stent to maintain the soft tissue modifications. The study yielded promising results and patient acceptance.

Keywords Preprosthetic surgery · Bhawsar–Karandikar stent · Vestibuloplasty

Introduction

Numerous surgical procedures have been developed to provide an adequate supportive base to achieve the best

possible complete denture prosthesis for patients who have deficient edentulous ridges (Fig. 1). In most of these procedures, muscles and soft tissues are repositioned to maintain an adequate vestibular depth.

However these treatment options have certain difficulties in fixation of prefabricated stents leading to loss of surgically achieved vestibular depth.

This article describes a new surgical stent for maintenance of achieved depth in vestibuloplasty.

Procedure

After making primary impression with impression compound, the vestibule is deepened on the primary cast with the help of lab-micro motor and round bur all along uniformly so as to overextend the auto-polymerized acrylic custom tray at least by 3 mm on labial aspect. With an overextended final impression, master cast is prepared. Continuous multi-hole or multiple two hole stainless steel bone plates are then adapted on the master cast in the anterior region so as to incorporate into the clear acrylic stent. The fabricated stent is then polished and sterilized using suitable chemical. The stent hereinafter is referred to as Bhawsar–Karandikar stent (B–K stent).

After completion of vestibuloplasty under aseptic conditions, B–K stent is transferred and fixed to the alveolus using 6 mm stainless steel screws of 2 mm diameter (Figs. 2, 3).

This stent is maintained in the mouth for three weeks with initial regimen of antibiotics and anti-inflammatory for 5 days. The patient is advised, to maintain oral hygiene and consume semisolid to soft diet for 3 weeks and regular follow up (Fig. 4). The B–K stent is removed by unscrewing after 3 weeks. After necessary modifications

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Fig. 1 Edentulous ridge with reduced vestibular depth (pre-op)

Fig. 3 Fixation of B-K stent to maxillary ridge

Fig. 2 Vestibuloplasty (Intra-operative)

Fig. 4 B-K stent in situ after three weeks (post-op)

stent can be used as a special tray for impression. After removal of stent, the dentures are fabricated and delivered within 48 h so as to avoid the loss of newly achieved vestibular depth (Fig. 5). Screw-hole wounds healed within a week under the cover of denture.

Discussion

Generally, vestibuloplasty demands a stent. Previously stent used to be wired to the alveolus. In case of lower arch the new depth established was held in position by the sutures that passed through chin area extra-orally and tied around cotton roll or rubber catheter placed below the chin. Additional stabilization is obtained by overextending the denture periphery with impression compound and gutta-percha sticks or zinc oxide impression paste to support the attachment in this new position. Firtell [1] described a procedure of making an overextended impression and a

Fig. 5 Maxillary edentulous ridge with improved vestibule (post-op)

custom made acrylic resin base and methods of modifying the base with a secondary impression to form a stent at the time of the operation. The preformed stents or dentures are fixed to the mandible by ligatures [2], circum-mandibular wiring [1], adhesives, and to the maxilla by per-alveolar wiring, nylon sutures [3], ligatures, palatal pins [4], suspension wires [5] fixation screws [6] etc. However some of these fixations are unstable and may be associated with risks such as formation of hematoma and complications thereafter.

One of the advantages of B–K stent is that incorporation of single or multiple SS bone plates helps in reinforcing the stent. The authors have observed that fixation of the stent without SS plate causes relative movement between stent and the screw during mastication, leading to instability and pain. This is avoided by using B–K stent as the screw holes in the SS plate do not undergo deformation. Moreover, it is advantageous to have a metal to metal contact to prevent movement at the interface area.

B–K stent is esthetically acceptable and is comfortably managed by the patient because it is stable and fixed to the tissues. It does not allow scar formation or relapse or contracture. Patient finds it very convenient and comfortable even during mastication and deglutition. It also acts as a protective dressing.

Conclusion

Clinical appraisal indicates that the technique appears to improve the anterior–posterior stability and retention of the

denture by increasing the vestibular area and offering better long-term results. B–K stent provides improved vestibular depth, comfort and hygienic interim prosthesis. The application of the newly designed B–K stent can serve as “easy to fix” and patient-friendly immobilizer for soft tissue management.

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