INNOVATIVE TUNNEL TECHNIQUE FOR MANDIBULAR FLABBY RIDGE

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ABSTRACT

Flabby ridges of mandible compromise the support, retention and stability of complete denture. The purpose of this paper is to describe an impression technique for mandibular flabby ridges. The technique described here makes use of a definitive impression for highly displaceable ridges using a custom impression tray with an opening and making the impression with impression plaster to accurately capture the shape of the residual ridge, without distorting the displaceable tissues.

Keywords: Flabby Ridges; Impression; Mandible; Tunnel Technique

Introduction

Fibrous or ‘flabby’ ridge is a superficial area of mobile soft tissue affecting the maxillary or mandibular alveolar ridges. It can develop when hyperplastic soft tissue replaces the alveolar bone due to its resorption and is a common finding, particularly in the upper anterior region of long-term denture wearers.1-3 Masticatory forces can displace this mobile denture-bearing tissue, leading to altered denture positioning and loss of peripheral seal.4 Forces exerted during the act of impression making can result in distortion of the mobile tissue. The resulting instability affecting both function and appearance can be heavily compromised. So impression should be made in static manner. There are two impression principles which are reported to overcome this problem. Muco-compressive impression technique was used with the aim of compressing the loose flabby tissue to allow functional support from it, by replicating the contour of the ridge during compression by occlusal forces.5 Mucostatic impression technique aims to achieve support from other firm areas of the arch and maximizes retention.6 Several techniques for management of flabby ridge are, one part impression technique (Selective perforation tray),7 controlled lateral pressure technique,8,9 palatal splinting using a two-part tray system,10 selective composition flaming,7 and two part impression technique (mucostatic and muco-displaceable combination).7,9-11 Because of common occurrence of flabby tissue in maxillary ridge, in literature a lot has been focused on impression techniques for maxillary fibrous ridge and only a little description is available regarding impression techniques for mandibular ridges. This paper reports a new impression technique for mandibular flabby ridges.

Case Report

A 45-year, male patient reported to the Department of Prosthodontics, Career Post Graduate Institute of Dental Sciences and Hospital, Lucknow, India, with a chief complaint of difficulty in chewing with the present denture, which he was wearing since last 5 years. Patient had been edentulous since last 6 years, he lost his lower anterior teeth first followed by upper anterior and then posterior teeth. On clinical examination it was found that his mandibular residual ridge was flabby in nature (Figure 1). The denture was ill-fitting with worn out teeth. After complete examination the treatment plan decided was a complete denture fabrication, with mucostatic impression technique for mandibular hyperpalstic ridge. A primary impression of the mandibular denture bearing area was made with a low viscosity irreversible hydrocolloid material (Zelgan plus, Dentsply, India), to ensure minimal distortion of the displaceable tissues. The impression was poured in dental stone, to avoid damage to the cast while fabricating special tray. The displaceable areas were identified on the cast. Three uniform thicknesses of spacer waxes (MARC, Shiva products, India) were placed as a ‘spacer’ over the displaceable areas identified on the cast and one thickness over the remaining non-displaceable area. The special tray was fabricated in the usual manner with self cure acrylic resin (RR Cold cure, DPI, India), leaving the spacer wax area over the displaceable tissues uncovered with acrylic resin, thus forming a tunnel of wax in between acrylic resin (Figure 2). At the chair-side, the special tray was corrected intraorally. Border moulding was done with low fusing impression compound (Pinnacle tracing sticks, DPI, India) and the master impression was then made in two stages.

Stage I: The spacer wax over the non-displaceable areas was removed and impression was made with impression paste (Neogenate, Septodont, India) of that particular area only.

Stage II: The spacer wax over the displaceable areas was removed carefully without damaging the first stage final impression. With the special tray placed in the mouth, impression plaster is injected with help of a custom-made carrier syringe from one side of the tunnel, taking care that it evenly flows to the opposite side (Figure 3). Once set, the impression was removed from the mouth and inspected. Any excess material was removed. The impression was re-inserted to ensure that it was retentive and did not rock when pressure was applied over the displaceable areas (Figure 4&S). The impression was cast in dental stone, paying careful attention to preserving the bordered moulded sulcus area. A heat-cured acrylic transparent baseplate was fabricated to assess the accuracy of fit. Denture fabrication then continued in the usual manner. Following face-bow transfer, the teeth were arranged on a semi-adjustable articulator, achieving balanced articulation, and paying attention to even tooth contact in excursive movements. The dentures were delivered, and at subsequent review appointments the patient reported satisfaction with stability, aesthetics and function.
Discussion
The main complaint of a complete denture that has been made for a flabby ridge, without proper care being taken to avoid the compression of the flabby tissues, is that the denture is loose. A common approach to solving a ‘loose’ complete denture is to apply some chairside relining material. It will be appreciated that this approach is inappropriate and will not solve the problem the complete denture will act as a custom tray, and with the viscous chairside relining material will further displace the flabby tissue. The tissues will once again tend to recoil and the denture will still be ‘loose’. The technique described here does not involve extra clinical stages in the construction of a complete denture, thereby keeping clinical time to a minimum. The impression technique can be accomplished relatively quickly, and uses materials with which the general dental practitioner is already familiar. There is no need for the practitioner to apprehensively use materials that they may have little experience of using. Manipulation of impression plaster is easier than polyvinyl siloxanes and also working time is under control of operator.

Other treatment modalities include surgical ‘debulking’ or excision of the flabby tissues, and the use of dental implants. Surgical ‘debulking’ of flabby tissues is mainly a historical concept nowadays. The rationale behind its use was that removal of flabby tissues would result in a ‘normal’ compressible denture bearing area on which a muco-compressive impression technique could be used. Some of the difficulties caused by this approach include the fact that many complete denture patients are elderly or have complex medical histories for which any form of surgery is contraindicated. Furthermore, the excision of flabby tissues and resultant ‘shallow’ ridge may provide little retention or resistance to lateral forces on the resultant denture. One is reminded of the concept that Prosthodontic therapy should be concerned with the ‘conservation of what remains, rather than the meticulous replacement of what has been lost’. The use of dental implants in this scenario is also not without difficulty. It is clear that if there has been excessive bone resorption and replacement by flabby tissues, then there will be little bone remaining into which dental implants can be placed. While it would be technically possible to augment the remaining ridge with bone grafts, the prognosis of such treatment would be questionable. Furthermore, there are a group of patients who for a variety of clinical or medical reasons are unsuitable for dental implant treatment. There are also some patients who do not wish to have surgically invasive procedures such as placement of dental implants.

It is worth noting two further items from the technique described. Firstly, after completion of the master impression, it is crucial to ensure that the occlusal plane is properly orientated, and that a suitable occlusal scheme with proper balancing contacts in excursive movements is achieved. The use of a face-bow transfer and arrangement of the teeth on a semi-adjustable articulator can facilitate this. It is important to realize that an incorrectly oriented occlusal plane, or incorporation of displacing occlusal contacts, will further destabilize a denture that is relying on poor quality denture-bearing tissues. The efforts to secure an adequate impression will have been wasted. Secondly, the use of a transparent acrylic heat-cured base permits rapid assessment of the accuracy of the impression technique. Using a transparent base allows rapid visualization of the adaptation of the base to the underlying denture bearing areas. Ingress of air can be rapidly noticed, and movement of the base can be observed in association with specific movements.

Conclusion
In conclusion the technique does not require additional clinical visits compared to fabrication of a conventional complete denture. The time required for the specialized impression technique is not excessive. This technique can be readily completed by the general dental practitioner allowing flabby ridge complete denture cases to be managed in a primary dental care setting.

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