Prong Denture: An Alternative to Alveoloplasty: A Case Report

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ABSTRACT

Rehabilitation of a complete Denture patient with any unusual morphology is a challenging situation. Some abnormal conditions that exist in an edentulous patient can be corrected surgically, prior to constructions of dentures. However, surgical aid is not always possible. This case report describes a nonsurgical treatment option for the completely edentulous patient with serve labial undercut in the anterior maxilla. The labial flange of denture is modified using prongs, and a denture is fabricated to adhere to the aesthetic needs of the patient.

KEYWORDS: Tissue undercuts, flangeless denture, Emergence profile

INTRODUCTION

It is inevitable for prosthodontist to come across patients with different ridge contours in our daily routine clinical practices. These different ridge forms may vary from severely resorbed ones to extensively bulky ridges. Labially inclined pre-maxilla and an accompanying severe labial undercut is one clinical condition which pose a problem in denture insertion and may even affect esthetics of the denture. An excessively prominent ridge is more commonly seen in maxilla than mandible. Pre prosthetic surgery can, of course, be a corrective option for such cases, though a major criterion of it includes patient consent.1 However, alveoloplasty must be performed only when there is a definite indication for the procedure as this procedure affects the quality of denture foundation.2 The Overall goal of reconstructive pre-prosthetic surgery is to provide an environment for a prosthesis that would restore function, be stable, aid retention, the pressure associated structures and satisfy esthetics.3 This case report gives a nonsurgical procedure to improve denture esthetics in a patient with labially inclined premaxilla and an accompanying severe labial undercut resulting in the excessive fullness of lips on wearing denture with the help of flangeless denture.

CASE REPORT

A 56-Year-old female patient reported to the Department of Prosthodontics and Crown & Bridge, Rungta College of Dental Science and Research, Bhilai, with the chief Complaint of missing tooth, due to which she unable to chew food and speak properly. She has no positive past medical/ surgical history (Fig. 1). On examination, the patient had an ovoid face, convex profile, normal muscle tone, normal lip length and TMJ has no abnormality. On Intra oral examination patient had an edentulous upper and lower arch with rounded crest, labially inclined premaxilla, bulbous labial cortical plate and accompanying severe labial undercut (Fig. 2a, Fig. 2b).

Fig. 1: Pre-treatment

Fig. 2(a): Intra oral view of upper arch

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Treatment Plan: Complete denture with unconventional design and intentionally modified labial flange was planned to fulfill the needs of patients. The patient was not willing for any surgical procedure hence alveoloplasty followed by fabrication of denture was ruled out. Keeping patients demand into consideration it was decided to use a nonsurgical treatment option of fabricating a new set of the denture with modified labial flanges.

Fabrication of prosthesis:

Impression making: The preliminary impression was made using Impression compound, and borders were molded with low fusing impression compound for maxillary arch. Impression was poured in type I dental plaster (Dentsply) and diagnostic cast was obtained, both maxillary and mandibular arches (Fig. 3). A Spacer was designed, and acrylic special Tray (DPI RR cold cure) was fabricated on a primary cast for Upper and lower arches. Border molding was done using low fusing impression compound, and secondary impressions were made with Zinc oxide impression paste. The severe labial undercut possesses a problem during the routine impression procedures, and special care had to be taken regarding the path of removal and insertion. The master cast was prepared using type II dental stone (Fig. 4).

Jaw Relation, Arrangement of teeth and Try in: Auto polymerizing resin base plates were fabricated. There was no denture base in the area of, labial prominent and the lips were in direct contact with the ridge which reduced the labial fullness. Using a 19 gauge S.S. wire a band with loop was fabricated and attached to the labial fullness area which increased the retention and hence overall need for denture was fulfilled. Wax occlusal rims were fabricated. The vertical and centric Jaw relation were carried out, and cast was mounted in a mean value articulation. Now the most critical step from the patient point of view, i.e. teeth arrangement was planned (Fig. 5). Due precaution was taken to satisfy the aesthetic demand of patient without hampering the functional aspect. For these teeth were modified in highly professional manner and were reduced to the thickness of laminates. The cervical contouring and gingival carving were done to depict the natural appearance. Once the patient and her relative showed the satisfaction for a try in the wax-up & sealing the record base was carried out (Fig. 6).

Step III: Denture Processing and Delivery: After completing the wax up & seating the record base, a conventional flasking technique was used. The denture
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was finished and polished and tried in patient’s mouths for evaluation of appropriate aesthetics and occlusion. After necessary occlusal corrections, the prosthesis was delivered. The patient was fascinated and highly satisfied with appearance and function. Her speech was satisfactory, and her problem of lip fullness was completely corrected. This was possible because of the modified labial flange denture (Fig. 7, Fig. 8).

![Fig. 7: Final denture](image)

![Fig. 8: Post-treatment](image)

DISCUSSION

Functional integrity along with esthetics is an ultimate demand of a prosthesis. The requirements are difficult to achieve in conditions with some abnormal morphology. At this moment, eccentric thinking different from routine conventional helps in changing the whole scenario.7

As in this case report, an unconventional denture design with modified Labial flange had proved its magnitude. Removal of acrylic and development of orthodontic prongs to engage the canine eminence assisted in creating the esthetics along with the maintaining the denture retention and stability. Recontouring the anterior teeth in the form of laminates also helped in diminishing the bulging of the upper lip.

Although the flangeless complete denture is not used routinely, it has been successfully used for the treatment of edentulous patients with existing bone and lip support. The modified maxillary denture is a valuable treatment modality.5

Another conservative mean of utilizing undercut without sacrificing them to surgical intervention is the use of resilient liners. Besides even distribution of functional load and prevention of local stress concentration, the flexible liners can be easily removed and inserted in severe undercut areas without traumatizing the tissues.4

Goals of pre-prosthetic surgery is to create a situation for a prosthesis that would restore function, provide stability and retention, preserve associated structures and satisfy esthetics but many times patient consent create a hurdle for this. Subsequently, a more acceptable conservation option is required.2

In conclusion, rehabilitating an edentulous patient with a bulbous labial cortical plate and severe labial undercut, diverse thinking of modified labial flange design of maxillary and mandibular dentures had justified its importance by providing a satisfactory smile on the patients face.

REFERENCES


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