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Flangeless Denture: A Simple Yet Novel Approach for Management of Severe Labial Undercuts in Edentulous Patients

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***Abstract**: Patients who undergo extraction of their proclined maxillary anteriors find it difficult to adjust to the conventional dentures when severe labial undercuts are present. This case report describes a nonsurgical treatment option for completely edentulous patients with severe labial undercut in the anterior maxilla.The labial flange of the denture is modified and a denture is fabricated to adhere to the esthetic needs of the patient.*
***Keywords:** Modified flange, flangeless denture, proclined premaxilla*

I. Introduction

Hard tissue undercuts intensify the retention of the prosthesis obtained biologically and are the most commonly available mechanical means of retention in completely edentulous patients. Tissue undercuts ranging from moderate to severe must undergo surgical correction for reduction of the undercut. Removal of severe undercuts in the form of pre-prosthetic surgery is considered as an essential mouth preparation before complete denture fabrication.[1] Patients should be made aware in such cases how surgical procedures will help for future denture wearing.[2,3]

Excessively prominent ridge is more commonly seen in maxilla than in mandible. Removal of the minimum amount of bone necessary to eliminate the undercut, while at the same time avoiding the loss of bony cortical plate can be done for such conditions in order to improve the environment for denture construction.[4] Some patients do not give their consent for undergoing a surgery to correct the proclination while some are deferred from surgical procedures due to certain systemic conditions. In such patients a novel technique can be followed in order to fabricate a prosthesis which will be esthetically pleasing and acceptable for the patient.

II. Case Report

A 47-year-old female patient reported to the Department of Prosthodontics, Government Dental College and Hospital, Aurangabad with the complaint of unaesthetic previously made complete dentures and difficulty in insertion and removal of the maxillary denture. The patient had been edentulous for the past 10 months. She had ovoid face, convex profile, increased mentalis muscle activity. Intra oral examination revealed U-shaped maxillary and mandibular arches with rounded crest, labially inclined premaxilla, and accompanying severe labial undercut. Due to frail health of the patient, the treatment option of alveoloplasty followed by construction of a complete denture, was not considered. Also, a conventional complete denture for this patient would have resulted in poor esthetics due to the bulge created by the labial flange of the maxillary denture. So a complete denture with unconventionally designed and intentionally modified labial flange was planned to fulfill the needs of the patient.

Maxillary and mandibular primary and final impressions were made and casts were poured. The master cast obtained was surveyed to identify the undercut areas, and the path of insertion and removal of the maxillary denture base was decided. The design of record base with the required modifications of the labial flange were drawn on the master casts. To preserve the master cast, a working cast was made and temporary record base was fabricated according to the decided design. The labial flange was completely removed and the anterior edentulous ridge was covered by denture base only over the ridge crest area.

The jaw relation was recorded and teeth selection was done. A semi-adjustable articulator was used for the further steps.(Fig.1) Anterior teeth setting was first done and anterior try-in was accomplished. Esthetics and phonetics of the patient were analyzed at this step. After the patient was satisfied with the esthetic outcome of the anterior teeth setting, the posterior try-in was done. The shape of the labial prongs were waxed on the master cast. After completing the wax-up and sealing the record base, a novel flasking technique was used.(Fig.2) In anterior land area of the master cast, V- shaped sharp grooves were made. Then polyvinyl siloxane rubber base impression material in putty consistency was mixed following manufacturer's instruction and was adapted over the anterior section of the master cast from the sulcus to the incisal edge of the anterior teeth (i.e. canine to canine). This was made in order to preserve the waxed design of the labial flange. The putty was indexed with three grooves on its outer side to orient it properly with the plaster during counter-flasking.(Fig.3) Rest of the laboratory procedure was carried out in a conventional way. After processing, finishing and polishing, the denture insertion was performed.(Fig.4) The patient was satisfied with the esthetics and function provided by

this new set of dentures.(Fig.5) She had clear speech and her problem of fuller appearance of the upper lip was rectified because of modified labial flange or a flangeless maxillary denture, where lip was in direct contact with ridge instead of the intermediate acrylic flange.

III. Discussion

One of the conservative means of utilizing undercuts without sacrificing them to surgical intervention is the use of resilient liners. Besides, even distribution of the functional load and prevention of local stress concentrations, the liners being flexible can be easily removed and inserted in severe undercut areas without traumatizing the tissues.[5-10] With advances in soft liners, surgical removal of undercuts will not be preferred in the near future as these liners can serve for a long period.[11,12] Modifying the labial flange of such patients also serves the purpose. Surveying of the cast helps in deciding the correct path of insertion and removal of the prosthesis, thus enhancing its life and preventing the tissue from undue trauma during placement and removal of the prosthesis.[13]

Re-contouring the anterior teeth in the form of laminates also helps in diminishing the bulging appearance of upper lip. Modified flasking technique with polyvinyl siloxane putty preserves the design of labial flange and facilitates the easy removal of denture during deflasking, finishing and polishing. The goal of pre-prosthetic surgery is to create a situation for the prosthesis that would restore function, provide stability and retention, preserve associated structures and satisfy esthetics [14] but many a times patients do not give their consent for the surgery. In this technique, in the area devoid of denture base, the perioral tissues came in direct contact with the mucosa which reduced the lip fullness and improved the esthetics serving the needs of the patient.

IV. Figures

Fig.1 Facebow transfer to a semi-adjustable articulator

Fig.2 Waxing of labial prongs and base flasking

Fig.3 Polyvinyl siloxane rubber base impression material adapted over the anterior section from the sulcus to the incisal edge of the anterior teeth putty was indexed with three grooves on its outer side for orientation with the plaster during counter-flasking.

Fig.4 Denture insertion after finishing and polishing

A B C

Fig.5 Patient satisfied with the esthetics and function of the denture. A: Pre-insertion, B: post-insertion frontal view, C: post-insertion profile view

V. Conclusion

The presented technique provides a conservative treatment approach in the presence of severe labial undercuts in the premaxilla (without the need of radical surgical procedures) in the provision of complete dentures for edentulous patients with excessively proclined premaxilla and accompanying labial undercut.

References

[1]. Obwegeser H: Surgical Preparation of the Maxilla for Prosthesis, J. Oral Surg. 1964.22:127-34.
[2]. Hillerup S. Preprosthetic surgery in the elderly. The Journal of Prosthetic Dentistry. 1994;72(5):551-8.
[3]. Nandita KN, Meena Aras A. Modified flange complete denture for labially inclined premaxilla. IDJA. 2010;2(2).
[4]. Lawson WA. Objectives of pre-prosthetic surgery. British Journal of Oral Surgery. 1973;10:175-88.
[5]. Baysan A, Parker S, Wright PS. Adhesion and tear energy of a long-term soft lining material activated by microwave energy. J Prosthet Dent 1998;79(2):182-7.
[6]. Wright PS. The success and failure of denture soft-lining materials in clinical use. J Dent 1984;12(4):319-27.
[7]. Bell DH Jr. Clinical evaluation of a resilient denture liner. J Prosthet Dent 1970;23(4):394-406.
[8]. Kawano F, Koran A, Asaoka K, Matsumoto N. Effect of soft denture liner on stress distribution in supporting structures under a denture. Int J Prosthodont1993;6(1):43-9.
[9]. Kawano F, Kon M, Koran A, Matsumoto N. Shock-absorbing behaviour of four processed soft denture liners. J Prosthet Dent 1994;72(6):599-605.
[10]. Jagger DC, Harrison A. Complete dentures — the soft option. An update for general dental practice. Br Dent J 1997;182(8):313-7.
[11]. Wilson HJ, Tomlin HR and Osborne J. Tissue conditioners and functional impression materials. Br Dent J 1966;121:9-11.
[12]. Starcke EN, Fischer TE and Sweeney WT. Physical properties of tissue-conditioning materials as used in functional impressions. J Prosthet Dent. 1972;27:111-3.
[13]. Saurabh Chaturvedi, Mayank Shah, SL Ghodpage, Manisha Kulkarni, Shruti Gill. unconventional prong dentures - a case report. International Journal of Dental Clinics. 2013;5 (1);49-50
[14]. Terry BC, Zarb GA. Report on the 4th International Congress on Preprosthetic Surgery, Palm Springs, USA, 18-20 April, 1991. International journal of oral and maxillofacial surgery. 1991;20(5):314.