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Dr. Greeshma Sunny
Post Graduate Student,
Department of Prosthodontics,
Rajarajeswari Dental College
and Hospital, Bengaluru,
Karnataka, India

Dr. Gautam Shetty
Professor and Head of
Department, Department of
Prosthodontics, Rajarajeswari
Dental College and Hospital,
Bengaluru, Karnataka, India

Dr. Shreya Bukkapatnam
Senior Lecturer, Department of
Prosthodontics, Rajarajeswari
Dental College and Hospital,
Bengaluru, Karnataka, India

Corresponding Author:
Dr. Greeshma Sunny
Post Graduate Student,
Department of Prosthodontics,
Rajarajeswari Dental College
and Hospital, Bengaluru,
Karnataka, India

Gum fit denture: Dentures befitting labial undercut to improve esthetics in anterior maxilla

Dr. Greeshma Sunny, Dr. Gautam Shetty and Dr. Shreya Bukkapatnam

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Abstract

In our day to day practice we come across patients who present with different forms of residual ridges i.e well formed ridges, severely resorbed or bulbous ridges. An excessively bulky maxillary ridge accompanied by a labial undercut and an inclined pre maxilla can compromise the facial esthetics. The thickness of the labial flange can further compromise the labial fullness and result in an unesthetic maxillary denture. So, in such clinical situations an unconventional approach may be considered for the fabrication of complete denture. This case report thus, describes a simple, economical, conservative and non-surgical treatment modality for fabrication of denture in a patient with a bulky maxillary ridge with a prominent labial undercut to enhance the facial esthetics of the patient.

Keywords: Gum fit denture, flangeless denture, wing denture, labial undercut

1. Introduction

Fabrication of complete denture can be challenging in some patients as they may have different kinds of edentulous ridge contours and shapes. Some patients can have severely resorbed ridges whereas some can have massive ridges. Variation in the resorption pattern of residual alveolar ridge can result in extremely prominent ridge with labial undercut which may be seen more commonly in the maxilla than in the mandible [1]. Dentist can face the challenge of constructing a functionally and esthetically stable complete denture in cases where labial inclination in the pre maxillary region is prominent. Pre-prosthetic surgery can be used to correct certain abnormal conditions that exist in the edentulous patient prior to construction of dentures, enabling the patient to function more successfully following prosthetic restoration [2,3]. The general objective of reconstructive pre-prosthetic surgery is to give a domain to a prosthesis that would re-establish work, be steady, guide maintenance, save related structures and fulfill esthetics [2]. However, use of reconstructive surgical treatment is not always feasible owing to lack of patient motivation and consent.

Also in patients with bulbous pre-maxilla the arrangement of denture teeth becomes troublesome because of the absence of space and inevitably brings about an unaesthetic swollen lip appearance, so in such clinical situations non-invasive methods can be adopted such as fabrication of flangeless denture in order to restore the esthetics and function.

Thus this case report aims to present an innovative technique to fabricate gum fit or flangeless complete denture for patients with proclined anterior maxillary ridge and associated labial undercut.

2. Case Report

A 68 year old female patient reported to the department of Prosthodontics, Rajarajeswari Dental College and Hospital, Bangalore, India with the chief complaint of difficulty in eating and speaking due to teeth loss. Intraoral examination showed that the patient had a U-shaped arch with proclined anterior maxillary ridge and an accompanying severe labial undercut and a V- shaped mandibular arch (Fig 1). Various treatment options including implant supported prosthesis or alveoloplasty with a conventional complete denture was explained to the patient. Since the patient was hesitant to any sort of surgical procedure, a flangeless maxillary denture with conventional mandibular denture was planned. Steps for the fabrication of the flangeless denture:

1. Impression compound was used to make the primary impression.
2. Special trays were fabricated on the primary cast. Border moulding was done utilizing green stick compound (pinnacle tracing sticks, DPI). Secondary impression was recorded using monophasic material (Aquasil ultra, Dentsply) (Fig 2).
3. Once the master cast was ready (Fig 3) jaw relation was done. Articulation was done and teeth setting was completed.
4. Try-in was done in a conventional manner. After try-in, during wax-up, the labial flange was completely removed to create a window from canine-to-canine leaving two acrylic spikes extending anteriorly from the distal side enabling retention by engaging the undercut (Fig 4).
5. After the denture was fabricated, the borders of the denture were in place and kept adequately thick to give sufficient strength. The denture was polished and attempted in the patient's mouth for assessment (Fig 5). The denture was then delivered with the needed occlusal corrections. The patient was reviewed following 24 hours and one month for post-insertion visits. The patient was

satisfied and had no critical dissensions.

3. Discussion

A precise diagnosis is a key requisite of an ideal treatment plan. An appropriate treatment plan paves the way for a good prosthesis. Different patients have different residual ridge anatomy and in patients with a bulbous ridge the esthetics can be compromised. The thickness of the labial flange further compromises the labial fullness and results in an unesthetic maxillary denture. Pre-prosthetic surgery may not be feasible in some patients, so in such situations a different technique in the fabrication of complete denture may prove to be beneficial for the patients. Modifying the labial flange of such patients also serves the purpose. Flangeless dentures, "gum fit" or "ridge grip esthetic prosthesis" as some authors call are one of the approaches to preserve the ridge [4]. Some authors have mentioned this as "wing denture" in which the labial flange is segmented in the labial frenum area and two wings show up from either side, which provides adequate space for the labial frenum [5, 6]. Flangeless denture for this case report was recommended as a result of a prominent labial form of the maxillary arch.

3.1 Figures



Fig 1: Intra oral view of the maxillary and mandibular arch



Fig 2: Secondary Impression



Fig 3: Master Cast poured in Dental Stone



Fig 4: Try in done with window shape cut in the labial portion of the denture base



Fig 5: Preoperative and Postoperative extraoral view

4. Conclusion

This clinical report describes the fabrication of an economical, quick and easy method of fabrication of a flangeless denture for rehabilitation of proclined maxillary ridge with presence of labial undercut. Nonsurgical procedures can thus be utilized for the fabrication of the prosthesis as they are non-invasive, provide better acceptance, and ultimate satisfaction for the patient. The flangeless denture was convenient for the patient in terms of insertion, removal and function.

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