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Flangeless denture for prominent pre-maxilla: An excellent approach for restoring facial aesthetics: A case report

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Abstract
Complete denture fabrication is always challenging when intraoral conditions are not favourable and ideal. Ridge contour varies with patients and excessive bulky maxillary ridges often have a compromised facial aesthetics as well as retention. Restoring labial fullness in a completely edentulous patient is a sensitive procedure. The thickness of the labial flange further compromises the labial fullness and results in an unaesthetic maxillary denture. Surgical intervention is required for such clinical conditions. However, sometimes patients are unwilling to undergo any surgical procedure and hence, to confront such perplexity, an unconventional approach is required in which a prosthetic modification is done in the complete denture. In this article, a nonsurgical treatment approach with flangeless denture was considered in patient with severely proclined premaxilla with severe maxillary labial undercuts in completely edentulous patient to achieve comprehensive rehabilitation with greatest regard to aesthetics.

Keywords: Edentulous, rehabilitation, ridge, surgery, undercuts

Introduction

Case report

A 65-year old female patient reported with chief complaint of unpleasant looking and bulky upper complete dentures. Patient was wearing complete denture since 3 years; however, due to poor retention and worn out denture teeth, she opted for fabrication of new denture. New dentures were fabricated and delivered to the patient two weeks before; retention and occlusion were found to be optimum. However, the newly fabricated denture set was not acceptable to patient as upper anterior teeth were forwardly placed giving un-aesthetic appearance to the face. On extra-oral examination, patient had a tapered face with convex profile, normal muscle tone and adequate lip length, support and fullness. On examination of the dentures, the patient's above mentioned concerns were found to be true. On intra-oral examination, patient had a completely edentulous maxillary arch opposing bilateral mandibular first premolars serving as abutments with metal copings on them. Patient had a severely proclined pre-maxilla with bilateral labial undercuts and prominent labial frenum. Maxillary ridge was irregular, low well-rounded with firm and resilient overlying mucosa. Patient was advised alveoloplasty for correction of unfavourable ridge contours followed by the fabrication of complete dentures. But the patient was reluctant and refused to undergo any surgical intervention. Hence, keeping the patient's desire in mind, it was decided to proceed with flangeless maxillary denture opposing a conventional mandibular overdenture.

Previous dentures were used as special trays for border moulding utilizing greenstick compound (DPI Pinnacle tracing sticks, India)and final impressions were made using Zinc Oxide Eugenol impression paste (DPI Impression paste, India).Border areas were kept sufficiently thick such that they had adequate strength and at the same time, they did not affect aesthetics. The severe labial undercut posed a problem during the routine impression procedures and special care had to be taken regarding the path of insertion and removal. Denture base in the area of the labial prominence was trimmed and the lips were in direct coordinate contact with the ridge which reduced labial fullness. Occlusal rims were checked

for optimum labial fullness, lip support and speech, and smile lines were marked accordingly. Vertical and horizontal jaw relations were recorded and the casts were mounted on a semi-adjustable articulator. At first, anterior try-in was accomplished. Aesthetics and phonetics were analysed at this step. After the patient was satisfied with the aesthetic outcome of the anterior teeth setting, the posterior try-in was done. Adequate lip support with no harmful effect on the musculature of face including facial expressions was observed. Both trial dentures were finalised with patient's consent keeping in mind the light weight of dentures.

On the day of denture insertion, final prosthesis (Fig 1) was delivered to the patient and checked for retention, stability, support and aesthetics. She had clear speech and her problem of fuller appearance of the upper lip was corrected because of modified labial flange i.e. flangeless maxillary denture, where lip was in direct contact with ridge instead of the intermediate acrylic flange (Fig 2). Patient acceptance was good with a positive feedback on her follow-up visits. The open faced maxillary denture was found to be comfortable, retentive, functional and aesthetic (Fig 3).

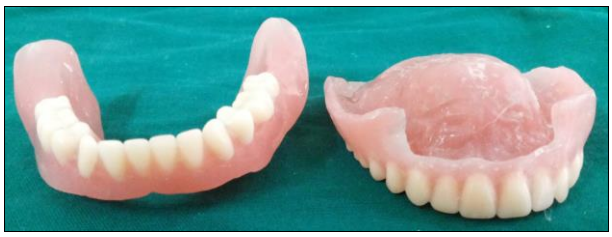

Fig 1: Final Prosthesis - Flangeless maxillary denture and mandibular complete overdenture

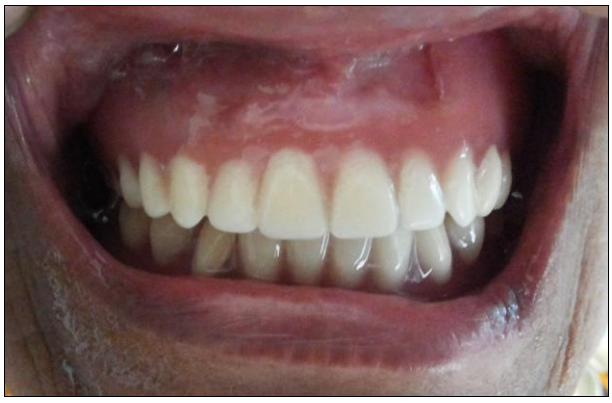

Fig 2: Denture delivery - Intraoral view post-insertion (Frontal)

Fig 3: Denture delivery –Extra-oral view post-insertion

Discussion

In modern era, face determines one's social acceptance and facial appearance is a significant part of self-image also. Loss of dentition affects facial appearance and also create psychological trauma to patient. Hence, aesthetic needs and demands are highly subjective [1]. Facial and dental aesthetics significantly influences the prosthetic treatment also [2, 3]. Optimal restoration of oral function and aesthetics should be achieved by prosthesis. Restoration of lost or missing tooth/teeth is one of the challenging tasks for a clinician among the various possible treatment modalities and any unusual morphology accentuates the task [4]. A prosthodontist comes across contrasting kinds of edentulous ridges and contours. Residual alveolar ridge forms vary from patient to patient from severely resorbed to widely massive ridges [2]. Some of these abnormal and unfavourable conditions that exist in the partially edentulous arch may require surgical correction, prior to fabrication of dentures, to enable patient to function more comfortably and efficiently following prosthetic restoration. Overall goal of reconstructive pre-prosthetic surgery is to provide an environment for prosthesis that should restore function, be stable, aid retention, preserve associated anatomic structures and satisfy aesthetics. However, use of surgical aid is not always possible, may be due to patient's unwillingness or due to certain associated medical conditions (uncontrolled diabetes, hypertension, heart ailments, etc.) which restrict surgical rehabilitation of compromised edentulous ridges [2, 5, 6].

Due to differential resorption pattern of residual alveolar ridges, excessively prominent ridge with labial undercuts is more commonly seen in completely edentulous maxilla [2]. Patient with excessive bulky ridges often has a compromised facial aesthetics. The labial vestibule width increases as the resorption of the labial cortical plate of the alveolar bone takes place. Most of the completely edentulous cases where this space is obliterated or decreased are either due to pro-clining maxillary anterior residual alveolar ridge or due to recent extractions where the labial cortical plate has undergone minimum or no resorption. It may also result if after extraction, the compression of the socket is not done [7]. Arrangement of artificial teeth in these prominent ridge cases is quite difficult and poses aesthetic problem as the placement of denture labial flange over prominent maxilla, pushes upper lip out giving a swollen lip appearance [6]. It may mutilate facial support, aesthetics and muscles of facial expression, limit function, and compromise aesthetics. If a denture base extension is placed in the prominent pre-maxilla, two-thirds of the upper lip gets severely distorted from the base of the nose to the edge of the upper lip, specifically the wet-dry line [8]. Placement of anterior teeth in such cases also become critical as even a minor prominence of anterior tooth/teeth gives the same unaesthetic swollen lip appearance [7].

Pre-prosthetic surgery is essential in such cases before advancing towards the construction of complete denture giving a simian appearance [3]. This surgical option is not viable every time as many patients are not satisfied with the notion of surgery. The only non-surgical alternative is to fabricate a flangeless ridge grip aesthetic prosthesis in maxillary anterior region, which improves facial aesthetics and function in a patient with labially prominent maxilla and an accompanying severe labial undercut. This also prevents appearance of excessive fullness of lips while wearing flanged dentures [2]. Flangeless dentures have been referred to as open-faced dentures, gum fit dentures, ridge grip aesthetic prosthesis and wing denture [2, 4, 9]. In our case, it was found

that the major cause of un-aesthetic appearance is labially inclined pre-maxilla and the accompanying undercut which led to excessive fullness in the maxilla. Flangeless denture was recommended as a result of a prominent labial form of the maxillary arch and unwillingness of the patient to undergo surgical correction. In flangeless denture, in the area devoid of denture base, the labial tissues come in direct contact with the mucosa overlying the prominent ridge which reduces the lip fullness and improves aesthetics serving the needs of the patient.

Conclusion

Flangeless dentures provide an easy, simple, conservative, economical and painless substitute to conventional dentures to improve the facial aesthetics of the patients with excessively proclined pre-maxillary ridge with associated severe maxillary labial undercuts. They prove to be successful in providing satisfactory aesthetics and better patient acceptance.

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