

Prosthodontic Rehabilitation of a Completely Edentulous Patient with a Compromised Hard Palate

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ABSTRACT

Recording an impression of a displaceable or a fibrous ridge is extremely challenging for the clinician. This article presents a case report of a completely edentulous patient with bone loss and displaceable tissue in the region of the labial plate and the

hard palate which were caused by cyst formation, in which a modified impression technique was used to record the maxillary basal seat area for the fabrication of a complete denture prosthesis

Key Words: Fibrous maxillary ridge, Modified impression technique, Residual cyst, compromised hard palate, Complete denture

INTRODUCTION

Radicular and residual cysts are the most common cystic lesions in the jaws. They occur as a result of fractured or decayed tooth, or on account of a disease of the bone. Initially, the bony enlargement is bony hard, but as the cyst increases in size, the covering bone becomes very thin despite subperiosteal bone deposition and then the swelling exhibits springiness. The cyst should be opened and the bony fragments and the diseased tissue should be removed along with the tooth [1].

A displaceable or a fibrous ridge is a superficial area of mobile soft tissue which affects the maxillary and mandibular alveolar ridges. It develops when a hyper plastic soft tissue replaces the alveolar bone and it is a common finding in the anterior region of the maxillary denture bearing area [2].

Generally, an impression technique, which is a combination of the mucostatic and muco-compressive techniques, is used for the displaceable anterior maxillary ridge, where the displaceable tissue is recorded in the unstrained position and the rest of the basal seat area is recorded under pressure.

In this article, an impression technique has been described, which records the maxillary basal seat area with the displaceable hard palate, for the fabrication of a complete denture prosthesis.

CLINICAL REPORT

A 54-year old, completely edentulous, male patient reported to the Department of Prosthodontics, AB Shetty Memorial Institute of Dental Sciences, Mangalore, with the complaints of missing teeth and inability to eat. The patient's history revealed that he had undergone an extraction in the region of the maxillary incisors 2 years back, but the region had not healed and it showed signs of purulent discharge. It was diagnosed as a residual cyst and the patient was advised cyst enucleation and a complete denture prosthesis. Following the cyst enucleation, a complete denture prosthesis was advocated for this patient.

The intra-oral examination revealed completely edentulous maxillary and mandibular ridges. A window was seen in the region of the maxillary right central incisor [Table/Fig-1]. There was bone

loss in the region of the labial plate and the rugae area due to the cyst formation. The tissue in the above region was unsupported and displaceable. The displaceable tissue also extended along the lateral borders of the hard palate [Table/Fig-2]. For the edentulous



[Table/Fig-1]: Window in the region of the right central incisor



[Table/Fig-2]: Displaceable tissue extended along the lateral borders of the hard palate

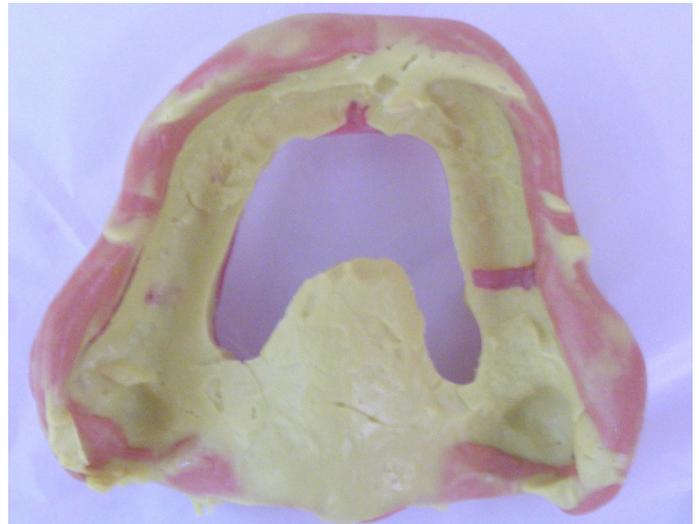
maxillary ridge, a 2 part impression technique and for the edentulous mandibular ridge, a conventional impression technique were planned.

A preliminary impression was made by using an irreversible hydrocolloid impression material (Algitex; dental products of India, Mumbai). The extent of the displaceable tissue on the maxillary denture bearing area was outlined in the patient's oral cavity by using an indelible pencil; this marking was recorded in the primary impression and it was transferred onto the primary cast. A maxillary custom tray of auto polymerizing acrylic resin (DPI-Self cure; dental products of India Ltd) with a spacer thickness of 3mm was fabricated. The marking was transferred onto the maxillary custom tray. The custom tray was perforated by creating a window within the marking. [Table/Fig-3]. The border moulding of the maxillary tray was done by using a putty consistency silicone elastomer (Aquasil Soft Putty/Regular set, Dentsply, Dentrax, Germany), followed by an impression of the non-displaceable tissues which was made by using a light body silicone elastomer (Aquasil Ultra LV, Dentsply, Dentrax, Germany) [Table/Fig-4]. The impression material in the region of the window was trimmed off. The impression was placed into position on the maxillary ridge. The impression of the displaceable tissues was made by using impression plaster (Dr. Balzer® Impression plaster). Initially, a thin mix of the impression plaster was painted on the displaceable tissues, followed by the application of a thicker mix [Table/Fig-5].

A conventional secondary impression custom tray of auto polymerizing acrylic resin (DPI- Self cure; dental products of India Ltd) was fabricated for the lower edentulous ridge, which had a spacer thickness of 3mm. The border moulding was done with putty elastomer and the final impression was made with light body silicone elastomers (Aquasil, Dentsply, Dentrax, Germany).

The final impressions which were obtained were poured with dental stone (Kala stone; Kala Bhai Pvt Ltd, Mumbai, India) and the casts were retrieved [Table/Fig-6]. The tentative jaw relation was recorded and a face bow transfer was done (Girrbach Dental GMBH, Germany). The casts were articulated on a non-arcon Artex articulator (Artex AR – Girrbach Dental GMBH, Germany). The teeth selection was done according to the dentogenic concept. A try-in of the waxed up complete denture was done. In the try-in stage, the occlusion, speech and the aesthetics were evaluated. A considerable amount of overjet and overbite was maintained to prevent the contact of the opposing anteriors [Table/Fig-7]. The

try-in was satisfactory. The denture was fabricated by using heat cure acrylic resin (DPI- Heat cure; dental products of India Ltd). The insertion of the complete denture prosthesis was done [Table/Fig-8]. The post-insertion instructions were given. The patient was instructed to wear the prosthesis for 24 hours and he was recalled after 24 hours. The necessary corrections were made. The recall check-ups were scheduled after 1 month, 3 months, 6 months, 9 months and 1 year. The patient was completely satisfied with the prosthesis.



[Table/Fig-4]: Maxillary impression using silicone elastomers



[Table/Fig-5]: Maxillary Final impression



[Table/Fig-6]: Maxillary final cast



[Table/Fig-3]: Maxillary custom tray



[Table/Fig-7]: Overjet and overbite in acrylized denture



[Table/Fig-8]: Acrylized dentures

DISCUSSION

The importance of the maxillofacial region in the early development, personality dynamics, and in the day-to-day interpersonal relationships were reviewed, together with the several specific problems which often accompany the changes in the structure or function of this region. The dentist must be concerned with the patient's expectations, personality characteristics, and with his/her ability to accept and integrate the prosthesis. The dentist's understanding and utilization of the psychological considerations of the patients should result in increased effectiveness in the treatment and rehabilitation of the patients [3].

It was observed that the human food selection was dependent on a complex interaction of biological, environmental, cultural and behavioural influences [4]. A review of the functional and the psychosocial outcomes of edentulousness which was treated with complete replacement dentures concluded that the loss of natural teeth had functional and psychosocial consequences that could be rectified with the use of complete replacement dentures. However, the outcome of complete denture therapy relies on the patient factors, as well as on the skills of the clinician and the laboratory technician who makes the dentures [5].

Lytle demonstrated that excessive pressures from the denture bases, poor bases and poor occlusion or trauma can cause distortion of the mucoperiosteum. The soft tissues re-assume the normal shape when they are relieved of the trauma [6].

The Muco-Compressive Technique was advocated by Green. In this technique, the impression should be recorded under an occlusal loading, which is comparable to the occlusal loading during its function. The main objective of this group of impression techniques has been to attain a better retention of the denture during its function [7].

The mucostatic impression technique was advocated by Page. In this technique, the soft tissue should be registered in an unstrained rest position; any other position will compel the tissue to try to regain its position. This leads to dislodgement of the denture [7].

A variety of impression techniques have been suggested to circumvent the difficulty of making a denture on a flabby tissue. It has been stated that while the flabby ridge may provide a poor retention, it is better than having no ridge, as it could occur as a result of surgical excision [8].

The presence of displaceable tissue in the maxillary denture bearing area can lead to the use of an altered impression technique for the maxilla. A two part impression technique i.e., a mucostatic and a mucodisplacive combination was utilized for this patient. This technique was first described by Osborne in 1964 to be used in the mandible [8].

The masticatory forces can displace the mobile denture bearing tissue, leading to an altered denture positioning and loss of the peripheral seal. The resulting stability of the denture becomes poor and both the function and the aesthetics will be compromised [2]. In our case, the anterior teeth were kept out of occlusion to reduce the load on the displaceable tissues. This can increase the stability of the denture and it can also help in bone deposition at the resected site.

CONCLUSION

The denture prosthesis should fulfill its basic objectives of the restorations of function, aesthetics and speech. It should also help in the maintenance of the health of the oral tissues. Nutrition is one of the main factors that determines the success or failure of the prosthetic appliance in the mouth of aging people.

Displaceable tissues pose a prosthodontic challenge in the achievement of a stable and a retentive dental prosthesis. When conventional prosthodontics is considered, there are a variety of impression techniques which can record the unsupported tissue for the denture construction. The considerations for the selection should include the location and the extent of the unsupported tissue, as well as the patient's chief complaints.

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