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Recommended Citation

Berisha, Vlora, "Fabrication of upper complete denture combining dental base materials to cover torus palatinus - Case report" (2023). *UBT International Conference*. 3.

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Fabrication of upper complete denture combining dental base materials to cover torus palatinus - Case report

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Abstract

Torus palatinus provides a challenge when restoring an edentulous arch. Because the mucosa is often quite thin, tori may be sensitive to the pressure that comes from a denture basis. . A strong palatal seal is prevented by the tori's propensity for having deep undercuts that occasionally extend to the junction with the soft palate.

Case Report: A 70-year-old edentulous female came to our dental clinic, with a chief complaint of the instability of her maxillary complete dentures, and she requested new denture. The patient had been wearing the dentures for approximately 2 years. Based on the intraoral examination, the patient had a large, unilobular diffuse torus palatinus .It was covered with thin mucosal tissue, and it did not interfere with her speech, her ability to chew, or other oral functions without the dentures. After the problems were thoroughly diagnosed, thermoplastic complete denture was chosen as the appropriate solution for this case. Dual lamination involves combining 2 materials to fabricate a denture base that utilizes the retentive aspects of the torus. The thermoplastic flange provides a measure of flexibility, allowing the denture to seat over the torus and the support for the denture teeth .The resilient liner provides a cushion to diffuse the occlusal load. Using this approach, a very retentive denture was fabricated using torus palatinus as a key element in anchoring the denture.

Keywords: Complete denture, thermoplastic denture, torus palatinus

Introduction

A torus palatinus (pl. tori palatini), or palatal torus (pl. palatal tori), is a bony protrusion on the palate. Tori palatini are usually present on the midline of the hard palate. Because the mucosa is often quite thin, tori may be sensitive to the pressure that comes from a denture basis.

Denture interference, or denture instability, is the most frequent issue linked to torus palatinus. When a denture is unstable, it negatively impacts the prosthetic device's support and retention, which puts harmful forces on the edentulous ridges while the prosthesis is being used.¹ Large torus palatinus with an undercut frequently makes it more difficult to situate the tray when taking impressions or putting the dentures in, which lowers the stability and retention of acrylic dentures and increases the risk of inflammation on the mucosa from friction from the prosthesis.² Gagging, on the other hand, results from the posterior palatal seal being overextended. There are two types of traditional management for torus palatinus: surgical and nonsurgical. Though it may result in a number of consequences such as nasal cavity perforation, nerve injury, and palatal bone fracture, some studies only advise surgical removal of the torus palatinus in the direst circumstances.³

A number of nonsurgical techniques are thought to be a good way to deal with this issue. These include creating a window in the dentures or designing a complete denture with accuracy. Another option is to fabricate complete dentures in the shape of a horseshoe to accommodate the torus palatinus so that stable, comfortable, and retentive dentures can be made.⁴

In order to help engage deep soft-tissue undercuts in the front aspect of the maxilla, triple lamination has been modified.⁵ By using a combination of soft flanges and liner, this approach prevents soft tissue trauma and pain when the denture engages the soft-tissue undercut.

The dual lamination technique is modified in this article to accommodate the positioning of a maxillary full denture over a torus palatinus.

Case Report

A 70-year-old edentulous female came to our dental clinic, with a chief complaint of the instability of her maxillary complete dentures, and she requested new denture. The patient had been wearing the dentures for approximately 2 years. Based on the intraoral examination, the patient had a large, unilobular diffuse torus palatinus. It was covered with thin mucosal tissue, and it did not interfere with her speech, her ability to chew, or other oral functions without the dentures (Figure 1).

After the problems were thoroughly diagnosed, thermoplastic complete denture was chosen as the appropriate solution for this case. Dual lamination involves combining 2 materials to fabricate a denture base that utilizes the retentive aspects of the torus. The

thermoplastic flange provides a measure of flexibility, allowing the denture to seat over the torus and the support for the denture teeth. The resilient liner provides a cushion to diffuse the occlusal load. Using this approach, a very retentive denture was fabricated using torus palatinus as a key element in anchoring the denture.

Surgically removing the torus palatinus, followed by the use of an implant prosthesis, was not a recommended treatment plan for the patient due to his economic status and age.



Figure 1. Palatal view of maxillary torus

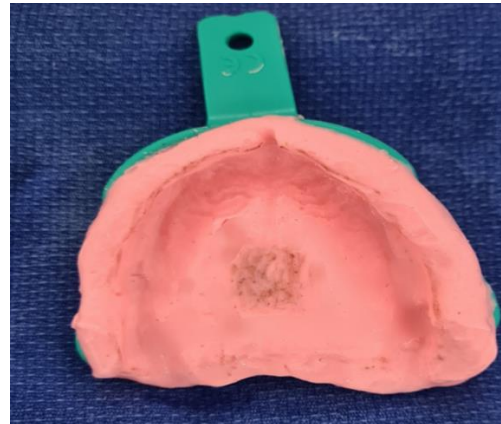


Figure 2. Preliminary impression with alginate

The primary impression of the edentulous maxilla and mandibular teeth was obtained using an irreversible hydrocolloid impression material taken with a stock tray to produce a diagnostic case made of artificial stone (Figure 2). The main concern was the accuracy of the impression due to the existence of torus palatinus. A border-molded (with impression compound) acrylic custom tray was used for the final impression. Adequate relief in the tray was provided to allow seating of the impression tray and capturing of the undercuts. The silicone impression material yielded a very good model of the maxillary torus. The vertical dimension of the occlusion was reestablished by the occlusion rim, which was well constructed and contoured to create adequate lip and cheek support. The anterior artificial teeth were selected and arranged to enhance the esthetics of the outcome, while the posterior teeth were arranged to fulfill the requirements of balanced occlusion. Balanced occlusion preserves the stability of complete dentures and simultaneously facilitates the realization of the tooth contacts at the working side and the balancing side. All the artificial teeth were arranged on the articulator in the centric occlusion position so that the centric relation records could be verified. A try-in of the waxed upper complete dentures was performed to verify the correct occlusion, shade, and mold. Thermoplastic complete denture was chosen as the appropriate solution for this case (Figure 3).

Dual lamination involves combining 2 materials to fabricate a denture base that utilizes the retentive aspects of the torus. A thermoplastic material was used to fabricate the base, buccal flange and the external portion of the palatal flange. MOLLOPLAST-B was

used to line the entire tissue surface of the denture including the palatal flange . The thermoplastic flange provides a measure of flexibility, allowing the denture to seat over the torus and the support for the denture teeth .The resilient liner provides a cushion to diffuse the occlusal load. Using this approach, a very retentive denture was fabricated using torus palatinus as a key element in anchoring the denture.



Figure 3. Thermoplastic complete denture

Verification of the retention and stability, phonetics, and esthetics of the thermoplastic complete denture was done. The patient was given postinsertion instructions regarding maintenance, nutrition, and hygiene. The patient was seen the next day and was comfortable. Recall appointments the following day and over the next 4 weeks showed no sign of any denture irritation. There were no complaints of irritation of the torus palatinus.

Discussion

Many of the patients with torus palatinus that are seen in everyday clinical practice need total denture treatment, which presents difficulties and hurdles for the fabrication process. The mucosa of torus palatinus is often extremely thin, which results in sensitivity to normal pressure from the denture base. This causes discomfort and irritation when wearing acrylic dentures on a regular basis. To fit over the torus, the thermoplastic denture offers some flexibility.

Versacryl is a thermoplastic polymer that is rather stiff at room temperature but becomes flexible when tempered in hot water. Before polishing or grinding, the denture must be chilled in order to make adjustments. It forms a chemical link with the resilient liner and denture basis by the use of methyl-methacrylate. The end effect is a semi-rigid flange that slides into soft-tissue undercuts in the maxillary anterior region and over the torus palatinus with comfort. Often used as a cushion on the fitting surface of dentures, resilient liners like MOLLOPLAST-B are used to treat ridge atrophy, bruxism, wounded oral mucosa, bony undercuts, and congenital oral abnormalities that need to be

obtured.⁶ Soft lining materials provide an even distribution of the functional load and avoid the concentration of local stress on the soft-tissue surface.⁷⁻⁸

This dual lamination of materials allowed the denture to fit onto the torus palatinus and engage the anterior undercut. The resilient liner prevented the thermoplastic material from locking around the torus, decreased the occlusal load on the torus, and acted as a shock absorber to distribute the occlusal load across the edentulous ridge. In the case described, this allowed the undercut to act as an active part of the retentive mechanism for the denture. It also reduced the incidence of sore spots and denture irritation . The semi-rigid exterior of the flange provided support and flexibility to allow the denture to engage the anterior undercut.

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