Complete Denture Covering Mandibular Tori Using Three Base Materials: A Case Report

· **Stephen Abrams,** DDS ·

Abstract

The torus mandibularis presents many challenges when fabricating a complete denture. The mucosa tends to be thin and will not tolerate normal occlusal loads on a denture. Large mandibular tori can prevent complete seating of impression trays and denture. To address this problem, we fabricated a new mandibular complete denture incorporating a combination of soft acrylic flanges and liners.

MeSH Key Words: *denture, complete; denture design; exostoses*

© J Can Dent Assoc 2000; 66:494-6
This article has been peer reviewed.

The torus mandibularis is a bony prominence on the lingual surface, found usually within the first mandibular cuspid to first molar area. Tori are composed of cancellous bone covered by compact bone, which may be laminated.[1] One or more tori may be present and are always located above the mylohyoid line but below the alveolar margin.[2] Torus mandibularis is rarely seen before the age of 10 years.[3] A number of studies have found that up to 10% of the general population is affected.[3-5] Clinically, these tori may be multi-lobulated and have up to 14.0 mm in mesial distal width.[5] The tori usually present as well-rounded, smooth-surfaced, hard, bony projections, covered with normal or blanched mucosa.

Torus mandibularis presents many challenges when fabricating a complete denture for a patient. The mucosa tends to be thin and will not tolerate the occlusal loading of a denture. Large mandibular tori may prevent complete seating of impression trays and denture. The large undercuts may lock the denture into place or preclude any sort of lingual flange in the area.

Case Report

A healthy 63-year-old woman presented for the fabrication of a new lower complete denture. She had been edentate for over 2 years and had worn a complete lower denture with some success. A new maxillary denture with flat plane teeth had been fabricated 2 years previously. The mandibular denture was 2 years old and had a very large midline fracture. Our patient had tried to wear the mandibular denture, but lack of retention and soreness were major obstacles.

Two bilateral multi-lobulated mandibular tori were present (Fig. 1). The left side was 12.0 mm mesio-distally and 4.0 mm in height. The right side was 20.0 mm mesio-distally and 5.0 mm in height. Both were located just 1.0 mm below the crest of the alveolar ridge. The tori were hard and covered with a very thin layer of mucosa. The patient reported pain whenever a denture was placed on the tori. The previous denture had very little lingual flange in the area of the mandibular tori and was painful to wear at times.

The existing maxillary denture had an adequate flat plane occlusal scheme and muscle support. Since finances were a concern, we decided to replace the mandibular denture only, incorporating soft acrylic resin flanges and a resilient liner. Standard study casts were made from an alginate impression in very large stock trays. A final alginate impression was made using a border-moulded acrylic custom tray (Fig. 2).

Base plates with short lingual flanges were fabricated to avoid loading the tori when recording the jaw relationships. Flat plane teeth were used to help create a balanced occlusion and freedom in centric. This allowed us to spread the occlusal forces over a very wide area and use the buccal shelves for additional loading.

The denture base was constructed with Ivocap (Ivoclar North America, St. Catharines, ON) injected-moulded acrylic resins for the base and buccal flange, a thermoplastic material (BITEM, Thermoplastic Technologies, Newmarket, ON) for the external portion of the lingual flange (Fig. 3) and a resilient material (Molloplast B, Detax GmbH, Ettlingen, Germany) to line the entire denture, including the lingual flange.

Figure 1: *Intraoral view of bilateral mandibular tori.*

Figure 2: *Final model of the mandibular arch.*

Figure 3: *Mandibular denture with lingual flange fabricated in BITEM material.*

Figure 4: *Tissue surface of the mandibular denture.*

Initially we had fabricated the lingual flanges in thermoplastic material but found that it locked into the undercut causing denture sores and pain on removal of the denture. The additional placement of a resilient liner solved these problems (Fig. 4).

Discussion

The thermoplastic material BITEM is relatively rigid at mouth temperature but tempers in hot water, softening the material. It is adjusted by first chilling the denture and then polishing or grinding. Essentially, it is a methyl methacrylate, and therefore it bonds chemically to the denture base and the resilient liner. The result is a semi-rigid flange that slides easily over the mandibular tori.

Resilient liners such as Molloplast are widely used as a cushion on the fitting surface of dentures in the management of traumatized oral mucosa, bony undercuts, bruxism, ridge atrophy and congenital oral defects requiring obturation.[6] Soft lining materials provide an even distribution of the functional load and avoid local stress concentrations.[7,8] There are 2 main types — plasticized acrylics and silicone elastomers — the latter differing in the percentage of crosslinking agents, catalysts and fillers and available in autopolymerizing and heat-curing forms.[9] Silicone-based polymers remain soft or rubbery at or below mouth temperatures.

Our patient found the new denture very retentive without soreness over the mandibular tori. The resilient liner prevented the thermoplastic flanges from locking around the torus and lessened the occlusal load on the torus. The lingual aspect of the denture was slightly thicker than usual due to the position of the torus and the need to stabilize the material. This initially caused some problems with speech, but the patient was able to adapt and has worn the denture for over one year with no need for adjustments in the last 10 months. ➧

Acknowledgment: I acknowledge the help and advice of Mr. Ron Klausz of Klausz Dental Laboratories, Toronto. My partner, Dr. Warren Hellen, has always provided a willing ear in treatment planning and case management.

Dr. Abrams is in private practice in Scarborough, Ontario.

Correspondence to: Dr. Stephen Abrams, 2995 Kingston Rd, Scarborough, ON M1M 1P1. E- mail: dr.abrams4cell@sympatico.ca.

The author has no declared financial interest in any company manufacturing the types of products mentioned in this article.

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