

Innovative Replication and Recuperation of Complex Torus Palatinus: A Prosthodontic Case Report

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ABSTRACT

The prevalence and morphological appearance of torus palatinus has been well documented in the literature. However, adequate literature regarding the precise impression technique and rehabilitation of edentulous maxillary arch with torus is less. Intraoral growths present challenges when trying to capture exact details for impressions starting from the primary to the final stage since the complete seating of conventional impression trays is not possible. In addition, the ability to withstand occlusal loading is compromised as the mucosa tends to be thin. As the extensions of these bony growths can vary, the design of the prosthesis should be optimal to give adequate retention and stability to the prosthesis. Although customized disposable trays are available, they are not cost effective and involve a complex armamentarium. This case report presents a modified impression technique where optimal accuracy was achieved with a design framework having better retention and stability of the final prosthesis.

Keywords: Complete denture, Exostosis, Impression technique, Palateless denture, Torus.

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INTRODUCTION

Torus palatinus presents many challenges for a clinician when constructing a removable denture. As anatomy and morphology of the torus fluctuates considerably among different geographical areas with a higher prevalence among Asians and Eskimos, the standardization of the technique is out of the question, which further complicates the management of the situation.^{1,2} When fabricating a complete denture with torus palatinus, either

surgical removal or implant-supported prosthesis is well accepted.^{3,4} Due to the expense of implants or complications associated with surgical removal, clinicians go for modifications in removable dentures with construction of a window within a denture to accommodate the torus, as in conventional techniques proper seating of the denture base is compromised resulting in interference of phonetics and/or function.^{5,6}

The anatomy of the torus is such that it tends to ulcerate as the mucosal lining is thin when exposed to stress from mastication using removable prosthesis. Failure to achieve the exact replication of anatomical areas can be the primary reason for failure even though the design of the prosthesis is well structured. Even though few techniques were discussed in the literature, most of them were limited to removable partial denture where hope of giving a better prosthesis persists as the stability and retention depend on the remaining natural teeth. In the former, even though the emphasis on the impression technique cannot be sidelined, a good success rate can be achieved by better design of the prosthesis. In complete denture rehabilitation, which relies on the anatomical structures for retention and stability, the ideal positive replica should be achieved from the start so as to contribute to better long-term prognosis. In case of maxilla where attaining posterior palatal seal is of utmost importance for retention, the extension of this bony growth can complicate in achieving the same. Therefore, impression techniques need to be customized based on the size and shape of tori. Based on Woo's classification of palatal tori, the size of the torus is rated as small, medium, or large, and with regard to the above, in a case of large torus palatinus, the concept of palateless complete denture can be looked into if the remaining alveolar ridge is ovoid having sufficient width and height for support and retention.⁷ Adequate posterior palatal seal can be attained by palatal beading made on the palatal peripheral border and reducing the prominence of the flange. For a bilateral balanced occlusion, the posterior artificial teeth should be arranged over the ridge, with the inner inclines of buccal cusp made out of occlusion while chewing.

A clinician should have a closer look at extracting the possible retentive features available when the extension of the torus is more toward the posterior palatal seal area. Under normal circumstances, the acceptance rate of the denture base covering the entire palatal area for first-time

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users is under question; so it will be further subdued for patients who are having huge palatal tori, adding further dilemma in treatment planning. This article gives insight into innovative application of a modified impression technique incorporating the concept of complete denture with window in the palate to relieve the tori through a case report which can be a pioneering work with scope for future research.

CASE REPORT

A 58-year-old male presented to the Asia Institute of Medical, Science and Technology University dental center with a chief complaint of looseness of his existing maxillary complete denture and pain in the palate while chewing. He also complained of difficulty in pronouncing certain words while speaking because of his denture. The patient had worn a maxillary complete denture for 6 months. The patient was concerned with the appearance of his prosthetic teeth as well as the fit and long-term prognosis of his maxillary denture.

On intraoral examination, the patient had a large, multilobulated torus palatinus (Fig. 1). It extended from the area adjacent to the first bicuspid to a point just in front of the junction of the hard and the soft palate. The torus was oblong in shape, measuring 36 mm long, 27 mm wide, and 9 mm in height from most prominent portions. It was covered with thin mucosal tissue, and the tissues appeared erythematous in the posterior lobe of the torus. It did not interfere with speech, chewing, or other oral functions without the denture. On examination with the denture in position, phonetics was found altered, especially with words having palatal sounds.

Treatment plans of surgical removal of the torus palatinus and another option of implant prosthesis were suggested to the patient. Due to the patient's fear about

surgery and his economic status, the above treatment plans were not acceptable for the patient. Hence, a maxillary metal base complete denture with an opening at the area of tori was finalized. There were a number of issues to consider. The main concern was regarding the accuracy of impression due to the presence of tori. So a modified stock tray was used for the primary impression and a specially designed tray was used for the secondary impression. Another issue was regarding the retention of the denture as the palatal portion of denture was getting opened up. So the decision was made to utilize the anterior undercut, which would aid in retention of the denture.

Accurate impression making was difficult due to the height and extent of the tori as it resulted in defects in the palatal portion around the tori. The primary impression was made using a stock tray modified with modeling wax. The impression was made with alginate. Due to the difficulty in impression making, a modified special tray was fabricated for the patient. A two-tray system was used in this case (Fig. 2). The tray design consisted of a small tray covering the tori for the accurate recording of the extent of tori and a complete palatal tray over the small tray for recording other areas of the palate without defects near the tori. The special tray was fabricated with light cure acrylic resin. Wax spacer was used inside both the trays. Border molding was done using green stick compound, and medium viscosity addition silicone was used for the secondary impression (Fig. 3). Initially, the impression of tori was made separately and then this was picked up along with the larger tray recording the entire palate. Thus, an accurate impression could be made (Fig. 4).

The secondary cast was duplicated in die stone and was used for the fabrication of cast metal base for the denture. The procedures in the lower arch were carried

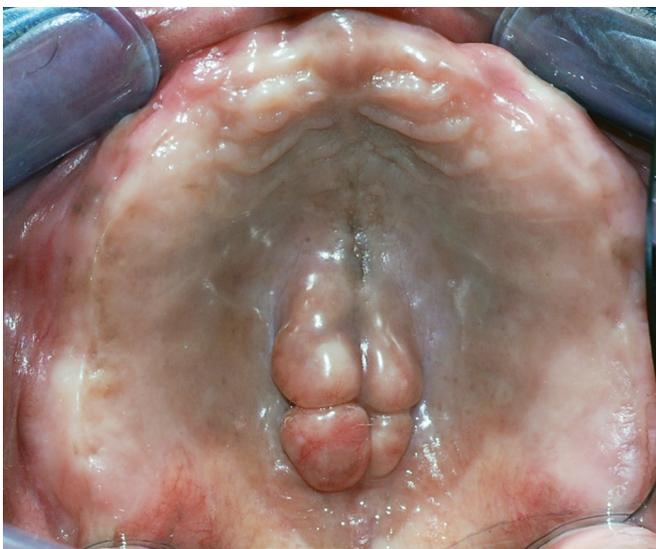


Fig. 1: Intraoral preoperative view of torus palatinus



Fig. 2: Dual tray



Fig. 3: Special tray for torus palatinus

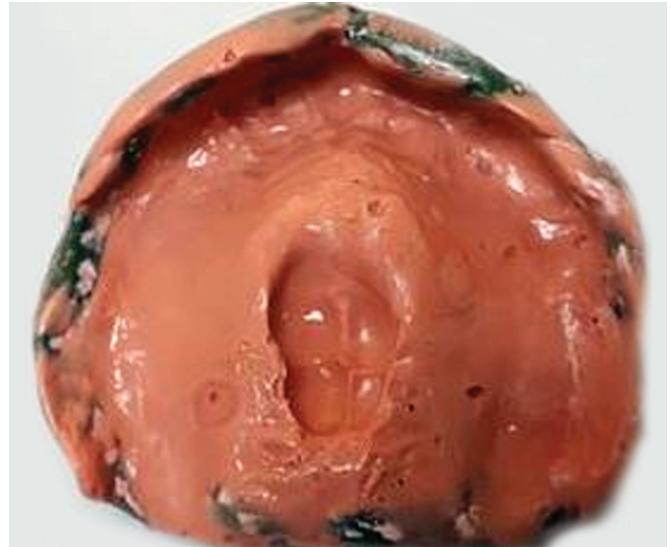


Fig. 4: Final impression

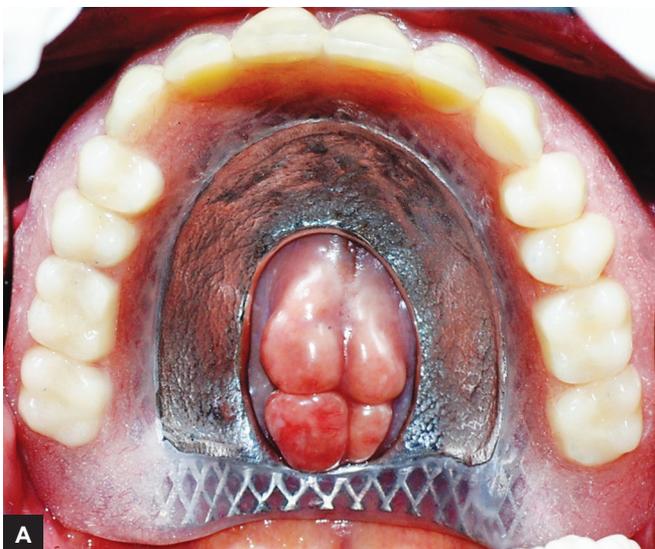


Fig. 5: Border molding

out in the conventional manner, and the acrylic denture base was fabricated.

Occlusal registration and tooth selection were then completed. Try-in was performed to verify the correct occlusion, shade, and mold. Vitapan prosthetic teeth (20° posterior teeth) were used. The dentures were acrylicized, and verification of retention, phonetics, and esthetics was done and the denture was well appreciated by the patient (Fig. 5).

The patient was given instructions on how to use and maintain dentures at home. The patient was seen the next day and was comfortable. Follow-up appointment after 4 weeks showed no sign of denture irritation. The patient was satisfied and explained about the change in his quality of life with the new denture. At 12 months' follow-up, the patient exhibited satisfaction and had no complaints (Figs 6A and B).



A



B

Figs 6A and B: Postoperative view: (A) Intraoral; and (B) extraoral

DISCUSSION

The majority of cases of tori in maxilla or mandible are asymptomatic calling for no management unless in prosthodontic, periodontal complications or in events of trauma. At present, the etiology of tori has been hypothesized as the interaction of multifactorial genetic and environmental factors.⁸ Due to very thin mucosa, tendency to have undercuts preventing the creation of good palatal seal, and inability to withstand normal pressures from denture base, palatal tori form a unique entity where traditional modes of management serve less. In terms of mastication, phonetics, as well as planning for rehabilitation of fully or partially edentulous cases, smaller tori do not pose much of a problem, whereas larger tori can cause significant problems.^{9,10} Capturing finer details for a wide range of dental applications is jeopardized due to interference by these bony ingrowths, thereby degrading the quality of service delivered to patients. So, the level of discomfort while taking an impression from the patient's point of view should never be underestimated. Conventional impression trays often cannot be seated to depth, because they get hung up on these bony anatomical variants causing pain during the impression procedure, resulting in tissue irritation.¹¹ An accurate impression delivers the critical information needed for predictable long-term outcome and time savings at the time of delivery. Even though material dentistry is flourishing with new systems like disposable tray, the cost-effectiveness and its routine usage by all segments of patients should be ascertained.¹² Keeping this in mind, clinicians are forced to open up the book of basics to find the answers within. In this article, optimal reading was done regarding the impression to find out the technique that overcomes most of the limitations mentioned earlier. Since morphology and size of torus are variable, the primary focus was to devise the method of copying its exact replica so that seating of final impression tray is not affected. Wax addition done on the stock tray during the primary impression helped in extension and filling in of the palate on the upper arch as a tray-seating stop and to equalize relief for impression accuracy. Modification of impression tray was attempted, so there is no or minimal interference with the path, insertion, and final position of the tray. In this regard, usage of dual tray where customization was possible solved the issue, with the small tray covering the tori for accurate recording of the extent of tori and a complete palatal tray over the small tray for recording other areas of the palate. Customization of special tray as dual tray during final impression solved the difficulty in achieving an accurate secondary impression.

The design of the prosthesis also plays a major role in the success of the denture. Keeping the principles of

palateless denture, a very retentive denture was fabricated using the anterior undercuts. Border seal was attained through palatal beading made on the palatal peripheral border. Minimizing the prominence of the denture flange increased the patient comfort and all these key elements together helped in securing the prosthesis.

The hallmark of this technique and design is that it is practically feasible and fulfills the need for better esthetics without any surgical intervention and with no extra clinical appointments. However, the limitation – lesser retention as compared with the traditional complete denture – was overruled in this case by accurate utilization of the labial undercuts during fabrication of the denture. The limitation of the palateless denture is about retention; it is less in comparison with dentures with palatal coverage.

Advantages

- Comfortable, less chances of injury
- Good patient compliance during clinical procedures
- Restores the lost good tastes
- Phonetics
- Economical
- Good long-term prognosis.

Limitations

- Retention
- Presence of favorable retentive undercuts in maxilla
- Size and shape of torus.

CONCLUSION

The suggested design may be favorable in medium- to large-sized maxillary tori. The design is comfortable to the patient, fits easily, and is esthetically acceptable, satisfying the patient's requirement of avoiding surgery. In this clinical case, the challenges faced while treating a patient with palatal tori could be overcome by the modified tray and denture design.

REFERENCES

1. Regezi, J.A.; Sciubba, J.J. Clinicopathologic correlations. 3rd ed. Philadelphia: WB Saunders; 1994. p. 376-378.
2. Jaikittivong A, Apinhasmit W, Swasdison S. Prevalence and clinical characteristics of oral tori in 1,520 Chulalongkorn University Dental School patients. *Surg Radiol Anat* 2007 Mar;29(2):125-131.
3. Rezai RF, Jackson JT, Salamat K. Torus palatinus, an exostosis of unknown etiology: review of the literature. *Compend Contin Educ Dent* 1985 Feb;6(2):149-152.
4. Ogle RE. Preprosthetic surgery. *Dent Clin North Am* 1977 Apr;21(2):219-236.
5. Costello, Betts NJ, Barber HD, Fonseca RJ. Preprosthetic surgery for the edentulous patients. *Dent Clin North Am* 1996 Jan;40(1):200-204.

6. Valentine DC. Conservative management of a pedunculated torus palatinus in an edentulous arch. *Gen Dent* 1983 May-Jun;31(3):202-203.
7. Woo JK. Torus palatinus. *Am J Phys Anthropol* 1950;8:81-111.
8. Gorsky M, Raviv M, Kfir E, Moskona D. Prevalence of torus palatinus in a population of young and adult Israelis. *Arch Oral Biol* 1996 Jun;41(6):623-625.
9. Shafer WG, Hine MK, Levy BM. A textbook of oral pathology. 4th ed. Philadelphia: WB Saunders Co; 1983. p. 169.
10. Haugen LK. The tori of human jaw skeleton. Studies on torus palatinus and torus mandibularis. Thesis (University of Oslo, Oslo, 1990).
11. Al Quran FA, Al-Dwairi ZN. Torus palatinus and torus mandibularis in edentulous patients. *J Contemp Dent Pract* 2006 May;7(2):112-119.
12. Leendert B, Brad C. Tori Mandibularis and tooth mal-position: disposable heat mouldable trays. Available from: www.oralhealthjournal.com.2009;8-12.