

Chairside Relining of Mandibular Complete Denture for Management of Severe Lingual Undercut

Basnet BB

Department of Prosthodontics and Crown-Bridge,
BP Koirala Institute of Health Sciences,
Dharan, Nepal.

Corresponding Author

Bishal Babu Basnet
Department of Prosthodontics and Crown-Bridge,
BP Koirala Institute of Health Sciences,
Dharan, Nepal.
E-mail: bishal.basnet@bpihhs.edu

Citation

Basnet BB. Chairside Relining of Mandibular Complete Denture for Management of Severe Lingual Undercut. *Kathmandu Univ Med J.* 2025;90(2):249-51.

ABSTRACT

Lingual undercuts in the mandibular alveolar ridge pose significant challenges to conventional complete denture fabrication and patient comfort. This case report details the management of a severe oblique lingual undercut using addition silicone to create a blockout, facilitating space for a soft liner. This technique was incorporated during the denture fabrication process, simplifying the chairside relining with soft liner and improving denture seating and retention. By preemptively accommodating the undercut, the procedure minimized patient discomfort and ensured a more stable and comfortable denture, offering an effective alternative to more invasive surgical interventions.

KEY WORDS

Alveolar bone resorption, Complete denture, Denture retention, Denture stability

INTRODUCTION

Alveolar bone resorption, exacerbated by factors like mechanical stress and nutritional deficiencies, is prevalent in elderly patients.¹ Mandibular resorption often results in a wider mandibular base compared to the maxilla, creating lingual concavities.² Severe lingual undercuts complicate denture fabrication, causing discomfort and potentially damaging anatomical structures. While surgical interventions or flangeless dentures are options, they present complexities and economic burdens.^{3,4}

This case highlights the importance of preemptive undercut management during conventional denture fabrication. This method minimizes patient discomfort, simplifies soft liner application, and avoids complex surgeries. Utilizing a blockout technique ensures adequate space for a soft liner, enhancing denture stability and patient comfort. This case demonstrates a practical, efficient approach to managing severe lingual undercuts in complete denture patients.

CASE REPORT

An elderly male patient presented with a severe oblique lingual undercut in the mandibular alveolar ridge, posing challenges for conventional denture fabrication. After initial screening and discussion with the patient about the treatment plan, a primary impression was made using irreversible hydrocolloid, and a primary cast was obtained. A custom tray was fabricated, and the undercut area was identified using a dental surveyor (Fig. 1). An addition silicone putty blockout mold was created and verified with the surveyor, with a roughened outer surface (Fig. 2). The undercut was blocked out with modeling wax (Fig. 3), and maxillomandibular relation records, articulation, teeth arrangement, and try-in procedures were completed. During wax elimination, the temporary denture base was discarded, and the silicone blockout mold was secured to the cast. The complete denture was acrylicized using heat-cure resin. The denture with the silicone mold was retrieved, finished, and polished (Fig. 4). Following adjustments, the



Figure 1. Master cast on a dental surveyor determining the lingual undercut



Figure 2. Fabrication of putty mold and checking blockout of undercut on the dental surveyor

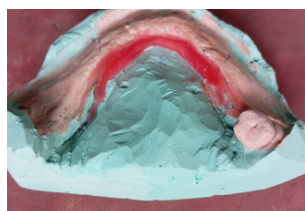


Figure 3. Block out of the undercut using modelling wax to fabricate temporary record base



Figure 4. Finished and polished intaglio surface of denture with silicone mold



Figure 5. Chairside relining with the firm occlusal pressure



Figure 6. Denture along after trimming excess long-term soft lining material

silicone mold was removed, and a long-term soft liner (mollosil, Detax) was applied in the space according to the manufacturer's instructions and both dentures were kept in ridges and the patient was instructed to bite firmly (Fig. 5), and after setting of the material the excess material was trimmed (Fig. 6).

The patient was instructed for the maintenance and care. The denture was functional and the patient reported satisfaction at a six-month follow-up.

DISCUSSION

This case is reported to demonstrate a simplified, effective chairside technique for managing severe lingual undercuts during mandibular complete denture fabrication, minimizing patient discomfort and improving denture retention without resorting to complex surgical procedures.

This management was chosen to avoid surgical intervention, and to provide a stable comfortable denture, by creating the space for the soft liner during the fabrication process.

Alveolar bone resorption, influenced by anatomic, metabolic, functional, and prosthetic factors as described by Atwood DA, significantly impacts denture stability.⁵ Tallgren A's research highlights a fourfold greater anterior height reduction in the mandibular ridge compared to the maxillary ridge, often resulting in lingual concavities.⁶ Managing these concavities is crucial, as severe cases may necessitate complex autologous bone grafting for implant placement, which requires advanced clinical setups, surgical expertise, and can be economically burdensome.³ Extremely deep concavities posing a high risk for lingual plate perforation in implant surgery have been reported in posterior mandible.⁷ Conventional dentures can cause discomfort during insertion and removal, potentially impeding anatomical structures. Severe lingual concavities and undercuts can be managed with a flangeless denture which is usually suitable for maxillary labial undercuts.⁴ The use of soft liner material which are resilient is another alternative.⁸

Traditional methods of applying long-term soft liners to complete dentures with knife-edge ridges or undercuts involve trimming the cured heat-cure resin to create space.^{8,9} This approach is time consuming and may result in inconsistent liner thickness. In the technique described here, a pre-formed space is created using readily available impression material, ensuring a uniform and adequate liner application at denture insertion. This proactive method simplifies the process and enhances the predictability of the outcome.

It's important to acknowledge the inherent limitations of soft liners, including porosity, loss of resilience, debonding, surface roughness, discoloration, microbial colonization, and reduced tear strength.¹⁰ Patients should be thoroughly informed about these potential issues, and preventative measures, such as meticulous oral hygiene and regular denture maintenance, should be emphasized. Regular follow-up appointments are crucial for monitoring liner integrity and addressing any complications promptly. This technique provides a predictable method for managing lingual undercuts, but careful patient selection, education, and follow up are essential.

In conclusion, this is a simplified and efficient technique for managing severe lingual undercuts during conventional mandibular complete denture fabrication. By incorporating a pre-formed space for the soft liner during the curing process, this method eliminates the need for post-cure trimming, saving time and effort while ensuring uniform liner application. This approach provides a predictable and comfortable solution for patients with challenging mandibular anatomy.

ACKNOWLEDGEMENTS

The author would like to acknowledge lab technicians Mr. Laxman Pashwan and Manoj Kumar Mahato for their assistance in laboratory steps.

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