



Complete Denture Fabrication in a Xerostomia Patient Caused by Antihypertensive Drug Use: A Case Report

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ABSTRACT

Introduction: Xerostomia is a subjective complaint of dry mouth commonly affecting elderly patients and may occur as a side effect of antihypertensive medications. Reduced salivary flow compromises the retention, stability, and comfort of complete dentures in edentulous patients.

Objective: This case report describes the management of complete denture fabrication in a patient with xerostomia associated with antihypertensive drug use.

Case: A 67-year-old male patient presented with complete tooth loss for six years and requested new dentures after his previous dentures fractured. Medical history revealed hypertension treated with amlodipine and losartan. Xerostomia was diagnosed based on the patient's complaint of dry mouth, medical history, and intraoral examination showing reduced salivary volume with thick saliva consistency. Panoramic radiography was performed to evaluate supporting bone structures. Complete denture treatment considered the patient's systemic condition, salivary quality, and oral tissues. Post-insertion instructions included hydration advice, salivary stimulation, and scheduled follow-up at 24 hours, one week, and one month to evaluate retention, stability, occlusion, mucosal condition, and patient comfort.

Outcome: The dentures demonstrated satisfactory retention, stability, and adaptation without significant mucosal trauma.

Conclusion: Comprehensive assessment, individualized prosthodontic management, and appropriate follow-up contributed to successful complete denture rehabilitation in a patient with antihypertensive drug-induced xerostomia.

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INTRODUCTION

Complete tooth loss remains a common oral health problem, particularly among elderly individuals, and may affect mastication, speech, esthetics, nutritional status, and overall quality of life. Complete dentures remain a widely used rehabilitation option because they are relatively simple, economical, and applicable for patients who are not suitable candidates for implant-based treatment. However, the success of complete denture therapy is influenced not only by residual ridge condition and occlusion but also by the quality and quantity of saliva and the condition of oral supporting tissues.¹⁻³

Saliva plays an essential biological and mechanical role in complete denture retention, stability, lubrication, and patient comfort. Adequate saliva contributes to adhesion, cohesion, and surface tension between the denture base and oral mucosa, while also protecting tissues from trauma and facilitating speech, mastication, and swallowing. Conversely, reduced salivary flow or altered salivary consistency may lead to poor denture retention, mucosal irritation, discomfort, and impaired adaptation to the prosthesis.^{1,2,11,12} Xerostomia, a subjective sensation of dry mouth, is commonly associated with systemic diseases and medication use, especially in elderly patients with polypharmacy. Several drugs, including antihypertensive agents, have been reported to contribute to salivary dysfunction and xerostomia.^{1,4-7,12,13}

Xerostomia is a common condition among complete denture wearers, with studies reporting a prevalence ranging from approximately 20% to 40%, particularly in older adults with systemic diseases and polypharmacy. The coexistence of xerostomia and complete edentulism presents significant challenges to prosthodontic rehabilitation because reduced salivary flow compromises denture retention, stability, and patient comfort. Although several reviews have discussed the general management of xerostomia and complete denture therapy, reports specifically describing the clinical management of complete denture fabrication in patients with antihypertensive drug-induced xerostomia remain limited. Therefore, this case report highlights the prosthodontic considerations, supportive xerostomia management, and clinical outcomes in an elderly patient receiving long-term antihypertensive therapy.^{12,13}

In prosthodontics, xerostomia represents a significant clinical challenge. Edentulous patients with dry mouth frequently complain of loose and uncomfortable dentures, difficulty during mastication and speech, and increased mucosal trauma. Thick or insufficient saliva may also complicate impression procedures and reduce denture stability, thereby prolonging patient adaptation to new prostheses. Therefore, successful prosthodontic management in xerostomic patients requires not only conventional denture fabrication procedures but also careful medical evaluation, clinical modification, and appropriate post-insertion instructions.^{1,2,11}

Special attention should be given to antihypertensive medication use because hypertension is highly prevalent among elderly patients. Long-term antihypertensive therapy may increase the risk of xerostomia through autonomic regulation disturbances, altered fluid balance, and pharmacological effects on salivary glands. Recent studies also emphasize that medication-induced xerostomia significantly affects oral comfort and quality of life.⁴⁻⁶ Management strategies may include hydration advice, salivary stimulation, saliva substitutes, denture adhesive use, denture modification, and regular post-insertion follow-up to improve patient comfort and reduce tissue trauma.^{1,2,8-10,12,13}

In addition to its local oral effects, xerostomia may negatively influence functional and psychosocial well-being in edentulous patients. Appropriate prosthodontic rehabilitation has been shown to improve oral health-related quality of life, patient confidence, and overall comfort.^{3,15,17,18} Therefore, this case report aimed to describe the management of complete denture fabrication in a patient with xerostomia associated with antihypertensive drug use, as well as the clinical considerations required to achieve functional and comfortable rehabilitation outcomes.^{1-6,11-13}.

CASE

A 67-year-old male patient, Mr. S, presented to the Prosthodontic Clinic with the chief complaint of complete tooth loss for the past six years. The patient had previously worn complete dentures; however, they had fractured, and he requested fabrication of new ones. Medical history revealed hypertension controlled with routine consumption of antihypertensive medications, namely amlodipine and losartan. The patient also complained of dry mouth during daily activities.

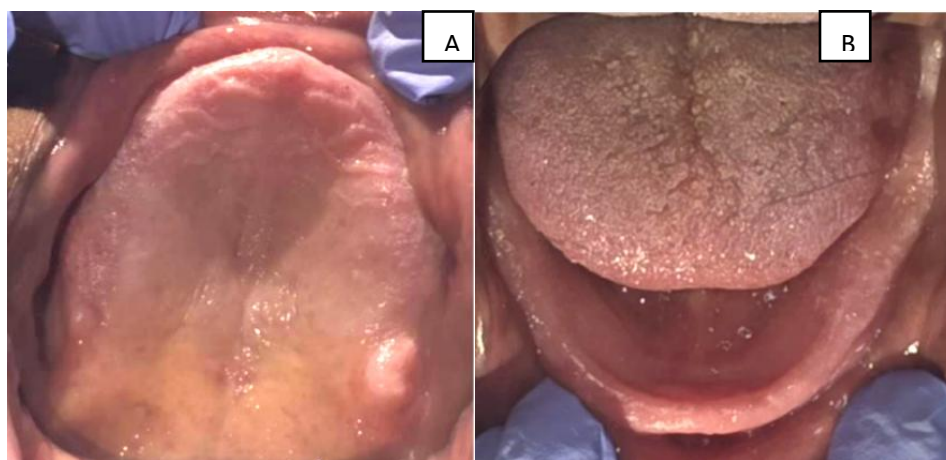


Figure 1. Intraoral examination showing completely edentulous maxillary and mandibular arches with moderate residual ridge resorption and dry oral mucosa associated with xerostomia: (A) Maxillary occlusal view, (B) Mandibular occlusal view.

Extra-oral examination showed a square facial form with a convex facial profile, symmetrical lips, and a normal mouth opening of 50 mm. Lymph node examination revealed no enlargement, tenderness, or palpable abnormalities. Examination of the temporomandibular joint (TMJ) showed a 1 mm deviation to the right side without clicking. Intraoral examination revealed completely edentulous maxillary and mandibular arches with moderate residual ridge resorption. The oral mucosa appeared dry with reduced salivary pooling and thick saliva consistency. Based on the patient's complaint of persistent dry mouth, medical history of long-term antihypertensive medication use, and clinical findings, the patient was clinically diagnosed with xerostomia (Figure 1). Panoramic radiographic examination was performed to evaluate the supporting bone structures and residual ridge condition (Figure 2). Based on anamnesis and clinical findings, the patient was diagnosed with complete edentulism accompanied by xerostomia associated with antihypertensive drug use.



Figure 2. Panoramic radiograph demonstrating the edentulous maxillary and mandibular arches and evaluation of supporting bone structures.

The treatment plan consisted of oral hygiene instruction and dental health education (OHI-DHE), fabrication of maxillary and mandibular complete dentures, and supportive radiographic evaluation. Preliminary impressions of both arches were made using alginate impression material, followed by fabrication of diagnostic casts. Individual custom trays were fabricated using acrylic resin. Baseplate trimming was performed by manipulating the lips and cheeks to determine denture border extension, followed by muscle trimming procedures to record the functional vestibular depth and establish the peripheral borders of the dentures. Final impressions were made using zinc oxide eugenol (ZOE) impression material according to the manufacturer's instructions while guiding functional movements of the lips and cheeks.

Working casts were fabricated using the beading and boxing technique, followed by construction of denture bases and occlusal rims. Evaluation of occlusal rim parallelism was then performed. Measurement of the vertical dimension at rest (VDR) showed 67.5 mm, and after subtraction of a 2 mm freeway space, the vertical dimension of occlusion (VDO) obtained was 65.5 mm, indicating an acceptable vertical relationship. Centric relation registration and orientation line determination were subsequently completed before transferring the casts to the articulator.

Arrangement of anterior teeth was performed, followed by esthetic try-in evaluation. Posterior tooth arrangement, wax denture try-in, and denture contouring procedures were then completed. The dentures were processed through packing, finishing, and polishing procedures. Prior to insertion, the dentures were evaluated to ensure the absence of porosities and sharp denture borders. Denture adaptation was assessed using pressure-indicating paste, while retention and stability were evaluated clinically. Occlusion was examined using articulating paper, and esthetic and phonetic evaluations were also performed before denture insertion. Following completion of denture fabrication procedures, the maxillary and mandibular complete dentures were inserted. Clinical evaluation demonstrated satisfactory adaptation, retention, stability, esthetics, and occlusion of the dentures (Figure 3).



Figure 3. Complete denture insertion showing satisfactory adaptation, retention, stability, esthetics, and functional rehabilitation after treatment: (A) Right lateral occlusal view. (B) Frontal occlusal view. (C) Left lateral occlusal view.

The patient received instructions regarding denture insertion and removal, oral and denture hygiene maintenance, and the adaptation period of complete dentures. The patient was advised to remove the dentures for at least 8 hours during nighttime to allow tissue rest and to store the dentures in room-temperature water when not in use. In addition to routine post-insertion instructions, the patient received specific xerostomia management through hydration advice and salivary stimulation. The patient was advised to maintain a daily water intake of approximately 2–3 liters, carry a water bottle throughout the day, and drink water regularly before experiencing severe oral dryness. He was also instructed to avoid caffeinated beverages

and smoking, as these may aggravate xerostomia symptoms. To stimulate salivary flow, the patient was encouraged to chew sugar-free xylitol-containing gum and use sugar-free lozenges as needed. These supportive measures were recommended to improve oral lubrication, enhance denture comfort, and facilitate adaptation to the complete dentures. Follow-up visits were scheduled at 24 hours, one week, and one month post-insertion to evaluate retention, stability, occlusion, articulation, esthetics, and patient comfort. During follow-up, the patient reported satisfactory comfort and improved mastication and speech without significant mucosal trauma or major complaints. Written informed consent was obtained from the patient for publication of this case report and accompanying clinical images.

This case report has several limitations. Objective assessment of salivary gland function, including unstimulated and stimulated salivary flow rate measurements, was not performed. In addition, xerostomia severity was not evaluated using a validated patient-reported outcome measure, such as the Xerostomia Inventory. Therefore, the diagnosis of xerostomia was established based on the patient's history and clinical examination findings, which reflects routine clinical practice in this setting. Future case reports should incorporate objective salivary measurements and validated xerostomia assessment tools to provide a more comprehensive evaluation of disease severity and treatment outcomes.

DISCUSSION

Xerostomia is an important clinical condition in prosthodontic treatment, particularly in edentulous patients requiring complete denture rehabilitation. Saliva plays a major role in denture retention, stability, adhesion, cohesion, surface tension, lubrication, mastication, swallowing, and speech.^{1,2,11,12} Therefore, reduced salivary quantity or altered salivary quality may directly compromise denture function and patient comfort. In the present case, the patient demonstrated reduced salivary flow with thick saliva consistency, accompanied by a history of long-term antihypertensive drug consumption, namely amlodipine and losartan. These findings are consistent with previous studies reporting that medication-induced xerostomia is common among elderly patients, especially those with chronic systemic diseases and polypharmacy.^{1,4-6,12,13}

Amlodipine, a calcium channel blocker, has been associated with xerostomia through interference with calcium-dependent salivary secretion mechanisms. Reduced calcium influx may impair ion and fluid transport in salivary gland acinar cells, resulting in decreased salivary flow and thicker saliva consistency. Meanwhile, losartan may contribute indirectly through alteration of the local renin-angiotensin system in salivary glands, although evidence remains

limited and largely experimental.⁴⁻⁶ In this patient, the combination of antihypertensive therapy and advanced age likely contributed multifactorially to xerostomia. The presence of thick and limited saliva was clinically significant because saliva viscosity and distribution are essential for forming a stable salivary film between the denture base and oral mucosa.^{1,2,11} Reduced lubrication may increase friction, compromise denture retention, and predispose the patient to mucosal irritation and adaptation difficulties.

In the present case, prosthodontic management was tailored to the patient's reduced salivary volume and thick saliva consistency, both of which are known to compromise denture retention and patient comfort. Unlike conventional complete denture treatment, particular emphasis was placed on achieving accurate border extension, optimal denture base adaptation, and balanced occlusion to maximize mechanical retention, as salivary adhesion was expected to be reduced. This approach is consistent with previous reports indicating that meticulous impression procedures and precise denture fabrication are essential in xerostomic patients to compensate for impaired salivary function. Conservative supportive management, including hydration advice and salivary stimulation, was selected instead of saliva substitutes or denture adhesives because the patient exhibited only mild-to-moderate clinical symptoms and demonstrated satisfactory denture retention and adaptation during follow-up. The favorable clinical outcome suggests that individualized prosthodontic treatment combined with conservative xerostomia management may provide adequate functional rehabilitation without requiring additional adjunctive therapies.^{1,2,4,6}

The clinical findings in this case were also consistent with previous reports describing xerostomia-related complaints in complete denture wearers, including discomfort, instability, difficulty in mastication and speech, and increased risk of traumatic mucosal lesions.^{1,2} Therefore, fabrication of complete dentures in xerostomic patients requires modifications beyond routine prosthodontic procedures. In this case, careful impression procedures, accurate denture base adaptation, proper border extension, occlusal evaluation, and close post-insertion monitoring were emphasized to minimize tissue trauma and improve prosthesis stability. Because salivary assistance for retention was compromised, the success of treatment relied heavily on the accuracy of clinical and laboratory procedures.^{1,2,11}

Patient education was also an essential component of management. Previous literature recommends comprehensive xerostomia management through hydration advice, saliva stimulation, denture hygiene maintenance, removal of dentures during sleep, and regular follow-up visits.^{1,2,8-10,12,13} In the present case, the patient was instructed to increase water intake, moisten dentures before use, maintain oral and denture hygiene, and remove the dentures

for at least 8 hours at night to reduce mucosal irritation. Supportive approaches such as saliva substitutes or denture adhesives may also be considered in persistent xerostomia cases because they may improve lubrication and denture retention.^{1,2,10-13} However, in this patient, conservative supportive measures were initially sufficient to improve comfort and adaptation.

The outcome of this case demonstrated that complete denture rehabilitation could still achieve satisfactory retention, stability, esthetics, and patient comfort despite xerostomia-related challenges. Improvement in mastication, speech, and overall comfort reflected the importance of individualized prosthodontic management in medically compromised elderly patients. Previous studies also reported that successful denture rehabilitation may improve oral health-related quality of life and psychosocial well-being in xerostomic patients.^{3,15-18} Nevertheless, this report has several limitations, including the absence of objective salivary flow measurements and relatively short follow-up duration. Further long-term evaluation would be beneficial to assess the stability of treatment outcomes and progression of xerostomia symptoms. Overall, this case highlights the importance of comprehensive medical history evaluation, salivary assessment, careful prosthodontic procedures, and post-insertion education in achieving successful complete denture rehabilitation in patients with antihypertensive drug-induced xerostomia.

The clinical outcome observed in this case was comparable to findings reported in previous studies, which demonstrated that successful complete denture rehabilitation in patients with xerostomia depends not only on salivary status but also on accurate prosthodontic procedures and appropriate patient education. Although xerostomia is generally associated with reduced denture retention, instability, and mucosal discomfort, the present patient achieved satisfactory retention, stability, and functional adaptation following individualized treatment planning and regular follow-up. This finding supports previous evidence that careful prosthodontic management can minimize the adverse effects of medication-induced xerostomia and improve patient comfort despite persistent salivary impairment.

CONCLUSION

Xerostomia associated with antihypertensive drug use may compromise complete denture retention, stability, and patient comfort. This case demonstrates that successful complete denture rehabilitation can be achieved through comprehensive medical history assessment, careful evaluation of oral tissues, individualized prosthodontic treatment, and appropriate supportive management, including hydration advice and salivary stimulation. Objective assessment of salivary function using salivary flow rate measurements and validated xerostomia

assessment tools, together with long-term follow-up, is recommended to optimize treatment outcomes and provide a more comprehensive evaluation of patients with medication-associated xerostomia.

DECLARATION

Authors' Contributions

[BAS]: Conceptualization, Investigation, Data Curation, Writing – Original Draft. **[SN]:** Validation, Supervision, Writing – Review & Editing. **[JAVW]:** Validation, Supervision, Writing – Review & Editing. All authors have read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Ethics Approval and Consent to Participate

Formal ethical approval was not obtained for this case report. Informed consent was obtained from the patient for the clinical management described in this report. The authors acknowledge that the ethical requirements applicable to case reports must be considered in accordance with institutional policies and the journal's guidelines.

Consent for Publication

Written informed consent was obtained from the patient for the publication of this case report and any accompanying clinical photographs, radiographic images, and relevant clinical information.

Data Availability Statement

The data supporting the findings of this case report are available from the corresponding author upon reasonable request, subject to patient confidentiality and applicable ethical requirements.

Declaration of Generative AI In Scientific Writing

During the preparation of this manuscript, the authors used ChatGPT (OpenAI) to assist with manuscript editing and refinement of academic language. Grammarly AI was used to support grammar checking and linguistic improvement. These tools were used to enhance the clarity, readability, and language quality of the manuscript. The authors critically reviewed, verified, and edited the AI-assisted suggestions and take full responsibility for the accuracy, integrity, and final content of the manuscript.

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