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Tooth-Supported mandibular overdenture opposing a conventional maxillary complete denture in a patient with generalized periodontitis: A case report

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Abstract

This case report presents the rehabilitation of a 55-year-old female with a completely edentulous maxilla and a partially edentulous mandible affected by generalized periodontitis. After the extraction of compromised mandibular teeth, only 33 and 43 were retained as overdenture abutments. A conventional maxillary complete denture and mandibular tooth-supported overdenture were fabricated. A labial window was created in the maxillary denture to accommodate a prominent premaxilla, improving esthetics. Follow-ups at 1 week, 1 month, and 6 months revealed good function, tissue health, and patient satisfaction. This case highlights the clinical value of preserving strategic teeth for overdenture support.

Keywords: Tooth-supported overdenture, Complete denture, Canine abutments

Introduction

Edentulism remains a significant global concern affecting oral health and quality of life, particularly among older adults. While the prevalence of complete edentulism has declined in some populations, partial edentulism and tooth loss due to periodontitis remain prevalent in developing countries and aging populations [1, 2]. Preservation of natural teeth, where possible, provides multiple advantages, including enhanced proprioception, retention, stability, and alveolar bone preservation [3, 4]. The tooth-supported overdenture represents a conservative and biologically beneficial treatment modality for partially edentulous patients with strategic abutment teeth [5, 6, 7].

Tooth-supported overdentures have been shown to offer improved masticatory efficiency, psychological comfort, and better retention compared to conventional complete dentures [8, 9]. Strategic retention of canines or premolars as overdenture abutments is commonly practiced due to their favourable root morphology and position [10]. This report details the prosthetic rehabilitation of a 55-year-old female patient with a completely edentulous maxilla and periodontally compromised mandibular dentition, where a tooth-supported overdenture was fabricated using canines as abutments.

Case Report

Patient Profile

A 55-year-old female reported to the prosthodontic clinic with a chief complaint of difficulty in chewing and dissatisfaction with aesthetics due to missing teeth. Medical history was non-contributory. Clinical examination revealed a completely edentulous maxilla and presence of nine teeth in the mandible: 36, 37, 33, 41, 42, 43, 44, 45, and 46.

Periodontal Evaluation

Detailed periodontal evaluation indicated generalized periodontitis. Most mandibular teeth exhibited poor prognosis due to clinical attachment loss and mobility. However, the mandibular canines (33, 43) had good bone support and were deemed maintainable with proper care.

Treatment Plan

Following the extraction of the compromised mandibular teeth (36, 37, 41, 42, 44, 45, 46) and a healing period of six weeks, a treatment plan was formulated to rehabilitate the patient with a.

- Maxillary conventional complete denture, and
- Mandibular tooth-supported overdenture

utilizing 33 and 43 as abutments. (Figure 1)

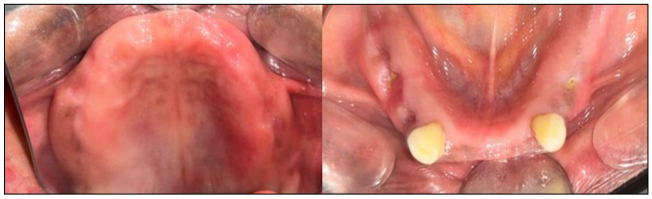

Fig 1: Maxillary and Mandibular pre-op

Clinical Procedure

- **Overdenture Tooth Preparation:** Tooth preparation was performed on 33 and 43 to receive medium-sized metal copings with chamfer finish lines. Root canal treatments were completed before the fabrication of the coping.

Impressions

- A putty-light body impression was made for the abutments to fabricate copings.
- Once fabricated, the copings were cemented using glass ionomer cement. (Figure 2)

Fig 2: Metal coping placed in relation to 33 and 43

Primary Impressions: Taken using alginate (irreversible hydrocolloid) for both maxillary and mandibular arches.

Custom Tray & Border Molding: Custom trays were fabricated. Border molding was done using green stick compound.

Secondary Impression: Light-body elastomeric material was used to make the final impression.

Jaw Relation & Occlusion

- Denture bases and occlusal rims were fabricated.
- Maxillo-mandibular relations were recorded, followed by teeth selection and try-in.

Denture Fabrication

- Dentures were processed using heat-cure acrylic resin.
- A labial window was created in the maxillary denture flange to accommodate a prominent premaxilla, thus improving esthetics and comfort.

Denture Insertion & Post-Insertion Care

- Dentures were inserted with minor occlusal adjustments. (Figure 3)
- Post-insertion instructions were given.
- Follow-ups at 1 week, 1 month, and **6** months showed good adaptation, tissue health, and patient satisfaction.

Fig 3: Denture Insertion

Discussion

Overdentures serve as an effective middle ground between removable prosthetics and implant-supported solutions, especially in patients who are not suitable for or unwilling to undergo implant therapy [11, 12, 13]. Retaining natural teeth under overdentures has several documented benefits including preservation of alveolar bone, enhanced stability, and improved sensory feedback [14, 15].

Canines are ideal abutments for mandibular overdentures due to their long roots and strategic anterior position which allows for effective load distribution [16]. In this case, the use of metal copings further protected the abutments against wear and provided a clean platform for hygiene maintenance [17].

Creating a labial window in the maxillary denture to accommodate the prominent premaxilla is a technique that improves esthetics and denture adaptation, especially in patients with severe ridge resorption or bony prominences [18, 19]. The patient in this case adapted well to the prosthesis with improved mastication and speech, and reported high satisfaction at all follow-ups.

Long-term success of overdentures requires patient compliance with oral hygiene protocols and periodic maintenance [20].

Conclusion

This case demonstrates that strategic preservation of natural teeth in periodontally compromised patients can significantly enhance prosthodontic outcomes. A maxillary conventional complete denture combined with a mandibular tooth-supported overdenture using 33 and 43 provided a stable, functional, and esthetic solution, with positive outcomes observed over a 6-month period.

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