

Oral Rehabilitation of a patient with Osteoporosis - Case Report

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Abstract

Osteoporosis is a skeletal disorder that has emerged as a major health problem affecting mostly in the postmenopausal women and older individuals. In osteoporosis, there is an imbalance between the bone formation and bone resorption where in, there is an increase in resorption. It even affects the jaw bones making a challenging task for the prosthetic rehabilitation. Here, we present a case report of rehabilitation of an osteoporosis case of 65-year-old woman presented at the Centre of Dental Medicine. A removable partial denture was created for the lower jaw to enhance stability, and a metal clasp was incorporated for additional reinforcement. The fixed prosthetic components were securely bonded to the prepared tooth surfaces using glass ionomer cement.

Key Words: Amalgam Restoration, Oral Rehabilitation, Osteoporosis, Removable Partial Denture

Introduction

Teeth play a crucial role in enhancing the quality of life at every stage of human development. Research has indicated a connection between tooth loss and osteoporosis. Women who have osteoporosis face a threefold increase in the likelihood of experiencing tooth loss compared to those without the condition.^{1,2}

Osteoporosis is a condition characterized by a reduction in bone mass and deterioration of the bone's microarchitecture. This occurs due to an increase in marrow spaces, leading to weakened bone tissue and a heightened risk of fractures. The World Health Organization defines osteoporosis as a generalized skeletal disease marked by a reduction of 25% in bone mass. In contrast, osteopenia refers to a physiological decrease in bone mineral density ranging from 10% to 25% from normal levels, serving as a precursor to osteoporosis.^{3,4}

Bisphosphonates play a crucial role in inhibiting bone resorption for individuals experiencing

postmenopausal osteoporosis, thereby contributing to a reduction in the incidence of osteoporotic fractures. Medication-related osteonecrosis of the jaws (MRONJ) and atypical femoral fractures (AFF) are both uncommon yet significant side effects associated with the use of anti-resorptive drugs (ARD) like bisphosphonates. The most advanced form of MRONJ is classified as stage 3 and may result in significant local complications, such as pathologic mandibular fractures (PMF).^{5,6} In these clinical scenarios, often linked to challenging economic and social circumstances, traditional prosthetic treatments are frequently chosen. These may encompass crowns, bridges, inlays, onlays, veneers, or standard dentures and over dentures.

Case Report

A 65-year-old female patient, experiencing challenging social circumstances, presented at the Centre of Dental Medicine. (Figure 1 and 2) She had worn upper jaw fixed bridges supported by a metal framework with acrylic veneers, along with a class II/1 Kennedy edentation that had been partially addressed with a fixed bridge in the lower jaw. The individual's medical history includes a diagnosis of osteoporosis, hyperlipidemia, and a nodular goiter located in the left lobe. The patient underwent treatment with bisphosphonates for osteoporosis and finished the regimen one month prior to seeking dental care.

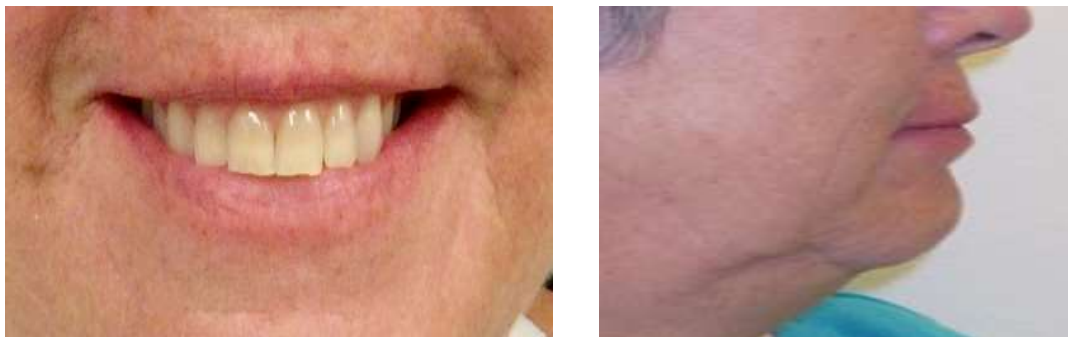


Figure 1: Clinical Picture and Extra oral Examination of the patient

The patient has also been prescribed antipsychotic medications. Blood tests indicate the presence of hyperlipidemia, and there is a suggestion of subclinical hypothyroidism based on the results. The ultrasound examination of the thyroid showed a clearly defined node measuring 10.3 by 11.1 mm in the left lobe. CT scanning in the conical fascicle (CBCT) revealed moderate bone demineralization, and the tenderness observed in the mandible was deemed acceptable from a dimensional perspective. Following the clinical and radiological assessment, it was observed that the remaining teeth exhibited multiple carious lesions.

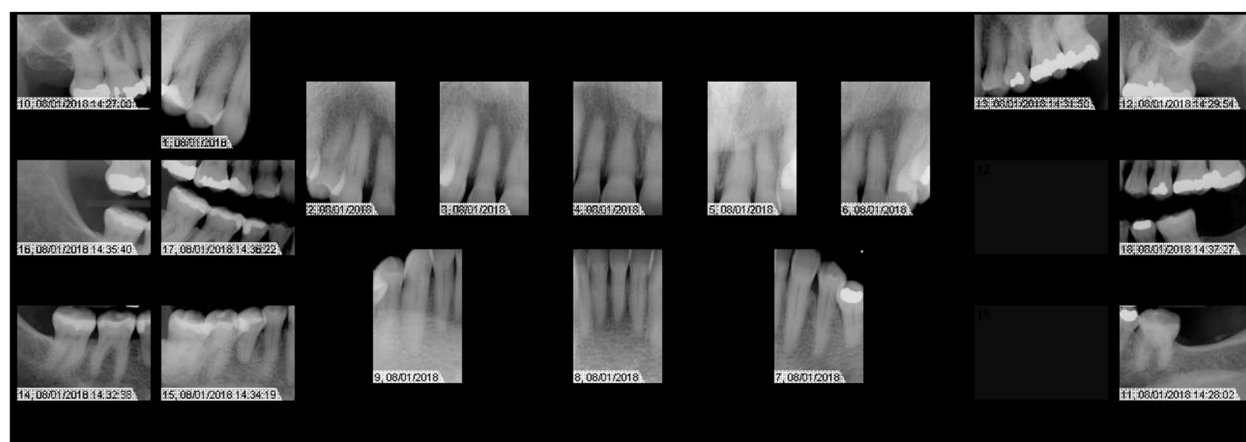


Figure 3: Intraoperative Radiographs

The upper jaw has undergone treatment with several individual amalgam restorations for the teeth. (Figure 4)



Figure 4: Restorations in Upper and Lower Jaw

The patient presented with a compromised composite restoration in the lower jaw, along with several cracks in the molar teeth. The initial orthopantomography reveals multiple carious lesions affecting

several teeth in the arch, along with signs of periodontal disease, improper endodontic obturations, and bone resorption. Initial impressions were obtained using irreversible hydrocolloids. The oral rehabilitation commenced with the enhancement of the frontal area using Nano hybrid composite fillings. The previous fillings have been taken out and have been substituted with Nano hybrid composite fillings.

During the subsequent visits, we explored and discussed the recommended treatment option with the patient. (Figure 5) The process involves the removal of all defective dental amalgam fillings in the upper jaw, addressing any carious lesions, and replacing them with aesthetic composite restorations in the necessary teeth.

Figure 5: Occlusal Evaluation – Static



Occlusal Evaluation – Dynamic



Right Working



Non-Working

Occlusal Evaluation – Dynamic



Left Working



Non-Working

The process involves the removal of the defective dental restoration in the lower jaw, followed by the placement of a removable partial denture (RPDs) that is securely attached to OT-CAP® systems connected by a rigid Dolder bar. To enhance stability, it is recommended to use a clasp on tooth 22. We provided guidance on the OT-CAP systems for teeth 28 and 31, as well as a clasp on tooth 22, which is a result of the skeletal prosthesis. A removable partial denture was created for the lower jaw to enhance stability, and a metal clasp was incorporated for additional reinforcement. The fixed prosthetic components were securely bonded to the prepared tooth surfaces using glass ionomer cement. The choices made aim to improve both the appearance and the function of the upper and lower jaw. (Figure 6)



Figure 6: Post Operative Cast Model

Periodontal Charting: Maxilla

Probing Depth				3	3	2	2	2	2	2	3	2	3	1	1	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2								
Recession																																																	
Attachment level				3	3	2	2	2	2	2	3	2	3	1	1	2	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	2	1	1	1	1	1	2	2					
Masticatory Mucosa				3			5			5			6			5			6			6			6			7		5		6		5		5		4											
Plaque				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Buccal																																																	
Lingual	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																																	
Plaque				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Attachment level				2	2	1	2	1	2	2	1	2	2	1	1	1	1	2	1	1	2	1	2	1	1	1	3	1	3	2	2	2	1	2	2	1	1	1	2	1	1	2	1	1					
Recession																																																	
Probing Depth				2	2	1	2	1	2	2	1	2	2	1	1	1	2	1	1	2	1	2	2	1	1	1	3	1	3	2	2	2	1	2	2	1	1	1	2	1	1	2	1	1					

Periodontal Charting: Mandible

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