

Case Report

Prosthetic and Occlusal Management of a Full Edentulous Maxilla: A Case Report

El Ghmari Widad^{1*}, Merzouk Nadia², Fajri Leila³

¹Specialist Dentist in the Removable Prosthetics Department, Faculty of Dental Medicine of Rabat, Mohammed V University in Rabat, Morocco

²Professor and Head of the Removable Prosthetics Department, Faculty of Dental Medicine of Rabat, Mohammed V University in Rabat, Morocco

³Professor in the Removable Prosthetics Department, Faculty of Dental Medicine of Rabat, Mohammed V University in Rabat, Morocco

***Corresponding Author:** Dr. El Ghmari Widad

Specialist Dentist in the Removable Prosthetics Department, Faculty of Dental Medicine of Rabat, Mohammed V University in Rabat, Morocco

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1. Abstract: Prosthetic rehabilitation of a completely edentulous arch remains a significant clinical challenge. This case report presents the occlusal and prosthetic management of a completely edentulous maxilla opposing a partially edentulous mandible, a clinical situation at risk of developing combination syndrome. Favorable outcomes were achieved through early diagnosis and a systematic prosthetic approach. Careful treatment planning and strict adherence to the principles of fully balanced occlusion are essential to ensure stable, functional, and predictable results in patients related to Kelly's syndrome.

Keywords: Edentulous, Complete denture, Occlusion, Kelly's syndrome, Balanced occlusion.

2. INTRODUCTION

Rehabilitation of a single completely edentulous arch represents a complex prosthetic challenge, particularly when a completely edentulous maxilla is opposed by a partially edentulous mandibular arch. In most cases, this clinical configuration corresponds to Kelly's syndrome, which is characterized by an anterior maxillary flabby ridge, extrusion of the mandibular anterior teeth, and hypertrophy of the maxillary tuberosities. All of which further complicate prosthetic management. These clinical manifestations are often related to wearing ill-fitting maxillary complete denture that induces traumatic occlusal forces [1].

Ill-fitting complete dentures, which are commonly associated with these clinical situations, may induce denture-related oral lesions such as denture stomatitis and the development of flabby ridges, leading to alteration of the prosthetic supporting tissues. Consequently, pre-prosthetic management is often required and may include tissue conditioning, appropriate medical treatment, or surgical intervention in selected cases.

The primary objectives of treatment are to achieve a harmonious occlusal plane, balanced occlusion, and satisfactory esthetic outcomes. Accordingly, successful prosthetic rehabilitation relies on clinical analysis, and respecting occlusal parameters, including occlusal plane, maxillomandibular relationship, appropriate tooth arrangement, accurate establishment of the vertical dimension of occlusion, and strict adherence to fully balanced occlusion are the keys to ensure stable and functional results. Moreover, the remaining natural teeth serve as valuable references for selecting the dimensions and shade of the prosthetic teeth [2, 3].

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This case report presents a systematic and rational therapeutic approach for the management of a complete edentulous maxillary arch opposing a partially edentulous mandibular arch, recently diagnosed and not associated with Kelly's syndrome. It highlights the importance of early clinical diagnosis and rigorous occlusal and prosthetic management in the treatment of this clinical situation.

3. CASE PRESENTATION

A 55 years-old female patient with a good general health was referred to the Department of Removable Prosthodontics for prosthetic rehabilitation. Informed consent was obtained from the patient for publication.

The patient has no smoking history. She has complained about the instability of her old complete removable denture during mastication and phonation, as well as the unsightly and unattractive appearance of her old maxillary denture. The patient reported discomfort while chewing related to missing teeth and non-rehabilitated mandibular partial edentulism.

The extraoral examination has revealed a diminution of vertical dimension of occlusion. The intraoral examination has shown a single maxillary complete edentulous opposed to a partial mandibular edentulous Class I Kennedy Applegate (KA), egression of the remaining mandibular teeth relative to the level of the lower lip, and a resorbed residual mandibular ridge (Class II Atwood in the maxilla, Class III Atwood in the mandible). Occlusal analysis of the casts on the articulator revealed a reduction of the anterior prosthetic space and a class III inter-arch relationship with a vestibular positioning of the lower teeth. The examination of the old denture had shown disruption of the anterior occlusal plan and an unaesthetic appearance of the prosthesis while smiling. The prosthetic base does not cover the entire supporting surface, with a border that is located short of the posterior limit, which explains the instability and lack of retention of the prosthesis reported by the patient. The radiographic examination revealed horizontal alveolar bone loss affecting the remaining mandibular teeth. A diagnosis of chronic periodontitis was established.

4. THERAPEUTIC INTERVENTION

As the patient presented at an early stage, the consequences associated with edentulism and the use of an ill-fitting prosthesis, especially the most deleterious condition known as Kelly's combination syndrome were limited.

After the first visit, the patient is advised not to wear her ill-fitting complete denture. We encouraged the patient to maintain proper oral hygiene by demonstrating the correct brushing technique to preserve the remaining teeth before starting the prosthetic treatment.

Concerning the therapeutic intervention, the patient has refused all implant prosthetic rehabilitation due to her financial constraints. Following occlusal management of the anterior occlusal plane, a conventional removable complete denture for the maxilla and a removable partial denture for the mandible were selected as the final prosthetic treatment.

After primary and secondary impressions, the occlusal plane was arranged using record base and wax rims. It was determined 1 to 2 mm below the edge of the upper lip at rest (**Figure 1**), ensuring parallelism with the anterior interpupillary line and the Camper's plane posteriorly, while providing adequate labial support. The centric jaw relation was made using record base and wax rims in the maxilla and metal framework with wax rims in the mandible, it was recorded in centric relation occlusion at the correct dimension vertical of occlusion. The occlusal analysis of the mandibular cast was made by flag technique, an egression of the residual mandibular teeth has been shown, then, it was confirmed clinically considering the lower lip position at rest. The ideal occlusal plane was marked in mouth on the mandibular anterior teeth to guide subsequent occlusal corrections. Following pre-prosthetic study, the occlusal adjustments and corrections were made. After a thoughtful design and creation of the occlusal rests in the mandible, a functional impression was taken, considering the varying mucosal depressibility. This impression allowed for metal framework fabrication in the laboratory, and for intermaxillary relation recording. Tooth selection was made according to the classic rules, taking into consideration shade and shape of the remaining teeth. Teeth arrangement was subsequently performed. Vestibuloverision of the maxillary anterior teeth was carried out to compensate for the interarch discrepancy and to restore an appropriate labial contour. An esthetic and functional try-in of the removable dentures was performed to obtain the patient's approval. This step allowed validation of the occlusal parameters, including the vertical dimension of occlusion, occlusal plane level, static and dynamic occlusion. The occlusal concept chosen for this situation was fully balanced occlusion. This means there are light contacts on the anterior teeth, while posteriorly, the contacts are bilaterally distributed in static occlusion. In dynamic occlusion, during propulsion and lateral movements, anterior contacts during guidance are maintained and balanced by posterior contacts at the level of the cuspid teeth (**Figure 2, 3**).

After receiving polymerized prosthesis from the laboratory, the prosthetic insertion was carried out, followed by an occlusal equilibration to distribute the occlusal contacts all over prosthetic teeth. Prosthesis intrados were examined with a low-viscosity silicone material to visualize any compressions areas. Oral hygiene and prosthetic instructions are

then given to the patient. An annual check-up with a periodic control visit was introduced to respond to the patient's requests and achieve regular occlusal balancing for best prosthetic integration. The patient was very satisfied with her new removable dentures.



Figure 1: Determination of anterior mandibular occlusal plane



Figure 2: Teeth arrangement using articulator and respecting fully balanced occlusion



Figure 3: Maxillary complete denture and removable partial denture in mouth with well-distributed bilateral contacts in static occlusion

5. DISCUSSION

Inadequate prosthetic management, particularly when associated with iatrogenic prosthetic trauma leads to alteration of denture-supporting tissues, disruption and occlusal parameters (occlusal plane, vertical dimension of occlusion, interarch relationships etc.), ultimately leading to the development of combination syndrome. Hence, The main issue in prosthetic rehabilitation with a single removable complete denture is the difficulty to manage balanced occlusion while respecting aesthetic requirements, and ensuring long-term occlusal stability.

Practitioners sometimes tend to simply "fill the gap" left by edentulism without considering the quality of the remaining tissues or completing the essential pre-prosthetic steps. Thus, pre-analysis evaluation and occlusal plane adjustment are essential steps that directly influence the functional and aesthetic integration of the prosthesis [1]. Pre-prosthetic management concerns the osteomucosal and dental tissues. The oral mucosa may be inflamed or significantly disorganized, which requires a non-surgical approach with tissue conditioning treatment, or surgical preparation prior to the placement of a new complete denture. Anterior "flabby ridges" are commonly observed, caused by occlusal overload and the persistence of natural teeth in the opposing arch. On the dentate arch, the occlusal curves are frequently disorganized due to the opposing edentulism. Malpositions and dental mobility are often found. Constructing a complete denture in such conditions is a real challenge for practitioners, as they must ensure both functional and aesthetic restoration while preserving the remaining dental tissues. The existing imbalance is somesthetic (mucosal extroception on the edentulous arch versus periodontal proprioception on the dentate arch), osteomucosal, and occlusal [4, 5]. A rigorous clinical observation phase and pre-prosthetic analysis are therefore essential, including a clinical and radiographic assessment of residual tissues and teeth, as well as an occlusal analysis on an articulator.

The occlusal scheme required for a complete edentulous patient is controversial. There is neither strong support for or against bilateral balanced occlusal schemes as it relates to patient satisfaction, preference or chewing ability. There is some support for increased alveolar bone loss with complete dentures that have a non-balanced occlusion. Hence, there is a need for bilateral balanced occlusal schemes for patients presenting with loss of stability and retention as a result of their presenting conditions [4]. Controversy, Another systematic review has reported that lingualised occlusion can be considered a predictable occlusal scheme for complete dentures in terms of quality of life-satisfaction and masticatory performance, while canine guidance can be used to reduce muscular activity [5].

However, fully balanced occlusion is the most occlusal concept used in dental practice for the management of such condition. This concept involves maximum occlusal contacts distributed across all posterior teeth in maximum intercuspitation, with light contacts on the anterior teeth, anterior and posterior contacts during mandibular protrusion movements and bilateral contacts during mandibular lateral movements. This occlusal concept offers the advantage of ensuring prosthetic stability during dynamic occlusion by distributing occlusal contacts all over natural and prosthetic teeth, which preserves the support surface, improves prosthetic's balance, and guarantees optimal chewing comfort for the patient [6].

The flag technique is widely described in the literature for defining the ideal occlusal plane, this allows for determining the necessary pre prosthetic adjustments both at the level of teeth and edentulous ridge. The ideal position of the occlusal plane must be clinically confirmed based on anatomical references (such as the levels of the upper and lower lips, lateral border of tongue..) or through phonation tests (such as the pronunciation of the words "fuh-vuh") [7, 8].

All dental disciplines may be involved in reconstructing the occlusal curves in the sagittal plane (Spee's curve) and the frontal plane (Wilson's curve), Subtractive or additive techniques can be used to restore the occlusal plane level of the remaining teeth, which includes occlusal adjustments, orthodontic corrections, fixed dentures or extraction. This was also the case in our clinical study, where selective occlusal adjustments of the remaining teeth helped to correct dental displacements and properly position the level of the occlusal plane, which has ensured functional and aesthetic rehabilitation and patient satisfaction [9, 10].

6. CONCLUSION

Prosthetic reconstruction of a single complete edentulous requires an analytical and rational approach. Early prosthetic treatment, carried out in accordance with key clinical steps and combined with occlusal maintenance are keys for achieving successful esthetic and functional prosthetic integration.

REFERENCES

1. Berteretche MV, Hùe O. L'Information Dentaire. 2000 [cité 16 oct 2024]. L'aménagement du plan occlusal en prothèse adjointe complète unimaxillaire. Disponible sur: <https://www.information-dentaire.fr/formations/l-amenagement-du-plan-occlusal-en-prothese-adjointe-complete-unimaxillaire/>

2. Louis JP, Archien C, Ludwigs H, Chevalley F. [Original method for total edentulous rehabilitation based on the Ludwig technique. 2. The « Lutemat » and construction of custom impression trays (C.I.T.)]. *Cah Prothese*. mars 1991;(73):54-62.
3. Prothèse amovible complète unimaxillaire : du simple au complexe - Clinic n° 06 du 01/06/2011 [Internet]. [cité 16 oct 2024]. Disponible sur: <https://www.editionsmdp.fr/revues/clinic/article/n-32-06/prothese-amovible-complexe-unimaxillaire-du-simple-au-complexe-CL11320630901.html>
4. Goldstein G, Kapadia Y, Campbell S. Complete Denture Occlusion: Best Evidence Consensus Statement. *J Prosthodont Off J Am Coll Prosthodont*. avr 2021;30(S1):72-7.
5. Lemos C a. A, Verri FR, Gomes JML, Santiago Júnior JF, Moraes SLD, Pellizzer EP. Bilateral balanced occlusion compared to other occlusal schemes in complete dentures: A systematic review. *J Oral Rehabil*. avr 2018;45(4):344-54.
6. Borges MHR, Miranda LFB, Dini C, Marañón-Vásquez GA, Magno MB, Maia LC, et al. Clinical performance of and patient satisfaction with conventional complete dentures with different occlusal schemes: A systematic review of systematic reviews. *J Prosthet Dent* [Internet]. 1 sept 2023 [cité 29 oct 2024];130(3):341-50. Disponible sur: <https://www.sciencedirect.com/science/article/pii/S0022391321005916>
7. Minette C, Archien C, Vermandé G, Louis JP, Helfer M. L'Information Dentaire. 2008 [cité 16 oct 2024]. Gestion de l'occlusion en prothèse amovible complète unimaxillaire. Disponible sur: <https://www.information-dentaire.fr/formations/gestion-de-l-occlusion-en-prothese-amovible-complexe-unimaxillaire/>
8. G G, Y K, S C. Complete Denture Occlusion: Best Evidence Consensus Statement. *J Prosthodont Off J Am Coll Prosthodont* [Internet]. avr 2021 [cité 16 oct 2024];30(S1). Disponible sur: <https://pubmed.ncbi.nlm.nih.gov/33336857/>
9. Zhou Y, Wang S, Xu L, Si J, Chen X. Implications of occlusal plane in diagnosis and treatment of malocclusion. *Zhejiang Xue Xue Bao Yi Xue Ban J Zhejiang Univ Med Sci*. 25 avr 2023;52(2):237-42.
10. Mazurkiewicz P, Oblizajek M, Rzeszowska J, Sobolewska E, Ey-Chmielewska H, Szymańska-Kozula R. Determining the occlusal plane: a literature review. *Cranio J Craniomandib Pract*. juill 2022;40(4):341-7.