

Prosthodontic Rehabilitation of Patient with Combination Syndrome : A Clinical Report

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Abstract

Combination syndrome commonly occurs in patients with a completely edentulous maxilla opposed by a bilateral distal-extension removable partial denture. This syndrome poses a considerable challenge to dentists. The symptoms of the syndrome consist of anterior maxillary bone loss, mandibular bone loss, tuberosity overgrowth, and alveolar ridge canting. All of these effects render prosthetic treatment more difficult, and although it is preferable to use dental implants for functional support, complex cases still require conventional prosthetic treatments for medical or financial reasons. This clinical report presents the prosthetic restoration of vertical dimension and function of a patient exhibiting combination syndrome along with a discussion of relevant literature.

Key Words: Combination syndrome, Distal-extension RPD, Flabby ridge.

Introduction

Glossary of Prosthodontic Terms¹ has defined combination syndrome as: the characteristic features that occur when an edentulous maxilla is opposed by natural mandibular anterior teeth, including loss of bone from the anterior portion of the maxillary ridge, overgrowth of the tuberosities, papillary hyperplasia of the hard palatal mucosa, extrusion of mandibular anterior teeth, and loss of alveolar bone and ridge height beneath the posterior mandibular removable dental prosthesis bases also called anterior hyperfunction syndrome.

Kelly² in 1972 coined the term combination syndrome. He observed 20 patients equipped with complete maxillary dentures opposing distal-extension removable partial dentures (RPD). After three years of follow-up, six of these patients showed a reduction of the anterior bony ridge height (1.35 ± 0.83 mm) on lateral cephalometric radiography. Meanwhile, an increasing bone level of the tuberosities (1.38 ± 0.36 mm) was noted in five patients.

Kelly stated that sequence was triggered due to a negative pressure within the maxillary denture, which causes the anterior ridge to be driven upward by the anterior occlusion, followed by an early loss of bone from the anterior part of the maxilla and formation of epulis fissuratum in the maxillary sulcus. This is followed by maxillary tuberosity hypertrophy, supra eruption of the remaining natural lower anterior teeth and posterior mandibular resorption.

Saunders et al³ in 1979 added to the description of the combination syndrome by including destructive changes such as

loss of occlusal vertical dimension, occlusal plane discrepancy, anterior spatial repositioning of the mandible, poor adaptation of the prostheses, epulis fissuratum and periodontal changes.

The present report details the prosthodontic management of a specific patient exhibiting symptoms of combination syndrome.

Case Report

A 63-year-old male patient was referred to the Department of Prosthodontics in D.J College of dental sciences and research Modinagar U.P for restorative treatment. The patient's chief complaints were inadequate retention of maxillary complete denture and inability to chew comfortably. No major systemic diseases or drug allergies were reported. On examination, the patient had an edentulous maxilla and six supra-erupted natural mandibular anterior teeth (Fig. 1).

Clinically, the patient displayed anterior bone loss and flabby tissue of the maxillary ridge, overgrowth of the maxillary tuberosities. (Fig. 2).

The patient rejected any surgery and implant therapy due to financial considerations. The patient agreed to have a new complete denture and a mandibular removable partial denture after some discussion.

Initial therapy included oral hygiene instructions, caries control and non-surgical periodontal therapy. At the first clinical appointment for prosthodontic treatment, a preliminary impression of the maxillary and mandibular arches was made with irreversible hydrocolloid materials and poured with dental stone.

A custom tray with a window on the anterior flabby ridge was fabricated for the maxillary complete denture and

green modeling compound (GC Corp, Tokyo, Japan) was then used to obtain accurate denture border position and seal. (Fig. 3)

Final wash impression was made with low viscosity mucostatic zinc oxide eugenol paste and impression plaster was used to make impression in the anterior window region. (Fig. 4) and definitive cast was created with type III dental stone.

A Kennedy Class I modification 1 RPD of the mandibular arch was designed after surveying the cast. Following tooth preparation, the definitive impression of the RPD framework was made with vinyl polysiloxane material (Aquasil, Dentsply Caulk, Milford, Delaware, USA).

After the face-bow transfer, the maxillary and mandibular master casts were mounted in centric relation on a semi-adjustable Hanau H2 articulator. (Fig. 5)

Teeth selection of maxillary anterior artificial teeth was determined by patient gender and personality. Balanced occlusion was indicated for this case to assure an even distribution of occlusal force and prevent occlusal interferences on the residual ridge. The tooth arrangement was checked for esthetics and CR position and then submitted for processing. (Fig. 6)

After prescrip, both casts were remounted, adjusted, and polished. At a subsequent appointment, the finished prostheses were delivered and minimal occlusal adjustment was needed. The patient was pleased with their appearance and chewing ability. (Fig. 7)

Discussion

Treatment of patients with an edentulous maxilla opposed to natural mandibular anterior teeth and a distal-extension RPD is considered a challenge for dental practitioners. Combination syndrome has a prevalence rate of approximately 24% for denture patients⁴.

Therefore, it is necessary for dentists to understand the particular problems of patients and provide a comprehensive



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treatment plan. Increasing pressure on the premaxillary alveolar ridge and loss of adequate posterior occlusal contacts are important factors in relation to combination syndrome.⁵ The bone loss in the midline of the maxilla observed by Kelly (1972) was 0.43 mm/year. López-Roldán et al (2009)⁶ and Barber et al (1990)⁷ reported similar results (0.32 mm/year and 0.36 mm/year, respectively) among patients wearing a maxillary complete denture and mandibular overdentures on two implants, a situation in which the prosthetics are biomechanically similar to Kelly's cases. Maximum support of the denture-bearing area, preservation of the mandibular posterior abutment and balanced occlusion were all proposed to prevent bone loss and excess pressure on the anterior maxillary alveolar ridge. Similarly, Van Waas et al (1993)⁸ suggested the avoidance of total tooth extraction, the preservation of a few teeth, and the use of overdentures.

In the present case, the mucostatic impression technique with window at the anterior maxillary flabby tissue was used to accurately record the entire functional denture-bearing area (Fig. 4). A proper occlusal plane, the balancing of tooth contacts during excursive movements, the elimination of anterior contacts, and remounting techniques were used to gain better distribution of occlusal force and reduce stress on the anterior maxillary alveolar ridge.

The effect of mandibular status on

maxillary ridge resorption has been widely discussed and investigated. Carlsson et al (1967)⁹ compared bone resorption of the anterior maxillary alveolar ridge among patients with maxillary complete dentures and three different mandibular statuses: (1) a mandibular complete denture; (2) mandibular anterior teeth with bilateral extension RPD; and (3) mandibular teeth only. Greater bone resorption was found in the groups that had anterior mandibular teeth with or without an RPD when compared to the group with mandibular teeth only. However, small and insignificant changes of the bone height were described over five-years of follow-up in patients with a maxillary complete denture opposed by a bar-retained mandibular RPD.¹⁰ Other studies^{11,12} showed no significant differences and proposed that the individual variations were larger, but the experimental data revealed that greater bone resorption occurred among patients with unilateral or bilateral RPD. To prevent the occlusal and enhance the treatment of combination syndrome, we propose that¹ the distal-extension mandibular RPD may serve a negative role for the deterioration of combination syndrome¹³; and² the application of dental implants in edentulous areas, especially at premolar or molar regions, could provide better posterior support.¹⁴

Conclusion

The evaluation of the risk of developing the combination syndrome is

based on past dental history and the condition of the remaining mandibular anterior teeth. High risk patients showing changes associated with the syndrome are more likely to be those who stress the maxillary ridge such as in angle class III jaw relationships, parafunctional habits and in patients who have functioned mainly with mandibular anterior teeth for long periods. The degenerative changes that develop in the edentulous regions of wearers of complete upper and partial lower dentures are almost inevitable. The dentist must carefully plan the treatment of these patients in order to maintain the health of the oral tissues of these patients provide them with prosthesis that provide function but do not contribute to the combination syndrome. Important areas which deserve earnest consideration are-

- Recording impressions that satisfy the parameters of support, retention and stability.
- Conveyance of appropriate functionally-related patient data, e.g. facebow and inter-maxillary relations.
- Creation of appropriate occlusal form.
- Informing the patient of his/her contribution to denture success.

Thorough diagnosis, planning, and implementation of treatment will result in an outstanding outcome for both the patient and dentist.

References

References are available on request at editor@healtalkht.com

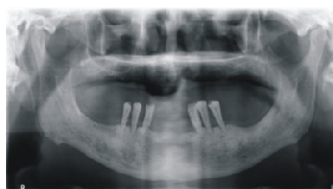


Fig. 1a : Orthopantomogram



Fig. 1b : Intraoral view of Mandibular Arch



Fig. 2 : Maxillary ridge



Fig. 3 : Custom Tray with a Window on the Flabby Ridge



Fig. 4 : Final Impression made with Zinc Oxide Eugenol & Impression Plaster

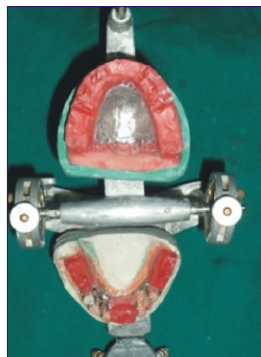


Fig. 5 : Mandibular & Maxillary Casts Articulated on Hanau H2 articulator



Fig. 6 : Polished Maxillary Complete Denture & Mandibular Cast Partial Denture



Fig. 7a



Fig. 7b