



ORIGINAL ARTICLE

Clinical evaluation of maxillary edentulous patients to determine the prevalence and oral risk factors of combination syndrome



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KEYWORDS

combination syndrome;
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Abstract *Background/purpose:* Destructive changes in maxillary edentulous patients with different mandibular occlusal schemes were first described many years ago. However, little is known about the causative factors for “combination syndrome”. The aim of the present study was to determine the prevalence and distribution of symptoms associated with combination syndrome among maxillary edentulous patients with different mandibular occlusal schemes.

Materials and methods: This study examined the clinical and prosthetic status of 100 maxillary edentulous patients with four different mandibular occlusal schemes to evaluate the prevalence of and oral risk factors for combination syndrome. Data were analyzed using logistic regression analysis.

Results: Only nine patients were found to have all five symptoms of combination syndrome. All of these patients used dentures. Eight of them had Kennedy class I and one had Kennedy class II mandibular occlusal schemes.

Conclusion: Development of symptoms associated with combination syndrome, especially mandibular posterior alveolar bone loss, cannot be prevented by the use of removable partial dentures.

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Introduction

Treatment of patients with an edentulous maxilla and a partially edentulous mandible is common in clinical practice. In general, only the mandibular anterior teeth remain in these patients, and specific degenerative changes are often seen.^{1,2} Destructive changes in the hard and soft tissues of the jaws were reported in patients with complete maxillary dentures opposed by mandibular natural anterior teeth, and a mandibular bilateral distal extension removable partial denture (RPD).^{3–6} Changes consisting of bone loss from the anterior part of the maxillary ridge, overgrowth of maxillary tuberosities, papillary hyperplasia of the palate, extrusion of the lower anterior teeth, and loss of bone under the RPD bases were first described by Kelly³ as comprising what he referred to as "combination syndrome". Combination syndrome is the evolution over time of pathological conditions of the stomatognathic system.¹ Saunders et al⁴ subsequently described six additional changes associated with combination syndrome as follows: loss of the vertical dimension of occlusion; an occlusal plane discrepancy; anterior spatial repositioning of the mandible; poor adaptation of the prosthesis; epulis fissuratum; and periodontal changes. They also noted that patients with combination syndrome experienced progressive difficulties in wearing dentures and eventually required surgical correction to improve prosthetic functioning.^{7,8}

Shen and Gongloff⁹ investigated the prevalence of combination syndrome in patients with complete maxillary dentures and found that 7% of patients experienced pathological alveolar ridge changes consistent with a diagnosis of combination syndrome. Although these changes are recognized by many clinicians and many treatment modalities are recommended,^{2,10–17} there is very little documentation to be found in the literature.^{1,9,10}

The aim of the present study was to determine the prevalence and distribution of symptoms associated with combination syndrome among maxillary edentulous patients with different mandibular occlusal schemes (MOSs) in order to identify which parameters represent oral risk factors for the development of combination syndrome.

Materials and methods

In total, 100 maxillary edentulous patients were randomly selected among patients applying for treatment at the Ankara Dental Hospital clinic. They had been edentulous for 10–20 years. Patients with parafunctional occlusal forces or a history of systemic disease that could affect bone metabolism or accelerate the resorption process were excluded.

Clinical examinations were conducted to assess five parameters that represent possible risk factors for combination syndrome as well as five symptoms associated with combination syndrome. In this study, neither medical nor invasive treatment was applied to patients, and a confirmation form was submitted by each patient. Clinical inspections of patients were conducted after receiving written informed consent from each of them. All examinations were conducted by the same dentist.

The following five parameters were examined: MOS; the presence of dentures (PD); denture retention (DR); denture stability (DS); and vertical dimension (VD) (Table 1). Prostheses were checked for stability and retention using conventional procedures for complete dentures and RPDs. Patients were judged to have poor retention when an examination showed no resistance to vertical pull and lateral forces, and the prosthesis fell out of place. Patients with protrusive and laterally balanced occlusions and only slight or no rocking of the prosthesis on its supporting structures when pressure was applied were judged to have adequate stability. Patients without protrusive or laterally balanced occlusions and with extreme rocking of the prosthesis on its supporting structures when pressure was applied were judged to have poor stability. Niswonger's physiological resting position and Silverman's phonetic tests were used to classify vertical dimensions of occlusion as normal, high, or low.

The following five symptoms were examined: maxillary anterior alveolar bone loss (MABL); overgrowth of maxillary tuberosities (OMT); papillary hyperplasia (PH); extrusion of the lower anterior teeth (ELAT); and mandibular posterior alveolar bone loss (MPBL). Patients with all five symptoms were considered to have combination syndrome.

Binary logistic regression analysis was used to identify any relationships between the parameters and symptoms studied in order to determine whether specific parameters could be considered risk factors for the development of the symptoms associated with combination syndrome. Binary

Table 1 Definitions of the clinical and prosthetic status of patients.

Parameter	Status	Level	
Mandibular occlusal scheme	Natural dentition	1	
	Kennedy class II	2	
	Kennedy class I	3	
	Edentulous	4	
Presence of dentures	Upper and lower	1	
	None	2	
	Only upper	3	
Denture retention	Absence	0	
	Presence	1	
Denture stabilization	Absence	0	
	Presence	1	
Vertical dimension	Normal	1	
	High	2	
	Low	3	
Symptoms	Maxillary anterior alveolar bone loss	Absence Presence	0 1
	Overgrowth of maxillary tuberosities	Absence Presence	0 1
	Papillary hyperplasia	Absence Presence	0 1
	Extrusion of the lower anterior teeth	Absence Presence	0 1
	Mandibular posterior alveolar bone loss	Absence Presence	0 1

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