

Combination syndrome: A Review Article

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Abstract:

Combination syndrome/anterior hyper function syndrome is a condition caused by the presence of the lower anterior teeth and the absence of the posteriors and resulting in significant maxillary anterior alveolar resorption. Here are considerable challenges to the Prosthodontics because of destructive changes that are associated with it. This syndrome includes flabby tissues in the anterior region of the maxillary ridge, fibrous overgrowth of tissues in maxillary tuberosities. There is a tilting of the occlusal plane posteriorly downwards, supra-eruption of the lower anterior, resorption in the mandibular distal extension area, and decreased vertical dimension of occlusion and the periodontal changes of the remaining natural teeth. These associated signs and symptoms make the prosthetic management more inconvenient; some cases still need conventional prosthetic treatment for medical or economic reasons. The managing such a diagnosis is to preserve the health of the oral tissues and provide them with a functioning prosthesis that reduces the chance for the combination syndrome to occur. Hence, a thorough diagnosis, proper treatment planning, and accurate execution of that plan will result in an exceptional outcome.

Keywords: Combination syndrome; over denture; anterior hyper function syndrome; flabby tissues; maxillary tuberosity; papillary hyperplasia; mandibular distal extension prosthesis

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INTRODUCTION:

One of the most complicated dental management is oral rehabilitation with an edentulous maxillary arch opposed by remaining mandibular natural anterior teeth.¹ Patients with a complete maxillary denture and a mandibular distal extension partial denture are referred to as the 'Combination Syndrome'.² Loss of bone of the anterior edentulous maxilla when opposed by natural mandibular anterior teeth is one of several features of the combination syndrome.³

Glossary of Prosthodontics Terms defines as the combination syndrome is the characteristic

features that occur when an edentulous maxilla is opposing with natural mandibular anterior teeth and a mandibular bilateral extension-base removable partial denture, including loss of bone from the anterior portion of the maxillary ridge, hyperplasia of the tuberosities, papillary hyperplasia of the hard palate's mucosa, supra-eruption of the mandibular anterior teeth, and loss of alveolar bone and ridge height beneath the mandibular removable partial denture bases.⁴

Ellsworth Kelly was the first to use the term combination syndrome in 1972. He followed a small group of patients wearing a complete maxillary denture opposed by mandibular

anterior teeth and a distal extension removable partial denture.³ He described signs or symptoms that commonly occurred in this situation.⁵

They consist of loss of bone from the anterior part of a maxillary ridge, overgrowth of maxillary tuberosities, extrusion of lower anterior teeth, papillary hyperplasia of the hard palate, loss of bone beneath the RPD base.



Figure 1- Overgrowth of the tuberosities



figure 2- Extrusion of the mandibular anterior teeth



Figure 3- Papillary hyperplasia in the palate



Figure 4- Epulis fissuratum

Saunders et al. later designated six additional signs associated with the syndrome.

They comprise:

i) Loss of vertical dimension of occlusion ii) occlusal plane discrepancy iii) anterior spatial repositioning of the mandible iv) poor adaptation of the prostheses v) Mucosal hyperplasia vi) periodontal changes.

According to Tolstunov CS can be classified into the following⁶

Class I. Maxilla: completely edentulous alveolar ridge.

Mandible: Modification 1 (M1): partially edentulous ridge with preserved anterior teeth only. Modification 2 (M2): stable “fixed” full dentition (natural teeth or implant-supported crowns/bridges). Modification 3 (M3): partially edentulous ridge with preserved teeth in anterior and one posterior region.

Class II. Maxilla: partially edentulous alveolar ridge. Teeth present in both posterior regions. So, the edentulous and atrophic area is present in the anterior region.

Mandible: Modification M1, M2, and M3, same as class I.

Class III. Maxilla: partially edentulous alveolar ridge. Teeth present in one posterior region only. So, the edentulous and atrophic areas are present in the anterior region and one posterior region.

Mandible: Modifications M1, M2, M3A, and M3B, like in Classes I and II.

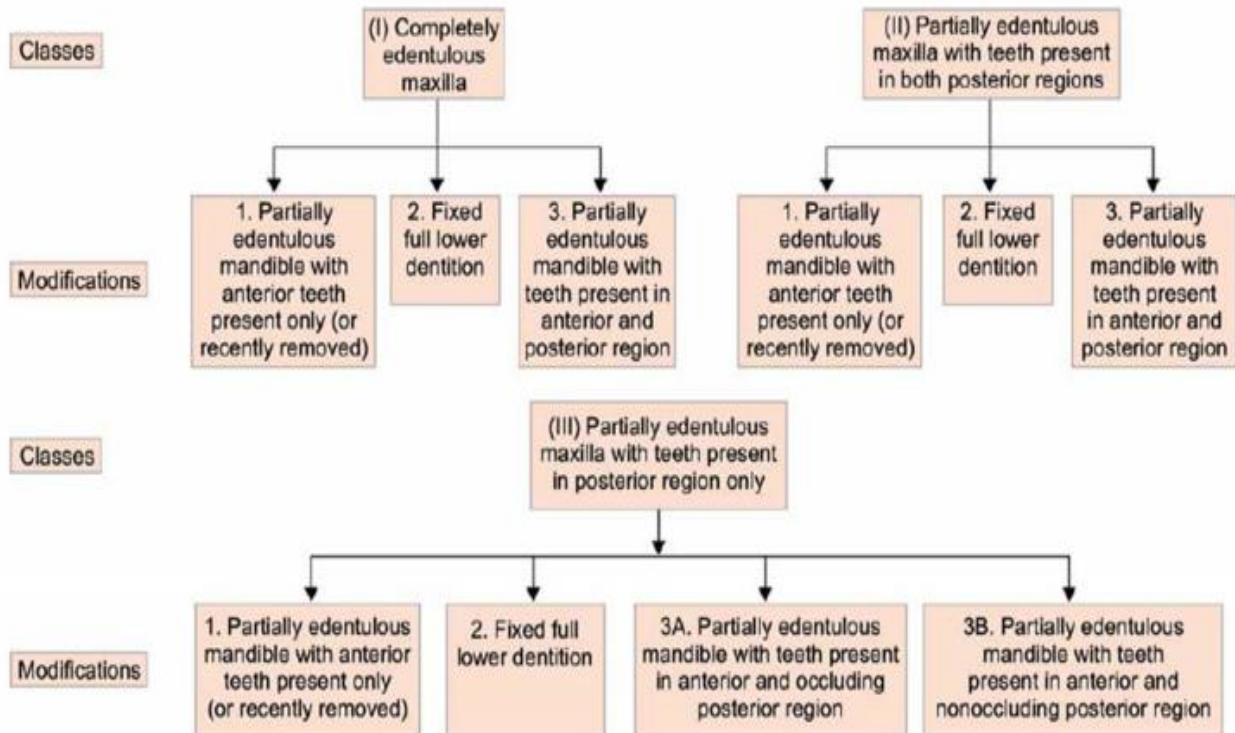


Figure 5 - Classification of combination syndrome: three classes and ten modifications.

The mechanism which produces the combination syndrome

Kelly's theory suggests that negative pressure within the maxillary denture pulls the tuberosities down, as the anterior ridge is driven upward by the anterior occlusion. Then the masticatory load will direct stress to the mandibular distal extension and leads to bony resorption of the posterior mandibular ridge. The tipping movement of the anterior portion of the maxillary denture in an upward direction and the simultaneous downward movement of the posterior region, will decrease antagonistic forces on the mandibular anterior natural teeth and lead to their supra-eruption. Eventually, an occlusal plane discrepancy will occur, and the patient may have a loss of the vertical dimension of occlusion. Besides, the chronic stress and movement of the denture will often result in an

ill-fitting prosthesis and contribute to the formation of palatal papillary hyperplasia.²

Prevalence

Shen and Gongloff in 1989 investigated the prevalence of the combination syndrome in patients who use complete maxillary denture and found that the changes most consequential to denture occurred in 24% of patients who had natural mandibular anterior teeth opposing maxillary single denture. This prevalence was five times higher than in patients who use maxillary and mandibular complete dentures. The rate did not considerably differ between patients who use or do not use a mandibular removable partial denture. Those who had even one mandibular molar present did not show the combination syndrome. It supports the outlook of Saunders et al. that the deficiency of posterior

occlusal support is an important aspect in the development of this phenomenon.⁷

In 2012, Mehmet Ali Kilicarslan et al. noticed the clinical and prosthetic status of 100 maxillary edentulous patients with four different mandibular occlusal schemes to examine the prevalence of and oral risk factors for combination syndrome. Only nine patients had to have all five symptoms of combination syndrome. All of these patients used dentures. In that eight of them had Kennedy class I, and one had Kennedy class II mandibular occlusal schemes.

Prevention of combination syndrome⁵

-Avoid the arrangement of complete maxillary dentures as opposed by a mandibular removable partial denture.

-An over denture on the lower teeth.

Retaining frail posterior teeth as abutment employing an endodontic and periodontic treatment.

Treatment

Systemic and dental considerations

- Evaluate medical and dental history.
- Assess the detailed clinical and radiographic hard and soft tissues associated with prosthesis wear.
- The resolution of any inflammation is essential if present.
- Evaluate patient's caries exposure, periodontal status, and oral hygiene.
- Consider factors like tooth vitality, morphologic changes, number of roots, bony support, mobility, and the crown-root ratio in the tooth to be used as an abutment.

Treatment approaches

- Saunders et al. in 1979 advocated splinting the remaining mandibular anterior teeth to provide the removable partial denture with positive occlusal support, rigidity, and

stability while minimizing excessive stress on the teeth. It should cover the maximum area of the basal seat beneath the distal extension bases. The occlusal scheme should be at an appropriate vertical and centric relation position. Anterior teeth should be for cosmetic and phonetic purposes only. Posterior teeth should be in balanced occlusion.⁸

- Stephen M. Schmitt, in 1985, designated a treatment approach that endeavored to minimize the vicious changes by using the treatment objectives of Saunders et al.
 1. Make the prosthesis in 2 stages.
 2. Complete mandibular removable partial denture first.
 3. Acrylic resin teeth for maxillary anterior and
 4. Cast gold occlusal surfaces for posterior teeth in the denture.
- Mandibular overdenture produced superior prognosis in patients who already had combination syndrome with periodontally or structurally compromised condition of mandibular teeth.
- Mandibular implant-supported overdenture compromises substantial enhancement in retention, stability, function, and comfort for nine the patient and also provide more stable and durable occlusion.
- Wennerberg et al. in 2001 reported outstanding long term results with the mandibular implant-supported fixed prosthesis, opposing ten complete maxillary dentures.
- Yair Langer et al. in 1995 designated an approach in which a maxillary impression is made in a uniquely designed tray using a combination of elastomeric impression material and impression plaster without distorting the anterior residual ridge. The mandibular removable partial denture is reinforced anteriorly by a cingulum rests on

the canines through a lingual plate as the major connector. This plate delays the supra-eruption of the mandibular teeth, avoiding unwanted pressure on the anterior part of the maxillary denture.



Figure 6 - A lingual plate provides anterior support

Use an altered cast technique for the absolute fit of the denture base. Covering the denture base over the retromolar pad gives maximum support posteriorly. The retromolar pad area has the attachments of the buccinators, temporalis, and superior constrictor muscles. It has the superimposing firmly bound masticatory mucosa. It delivers a stress-bearing area that is moderately resistant to resorptive change, thereby maintaining posterior occlusal contact. Primary support for the denture base from coverage of the horizontal buccal shelf with its superior layer of cortical bone, submucous layer with glandular connective tissue, and buccinator muscle fibers. The maximum occlusal support in the posterior region with no contact anteriorly in centric occlusion and balanced articulation in eccentric movements. It further lessens the pressure on the anterior maxillary ridge.

Conclusion

Nearly unavoidable degenerative changes occur in the edentulous regions of the complete upper and partial lower dentures of

the wearer. The dentist should approach the treatment of these patients carefully and the establishment of correct treatment initiatives essential. Every patient must be alert from the onset that the lengthiest potential life of any prosthesis by the minimum possible damage to the remaining tissues, can only be ensured by the regular recall and maintenance care.

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