

Combination Syndrome - A Review

S. Bhuminathan, M. Sivakumar and S. Venkataeswaran

Sree Balaji Dental College & Hospital, Bharath University, Chennai, India.

dx.doi.org/10.13005/bbra/1245

(Received: 01 January 2014; accepted: 02 February 2014)

The group of complications which representing as a syndrome are interlinked to one another progressing in a sequential manner is known as 'combination syndrome' by Ellsworth Kelly in 1972. Combination syndrome progresses in a sequential manner. One in four demonstrated changes consistent with the diagnosis of combination syndrome. Patient education and frequent recall and maintenance care are essential, if the development of this insidious syndrome is to be avoided.

Key words: Kellys Syndrome, Edentulism, Flabby ridge

Specific oral destructive changes are often seen in patients with a maxillary complete denture and a mandibular distal extension partial denture. The group of complications which representing as a syndrome are interlinked to one another progressing in a sequential manner is known as 'combination syndrome' by Ellsworth Kelly in 1972.

Definition

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 mandibular partial denture bases also called anterior hyperfunction syndrome."¹

Clinical features

Kelly originally described combination syndrome in a no. of patients with maxillary complete dentures opposing natural mandibular teeth and a distal extension removable partial denture. He described five signs or symptoms that commonly occurred in this situation. They include,

1. Loss of bone from anterior part of maxillary ridge.
2. overgrowth of tuberosities
3. Papillary hyperplasia in the hard palate.
4. Extrusion of lower anterior teeth
5. Loss of bone under partial denture base.

Saunders *et al.*,⁴ in 1979 described 6 additional changes or signs associated with this syndrome. They include,

1. Loss of vertical dimension of occlusion
2. Occlusal plane discrepancy.
3. Anterior spatial repositioning of mandible
4. Poor adaptation of prosthesis.
5. Epulis fissuratum.
6. Periodontal changes.

Pathogenesis

Combination syndrome progresses in a sequential manner. The progress of the disease can occur in any of the following sequences.

* To whom all correspondence should be addressed.

Sequence 1

1. Patient tends to concentrate the occlusal load on the remaining natural teeth (mandibular anteriors) for proprioception. Hence there is more force acting on the anterior portion the maxillary denture.
2. This leads to an increased resorption of anterior part of the maxilla which gets replaced by flabby tissue. The occlusal plane gets tilted anteriorly upwards and posteriorly downwards.
3. The labial phalange will displace and irritate the labial vestibule leading to formation of epulis fissuratum. Posteriorly there will be a fibrous overgrowth of the tissues in the maxillary tuberosity.
4. The shift of the occlusal plane posteriorly downwards produces resorption in the mandibular distal extension denture bearing area.
5. Mandible shifts anteriorly during occlusion.
6. The vertical dimension at occlusion is decreased. The retention and stability of the denture is also reduced.
7. The tilt in the occlusal plane disoccludes the lower anteriors causing them to supraerupt. This reduces the periodontal support of the anterior teeth.
8. The supraerupted anteriors increase the amount of force acting on the anterior part of the complete denture and the vicious cycle continues.

Sequence 2 (Craddock)

1. Gradual resorption of the distal extension residual ridge in the mandible.
2. Tilting of the occlusal plane posteriorly downwards and anteriorly upwards. Rest of the vicious cycle continues as sequence 1.
3. In addition 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.

Prevalance

1. Shen & Gongloff in 1989, reviewed records of 150 maxillary edentulous patients who had maxillary complete dentures and mandibular anterior natural teeth.
2. One in four demonstrated changes

consistent with the diagnosis of combination syndrome.

Prevention of combination syndrome

1. Avoid combination of maxillary complete



Fig. 1. Prominent Supra eruption of the lower anterior segment



Fig. 2. Complete edentulous maxillae with Prominent Maxillary tuberosity



Fig. 3. Presence of Flabby ridge in relation to the upper anterior segment of the maxillae

- dentures opposing class mandibular R.P.D
2. Retaining weak posterior teeth as abutments by means of endodontic and periodontic treatment.
3. An over denture on the lower teeth.

Systemic and dental considerations

1. Review of medical and dental history.
2. Through clinical and radiographic evaluation of both hard and soft tissues, associated with prosthesis wear.
3. Resolution of any inflammation if present.
4. Evaluation of patients caries susceptibility, periodontal status and oral hygiene.

Factors to be considered in tooth to be used as an abutment:

1. Tooth vitality.
2. Morphologic changes
3. No. of roots.
4. Bony support
5. Mobility
6. Crown-root ratio.
7. Presence and position of existing restorations.
8. Position of teeth in the arch.
9. Availability of retention and guide planes.

Kelly said that, before proceeding with the prosthetic treatment, gross changes that have already taken place should be surgically treated. These include conditions like:

1. Flabby(hyperplastic) tissue
2. Papillary hyperplasia.
3. Enlarged tuberosities.

Lower partial denture base should be fully extended and should cover retromolar pad and buccal shelf area.

Basic treatment objective

Saunders *et al* in 1979 stated that, the basic treatment objectives in treating these patients is to develop an occlusal scheme that discourages excessive occlusal pressure in maxillary anterior regions in both centric and eccentric positions.

They also stated some specific objectives

Mandibular R.P.D should provide positive occlusal support from the remaining anterior teeth and have maximum coverage of basal seat beneath distal extension bases.

The design should be rigid and should provide maximum stability while minimizing excessive stress on remaining teeth.

The occlusal scheme should be at a proper

vertical and centric relation position.

Anterior teeth should be used for cosmetic and phonetic purpose only.

Posterior teeth should be in balanced occlusion.

Patient education and frequent recall and maintenance care are essential, if the development of this insidious syndrome is to be avoided.

Treatment approaches

Stephen M. Schmitt, 1985

They described a treatment approach that attempted to minimize the destructive changes by using the treatment objectives of Saunders *et al*.

1. Prosthesis is made in 2 stages.
2. Mandibular R.P.D is completed first.
3. Acrylic resin teeth are used to replace maxillary anterior teeth.
4. Cast gold occlusal surfaces for posterior denture teeth.
5. Mandibular overdenture produced better prognosis in patients who already had combination syndrome and whose mandibular teeth were structurally or periodontally compromised³.
6. Mandibular implant supported overdenture offers significant improvement in retention, stability, function and comfort for the patient and amore stable and durable occlusion².
7. Implant supported fixed prosthesis.
8. Some form of stabilization of maxillary arch retention of maxillary overdenture abutments. Maxillary osseointegrated implants. Augmentation of maxilla with resorbable hydroxyapatite in conjunction with a guided tissue regeneration technique and vestibuloplasty.
9. In 2001 Wennerberg *et al* reported excellent long term results with mandibular implant supported fixed prosthesis, opposing maxillary complete dentures.
10. Sigmond Palmqvist *et al* in 2003, reviewed the literature in combination syndrome and related features such as bone loss, bone resorption in maxillary tuberosities, denture stomatitis and maxillary abnormalities combined with removable partial denture variables.

They concluded that combination syndrome does not meet the criteria to be accepted as a medical syndrome. The single feature

associated with combination syndrome exist, but to what extent and in which combination has not been clarified.

CONCLUSION

Almost inevitable degenerative changes develop in the edentulous regions of wearers of complete upper and partial lower dentures. The dentist should approach the treatment of these patients cautiously and the institution of correct treatment initiatives essential.

Every patient must be made aware from the outset that the longest possible life of any prosthesis with the least possible harm to the remaining tissues, can only be ensured by regular recall and maintenance care.

REFERENCES

1. The glossary of prosthodontic terms. *J Prosthet Dent.* 2005; **94**(1):10-92.
2. Kapur KK, Garrett NR, Hamada MO, Roumanas ED, Freymiller E, Han T, *et al.* Randomized clinical trial comparing the efficacy of mandibular implant-supported overdentures and conventional dentures in diabetic patients. Part III: comparisons of patient satisfaction. *J Prosthet Dent.* 1999; **82**(4): 416-27.
3. Kumar P, Bhargava A, Gupta S, Makkar S. An innovative method to anchor mandibular overdenture by OT Cap semiprecision attachment: A clinical report. *Int J Health Allied Sci* 2012; **1**: 25-8
4. Saunders T, Gillis Jr R, Desjardins R. The maxillary complete denture opposing the mandibular bilateral distal-extension partial denture: treatment considerations. *The Journal of Prosthetic Dentistry* 1979; **41**(2):124-8.