

Combination Syndrome: A case report.

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Abstract

Combination syndrome (CS) is a dental condition that is generally seen in patients with a fully edentulous maxilla and partially edentulous mandible with preserved anterior teeth. This syndrome is characterised by presence of anterior maxillary resorption in combination with hypertrophic and atrophic changes in different quadrants of maxilla and mandible. This makes it a grueling condition in dentistry that requires significant experience along with advanced restorative and surgical expertise. Conventional treatment with full upper and partial lower dentures for the CS cases are not always acceptable or satisfying for patients and it frequently requires multiple remakes due to continuing bone resorption. Dental implant rehabilitation challenges conventional treatment with bone-anchoring strategies to provide improved retention and stability for implant-retained and supported prostheses. This case report portrays a successful treatment of the edentulous maxilla and partially edentulous mandible in CS patient. The necessity of an interdisciplinary approach for early prevention and treatment of this complex condition is emphasized.

Keywords: Combination syndrome, resorbed maxilla, flabby tissue, atrophic bone.

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Introduction

Alveolar bone resorption following tooth extraction and denture wearing has been well documented in the literature. The role of traumatic occlusal forces in aggravating residual ridge destruction has also been elucidated. Combination syndrome (CS) is defined as the characteristic features that occurs when an edentulous maxillae is opposed by natural mandibular anterior teeth and a mandibular bilateral extension-base removable partial denture, including bone loss from the anterior portion of the maxillary ridge, hyperplasia of the tuberosities, papillary hyperplasia of the hard palatal mucosa, supra eruption of the mandibular anterior teeth, and loss of alveolar bone and ridge height under the mandibular removable partial denture bases.^[1] Ellsworth Kelly was the first person to use the term 'Combination Syndrome'.^[2] Kelly elaborated Combination

Syndrome in a sample of patients with complete maxillary dentures, opposing natural mandibular teeth and a distal extension removable partial denture. Saunders et al^[3] later described six additional signs associated with the syndrome: loss of vertical dimension of occlusion, occlusal plane discrepancy, anterior spatial repositioning of the mandible, poor adjustment of the prostheses, Epulis fissuratum and periodontal changes. The mechanics which produce the CS is negative pressure within the maxillary denture which pulls the tuberosities down by which the anterior ridge is driven upward by the anterior occlusion thereby producing functional load which directs stresses to the free end saddle resulting in bony resorption of the posterior mandibular ridge, supra-eruption of mandibular anteriors, occlusal

plane discrepancy, loss of vertical dimension of occlusion and an ill-fitting prosthesis.^[4]

Case Report:

A 67-year-old female patient reported in the department of Prosthodontics and crown & Bridge, Guru Nanak Institute of Dental Sciences & Research, Panihati, Kolkata complaining of poor fit of upper denture and difficulties in speaking and swallowing. Her history of extraction dates back to few years due to caries and periodontal degradation. She is a known hypertensive and is under medication.

On examination, the patient presented with thinning of anterior maxillary edentulism with the anterior maxillary alveolar process and it was deficient three dimensionally with mobile hypertrophic tissue in the anterior crest, at region papillary hyperplasia of the hard palatal mucosa and hyperplasia of both tuberosities (Fig:1). In the lower jaw, the patient had edentulous areas in 36,37 and 46,47 regions. A moderate extrusion of anterior tooth was evident (Fig.2). For proper assessment of bone resorption and mucoperiosteal thickness, combination of clinical and radiographic procedure was used.

A diagnosis of combination syndrome was made by evaluating the clinical and radiographic findings.

Following clinical and radiographic examination, it was evident that dental implants could not be placed due to insufficient amount of bone in the maxillary anterior region and the prognosis for successful implant treatment was limited by the patient's medical history and economic conditions. The following treatment plan was decided for the patient a maxillary complete denture and a cast partial mandibular denture.

A preliminary impression of maxillary and mandibular arches was made by a low viscosity irreversible hydrocolloid material

(Algitec; DPI) (Fig.3) and poured in type II gypsum product (B N Chemical; India).

Conventional spacer was designed for maxillary cast and custom tray was fabricated. Border moulding was done by greenstick impression material (Green Impression Compound; DPI) (Fig.4) and flabby tissue area was marked intra-orally in the patient mouth by indelible marker (Fig.4) and was transferred to the border moulded custom tray. The spacer wax was removed except for the hyperplastic region and final impression was made by medium body elastomeric material (Reprosil; Dentsply) (Fig.5). The marked area was cut and window was created in the custom tray for accommodation of the flabby tissue (Fig.6). After placing the partially completed final impression tray, light body elastomeric material was injected over the window area and recorded with minimal distortion and pressure (Fig.7). Master Cast was poured by Type III gypsum product (B N Chemical; India).

Kennedy Class I removable partial denture was designed for the mandibular arch. Diagnostic cast was surveyed and necessary tooth preparation was done in the patient's mouth (Fig.8). A thickness of double and single wax spacer was adapted over the dentulous and edentulous portion respectively and custom tray was fabricated. Medium body elastomer was used for final impression (Fig.9) and master cast was fabricated. Master cast surveying and block out was done. Refractory cast (Wirovest, BEGO) was fabricated after duplication by agar-agar. Wax framework was designed over the refractory cast (Fig.10) and casting was done by Co-Cr alloy. Metal framework was tried in patient's mouth and necessary adjustments were done. Following which jaw relation and trial was done and final prosthesis was delivered to the patient (Fig.10-16).

Discussion:

Treatment of patients with combination syndrome are often a challenge for a prosthodontist. A significant resorption of anterior maxillary alveolar ridge is usually seen when mandibular molars and premolars are lost and therefore, the anterior mandibular teeth with a distal extension condition opposes the edentulous maxilla. When the lower removable partial denture is adjusted timely and properly maintained as the bone loss progresses, the deteriorating effects of CS are often postponed and less severe. When patients do not return for follow-up care and/or RPD is not well designed and fabricated, the continuous resorption of the posterior mandibular bone leads to a loss of posterior occlusion with opposing maxillary denture teeth.^[5] Mastication then transfers to the anterior regions that are bio-dynamically not designed for a heavy occlusal load. An adverse habitual pressure is placed on the anterior portion of a maxillary denture and the resorption of the premaxillary alveolar bone follows resulting in the combination syndrome (anterior hyperfunction). This unfortunate and continuous chain of events that causes an overgrowth and hypertrophy of some parts of maxilla and mandible as well as resorption and atrophy of other areas of the jaws is the result of a pathologic bone remodeling. According to Wolff's law "bone, either normal or abnormal, will develop the structure most suited to resist those forces acting on it".^[6] In simpler meaning, bone is deposited and resorbed in agreement with the stresses placed upon it. Recent experimental research has also shown that bone resorption is a pressure-regulated phenomenon. Although theoretically these bone changes could be reversed with return to the original bone condition if the source of pressure is removed (pressure-counter pressure), practically these changes are irreversible and do not undergo changes on their own.^[7]

However, a standard treatment with specialised impression technique for flabby region (Window Technique) with a complete maxillary denture and distal extension mandibular partial denture remains common.

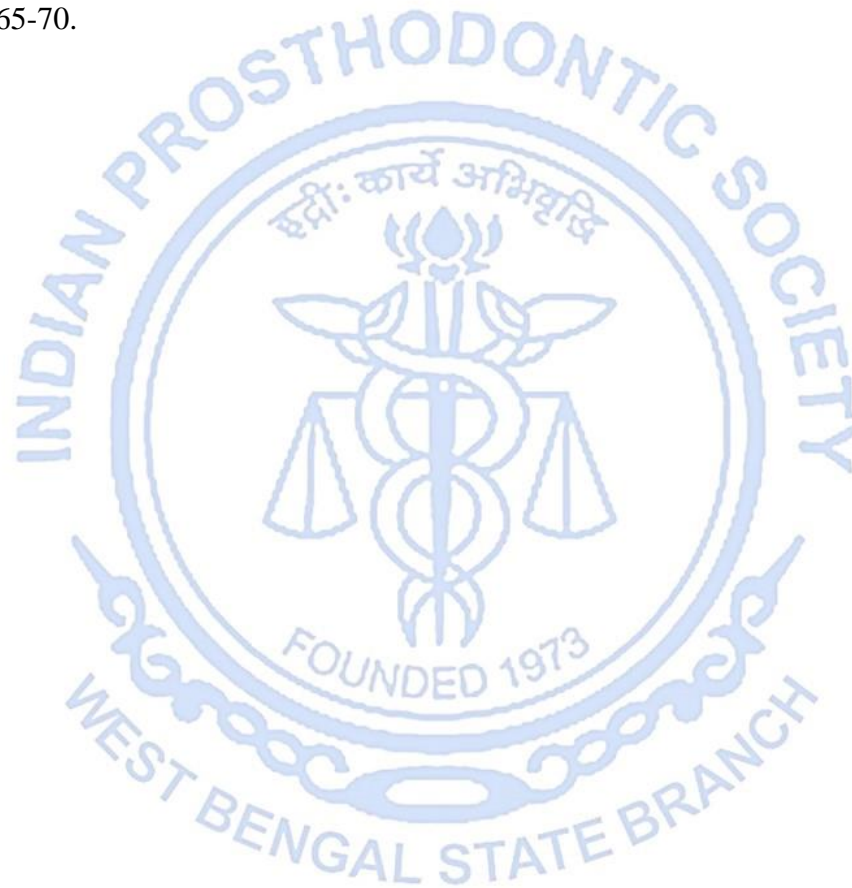
Conclusion:

The evaluation of the risk of developing the combination syndrome is based on 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 which applies more stress on the maxillary ridge, such as in Angle class III jaw relationships, parafunctional habits and in patients who have performed functional activities 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 and provide them with prosthesis that provide function but do not contribute to the combination syndrome. Thorough diagnosis, planning and proper implementation of treatment will result in an outstanding outcome for both the patient and the clinician.

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FIGURES:



Figure 1



Figure 2



Figure 3

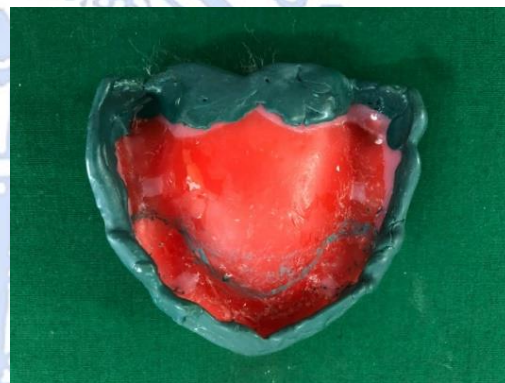


Figure 4

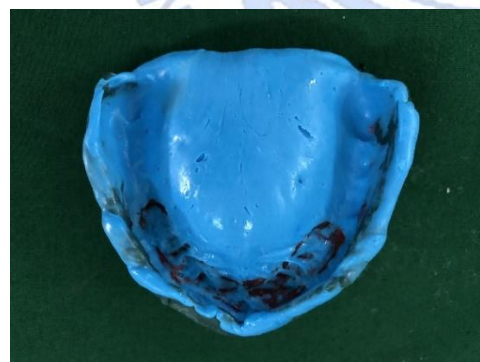


Figure 5



Figure 6

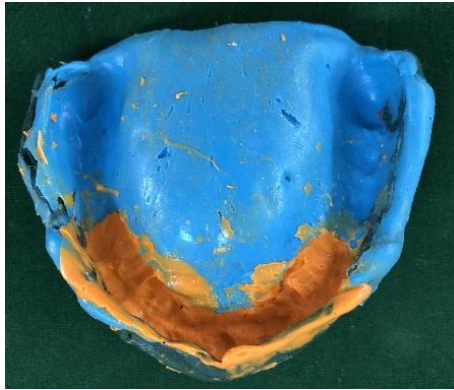


Figure 7



Figure 8



Figure 9



Figure 10

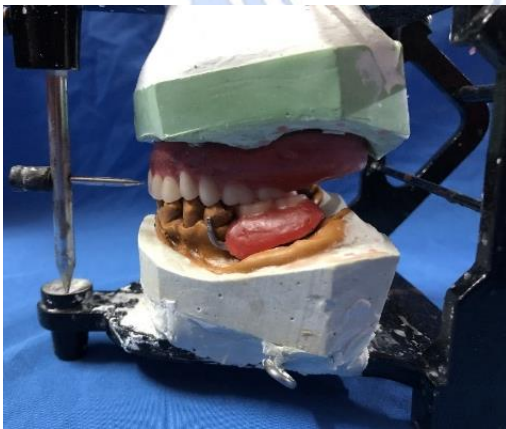


Figure 11



Figure 12



Figure 13



Figure 14



Figure 15



Figure 16