

Rehabilitation of severely attrited mandibular anterior teeth without raising the occluso-vertical dimension: A case report.

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Abstract

In the present date one of the many challenges faced by a dentist is that of rehabilitating severely worn dentition. Most dental professionals opt for full mouth rehabilitation following a raised vertical. But in many cases it may not be necessary. This case report presents management of a case of excessively worn mandibular anterior teeth as a result of deep overbite. The rehabilitation of worn out mandibular anteriors was done without changing the vertical height. Clinical crown length was increased following periodontal surgery. After which each worn out teeth were restored with porcelain fused to metal crown.

Keywords: Attrition, Full mouth rehabilitation, Crown lengthening, Surgical guide tray.

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Introduction

Apart from dental caries superficial loss of dental hard tissues may occur from trauma or as a result of developmental disorders.^[1] Wear may progress to excessive occlusal attrition thus resulting in pulpal pathology, occlusal disharmony, impaired function, and esthetic disfigurement.^[2] It is also commonly assumed that extensive occlusal wear results in decreased occlusal vertical dimension, which may not always be. This is when most of the practitioners plan a full mouth rehabilitation which includes increasing the occlusal vertical dimension. A slower rate of wear with secondary supra-eruption of the dento-alveolar processes are responsible for severe attrition without any loss of vertical dimension of occlusion.^[2] Unnecessary raising of the vertical dimension in such cases will invite postoperative problems like clenching of teeth; muscle fatigue; soreness of teeth, muscles, and joints; headache; intrusion of teeth; fractured porcelain; occlusal instability; and continued wear.^[3,4]

It is therefore essential to diagnose the etiology of wear and to verify any loss of occlusal vertical dimension before planning to increase it.^[2] This case report presents management of a case of excessively worn anterior teeth as a result of deep overbite, with almost no loss of posterior tooth support and without the loss of vertical dimension of occlusion.

Case Report –

A 25 year old male patient, reported to Department of Prosthodontics, Kothiwal Dental College and Research Centre, Moradabad with the chief complaint severely worn lower anterior teeth and poor esthetics (Figure 1 and 2). History of present illness revealed that he had attrited mandibular anterior teeth for last 6-7 years. Past dental history indicated caries in maxillary anterior teeth about 10 years ago. He had undergone endodontic treatment with post and core followed by porcelain fused to metal crowns in relation to (irt) 12,11,2, and 22 was done

eight years back. Endodontic treatment irt 33,31,41,42 and 43 was done six months back, but these mandibular anterior teeth were not restored with any extracoronal restoration.

The extra oral examination revealed a square tapering apparently bilateral face. Vertical dimension at occlusion and at rest were determined. It was found that there was no loss of vertical height. There were no abnormal TMJ findings, nor any muscular dysfunction.

The intraoral examination revealed normal labial and lingual mucosa. Mandibular anterior teeth showed sever attrition with normal posterior teeth. Adequate amount of attached gingiva (5mm) was available in the mandibular anterior region (Figure 3). Radiograph showed crestal bone within 2mm of marginal gingiva. (Figure 4)

Treatment procedure:

Preliminary impression were taken using irreversible hydrocolloid impression material and cast was pour in dental stone.

Diagnostic cast were mounted on a semi adjustable articulator (Figure 5) and mock wax up was done irt mandibular anteriors (Figure 6). The mock wax up was duplicated and guide tray was fabricated using autopolymerized acrylic resin to guide the operator during crown lengthening surgery (Figure 7).

The template was placed in intraorally to ensure proper fit and stability (Figure 8). Incisions were made according to the template using a No. 15 surgical blade (Figure 9).

Mucoperiosteal flap was raised and alveolectomy was done using a high speed rotary instrument to increase the length of clinical crown. (Figure 10). Interrupted interdental sutures were given to reposition the flap (Figure 11) and a surgical dressing was given to protect the surgical site during the healing process (Figure 12).

After 10 days the sutures were removed and the area was evaluated. It was found that there was an increase of 3 to 4 mm clinical crown length. Tooth preparation was carried out (Figure 13) and metallic copings were tried in (Figure 14). The porcelain fused to metal crowns were fabricated and cemented using glass ionomer cement. Post operatively (Figure 15 and 16) there was a significant change of esthetics and smile in comparison to the pre-operative state (Figure 17 and 18).

Discussion

Occlusal wear is defined as the loss of substance on opposing occlusal units or surfaces as the result of attrition or abrasion. Attrition is defined as the act of wearing or grinding down by friction. The mechanical wear resulting from mastication or parafunction, limited to contacting surfaces of the teeth.^[5] Tooth wear can result from abrasion, attrition, and erosion. Severe anterior teeth attrition may result from posterior teeth loss, occlusal interferences or malposition teeth leading to occlusal prematurities thus preventing in functional and parafunctional movements of the jaw.^[6] A compromised posterior support drives the mandible forward and exerts undue force on the anterior teeth. When there is a loss of posterior support we often witness anterior tooth mobility or tooth movement. It is very rare to see extensive wear of the attrition of clinical crown without tooth mobility and associated periodontal diseases.^[7]

Turner and Missirlian^[2] have classified extremely worn dentition as

Category 1: Excessive wear with loss of occluso-vertical dimension (OVD).

Category 2: Excessive wear without loss of OVD but with space available.^[2]

Category 3: Excessive wear without loss of OVD but with limited space.

The present case report was a category three situation where the treatment plan would have been orthodontic tooth movement, restorative repositioning, and surgical repositioning of segments and programmed OVD modification.^[2]

The first option involves repositioning of teeth which provide space for restorative dental materials. Hence improving esthetics, and offering a more favorable occlusion plane. Continuous eruption of the worn tooth can be accompanied by eruption of the alveolus and associated soft tissues, which results in an unesthetic, uneven occlusal plane and gingival margin.^[2] Periodontal surgery removes the soft tissues, increase the clinical crown height, and thus provide ample tooth structure for a more suitable occlusal plane and pleasing smile. Sufficient interocclusal space for dental materials can usually be obtained by altering the contours of opposing restorations and/or tooth structure.^[8] Endodontic treatment is required if tooth preparation causes near exposure of the pulp tissue or excessive attrition wear threatens the vitality of the pulp tissue.

Repositioning of the maxillary teeth labio-palatally using orthodontic tooth movement combined with limited intrusion. But it had limitations like mesiodistal spacing that occurs as the teeth are repositioned anteriorly. Again intrusion is considerably difficult in adult patient. Orthodontic treatment requires also ample time 6 to 12 months. Therefore this was not planned in this case.

Surgical interventions are done if a dentofacial deformity exists in conjunction with extreme wear. In such a case a segment of teeth and supporting alveolus is surgically repositioned. Thus it was never taken into consideration.

Increasing the occlusal vertical dimension to achieve space for restorative materials where there has apparently been no loss of occlusal vertical dimension is seldom advisable.^[2] Thus to attain adequate height of the crown for retention and resistance surgical crown lengthening was planned.

In the year 1962 D.W. Cohen introduced the concept of crown lengthening. It is a procedure that often employs some combination of tissue reduction or removal, osseous surgery, and / or orthodontics for tooth exposure.^[9] It should be kept in mind that nearly 4mm of tooth structure should be above the osseous crest to provide for a stable dentogingival complex. It provides ample space for the biologic width to develop. It also allow an adequate marginal placement during tooth preparation. This affirms a proper marginal seal and height for retention of both provisional and final restorations. When the width of attached gingiva adequate-(>3mm) and the bone crest is high i.e. more coronal an external or internal bevel gingivectomy with ostectomy is performed.^[9] The technique of incisions depends on gingival biotype. The best way is to make temporary crowns or tray guide with the margins of final restoration before surgical clinical tooth crown lengthening. Doing so surgeon could define more exactly the relationship between margins of final restoration and marginal bone during surgical procedure.^[10]

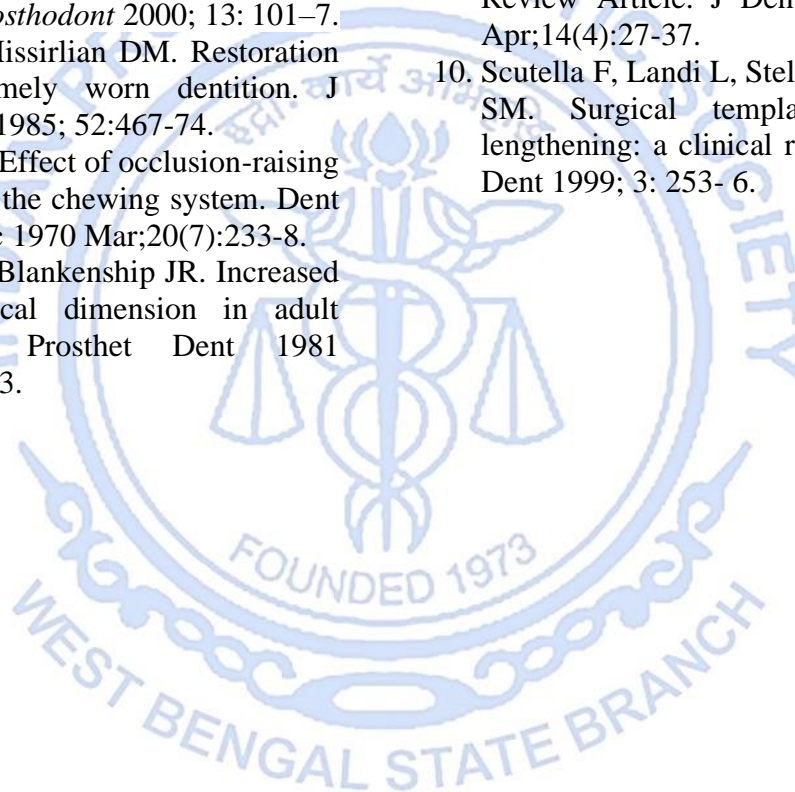
Conclusion

More often a full mouth rehabilitation is planed where the vertical height is raised by restoring posterior teeth with full coverage crowns. This case report puts light on a technique that provides an option to restore the lost structure of anterior tooth surfaces and defer or eliminate the need for more extensive treatment planning. In this multidisciplinary approach rehabilitation of

the anterior teeth were done by surgical crown lengthening was done to gain necessary height of clinical crown while the attrited teeth were restored with porcelain fused to metal crowns. This treatment improved the patient's esthetics and social confidence significantly.

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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



Figure 17



Figure 18