ABSTRACT

The management of tooth wear, has an important role in prosthodontics literature, from both preventive and restorative points of view. This case report presents the prosthodontic rehabilitation of two cases with severely worn dentition using fixed partial denture.

Key words: Rehabilitation; Prosthodontic; Tooth wear; Khat chewing

Introduction

The chronic destruction of hard dental tissues due to physical or chemical wear, or both of them, has been defined as tooth wear. Tooth wear has been classified into four types: i. attrition, that is the wear of teeth or restorations caused by tooth to tooth contact during mastication or parafunction, ii. abrasion, that is the loss of tooth surface caused by abrasion with foreign substances other than tooth to tooth contact, iii. erosion, that is the loss of tooth surface by chemical processes not involving bacterial action, and iv. abfraction, that is non-cari- ous cervical wedge-shaped defect caused by occlusal stresses. The physical wear (attrition) due to the action of antagonistic teeth can be distinguished by the plane facets and sharp margins. Tooth attrition may occur as a physiological process due to using of the tooth during normal masticatory function, which means the loss of the tooth hard tissues may be a sign of age progress. Pathological attrition may occur when this normal function is exaggerated to parafunctional habits, resulting in accelerating the loss of the hard tissues in the vertical aspect. Excessive wear results in unacceptable damage to the occluding surfaces, TMJ and masticatory muscles.

The management of tooth wear, especially attrition, is becoming a subject of increasing interest in the prosthodontics literature, from both preventive and restorative points of view. A critical aspect for successful treatment is to determine the occlusal vertical dimension (OVD) and inter-occlusal rest space (IRS). Management of worn dentition using fixed or removable prostheses is complex and among the most difficult cases to restore. Assessment of the vertical dimension is important for the management, and careful comprehensive treatment plan is required for each individual case. This case report presents the prosthodontic rehabilitation of two cases with severely worn dentition using fixed partial denture.

Case Report 1

A 50-years-old lady reported to the dental clinic with both maxillary and mandibular teeth showing severe attrition. The patient's facial appearance showed signs of collapsed occlusal vertical dimension; and wrinkles and drooping commissures around mouth. The patient's chief complaint was restoration of the worn teeth, along with replacement of missing teeth. History confirmed parafunctional habits i.e., bruxism and clenching. Clinical and radiographic examination revealed severe attrition, especially on the anterior teeth. The occlusal vertical dimension and inter-occlusal rest space were recorded. The IRS was 5-6 mm that was greater than the normal 2-4 mm, which means that the occlusal vertical dimension is less than the normal. Full mouth rehabilitation with increasing OVD was planned. Severely worn teeth were considered crown lengthening procedures. Two sets of maxillary and mandibular irreversible hydrocolloid impressions were taken. The two diagnostic casts were mounted on a semi-adjustable articulator. The adaptation of patient to the increased OVD was evaluated during 1-month trial period. No muscle tenderness and temporomandibular discomfort was found. Root canal therapy RCT was performed for three lower anterior teeth i.e., 43, 42 and 41 and two upper anterior teeth i.e., 13 and 11. After teeth preparation (Figure 1), final impressions were made with silicone impression material. Porcelain fused to metal restorations were made and cemented with glass ionomer cement (Figure 2). Oral hygiene instructions were reviewed to the patient, emphasizing cleaning of the restoration margins. Six months follow-up showed no problem in teeth, restorations and temporomandibular joints (Figure 3).

Case Report 2

A 38-year-old male reported to the dental clinic with both maxillary and mandible teeth showing severe attrition. The patient's chief complaint was pain in the TMJ region and insufficient masticatory forces. Unfortunately, the patient visited many general hospitals and clinics, every time he was treated as psychic patient, the patient was so depressed. An initial evaluation of the patient indicated a history of parafunctional habits of Khat Chewing. The patient said that because he had an edge to edge occlusion type, with this type he couldn't get a sufficient masticatory function because the maxillary posterior cusps were occluding on the mandibular posterior cusps, as a result of that he used to protrude his mandible to achieve satisfactory forces for chewing. This parafunctional habit resulted in this severe wearing of the teeth (except the upper and lower anterior teeth) and pain in temporomandibular joint. Orthopantomogram was taken (Figure 4). Two sets of maxillary and mandibular irreversible hydrocolloid impressions were taken. The two diagnostic casts were mounted on a semi-adjustable articulator. The occlusal vertical dimension OVD and inter-occlusal rest space IRS were recorded. The mandible was guided posteriorly and superiorly to achieve the centric occlusion. The contact between the upper and lower
central teeth, edge to edge, was used as guide for the centric occlusion. Preparation was carried out in the maxillary teeth only. After completion of teeth preparations, final impressions were made with silicon impression material. Porcelain fused to metal restorations were made and cemented with glass ionomer cement (Figure 5,6). The patient was instructed for good oral hygiene including khat chewing avoidance. The patient was seen at one and two weeks follow-up appointments followed by a month and later after 3-months. The patient stated that there was a little discomfort at first but this discomfort disappeared one week later. The patient was pleased with aesthetics and function.

Discussion
Turner KA classified the treatment of a severely worn dentition by the amount of the loss of OVD and available space to restore. His classification and conventional treatment, which includes raising OVD with multiple crown-lengthening procedures, have been widely used up to present.8 The management of a complete oral rehabilitation in patients with severely worn dentition is often challenging due to loss of vertical dimension, loss of tooth structure, uneven wear of teeth creating an uneven plane of occlusion and parafunctional habits.

Hill and Gibson observed the effects on oral and dental tissue among Yemeni males with average age of 35 years who chewed khat for 20 years. They found a low prevalence of caries, but universal attrition, and temporomandibular joint pain.9 Due to mechanical friction, khat chewing may cause clicking and pain in the temporomandibular joints and lead to attrition. In the first case the severe wearing in the dentition due particularly to parafunctional habits of bruxism and clenching, but in the second case the parafunctional habits was of khat chewing. The treatment in both the cases were to gain a good occlusal vertical dimension by full mouth rehabilitation using fixed prosthodontic.

Conclusion
Raising the occlusal vertical dimension OVD in these cases using fixed prosthodontic based on accurate diagnosis showed successful full mouth rehabilitation for patients with severely worn teeth due to parafunctional habits.

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