Prosthodontic rehabilitation of mutilated dentition
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Abstract

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 para-functional habits. This paper reports the prosthodontic management of a prosthodontic full-mouth rehabilitation of a 48 year old female patient with Prosthodontic Diagnostic Index Class IV dentition.

Key Words: Rehabilitation; worn dentition; Prosthodontic Diagnostic Index

Introduction

The dentitions of humans differ in terms of degree of tooth wear. Wear that was sufficiently severe to obliterate cusp morphology and flatten the occlusal surfaces of teeth was ubiquitous and normal within physiologic limits and excessive wear can be expected to require corrective intervention in order to preserve the dentition. (1) Excessive wear results in unacceptable damage to the occluding surfaces, TMJ and masticatory muscles. (2) It is known that loss of the vertical dimension of occlusion (VDO) may pose significant clinical difficulties in prosthodontic treatment. (3) Loss of the tooth structure does not necessarily equate to loss of the VDO, as the VDO may be maintained as a result of compensatory dental eruption. Restoration of anterior teeth is necessary for acceptable anterior guidance function of for aesthetics. (3) This article reports a sequence of prosthetic management of completely worn dentition.

Case Report

A 48-year-old lady reported with both maxillary and mandibular teeth showing severe attrition of all teeth. Clinically, the patient’s facial appearance showed signs of collapsed VDO (Figure 1a). The preoperative interocclusal rest space (IRS) was 6mm. Periodontal and soft-tissue examination showed pocket depth of < 2mm and no mobility of remaining teeth. Radiographic evaluation showed excellent bone support for all teeth. The patient was classified as prosthodontics diagnostic index (PDI) Class IV. The findings were explained to the patient, and treatment options were presented. The treatment goal were (a) to restore the lost VDO, (b) to correct the occlusal plane, (c) to restore function and (d) to restore the aesthetics of the patient’s dentition.

Treatment Sequence

1. Two sets of irreversible hydrocolloid impressions were made in stock trays. The patients existing VDO and Physiologic rest position (PRP) were recorded.

2. Diagnostic casts were mounted on a Hanau semi-adjustable articulator using a face-bow transfer and a centric relation record was made at the existing VDO. A diagnostic wax up was done at the estimated restored VDO. The patient’s IRS was determined by taking the difference between the patient’s existing PRP and the VDO. The diagnostic wax up of teeth was done with an estimated increased in VDO of 3mm to achieve a mutually protected occlusion. Permissive occlusal splint was constructed to allow the patient to adapt to the new vertical dimension (Figure 1b).

3. The patient was then referred to endodontic department for root canal therapy with #31, #32, #41, and #42.

4. Tooth preparations were done and provisional restoration were cemented with zinc oxide luting cement. The final prosthesis was constructed after the provisional has been used for two months (Figure 1c).

5. After insertion of interim prosthesis, the patient reported a slight difference in her pronunciation of the ‘s’ sound; however, this problem resolved itself after 10days. The patient reported with no muscular or temporomandibular joint discomfort.

6. Follow-up treatments were done to evaluate the patient’s comfort, arch form and potential VDO problems. The PRP was accommodated, and the patient presented with a 3mm IRS within a few months.

7. Impression for the mandibular and maxillary final prosthesis was made using polyvinyl silicones with a double mix double impression technique.

8. Cast of the prepared teeth were mounted on the Hanau articulator and a centric relation record was made at the predetermined restored VDO.

9. Finally the restoration were polished and cemented with glass ionomer cement.
10. Instructions to Patient: Oral hygiene instructions were reviewed, emphasizing cleaning of the restoration margins. Additional instructions were given on the use of floss threads. The patient was also instructed to wear the occlusal splint at night.

11. Post-treatment therapy: The patient was seen at one and two week follow-up appointments followed by a month and later after 3-months. The patient stated that she was pleased with aesthetics, function and comfort of the prosthesis. Oral hygiene was excellent.

Discussion

Prosthetic rehabilitation of patients with excessive loss of VDO is risky and prone to problems because of the complex structure of the stomatognathic system.(3) The aetiology of occlusal wear for this patient is not fully understood; however, it can be hypothesized that the patient had a parafunctional occlusal habit and started grinding her anterior teeth. Once the anterior teeth got shorter, the patient lost anterior guidance and developed posterior interferences. The posterior interferences in lateral excursions can activate the masseter and temporalis muscle, enabling the patient to generate more forces to grind her teeth more aggressively.

A mutually protected occlusal scheme was used to prevent the destruction of the new prostheses. Mutually protected articulation is described as “an occlusal scheme in which the posterior teeth prevent excessive contact of the anterior teeth in maximum intercuspation, and the anterior teeth disengage the posterior teeth in all mandibular excursive movements”.(4, 5)

Studies, have shown that in lateral excursive movements, the anterior teeth can best receive and dissipate forces and posterior contacts in excursions appear to provide unfavourable forces to the masticatory system because of the amount and direction of the applied forces.(6) In addition to using the mutually protected occlusal scheme, an occlusal splint was fabricated for night wear, and the patient was instructed and trained to keep her teeth apart when not actively chewing.

Conclusion

The patient was motivated to keep her oral health to optimal condition. Her positive attitude and improved oral hygiene help to ensure a favourable prognosis. The restored VDO has shown to be physiologically and aesthetically acceptable to the patient.

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References


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