Full mouth rehabilitation in a patient with multiple decayed and attritioned teeth: A clinical case report.

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ABSTRACT

Full mouth rehabilitation always claims careful attention and meticulous treatment planning. It continues to be the biggest challenge to any clinician in Restorative Dentistry. It requires efficient diagnosis and elaborate treatment planning to develop ordered occlusal contacts and harmonious articulation in order to optimize stomatognathic function, health and esthetics which then translates to patient’s comfort and satisfaction. The severe wear of anterior teeth and the collapse of posterior teeth results in the loss of normal occlusal plane and the reduction of the vertical dimension of occlusion. This case report is of full mouth rehabilitation of a 55 years old patient with multiple decayed and attrited teeth with loss of vertical dimension.

Keywords: full mouth rehabilitation, cast partial denture, vertical dimension of occlusion (VDO)

Introduction

The gradual wear of the occlusal surfaces of teeth is a normal process during the lifetime of a patient. However, excessive occlusal wear can result in pulpal pathology, occlusal disharmony, impaired function, and esthetic disfigurement. Tooth wear can be classified as attrition, abrasion, and erosion depending on its cause. In many situations, there exists a combination of these processes. Therefore, it is important to identify the factors that contribute to excessive wear and to evaluate alteration of the VDO caused by the worn dentition. In many cases, the vertical dimension of occlusion VDO is maintained by tooth eruption and alveolar bone growth. As teeth are worn, the alveolar bone undergoes an adaptive process and compensates for the loss of tooth structure to maintain the VDO. Therefore, VDO should be altered conservatively and with a careful approach.

However, the rehabilitation of the severely worn dentition is challenging when the space for restoration is not sufficient. Management of worn dentition using fixed or removable prostheses is complex and among the most difficult cases to restore. Assessment of the VD is important for the management, and careful comprehensive treatment plan is required for each individual case. Articulated study casts and diagnostic wax-up can provide important information which is helpful for the evaluation of treatment options. Tolerance of changes to vertical dimension of occlusion is usually confirmed with the clinical evaluation of the patient having a diagnostic splint or provisional prosthesis. This clinical case report describes the full mouth rehabilitation treatment of a patient with...
multiple decayed and attrited teeth and with reduced VDO with porcelain fused to metal crowns and cast partial dentures.

Case Report
A 55 years old male patient reported to the Department of Conservative Dentistry and Endodontics, Yerala Medical Trust's Dental College, Kharghar, Navi Mumbai complaining of inability to masticate and unaesthetic facial appearance. He had no specific medical history and dysfunction habit. Intraoral examination revealed generalised loss of enamel and dentin of the maxillary and mandibular anterior teeth (Fig. 1). Teeth 11, 21, 22, 23, 31, 32, 33, 41, 42 and 43 were endodontically treated. He had clinically missing 12, 16, 26, 34, 35, 36, 37 and 46. In addition to this, Grade II mobility, furcation involvement and supra eruption was seen with 27 and 28. Anatomic landmarks, facial measurements and the resting positions of mandibular jaw were used to determine appropriate vertical dimension for the patient. It was found that there was decreased VDO and unsatisfactory occlusion. The freeway space was found to be increased to about 5-6 mm which was more than the physiologic space of 2-3 mm. The options of treatment plan were restoring the edentulous posterior region with implants or removable partial denture, full mouth rehabilitation with metal ceramic restoration with or without crown lengthening procedure. The patient did not want to undergo implant placement because of apprehension of surgical intervention and the high cost factor. It was then decided to endodontically treat the teeth followed by restoration with porcelain fused to metal crowns and cast partial dentures for the edentulous spaces.

Teeth 27 and 28 were mobile and hence extracted under local anaesthesia. Full mouth series radiographs and OPG was taken (Fig. 2). Endodontic retreatment of the maxillary and mandibular anterior teeth alongwith endodontic therapy of 13, 14, 15, 24 and 25 was done. Diagnostic impressions were made with Alginate (AlgiteX, DPI India), casts were poured and mounted on a semiadjustable articulator (Hanau Wideview). A wax mockup was made on the articulated casts to get an idea of the required crown height for fabrication of crowns. Surgical crown lengthening procedures were undertaken for the maxillary and mandibular anterior teeth to obtain sufficient clinical crown length and ferrule effect. Fiberposts (DT Lightpost, RDT Bisco) with composite core build up was done for the maxillary anterior teeth. The teeth were prepared to receive provisional crowns. Impressions were made again and the patient’s jaw relation was recorded and transferred to a semi adjustable articulator using a facebow record (Fig. 3 A). The new VDO was set by 4 mm increase in the incisal guidance pin of the articulator. Provisional crowns were fabricated for the maxillary and mandibular anterior teeth and acrylic removable partial dentures for the posterior edentulous spaces with reference to the new VDO. These provisional crowns were cemented with temporary Zinc oxide eugenol cement (DPI, India) and removable partial dentures were delivered (Fig. 3C). The patient’s adaptation to this provisional assembly was monitored. For two months, the provisional restorations were adjusted, and used as a guide for the definitive oral rehabilitation. During this period, the patient’s condition and functions, such as muscle tenderness, discomfort of TMJ, mastication, range of the mandibular
movements, swallowing, and speech, were evaluated. Improvement in mastication, speech, and facial esthetics confirmed the patient’s tolerance to the new mandibular position with the restored VDO.

The maxillary and mandibular casts were surveyed on a surveyor for cast partial denture design. It was planned to prepare occlusal rest seats on crowns of 15, 17, 25, 45 and 47. Cingulum rests were planned on crowns of 33 and 43. Occlusal rest seats were prepared on natural crowns of 17, 45 and 47. The rest seats of 15 and 25 were incorporated in the PFM crown design. Final crown preparation for porcelain fused to metal crowns was then undertaken. Gingival displacement was done using double cord technique (Ultradent Products Inc., Salt Lake city, Utah) (Fig. 3 B). Final impressions were then made with addition polyvinyl siloxane impression material (Aquasil, Dentsply) and final casts were poured. Porcelain fused to metal crowns were made for maxillary anterior and premolar teeth and mandibular anterior teeth and cemented with luting glass ionomer cement (GC, Fuji I). After the adaptation of cast partial denture framework and the trial of wax denture were done, the definitive cast partial dentures were fabricated and delivered with minor occlusal adjustment (Fig. 4). The prostheses were designed using mutually protected occlusion. The anterior teeth protected the posterior teeth from excursive force and wear, and posterior teeth supported the bite force. Oral hygiene instructions were given and regular check up was administered.

Discussion

Turner in 1984 classified the treatment of a severely worn dentition by the amount of the loss of VDO and available space to restore. His classification and conventional treatment, which includes raising VDO with multiple crown-lengthening procedures, have been widely used up to present. However, the etiology of tooth wear is multifactorial, and clinical controlled trials of restorative and prosthodontic approaches are limited in quantity and quality. In addition, lack of evidence regarding the long-term outcomes of treatment methods and materials cause difficulty in clinical decision-making. Because of these unclear guidelines, rehabilitation of these teeth becomes a challenging and time consuming task. In this case, the conventional treatment modality that includes increasing the VDO with provisional restorations and acrylic partial dentures, careful monitoring, and definitive prosthesis, was chosen.

In this case, the patient was carefully monitored for 2 months to evaluate the adaptation to the increased VDO incorporated in the provisional crowns and acrylic partial denture. Discomfort, wear, and muscle fatigue were not observed during the trial period. The increase of VDO was determined by patient’s physiologic factor like interocclusal rest space and speech. If the increase of VDO was decided arbitrarily without close evaluation, multiple complications would happen and longer treatment period might be needed. Depending on the patient’s situation and adaptation ability, the interim period can be modified, and the careful evaluation and monitoring may shorten the overall treatment duration. The rehabilitation using restoration of anterior crowns and RPD providing posterior support is affordable and common for many patients who require the treatment of teeth wear because of reasons of economics and tradition. However,
the restored anterior teeth can be easily exposed to excessive occlusal loads if the patient does not wear the RPD or resorption of residual ridge proceeds. Good patient compliance and motivation is required for the use and success of RPD, thus the education on wearing RPD is necessary. Regular check-up for the occlusal adjustment and RPD fitting is essential.

Fig. 1. Intraoral examination. Frontal view, Left view and Right view.

Fig. 2. Preoperative and Post endodontic treatment Orthopantomogram (OPG).

Fig. 3. A) Facebow Record, B) Crown preparation C) Provisionalisation.

Fig. 4. Definitive restorations- Porcelain fused to metal crowns and cast partial dentures.
Conclusion

In this clinical report, raising vertical dimension of occlusion using provisional acrylic crowns and removable acrylic partial dentures and following with fixed porcelain fused to metal crowns and cast partial dentures based on accurate diagnosis showed successful full mouth rehabilitation for the patient with multiple decayed and attrited teeth.

References: