CASE REPORT

Rehabilitation of lost vertical dimension with cast post core and cast partial denture

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SUMMARY

Loss of teeth is sometimes inevitable. But, it is the duty of a restorative dentist to restore the loss of teeth in way keeping in mind the discomfort and agony of the patient. Rehabilitation of these types of patients requires thorough knowledge and great skills on the part of a prosthodontist. This clinical case report describes the management of a 58-year-old male patient with a loss of mandibular posterior teeth and severely attrited anterior teeth opposing natural teeth. The treatment plan was to restore the loss of teeth and the loss of vertical dimension by providing prosthesis keeping in mind the occlusion and stomatognathic system. A novel approach of fixed and removable type of prostheses was implemented and successfully delivered.

BACKGROUND

Tooth wear can be classified as attrition, abrasion and erosion depending on its cause. A differential diagnosis is not always possible because, in many situations, there exists a combination of these processes.¹ But, it is important to evaluate the alteration of the vertical dimension of occlusion (VDO) caused by the worn dentition. It is then necessary to increase the vertical dimension in order to help solve the problems. For instance, an accepted initial treatment of the temporomandibular joint (TMJ) syndrome includes an increasing vertical dimension with some type of occlusal splint. Increasing vertical dimension often helps to relieve tense and tired muscles by correcting the physiological length of the muscles. Vertical dimension must be increased in order to correct the overclosure of the mandible and make improved aesthetics and phonetics possible.

CASE PRESENTATION

A 58-year-old male patient reported to the department of prosthodontics with severely attrited mandibular anterior teeth and lost posterior teeth. The patient's chief symptom was the inability to chew food properly. A complete medical and dental history was elicited; he gave the history of temporomandibular joint discomfort and the habit of bruxism since many years, but he had never undergone any treatment for the same. This leads to the loss of clinical crown height. Extraoral examination reveals no asymmetry (figure 1) and any muscle tenderness. Intraoral examination revealed deep bite and loss of vertical dimension (figures 2 and 3).

The aim of the treatment was to restore occlusion and to achieve optimum mastication for the patient.

Figure 1 Patients with bilaterally symmetrical face.

TREATMENT

Procedure

The patient underwent oral prophylaxis followed by orthopantomograph to assess the level of pulp in attrited teeth. Maxillary and mandibular impressions were made with irreversible hydrocolloid, and study models were prepared for diagnosis and treatment plan.

The study models were analysed, diagnostic wax-up was performed (figure 4) and the treatment plan was formulated. A loss in vertical dimension was then assessed, and accordingly a removable partial denture (RPD) was fabricated to raise the vertical dimension. The patient was asked to wear it for 4 weeks during day as well as at night; this helped in relieving the patient's TMJ discomfort and to avoid attrition due to bruxism. This RPD with increased vertical dimension (VD) also trains the patient for an increase in VD psychologically as well physically.

Meanwhile, the patient was advised for intentional RCT in relation to 31, 32, 33, 34, 41, 42 and 43. An impression of the canal was then taken by the direct method with cold cure acrylic resin. These acrylic patterns were invested and casted and then cemented in the patient's mouth (figure 5). During intracanal preparation of 41 for post, a ledge was formed; hence, it was planned to place a

Figure 2 Intraoral view: deep bite.

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Figure 3 Severely attrited mandibular teeth.

prefabricated post there, crown preparation and the final impression with a modified copper band technique were made² (figures 6 and 7). The patient was sent back home with provisional restorations until the final restorations are obtained. In laboratory, wax patterns were surveyed and rest seats were prepared on 34, 35 and 44. These wax patterns were invested and casted in metal ceramic alloys. All the crowns were then cemented (figure 8) and then the impression of a distal extension was made via the dual impression technique. A metal frame work was casted and checked in the patient's mouth. Later on, teeth were arranged over the resin on the cast partial (figure 9). The occlusion was checked and selective grinding was performed intraorally. Prosthesis is then delivered to the patient (figures 10 and 11) and oral hygiene instructions were given. The patient is then put on a regular follow-up for the review of prosthesis.

DISCUSSION

Loss of some teeth results in disability in patients. This partial loss of teeth also deterred patients with functions of mastication. When patients present with a loss of posterior teeth with the remaining anterior teeth and opposing natural teeth, treatment planning becomes a very crucial factor.

Figure 4 Diagnostic wax-up.

Figure 5 Cemented post and core.

Whenever a patient is provided with full-mouth rehabilitation, the prime goal of a prosthodontist is to restore the function keeping in mind the TMJ.

As full mouth rehabilitation has an impact on TMJ, we are supposed to plan occlusion in such a way that it also maintains healthy masticatory system. The basic rule is to follow the occlusion unless a complete posterior occlusion is to be changed.

This patient was presented with severely attrited mandibular teeth, with a habit of bruxism for past many years being the reason. The patient has not undergone any intervention for this problem, resulting in a loss of clinical heights of mandibular anterior teeth.

For the restoration of the posterior, group function or mutually protected occlusion is the choice of occlusion. In this case, we have planned a novel approach of providing the patient with anterior fixed partial denture (FPD) and distal extension RPD. The patient was cooperative, and hence it was planned to provide a removable type of prosthesis so that the maintenance of oral hygiene is easier on the patient's part.

Diagnostic wax-up and mock preparations are integral parts of treatment planning, as these give us the amount of preparation and modifications necessary. Diagnostic wax-up also helps us in the fabrication of provisional restorations.

The anterior teeth are usually restored first so as to achieve viable Anterior Guidance. For healthy TMJ, the most important factor to be considered is the anterior guidance after Centric relation. The main objective being providing the patient good

Figure 6 Making of final impression with modified copper band technique.

Figure 7 Final impression.

Figure 10 Seating of cast partial.

Figure 8 Cemented porcelain fused to metal restoration.

Figure 11 Intraoral view with final restoration.

aesthetics, function (phonation) and posterior disclusion during mandibular discursion. Anterior guidance is planned to protect the posterior teeth from lateral or protrusive stresses.

The restoration of the vertical dimension of occlusion has to be performed at the centric relation which was acceptable for the patient at the neuromuscular level.³

Figure 9 Distal extension cast partial.

The patient had a severely worn down mandibular anterior, so a group function was planned resulting in decreases in stress on part of the distal extension RPD. Group function refers to the distribution of lateral forces to a group of teeth rather than assigning all forces to one particular tooth. Lateral pressure is distributed to all working side teeth in order to prevent the overloading of any teeth in particular.³

Good quality provisional restorations are essential to achieve predictability with comprehensive cases involving severe parafunctional habits. As in this case we have planned provisionals with increased VD for this case. Not only do they have to be good looking for the patient but they also have to be strong. Hence, these provisionals are made with heat cured acrylic resin.³

Learning points

- ▶ Group function should be planned in most cases of full mouth rehabilitation.
- ▶ Vertical dimension should be increased in order to correct the overclosure of the mandible.
- ▶ Diagnostic wax-up and mock preparations are integral parts of treatment planning.

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