International Journal of Community Medicine and Public Health
Tyagi M et al. Int J Community Med Public Health. 2022 Jul;9(7):3010-3013
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20221775

Case Report

Full mouth rehabilitation of the patient with severely mutilated dentition: a case report

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Received: 31 May 2022
Accepted: 16 June 2022

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ABSTRACT

Management of the lost tooth structure by restoring the dental occlusion and aesthetics, is a challenging task for a dental clinician in full mouth rehabilitation cases. With the advent of new techniques and tooth-colored materials, it has become easy to meet demands of the patient. Full mouth rehabilitation involves restoring of dental occlusion, dental balance, and functionality with dental esthetics. This can be achieved through accurate clinical and radiographic examination, along with a diagnostic wax-up. Determining OVD is crucial in these cases. This paper describes the full-mouth rehabilitation of a 55-year-old patient with a severely mutilated dentition.

Keywords: Full mouth, Zirconia, Functionally generated path

INTRODUCTION

The gradual loss of occluding surfaces of natural teeth is an unavoidable aging process and have a deep impact on the social and physical well-being of the patient. On top of that, if a patient endures a treatment that lacks clinical expertise, it can further worsen the situation. The prosthetic rehabilitation of a patient with a functionally compromised dentition frequently involves a multidisciplinary approach that requires critical treatment planning for determining the occlusal vertical dimension (VD) and interocclusal rest space.[1]

As the process of wearing of teeth occurs, there is a continuous adaptive mechanism taking place in the alveolar bone to compensate for the lost VDO.

Careful assessment of the vertical dimension of occlusion and thereafter formulation of a comprehensive treatment plan is paramount for such type of cases. Articulated study casts and diagnostic wax-up provides valuable information about the treatment plan to be carried out.[2]

This case report describes a detailed multidisciplinary approach in which an endodontist, a prosthodontist worked as a team for occlusal rehabilitation of the mutilated dentition by replacement of the missing tooth structures and restoration with all ceramic restorations.

CASE REPORT

A 55-year -old male came to the department of prosthodontics with chief complain of inability to chew food and generalized sensitivity to heat and cold. The medical history of the patient contributed nothing significant.

On intraoral examination it was found the patient was having generalized decimated occlusion. Dental history of the patient revealed that the patient had undergone treatment for a worn-out dentition by some unauthorized local dental practitioner near his place. There were extensive tooth preparations found (Figure 1).

A OPG was advised for the patient and it revealed caries in respect to 24, 25, 36 and 42 and less than 1mm residual

remaining dentin i.r.t 13, 23, 31, 32, 37, 41, 42 and 43 (Figure 2).

Figure 1: Pre-op.

Figure 2: Pre-op OPG.

Treatment plan was formulated and the preprosthetic phase was decided as follows: RCT 13, 23, 24, 25, 31, 32, 36, 37, 41, 42 and 43 followed by restorative phase.

After the endodontic treatment was finished, the patient was asked to report back to the prosthodontics department. After reporting back, the maxillary and mandibular alginate, impressions (Zelgan 2002, Dentsply) were made and study casts were poured.

The vertical dimension at rest was determined for the patient. As the patient had already lost the posterior occlusal support, it was not possible to assess the vertical dimension of occlusion using occlusal support. So, keeping in mind that the restorative space has already been provided and an interocclusal space in the range of 2-4 mm, the vertical dimension at occlusion was determined.

The casts were mounted on semi- adjustable articulator (Bio-art model A7, Brazil) following the face-bow transfer and interocclusal records in centric relation (Figure 3). It was found that the restorative space was limited and the occlusal rehab has to be done at the proposed VD. Therefore, the final refinement of the preparations was done and impressions were made in silicon elastomer impression material (Aquasil, Dentsply, Germany) and casts were poured in type IV dental stone (Kalrock, Kalabhai, India).

Figure 3: Facebow transfer.

Articulation was done with the proposed vertical dimension of occlusion and diagnostic wax- up was done. Taking the putty index of the diagnostic wax up, temporary restorations were fabricated. The provisional restorations were fabricated in the anterior and posterior sections separately (Figure 4) and cemented using temporary cement. (Rely X Temp NE, 3 M ESPE, Germany).

Figure 4: Customised incisal guide table.

Post cementation anterior provisional restorations were evaluated for optimum anterior guidance for comfortable and harmonious functional movement along with esthetics. Customised incisal guide table was built to accurately record the anterior guidance developed by the provisional restorations (Figure 4).

Patient's occlusion and comfort was again evaluated for the next 3 weeks. When no complaints came up with provisional restorations, impressions of maxillary and mandibular arches with these crowns were made. Casts

made from these impressions were used to make putty indices for the fabrication of definitive restorations.

It was decided to fabricate anterior restorations with lithium disilicate and posterior with zirconia restorations.

Definitive maxillary and mandibular anterior restorations

An impression of the prepared maxillary and mandibular anterior teeth was made using the additional silicone impression material by dual stage impression technique. And the casts which were obtained were articulated to each other using anterior occlusal records and posterior provisional restorations as vertical stop. All records were sent to the lab along with mounted casts. The maxillary and mandibular anterior definitive restorations were fabricated using the putty indices of anterior provisional restorations. The definitive maxillary and mandibular anterior crowns thus fabricated were temporarily cemented and evaluated for functional harmony, esthetics, and comfort, following which they were permanently cemented using resin cement.

Definitive posterior restoration

After fabrication of maxillary and mandibular anterior restorations, occlusal plane analysis was done using Broadricks occusal plane analysis principle (Figure 5). After this, maxillary and mandibular definitive impression were made with maxillary and mandibular anterior restorations in place. The mandibular posteriors were sent first for fabrication with zirconia along with interocclusal and jaw relation records.

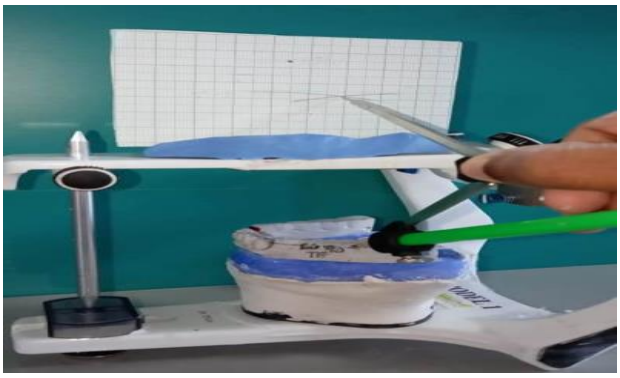

Figure 5: Broadricks occlusal plane analysis.

After fabrication, the definitive mandibular posteriors were tried in the patient's mouth and checked for fit and occlusion and for sufficient posterior disocclusion during eccentric movements. Next, after proper evaluation, the mandibular posteriors were permanently cemented with resin cement. (3M Espe Relyx U200 self-adhesive resin cement).

For the upper posterior, the functionally generated path technique was followed and the imprints of lower posterior border movements were made on the pattern resin which was placed in the patients mouth (Figure 6). All records along with pattern resin were sent to lab where the movements made with FGP technique were scanned and the upper restorations were finalized in zirconia. On the next appointment of the patient, the upper posteriors were evaluated for fit and occlusion in centric and eccentric movement, (Figure 7-9) and after satisfaction were permanently luted with resin cement providing mutually protected occlusion. Patient was monitored and recalled after 24 hours and necessary occlusal corrections were done. Patient was instructed about the proper oral hygiene measures. The recall visit after one month, six months, and one year revealed a well functional, esthetic prosthesis with occlusal harmony.

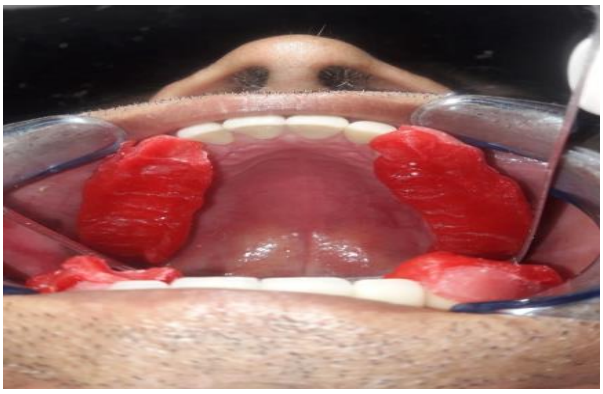

Figure 6: Functionally generated path technique.

Figure 7: Restortions in centric occlusion.

Figure 8: Protrusive left.

Figure 9: Protrusive right.

DISCUSSION

Successful occlusal rehabilitation of a functionally compromised dentition requires an interdisciplinary treatment approach that requires a correlation of biological factors and mechanical principles. Apart from esthetics and functional aspects of the dentition, the aim of full-mouth rehabilitation is to restore the normal healthy function of the masticating apparatus.[3] In this case report the patient presented with a mutilated dentition and in which no posterior occlusal support was present. For that purpose, VDO was established keeping in mind the available limited restorative space and required amount of interocclusal space. The occlusal rehabilitation was done following PMS technique which involves the principles of Broadrick's occlusal plane analysis and functionally generated path technique. As per patients esthetic demand full mouth, all ceramic restorations were planned.

Currently available ceramic systems offer a wide array of prosthetic advantages, including superior esthetics and enhanced physical and mechanical properties. The dental ceramic with the highest reported mechanical properties being zirconia was planned for posterior rehabilitation, while the anterior restorations were fabricated in lithium disilicate.[4] The restorations were designed and fabricated through CAD/CAM process after sending all necessary records to the lab. A possible drawback of the prescribed treatment could be the difficulty of prosthesis repair. Monolithic zirconia restorations are gaining popularity and are increasingly being used in high loadbearing areas.[5]

CONCLUSION

This clinical report discusses the treatment of a patient who presented with a decimated dentition. A complete mouth rehabilitation by using all ceramic system has been described. The patient was satisfied with the functional and esthetic outcome of the treatment and reported a significant improvement in quality of life.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Tyagi M, Kusum CK. Full mouth rehabilitation of the patient with severely mutilated dentition: a case report. Int J Community Med Public Health 2022;9:3010-3.