

## Oral Rehabilitation of a Worn Out Dentition

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### ABSTRACT

Noncarious loss of the tooth surface continues throughout the life of a person. One of the most common causes of the noncarious tooth surface loss is tooth wear which is a common condition found in the elderly. A case is presented here which demonstrates the provision of full mouth rehabilitation to a patient with severe worn out dentition and highlights the complexity associated with the treatment of generalized worn out dentition.

**Keywords:** Tooth wear, Worn out dentition, Oral rehabilitation.

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### INTRODUCTION

Tooth structure wears with age depending on individual's diet and masticatory habits. Tooth wear has a multifactorial etiology.<sup>1</sup> Common causes of noncarious tooth wear are erosion, attrition and abrasion.<sup>2</sup> If tooth wear involves the occlusal surface, it results in loss of vertical dimension.<sup>3</sup> However, the knowledge of changes in the vertical dimension can be utilized in the treatment planning. A full mouth oral rehabilitation can be provided to patients suffering from generalized tooth wear. Oral rehabilitation has different meaning for different people but it usually involves phased treatment plan extending over a period of time.<sup>4</sup>

### CASE REPORT

A 55-year-old male presented with the chief complaint of poor looking teeth, inability to chew due to absence of multiple teeth and chronic dull pain in the lower right quadrant. Patient was a doctor by profession. The patient's previous dental experience involved extractions of multiple teeth and the patient was also a denture wearer but was not satisfied with the denture. Patient's knowledge of prevention was limited to brushing the teeth twice daily.

His motivation for seeking dental treatment was to improve esthetics and restore mastication. He was briefed on the long duration of treatment, i.e. 6 to 8 months. He agreed with the formal plan of the treatment and was also prepared for multiple visits. His medical history was not significant.

Extraoral examination was normal and intraoral examination revealed missing 16, 21, 24 to 26, 35, 36, 45



Fig. 1: Worn out dentition—closed mouth view

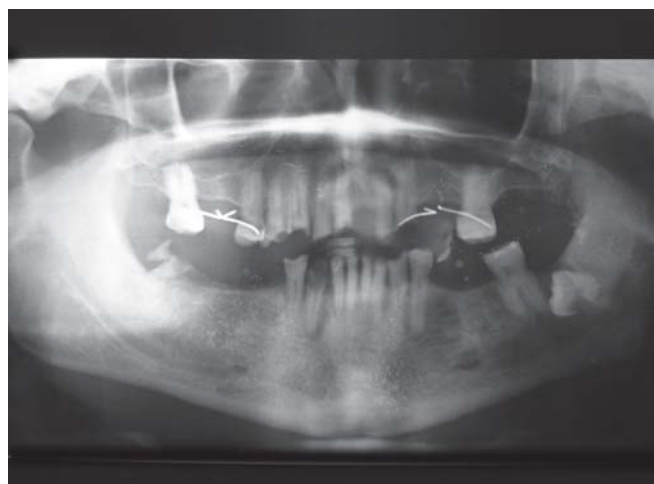


Fig. 2: Preoperative OPG

and BDR of 43 and 48. There was generalized worn out dentition. Oral hygiene of the patient was also poor (Fig. 1). OPG was also taken to observe any underlying pathologies and for record keeping (Fig. 2).

### Treatment

The treatment plan was designed to be provided in phases so, that the success of the treatment provided can be reviewed and the oral tissues of the patient also get time to adjust.

### Literature Evidence on which the Treatment Plan was Based

Decrease in the height of the tooth is compensated by the increase in the height of alveolar bone,<sup>5</sup> it becomes rarely

necessary to increase the vertical dimension by 2 mm.<sup>6</sup> Keeping these two points in mind, it was planned to raise 1 mm of the bite in the upper and 1 mm of the bite in the lower anterior crowns and bridge during phase 5 of the treatment. Yagi et al<sup>7</sup> studied the changes in vertical dimension after raising the bite by 3 mm in guinea pigs with the help of a bite raising appliance placed on the lower incisors and observed that the space between the upper and lower molars got filled within 10 days because of the eruption of lower molars.

In this case, patient was given 30 days break so that the bite can be raised during phase 5 of the treatment.

The separation of posterior teeth causes the elevator muscles to shutoff. This has several advantages as it decreases the loading forces on TMJ and wear of posterior teeth is also stopped.<sup>8</sup> Keeping this in mind, bite was raised for the posterior teeth.

### Phase 1: Extraction of BDR of 43 and 48 for Pain Relief

Extraction of BDR of 43 and 48 (FDI numbering system) was carried out under local anesthesia to provide pain relief and the following drugs were prescribed: Amoxicillin 500 mg tds for 5 days, Metronidazole 400 mg bd for 5 days and Paracetamol 1000 mg four times a day as required.

Placement of implant after the removal of 43 would have been ideal but due to financial implications, patient avoided it.

### Phase 2: Scaling and Oral Hygiene Instructions

Scaling was carried out after the healing occurred. All deposits of calculus were improved. Patient was given instructions for the maintenance of oral hygiene.

The patient had to demonstrate the ability of maintaining oral hygiene as failure to maintain this would result in treatment being aborted. The patient demonstrated good compliance in oral hygiene after 2 weeks.

### Phase 3: Root Canal Treatment

Root canal therapy was decided to avoid extractions keeping in mind the minimal intervention approach. Root canal treatment of tooth no. 11, 12, 13, 14, 15, 22, 23, 27, 31, 32, 33, 34, 41, 42 and 44 was carried out as all of these teeth were worn out and their orifices were exposed. The patient was warned about the weakness of the teeth and that it was critical to maintain their integrity.

### Phase 4: Restorative Phase

All of the above mentioned root canal treated teeth were then restored with composite (Denfil<sup>TM</sup>) except for 15 which



Figs 3A and B: After insertion

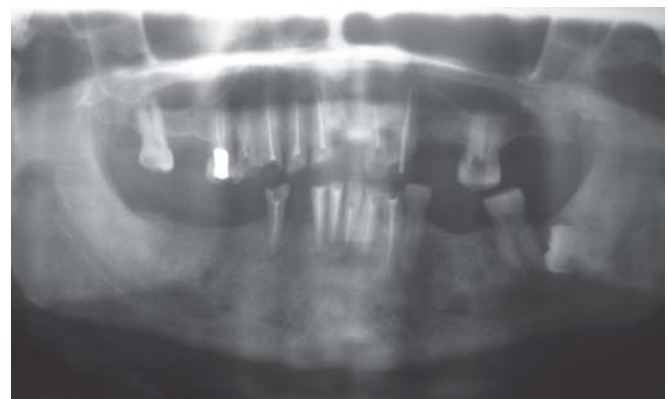


Fig. 4: OPG postoperatively

was restored with amalgam (Spetalloy NG70<sup>TM</sup>). There was considerable tooth structure loss of tooth no. 23. Therefore a prefabricated tapered screw post and then composite core were considered necessary for it.

Single porcelain fused to metal (PFM) was placed on tooth no.13 and 12 and a bridge involving tooth no.11, 21 and 22 was given to the patient in which 21 was a pontic and 11 and 22 acted as abutments.

Single porcelain fused to metal crown was placed on tooth no. 31, 32 and 33 and a bridge involving 41, 42, 43,

44 and 45 and the bridge was a distal cantilever (Figs 3A and B). OPG was then taken postoperatively (Fig. 4).

Long span bridges were avoided so that if one tooth fails endodontically, replacement of bridge is easy and relatively inexpensive.

### Phase 5: Bite Raising Phase

Before the start of the treatment, OVD (Occlusal vertical dimension) and RVD (Rest vertical dimension) of the of the patient was checked and the loss of tooth structure due to wear was calculated to be 2 mm. Therefore, it was planned to raise the bite of the patient by 2 mm. 1 mm of the bite was raised in the upper anterior crowns and bridge and 1 mm of the bite was raised in the lower anterior crowns and bridge. The patient was then given an acrylic bite plate to cover the lower posterior teeth and was instructed to wear it only during the daytime and was also advised to take soft diet as the pressure of the mastication was now on the anterior teeth and was given 30 days break to raise the bite of the posterior teeth.

### Difficulties Encountered

Patient came back after 45 days with dislodged crowns and broken upper anterior teeth except 13.

Then prefabricated tapered screw posts were placed in 11, 12, 13 and 22 and again the crowns and the bridge was placed. The patient then again came back with dislodged crowns and bridge, fractured posts and considerable loss of tooth structure.

### Phase 6: Upper and Lower Arch Cast Partial Denture

The posts were removed and 11, 12 and 22 were then buried in the bone and restored with amalgam. Then a cast partial denture was given to replace the saddles with teeth in the upper arch and in the lower arch.

### Phase 7: Review

The patient was reviewed for minor adjustments to partial denture. Overall the oral hygiene of the patient was good and he was very happy with the treatment (Figs 5 to 7).

## DISCUSSION

The incidence of tooth wear is on a rise.<sup>9</sup> One study suggests that the presence of wear in people greater than 65 years of age is three times greater than the tooth wear present in people aged between 26 and 35 years.<sup>10</sup> But this is not to suggest that wear occurring in children's teeth can be ignored. On the contrary, wear can compromise children's



Fig. 5: Right side of the bite postoperatively



Fig. 6: Left side of the bite postoperatively



Fig. 7: Final photograph

teeth for the entire life span and they may require frequent costly dental treatments.<sup>11</sup> In the past, tooth wear was considered as part of a normal aging process but nowadays its treatment is strongly recommended. The treatment of tooth wear as compared to dental caries is more complex,

expensive and challenging as it is a generalized condition whereas caries affects individual teeth.

In certain cases, tooth wear extends to such an extent that the root canal orifices of the teeth are exposed, putting the vitality of the teeth at risk. In these cases, root canal treatment followed by steps taken to restore lost vertical dimension become necessary. This not only complicates the treatment plan but also increases its duration and expense. Patient's compliance during the treatment is also very important as noncompliance seriously affects the outcome of the treatment. A smarter move is to formulate a treatment plan after a discussion with the patient as an essential requirement for the success of the treatment is that the patient is compliant with the health care suggestions and recommendations.<sup>12</sup>

Therefore, the treatment of worn out dentition has several aspects and whenever, treating the worn out dentition, the clinicians should remember the five P's: proper planning prevents poor performance.<sup>13</sup>

The prolonged length of the treatment in this case could have been avoided, if patient would have obtained dental advice earlier. This would have saved both time and money for the patient therefore early detection is always better.

## CONCLUSION

Dentists observe tooth wear and loss of vertical dimension routinely in their practices. This case illustrates that with better planning, patience and patient's compliance, dentists can improve patient's quality of life.

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## REFERENCES

1. Johansson A, Johansson AK, Omar R, Carlsson GF. Rehabilitation of the worn dentition. *Journal of Oral Rehabilitation* 2008;35(7):548-66.
2. David Bartlett. A new look at erosive tooth wear in elderly people. *J Am Dent Assoc* 2007;138.
3. Hylander WL. Morphological changes in human teeth and jaws in a high attrition environment. In: Dahlbert AA (Ed). *Orofacial Growth and Development*. New York, NY: Walter De Gruyter Inc; 1977.
4. Christensen JG. Defining oral rehabilitation. *JADA* 2004;135: 215-17.
5. Berry DC, Poole DF. Attrition: Possible mechanism of compensation. *J Oral Rehabil* 1976;3:201-06.
6. Bloom DR, Padayachy JN. Increasing vertical dimension: Why, when and how. *BDJ* 2006;200:251-56.
7. Yagi T, Morimoto T, Hidaka O, et al. Adjustment of the occlusal vertical dimension in the bite raised guinea pig. *J Dent Res* Feb 2003;82(2):127-30.
8. Dawson PE. *Functional occlusion from TMJ to smile design*. St. Louis, MO: CV Mosby 2007:50-51.
9. Van't Spijker A, Rodriguez JM, Kreulen CM, Bronkhorst EM, Bartlett DW, Creugers NHJ. Prevalence of tooth wear in adults. *International Journal of Prosthodontics* 2009;22(1): 35-42.
10. Smith BG, Robb ND. The prevalence of tooth wear in 1007 dental patients. *J Oral Rehabil* 1996;23(4):232-39.
11. Lussi A, Hellwig E, Zero D, Jaeggi T. Erosive tooth wear: Diagnosis, risk factors and prevention. *American Journal of Dentistry* 2006;19(6).
12. Schou L. The relevance of behavioural sciences in dental practice. *Creating A Successful*. *Int Dent J* 2000 Suppl;324-32.
13. Frederick McIntyre. Restoring esthetics and anterior guidance in worn anterior teeth: A conservative multidisciplinary approach. *JADA* 2000;131:1279-83.

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