

Complex Restoration of a Failing Dentition with Direct Composites

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ABSTRACT

Teeth wear in elderly is often associated with erosion and acid reflux .The restoration of function of the teeth is impossible to accomplish without the addressing the failing dentition. Severe tooth wear causes with a decrease in vertical dimension at occlusion. Reorganization of the occlusal scheme requires a facebow transfer to ensure balanced occlusion.

KEYWORDS: Teeth Wear, Erosion, Failing Dentition, Direct Composites

INTRODUCTION

Dental erosion causes the chronic tooth loss by chemically washing away the surface. Erosion is caused by intrinsic and extraneous factors. Eccles, 1982, suggested the term “tooth surface loss “ be used when a single etiological factor was difficult to identify (3). Clinical manifestations and diagnosis diseases caused by combination of these etiological factors should be given careful consideration. In this report a case of dental erosion is discussed with the management.

CASE REPORT

AB was referred by his GDP explaining that AB has been having problems with his upper and lower dentures and had a failing dentition. AB complained of food getting stuck under the palate of the upper denture and the lower denture had become “loose AB has had upper and lower partial dentures since the last 5 years and has wanted them replaced, as he was unable to eat with them . AB also explained since his last denture was made he had a fractured tooth on his lower right side (Fig 1). AB was diagnosed with capillary fragility 3months ago and is not on any medication.

AB has frequent regurgitation of food after his meals and is currently being investigated for the same by his GP. On extra oral examination lower facial height was reduced.

On examination of the dentures the upper denture: Lacked retention stability and support and the lower denture showed that LR5 had fractured thus the purpose of the clasp to aid in retention was lost. Patient had had the dentures for 5 years and the dentures had good oral hygiene. The patient had a deep overbite with loss of occlusal vertical dimensions. The Radiographic Assessment of UL2 AND LR5 had fractured crowns and embedded and the root stumps also depicted periapical radiolucency with widening of the periodontal space. LR1, LR2, LL1, LL2 depicted reduced coronal height (Fig 2).

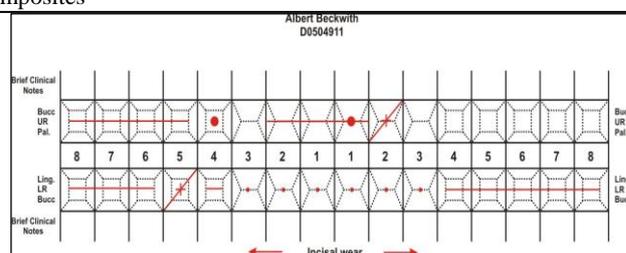


Figure 1:- Intraoral Charting

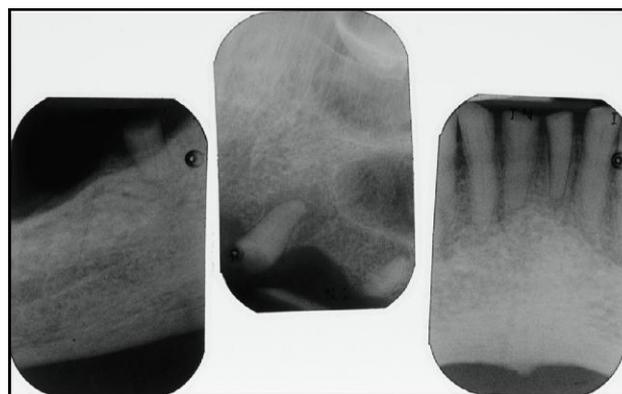


Figure 2:- Radiographs of the root stumps



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Figure 3A, 3B, 3C: Preoperative Photographs

AB complains of regurgitation and is unaware of any grinding habit. He suffers from -

Tooth wear: A combination of erosion and attrition affecting the upper and lower anterior sextants with a loss of Occlusal vertical dimension (OVD) due to missing posterior teeth and loss of tooth structure anteriorly and failing dentition (Fig 3A,3B,3C).

TREATMENT PLAN

- 1) Prevention, Oral hygiene instructions, Diet counseling and scaling and polishing
- 2) Extraction of UL2 and LR5
- 3) Reorganized approach to increase the patients OVD using a face bow transfer and articulation of casts on a semi- adjustable articulator
- 4) Construct Upper and Lower partial acrylic with increased OVD (Fig 4, Fig 5).



Figure 4: Study models



Figure 5: Study models with diagnostic wax up

- 5) Increase in the OVD by 2-3 mm depending upon individual tooth wear using composite with the aid of memosil indices (Fig 6).
- Plan was explained to AB for which he gave his approval and consent
 - Instructions and leaflet was given to the patient.



Figure 6: Study model with memosil index





Fig 7A, 4B, 4C: Post Operative View



Figure 8A, 8B: Comparative facial views of the patient

DISCUSSION

Teeth wear: The patient's primary complaint was not tooth wear. However, the restoration of the function without addressing the failing dentition was impossible. The tooth wear in the patient was characterized by "cupping" of the incisal edges thus indicating that the frequent regurgitation may have caused erosion on the teeth surfaces.¹ The presence of the reduced clinical crown height may be another indicator of attritional wear from grinding habit.¹ The patient also displayed "over closure" and decreased anterior facial height as a result of loss of occlusal vertical dimensions (OVD) due to the pathological wear. Tooth wear has also been associated with age, in a study conducted by Van't Spiker et al found that the percentage of wear increased from 3% at age 20 to 17% at age 70.¹³

Occlusal Vertical Dimensions: The patient on examination presented decreased OVD and, despite wear

on the upper and lower anterior teeth, there was minimal amount of space available for placing the restorations. An increase in OVD may hamper the balanced activities of the muscles of mastication; this might even cause repeated failures of restoration and myofascial pain.^{11 12}

Chu F (2002) reported that an increase in OVD was better tolerated in dentate patients than edentulous patients. In fact electromyography studies have shown that the muscles of mastication are easily able to adapt to the increased OVD.¹

Since multiple restorations were required a "reorganized occlusal scheme" was decided upon. The worn out teeth still had enough crown height for adhesive restorations without any further surgical interventions.²

Importance of Face bow Transfer: The face bow transfer is one of the key components in reorganization of the occlusal scheme. The objective of face bow transfer is to register the anterior-posterior and vertical relationship of the maxilla to the transverse horizontal axis and transfer this information on the articulator (Rouse 2010). The use of face bow transfer has been reported to be as low as 29.64% by general dentists and as high as 96.22% by prosthodontists. The face bow transfer allows stimulated occlusal movements and allows small changes in vertical dimensions.¹² The failure to transfer the appropriate anterior-posterior relationship may cause significant errors in occlusion.⁹

Articulated casts and wax ups are required to provide any information that are required for evaluating treatment options and tolerance to any prosthesis.⁶

Restoration of tooth wears: Many treatment options have been suggested for the restorations of tooth wear. Though the use of conventional crowns has superior esthetic, it results in further loss of tooth structure. Cast adhesive restoration though a conservative option causes compromised esthetic.⁵ Porcelain onlays have an esthetic outcome but have been reported to lack long-term follow up.⁴ Direct composites on the other hand are relatively simple, easy to place, esthetic and have predictable outcome.⁷ A clinical trial conducted by Hemming, 2000, on restoration of tooth wear with direct composite restorations using increased vertical dimensions reported to have a high success rate of 88.4% after 30 months. However, the main disadvantage of this technique is that it is time consuming.⁷ The use of memosil indices combines the advantages of direct and indirect techniques, while being cost effective and simple.⁸

A removable partial denture was used in the management of tooth wear that might have been difficult to restore. An increased OVD was achieved by the placement of the upper and lower dentures, which has provided space for the placement of composite restorations. As a result the removable partial dentures helped restoring the lost vertical dimension.

Once the patient was able to tolerate the increased OVD, the composite buildups were placed on his teeth. The patient was pleased with the esthetic, retention and

stability of the dentures and restorations (Fig 7, Fig 8). The patient prior to treatment was informed about the possible wear, fracture and debonding of the composite which are liable to happen in this kind of approach.¹ Acrylic resin and composite were used as materials of choice as they are inexpensive and easy to fix in case of fracture. However, providing definitive restorations using metal ceramic crowns with palatal metal surfaces may be considered in the case of composite restoration failure. Regular recall and maintenance visits have been advised to ensure the longevity of the restoration. The patient has also been instructed and advised about the importance of oral and denture hygiene routines.

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