Metal Veneer – A Case Report

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Abstract

Tooth wear refers to the loss of tooth tissue from causes other than dental caries or trauma. Excessive wear lead to loss of occlusal vertical dimension and subsequent inadequate inter-occlusal space for restoration of missing teeth. Restorative treatments of the missing teeth could only be performed after stabilization of tooth wear. Among other management, Dahl concept has been introduced to increase inter-occlusal space on collapse vertical dimension cases. These include direct and indirect composite resin restorations, cast adhesive alloys and adhesive ceramic restorations. In this case report, metal veneer restoration was performed to re-establish occlusal vertical dimension and further restore missing teeth.

Keywords: dahl concept, inter-occlusal space, metal veneer, tooth wear

Introduction

Tooth wear is the general term that used to describe tooth surface loss of dental hard tissues from causes other than dental caries, trauma and developmental disorders. Tooth wear is a normal physiological process that is irreversible and cumulative with age. The process of tooth wear is associated with multi-factorial aetiology which can be subdivided into 4 categories: attrition, abrasion, abfraction and erosion. However, it is difficult to determine single aetiological factor for the patient presents with tooth wear clinically. The estimated normal vertical loss of enamel resulting from natural wear is approximately 20-38 μm per year. Tooth wear is considered pathological once it is associated with functional or aesthetic concerns by patient. Tooth wear cases that required active restorative intervention when there is aesthetic concerns, functional difficulties and unstable occlusion. Furthermore, neglecting restorative management in these cases may result in exposure of pulp. Management of tooth wear can be very challenging in obtaining an accurate diagnosis, as well as appropriate time to implement active restorative intervention.

Restorative management for these cases further challenged when patient presented with multiple missing teeth. Not only the operator has to deal with the tooth surface loss but almost always patient presented with reduced in inter-occlusal space. Inter-occlusal space is reduced because of two factors, 1/ continuous surface loss, and 2/ overeruption of the opposing dentition.

Case

A 69-year old Indian male came with concerns of difficulty of eating and requested for a partial denture. Clinical examination revealed narrow vermillion border and overclose lip commissure. Mandibular arch presented with Kennedy Class I partially dentate, with inadequate inter-occlusal space during intercuspal position (Figure 1(a-c)). Height of the mandible ridge as well as sulcus depth appeared adequate for replacement of missing teeth. Maxillary anterior dentition presented with tooth surface loss at the palatal side, resulting in increased overbite (Figure 1(d)).
Figure 1. Pre-operative views. (a-c) Inadequate interocclusal space during intercuspal position, (d) Pathological wear affecting the maxillary anterior dentition.

Discussion was made on the restorative management of the case. Clinical problems were highlighted to the patient. Patient was given option for metal veneer restoration of his anterior maxillary teeth to re-establish occlusal vertical dimension (OVD) and further restore missing teeth with cobalt-chrome removable partial denture. Written consent was obtained.

Primary impression was casted and diagnostic wax-up was constructed. Diagnostic wax-up was done on palatal of teeth 12 to 22 to re-establish OVD by increasing 3mm from existing OVD (Figure 2).

Figure 2. Diagnostic wax up. (a) Mounting of maxillary and mandibular casts, (b) Wax up of palatal surface of maxillary anterior teeth.

Minimal veneer preparation was done on the palatal of maxillary anterior teeth. No provisional restorations were fabricated as preparation only involving enamel surfaces. Veneer restorations were fabricated based on the diagnostic wax-up. Try-in was done, occlusion was checked and adjustments were made. All metal veneers were cemented with resin cement (Figure 3).
Figure 3. Metal veneer. (a) Cemented metal veneer in situ, (b-c) Re-establish occlusal vertical dimension of 3 mm.

Review appointment was conducted to evaluate patient’s acceptance on the new OVD. After stabilization, the edentulous mandibular arch was restored with cobalt-chrome removable partial denture (Figure 4).

Figure 4. Post-operative view.

Discussion

Dahl concept has been introduced in management of tooth wear to increase inter-occlusal space on collapse vertical dimension cases. In the studies which assessed the efficacy of the Dahl concept by Poyser et al. in 2005, a success rate of between 94-100% has been reported.

Metal veneer is a thin shell of Type III gold alloy or alloys based on nickel-chromium type of restoration that can use to protect worn and vulnerable tooth surfaces from the effects of further wear. This can be achieved through forming a barrier against mechanical and chemical insults. It has advantages of optimum accuracy, predictable fit attainable, minimal wear of antagonistic surfaces and conducive to good periodontal health since it placed supra-gingivally. The introduction of resin-bonded metal restorations has reduced the need to remove tooth substance in order to achieve mechanical resistance and retention of worn teeth for conventional crown. Resin cement able to form a high level of predictable bond between metal veneer and the dental hard tissue thus only minimal tooth preparation required, thereby reducing the ‘biological damage’ inflicted during tooth preparation to compromised tooth tissue.

The main downside of metal veneer is cosmetically unacceptable as it may result in a dulled appearance of the restored tooth or even the ‘shine through’ of metallic grey on incisal edges. This is very difficult to overcome even with the advent of opaque or tooth coloured resin cements thus comprehensive treatment planning and patient consent are important factors to success. The other disadvantage is metal veneer need copious and good quality of enamel in order to achieve acceptable bond interface. Thus, heavily restored worn tooth may consider Metal veneer restoration is one of the options to manage localised anterior tooth wear that could lead to a promising result. Minimal preparation is feasible to address pathological tooth wear and re-establish occlusal vertical dimension. Metal veneer restoration is one of the options to manage localised anterior tooth wear that could lead to a promising result. Minimal preparation is feasible to address pathological tooth wear and re-establish occlusal vertical dimension.

Acknowledgment

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References