

**Bruxism – a case with direct Esthetic deal****Bijo Kurian<sup>1</sup>, Roopa R. Nadig<sup>2</sup>, Usha G<sup>3</sup>, Swapna D.V.<sup>4</sup>, Karthik Kabbur<sup>4</sup>, Rejitha Kamala Sanan<sup>1</sup>**

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**ABSTRACT:**

Incidence of tooth wear has been on the rise especially amongst the younger population due to variety of reasons. Its diagnosis, precautions, symptoms, and treatment modalities have to be well understood to produce satisfactory esthetic functional rehabilitation. A case of bruxism presenting with moderate tooth wear and displeasing aesthetics was managed with a multidisciplinary approach using orthodontic treatment and minimally invasive direct composite restorations to obtain a comprehensive functional and esthetic rehabilitation by incorporating important concepts of smile design and occlusion.

**Keywords:** Bruxism, Bio-esthetic, Night guard, Vertical dimensions.

**INTRODUCTION**

Diagnosis and management of tooth wear has remained a challenge to all dental professionals for a long time and has continued to be a theme of countless research papers. Bruxism is perhaps one of the commonest causes of tooth wear. The troubling fact of the matter is that in recent times tooth wear has been on the rise in younger patients for various reasons.<sup>1</sup> Most of the patients want to retain their natural dentition while desiring optimum esthetics posing a challenge to the general dental practitioners.

When treating a patient with bruxism, there are many treatment options that have been prescribed by various authors. Very often, inter-incisal clearance and bite relation poses great difficulty when a restorative esthetic treatment is planned at an existing occlusal vertical dimension. For such cases, surgical crown lengthening and orthodontic therapy are the treatment options. Both these methods have their own limitations and are conjoined, depending upon the case, to create ample

crown height, acceptable inter-incisal clearance and over jet.<sup>2-5</sup>

The ultimate goal of the restorative dentist is to create life like restoration –direct or indirect – that integrates comprehensively important concepts of smile design and occlusion into the treatment planning of a case.<sup>6-9</sup>

Composite resins occupy a paramount position in the practice of esthetic dentistry because they offer excellent esthetic potential and acceptable longevity, with much lower cost than equivalent ceramic restorations. In addition, direct composite restorations allow for minimally invasive preparations or no preparation at all when assuming the replacement of decayed or missing tissues. This thinking is part of a new concept called “bio-esthetics,” giving priority to additive, minimally, or micro-invasive procedures to preserve tooth biology and biomechanics.<sup>10-12</sup>

The aim of this case study is to demonstrate how a patient with moderate tooth wear can obtain an esthetically desired dentition with the help of orthodontic treatment and

minimally invasive direct composite restorations.

### CASE REPORT

A 24 year old male patient came with a complaint of tooth wear and reduced size of the upper front teeth. On enquiry he gave a history of grinding of his teeth during night time since many years. Clinical examination revealed moderate wear of all the teeth with edge to edge bite in the anterior teeth. (Figure 1) Attrition of the posterior teeth resulted in reduced overjet and overbite causing further attrition of the incisal edge of maxillary anteriors resulting in reduced cervico-incisal height. Other routine investigations like vitality test and occlusal relation were carried out. All involved teeth were vital and occlusion was in class I molar relation with no overjet and over bite but no major loss in vertical dimension

A comprehensive treatment approach was planned out which included:

Orthodontic treatment to create favourable over jet followed by Composite build up in relation to 12,11,21,22 to increase the cervico-incisal dimension as well as to improve incisal curve to contact the contour with lower lip together with a habit breaking appliance-night guard.

Pre orthodontically there was class I molar relation with zero overjet and overbite. But post orthodontically an overjet of 1mm and over bite of .5mm was achieved. (Figure 2) Before the patient underwent restorative esthetic rehabilitation. On analysing the occlusal plane and incisal curve there appeared a 2 mm discrepancy in relation to central incisors and 1 mm discrepancy in relation to lateral incisors resulting in flat incisal curve. The wax mock-up was done (figure 3) for patient motivation and to analyse treatment outcome.

A silicone template of the corrected anteriors was made and checked for the adaptation in the patient's mouth. After selecting the appropriate shade (Figure 4), composite build up (Filtek- universal Nano filled composite

restorative kit) was carried out. Starburst bevel of 1mm width was prepared all over the incisal edge of the teeth from upper right lateral to left lateral incisors. After the teeth were etched, two coats of bonding agent-(single bond-3M ESPE) applied, the composite build-up was done using silicone template with multilayering technique (figure 5). The morphological layering technique was completed by applying a thin layer of enamel shade. Finishing and polishing of the composite build up was done with coarse to fine soflex discs (figure 6,7) (3M ESPE), interproximal abrasive strips and polishing pastes. The patient was further instructed to use the prepared night guard regularly in an attempt to break the habit of grinding (figure 8) and also to prevent the fracture of composite restoration. The patient was followed up for 2 years and the restoration was in place and in good condition (figure 9).



Figure 1: Pre-operative



Figure 2: Post-orthodontically



Figure 3: Mock up



Figure 4: Shade selection



Figure 5: Composite build up



Figure 6: Finishing and polishing



Figure 7: Final restoration



Figure 8: Night guard



Figure 9: 2 year follow up

## DISCUSSION

Night grinding or Bruxism is a common cause of tooth wear. Usually, the worn surfaces exhibit a uniform pattern on all the teeth. In this case, the patient exhibited typical signs of attrition more in the anterior teeth on both upper and lower arches on account of edge-to-edge incisor relationship.

Bruxism can also have a major impact on the esthetic appearance of a smile. An esthetically youthful smile is characterized by maxillary central incisors that are slightly longer than lateral incisors. Worn anterior teeth give the appearance of an older smile with the incisal line of the maxillary incisors having a straight appearance, resulting in the teeth being not only shorter but also appearing wider.

There have been many clinical approaches to the treatment of bruxism. A primary preventive approach in the treatment of bruxism is the fabrication of a custom hard, plastic night guard. Once it is achieved, definitive orthodontic and restorative interventions will be carried out.<sup>13</sup>

In the present case since patient had edge to edge bite relation in the anterior region (Figure 1), prior orthodontic treatment was essential to prevent rapid wear of the teeth. This was achieved orthodontically by proximal stripping of lower anteriors followed by retraction thereby creating the desired overjet and overbite.

It was decided that composite restorations should be placed initially as intermediate restoration and if it stays without fracturing for reasonable period of time, indirect restorations could be performed that involves more expense and tooth preparation. Composite restorations were placed on the

maxillary teeth from lateral to lateral, using a silicon template constructed from a diagnostic wax up on study models. This technique for composite build ups has been described by Mizrahi in 2004.<sup>14</sup> By using this indirect wax-up and a direct intra-oral approach, good esthetic result can be achieved with less chair side time with minimal wastage of restorative material.

The factors considered for smile design includes - age, sex, symmetry, smile line, embrasure and axial inclinations.<sup>15</sup> In this case apart from increasing the length of the central and lateral incisors to obtain a convex incisal curve, a progressive increase the size and depth of incisal embrasures that was created resulted in pleasing smile.

Preventive intervention is required in all cases of bruxism using an occlusal splint (night guard) along with stress management recommendations.<sup>16</sup> Patient's compliance with regards to usage of night guard was good as reviewed in the subsequent visits. At the end of two years the restoration appeared to have performed very well and the patient was satisfied with the esthetic outcome.



Figure 10: Pre-operative smile



Figure 11: Post-operative smile

## CONCLUSION

Tooth wear is a common issue that affects countless individuals in our society. Hence, a dental practitioner should be well-equipped with the knowledge of its precautions, symptoms, diagnosis, and treatment. The method of treatment described in this case study is simple, inexpensive and easily replicable should be brought into regular

practice when a clinician is confronted with a patient with moderate tooth wear.

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