

A Case of Generalized Tooth Wear caused by Bruxism and its Rehabilitation

Dr. Anupam Podder

BDS, MS (Prosthodontics)
PGT (Bangkok, Thailand)
Asst. Professor
Dept. of Prosthodontics
Dhaka Dental College, Dhaka

Dr. Boby Saha

BDS, MS (Resident)
Dept. of Conservative Dentistry & Endodontics
Bangabandhu Sheikh Mujib Medical
University, Dhaka

Dr. Arup Kumar Saha

BDS, MPH
Asst. Professor
Dept. of Dental Public Health
City Dental College, Dhaka

Dr. Nowseen Jahan Luna

BDS, MPH (In-course, NIPSOM)
Lecturer
Dept. of Dental Public Health
City Dental College, Dhaka

Correspondence to:

Dr. Anupam Podder

BDS, MS (Prosthodontics)
PGT (Bangkok, Thailand)
Asst. Professor
Dept. of Prosthodontics
Dhaka Dental College, Dhaka
Email: dranupampodder@gmail.com

Abstract:

Bruxism may lead to dental problem such as tooth wear, fracture, crack of tooth, muscles of mastication discomfort, temporomandibular joint (TMJ) dysfunction syndrome and periodontal signs such as gingival recession and tooth mobility. This article presents a case report in which bruxism caused severe tooth wear that lead to great muscular discomfort with TMJ pain. The initial treatment approach was the installation of an inter-occlusal acrylic device in centric relation of occlusion for re-establishment of the occlusal stability. Vertical dimension of occlusion, anterior guides and return of normal muscle activity were observed within 3 months. After subsiding primary symptoms, oral rehabilitation therapy was approached by means of metal bond ceramic restoration and new inter-occlusal device was provided for protection of restoration. Satisfactory aesthetics, improved function, occlusal stability were obtained after oral rehabilitation therapy. No specific trouble occurred during 1 year follow up period.

Key words: Tooth wear, bruxism, occlusal splint, oral rehabilitation.

Introduction:

Tooth wear can be defined as the non-carious gradual loss of tooth structures.¹ Factors related to tooth wear are attrition (tooth to tooth friction), abrasion (abnormal tooth brushing with dentifrices) and erosion (eroded by gastric juice, citrus fruits, etc.) that may result in reduced vertical dimension.^{1,3} Decreased vertical dimension and absence of anterior and lateral guidance seem to be associated with muscular pain and difficult mandibular movements.^{1,3,6}

Bruxism is a total parafunctional daily or nightly activity that includes grinding, gnashing, or clenching of the teeth.¹ It may take place in the absence of

subjective consciousness and can be diagnosed by the presence of tooth wear facets which are not resulted from the chewing function. Local, systemic, psychological and /or hereditary factors are related to bruxism. Features of bruxism include tooth wear, crack of tooth, fracture of tooth, pain and discomfort on muscles of mastication, TMJ dysfunction syndrome, and periodontal problems such as gingival recession and tooth mobility.^{1,6}

This case report was made after correcting vertical dimension and anterior guides of a patient in which bruxism caused sever tooth wear and great muscular discomfort with TMJ pain.

Case Report:

A male patient aged 60 years, came to a private dental office at Dhaka city with the complain of facial pain and poor aesthetics due to generalized tooth wear in the lower jaw. Patient gave a history of bruxism. His oral hygiene was good. He did not give any history of gastric regurgitation, or faulty tooth brushing habit.

On examination:

- i. Generalized tooth wear was observed:
 - a. Anterior teeth (incisal surface)- 2-3 mm from the gingival margin.
 - b. Posterior teeth (occlusal surface)- 1-2 mm and buccal surfaces of the premolars and molars were also affected.
- ii. Centric relation-70 mm.
- iii. Centric occlusion-62 mm.
- iv. Freeway space-8mm (normal value in adult 2-3mm).

Treatment Strategy:

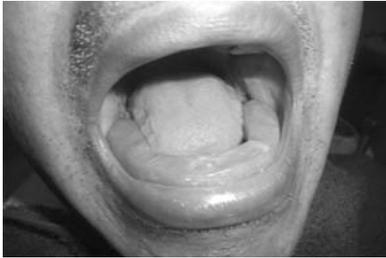
After determining the etiological factors, a multi-phase treatment was approached.

Phase-1

Patient was referred to gastro-enterologist about the suggestion of gastric regurgitation. It was thoroughly discussed with the patient about the treatment time, steps of treatment and cost of treatment and finally a written consent of the patient was obtained.

Phase-2

Use of occlusal splint for re-establishment of vertical dimension and control of muscular pain. Splint was prepared for the lower arch.



Steps of Occlusal Splint preparation:

1. Mouth prepared.
2. Impression took with irreversible hydrocolloid impression materials.
3. Bite registered with modeling wax.
4. Bite transferred to semi adjustable articulator.
5. Increased vertical height about 4 mm.
6. Model preparation-
 - a. Blocked the undercut with modeling wax.
 - b. Bound the periphery with modeling wax.
7. Applied self-cured acrylic resin by sprinkle method.
8. Finished and polished using proper tools.
9. Tried-in patient's mouth (adjustment of vertical height and check-up occlusion).
10. Inserted to the patient mouth and kept for 90 days.
11. Advised the patient for must wearing the splint for 24 hours.
12. Followed up (recall visits)

Phase-3

Endodontic therapy was provided to the abutment teeth.

Phase-4

Final Restoration (aesthetic and functional rehabilitation by metal bond porcelain restoration)- Purpose of final restoration were definitive for the re-establishment of previously determined vertical dimension and anterior guidance. Final restoration was done after 90 days of splint therapy. The patient continued the treatment till the muscle pain disappeared.



Steps of Final restoration:

1. Abutment prepared on biological, mechanical and aesthetic considerations.
2. Accurate parallelism (undercut were freed).
3. Impression took by irreversible hydrocolloid impression material (alginate).
4. Poured the cast.
5. Bite registered (previously adapted bite)-
CR- 70mm
CO- 65mm
Freeway space- 5mm
6. Metal try-in (checked for proper marginal adaptation).
7. Bonded porcelain try-in (checked vertical height and occlusion).
8. Finished and polished using proper tools.
9. Inserted to the patient mouth.
10. Advised to the patient about wearing and post insertion management.
11. Followed up (recall visits).

Phase-5

Prepared a second occlusal splint (essential for good clinical longevity).

Phase-6 (recall visits)-

The patient was asked to attend scheduled in office visits in order to check for the maintenance of the occlusal parameters and to certify that the restorations were in perfect functions. After 1 year follow-up, correct function of stomatognathic system was checked and new polishing was done. Patient was asked again about the remission of TMD problem and no significant trouble was claimed /or observed.

Discussion:

Rehabilitation of severe cases of tooth wear is one of the most complex treatment modalities in dentistry because of not only dentists, many other health professionals are to be involved.^{2,3} In addition, patient compliance with the treatment is extremely important. The diagnosis may be faced as an important part of treatment and the patient can provide sufficient information to the clinician to allow for a differential diagnosis and to prevent further progression of those pathologies.^{2,5} Worn dentition are usually related to the presence of bruxism leading to occlusal instability, reduced vertical dimension, muscle tenderness, TMJ pain and dysfunction.^{1,2,4,5} Treatment plan must involve control of symptoms and removal of causes as much as possible.^{1,6}

The case study made a successful attempt for rehabilitation of such a complicated case.

Conclusions:

Altered vertical dimension, TMJ dysfunction and pain resulted from severe tooth wear caused by bruxism may be resolved by approaching two-step occlusal splinting method.

References:

1. Pavone BW. Bruxism and its effect on the natural tooth. *J prosthet dent* 1985;53(5):192-6.
2. Parker MW. The significance of occlusion in restorative dentistry. *Dent Clin North Am* 1993;37(3):341-51.
3. Gray HS. Occlusal adjustment principles and practice. *NZ Dent J* 1994;90(399):13-19.
4. Gandara BK, Truclove EL. Diagnosis and management of dental erosion. *J Contemp Dent Practice* 1999;1(1):16-23.
5. Christensen J. Effect of occlusal raising procedure on chewing system. *Dent Pract Assoc* 1970;20(7):233-38.
6. Christensen GJ. Abnormal occlusal condition: a forgotten part of dentistry. *J Am Dent Assoc* 1995; 136(12):1667-68.