

CASE REPORT

Sectional Occlusal Splint in Mouth Rehabilitation: An Update

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ABSTRACT

Severely worn dentition affects function, esthetics, or longevity of dentition adversely. The etiological factors of tooth wear are abrasion, attrition, and erosion. The present case report determined the etiology and correct sequence of treatment out lines. Patient was dentate completely except for the mandibular left first molar. Authors recommended the use of sectional occlusal splint of the acrylic polymer in full mouth rehabilitation. Sectional occlusal splint was used as a vertical stop to guide the teeth preparations and plan for provisional restorations at the established vertical dimension of occlusion. It helped the clinician in lab and clinical procedure, bilaterally. Recordings and restorations were made with latest economical material technology. This being an organized approach, managing these patients certainly leads to an expected and encouraging prognosis.

Keywords: Provisional restorations, Sectional occlusal splint, Severely worn dentition.

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INTRODUCTION

Noncarious tooth surface loss is a normal physiological process occurring throughout the life. However, accelerated tooth wear can become a problem affecting function, esthetics, or longevity of dentition. Mouth rehabilitation has been defined as restoration of the form and function of the masticatory apparatus toward as near normal as possible.¹ Full-mouth rehabilitation is also called reconstruction or rejuvenation of individually each tooth in a mouth.² Further, the term occlusal rehabilitation has been defined as the restoration of the functional integrity of the dental arches by the use of inlays, crowns, bridges, and partial dentures.² Therefore, occlusal rehabilitation involves restoring the dentate or a partially dentate

mouth. The conjecture literature of the sectional occlusal splint is sparse. Few references were listed.^{3,4} The previous studies of McCollum, Christensen, and Pankey-Mann-Schuyler have been heightened over the years by the practicing gnathologists.²

The present case report describes the application of sectional occlusal splint in mouth rehabilitation on the articulator as well as in the oral cavity. It can be used to maintain the established vertical dimension of occlusion (VDO) as a vertical stop to guide the teeth preparations and provisional restorations.

CASE REPORT

A 35-year-old middle-aged male patient reported to the department of prosthodontics, Institute of Dental Sciences, Bareilly, Uttar Pradesh, India, with the complaint of generalized hypersensitivity of teeth, difficulty in chewing, and pain in masticatory muscles. Patient was an alcoholic. He did not report any compromising medical condition. He had the addiction of pan, beetle nuts, tobacco, and pan parag chewing. Personal history revealed that patient was also under considerable psychological stress due to financial constraints.

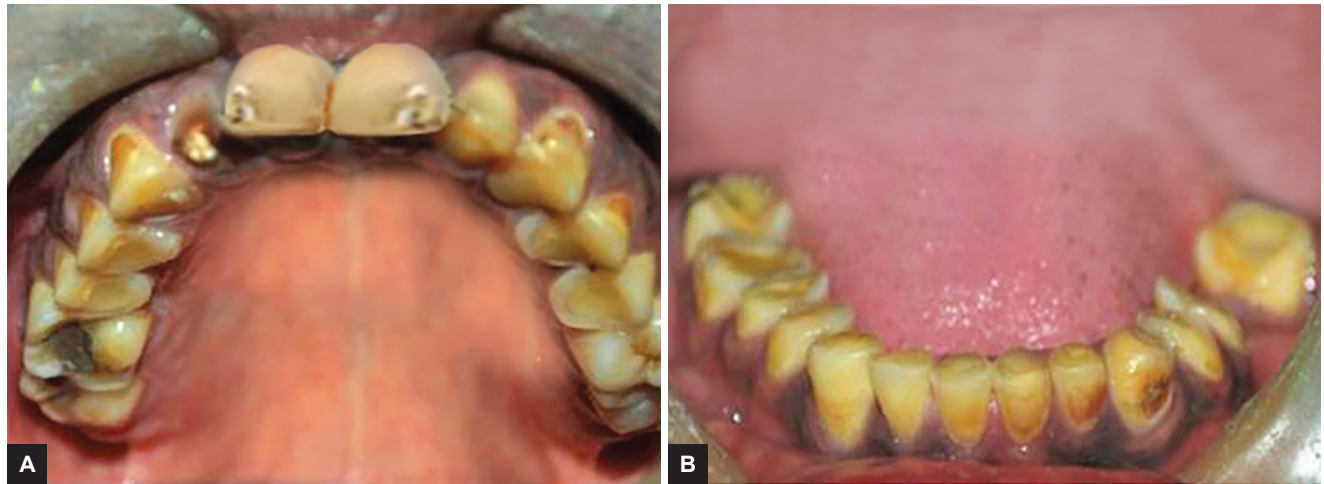
Clinically, on calibration of VDO using physiologic rest position method, a difference of 5 to 6 mm was recorded between vertical dimension of rest and VDO position. This was further assessed by phonetic and esthetic method. Patient was completely dentate except for mandibular left first molar. He has extracted two third molars. Rest of the two last molars were congenitally absent. Generalized, occlusal wear facets were present. Maxillary central incisors were previously restored following endodontic treatment with acrylic jacket crown (Figs 1A and B). Occlusion revealed occlusal interferences in protrusive and balancing movements. Patient complained of masticatory muscle tenderness on palpation, while temporomandibular joint was asymptomatic.

Orthopantomograph was advised and revealed generalized loss of enamel and dentin with close to pulp in relation to most of the teeth. Intraoral periapical X-rays showed that present teeth did not show any pulp exposure. Blood hemogram, complete urine examination, blood sugar, and thyroid function test were also investigated. These were all in normal range. Load testing was done to assess centric position. Class I occlusion with severely worn complete dentition was noticed.

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Figs 1A and B: Occlusal view – severely worn dentition of maxillary and mandibular arches



Fig. 2: Customized BOPA



Fig. 3: Bilateral sectional occlusal splints – positioned on the second molars, at 3 mm inter occlusal gap

Treatment Plan

The goal of occlusal therapy was to achieve type I Condition of Dawson.² The reported patient was a case of full mouth rehabilitation over the newly established vertical dimension. Treatment outline was included as a construct of diagnostic and working cast. The centric relation record was made after anterior deprogramming exercises.⁵ Occlusal splint therapy was planned at normal freeway space of 3 mm for the masticatory muscular pain for 1 month over the complete mandibular arch. The patient was responding favorably to the splint. Mock preparation and diagnostic wax up were done with the application of customized⁶ Broadrick occlusal plane analyzer (BOPA). Sectional occlusal splint therapy was advised after 1 month (Fig. 2).

Fabrication of Sectional Occlusal Splint

Sectional occlusal splint was fabricated over the arcon type whip mix articulator from dough stage method with the self-cure poly methylmethacrylate resin at the established VDO in between the maxillary and

mandibular second molars on either side, separately. Working casts were mounted with face bow records. Customized BOPA assembly was set for the articulator to determine the curve of spee (anterior–posterior curve) for black carbon pencil mark of sectional splints and mock preparations. Full mouth wax patterns were prepared and silicone indexes were made to prepare the provisionals (Fig. 3).

Bilaterally, the sectional occlusal splints were placed on second molars in oral cavity (Fig. 4). Teeth preparations were done leaving out the second molars. The teeth preparations were phased on the patient as were preplanned as on the articulator. Once the provisional restorations of acrylic were in place as planned on the VDO established, the sectional occlusal splints were removed and teeth preparations on the second molars were completed. Provisional restorations were placed full arch and luted with temporary cement (Fig. 5). Patient was monitored further periodically for 1 month.

For permanent restorations, all ceramic restorations (IPS e.max Ivoclar, vivadent) were planned for



Fig. 4: Silicon putty index



Fig. 5: Provisional restorations – upper and lower arches

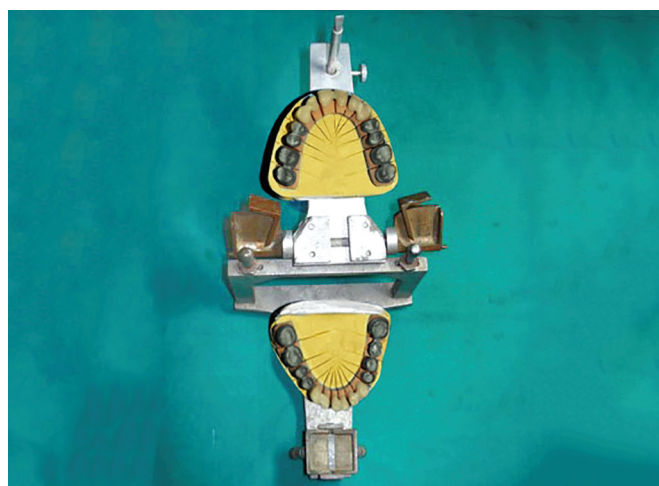


Fig. 6: Whip mix articulator – Zirconia copings for anteriors and metal copings for posteriors



Fig. 7: Final restorations in the patient oral cavity

the upper and lower anteriors in the form of two–two units. The porcelain fused to metal (PFM) restorations were decided (IPS d.sign 84 Ivoclar, vivadent) for the posteriors in the form of two–two units except for left-sided lower mandibular molar region – A three unit bridge (Figs 6 and 7).

Patient was instructed to wear a full mouth soft splint at night for 2 months to protect the permanent restorations from parafunctional wear. Patient was also advised totally to leave the bad habits of chewing.

DISCUSSION

A systematic approach for managing tooth wear could lead to a predictable and favorable prognosis toward full mouth rehabilitation situation. Occlusal splint was used initially to maintain comfortable neuromusculature and relieve all occlusal interferences at established VDO. Any disagreement between the teeth and joint made the neuromusculature to initiate a series of negative reflex actions, which interfered with normal functional mandibular movements. This is a strong cause for painful

masticatory musculature at decreased VDO.^{2,5} The advocated sectional occlusal splints were made in the diagnostic mounting certainly served as the guide to maintain the planned vertical dimension during teeth preparations and provisional restorations.

CONCLUSION

If you are not too big enough to lose, you are not too big enough to win. Therefore, tooth attrition and erosion are modern-day problems for dentistry. A concern is taken in diagnosing the cause before treating the effect. Sectional occlusal splint definitely guides in teeth preparations and provisional restorations. Patient is educated and warned regarding the chewing bad habits and parafunctional movements.

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