

The effectiveness of occlusal splints for sleep bruxism

Are occlusal splints effective in the treatment of sleep bruxism?

Macedo CR, Silva AB, Machado MA, Saconato H, Prado GF.

Occlusal splints for treating sleep bruxism (tooth grinding).

Cochrane Database Syst Rev 2007; issue 4

Data sources Searches were made using the Cochrane Oral Health Group's Trials Register, Cochrane Central Register of Controlled Trials (CENTRAL), Medline, Embase, LILACS (Latin American & Caribbean Health Sciences Literature), Biblioteca Brasileira de Odontologia, and Dissertations, Theses and Abstracts. Hand searches were made of abstracts of particular importance to this review. Additional reports were identified from the reference lists of retrieved reports and from article reviews about treating sleep bruxism. There were no language restrictions.

Study selection Randomised controlled trials (RCT) or quasi-RCT were chosen that compared splint therapy concurrently with no treatment, other occlusal appliances, or any other intervention in participants who had sleep bruxism.

Data extraction and synthesis Data extraction was carried out independently and in duplicate. Validity assessment of the included trials was carried out at the same time as data extraction. Discrepancies were discussed and a third review author consulted. The author of the primary study was contacted when necessary.

Results Thirty-two potentially relevant RCT were identified of which five were eventually included. In these, use of an occlusal splint was compared with palatal splint, mandibular advancement device, transcutaneous electric nerve stimulation, and no treatment. There was just one common outcome (arousal index) which was combined in a meta-analysis. No statistically significant difference between the occlusal splint and control groups were found in meta-analysis.

Conclusions There is not enough evidence to state that the occlusal splint is effective for treating sleep bruxism. Indication of its use is questionable with regard to sleep outcomes, but there may be some benefit with regard to tooth wear. This systematic review suggests the need for further investigation in more controlled RCT that pay attention to method of allocation, outcome assessment, large sample size, and sufficient duration of followup. The study design must be parallel in order to eliminate the bias provided by studies of crossover type. A standardisation of the outcomes of the treatment of sleep bruxism should be established in the RCT.

Commentary

It has been estimated that more than a million occlusal splints are constructed in the USA each year.¹ There is limited evidence for their effectiveness in the management of temporomandibular disorders (TMD)² and this review considers their effectiveness in the treatment of sleep bruxism.

Sleep bruxing is characterised by teeth grinding or clenching during sleep and is usually accompanied by tooth contact sounds.³ Although tooth surface loss, TMD and headaches are potential consequences of bruxing, it can be misleading to consider them as being signs and symptoms of the underlying disorder.

Only five studies met the rigorous Cochrane Collaboration criteria for inclusion in this review. Outcome measures for only three of these studies were obtained by polysomnography, which is potentially sensitive enough to detect bruxing. The outcome measure for one other study was reduction in temporomandibular joint sounds and for another was tooth surface loss. Use of secondary signs and symptoms that are presumed to be associated with bruxism is not suitable for the purpose of the review since the nature of the association is unknown.

The inclusion of those studies, however, did not affect the conclusion of the review: evidence is insufficient to affirm that the occlusal splint is effective in treating bruxism. The reviewers explain that this can be attributed mainly to the inadequate methodology of previous studies. Attention is drawn particularly to the need for adequate sample size for statistical power. Lack of clarity regarding diagnostic criteria and information about the natural course of the disorder has also hampered investigation. In that respect, the authors' conclusion that standardisation of the outcomes of treatment should be established is well made. Bruxing episodes per hour of sleep and episodes of mandibular movement with tooth contact sounds have been used previously and should form the basis of future assessments.

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Evidence-Based Dentistry (2008) **9**, 23. doi:10.1038/sj.ebd.6400569

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