

# Summary of: Use of the Grindcare® device in the management of nocturnal bruxism: a pilot study

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## FULL PAPER DETAILS

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**Background** Bruxism may be described as a diurnal or nocturnal parafunction, characterised by clenching, bracing, gnashing or grinding of the teeth and jaws. The aim of the management of bruxism should be to control or reduce the level of activity where possible. A variety of treatment strategies have been employed to achieve this including hypnosis, occlusal equilibration, splint therapy, physiotherapy and acupuncture. A more recent approach is the use of biofeedback. **Method** Nineteen consecutive patients were recruited from the temporomandibular joint dysfunction (TMD) clinic at Manchester Dental Hospital, all of whom were known bruxists. They were supplied with the Grindcare® device (Medotech) and instructed to wear it every night over the five-week observation period. By monitoring electromyographic (EMG) muscle activity, the device is able to emit low-voltage electrical impulses as it senses a clenching or grinding episode, bringing about muscle relaxation. **Results** Eleven of the nineteen patients (58%) reported a major reduction in the occurrence of headaches and discomfort of the masticatory muscles on waking. Female and younger subjects responded more favourably than male and older subjects respectively. **Conclusion** The use of biofeedback could reduce the level of parafunctional activity and bring about meaningful symptomatic improvement. No adverse effects occurred throughout the study period.

## EDITOR'S SUMMARY

Various aspects of dentistry seem to be surrounded by an aura of mystery at best and confusion at worst. One of the chief candidates is occlusion, followed not far behind by temporomandibular joint dysfunctions. Texts on these subjects can be vast, ranging from those which apparently make a simple problem complex to others which seem to make a complex issue even more befuddling.

What is not in doubt is that some patients do suffer considerably from the symptoms arising from these conditions and as practitioners we can be at something of a loss to know what is the best, or the current treatment of choice. Mixed into this orthognathic maelstrom is bruxism, or diurnal or nocturnal parafunction which is characterised by clenching, bracing, gnashing or grinding of the teeth and jaws. A variety of therapies have been tried including hypnosis, occlusal equilibration, splint therapy, physiotherapy and acupuncture but a more recent approach is that of biofeedback.

This pilot study has investigated the use of biofeedback in relation to the use of electromyographic muscle activity. The device works by stimulation in the form of controlled low voltage electrical impulses which interrupt the muscular activity and bring about local muscle relaxation. Results show some promise and although this is only a small scale study, any positive outcomes are to be welcomed.

The chances are that with the often quoted increase of more of the population keeping more of their natural teeth for longer we may have more patients in the future who experience these conditions. Additionally, with a concomitant fall in the amount of traditional restorative dentistry we will be doing in relation to falls in caries rates it may well be that more of us will wish to concentrate on delivering such care in specialised settings or sessions. The more studies we have at our disposal the more likely we are to be able to match the most effective therapy to the correct patient.

The full paper can be accessed from the *BDJ* website ([www.bdj.co.uk](http://www.bdj.co.uk)), under 'Research' in the table of contents for Volume 215 issue 1.

Stephen Hancocks  
Editor-in-Chief

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**IN BRIEF**

- Describes a new way of providing biofeedback to manage sleep bruxism.
- Includes a brief update on the current thinking about the causes of sleep bruxism.
- Indicates a small group of myofascial pain patients used this Grindcare® device with mixed results.

**COMMENTARY**

One definition of 'pilot' in the Oxford English Dictionary is 'something done as an experiment or test before wider introduction'.

This study with only 19 participants, selected consecutively from a temporomandibular joint dysfunction (TMD) clinic with a diagnosis of nocturnal bruxism for treatment with an electromyographic (EMG) biofeedback device, clearly falls into this category.

Why undertake a pilot? Because conducting a randomised clinical trial (RCT) is demanding and so gaining a preliminary insight into the potential effect an intervention may have helps inform whether one should be undertaken.

Why publish the results of a pilot? Because these alert the wider profession to clinically relevant emerging research and highlight the corroborative opportunity for other scientific teams to become involved.

As such, the present study seems to illustrate that after four weeks of nocturnal therapeutic use, the EMG Grindcare device may provide preferential improvement in female *versus* male and in younger *versus* older sleep bruxism (SB) patients.

Why might this affect future clinical practice? Because should RCTs ratify the trends identified in this trial, evidence to support the addition of a new, non-dental intervention in the management of SB would be provided.

What advantage would this offer? At present, one mainstay in the management of patients with either SB or TMD is through the use of dental splints. Yet

this requires clinicians to know which type of splints there are to select,<sup>1</sup> and be proficient in how to construct and use those proven to be most effective.<sup>2</sup>

Also, while 4.4% of the adult European population have SB, subjects with obstructive sleep apnoea (OSA) seem to have a higher prevalence,<sup>3</sup> with bruxisms appearing as arousal responses at the end of an obstruction.<sup>4</sup>

The relevance of this is that if a dental splint is used to treat a SB patient who unwittingly also has OSA, vertically opening the bite without mandibular protrusion can inadvertently aggravate the OSA.<sup>5</sup>

Therefore, should the Grindcare device prove efficacious, it would provide an alternative treatment for those SB patients most likely to benefit from it and circumvent the skills' dependency otherwise required for managing SB patients with dental splints.

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**AUTHOR QUESTIONS AND ANSWERS****1. Why did you undertake this research?**

Sleep bruxism is a common phenomenon that can have an adverse effect on teeth. Historically, it was thought to be a reaction to a less than ideal occlusion. Results from recent research has made this unlikely and yet a search of the internet will still find dentists who appear to be offering a solution based upon the hypothesis of 'correcting the bite'. This management, equilibration, makes permanent and irreversible changes to the teeth. In the experience of the authors this treatment, which is not based upon any evidence, can have adverse consequences. The device that was tested in this small trial offers the possibility of a safe, reversible and drug free intervention to reduce this common parafunction.

**2. What would you like to do next in this area to follow on from this work?**

This very small trial seems to show that some patients can enjoy a significant benefit from the use of this simple device. Clearly a much larger trial is needed to establish how useful this device can become. The authors would like to see trials designed not only to determine more accurately the benefit or not of the Grindcare device, but also what sort of subjects are likely to be helped by it. As our understanding of sleep bruxism increases it may be that different types of sleep bruxists can be identified. If this happens then future research may be able to answer the important question of which type of patient is most likely to benefit from the use of a Grindcare device.