



Benefits, Concerns, Questions & *Answers*

Drs. James Boyd and Andrew Blumenfeld combat the myths surrounding the device

Ten years ago the FDA (U.S. Food and Drug Administration) approved the first nonpharmaceutical treatment for migraine headaches, the NTI-tss. Since then, more than 20,000 dentists worldwide have prescribed more than one million devices.

The developer of the NTI therapeutic protocol, James Boyd, DDS, recognized that patients in his general practice who suffered from frequent migraines had a common symptom – morning headaches. “Even though these patients would report of some days being relatively migraine-free, they reluctantly admitted to waking with some degree of discomfort every morning,” says Boyd.

While some of Boyd’s patients responded favorably to full arch occlusal splint therapy, those who reported chronic morning headaches seemed less predictable, with some even worsening with these splints. After reviewing the occlusion on these

cases and looking for similarities, Boyd realized the occlusal scheme wasn’t predictive of who would or would not respond to splint therapy. Instead of *occlusion*, Boyd postulated that *occluding* was the problem. “As Henry Tanner used to say, ‘it isn’t what you have, it’s *what you do with what you have* that causes and perpetuates the pain,’” says Boyd. He identified these chronic headache patients in his practice as *primary clenchers*, and his goal became finding a way to reduce and control the intensity of that parafunctional activity.

His development of a parafunctional control protocol, using an appliance design that was effective, durable, comfortable and cost effective for both the dentist and the patient, took nearly a decade, changing as Boyd’s knowledge and insight of the medically diagnosed migraineur evolved. Boyd’s patents are based on the provision of a prefabricated, enhanced discluding element, which provides immediate and continuous incisal guidance in

all mandibular movements by preventing posterior and canine contact on both the device and the opposing dentition.



After years of teaching the NTI therapeutic protocol to dentists, Boyd developed a new professional relationship that would have even wider repercussions for NTI use and credibility.

Andrew Blumenfeld, MD, a neurologist and recognized researcher in the field of headache and migraine, is director of The Headache Center of Southern California. “The more we discussed each other’s field of expertise, the more we realized that we were talking about nearly the same thing, that both migraine and temporomandibular (TM) disorders were trigeminal nerve disorders: TMD resulting from trigeminal motor hyperactivity; and, migraines the result of trigeminal sensory dysmodulation. What intrigued us was the probability that either one may cause or influence the other.”

Within the last three years Dr. Blumenfeld has presented research highlighting the NTI’s migraine prevention efficacy in his practice at migraine research symposiums in Los Angeles, London, Philadelphia and Nice. Starting this fall, The Headache Center, in collaboration with Dr. Boyd, will initiate its most significant NTI research to date.

“No one in the migraine field disagrees that sleep has a considerable influence on headache frequency and intensity,” says Blumenfeld. “What we don’t fully understand is what exactly it is about sleep that is so influential. We will be doing a polysomnogram on 100 consecutive chronic migraineurs, complete with EMG recordings of temporalis activity. Following eight weeks of NTI use, we will repeat the sleep study (while the subject uses their NTI). Our hypothesis is that those who’ve reported the most relief will be those who’ve had the most significant reduction in temporalis activity.”

Although future research promises even more details on how NTI achieves prophylactic and treatment success for migraine pain, both Drs. Boyd and Blumenfeld remain dedicated to combating current myths about NTI use.

Dentaltown Magazine had the opportunity to ask the doctors a few questions about NTI treatment. Below they address the benefits and concerns about the device to aid acceptance within the dental community.

Some practitioners warn against “long-term” NTI use, due to possible posterior supraeruption and incisor intrusion. Are you concerned as well?

Boyd: I asked my local orthodontist a hypothetical question. “If I needed you to extrude the most distal molar on one of my patients, but you were restricted from attaching any brackets to the molars, and could not use a removable device that touched the molars, and there would be no means of treatment throughout the day, could you do it?” The answer was no! That is, however, exactly what some dentists claim an NTI can do! As far as tooth movement in a general sense is concerned, there just isn’t the means to forcefully extrude or intrude any teeth. However, that is not to say that the “one-in-1,000” case is not out there. With more than one million NTI devices in use, I have seen and heard of almost everything.

What about aspiration? Is that a concern?

Boyd: I wonder how many acrylic temporary crowns are dislodged and swallowed or aspirated every night. I can’t count how many times a patient has arrived for their permanent crown delivery, only to find their temporary crown missing, with the patient having no idea that it was gone. Proper NTI protocol adapts the NTI device onto unprepared teeth. Of course there is always a degree of risk inherent in all intraoral removable devices, but of more than a million NTI devices delivered, no more than three occurrences of aspiration have ever been claimed, and none verified radiographically or otherwise.

There are reports of anterior open bites “caused” by NTI use. Given the litigious nature of society, should a dentist even bother providing an NTI?

Blumenfeld: In the medical field, and especially in migraine prevention therapy, all of the medications we use have side effects, and some of those are particularly undesirable. With NTI therapy, we inform the patient that in a small minority of cases, a degree of change in their bite might occur and then a shared decision is made. In certain medical conditions the NTI becomes a first line choice.

Boyd: When I examine a potential candidate for NTI therapy, I note the degree of incisal overlap. If the overlap is minimal, or edge-to-edge, I advise the patient that an NTI can reveal orthopedic relationships that were previously not noticeable, meaning, the way their lower jaw fits up against their upper jaw could change.

Are there circumstances when the NTI is contraindicated?

Blumenfeld: There are no medical contraindications. There is no treatment that will help everyone. When it comes to migraine prevention, we like to prescribe an NTI to rule out nocturnal parafunction. Certainly not all migraines are affected

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by nocturnal parafunction like clenching intensity, but we find ruling out, or identifying and controlling nocturnal parafunction enhances our treatment efficacy.

Boyd: Because I see mostly refractory migraineurs now, a strict adherence to protocol is essential. For those with a compromised joint, the practitioner must confirm that the NTI does not complicate their condition further. That is not to say that an NTI is contraindicated for degenerative joint disease; in fact, quite the contrary. In the presence of nocturnal parafunction, the goal is to minimize muscle contraction intensity while minimizing joint strain and load, which a properly provided NTI allows for. However, simple oversights such as allowing for excessive vertical dimension in extreme protrusive can further complicate a patient's presentation. Just as a general practitioner is licensed to perform complex oral surgery, it would be considered "contraindicated" for the generalist to do so. The same exists with NTI therapy. As the demand for expertise increases, so do the risks of complications resulting from inexperience or lack of understanding about both the nature of the condition and the treatment modality. The NTI is easy to use but the therapeutic protocol must be followed to attain optimal treatment results. This means properly customizing the device to guarantee posterior and canine disclusion, adequate retention and proper vertical dimension.

Some claim that an NTI is simply an anterior deprogrammer and you're using some savvy marketing to rake in the dough. How do you respond?

Boyd: Use of a "deprogrammer" stipulates that lateral pterygoids are "programmed" to prevent certain occluding contacts from occurring during mastication. The practitioner employs the deprogrammer in a chairside setting, which is nothing like what happens during sleep. Comparing the NTI therapeutic protocol to traditional deprogrammers or full-arch occlusal guards doesn't make sense. By ensuring constant cuspid and posterior disclusion, the NTI, an *enhanced* deprogrammer, minimizes muscle intensity by as much as 70 percent and reduces joint load during nocturnal parafunction. Other anterior deprogrammers may allow posterior or canine occlusion and not only allow, but may increase muscle activity and intensity.

What research is available to prove the efficacy of the NTI as a migraine preventive treatment?

Blumenfeld: The standard used in medical practices in assessing the effect of migraine prevention drugs is that they should ideally reduce migraine frequency by at least 50 percent in at least 50 percent of the subjects. This usually involves comparing the active medication to a placebo and showing superior effects. Unlike drug trials, it is impossible to compare an intraoral device to a placebo intraoral device, as anything placed within the mouth elicits trigeminal sensory input. When compared to a "control" mouthpiece, the studies done to date show that the NTI reduced migraine events by 77 percent in 82 percent of the subjects.

If the NTI is effective, why hasn't the medical community embraced it?

Blumenfeld: Just as it is in dentistry, a physician will prescribe what he is familiar with. In addition, migraines remain underdiagnosed and undertreated in medical practices. The migraine specialist's goal for prevention is to eliminate or minimize as much noxious sensory input as possible, and a properly provided NTI does just that. However, most physicians are yet to understand it that way. We believe that our next study will help to expand the understanding of how the NTI affects migraines.

Aren't migraines caused by triggers like diet and weather changes?

Blumenfeld: Almost... the term "trigger" is correct, but "cause" is not. Trigeminal sensory dysmodulation is what *allows* something that would otherwise be "normal" input to activate a cascade of events that result in migraine pain. The less noxious bombardment the sensory nucleus is exposed to, the less likely the patient is to experience a migraine due to their "triggers."

To learn more about the NTI-tss therapeutic protocol, visit: (Chairside Direct) www.nti-tss.com or (Lab Fabricated NTI Plus) www.kellerlab.com. ■

Not Totally Indicated: The When, Where, and Why of NTI

The practical use of the NTI-tss therapeutic protocol



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