Clinical Perspective

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Clinical Strategies To Help Patients Reduce Jaw Clenching And Bruxing Behaviors

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Jaw clenching is a commonly reported behavioral reaction to stress; especially anger, pain, and frustration. Some people clench their teeth when about to push or lift heavy objects. Bruxing most typically occurs during the night, but jaw clenching is often reported as a daytime behavior. Parafunctional behaviors are found in children and adults. These behaviors can produce symptoms when they are excessive in any of the following variables: frequency, intensity or duration.

This article describes some causes and effects of jaw clenching and bruxing, and details strategies to help patients free themselves from these behaviors. It also suggests that the orofacial myologist may be ideally qualified to cooperate with the referring doctor or dentist to help these patients control these behaviors.

Currently, the principal goals in oral myofunctional therapy (OMT) are to improve oral rest posture by establishing lip closure with the teeth apart and the tongue relaxed up against the hard palate (Pierce, 1986). Disordered speech, chewing, and swallowing patterns are also normalized and parafunctional habits are systematically reduced or eliminated.

Most patients are referred by dentists or orthodontists for OMT for one or more of the following reasons: To decrease the eventual severity of a malocclusion by improving muscle influences (Mason, 1988); help eliminate digit or other sucking habits (VanNorman, 1985); improve orthodontic response by removing muscle interferences; improve facial esthetics; and increase the chance for post treatment stability (Andrianopoulos & Hanson, 1987) by improved adaptation of the musculature to the corrected dental and/or skeletal relationships.

Attention is also given to encouraging appropriate head, neck and body posture as this is known to influence tongue, lip and mandible posturing and function (Saboya, 1985). Referral for physical therapy is suggested when appropriate. Normal oral, head, and neck posture allows the mandible to be suspended without inappropriate tension in the facial, neck or masticatory muscles. When there are gross dental or skeletal discrepancies, lip closure and the ideal tongue up resting posture may not be possible until orthodontic and/or surgical treatment has occurred. Until or unless structures are normalized, it may be more relaxing for some patients to let the lips be slightly parted and the tongue relaxed down (but not against or between the teeth).

The certified orofacial myologist is conversant with the anatomy and physiology of the oral cavity and surrounding structures, and is skilled in the psychology

of motivation and behavior change. Clinicians within this specialty have degrees in speech pathology, dentistry, dental hygiene, or closely related fields. While treatment of musculo-skeletal disorders of the cervical spine and the temporomandibular joint (TMJ) are clearly within the realm of the physician/dentist, physical therapist team (Rocabado et al., 1982), I suggest that orofacial myologists can play a valuable role on this team by helping the patient normalize oral rest posture and reduce parafunctional behaviors. Orofacial myofunctional therapy is minimally invasive and does not involve irreversible changes. Reduction of parafunctional behaviors and normalization of oral rest posture may be all the patient needs to relieve symptoms.

Patients with complex craniomandibular disorders will benefit from a team approach including all or some of the following professionals and services: Physician, dentist, orthodontist, periodontist or oral surgeon for initial diagnosis; psychologist for counseling, and stress management instruction; biofeedback and relaxation training from appropriately trained personnel; dentists and orthodontists for any necessary splint construction, equilibration or orthodontic treatment; oral surgeon where joint repair is indicated; physical therapist; orofacial myologist; and speech pathologist. Some patients may also benefit from the attention of a massage therapist, chiropractor, or other relevant health professionals.

Effects of Detection of Bruxing and Clenching Behaviors

Bruxing and clenching behaviors seem able to contribute to a variety of symptoms differing in type and severity. These symptoms may have other medical or dental origins; thus, a differential diagnosis is essential before therapy. However, rapid reduction of symptoms when a patient reduces these behaviors can also help confirm the diagnosis. An individual may complain of one or a group of symptoms. When these behaviors are triggered by stress there is often considerable day-to-day or even hour-to-hour variation in the number and severity of symptoms. Symptoms may progress over time, or be cyclical in nature.

Identification of bruxing and jaw clenching is important since these parafunctional habits are considered an etiological factor in some disorders of the temporomandibular joint (Ash & Zetz, 1989), and frequently contribute to myofascial pain dysfunction (MPD; Dolan, 1987). When there is already a structural deviation (i.e. the loss of posterior dental height) bruxing and clenching

would seem more likely to cause repetitive microtrauma to the TMJ. These behaviors may also contribute to some non-vascular "common" migraine (Moss, 1987).

Awareness of bruxing and clenching behaviors varies considerably. Some patients think it is normal to keep their teeth in constant contact, and may even be unaware that all or some of their teeth are touching. Such a patient is usually sensitive to premature dental contacts and may repeatedly ask the dentist to "even" the bite (Goldberger, 1978). If the patient is resting the tongue between the teeth, the irregularity of contact will tend to reoccur as the teeth that are held out of occlusion super-erupt. The patient may begin to "splint" the tongue between the teeth to lessen joint or muscular discomfort. This behavior can become a habit and add to the overall problem.

A patient may complain of soreness in the teeth on waking, and be aware of aching in the masseter and temporalis musculature, but be unaware of the actual bruxing or clenching behavior. Teeth sensitivity may persist through the day. When clenching is diurnal, pain symptoms typically worsen as the day progresses; and may completely disappear with rest. Worn facets on the teeth may be the only symptoms of bruxing. Although bruxing typically occurs at night, careful questioning and self monitoring often uncovers other tense oral behaviors during the day.

The question "Do you clench your teeth?" often produces a denial. The examiner needs to be more subtle. Ask "As you are listening to me now, are any of your teeth touching or are they apart?" This question does not suggest the "correct" response, and avoids the problem that the patient may not understand what *clenching* means. Clenching may be situation-specific; so one must also ask "Do you notice that you clench your teeth or keep them contacting when performing certain activities or in reaction to emotions?" The wording of questions will need to be suited to the individual's age and educational level. Some patients not only clench the teeth but do so with the jaw shifted forward, retruded, or shifted to one side. This would seem potentially more damaging by producing asymmetrical stress on the muscles, ligaments, and joints. Frequent leaning with the hand on one side of the jaw in the day or at night can produce similar problems.

As part of a complete orofacial examination the orofacial myologist will ask about a number of oral habits that are also potentially damaging (e.g., nail biting, lip habits, jaw thrust, unilateral chewing, object biting, excessive gum chewing, deliberate jaw cracking, and tongue sucking). Management of these habits will not be addressed in this particular article.

If clenching is frequent, the muscles of mastication are typically tender to palpation. In more severe cases these muscles actually ache or exhibit muscle spasm (Dolan, 1987; see Figure 1). When a muscle is constantly contracted, blood flow is restricted and the by-products of metabolism build up producing pain. Forward head posture is frequently observed in these patients and complaints of tension in the neck and shoulders are common.

Sometimes the primary complaint is pain or pressure

in one or both ears. This seems to be caused by the clenching behavior retruding the mandible so that the condyle puts pressure on the auditory canal. It seems possible that prolonged clenching and bruxing could contribute to alveolar bone loss and root resorption in some individuals, especially in teeth that are in traumatic occlusion.

Why Do People Clench Or Brux Their Teeth?

There seem to be several causes for clenching and bruxing behaviors. Figure 1 describes how tension and/or dental irritation can lead to the oral habit of clenching. Clenching often starts during a period of high stress associated with a significant life change. Some patients report that they always occlude the teeth whenever they perform activities requiring concentration or effort. One patient discovered that she clenched her teeth during almost all her daily activities, including "relaxing" hobbies such as sewing. Patients with chronic pain may clench their teeth to help them cope with the pain, not realizing that the prolonged muscle contraction will eventually cause more pain. Some patients have reported that they started to clench their teeth to alleviate the temporary pain of orthodontic treatment or as a reaction to vertical orthodontic elastics. By the time the patient seeks treatment the original cause of the clenching may no longer be present but the behaviors persist as habits.

Laskin, D.M. (1969). Etiology of the Pain Dysfunction Syndrome, *The Journal of the American Dental Association*, pp. 147-153.

What Is The Significance Of Clenching And Bruxing To Orthodontic Treatment?

It would seem likely that patients who rest their teeth in contact would experience a slower response to orthodontic treatment forces. Active clenching and bruxing during treatment would also seem likely to increase the stress on the tooth and the periodontal support structures. When TMJ or MPD symptoms arise during orthodontic treatment it is appropriate to ask whether the patient has started to clench or brux for any reason. Immediate advice to let the teeth rest apart may quickly alleviate symptoms.

If a patient has a tongue-thrust swallow pattern, and then starts to clench the teeth, it would seem to set up a scenario for increased negative impact on the dentition. One can draw an analogy with the situation of a car hitting a lightweight road divider—no damage is done. If the jaw relaxes open as the tongue thrust forward to swallow, and then postures normally without sustained pressure on the teeth, one may surmise that little damage would occur. But, should the same thrust forward occur with the teeth tightly occluded the resultant pressures and impact may be entirely different. These theories are yet to be adequately researched. Following is a case which seems to illustrate this phenomenon.

The patient, an adult female in her twenties was referred by her orthodontist for evaluation prior to orthognathic surgery. She needed surgery to the mandible and maxilla to correct a skeletal Class II malocclusion with open bite. At that time she had severe lip incompetence, her tongue rested low and forward between her anterior teeth and she swallowed with an anterior tongue thrust. She reported frequently sucking her lower lip under her upper incisors. She reported that she did not clench or grind her teeth. She thrust her mandible forward during speech, and noticed distortion of her /s/ and /z/ consonants. She was observed to have marked forward head posture. She had a long history of nasal airway obstruction due to allergies and a sinus problem. These airway problems were now under medical control.

Prior to surgery she attended five therapy sessions to reduce lip habits, establish a tongue-up resting posture, and improve lip flexibility. Essentially, the goal was to prepare her for a rapid adaptation of posture and function to the orthodontically and surgically corrected structure. At the time of her surgery the new swallowing pattern was correct on a conscious level, but not yet automatic.

Post-surgery she wore elastics to complete the alignment and closure of her bite. Her open bite worsened slightly. Strong elastics were used but the bite opened further. She reported that the tight elastics were causing her to clench her teeth, especially at night. As her normal swallow pattern was not yet fully automatic it seemed that her tongue was thrusting between her clenched teeth producing a wedge effect. Consultation with her orthodontist lead to a plan to cease elastic wear for a period to make it easier for her to stop the clenching behavior—while gaining time to increase the automaticity of the corrected swallow pattern. Within a month her teeth were in contact.

A possible explanation for this situation is that with her tongue up and teeth apart there was no interference with the natural eruptive forces of the teeth which tend to bring them into occlusion. This example illustrates how the orofacial myologist can be a useful resource for the orthodontist when muscle postures and behaviors are interfering with the expected treatment response.

Integrating Therapy With Other Treatment Methods

It is important to screen for clenching and bruxing behaviors when anticipating surgery to the TMJ. If the patient can become free of damaging behaviors prior to surgery then there is an increased chance for a successful long term outcome. This is particularly important if these behaviors were considered to be primary causative factors in the TMJ disorder.

It is increasingly common to screen candidates for TMJ surgery for psychological problems. Clenching and bruxing may be just one aspect of a psychological problem needing psychological diagnosis and treatment. Some patients will benefit from stress management counseling. When tension levels in the muscles are high and chronic, biofeedback sessions may be necessary to help the patient achieve appropriate relaxation.

Many patients referred for OMT are already wearing a splint. This can help protect the condyle in a more favorable position in the fossa. Theoretically, the splint relaxes the muscles and breaks the habit of clenching. Many patients are reported to be successfully treated solely by splint therapy. However, some individuals are referred who continue to clench despite the splint—or who need help to prevent reoccurrence of clenching when decreasing splint wear. Additionally, some patients are unable or unwilling to tolerate a splint. If given a choice between wearing a splint or participating in therapy to normalize oral posture and function, some will choose the behavioral option.

One disadvantage of splint therapy is that it does not give the patient the feel of inter-occlusal space—the cushion of air between the upper and lower teeth, and the feeling that it is normal to let the jaw hang comfortably in the “hammock” of the muscles and ligaments.

Therapy Problems and Strategies

Patients and clinicians may be pessimistic about the chance of significantly reducing jaw clenching. When it is seen as an inevitable result of stress it may seem impossible to change the behavior without a major life change. Adults may feel it is impossible to change a coping behavior that has been used for so long, even when they understand that this particular coping strategy is harming more than it helps. Education becomes essential; pictures, diagrams and models can be used to show how clenching pushes the condyle of the mandible back in the fossa, compressing the nerve and blood vessel plexus in the posterior joint space. Bruxing and jaw thrust parafunctional behaviors tend to pull the condyle forward or laterally, stretching the attachments of the meniscus.

Demonstration can help the patient understand how constant muscle contraction can lead to pain. Ask the patient to make a clenched fist and maintain the

contraction. It does not take long for a dull aching sensation to develop. With continued contraction, the sensation will be perceived as pain. The patient needs to gain the insight that clenching is often simply a behavior that has become a habit.

"How can I possibly control what my jaw does at night?" is a common question. The clinician must be honest and not make inflated claims, but one can report that most patients are able to reduce or stop their night clenching and bruxing. The evidence for this is largely subjective: Waking with the jaws relaxed, reduction of pain problems, and reduction or absence of teeth sensitivity.

Careful examination and history-taking typically reveals that tense behaviors are also occurring during the day. The first goal is to increase ideal oral rest posture and reduce parafunctional behaviors during the day. I tell the patient that with normal rest posture (i.e., tongue up, lips closed—ideally—and teeth apart) it is *impossible* to clench the teeth. The patient then has something positive to do rather than focusing on stopping a behavior. While it is hard to stop ingrained habits, it is much easier to replace a non-adaptive behavior with a more adaptive one. If the clenching is in response to stress, the patient can be taught some simple stress management strategies. Posturing the mouth and body correctly, then taking several deep breaths, is calming. Breathing often becomes shallow in states of tension. I suggest that when the ideal oral posture has become a habit during the day it will likely begin to occur during sleep. Explain that if this goal is not completely achieved, the splint can continue to be worn at night. This can remove the pressure of achieving success.

When the new rest posture is consistent and easy during the day, or as soon as the patient feels ready, an attempt may be made to let the jaw stay relaxed at night. Physical exercise during the day or evening seems helpful in reducing tension. The patient can use visual imagery and picture him/herself sleeping relaxed and waking with the tongue up and jaws relaxed. Self suggestion is also helpful, the patient reads or says a loud phrases such as: "It feels comfortable and natural to sleep with my tongue up and my teeth apart." "If my teeth touch in the night, it will feel easy to let them relax apart." "I will wake up with my lips closed, tongue up and jaws relaxed." The patient keeps a chart of progress as it is usually gradual. If the patient wakes with the jaws clenched or tongue out of position, or simply fails to notice, he/she is advised to simply correct the posture and picture it being correct the next day. If success is not achieved within a week, further attempts are postponed until the new posture is more automatic during the day.

It is essential for the orofacial myologist to cooperate with the dentist or orthodontist in encouraging the patient to follow recommended appliance wear instructions. If the patient feels ready to discontinue splint wear we must encourage him/her to discuss this with the dentist/orthodontist.

Some patients may only need information on the consequences of prolonged clenching, followed by demonstration on how to rest the tongue up, lip relaxed together and teeth apart. The patient places reminder stickers (self adhesive colored file labels work well) where they will be frequently seen so as to cue correct relaxed posture (Winchell, 1989). Many patients with "simple" clenching habits report a significant decrease in clenching within several days.

Patients have told me that simply being told to "rest the tongue up" is insufficient. They have sometimes achieved a more elevated tongue posture but part of the tongue is still resting against or between the teeth. The correct posture may be possible, but not be maintained due to muscle fatigue or forgetting. Patients often have weakness and incoordination of the tongue and need exercises to inhibit inappropriate posturing and facilitate a relaxed elevated posture. The particular myofunctional exercises will depend on the results of the orofacial examination.

In some cases when the patient lets the teeth rest slightly apart, the increased vertical dimension makes it difficult to close the lips. The appropriate oral rest posture now reveals a previously hidden lip incompetence. When this is relatively mild, stretching exercises to relax the circumoral musculature are typically sufficient (several effective exercises are described in the Hanson and Barrett [1988] text, and Altmann's article [1987]). It is essential to have the patient posture correctly—check it several times with a mirror before leaving the office.

The immediate reaction of some over-zealous adults will be to try to maintain the new posture all the time. It is important to warn the patient that this strategy will likely cause pain and rapid discouragement. Instead, advise the patient to posture, tongue up, teeth apart, lips relaxed together. . . check for good body posture, breathe and relax for brief periods. I suggest starting for five to ten second periods throughout the day. A beginning goal might be to correct the posture at least fifty times a day. The patient should focus on gradually increasing the time and frequency in the healthy posture. When catching an error it is helpful to encourage the patient to react mentally "Good thing I caught myself. . . (correct self) . . . this feels better." Dwelling on negative thoughts (e.g., "Wrong again, I'll never get this"), only interferes with the learning process.

At the first session the patient can also learn how to use visualization to help speed learning. Some patients may already use such techniques for other goals, or may have heard of their use in sports. If not, it will be necessary to explain that when a movement or posture is imagined vividly in a relaxed state then brain activity occurs and a "memory" is stored as if the movement pattern actually occurred. In a relaxed state, the patient can visualize the new posture being already easy and natural in several specific situations. Many choose to practice this before falling asleep.

It is critical that the patient chooses to change because of the benefits of that change. The therapist's goal is to communicate without blaming—that there are things that the patient can do differently to help the situation. Adults do not generally react well to simply being told they are messing up and *should* change! A calm, empathetic approach is most helpful.

Keeping a tally of the negative behavior for periods in the day can give objective feedback on how frequently the behavior is occurring. This may help to "shock" the over-complacent patient. Simply counting a behavior that one wishes to reduce, typically leads to an initial increase in the behavior and then a gradual decrease. This can be highly motivating to the previously discouraged patient.

When decreasing the clenching behavior is seen as a very difficult task, it can be approached in a series of small steps. The patient can construct a hierarchy of situations which trigger clenching. Easy and brief activities can be targeted first for practice of the new relaxed posture. Only when control during these situations is easy, might longer and more challenging tasks be selected. In this way, individuals gradually increase their confidence in their ability to control reactions to external events. It is important for the patient to recognize that progress will be affected by changes in every day stress and fatigue, and to be self forgiving of slip-ups.

Increasing Referrals

The Appendix contains an example of an information sheet that referral sources have found useful to help explain the reason for referral to an orofacial myologist.

Conclusions

It seems both logical and timely to consider the behavioral aspects of TMJ and MPD disorders. The primary purpose of joints and muscles is to permit posture and movement patterns. In the management of other parts of the musculoskeletal system (e.g., the back or knee), it is already considered crucial to consider the individual's "use" or "misuse" of the specific body part. Just as it is vital to teach an individual with a history of back pain how to lift objects, it would seem equally appropriate to ensure that patients with jaw or myofacial pain dysfunctions be screened for parafunctional behaviors, and be given help to acquire normal oral motor posture and function.

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Appendix

Help For People Who Clench Or Grind Their Teeth

Clenching and bruxing (grinding the teeth) can cause you pain, affect your jaw joints (TMJ), and put damaging pressure on your teeth. I am referring you to a therapist who will help you free yourself from these behaviors and develop a more relaxed and comfortable mouth posture.

How Can Teeth Clenching Cause Pain?

When you clench your teeth, you contract several strong jaw muscles. After a while acid builds up in these muscles causing a pain or dull ache. Teeth clenching can also lead to tension in other parts of the head and neck.

Why Me?

The teeth typically need to make contact only when you chew and swallow, and are normally closed tightly for just a short time each day. Clenching the teeth may simply be a habit that has developed over the years. Some people notice that they put their teeth together whenever they are performing certain everyday tasks. You may find that clenching your teeth has become your way of coping with stress. Other people start to clench their teeth in reaction to pain or to some unevenness in their bite. The original cause of the behavior may become irrelevant in time, as the clenching becomes a habit that continues to cause problems.

Why A Speech Pathologist If My Speech Is O.K.??*

People with bruxing and clenching problems often do have normal sounding speech. I have referred you to a licensed speech pathologist with certification in Orofacial Myology. This professional has received additional specialist education in the diagnosis and treatment of problems of posture and function of the muscles of the tongue, lips and jaw, and related head and neck posture.

What Will Therapy Involve?

Your active cooperation and strong desire to get better will be the most significant factor in determining your response to therapy. The therapy techniques will depend on the nature of your problem. You will learn the normal relaxed resting position for the jaws, tongue, and lips. Some exercises help to tone or relax muscle—so as to make the natural mouth resting position easier. If you clench in reaction to stress, you will learn relaxation techniques and basic stress management strategies suited to your individual needs. It is important that you continue to follow dental advice about splint wear.

Specific questions regarding your treatment plan can be answered following an individual evaluation. Assistance is provided in submitting insurance claims. I suggest that you contact the therapist before you speak to your insurance company.

I have referred you to: _____

For appointments or information, call: _____

* (only use the paragraph: "Why A Speech Pathologist If My Speech Is O.K.?" if the provider of therapy is a Speech Pathologist)