the point of having a finished and successful denture in the mouth will vary between individuals depending on their response to treatment.

Conclusions

Hypnosis is a useful aid in the management of some patients presenting with denture intolerance for psychological reasons. It may be used to reduce anxiety, facilitate conditioning / desensitisation techniques and boost self- confidence. It is difficult to say to what extent success in treatment is the result of the use of hypnosis since inevitably the management of denture intolerance also involves other psychological and dental techniques. It is also impossible to assess the extent to which the dentist / patient relationship plays a part in any therapeutic strategy. It seems likely, however, that hypnosis is a useful adjunct in the management of this problem.

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The Role of Hypnosis in Treating Bruxism

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Bruxism (tooth grinding and clenching) is a common problem causing chronic pain, severe tooth wear and other sequelae. Therapies that are quite effective for some patients do not benefit many others. A variety of remedies are needed and hypnosis may be one of the most effective treatments for longterm improvement. This article reviews the clinical significance of bruxism: its prevalence, methods of treatment, and the role of hypnosis. The only hypnotic treatment so far evaluated by objective research is described.

Bruxism is defined as diurnal or nocturnal parafunctional activity including clenching, bracing, gnashing, and grinding of the teeth. The most common and troublesome sequelae of bruxism include recurrent (often daily) headaches, chronic jaw muscle pain and tenderness, severe tooth wear, and temporomandibular joint damage and pain (Katzberg, Westesson, Tallents & Drake, 1996; Thompson, Blount & Krumholz, 1994). Studies from Europe (Agerberg & Carlsson, 1975; Wigdorowicz Makowerowa, Grodzki & Maslanka, 1982), Canada (Lavigne & Montplaisir, 1994) and the United States (Glass, McGlynn, Glaros, Melton & Romans, 1993) all tend to report an overall prevalence of bruxism at about 20%. Because of a variety of methods and criteria, prior studies have sometimes reported a much higher prevalence than this, but using the individuals awareness of the problem and the presence of one or more symptoms as the main criteria, 20% to 26% is a conservative and reasonable overall range (Solberg, Woo & Houston, 1979; Van Dongen, 1992). The 25-35 year old age group is reported to have bruxism prevalence rates of 38% to 50%. Other age groups have lower prevalence rates (Glass et al., 1993).

The precise etiology of bruxism is still not known. However, recent research has provided a body of evidence that malocclusion and occlusal disharmonies are not significant etiologic factors (Vanderas & Manetas, 1995). Current evidence does support a hypothesis of a centrally (central nervous system) mediated response associated with emotional stress (Billups, 1992; Mercuri, Olson & Laskin, 1979; Pierce, Chrisman, Bennett & Close, 1995).

Methods of treatment

Occlusal treatments: In the past, selective grinding of teeth by dentists was thought to eliminate irregularities that were the triggers to bruxing. Actually the response of jaw muscles to interferences is to inhibit rather than promote jaw closure, and an overwhelming body of scientific evidence shows that adjusting occlusion is not effective in reducing bruxism (Attanasio, 1991; Holmgren, Sheikholeslam & Riise, 1993; Klineberg, 1994).

Occlusal splints (Night Guards): Occlusal splints do reduce symptoms in a significant number of sufferers but not all. Holmgren, Sheikholeslam and Riise (1993) found that splints did not stop the bruxing but did significantly reduce symptoms for many patients. However, for symptoms of temporal pain, neck pain and headache, approximately 20% did not achieve significant improvement. Clark, Beemsterboer, Solberg and Rugh (1979) found with occlusal splint therapy that while 52% of patients showed a significant reduction in masseter activity as measured by electromyography, 28% showed no change and 20% exhibited an increase in muscle activity while using the splint.

Behavioral interventions: Massed practice (intentional bruxing until fatigue develops), habit reversal therapy, and biofeedback therapy have shown mixed results and lack long term evaluations with consistent methodology (Hathaway, 1995). Self management (heat, exercise, posture, etc.) and physical therapy have also shown some beneficial results but lack adequate scientific study (Thompson, et al., 1994).

Hypnosis: None of the behavioral therapies for bruxism have been adequately measured for long term effectiveness, but from what has been published, hypnosis appears promising. There have been many case reports but only two objective studies of hypnosis for bruxism.

Case reports

During hypnosis, Golan (1990) develops glove anesthesia, inserts a needle in the back of the hand, has the patient open his/her eyes to see the inserted needle with no pain, and then close the eyelids again. With the patient still in hypnosis, he uses the glove anesthesia experience to demonstrate the power of that person's mind to control bodily functions and feelings. He then gives a series of suggestions relating to the desirability of taking care of his/her own body "a prized possession". He comments "nothing is worth your eating yourself up".

Then he suggest that during sleep, if the jaws begin to clench or grind, the pressure on the teeth will trigger the unconscious to immediately awaken the individual. Upon awakening, the patient will be pleased that his/her protective mechanism is working and go right back to a deep, relaxed sleep. Of course, this is a very brief outline of Golan's approach. In practice, it includes much embellishment with positive suggestions and images.

Other clinicians have reported cases using a similar approach. Neiburger (1990)

suggests that when clenching occurs, the jaws will automatically open so the tongue can automatically insert between the teeth and the jaw muscles become "loose and limp like wet cotton". Many clinicians suggest repeating the phrase "lips together, teeth apart" and others have recommended having the patient keep a small ball or sponge in the hand and when clenching occurs, release the jaws and squeeze the ball (Erickson, 1990).

These are all suggestions associated with case reports but without objective evaluations of success with a number of patients.

Objective studies

Several authors (Mulligan & Clark, 1979; Clarke & Reynolds, 1991) have described a process using a personalized audiotape to train the patient in autohypnosis. This is the only approach evaluated objectively with several subjects. Mulligan and Clark (1979) used a portable electromyograph (EMG) with surface electrodes to record electrical activity of the masseter muscle during sleep for ten nights before and ten nights after treatment with hypnosis. Three of six subjects showed decreased muscle activity, significant at the .05 level. Two months after treatment, subjects completed self evaluation questionnaires. One subject reported that the bruxism was completely gone; four reported that it was reduced but not gone and one reported no effect of treatment.

In 1991, Clarke and Reynolds reported a similar study with eight subjects. The EMG recordings were made of the masseter for seven nights before and after treatment. Self-reports were made immediately following treatment and again for long term evaluation at periods ranging from 4 to 36 months. All subjects showed reduction in EMG recordings with the mean significant at the .001 level. Reductions in electrical activity of the muscles ranged from 18% to 70%. All self-reports indicated improvement both immediately following treatment and longterm. Table 1 shows the results of self-reports.

The treatment process used in this study has been shortened by the author and is currently being used by him and some colleagues with an apparent success rate estimated at about 75% to 80%. The treatment generally requires four sessions of about 30-40 minutes each. A brief summary of this treatment regimen follows.

The treatment protocol

A. Initial interview

1. Presences or absence of temporomandibular disorder (TMD): If chronic pain, limited opening, locking or other serious temporomandibular joint signs or symptoms are present, it is wise to have the patient evaluated by a qualified diagnostician in that area before proceeding.

2. History of splint therapy: For nocturnal bruxism, the success rate with simple occlusal splints ("night guards") is sufficient to recommend this first if the patient has not tried this.

3. Psychosocial factors: A high percentage of sufferers from the effects of bruxism have a history of abuse, are children of alcoholics, suffer from other chronic pain, or for some other reason are tense and hypervigilant. It is wise to ask the patient about such factors. If unresolved psychosocial factors are present, a referral to a mental health professional is in order.

4. Preparation for hypnosis: Once the above factors have been considered and it has been determined that hypnosis is the appropriate method, the patient should be prepared to experience hypnosis. It saves considerable office time and prevents omissions to provide the patient with a brief, authoritative written explanation of, and answers to common questions regarding, clinical hypnosis.

B. Exploring and collaborating

1. The objectives of this appointment are: (a) To have the patient *experience hypnosis* with a variety of images, phrases, and suggestions related to bruxism therapy. (b) To provide the therapist with *feedback from the patient* as to which suggestions are going to be most effective on a selfhypnosis audiotape to be made at the next appointment.

2. Hypnotic exploring: The "Exploring" referred to here is not psychological exploration, but simply a process to discover the patient's strongest areas of hypnotic responsiveness and preferred images. A list of inductions, phrases and images we have found useful is shown in Table 2.

3. Collaborating: Review of the patient's response to each of the suggestions, and encourage his/her input (collaboration) regarding the most useful suggestions to be included on the upcoming audiotape.

C. Audiotape

Using a simple outline made from the material obtained in the prior appointment, an audiotape is made with the patient there and responding. (This could be done without the patient being present if so desired.) The tape is usually about 15 minutes in length for nocturnal bruxism. Patients are instructed to listen to the tape upon retiring each

subject		after treatment	long term	number of months
1		4.5	5	36
2		5	4	4
3		5	6	36
4		5	4	15
5		5	6	4
6		5	5	11
7	(* unable to contact)	5	*	*
8		5	5	9

Table 1: Self reports of patients treated with hypnosis for bruxism (Clarke & Reynolds, 1991) Rating scale: 1 = much worse, 2 = slightly worse, 3 = no change, 4 = slightly better, 5 = much better, 6 = no more bruxing.

Inductions:

1. Focus on relaxed breathing
2. Progressive muscle relaxation
3. Waves of relaxation from head to toes

Images and ideosensory responses:

1. Jaw hanging like a hammock or sling
2. Muscles soft, smooth and relaxed
3. Blood vessels dilating and warm
4. Tissues being nourished
5. Hot packs*
6. Cold packs*
7. Hot tub*
8. Sun or ski
9. Walking, floating, riding, drifting*

* In the prehypnosis interview, ask which of these images are pleasant and unpleasant.

Positive statements and phrases:

1. Lips together, teeth apart
2. No problem worth eating yourself over*
3. Now you can control relaxation rather than stressors controlling you
4. You can take care of yourself
5. Approach the world with a sense of humor*
6. Smile inwardly and outwardly*
7. Your body is your most prized possession, and you owe it the respect of good health*

* From Golan, H.P., Hypnosis in Bruxism Treatment (Video cassette No. D3). The American Society of Clinical Hypnosis, Des Plaines, IL., U.S.A.

Table 2: Hypnotic inductions images, statements and phrases for "exploring and collaborating" in treating bruxism.

night. At the end of the tape are suggestions to go from hypnorelaxation into deep sleep. Some patients fall asleep before the end of the tape but this has not been a problem. They may well be in a hypnoidal state and aware of suggestions at an unconscious level.

Daytime clenchers listen once or twice a day in a quiet relaxing place. The suggestions at the end of the tape are to return to the "usual state of awareness, wide awake, refreshed and relaxed and alert". Often the daytime tapes can be shorter (about 10 minutes). Discussing the desired length with the patient (more collaborating) is apt to encourage compliance.

The most important suggestions for either a waking or a sleep tape are that the patient will begin to experience the following: (1) A heightened awareness of unnecessary, counterproductive muscle tension, (2) An increased ability to relax, (3) His/Her speci-

al phrases and images will trigger jaw muscle relaxation, and (4) The above process will work automatically whether awake or asleep. These suggestions should be stated at the beginning of the tape, repeated at least two or three times throughout the tape and again near the end of the tape.

D. Progress check

Daily practice generally produces sufficient improvement to evaluate the progress at around four to five weeks. We generally make a short (20-30 minutes) "progress check" appointment five weeks from the audiotape session. We charge a fee for the prior sessions that is sufficient for us to make the "progress check" at no charge. This encourages compliance.

Occasionally at the "progress check" appointment we do not have adequate results. We then explore such possibilities as the level of compliance, whether more time is needed, making a new tape or additional tapes, referral to a physical therapist for concomitant treatment, or an evaluation by a mental health therapist to determine whether unknown or unresolved psychosocial factors might need attention.

Conclusion

Bruxism is a serious clinical problem that demands a variety, and sometimes combinations, of treatments. For nocturnal bruxers who are not adequately treated by splint therapy (night guards) and for diurnal clenchers, hypnosis appears to be one of the most valuable treatment modalities. One hypnotic method has been outlined.

Much more clinical research is needed to conclusively evaluate the effectiveness of hypnosis for bruxism. At present though, the treatment protocol described in this article shows significant promise both empirically and from the two small studies referred.

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