

Management of a preadolescent chronic headache patient with occlusal splint therapy: case report

Carroll G. Bennett, DDS, MS Parker E. Mahan, DDS, PhD

Abstract

Preadolescent children frequently report headache symptoms. Long-term, recurrent headache problems occur much less frequently and are often classified as migraine. This report describes an 8 1/2-year-old male who, after limited relief through traditional therapy over a 4-year period, was helped significantly with an occlusal splint.

Headache symptoms frequently are reported by children. Bille (1962), in a study of 9000 children, found that by age 7 years, 2.5% had frequent nonmigrainous headaches, 1.4% had true migraines, and 35% had other types of infrequent headaches. He reported that by age 15 years 15.7% of children had frequent nonmigrainous headaches, 5.3% had true migraines, and 54% had experienced infrequent nonmigrainous types. These figures have been validated in another study (Sillanpaa 1976).

Rothner (1983) uses a classification based on the temporal pattern of the headache: (1) acute; (2) acute and recurrent; (3) chronic and progressive; and (4) chronic and nonprogressive. An acute headache is an isolated event with no previous history. If it is associated with neurologic signs and symptoms, an accurate diagnosis must be made quickly. There are a number of factors which must be considered, the most serious of which are CNS infection, emboli, vascular thrombosis, toxins, and trauma. Acute recurrent headaches are those events that recur periodically and in most instances are the migrainous types. Chronic progressive headaches are the types that increase in severity and frequency over time, and the patient usually develops other neurological signs and symptoms after several weeks. This type is usually related to increased intracranial pressure. The chronic, nonprogressive type of headache occurs several times either weekly or daily, (or in some cases constantly) without significant change in severity. This type, which is usually not associated with other neurological signs and symptoms, is frequently related to emotional factors. Rothner (1987) discusses the various types of headaches seen by the pediatrician

and presents a systematic approach to their diagnosis and treatment.

In the present report significant relief was obtained for a chronic headache patient through the use of occlusal splint therapy. This mode of treatment was selected because the patient had a history of bruxism, with evidence of significant wear on the occlusal surface of his posterior teeth, and family socioeconomic factors and distance would not permit multiple visits required for behavioral treatment approaches.

There are a number of other, nonstandard medical and psychotherapy techniques for treating chronic recurrent headaches in children (Labbe and Williamson 1984; Masek et al. 1984; Schechter 1985; Fentress et al. 1986; Richter et al. 1986; Olness et al. 1987). Womak et al. (1988) reported a study using biofeedback and relaxation/mental imagery (self-hypnosis) techniques to treat recurrent headache patients. In their study significant success was found in both the migraine and muscle contraction groups. The etiology and management of bruxism in children is reported by Mahan and Alling (in press).

Case Report

A white male child from a rural Florida area has received most of his health care at the University of Florida Medical and Dental Clinics through the sponsorship of a state funding agency. His first visit occurred when he was 4 1/2 years of age, a referral to pediatrics with a history of recurrent tonsillitis and delayed speech. He had experienced 6 throat infections between the age of 3 years, 4 months and 4 years, 5 months. During his initial visit to the Pediatric Clinic, he was referred to the Ear, Nose and Throat Clinic and scheduled for an evaluation in the speech clinic. The ENT physicians recommended a tonsillectomy and placed him on oral penicillin to correct his problem. The speech pathologist found no functional or anatomical defects and suggested that part of the problem was related to

delayed speech development.

A tonsillectomy was performed 3 months later. The adenoids were not removed because of the presence of a submucous cleft in the palate. The surgical procedure was tolerated well, and he had an uneventful hospital stay. Thirteen days after the tonsillectomy he presented to the ENT clinic with an adenoid infection and a marked decrease in the nasal airway. He was treated successfully with a 7-day course of ampicillin. At the 2-week follow-up visit he was free of disease.

Three months later he presented to the Pediatric Clinic with a history of frequent headaches. The pediatrician felt his problem was likely viral in nature and treated him symptomatically. However, after 2 months of repeated headaches he was referred back to the ENT clinic. Following a thorough examination he was referred to the Pediatric Neurology Clinic for a complete neurological evaluation. He was now 5 years old with a 4-month history of headaches, nausea, and dizziness. The headaches were described as pulsating, usually in the temporal area, and lasting from 1 hr to 1 day, occurring 2-3 times per week. The time of onset varied, and could not be associated with periods of stress, hunger, or specific food ingestion. The headaches were relieved by aspirin and rest. The patient's father also had a history of chronic headaches. His mother was 39 years old at the time of delivery. There are two other siblings, a brother 8 years older and a sister 9 years older. The initial neurological examination was done in July, 1980. The report indicated that there were no abnormalities noted with regard to the cranial nerves, motor and sensory reflexes, cerebellar, and mental status. There were no psychogenic causes found; no contact with toxic substances, drugs or foods were seen as contributory. The diagnosis was "consistent with migraine" and the treatment recommended was analgesics.

The patient returned to the Pediatric Clinic in April, 1981, with essentially the same complaints. His mother reported several headaches per week and he had been given children's aspirin on some occasions and acetaminophen (Tylenol® — McNeil Lab Inc; Fort Washington, PA) at other times. His mother indicated that each year at the beginning of school his problem intensified. In October, 1981, the pediatric neurologist advised the patient's school principal of the diagnosis of migraines and recommended that he be given aspirin as necessary at school.

During the period July, 1980, to March, 1984, the patient was seen 2-3 times a year in the Pediatric Clinic and once a year in the Neurology Clinic. In February, 1983, he had a CT scan which was judged normal. During these years he was treated at various times with aspirin, Tylenol, Anacin® (Whitehall Laboratories Inc; New York, NY), Compazine® (Smith Kline & French

Laboratories; Philadelphia, PA) for nausea, and propranolol HCl.

By November, 1983, his headaches had become more severe and apparently were interfering with his school work. It was noted at this time that he "grinds his teeth." IQ testing was recommended and he was put on 10 mg quid Inderal® (Ayerst Laboratories; New York, NY). There was improvement during December. However, in January, February, and March he experienced headaches almost daily, frequently with nausea. In late March, 1984, he was referred to the Pediatric Dentistry Clinic for evaluation of grinding teeth and the possible association with his frequent headaches.

On April 1, 1984, he was examined and the following notes were recorded: "small, 8 1/2-year-old male with history of headaches since 4 years, 9 months; recently experiencing 4-5 headaches each week often accompanied with nausea; vanilla ice cream always triggers an attack; pain, usually in the frontal and temporal region, is often bilateral; an examination of the temporomandibular joint indicated no tenderness or joint sounds with function; no muscle soreness was noted." His dental development (Figs 1-3, Fig 3 - page 66) was consistent



FIG 1. Anterior view with teeth in occlusion. Note deep overbite.

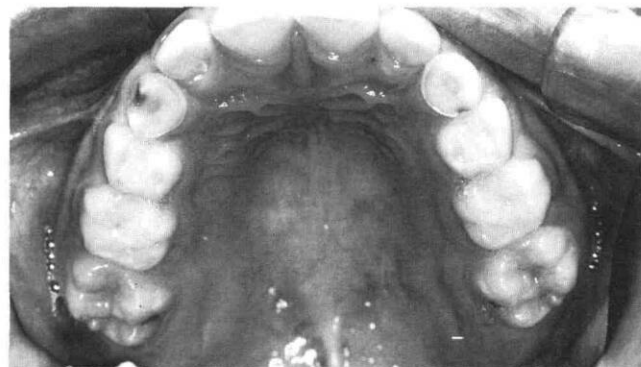


FIG 2. Occlusal view of the maxillary arch. Note extensive wear on the primary canines.

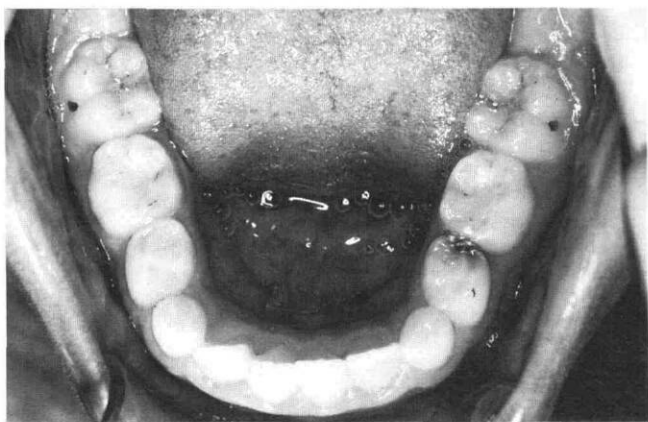


FIG 3. Occlusal view of mandibular arch. Note extensive wear on the primary canines.

with his chronologic age. He had a deep overbite (approximately 90% incisor overlap) and very little overjet (approximately 1-2 mm). His arches, (Figs 2, 3), were well developed with minor mandibular incisor crowding. Caries activity was relatively low and there was marked wear on the primary canines and to a lesser degree the primary molars. An initial diagnosis was made of noxious bruxism resulting in excessive activity in the masseter and temporalis muscles leading to temple and frontal headache.

Autopolymerizing acrylic resin was molded around the maxillary 6 anterior teeth and the patient closed lightly into the resin to establish occlusal contact for the lower incisors before the resin hardened. This anterior, deprogrammer-type splint was trimmed and adjusted to allow anterior and lateral function. The objective was to "unload" the joint, reduce pressure exerted through the condyles, and reduce contractile force in the masseter and temporalis muscles. The patient was instructed to wear the splint 24 hr/day for one week.



FIG 4. View of maxillary bite splint in place on the maxillary arch. Clear, hard, acrylic was used in the construction.

At the end of the week the mother reported a dramatic decrease in the headaches. The temporary splint then was replaced with a full arch acrylic splint. Maxillary and mandibular alginate impressions and an Aluwax® (Aluwax Dental Products Co; Grand Rapids, MI) bite registration were completed. The casts were mounted on an adjustable articulator and a maxillary, full-arch, muscle relaxation splint was constructed. Figure 4 shows the splint in place. It covered the entire hard palate and about one-third of tooth crowns on the buccal surfaces. It was adjusted with positive occlusal stops in the centric position with an even distribution of occlusal force (Fig 5). In protrusive and lateral movements the posterior region was taken out of occlusion as a result of the inclination of the anterior guidance in the splint (Fig 6).

The full-arch appliance was delivered in early May, 1984. The appliance was deemed "comfortable" by the patient after several adjustments. The number and frequency of headaches decreased significantly. In June, 1984, the appliance was broken and a new splint was made. During the 2 weeks he was without the splint he experienced several episodes of headaches. He was followed at 2- to 3-month intervals. In May, 1985, another splint was constructed using a new impression. The patient reported continual positive benefit from the use of his splint. In June, 1985, the family lost state

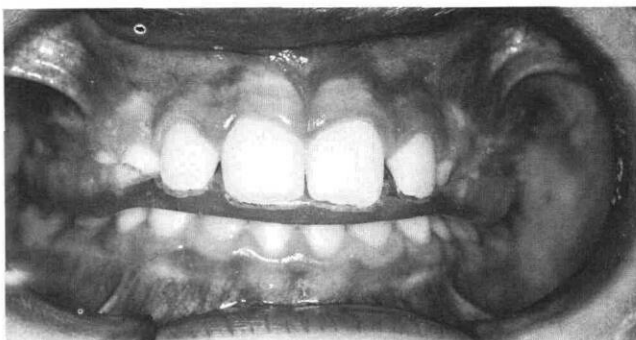


FIG 5. Anterior view with bite splint in place.

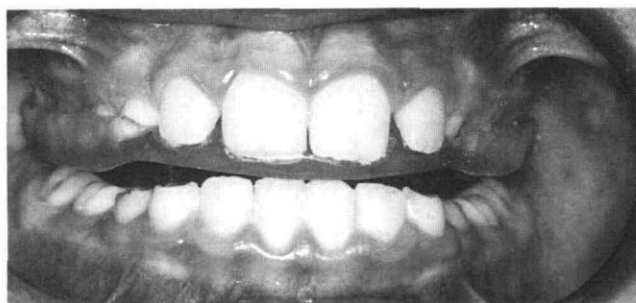


FIG 6. Bite splint in position with patient in a protrusive relation. Note disarticulated occlusion in the posterior region.

funding since they had reached maximum benefit and they refused to continue dental treatment. He was last seen in March, 1986, in the Pediatric Clinic and his headache problem appeared to be under control.

Conclusion

This case represents a rather extreme chronic headache problem in a preadolescent male that was helped significantly through the use of a maxillary bite splint. By reducing mandibular elevator muscle excessive activity and possible excessive compression of joint tissues, frequent incapacitating headache was reduced significantly to a level that allowed normal performance of school work. If the bruxing habit continues this patient will require long-term splint therapy.

A number of other medical, behavioral, and psychotherapy treatment techniques are available. The chronic headache patient needs to be evaluated carefully by physicians, dentists, and behavioral scientists in order to determine the best course of treatment.

Dr. Bennett is a professor, pediatric dentistry, and Dr. Mahan is a professor, oral biology, and co-director, Cranial Facial Pain Center, University of Florida. Reprint requests should be sent to: Dr. Carroll G. Bennett, Dept. of Pediatric Dentistry, University of Florida, College of Dentistry, Box J-445, JHMHC, Gainesville, FL 32610.

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Dental employment to grow

Employment of dentists will grow faster than average for all professions, according to a new publication by the Bureau of Labor Statistics. In its *Occupational Outlook Handbook*, published every two years, the agency predicted a 25-34 percent increase in dentist employment by the year 2000. Among the reasons, according to the publication:

- A growing need for restorative dentistry in an aging population
- Growing public awareness of the need for preventive care, and
- Expanding insurance coverage.

Because more dentists will enter the profession than will retire or leave, the publication predicted, this will mean more competitive fees, more weekend and evening office hours, and less extensive use of auxiliaries.

Faster than average job growth also was predicted for dental hygienists and assistants.