

-
32. Ingerslev H: Functional disturbances of the masticatory system in school children. *J Dent Child* 50:445, 1983.
33. Okeson JP: *Management of Temporomandibular Disorders and Occlusion*, 2nd edition, St. Louis, MO: the CV Mosby Company, 1989, pp 306-307.
34. Nesbitt BA, Moyers RE, TenHave T: Adult temporomandibular joint disorder symptomatology and its association with childhood occlusal relations: a preliminary report. In Carlson DS, McNamara JA, Ribbens KA: *Developmental Aspects of Temporomandibular Joint Disorders*, Ann Arbor, MI: University of Michigan Press, 1985, pp 183-89.
35. Williamson EH, Simmons MD: Mandibular asymmetry and its relation to pain dysfunction. *Am J Orthod* 76:612, 1979.
36. Stringert HC, Worms FW: Variations in skeletal and dental patterns in patients with structural and functional alterations of the temporomandibular joint: a preliminary report. *Am J Orthod* 89:285, 1986.
37. Sadowsky C, BeGole EA: Long-term status of temporomandibular joint function and functional occlusion after orthodontic treatment. *Am J Orthod* 78:201, 1980.
38. Behrents RG: Growth in the aging craniofacial skeleton, Monograph 17, Craniofacial Growth Series, University of Michigan Press, 1985, p. 79.
39. Thilander B: Temporomandibular joint problems in children. In Carlson DS, McNamara JA, Ribbens KA: *Developmental Aspects of Temporomandibular Joint Disorders*, Ann Arbor, MI, 1985, pp. 89-104.
-

PEDIATRIC DENTISTRY/Copyright © 1989 by
The American Academy of Pediatric Dentistry
Volume 11, Number 4

Standards for temporomandibular evaluation in the pediatric patient

Jeffrey P. Okeson, DMD, Workshop Leader

Joseph P. O'Donnell, DMD, MS, Workshop Recorder

As part of the overall dentofacial evaluation of every patient, the pediatric dentist should be aware of significant signs and symptoms of temporomandibular dysfunction (TMD). The history and examination should include specific elements which will aid in determining whether the child's masticatory system is functioning normally.

History

As in all aspects of the clinical sciences, the history plays an essential role in diagnosing TMD. The history form for the pediatric patient should include such questions as:

1. Does your child report any pain during chewing or while opening the mouth wide?
2. Does your child report any discomfort in the jaws upon awakening?
3. Does your child complain of headaches?
4. Is there a history of trauma to the jaws or neck region?
5. Is there a history of allergies?
6. Does your child's jaw "click" or lock upon opening?

If the response to any of these questions is positive, further investigation is necessary. If there is a history of jaw pain or headaches, it is important to determine when the pain manifests. Is it most commonly in the morning, after eating, or after school? Is it associated with allergic symptomatology or periods of stress, e.g., school exams, social or sporting events, etc. Does the child eat a balanced diet? The answers to these questions may help sort out psychological problems, allergic responses, and nutritional imbalances from true TMD.

Care must be exercised in reviewing the history so that the parent or child is not "led" to answer a question in a manner that pleases the doctor. For example, "Your jaw hurts sometimes in the morning, doesn't it?" has a far different connotation than "Does your jaw ever hurt in the morning?"

If there is a history of joint sounds, inquiries should be made about sleeping posture, since this can be an influencing factor in joint dysfunction.

Clinical Examination

An examination of the hard and soft tissues of the oral cavity should include an evaluation of the muscles of mastication. Since head position can be an important factor in diagnosis, the child should be seated upright during this part of the examination. The pediatric dentist should gently and cautiously palpate the temporalis, masseter, and sternocleidomastoid muscles. The purpose of this examination is to determine the health of the muscles and if there are any "trigger" points that may be a factor in producing headaches (myofascial trigger point pain). The responses to palpation should be rated as follows: 0 = no pain, 1 = tenderness, 2 = definite pain, and 3 = evasive action.

Once again, care must be exercised since an overzealous examiner will produce false positive results which will lead to an improper diagnosis.

The child's range of movement, including maximum opening and lateral excursions, should also be evaluated. The child should be asked to open the mouth until a comfortable position is reached; then the mouth should be opened to its widest position. A maximum opening of approximately 40 mm is an acceptable minimum limit. The anterior bite depth should be considered, i.e., if the measured opening from the incisal edges of the maxillary and mandibular incisors is 34 mm with an overbite of 6 mm, then the opening range is 40 mm.

If there is a history of pain upon opening, the child should be asked to open as far as possible until discomfort is produced. If a "click" is present, the extent of opening where the click occurs should be recorded. It could be early, late, or both. Documentation of such measurements in the patient's record is essential in establishing a data base from which a diagnosis can be derived and a treatment plan developed. Such data also is important for comparison of future developmental patterns.

Any obvious deviation in function also should be recorded. Particular attention should be paid to a slide

between centric occlusion and centric relation, especially pronounced slides from retruded contact position to maximum intercuspation. The presence of any interocclusal interferences as crossbite malocclusion should be noted.

The use of a stethoscope to hear clicks has questionable value, since it may magnify insignificant, asymptomatic joint sounds. It should be emphasized that asymptomatic joint sounds rarely require treatment and that observation upon recall is the proper course of action.

Radiographic Examination and Special Armamentarium

In the absence of a significant history and positive findings upon clinical examination, there is no indication for radiographs of the TMJ. However, if there is a history of intracapsular joint pain, there can be value in taking transcranial radiographs or tomograms. Caution should be taken when interpreting joint spaces in transcranial radiographs, since a small change in head posture by as little as five degrees can substantially alter the position of the condyle in the fossa. Radiographs rarely will influence an initial, conservative treatment plan for TMD, but do become more important if more aggressive therapy is required.

Other approaches currently used in the diagnosis of TMD include magnetic resonance imagery (MRI) and arthrograms. In addition to being very costly, the MRI has questionable value, since 40% of the normal population may demonstrate displaced discs. Arthrograms generally are not indicated in children, since symptoms rarely warrant this somewhat invasive technique. If, however, a patient is not responding to conservative therapy, additional studies such as an arthrogram may be indicated. The use of an arthroscope for the purpose of TMJ lavage has been reported to have benefit in adults in breaking adhesions and freeing the disc to resume normal movement.

Standards for management of the pediatric patient with acute pain in the temporomandibular joint or muscles of mastication

Paul J. Loos, DMD, MS, Workshop Leader

Gerald A. Aaron, DMD, Workshop Recorder

Children with acute pain in the TMJ or muscles of mastication present a challenging problem in diagnosis and management. Since TMJ disorders are often multifactorial in nature, therapy frequently must involve a multidisciplinary approach. The goal in managing these patients is to provide relief of acute symptoms while recognizing that there are long-term diagnostic and therapeutic problems to be addressed.

The first step in management of the patient with acute pain is to determine its cause. A history must be obtained to include the following:

1. Is there a history of trauma to the jaws or neck region?
2. Is there a history of recent general anesthesia with nasal or oral intubation?
3. When did the pain first occur?
4. How long has the pain persisted?
5. Is the pain greater in the morning, during chewing, or after eating? How frequent is it?

An examination of the child should include palpation of the muscles of mastication, an evaluation of the child's occlusion, especially discrepancies between centric relation and centric occlusion, and determination of range of motion. Pain, trismus, and limited opening are the cardinal signs of the acute phase of TMD.

If the patient manifests muscle pain, conservative therapy in the form of a superior repositioning (centric relation) splint is indicated. The goal of this splint is to set the condyle properly in the fossa and bring about

relief in muscle tension. Analgesics and muscle relaxants also can play a significant role in bringing about patient comfort; the patient should be advised to gently stretch the mouth open while a vapo-coolant spray is applied exteriorly. This should be followed by application of moist heat. During the recovery period the patient should be advised to eliminate heavy chewing, including chewing gum. Gentle stretching exercises at home also should be prescribed.

If the source of pain is determined to be a result of intracapsular disc position, then an anterior repositioning splint is indicated.

Since most TMJ disorders are a multifactorial problem, the clinician should be aware of the spectrum of conditions that may contribute to the pain and negatively influence the patient's response to the above conservative therapy. Some of these include:

1. Earache: The pain of otitis media can be mistaken for TMD
2. Stress in one's life
3. Allergic responses
4. Sleep disturbances, as obstructive sleep apnea, or unusual sleep posture
5. Pinworm infections: One of the symptoms of this condition is nocturnal bruxism
6. Juvenile rheumatoid arthritis.

For this reason, the pediatric dentist would be prudent to seek further consultation for any patient who does not respond to conservative therapy.

Standards for long-term management of the pediatric patient who manifests temporomandibular joint or masticatory muscle pain and dysfunction

G. Fräns Currier, DMD, Workshop Leader

Jack L. Hertzberg, DMD, Workshop Recorder

This workshop concentrated its efforts on the long-term management of the pediatric patient with a history of pain and dysfunction of the TMJ or masticatory muscles. Although a wide variety of treatment modalities are employed currently to manage this group of patients, little scientific evidence exists on their efficacy. There is a lack of well-controlled longitudinal studies on the results of therapy.

In view of the paucity of scientific data, this workshop concluded that the only justifiable course of treatment in the long-range management of TMJ disorders is reversible, conservative therapy. Such treatment modalities such as extensive occlusal equilibration, transcutaneous electrical nerve stimulation (TENS), TMJ surgery, etc., should be restricted in their use until there is more scientific evidence.

Patients who do not respond to reversible, conservative therapy should be referred to an academic institution or regional pain center where an extensive data base can be collected and coordinated to make a more thorough diagnosis and for more complicated treatment modalities.

Workshop participants agreed that the College of Diplomates could serve as an excellent vehicle to create and distribute a standardized examination and treatment form for TMJ disorders. In this way, data can be collected on a broad scale which will serve as a catalyst for research in this field. With approval of the College, members of the workshop hope to have the standardized form ready for review by the 1990 meeting of the College.

The following sources are recommended for research in this area.

McLaughlin RP: Malocclusion and the temporomandibular joint: an historical perspective. *Angle Ortho* 58:185, 1988.

Magnusson T, Egermark-Eriksson I, Carlsson G: Five-year longitudinal study of signs and symptoms of mandibular dysfunction in adolescents. *J Cranio Prac* 4:339, 1986.

Morawa AP, Loos PJ, Easton JW: Temporomandibular joint dysfunction in children and adolescents: incidence, diagnosis and treatment. *Quintessence Int* 11:771, 1985.

Nilner M: Functional disturbances and diseases of the stomatognathic system. A cross-sectional study. *J Pedod* 10:211, 1986.

Ogura T, Morinushi T, Ohno H, Sumi K, Hatada K: An epidemiological study of TMJ dysfunction syndrome in adolescents. *J Pedod* 10:22, 1985.

Padamsee M et al.: Functional disturbances of the stomatognathic system. Part II. *J Pedod* 10:1, 1985.

Padamsee M et al.: Trigger point injections: a neglected modality in the treatment of TMJ dysfunction. *J Pedod* 12: 72, 1987.

Riolo ML, Brandt D, Tenhave TR: Associations between occlusal characteristics and signs and symptoms of TMJ dysfunction in children and young adults. *Am J Orthod Dentofac Orthop* 92:467, 1987.

Stack BC, Funt LA: TMJ problems in children. *J Pedod* 1:240, 1977.

Tsamtsouris A, Beenal M: Signs and symptoms of TMJ dysfunction in three- to five-year-old children. *J Pedod* 10:127, 1986.

Wanman A, Agerberg G: Two-year longitudinal study of symptoms of mandibular dysfunction in adolescents. *Acta Odontol Scand* 44:321, 1986a.

Wanman A, Agerberg G: Two-year longitudinal study of signs of mandibular dysfunction in adolescents. *Acta Odontol Scand* 44:333, 1986b.

Requests for reprints of this special report should be sent to: Mr. James J. Baran, Editorial Assistant, the American Academy of Pediatric Dentistry, 211 E. Chicago Avenue ~ Suite 1036, Chicago, IL 60611-2616.

Dry mouth diagnostic test developed

A test to diagnose Sjogren's (pronounced Show-grenz) syndrome, also known as dry mouth, is being developed at the University of Medicine and Dentistry of New Jersey.

The breakthrough test involves microscopic analyses of saliva for telltale elements that reveal the disorder in its early stages or show that conditions exist for development of the syndrome.

Two diagnostic tests are being developed for Sjogren's syndrome, a condition afflicting some 85% of the elderly that commonly precedes development of arthritis. In one of these tests, the predictive sign is the level of lipids, which are fats, in the saliva. Those developing the condition have 20% higher levels of these fats than normal.

In the other test, a specialized monoclonal antibody is introduced into the saliva to act like a guided missile, seeking out a single, specific protein—in this case, mucus glycoprotein. If the monoclonal antibody, which has been stained, finds the protein, it binds to it. Therefore, if laboratory tests reveal a cluster of stained antibodies, the dry mouth disorder is confirmed.

In most cases, the more sophisticated antibody procedure would be used to confirm the simpler lipid-level method. Physicians and dentists will be able to recognize the disorder and take steps to minimize or prevent it before it leads to the development of arthritis.

Sjogren's syndrome breaks down the protective qualities of saliva, leaving gums and teeth susceptible to decay. It is particularly prevalent in postmenopausal women.

The disorder can manifest itself by the long-term use of certain medications, so if diagnosed early, alternative drugs, when available, can be tried. Certain treatments also can control the condition, including the increased consumption of fluoride through products like toothpaste and mouthrinses, and increased fluid intake. If necessary, drugs are available to induce greater saliva production.

The saliva tests are still experimental and not yet available to the public. They are part of ongoing research into the relationship between the salivary gland and disease.