EVALUATION OF THE PATIENT WITH TEMPOROMANDIBULAR JOINT DYSFUNCTION

Edward A. Dolan, D.D.S.

Evaluating the patient with temporomandibular joint disorders can be difficult and challenging for the clinician. Gathering the appropriate data, diagnosing the problem and formulating an accurate differential diagnosis is essential. Temporomandibular joint disorders may be muscular in origin (myofascial pain dysfunction)[1] or have their primary etiology within the joint itself (internal derangement)[2].

It is important for the clinician to systematically evaluate the patient in order to formulate an optimal treatment plan. The treatment must be multidisciplinary, however the first challenge for the clinician is to recognize the problem. Listening to the patient, taking a complete history, and performing a thorough clinical and radiographic examination are the first priorities.

History

The first collection of data begins with accurate history taking (Fig. I). The history should include the patient's chief complaint, history of present illness, and the medical and dental histories. The patient's chief complaint will indicate whether the disorder exists primarily within the joint or in the musculature. Patients who complain of generalized temporal, neck, shoulder, and occipital pain in all probability will have a muscular component, while patients who complain of well localized pain and dysfunction may have an intrinsic disorder of the joint. It is imperative to realize that both of these disorders may exist in combination or independently. The history of the present illness should include the onset, duration, intensity, pain sequence, and previous treatment. Patients with myofascial pain dysfunction usually present with dull diffuse unilateral pain associated with muscle tenderness, joint pain, clicking, and some limitation of jaw function. Generalized headaches and constant pain are often present on waking and gradually worsen as the day progresses.

Internal derangement patients complain of well localized pain, clicking and popping, and chewing difficulty. Statements such as "my jaw locks" or "hurts when I chew" are frequent complaints. The onset is often associated with a traumatic incident such as a blow to the head, whiplash or a history of forced mouth opening. The patient may report a long history of clicking and popping (non-painful) followed by increased pain and jaw locking. Documenting whether the problem is acute or chronic (recurrent), and the patient's response to previous treatment methods are important in determining the course of treatment.

An accurate medical, social, and family history is essential. The overall treatment and prognosis are greatly influenced by the medical condition of the patient. Ascertaining the patient's current treatment status of a serious illness such as rheumatoid arthritis is necessary. Medications which may influence overall function and treatment of the patient should also be recorded. A history of neurological problems or allergies may also confuse the differential diagnosis of the patient's temporomandibular joint disorder. An assessment of the patient's social and family history is invaluable in determining the overall psychomedical status of the patient. For example, a disrupted family life or significant job stress may play an important role in the diagnosis and treatment of myofascial pain dysfunction syndrome that has tension and anxiety as its primary etiology. The dental history should record any previous treatment for this problem, and whether the patient has any parafunctional habits such as bruxing, grinding or clenching of the teeth.

Clinical Examination

Evaluation of the muscles of mastication and cervical muscles for tenderness and myospasm should be performed. Muscular fatigue secondary to an increased level of stress, tension and anxiety in combination with clenching, bruxing and grinding of teeth will produce significant muscle pain. This muscle over-contracture can produce occlusal disharmony, altered chewing patterns, and increased myofascial pain (Fig. II). All masticatory muscles, in particular the temporalis and masseter are affected. Patients complain of constant pain and headache which is present on waking and gradually worsens as the day progresses. Examination of the temporomandibular joint itself may elicit some clicking, popping, and joint tenderness; however, palpation of the external auditory canal will be nontender. Patients who complain of pain rather than dysfunction, usually relate a history of stress, tension and anxiety coupled with generalized muscle tenderness and in all probability have a muscular component to their temporomandibular joint disorder.

Internal Derangement

Internal derangement of the temporomandibular joint is defined as a displaced meniscus resulting in abnormal function. Clinical examination will demonstrate tenderness to palpation over the condylar area indicating a capsulitis. Palpation of the external ear canal will also produce tenderness. Observation of the patient's mandibular movements; namely, limitation of motion, deviation, and amount of interincisal opening should be recorded. The clinician should note whether there is clicking, crepitus or locking and at what point in the opening cycle the click occurs. Auscultation using a stethoscope is a useful aid in assessing temporomandibular joint sounds.

The meniscus may be subluxated (reducing) or completely dislocated (non-reducing) (Fig. III). The displacement is a result of stretching the bilaminar zone of the meniscus and thereby permitting the meniscus to move anteriorly.

If the meniscus is reducing, the condyle translates the junction of the bilaminar zone and the meniscus; in non-reducing closed lock, the condyle is unable to translate the junction of the bilaminar zone and the meniscus. Patients with subluxated discs often have reciprocal clicking. As the jaw opens, clicking occurs as the condyle moves across the junction of the bilaminar zone and the posterior zone of the meniscus; this returns the condyle to the meniscus. On closing, the condyle slips posterior to the meniscus producing a closing click and the meniscus is anteriorly displaced. There is a direct correlation between when the click occurs and the extent of the displacement. The earlier the click, the less the displacement; the later the click, the greater the displacement.

Anterior dislocation (non-reducing closed lock) occurs when the condyle cannot translate the junction of the bilaminar zone and the meniscus, and the meniscus remains displaced during opening and closing. Such patients may have severe pain, experience difficulty achieving maximum opening with deviation to the affected side. Chronic dislocation of the meniscus may result in perforation of the bilaminar zone and degenerative joint disease.

Radiographic Evaluation

Radiographic examination should include lateral transcranial radiographs in patients with temporomandibular joint dysfunction. These x-rays are excellent screening tools to determine condylar position and bony abnormalities, however, these films do not replace the need for specialized radiographs such as arthrography, computerized tomography, and the more recent magnetic resonance imaging (MRI)[5].

Arthrography continues to be the most useful radiographic study for the diagnosis of internal derangements of the temporomandibular joint.[3] Radiopaque contrast such as *Renografin 60* is usually injected into the lower joint space of the temporomandibular joint. A total of 0.5 cc. of contrast material is enough to fill the joint space. After the needle is withdrawn, fluoroscopic videotape images are recorded as the patient opens and closes. From this study, the clinician can determine not only the position and condition (perforation) of the meniscus, but also can observe the exact point at which the meniscus reduces during function, or if it is completely dislocated.

Computerized tomography[4] is particularly useful for diagnosing osseous structures, however it cannot demonstrate meniscus function or diagnose a perforation. Therefore, at the present time computerized tomography has limited use in the diagnosis of internal derangement of the temporomandibular joint.

Magnetic resonance imaging holds great promise in the evaluation of temporomandibular joint internal derangement. It can provide excellent tomographic images with superior soft tissue detail without the use of ionizing radiation. MRI has the potential for replacing computerized tomography and arthrography in the evaluation of patients with internal derangement.

There is an increasing need for all health professionals to become familiar with the symptoms of temporomandibular joint disorders. The orofacial myologist can perform a critical role in detecting and treating damaging parafunctional habits. These habits greatly influence the outcome of both conservative and surgical treatment. Understanding current diagnostic methods is essential for all members of the team involved in diagnosing and treating temporomandibular joint disorders.

Figure I
Temporomandibular Joint Questionnaire

1. Name
   Age
2. Medical History (past and current).
3. Dental History (past and current).
4. Have you been previously treated for this problem?
5. Do you have pain?
6. Is the pain in the temple, ear, or jaw?
7. Is there pain in the right, left, or both joints?
8. Is the pain sharp, dull, and how long does it last?
9. Do you have headaches?
10. Do you have any history of trauma?
11. Do you have any back, neck, or shoulder pain?
12. Do you clench your teeth during the day?
13. Do you grind your teeth at night?
14. Is there any clicking, popping, or grating when you open and close your mouth?
15. Does your jaw lock open or closed?
16. Do you have history of emotional or psychiatric problems?

FIGURE II

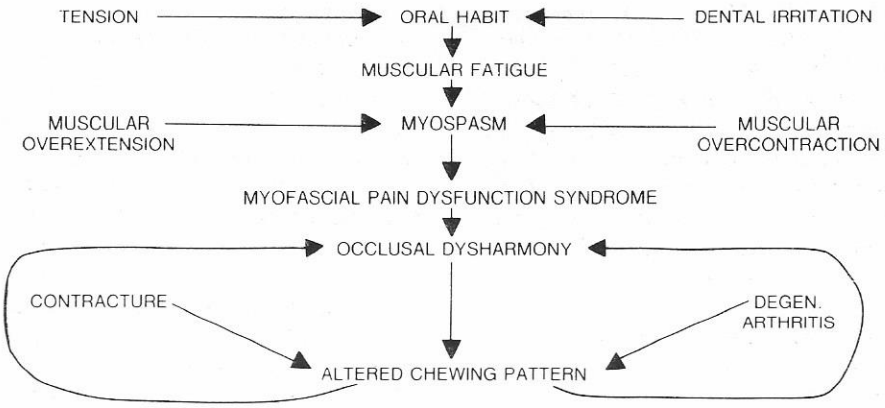
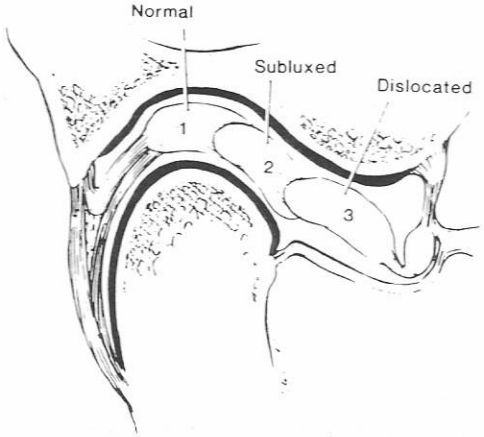


FIGURE III

Diagrammatic description showing a normal, subluxated and dislocated meniscus.



REFERENCES

1. Laskin, D.M.: Etiology of the pain dysfunction syndrome. *The Journal of the American Dental Association* 79:147-153, 1969.
2. Helms, C.A.; Katzbert, R.W.; Dolowick, M.F.: Internal derangements of the temporomandibular joint. *Research and Education Foundation,* 1983.
3. Katzberg, R.W.; Dolowick, M.F.; Helms, C.A. et al. Arthrotomography of the temporomandibular joint. *American Journal of Roentgenology* 134:995-1003, 1980.
4. Helms, C.A.; Vogler, J.B.; Morrish, R.B. et al. Temporomandibular joint internal derangements: CT Diagnosis. *Radiology* 152:459-462, 1984.
5. Katzberg, R.W.; Bessette, R.W.; Tallents, R.H. et al. Normal and abnormal temporomandibular joint: MR imaging with surface coils. *Radiology* 158:183-189, 1986.

Please address all correspondence to:
Edward A. Dolan, D.D.S.
Assistant Professor
Division of Oral & Maxillofacial Surgery
Duke University Medical Center
Durham, North Carolina 27710