Clinical Integration of Osteopathic Manipulative Medicine

Family Medicine: Temporomandibular Joint Disorder

Authors: Gabriel Orner OMS IV, Dr. Sheldon C. Yao DO

Introduction

Temporomandibular joint (TMJ) dysfunction is a disorder included under the umbrella term of Temporomandibular disorders (TMD) which is characterized by pain, joint sounds, restricted mandibular movement, and other signs and symptoms. TMD is common in the US and negatively impacts quality of life as evidenced by its estimation of 17.8 million lost work days per 100 million annually. One study found the prevalence of orofacial pain in the population to be 26 percent, 6 percent of which was attributed to pain the in TMJ. It has been reported that the prevalence of TMD is roughly 1.5 times more common in women and the onset is most likely between the ages 18-44. TMD is associated with psychiatric conditions as well as rheumatoid arthritis with the prevalence in the latter ranging from 53-94 percent.

TMJ is usually managed with a combined approach using patient education and pharmacologic therapy. For patients who don’t respond to this approach, other available options for patients include trigger point, steroid, and botulinum injections, acupuncture, and finally, surgery. Surgery is the suggested management of refractory painful TMD in patients whom initial management was unsuccessful for at least 3-6 months, have anatomical pathology and display symptoms that interfere with activities of daily living. One study failed to demonstrate any significant improvement with physical therapy, but perhaps this presents an excellent opportunity for OMT to provide relief in these patients.

Patient Presentation

Facial Pain (96.1 percent)
   Ear, temporal, periorbital, and mandibular regions
Ear discomfort / dysfunction and tinnitus (82.4 percent)
Headache (79.3 percent)
TMJ dysfunction (75 percent)
   Decreased range of motion in mandible
   Popping or clicking noises with jaw function
   Jaw deviation to affected side
   Involuntary jaw clenching
Neck pain
Arm and back pain
Dizziness

**Differential Diagnosis**

Facial pain unrelated to TMD
- Dental disorders including caries, periodontal disease, malocclusion
- Trigeminal Neuralgia
- Head and neck cancer pain
- Sinusitis
- Postherpetic neuralgia
- Glossopharyngeal neuralgia

Otologic disorders and disease
- Acute otitis media
- Eustachian tube dysfunction
- Middle ear injury

Headache unrelated to TMD

**TMJ dislocation**

Should be distinguished from TMJ dysfunction. Dislocation is characterized by inability to close the mouth and excessive salivation.

**Clinical pearls and diagnostic tools**

The pathogenesis of TMD is uncertain but may have structural (including trauma), biologic, behavioral, environmental, and cognitive factors, therefore using multiple models of manipulation would be best.

The diagnosis of TMJ dysfunction is primarily clinical and is based on the history and physical exam. In the history one should ask about the symptoms mentioned above as well as history of trauma, dental work, jaw soreness or morning headaches indicative of nighttime bruxism (teeth grinding), sleep habits/position, and psychiatric history. Questions about occupation and habits such as gum chewing, posture, and nail biting may provide clues as well.

Imaging should be performed in select cases and the initial modality recommended is a panoramic X-ray of the jaws. CT and MRI may be performed if there is an abnormality on X-ray, history of TMJ surgery, or abnormal cranial nerve findings.

**Osteopathic Structural Examination**

Areas to focus on include:

**TMJ examination**
- Observation of facial symmetry or asymmetry
- Observation of midline deviation of the mandible and palpation of TMJ during opening and closing of the mouth
- Measurement of jaw opening. Average adult opening is 40 mm.
- Assessment of joint noises such as clicking or popping with mouth opening
- Palpation of the TMJ and surrounding areas for tenderness and bony abnormalities
- Assessment of musculature for spasms and imbalance
- Palpation of the TMJ through the external auditory meatus, noting tenderness or deviation with motion

Cranial bones, most notably the temporal bones and craniosacral motion

Cervical spine, most notably the Occipitoatlantal joint, C2, and C3

Posture and shoulder muscle tenderness

Teeth examination for evidence of bruxism

**OMM Integration**

The main goals of osteopathic treatment of TMJ dysfunction include eliminating any treatable causes, application of OMT, and at-home patient exercises. In a randomized, controlled trial studying the effectiveness of OMT for patients with TMD, Cuccia et al, concluded that OMT is a “valid treatment option” for such patients. The study compared two groups of patients with TMD, one of which was treated with OMT, the other with conservative conventional therapy using multiple different treatment modalities. While both groups displayed improvement, the OMT group required significantly less NSAID’s and muscle relaxants (p<0.001). Moreover, the OMT group exhibited the best results when comparing mouth opening, patient reported pain scales, and range of motion (ROM) post-treatment. They further state that OMT is recommendable because of its positive effects on physical symptoms and dentists should collaborate with osteopathic physicians for these patients. Another study by Monaco et al. found that application of OMT in pediatric patients with non-specific TMD symptoms significantly improved mandibular kinetics further supporting the use of OMT for such patients.

**Treatment Options**

It should be noted that the OMT applied in Cuccia et al. consisted of treatment sessions between 15-25 minutes incorporating a variety of techniques directed at the cervical and TMJ regions including:

- Myofascial release
- Balanced Membranous tension
- Muscle Energy
  - Target the muscles of mastication, specifically those that open and close the jaw and those involved in lateral movement
- Joint Articulation
HVLA
Counterstrain
Pterygoid Muscle Stretches
- These muscles may be hypertonic and can be passively stretched with a gloved finger
  applying pressure inside the mouth.
Cranial-Sacral technique
- Specific attention should be placed towards dysfunction of the temporal bones

Related Evidence Based Medicine Articles

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