Osteopathic Management for Temporomandibular Joint Disorder

Introduction

Temporomandibular disorder (TMD) is becoming a very common problem affecting approximately 20 - 30% of individuals between the ages 20 to 40 [2, 3, 7]. Temporomandibular disorders are classified as a musculoskeletal condition resulting in craniofacial pain, functional limitations and disability. Some typical TMD symptoms associated with TMD can include bitemporal headache, unilateral facial pain, unilateral dull ache around the mastication muscles, jaw locking, jaw clicking, dull ache in the neck or tinnitus [9, 10]. TMD is not life-threatening but it can be detrimental to quality of life. The symptoms can become chronic and difficult to manage. The origins of TMD can varies greatly; it could be due to microtrauma, abnormalities of the articular disc, parafunctional habits, anxiety, stress, TMJ’s capsule or ligaments damage and muscle pain or spasm [2, 7]. TMD may also be the result of osteoarthritic changes and disk dislocation.

TMD’s management is frequently multifactorial and multidisciplinary [2]. The debate surrounding the effectiveness of surgical intervention for TMD has led many patients to seek conservative care for the management of their pain and associated loss of function. The purpose of this systemic review is to describe the examination and treatment of TMD from the osteopath’s perspective.

Overview: Anatomy of TMJ and related structures

TMD is viewed as a musculoskeletal disorder within the masticatory system [2 – 5]. The temporomandibular joint (TMJ) is responsible for all movements of the jaw. These movements allow a number of functions such as chewing, sucking, swallowing, articulating sounds breathing and making facial expression [5, 6]. The TMJ makes muscular and ligamentous connections to the cervical region, forming the cranio-cervico-madibular system [2]. The TMJ is a synovial joint consisting of the condyle of the mandible, the mandibular fossa of the temporal bone, a thin articular disc and a capsule [6]. The articular disc is bi-concave structure [2]. With the mouth closed, the thick part separates articular surfaces. With the mouth open, the thin part separates the articular surfaces [7].

There are a few key muscles involved in mastication. They are the suprhyoid muscle, temporalis masseter, lateral pterygoid, medial pterygoid, buccinator and succinctor muscle [2, 3, 5]. All the muscles of mastication are innovated by the mandibular division of the trigeminal nerve [2, 3].
**TMD Examination**

TMD pain is generally located in the masseter muscle, preauricular area, and/or anterior temporalis muscle regions [4, 5]. The quality of this pain is generally an ache, pressure, and/or dull pain and may include a background burning sensation [4, 5]. There may also be episodes of sharp pain, and when the pain worsens, the primary pain quality may become a throbbing sensation. Practitioners must obtain a patient’s pain history which includes pain location, pain qualities, aggravating and relieving factors and other factors suggestive of other disorders [2, 5].

The physical examination consists of a comprehensive evaluation of the TMJ and the upper quarter. The quantity and quality of the bilateral active and passive TMJ, cervical and thoracic mobility are part of the assessment. The diagnosis of TMJ disorder should include careful palpation of the TMJ, masticatory muscle, and neck, as well as temporomandibular index test, which measures the severity of the disorder and the visual analog scale which records the intensity of pain [5].

Firstly, begin with a standing postural assessment observing head-neck-spine relationships [8]. The osteopath should pay special attention to the position of the TMJ in relation to the skull, anterior and posterior cervical soft tissues and shoulder girdles all of which make up the closed kinetic chain of the gnathic system [2, 5, 8]. Active range of motion is assessed visually by asking patient to initially maneuver his/her cervical spine throughout the cardinal planes, followed by an assessment of the thoracic spine. Passive mobility of the cervical spine can be assessed by applying overpressure in the direction of the range of motion being tested actively.

Next, inspect the face and jaw, looking for asymmetry such as misalignment of teeth and evidence of swelling [4, 5]. Temporomandibular joint active range of motion is assess by asking the patient to actively depress the mandible, laterally deviates the mandible bilaterally and protrude the mandible. Ask the patient if any jaw movements are painful. Evaluate the mandibular range of motion; the minimum of normal is a 40mm opening, 7mm to the right and to the left movements, and a 6mm protrusive movement [4]. If there is a restricted opening, the patient will usually feel tightness or pain at the location of the restriction [2]. The practitioner may be able to determine its origin by stretching the mouth wider and also to palpate the pain location [2]. Hypo-mobility resulting from joint dysfunction, or a closed lock as a result of disc displacement should be suspected. If opening beyond three fingers occurs, hyper-mobility from ligament laxity or capsular overtrain is likely [2, 3, 5]. Also, palpate the muscle of mastication to determine changes in tone, texture and tenderness [2, 4]. Anterior temporalis and masseter can be reached externally [2]. Medial and lateral pterygoids are palpated intra-orally [2].

General observation of the mouth should be performed to rule out dental or oral lesions. If tooth abscess or malocclusion indicated, refer to a dental practitioner is advised [8]. Palpation of the TMJ is best performed 1-2cm anterior to the tragus, inferior to the zygomatic arch [4]. Placing gloved thumbs can assess the accessory motions of the TMJ intra-orally over the lower teeth and wrapping fingers around the mandible externally. Apply passive stress to A-P glide and lateral glide. Normally a springing end feel is perceived [4]. Practitioners should be able to identify contributing factors that appear to be contributing to the TMD symptoms. Examples of commonly identified TMD perpetuating factors are night time parafunctional habits, gum chewing, daytime clenching, holding tension in the masticatory muscles, neck pain, excessive caffeine consumption, stress, tension, aggravations, frustrations, depression, poor sleep, poor posture, and widespread pain [6, 7, 8]. It is recommended that the contributing factors that are
the easiest to change and that are speculated to provide the greatest impact on the symptoms be initially changed.

**TMD Treatment Protocol**

After a full examination of the patient’s condition the osteopath can begin designing a treatment plan. Manual therapy directed at TMJ combined with exercise has been shown to significantly reduce pain and increases range of motion [11, 12]. The treatment for TMJ dysfunction depends on the cause of the problem. If it is due to postural or muscular problems, osteopathic treatment is the best solution. Osteopathic treatment will relieve the spasm in the muscles of the jaw and restore the mobility of the joint [2, 3]. Osteopathic treatment will include gentle massage and stretching of the muscles of the jaw, work on your posture and the muscles and joints of your neck and back. Studies have also shown manual therapy including TMJ and cervical/thoracic spine mobilisation/manipulation such as cephalad and caudal TMJ mobilisation and soft tissue mobilisation has significantly reduce the symptoms [3].

Osteopathic can also give valuable self management advices and strategies to individual. Self-management instructions routinely encourage patients to rest their masticatory muscles by voluntarily limiting their use, i.e., avoiding hard or chewy food and restraining from activities that overuse the masticatory muscles [10]. The self-management instructions also encourage the use of heat to relax the muscle spasm, stretching for the jaw and related structures such as the head, neck and back, night guard or mouth guard may assist in reducing teeth grinding which is commonly use over a short period of time [10]. Similar to other musculoskeletal advice, regular exercise or meditation will aid in stress induced muscle spasm.

Clinicians can also encourage patients to begin with some home exercise program to self manage the symptoms. Some general TMJ exercises consisting gentle isometric contractions resisted by fingertip pressure to the forehead, occiput and temples [11, 12]. The exercises are held for three seconds and repeated six times in each of the range of motion direction. The exercises encourage equal opening of the jaw [11, 12]. Exercises can be made more difficult by having clinician providing random gentle resistance to the forehead, temple and occiput. Hence the patient is required to respond to random stimuli that may act to improve cervical muscle coordination and awareness of neck and head position [11, 12]. Also, standard shoulder retraction and chin tuck exercises are beneficial. The exercises are gentle and their purpose is muscle coordination and not so much about muscle strengthening [10, 11, 12].

Patient static and functional posture is important in the management. Always discuss with patient their social lifestyle and occupation to further understands their working habit and posture. Postural taping and brace can be part of the management if one finds it hard to hold their neutral posture [11, 12]. Postural exercises can be provided to assist in strengthening their postural muscles. Re-education patient the importance and how posture affects their pain. Patients are more compliant if they know the importance of re-training their posture.

Self-report questionnaires such as the Temporomandibular Disorder Disability Index and Patient Specific Functional Scale (PSFS) can be used to identify changes after osteopathic treatment [11]. The Temporomandibular Disorder Disability index consists of ten questions regarding
disability associated with TMD and each question is scored from 0-4. High score represent greater levels of disability. The Patient Specific Functional Scale is a patient-specific outcome measure which investigates function status by asking patient to nominate a few activities that are difficult to perform based on their condition and rate the level of limitation with each activity [11, 12]. The patient rates each activity on a 0-10 scale, with 0 representing the inability to perform the activity, and 10 representing the ability to perform the activity as well as they could prior to the onset of symptoms. It is important to have an outcome measure to monitor the progress of the treatment and also to show patient the benefits of the treatment.

If there is no significant change after treatment or further assistance is required, the osteopath will refer one to a specialist (GP for temporary pain relief or a dental/TMJ specialist) [9, 10]. A referral to a psychologist may also assist in some cases such as anxiety management. Surgery is rarely needed for TMD patients other than for the obvious reasons such as infection or neoplastic growth [3, 7]. Imaging is not usually indicated unless there is acute trauma. Then, plain radiography is adequate. MRI is very expensive and is reserved for pre-operative diagnosis.

**Summary**

TMD has many similarities to musculoskeletal disorders of other parts of the body and hence therapeutic approaches for other musculoskeletal disorders generally apply to this disorder as well [2, 5]. As with other musculoskeletal disorders, pain during function and/or at rest is the primary reason patients seek treatment and reduction in pain is generally the primary goal of therapy. Following osteopathic principles, it is important to consider the functional interrelation among the head, the neck, the TMJ and the body as a whole in the management of TMD. Many studies has shown that conservative intervention consisting of manual therapy and a specific exercise program can be beneficial to patients with presenting with symptoms similar to that of TMD. Future research should focus on the specific intervention as described above to determine the most beneficial form of treatment. Clinical decision making rules may also be established to enhance the identification of particular patients that are likely to respond rapidly and dramatically to specific interventions.
REFERENCES

1. Reimam EK. The ABC's of TMJ/TMD Diagnosis & Treatment. Alberta, Canada: Medical Scope; 2005.


