Academy of PHYSICAL MEDICINE

Research Paper Review

*This review is published with the permission of Research Review Service (*www.researchreviewservice.com*)*

Temporomandibular Disorders. Part 2: Conservative Management.
The Journal of Manual & Manipulative Therapy [2014, 22(1):13-23]
Shaffer SM, Brismée JM, Sizer PS & Courtney CA

ABSTRACT

Appropriate management of temporomandibular disorders (TMD) requires an understanding of the underlying dysfunction associated with the temporomandibular joint (TMJ) and surrounding structures. A comprehensive examination process, as described in part 1 of this series, can reveal underlying clinical findings that assist in the delivery of comprehensive physical therapy services for patients with TMD. Part 2 of this series focuses on management strategies for TMD. Physical therapy is the preferred conservative management approach for TMD. Physical therapists are professionally well-positioned to step into the void and provide clinical services for patients with TMD. Clinicians should utilize examination findings to design rehabilitation programs that focus on addressing patient-specific impairments. Potentially appropriate plan of care components include joint and soft tissue mobilization, trigger point dry needling, friction massage, therapeutic exercise, patient education, modalities, and outside referral. Management options should address both symptom reduction and oral function. Satisfactory results can often be achieved when management focuses on patient-specific clinical variables.

ANALYSIS

Background Information

In part 2 of this 2-part series on assessment, diagnosis and management of temporomandibular joint disorders (TMDs), a review of available treatment modalities is presented and discussed regarding their relative success.

The literature is, unfortunately, sparse with respect to systematic reviews and meta-analyses evaluating treatment options for TMD. A recent review of TMD-based systematic reviews and meta-analyses found that too few published studies exist and that more research is needed before establishing global interpretations of management efficacy (1). The authors contend that while this does not preclude therapists from seeking evidence-based guidelines for TMD treatment, it does reflect the fact that management of TMD requires “a mixture of both art and science”. They add that an important aspect of management is the balance between being sufficiently aggressive with treatment as to provide rapid relief, while not increasing irritability to a point where the patient cannot tolerate treatment.

SUMMARY

Joint Mobilization

Joint mobilization is a staple of TMJ treatment and is thought to facilitate improvements through

inhibition of pain, improvement of range-of-motion (ROM), and inhibition of muscle spasm (2). Mobilization may also function by decreasing spinal excitability of nociceptive pathways, via down-modulation of central sensitization mechanisms (3).

A number of mobilizations have been identified as imperative in the treatment of TMD: distraction, anterior glide, anterior glide with pre-positioned mouth opening, medial/lateral glides, caudal-anterior-medial (CAM) glide and CAM glide with pre-positioned mouth opening. Each technique can be performed with varying amounts of mouth-opening to isolate structures and maximize results. Joint mobilization should be applied when a movement restriction is evident, but should be avoided if joint hypermobility is suspected or verified unless a low-grade technique is utilized.

No clinical studies have specifically verified the isolated usage of mobilizations for TMJ management; however, considerable evidence exists that supports their use for improving general joint mobility (4-7). In some cases, teaching the patient self-mobilization techniques can facilitate a more rapid response to treatment. These techniques generally mimic those discussed previously, with the patient focusing on stabilizing one joint while mobilizing the other. Care should be taken when providing these types of recommendations, though, as worsening of pain and mobility can accompany improperly performed mobilizations.

Soft-Tissue Mobilization

Soft-tissue status is an important consideration in all TMD diagnostic classifications; as such, it is an important aspect of conservative management of TMD. However, the available evidence regarding soft tissue mobilization in patients with TMD is limited (8, 9). When attempting treatment, the temporalis, masseter, medial pterygoid, and lateral pterygoid muscles must be considered for soft tissue mobilization, in addition to cervical spine musculature and accessory muscles of mastication. Extra-oral techniques are valuable in addressing muscle hypertonicity, while intra-oral techniques, directed at the medial and lateral pterygoid muscles, are useful but can be difficult to perform. Care must be taken and experience gained before proficiency is to be expected.

Trigger Point Dry Needling

Trigger point dry needling should be considered as a treatment option, especially in cases where myofascial trigger points are identified. The difficulty with this treatment modality revolves around the limited number of clinicians sufficiently trained to perform the technique, although evidence indicates that it is effective at limiting pain associated with myofascial trigger points (10, 11).

Friction Massage

Research indicates that friction massage can, at the cellular level, influence fibroblasts and other connective tissue components (12). While no studies have been published regarding the effectiveness of friction massage in the management of TMD, empirical evidence suggests that musculature at the lateral joint line, retrodiscal space, the temporalis insertion on the coronoid process, and over myofascial trigger points, respond well to friction massage.

Therapeutic Exercise

Exercise programs specifically designed to address TMD have been suggested, including the Rocabado 6x6 program (13) and the Kraus method (14), although there is little to no evidence to support these

types of exercise programs as valuable for TMD symptomatology. In general, no evidence currently exists directing clinicians towards effective exercise programs for TMD.

Patient Education

Patient education is a central component of TMD management. Education should focus on several areas, including: reducing parafunctional habits, addressing psychosocial factors, and providing pain science education. Relevant psychosocial factors may include both anxiety and stress management.

Parafunctional habits are generally defined as activities not associated with routine oral function and are categorized as either bruxism or other parafunctional habits. Bruxism is the most important parafunctional habit and is categorized as either nocturnal or awake. Nocturnal bruxism is generally an unconscious action, while awake bruxism is consciously performed. Addressing the underlying causes of bruxism may require investigation of causes of anxiety and/or stress and may be beyond the scope of rehabilitation clinicians.

Normal functional habits such as mastication and yawning are also areas requiring patient education, such as food consistency, laterality of chewing, symptom behavior, and pain variables as they relate to the clinical presentation. Patients with TMD may require dietary changes to limit harder foods that necessitate increased numbers of chewing cycles and longer times in the mouth before swallowing. Activities such as yawning could irritate joint structures and, as a result, patients with hypermobility may require strategies to modify their daily routines (15, 16).

Cognitive behavioural therapy (CBT) is also often utilized to manage chronic pain and can be used in TMD patients. While studies have yielded mixed results regarding the effectiveness of CBT in TMD patients, it appears to be an advantageous component of comprehensive treatment program.

Modalities

Both IFC and TENS are known to have an analgesic effect (17) in TMD patients and to elevate pain thresholds in pain-free subjects (18). While the analgesic effect is relatively short-lived (approximately 30 minutes), it does provide a short-term decrease in symptoms and can facilitate an increase in ROM.

Biofeedback has been recommended for TMD treatment, utilizing surface electrodes placed over the masseter or anterior temporalis muscles in an attempt to retrain them and increase patient awareness of muscular contraction. A literature review of 6 RCTs found that biofeedback was superior to both no intervention and placebo intervention in five of the six studies.

Iontophoresis with dexamethasone has been recommended for TMD patients, although the evidence supporting this treatment is inconsistent. Concerns center on the ability of the dexamethasone to be adequately absorbed. Currently, there is insufficient evidence to fully support or refute the utilization of iontophoresis with dexamethasone as a component of multimodal TMD management.

Therapeutic ultrasound, a mainstay of rehabilitation practice, is often recommended for TMD treatment; however, a review of 38 studies concluded that there was little evidence supporting its use in the management of musculoskeletal disorders, including TMD (19).

Oral Splints

Oral splints, prescribed and fabricated by dentists, are commonly used for TMD treatment. Splints are

designed to be worn at night to limit nocturnal bruxism and minimize muscle contraction. However, EMG studies have shown that the effects of splint usage are transient and insufficiently strong to reduce sleep bruxism (20). Systematic reviews (21, 22) have concluded that there is insufficient evidence to either recommend or refute the use of oral splints for TMD.

Multimodal Approaches

Multimodal approaches to care have been shown to be effective at reducing symptoms associated with anterior disc displacement with reduction (23), anterior disc displacement without reduction (24), TMJ osteoarthritis (25, 26), and myofascial dysfunction of the TMJ (5). In a minimum of five 30-minute sessions, combined treatment with the following was found to be effective at treating symptoms of TMD:

- soft tissue mobilization,
- muscle stretching,
- gentle isometric tension exercises against resistance,
- guided opening and closing,
- manual joint distraction,
- disc/condyle mobilization,
- postural corrections, and
- relaxation techniques.

The variability inherent in the various studies evaluating multimodal approaches makes general conclusions difficult; however, the comprehensive approach to treatment appears to be of significant clinical value.

Cervical Spine Management

While rarely the root cause of TMD, treatment of cervical spine impairments such as limited mobility, muscle hypertonicity and imbalance and accessory movement restrictions should be addressed as part of a comprehensive treatment program for TMD.

Clinical Application & Conclusions

This 2-part series was produced to provide manual medicine clinicians with information regarding the diagnosis and treatment of TMD. While prevalent in practice, patients are often left without sufficient options for care. The authors conclude that when management focuses on addressing identified impairments through a multimodal approach to care, there is a reasonable likelihood for success.

Additional References

1. List T, Axelsson S. Management of TMD: evidence from systematic reviews and meta-analyses. J Oral Rehabil 2010; 37: 430–51.
2. Bialosky JE, Bishop MD, Price DD, et al. The mechanisms of manual therapy in the treatment of musculoskeletal pain: a comprehensive model. Man Ther 2009; 14: 531–8.
3. Courtney CA, Witte PO, Chmell SJ, Hornby TG. Heightened flexor withdrawal response in individuals with knee osteoarthritis is modulated by joint compression and joint mobilization. J Pain 2010; 11: 179–85.
4. Olson VL. Evaluation of joint mobilization treatment. A method. Phys Ther 1987; 67: 351–6.
5. Threlkeld AJ. The effects of manual therapy on connective tissue. Phys Ther 1992; 72: 893–

902.
6. Michlovitz SL, Harris BA, Watkins MP. Therapy interventions for improving joint range of motion: a systematic review. J Hand Ther 2004; 17: 118–31.
7. Bronfort G, Haas M, Evans R, et al. Effectiveness of manual therapies: the UK evidence report. Chiropr Osteopat 2010; 18:3. Available from: http://chiromt.com/content/18/1/3
8. Capellini VK, de Souza GS, de Faria CR. Massage therapy in the management of myogenic TMD: a pilot study. J Appl Oral Sci 2006; 14: 21–6.
9. Pierson MJ. Changes in temporomandibular joint dysfunction symptoms following massage therapy: a case report. Int J Ther Massage Bodywork 2011; 4: 37–47.
10. Srbely JZ, Dickey JP, Lee D, Lowerison M. Dry needle stimulation of myofascial trigger points evokes segmental antinociceptive effects. J Rehabil Med 2010; 42: 463–8.
11. Fernandez-Carnero J, La Touche R, Ortega-Santiago R, et al. Short-term effects of dry needling of active myofascial trigger points in the masseter muscle in patients with temporomandibular disorders. J Orofac Pain 2010; 24: 106–12.
12. Ingber DE. Cellular mechanotransduction: putting all the pieces together again. FASEB J 2006; 20: 811–27.
13. Rocabado M, Iglarsh ZA. Musculoskeletal approach to maxillofacial pain. Philadelphia, PA: JB Lippincott; 1991. p. 187–92.
14. Kraus SL. Management of the craniomandibular complex. New York: Churchill Livingstone; 1988. p. 139–74.
15. Orlando B, Manfredini D, Salvetti G, Bosco M. Evaluation of the effectiveness of biobehavioral therapy in the treatment of temporomandibular disorders: a literature review. Behav Med 2007; 33: 101–18.
16. Aggarwal VR, Tickle M, Javidi H, Peters S. Reviewing the evidence: can cognitive behavioral therapy improve outcomes for patients with chronic orofacial pain? J Orofac Pain 2010; 24: 163–71.
17. Johnson MI, Tabasam G. An investigation into the analgesic effects of interferential currents and transcutaneous electrical nerve stimulation on experimentally induced ischemic pain in otherwise pain-free volunteers. Phys Ther 2003; 83: 208–23.
18. Cheing GL, Hui-Chan CW. Analgesic effects of transcutaneous electrical nerve stimulation and interferential currents on heat pain in healthy subjects. J Rehabil Med 2003; 35: 15–9.
19. van der Windt DA, van der Heijden GJ, van den Berg SG, et al. Ultrasound therapy for musculoskeletal disorders: a systematic review. Pain 1999; 81: 257–71.
20. Harada T, Ichiki R, Tsukiyama Y, Koyano K. The effect of oral splint devices on sleep bruxism: a 6-week observation with an ambulatory electromyographic recording device. J Oral Rehabil 2006; 33: 482–8.
21. Gray RJ, Davies SJ. Occlusal splints and temporomandibular disorders: why, when, how? Dent Update 2001; 28: 194–9.
22. Turp JC, Komine F, Hugger A. Efficacy of stabilization splints for the management of patients with masticatory muscle pain: a qualitative systematic review. Clin Oral Investig 2004; 8: 179–95.
23. Nicolakis P, Erdogmus B, Kopf A, Djaber-Ansari A, Piehslinger E, Fialka-Moser V. Exercise therapy for craniomandibular disorders. Arch Phys Med Rehabil 2000; 81: 1137–42.
24. Nicolakis P, Erdogmus B, Kopf A, et al. Effectiveness of exercise therapy in patients with internal derangement of the temporomandibular joint. J Oral Rehabil 2001; 28: 1158–64.
25. Nicolakis P, Burak EC, Kollmitzer J, et al. An investigation of the effectiveness of exercise and manual therapy in treating symptoms of TMJ osteoarthritis. Cranio 2001; 19: 26–32.
26. Nicolakis P, Erdogmus CB, Kollmitzer J, et al. Long-term outcome after treatment of temporomandibular joint osteoarthritis with exercise and manual therapy. Cranio 2002; 20: 23–7.

This review is published with the permission of Research Review Service (www.researchreviewservice.com)