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Jaws

*how massage can
help clients dealing
with temporomandibular
dysfunction.*

healers have wrestled with jaw-related pain

since Hippocrates', and they have gained a lot of insight along the way.

But there is still an impressive amount of disagreement surrounding temporomandibular dysfunction (TMD). Doctors, dentists and other practitioners struggle with how to precisely define TMD, as well as how best to treat it^{1,2}. Purely structural fixes like oral splints don't produce consistent results³, and therapists who focus on pain or stress reduction sometimes don't address some of the physical causes. It seems clear that TMD demands a multidisciplinary approach, and that practitioners should strive for awareness beyond their own specialty^{3,4}.

The challenge for massage therapists is one of integration: how can you meaningfully draw from multiple disciplines to effectively treat TMD? The goal of this article is to focus on the practices that best empower our clinical intent. We'll make the case that TMD is deeply connected to the rest of the body, both structurally and neurologically. Based on those influences, we'll discuss some useful assessment and treatment options. Finally, we hope to provide a good collection of references for the therapist who wants to deepen their knowledge of this fascinating subject.

ANATOMY & PATHOPHYSIOLOGY

TMD is commonly defined as “a cluster of conditions characterized by pain in the temporomandibular joint (TMJ) or its surrounding tissues, functional limitation in the mandible, or clicking in the TMJ during motion.”

³ We can find some hint of TMD in quite a few people, though the severity and specific pattern of dysfunction varies widely. Up to 75 percent of adults show clinical signs at some point, but only 5 percent ever need treatment³. Two questions seem to be particularly important: What are the structural influences on the mandible, and how is the pain being generated?

Let's begin with structural influences on the mandible. Imagine the whole bone, suspended in three dimensions by muscles and fascial planes, and strapped to the skull with ligaments. What is normal movement? How can imbalances arise?

When we examine the structure surrounding the mandible, we find that the local connection must be linked to the systemic whole. While it's important to address this muscle or that fascial sleeve, we cannot separate the jaw from the whole body.

PIECES OF A WHOLE

TMJ: A modified hinge joint that contains an articular disc that allows for all the complex movements involved in chewing, swallowing and speaking. Much has been written about “ideal” movement of the TMJ^{1,2,5,6}, but essentially the mandibular condyle should have the ability to roll against the disc and slide forward and backward without pain or restriction. If the condyle is compressed, pulled or torqued in any direction, it can stress the highly innervated joint capsule and surrounding ligaments. The goal for the practitioner is to facilitate balance and freedom of movement in both TMJs, and then help to calm any increased pain sensitivity.

Masseter: This powerful jaw-closer attaches from the zygomatic arch down to the exterior ramus of the mandible. Its tough fascial sheath can make it difficult to penetrate with manual pressure, and it has two distinct layers (of which the deeper layer is often more problematic). Trigger points here can refer into the TMJ, teeth, the maxilla and above the eye^{2,7}.

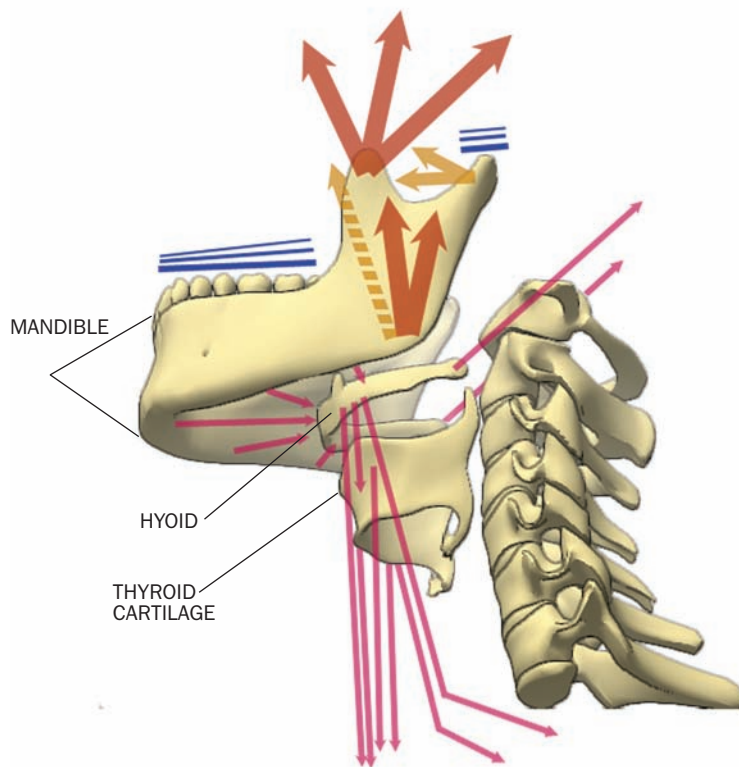
Temporalis: As the other major closer of the jaw, temporalis deserves as much attention as masseter. Its broad superior attachment on the temporal, frontal, parietal and sphenoid bones can powerfully compress the skulls

treatment focus: masseter—temporalis release

The goal here is to create ease and balance in the myofascial sling that holds the jaw firmly to the head. This fascia can be mobilized either superiorly or inferiorly.

SUPERIORLY: Anchor your fingertips in the temporalis fascia just above the temporomandibular joint (TMJ), and carry the tissue superiorly while your client slowly opens and closes his mouth. Continue with this stroke superiorly, until you reach midline.

INFERIORLY: Begin your stroke just inferior to the TMJ, and initiate a downward hook while the client once again opens and closes his mouth.



MUSCLE ACTIONS IN JAW MOVEMENT

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|-------------------------|---------------------|
| ■ Masseter & Temporalis | ■ Hyoids |
| ■ Pterygoids | ■ Bone-Bone Contact |

bony sutures, and its posterior fibers can pull the mandible into retraction⁶. Trigger point pain here can refer superiorly across the skull or anteriorly into the face and upper teeth^{2,7}.

Pterygoids: Any assessment of jaw position cannot ignore the pterygoids. These are chiefly responsible for the finer movements of the jaw: protrusion, retrusion and side-to-side deviation. Both attach medially and anteriorly on the sphenoid behind the upper teeth, and both attach laterally and posteriorly to the inner mandible. Medial pterygoid stretches to the inner angle and forms a sort of sling with the exterior masseter fibers. Lateral pterygoid attaches firmly to the neck of the mandible, and its upper fibers pull directly on the TMJ disc. Trigger points in both muscles can produce intense pain and restriction in the TMJ, and thus can easily be mistaken for true joint dysfunction^{2,7}.

Suprahyoids and Infrahyoids: This collection of muscles—also under-examined in many practices—can be a source of chronic imbalance of the mandible. As a group, they form a tensile sleeve that descends from the mandible, suspends the hyoid bone over the trachea, and anchors to the sternum and scapulae. Most clients have very little awareness of these muscles, despite their importance for opening the jaw and for emotional holding (e.g. a “lump in the throat”).

POSSIBLE PROBLEM AREAS

Fascial relationships: Many bodyworkers naturally focus first on the muscular aspects of dysfunction, but the ubiquitous fascial sheets and cylinders are also responsible for pain. The neck fascia surrounds and permeates structures in specific and important ways. For starters, the sternocleidomastoid muscle (SCM) lives in a superficial cylinder that wraps around the entire neck and includes the trapezius muscle. Deep to this layer is a smaller cylinder, which includes the hyoid muscles and frequently connects to the superficial cylinder⁸. Both cylinders anchor the mandible, and when shortened can cause asymmetries in movement, as well as compression of the mandible into the TMJ. Since the front of the neck is a very protected area, bodyworkers have the tendency to avoid it. In the treatment of TMD, however, this area can't be ignored.

Postural patterns: The forward head is probably the most common human postural ailment, and contributes generously to the woes of the mandibular region. As the occiput moves forward on the cervical spine, or the cervical spine reaches anteriorly and drops, we see a correlating shortness in the suboccipital muscles and the fascia covering the back of the head. In that same head-forward position, the mandible moves anteriorly with the head, stressing the suprahyoid and infrahyoid muscles and the anterior fascia. As fascia and muscle are not infinitely extensible, the mandible encounters resistance, resulting in a relative posterior/inferior position or compression into the TMJ. The usual culprits, the SCM and scalenes, directly contribute to the forward head and neck respectively.

The other most common deviation is a lateral imbalance. Any difference in leg length or lateral pelvic tilt will have an impact on spinal alignment and therefore TMJ alignment. Any scoliotic curve will affect the alignment of the cranium and therefore the mandible. Often -- in an attempt to keep the head and eyes level -- the atlanto-occipital joint will pinch on one side, and the TMJ will thus be compressed on one side and stretched on the other^{1,2,4,6}.

Neurological connections: On a basic level, it makes a lot of sense to have the neck and the jaw muscles wired together. Think of the effectiveness of biting something without the appropriate neck tension to support the transmission of force. In one study⁹, jaw clenching increased tone from 7 to 33 times in neck muscles (SCM, trapezius and paraspinals). Yin et al.⁵ state that “the masticatory system is considered to be integrated with proprioceptive, visual, balance, and postural control of the whole body.” Jaw muscles increase tone in times of neurological tension because of a link with protective and stabilization reflexes. They are closely linked to balance; particularly to eye position and the suboccipital muscles. Over time, this connection between systemic tension and jaw clenching can get more and more sensitized^{5,7,9}. Our clinical intent should be to decrease local and systemic activation and allow the nervous system to recalibrate to a more organized and relaxed state^{2,4,6,7}.

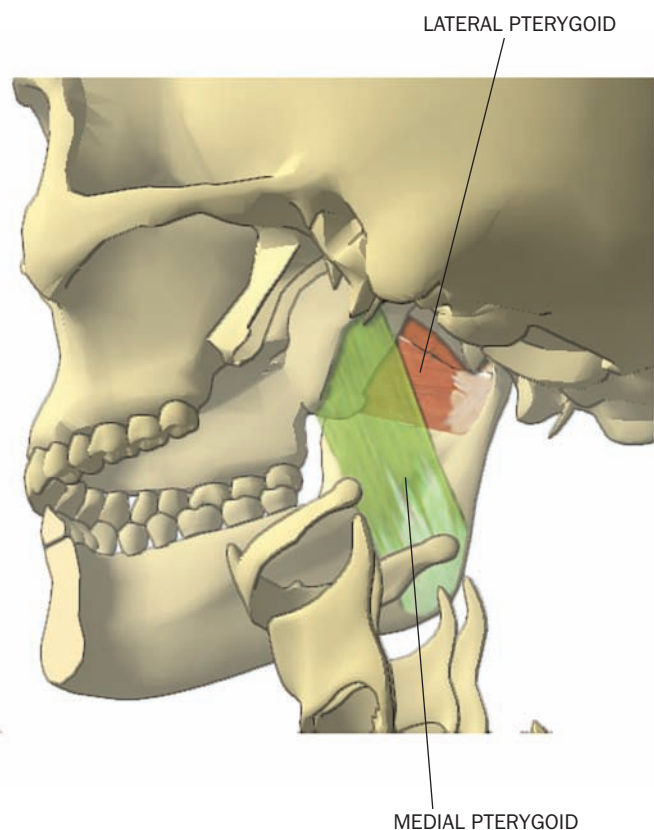
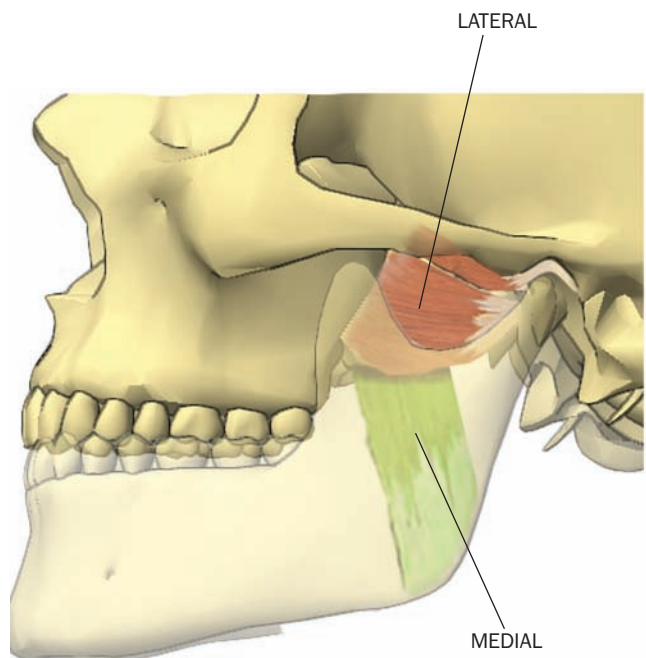
treatment focus: intraoral work

Working inside the mouth is controversial. Several states prohibit this treatment, and good training is scarce. However, the potential benefit of contacting intraoral structures is so great that it bears brief description. If intraoral work is not permitted in your state, the following can be used to guide your clients in self-massage. Good hygiene and medical-grade gloves are a must.

PINCER GRIP ON MASSETER: Using your thumb from the client's opposite side, gently contact the internal surface of this thick muscle. You will find it much softer than the exterior, and much more receptive to gentle loosening. With your fingers, engage the exterior of the muscle and ask your client to slowly open and close her jaw.

MEDIAL PTERYGOID: From the same position as the masseter grip, allow your thumb to slide posteriorly along the bottom teeth. Just inside the bony coronoid process, your thumb should contact a vertical sheet of tissue—the medial pterygoid and its associated fascia. Once again, you can get results with very little pressure, and it's important to work within the bounds of your client's comfort.

LATERAL PTERYGOID: Standing on the same side as the muscle you're contacting, use your little finger to find the medial pterygoid again. Move into the space between the medial pterygoid and the coronoid process, and slide posteriorly in the direction of the ear canal until you find resistance. Direct your gentle pressure in a deep and slightly medial direction. The lateral pterygoid is often dense and tender, and your client may feel pain referring into the temporomandibular joint.



On the more experiential level, traumatic experiences can also influence jaw tension^{6,10}. For example, a whip-lash injury from a motor vehicle accident is a very good model for mechanical trauma to the muscles and joints, but also for the neurological imprint of the pain, fear, and overwhelmed feelings that accompany such events. Any event or situation that is neurologically similar can stimulate a protective clenching. Sometimes just life in general feels overwhelming, and one falls into the same reflex. Therefore, providing a safe and interactive environment during treatment is of utmost importance.

MAKING AN ASSESSMENT

A specific and thorough assessment renders a treatment significantly more effective. Two aspects will be covered here: an alignment assessment of both the head and the whole body, and then a functional assessment of the TMJ. The big question that needs to be answered is this: What's affecting the mandible, both locally and systemically?

Postural assessment: Visually, we can identify many important factors. Among them, the position of the mandible, the ears (which mark the temporal bones), the cheekbones or zygomatic arches, and the frontal ridge and eye sockets. With respect to the rest of the head, does the mandible sit anteriorly, posteriorly or laterally? Is it tilted or compressed into one of the TMJs?^{1,2,4}

On a larger scale, many other postural factors can be of interest. As was mentioned previously, a forward head can directly influence mandibular balance. If the SCM doesn't angle posteriorly as it rises to the mastoid, then the head is too far forward. A sunken ribcage can pull downward on the mandible via the hyoids and cervical fascia⁸. Spinal alignment also plays a part. Excessive cervical or thoracic curves and scoliotic curves—especially when related to a high shoulder—can all change force dynamics in the jaw. Finally, pelvic imbalance can also cause mandibular imbalance.⁶

Functional assessment: From whatever position in which you find the bones, can they move in a normal way? Some guidelines for movement can be useful: Your client should be able to open their mouth from 1-1/3 inch to a little more than 2 inches. Any measurement below 1 inch is pathological. A very simple test is to see if three fingers will fit inside of the mouth stacked horizontally. You should note, however, that this measurement is on the higher side of functionality. Lateral deviation should be a bit less than one-half inch, and protrusion and retrusion even less at one-tenth of an inch, respectively². Some very important clues lie in the balance from side to side. Is there a big difference in lateral deviation, or a major deviation to one side when opening the mouth?

TREATMENT OVERVIEW

As we've seen, the perpetuation of TMD revolves around a constellation of factors—structural and neurological—and the practitioner should strive for a balanced approach that addresses both.

A balance between local and systemic intervention is also important. Compressions, torques and deviations of the mandible can all be addressed by working on the local muscles and fasciae. Once balanced on a local level, try integrating that balance with larger patterns in the rest of the body. Doing this work can make the benefits more profound and longer-lasting for your client. To start, here are some general structural treatment goals:

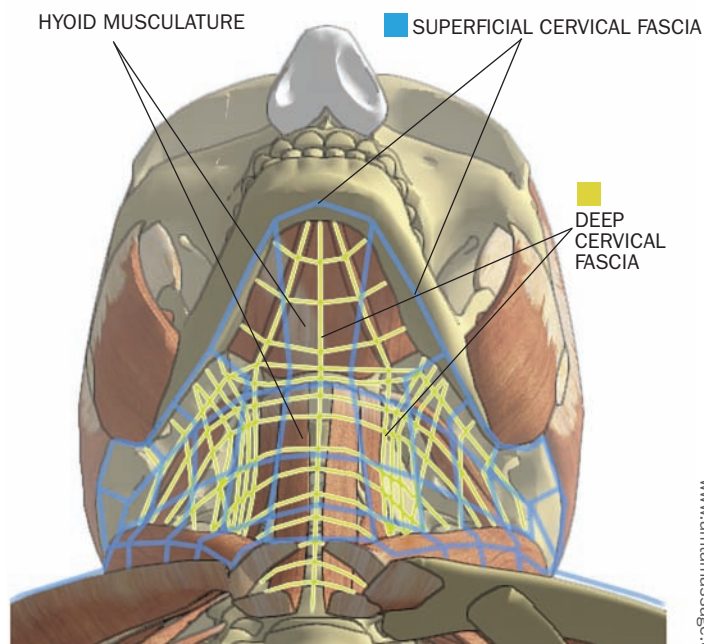
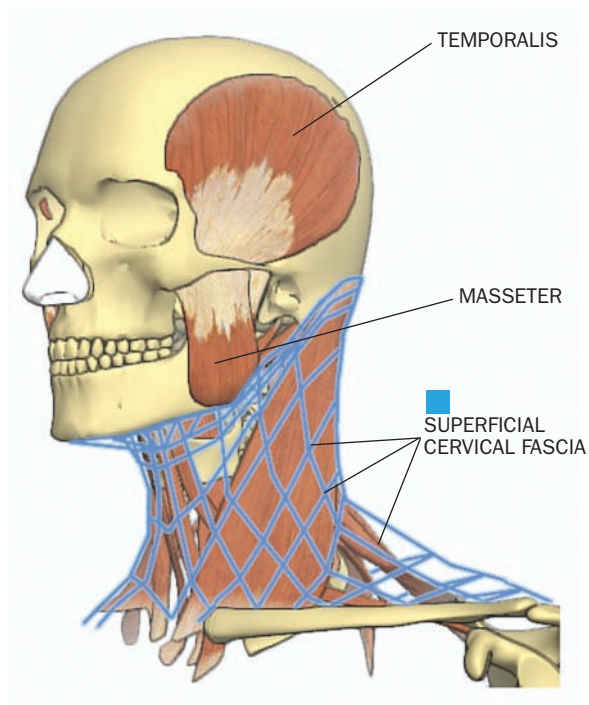
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treatment focus: cervical fascia

As mentioned earlier, the fascial wrapping around the front of the neck and under the mandible is often short—and often avoided because of the vulnerability of the throat. If worked carefully and sensitively, the results can be highly liberating both mechanically and neurologically. The corresponding shortness in the occipital region also requires attention.

SUPERFICIAL ANTERIOR FASCIAL STRETCH: Standing by the side of the table with a supine client, place the soft fist of your lower hand on the SCM. (The dorsal surface of your proximal phalanges should have the most contact.) Hook gently but firmly into the tissue, with no oil, and take out the slack in the tissues laterally. Make sure not to smash into the front of the neck, but to hook and stretch the tissues around the neck. As your fist moves around the neck, have the client slowly turn his head away from you. Keep contouring around the neck and stop when you lose an effective hook.

OCCIPITAL FASCIAL STRETCH: The fascia on the posterior occiput is often overlooked. Opening the suboccipital muscles will be easier and provide longer-lasting relief if the overlying fascia is released. Again, with the client face up on the table, hook unlubricated fingertips into the fascia at the occipital ridge and take out the slack in a posterior direction. Then have the client slowly tilt his chin inferiorly. You can move in other directions as well, looking for restriction in the movement of the fascia over the back of the occiput and mastoid area.



- Create a stable base for the spine by balancing the pelvis and sacrum.
- Work to ease scoliotic curves and differences in shoulder height, so as to encourage side-to-side balance for the neck and head.
- Encourage a lifted, buoyant ribcage and a freer breathing pattern.
- Alleviate the forward-head pattern by releasing the scalenes, SCM and suboccipitals.
- Create ease and pliability in the fascial cylinders of the neck, especially at their mandibular attachments.
- Release any unnecessary tension in the masseter, temporalis, pterygoids and hyoid musculature, focusing on TMJ decompression and side-to-side balance.

From here, begin working toward these functional and neurological goals:

- Help you client practice a smooth and balanced jaw opening, and call attention to any kinks in the motion.
- Encourage your client to perform their daily tasks with an elongated neck, a poised head and deep breaths.
- Bring awareness to the link between your client's emotional states and their jaw tension. Simply being conscious of this link can be immensely therapeutic for your clients.
- Identify any past traumas to the neck, head and jaw that may have influenced jaw function. For example, whiplash injuries, direct impacts, surgeries, dental procedures and emotional traumas. Treat these when possible, and refer out when necessary.

Even with a powerful set of tools and assessments, the complete treatment of TMD challenges the therapist to remain open to unseen connections. What begins as a purely physical phenomenon can quickly entrench it-self in the nervous system. Likewise, a neurological pattern can soon wreak havoc on joints and soft tissues. Our bodies are phenomenal mechanical puzzles, as well as intricate neurological organisms. If we maintain an awareness of the whole system, massage therapy can be effective where less holistic interventions may have failed.

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