

# Temporomandibular Joint Dysfunction

## Observations

### Postural Assessment

- A full postural assessment is performed.
- Scoliosis, hyperkyphosis, hyperlordosis or pes planus may be present.

The following upper body observations may be present

### Anterior view

- The shoulders may be elevated or one may be higher than the other.
- The symmetry of the face is assessed, observing levels of both external auditory meatus, frontal ridges, zygomatic arches, angles of the mandible and alignment of the jaw and teeth.

### Lateral view

- A habitual head forward posture may be observed, with an accompanying increase in the cervical lordotic curve.
- Assessment for mandibular protraction or retraction is performed.
- With a head forward posture the sternocleidomastoid muscle assumes a more vertical orientation. In a normal posture, this muscle angles posteriorly from the inferior to superior attachments.
- The scapula may be protracted

### Posterior view

- The level of the occiput is observed for lateral tilting.
- The person may have a pained or medicated facial expression
- The masseter or temporalis muscles may be obviously clenched.
- There may be ridging on the inside of the cheek
- There may be lateral tongue scalloping due to jaw clenching.

## Palpation

- Tenderness is present in the muscles of mastication
- Tenderness is also present either anterior to the TMJ itself or inside the external auditory meatus on the anterior aspect

- With inflammation, there is an increase in temperature over the affected TMJ. Edema may be palpable.
- The affected muscles may be fibrosed.
- There is popping, clicking or crepitus palpable in the affected joint with movement
- A click on initial opening may indicate an anterior disc displacement, with the condyle moving over the posterior portion of the disc.
- Clicking during mid range of mandibular opening may indicate incoordination of lateral pterygoid.
- Clicking near the end of opening may indicate that the condyle is moving over the anterior portion of the disc.
- There are hypertonicity and trigger points in the muscles of mastication and also in the muscles of the neck and thorax, including upper trapezius, suboccipitals, scalenes, erector spinae and intercostals.

## Testing

- **AF ROM** of the mandible on the cardinal planes is reduced due to pain.
- Depression, elevation, lateral deviation, protraction and retraction are all assessed.
- Assessment is made to see if condylar movement is symmetrical, one condyle may move before the other.
- A ruler may be used to record mandibular depression, normal range measured from maxillary to mandibular incisor edge is between 35 to 50 millimeters.
- Normal lateral motion to each side is 8 – 10 millimeters using the midline of the maxillary and mandible incisors. Restriction of 50% or more may be due to capsular restriction on the contralateral side.
- Mandibular protrusion is 5 millimeters, measured from the position where both maxillary and mandibular incisors are opposed; normal retrusion is 3 – 4 millimeters, measured from the same position of opposed incisors.
- **Temporomandibular Joint AF ROM test** is performed.

- A positive test reveals either a c-wobble, indicating a capsular source on the side the jaw deviates towards, or an s-wobble, indicating a muscular source such as trigger points.
- Reduced mandibular depression may be due to bilateral trigger points in masseter.
- Lateral mandibular deviation may be due to trigger points in masseter, temporalis and posterior digastric on the side the mandible deviates towards.
- Masseter trigger points pull with full opening
- Temporalis trigger points pull on opening or closing
- Posterior digastric trigger points pull the mandible over on initial jaw opening only.
- Lateral deviation may also result from trigger points in lateral pterygoid on the side it moves away from. This is confirmed by having the client place the tip of the tongue on the hard palate as far back as possible while opening the mouth. If lateral motion stops, trigger points are responsible.
- **AF ROM** of the cervical spine on the cardinal planes may be reduced.
- **PR ROM** of the mandible is performed on the cardinal planes of motion, with the range that stretches the affected muscles tested last.
- A painful, muscle spasm end feel is present with muscular involvement
- Clicking and springy block end feel are present with disc derangement
- A capsular restriction is present with joint hypomobility or capsulitis
- On initial opening a large anterior glide (instead of initial rotation) is present with hypermobility
- Closed lock end feel is soft.
- **PR ROM** of the cervical spine may be reduced
- **AR isometric testing** of the mandible is performed.
- With resisted depression, weakness or pain may be due to lateral pterygoid or supra or infrahyoid muscles
- With resisted lateral motion, weakness is due to lateral or medial pterygoid on the opposite side.

- With resisted protrusion, weakness is due to lateral or medial pterygoids.

### **Special Tests**

- A three knuckle test is positive with trigger points in the muscles that elevate the jaw
- Passive relaxed atlanto-occipital and atlanto-axial articulation tests may be restricted with a capsular pattern.
- Passive relaxed anterior and lateral spinous challenges may be hyper or hypomobile in the cervical spine.

### **General Treatment**

- Relaxation, trigger point therapy and focused work on the muscles of mastication is effective for treating TMJ
- Hydrotherapy is heat to the affected muscles in the shoulder girdle, neck and jaw. If inflammation is present, cold such as a gel pack is applied to the affected joint instead.
- The treatment begins prone.
- The trunk and shoulder girdle are treated to reduce hypertonicity and increase drainage and venous return to the affected tissues. Rythmic techniques, effleurage and slow petrissage such as palmar kneading, fingertip kneading and c-scooping are used.

### **Specific Treatment**

- Specific work is performed supine. Initially the therapist is seated.
- If edema is present lymphatic drainage techniques are used
- Nodal pumping at the terminus (just superior to the clavicle, immediately lateral to the scm)
- Then at the proximal lymph nodes in the neck and axilla
- Nodes are found in chains anterior and posterior to the scm, below the angle of the mandible and at the occiput.
- Unidirectional effleurage, stationary circles and the local technique are used proximal to the affected joint to reduce edema and prevent adhesion formation.

- Fascial glide is used to assess, then fascial techniques are used to treat, the restrictions around the neck and jaw. Techniques include skin rolling, crossed hands and fingertip spreading and the connective tissue cutting technique over the pectoral muscles.
- Passive stretches are used on the tight postural muscles such as pectoralis major.
- Effleurage and petrissage are used on the muscles of the shoulder girdle and neck to reduce hypertonicity
- Posteriorly, these muscles include upper traps, levator scapulae, splenius cervicis and capitus, semispinalis capitus, the suboccipitals, cervical multifidi and rotators
- Anteriolaterally, the scalenes are also treated.
- Anteriorly, pectoralis major, pectoralis minor and subclavius are treated, especially with clients who have head forward posture.
- There is an additional focus on muscles of respiration, including intercostals, in clients who are apical breathers.
- Sternocleidomastoid is treated unilaterally. Pincer grasp and origin and insertion techniques can be used.
- Avoid deep carotid artery
- Avoid external jugular vein
- Joint play is indicated for hypomobile cervical vertebrae and other joints in the thorax and shoulder.
- Muscles of mastication are now treated from the outside of the mouth.
- Temporalis, masseter, lateral pterygoid and medial pterygoid are treated with fingertip kneading, muscle stripping and ischemic compression
- Gentle fascial spreading can also be used on temporalis and masseter. Strokes are from superior to inferior to avoid compressing the mandible.
- Origin and insertion techniques are used on temporalis attachments to the frontal and parietal bones and also on the zygomatic and mandibular attachments of masseter.
- Trigger points in temporalis refer to the upper teeth and temporal regions. The client is asked to partially depress the mandible to make taut bands in the muscle more palpable.

- Masseter trigger points refer into the TMJ, the mandible and the molars and above the eye. They also produce tinnitus in the affected ear.
- Lateral pterygoid refers to the TMJ and the zygoma, tinnitus is also produced.
- Medial pterygoid refers to the TMJ and in to the back of the mouth and pharynx.
- Next the infra and supra hyoids including omohyoid are treated.
- Specific client consent is recommended.
- Therapist stands at the clients shoulder, facing the client so the clients comfort levels are constantly monitored.
- After the hyoid bone is located as a reference, cross- fiber strokes are used on infrahyoid muscles, moving from lateral to medial along the muscles.
- The therapist's thumb gently stabilizes the lateral trachea on the side not being treated. Gentle ischemic compression is used to treat trigger points.
- Avoid carotid triangle
- Infrahyoid muscles are treated unilaterally. They refer into the throat.
- The suprahyoids are treated next. Mylohyoid and anterior and posterior digastric muscles.
- They are also treated using a stabilizing thumb or finger on one side while cross fiber strokes are used to locate trigger points in the other side of the muscle.
- Mylohyoid trigger points seem to refer to the tongue and throat
- Anterior digastric refers to the lower incisors
- Posterior digastric refers below the ear
- Care should be taken when treating the posterior digastric muscle, as the styloid process of the temporal bone lies superior to the muscle belly
- Masseter, lateral pterygoid, mylohyoid and medial pterygoid can also be treated intra-orally.
- Special consent and a safety signal should be set up.
- Put on gloves
- Treat masseter – most tolerated
- Lateral pterygoid

- Mylohyoid
- Medial pterygoid is least tolerated
- Origin and insertion technique, gentle muscle stripping, cross-fiber work and ischemic compressions to the client's pain tolerance are indicated.
- One finger is used to treat.
- Muscle stripping in short strokes is used to reduce adhesions intra- and extra- orally.
- Pain free AF ROM is used to normalize proprioception.
- Between treatment of each muscle the therapist takes the treating finger out of the clients mouth and allows the client to gently open and close the mandible normalizing proprioception at the TMJ
- Joint play techniques may be used for hypomobile TMJ joints
- Remove gloves
- Seated suboccipital hypertonicity is reduced with golgi tendon organ release.
- Specific passive stretching for short suboccipitals in the prone position is achieved by the therapist first stabilizing the spinous process of C2 with the index and middle finger of one hand. The fingertips of the other hand grasp the occiput and slowly traction the occiput into flexion.
- Long-axis traction of the cervical spine is also indicated
- Inferior traction of the mandible is performed by the therapist contracting the angle of the mandible with the fingertips. A light steady traction is applied in an inferior direction. This is a motion towards the client's feet. The TMJ should feel like it is opening up.
- PR ROM is used on the cervical spine
- PIR for a tight digastric muscle is performed by the therapist placing one hand under the mandible, the thumb of the other hand is on the lateral aspect of the clients hyoid bone on the tight side. The client submaximally isometrically resists jaw depression for up to 10 sec then exhales and relaxes completely. The therapist moves the hyoid medially.
- The treatment is finished with effleurage to the neck and shoulders and a scalp massage.

