TMJ AND UPPER CERVICAL DYSFUNCTION – ADDRESSING POSTURE AND MOTOR CONTROL ISSUES

12/04/14
Johnny Loughrey MISCP
Director JT Physiotherapy Ltd
CO-DEPENDANT

- TMJ cannot be looked at in isolation. It is a member of a complex system (stomatognathic) where it contributes to allow a myriad of vital functions to occur.
- That system includes bones (skull, mandible, hyoid clavicle and sternum), joints, ligaments and muscles (including the tongue) that stabilise and control these joints, vascular, lymphatic and neurological systems.
- All these structures need to work in tandem to allow an individual to speak, eat, swallow, breathe, kiss, smile, laugh.....
- The capacity of the TMJ and upper neck to function normally is key to human survival.
Most utilised joint of the human articular system

- Essential that we know as health professionals what we can do to help, and if unable to help who we should refer to
- MDT includes Physiotherapists, GP’s, Dentists, Nurses, Prosthodontists, Endodontists, Maxillofacial Surgeons, Pain Specialists, Mental Health
- Each have a special and important role
ANATOMY

- Temporal bone
- Mandible
- Hyoid
- Very close proximity to transverse process of the atlas/C1
- Fibrocartilagenous disc
- Capsule
- Ligaments
  1. Lateral
  2. Sphenomandibular
  3. Stylomandibular
Muscles of Mastication

- Temporalis
- Masseter
- Medial and Lateral Pterygoids
- Digastrics
- Infra hyoid and Supra hyoid muscles
- Innervated by Mandibular branch of Trigeminal Nerve
ANATOMY Cx

- Cervical spine: Upper C0-2, Lower C2-7
- Blood supply: needs to follow a clear pathway
- Neural tissue: needs to follow a clear pathway
- Soft tissue
  1. Contractile - muscular
  2. Non contractile - ligament, capsule, fascia
**Upper Cx Spine (50% Cx ROM)**

- **C0 – Occiput**
- **C1 - Atlas - Greater ROM than any other vertebrae in spine.**
  - Flexion/Extension 30°
  - Rotation 4-8°
- **C2 - Axis - Pivot**
  - Dens/Odontoid process.
  - Rotation 40-50°
  - Flexion/Extension 10-20°
Prevalence of TMJD

- Very common, estimated to affect 20-30% of the adult population (Gou et al, 2009)
- Approx 33% have at least one symptom of TMJD (Wright & Edward, 2010)
- Females twice as likely to suffer than males (Edwab, 2003)
- Main age 20-40 years, student population (Gou et al, 2009)
SYMPTOMS

- Hearing loss
- Tinnitus
- Dizziness
- Sensation of malocclusion
- Headache

- Pain (TMJ, neck, face, head, shoulder, teeth)
- Poor motor control around the jaw
- Decreased ROM
- Joint sounds
PREVALENCE Cx PAIN

- 30% to 50% of adults in the general population in any given year.
  Approximately 50%–85% of these individuals with neck pain do not experience complete resolution of symptoms and some may go on to experience chronic, impairing pain (Carroll et al, 2008)

- Posture has a big role to play.
**Link Between TMJ and Cx**

- Significant link between TMJD and Cervical pain (Pressman et al, 1992)
- In a systematic review in which 8 studies met inclusion criteria 23% of whiplash patients were suffering from some degree on TMD (Haagman-Henrickson et al, 2013)
- Looked at effectiveness of treatment modalities conventionally used for TMD, such as jaw exercises and occlusal splints. The review found that TMD improved more in the absence of cervical WAD (Haagman-Henrickson et al, 2013)
- More research needs to be done looking at link between Cx and TMJ.
**Jaw Resting Position**

- Sling/hammock
- Passive jaw/relaxed
- Tongue on roof of mouth
- Resting Freeway Space- space between teeth (2-4 mm)
- Mandible centred
- If teeth in contact then masseter/temporalis active. We don’t want this.
**POSTURE**

- Forward Head Position/Pokey Head Syndrome
- Student occupational hazard
- Combined mandibular retrusion and upper cervical extension
- Elongation deep cervical flexors and shortening and hypertonicity of cervical extensors
- Poor Cervical posture = Increased stress on TMJ
- Leaves TMJ in a vulnerable position and closes down upper cervical spine and resting freeway space
- Head can weigh 8-12 pounds
FORWARD HEAD POSITION

“For every inch of Forward Head Posture, it can increase the weight of the head on the spine by an additional 10 pounds.”
(Kapandji, 2008)
FORWARD HEAD POSITION

‘Clinically patients with FHP are at greater risk of developing swallowing impairment, impingement of the glenohumeral joints, reduced costal cage expansion during inhalation, and lower extremity problems related to hyperpronation (e.g., ankle sprains, shin splints, and patellofemoral pain)’

(Makofsky, 2003)
TYPES OF PROBLEMS WITH TMJ

• Muscle - Most Important.
• Disc
• Joint
Muscle Problems

- Muscular – Myofascial pain
- Focus needs to be on motor control/improving efficiency
- Decrease tension? Only if necessary. Not always increased tension.
- Deep neck flexors. Supra/infra hyoid muscles - may not be providing a good enough anchor for the mandible.
MUSCLE PROBLEMS - SCALLOPING

- In presence of poor motor control or lack of jaw stability patients will attempt to provide an extra point of contact
- Thrusting tongue into back of teeth
- Tooth indentations on the tongue
- Sign of a jaw/neck that is struggling
Disc Problems

Anterior Disc Displacement
- Reducing - hard reciprocal click.
- Non reducing - limited rom ++
- Internal disc derangement present in 80-90% of symptomatic patients (American Society of TMJ Surgeons, 2001)
Joint Problems

- OA
- Stiffness in inert structures (ligaments, capsule, fascia)
- Look for deflection rather than deviation
- Reducing disc normally deviation
- Stiff joint normally deflection
HEADACHE

- Pain arising from the TMJ may be experienced in any region of the head, due to the common connections within the Cervico-Trigeminal Nucleus of the Brainstem.
- Watson Technique
- TMJ issues may cause headache without TMJ pain
TMJ Objective Assessment

- ROM - best objective measure of junction
- Tested using callipers (capable of measuring up to 1/10 of a mm)
- Opening 45-53 mm
- Lateral deviation 8-12 mm
- Not much research in this area

Callipers
IN HOUSE STUDY

- The Headache Neck and Jaw Clinic, Brisbane, Australia
  - In house study 2010 involving 52 patients suffering from TMJD
  - Average improvement 12.8mm opening - this correlated with a significant decrease in pain levels
- (www.theheadacheneckandjawclinic.com.au)
# Referral - When and Who To?

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Probable Cause</th>
<th>Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clicking jaw</td>
<td>Disc displacement and ligament restriction</td>
<td>Physiotherapy +/- Prosthodontist/Dentist (splint therapy)</td>
</tr>
<tr>
<td>Locking jaw</td>
<td>Disc dislocation, parafunction</td>
<td>Sudden onset: Oral Surgeon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gradual onset: Physiotherapist</td>
</tr>
<tr>
<td>Deviating jaw</td>
<td>Muscle weakness +/- ligament restriction</td>
<td>Demonstrate postural exercises, refer to Physiotherapy</td>
</tr>
<tr>
<td>Clenching jaw</td>
<td>Stress based parafunction</td>
<td>Prosthodontist/Dentist/Physiotherapist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medication (diazepam)</td>
</tr>
<tr>
<td>Pain without restriction</td>
<td>Cervical spine referring pain</td>
<td>Physiotherapy referral</td>
</tr>
<tr>
<td>Ear pain from jaw movement</td>
<td>Disc displacement with compression of retrodiscal tissue</td>
<td>Physiotherapist/Prosthodontist (splint therapy)</td>
</tr>
<tr>
<td>Headaches from clenching</td>
<td>Central sensitization of cervical and trigeminal nerves</td>
<td>Medication and Physiotherapy referral</td>
</tr>
</tbody>
</table>
Things to Look Out For

- Poor range of movement
- Clicking
- Deviation/Deflection
- Pokey head syndrome with associated neck or jaw pain
- Look for evidence of scalloping
- Dysfunctional movement patterns (simply ask pt to open/close, move jaw to left or right with tongue on roof of mouth)
**Acute Jaw Pain**

**Do**
- Keep your jaw in neutral posture: place tongue on roof of mouth, teeth apart, lips together and breathe through your nose.
- Maintain good neck posture: the jaw and neck are critically dependant on each other.
- Try both heat packs and cold packs.
- Trial both anti-inflammatories and analgesics. (e.g. Panadol)
- Avoid stressful situations! Do whatever works for you to relax.
- Cut food into small pieces to avoid opening your jaw past 20mm.
- Try to chew evenly on both sides of your mouth (within reason).

**Don’t**
- Eat hard and chewy foods, choose soft foods like pasta or fish. You don’t have to eat soup.
- Tear food with your front teeth e.g. crusty bread rolls.
- Chew gum, pens or ice, no biting nails.
**Tongue on Roof of Mouth Exercises**

- Tongue on roof of mouth as if saying letter N. Keep tongue steady and open and close jaw (10 reps)
- Tongue on roof of mouth. Keep tongue steady and move jaw to left and then right (10 reps)
- Jaw slightly open - 1cm between teeth. Slowly slide tongue from left side of mouth to right as if cleaning back of top row teeth without moving jaw (10 reps)
- Perform 6 x day
- Use mirror for visual feedback
REFERENCES

REFERENCES

REFERENCES

REFERENCES PICTURES

- www.tonguethrust.com
- drkarinmatttern.shawwebspace.ca
- www.massagebydebrajean.massagetherapy.com