Temporomandibular Joint Dysfunction and Pain Syndromes

Synonyms: TMJ pain dysfunction syndrome, myofascial pain disorder, myofascial pain-dysfunction syndrome, facial arthromyalgia, craniomandibular dysfunction, Costen's syndrome

The term temporomandibular disorders (TMDs) refers to a group of disorders affecting the temporomandibular joint (TMJ), masticatory muscles and the associated structures. These disorders share the symptoms of pain, limited mouth opening and joint noises. [1]

Epidemiology[1]

TMJ symptoms are relatively common, affecting up to 25% of the population, although only about 5% seek medical help for their symptoms. TMDs may occur at any age but are more common in women and between 20 and 50 years of age.

Temporomandibular symptoms are commonly found in musicians, particularly wind and string players. [2]

There is also an increase in symptoms among patients with schizophrenia. [3] This is due to a number of factors including poor oral health and psychological factors as well as use of antipsychotic medication.

Aetiology[4, 5]

TMDs are thought to have a multifactorial aetiology but the pathophysiology is not well understood. Causes can be classified into factors affecting the joint itself and factors affecting the muscles and joint function. The American Academy of Orofacial Pain has also produced a diagnostic classification.

Factors affecting muscles and joint function - myofascial pain and dysfunction

This type of TMJ problem is most common. Often it is difficult to determine a single cause but contributing factors may be:

- Chronic pain syndromes or increased pain sensitivity.
- Psychological factors: these may contribute, as with other chronic pain syndromes.
- Muscle overactivity: bruxism (grinding of the teeth and clenching of the jaw); orofacial dystonias. [6]
- Dental malocclusion: this was formerly considered to be an important factor; indeed TMJ dysfunction was often considered as a dental problem. However, the evidence does not support this and TMJ dysfunction is now seen as a multifactorial problem rather than a dental condition. [7]

Factors affecting the joint[8]

The most common problems are:

- Intra-articular disc derangement (various types).
- Osteoarthritis.
- Rheumatoid arthritis.
Other problems affecting the joint are:

- Other types of arthropathy - eg, gout, pseudogout or spondyloarthropathy.
- Trauma.
- TMJ hypermobility or hypomobility.
- Infection.
- Congenital disorders - eg, branchial arch disorder.
- Tumours (rare).

**Symptoms**

The three cardinal symptoms of TMDs are: facial pain, restricted jaw function and joint noise.

**Pain**

- Located around the TMJ but may be referred to the head, neck and ear.
- Pain, located immediately in front of the tragus of the ear, projecting to the ear, temple, cheek and along the mandible, is highly diagnostic for TMD.

**Restricted jaw motion**

- May affect mandibular movement in any direction.
- Jaw movements increase the pain.
- Patients may describe a generally tight feeling, which is probably a muscular disorder, or a sensation of the jaw 'catching' or 'getting stuck', which usually relates to internal derangement of the joint.

**Joint noise**

- Clicks and other joint sounds are common; they are not significant unless there are other symptoms.

**Other symptoms**

- Ear symptoms - otalgia, tinnitus, dizziness.
- Headache.
- Neck pain.
- 'Locking' episodes - inability to open or close the mouth. Inability to open the mouth is more common.

**Examination[^9]**

- Palpate the joint by placing the fingertips in the preauricular region just in front of the tragus of the ear. The patient is then asked to open their mouth and the fingertip will fall into the depression left by the translating condyle.
- Palpate the head, neck and masticatory muscles for areas of tenderness.
- Joint clicks or grating sounds on jaw movement may be palpable, or may be heard with a stethoscope over the preauricular area.
- Assess mandibular movement:
  - Measure the distance of painless vertical mouth opening, using inter-incisal distance (normal range 42-55 mm).
  - Observe the line of the vertical jaw opening: straight or deviating, smooth or jerky.
  - Examine lateral movements and jaw protrusion.
- Assess other orofacial structures - salivary glands, oral cavity, dentition, ears and cranial nerves.

**Differential diagnosis[^10]**

- Giant cell arteritis.
- Cardiac pain ([angina](https://en.wikipedia.org/wiki/Angina_pectoris) and [acute coronary syndromes](https://en.wikipedia.org/wiki/Acute_coronary Syndromes)) can radiate to the neck and jaw but is usually more acute.
- Dental problems.
- Trigeminal neuralgia.
- Migraine and other causes of headache.
- Herpes zoster.
- Other ENT disorders - eg, [salivary gland disorders](https://en.wikipedia.org/wiki/Salivary glands) and ENT neoplasms.

The location of the pain helps in diagnosis. The pain in TMDs is centred immediately in front of the tragus of the ear and projects to the ear, temple and cheek and along the mandible.

**Investigations[^11]**

No tests may be needed in straightforward cases. Possible investigations are:

- Blood tests: ESR, CRP for inflammation.
- Plain radiographs: show gross bony pathology such as degeneration or trauma.
- CT or MRI scan of the joint. MRI scan shows the soft tissues and intra-articular disc well.
- Ultrasound: this is a useful alternative imaging technique for monitoring TMJ disorders.^[12]
Diagnostic nerve block.\textsuperscript{[13]}
Arthroscopy.

Management\textsuperscript{[14, 15]}

Overview

- Initial care is usually with conservative treatment, which is effective in most cases.
- Psychological aspects of pain management are important - as with other chronic pain and somatisation disorders.
- Surgical intervention may be used in selected cases, where there is structural pathology not responding to conservative treatment.
- With symptoms of locking: intermittent locking often responds to conservative treatment. A 'closed lock' (difficulty opening the mouth) which is long-standing, is more likely to need intra-articular steroid injection or arthroscopy.

Non-invasive (conservative) treatment\textsuperscript{[16]}

Non-drug treatment

- Explanation and reassurance:
  - Most TMDs are benign and will improve with non-invasive treatment.

- Rest, patient education and self-care:
  - Limit excessive jaw movement by eating soft foods. Avoid wide yawning, singing, and chewing gum.
  - Massage affected muscles and apply heat.
  - Use relaxation techniques; identify and reduce life stresses.

- Occlusal splints:
  - These are also known as 'bite guards' and are removable devices made by dentists, to be worn over the teeth, on the principle that they may help with malocclusion or bruxism. Some studies have shown benefit from these, although systematic reviews did not find evidence of benefit.\textsuperscript{[17]}

- Other treatments;\textsuperscript{[18, 19]}
  - Acupuncture may be helpful but the evidence is not conclusive.\textsuperscript{[20]}
  - Physiotherapy.
  - Behavioural techniques - eg, postural training, biofeedback and proprioceptive retraining.
Drug treatment

- Analgesics, non-steroidal anti-inflammatory drugs (NSAIDs) and/or muscle relaxants.
- Antidepressants:
  - Tricyclic antidepressants - eg, starting with a low or moderate bedtime dose for 2-4 weeks; if helpful, continue for 2-4 months and then taper down to a low maintenance dose.
  - Fosamprenavir is a new antidepressant such as a selective noradrenaline reuptake inhibitor - eg, duloxetine.
  - Selective serotonin reuptake inhibitors (SSRI) antidepressants have been used but some (fluoxetine and paroxetine) may increase bruxism and are not recommended.
- Benzodiazepines have been used but there is a risk of dependence.
- One small case study suggested that tiagabine may be helpful for bruxism. [21]

Invasive treatments [22, 23]

- Intra-articular injection, using steroid or hyaluronic acid. [24, 25] The effectiveness of hyaluronic acid is uncertain. [26]
- Surgery may be indicated for some patients, mainly when conservative treatments are not successful. It is usually supported by non-invasive treatment before and afterwards. [27] Surgical options include:
  - Therapeutic arthroscopy.
  - Arthrocentesis.
  - Removal of loose bone fragments.
  - Reshaping the condyle.
  - More complex procedures, including joint replacement, depending on the pathology involved. [13, 28]
- Botulinum toxin A (BTA) injections:
  - A literature review of BTA use in chronic facial pain suggested that it was no better than other treatments. [29]

Prognosis [30]

Because TMDs have many features in common with other functional and complex pain syndromes, the outlook depends on psychological factors as well as mechanical ones. It may respond well to a multidisciplinary approach to treatment.

Further reading & references

- BOAOMS - British Association of Oral and Maxillofacial Surgeons
- American Academy of Orofacial Pain Classification


28. Total prosthetic replacement of the temporomandibular joint; NICE Interventional Procedure Guidance (August 2014)


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