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Temporomandibular disorders

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]. TMDs have previously been referred to as TMJ disorders or TMJ dysfunction.

Pain-related TMDs may be subdivided into different categories^[2]:

- Myalgia/myofascial pain – masticatory muscle disorders.
- TMJ disorders – eg, disc displacement (often due to an abnormal relationship or misalignment of the articular disc of the TMJ relative to the condyle), or arthralgia, which may be caused by localised degeneration of the TMJ.
- Headache: typically localised to the temporal region.

TMDs may be also classified according to the duration of symptoms. Acute TMD pain: often of short duration, self-limiting, and may be related to prolonged jaw opening (such as following dental treatment or trauma). Chronic TMD pain is defined as pain lasting for more than three months^[2].

Epidemiology^[1]

TMJ symptoms are relatively common, although only about 5% seek medical help for their symptoms. TMDs may occur at any age and are more common in women^[2].

Temporomandibular symptoms are commonly found in musicians, particularly wind and string players^[3].

There is also an increase in symptoms among patients with schizophrenia^[4]. This is due to a number of factors including poor oral health and psychological factors as well as use of antipsychotic medication.

Aetiology^[2] ^[5]

TMDs are thought to have a multifactorial aetiology but the pathophysiology is not well understood. The causes are likely to be complex and multifactorial, and may include:

Anatomical factors - eg, internal derangement of the TMJ caused by disc displacement.

- Trauma - eg, following a dental procedure or a fall on to the chin. Parafunctional habits such as bruxism (grinding or clenching of the teeth) may overload the TMJ, leading to cartilage breakdown and alterations in the synovial fluid.
- Psychosocial factors - eg, stress, anxiety, and depression. Psychological factors may predispose to parafunctional habits in some people.
- There may be an association with other chronic pain conditions - eg, chronic fatigue syndrome, fibromyalgia, migraine, irritable bowel syndrome, and widespread chronic pain.
- Genetic risk factors have also been identified.

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.

- 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.

Factors affecting the joint

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

TMDs tend to present with pain in the TMJ and surrounding structures, limitation of jaw movements, and/or sounds (such as clicking, popping, grating or crepitus) from the TMJ^[2].

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 may include:

- 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.

TMDs may cause^[2]:

- Chronic pain.
- Psychosocial distress.
- Dental problems.
- Speech problems.
- Swallowing and chewing difficulties.

Examination^[6]

- 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^[7]

- [Giant cell arteritis](#).
- Cardiac pain ([angina](#) and [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](#) 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.

'Red flags' for orofacial pain that may mimic TMDs include^[2]:

- Previous history of malignancy (possible new primary, recurrence, or metastases).

- Persistent or unexplained neck lump or cervical lymphadenopathy (neoplastic, infective, or autoimmune cause).
- Neurological symptoms - eg, headache, cranial nerve abnormalities with sensory or motor function changes (intracranial cause, or malignancy affecting cranial nerve peripheral branches).
- Facial asymmetry, facial mass or swelling, or profound trismus (neoplastic, infective, or inflammatory cause).
- Recurrent epistaxis, purulent nasal discharge, persistent loss of smell, or reduced hearing on the same side (nasopharyngeal carcinoma).
- Unexplained fever or weight loss (malignancy, immunosuppression, or an infection).
- New-onset unilateral headache or scalp tenderness, jaw claudication, and general malaise, especially if the person is over 50 years of age (giant cell arteritis).
- Occlusal (bite of teeth) changes (neoplasia, rheumatoid arthritis, trauma, or bone growth around the temporomandibular joint - eg, acromegaly).

Management^{[2] [8] [9] [10]}

Primary care

Early self-management to help control symptoms and limit functional impairment:

- Reassure that the condition is usually non-progressive, and that symptoms may fluctuate, but should improve.
- Eat a soft diet and rest the jaw if there is acute pain.
- Try to avoid parafunctional activities that may exacerbate symptoms - eg, wide yawning, teeth grinding or jaw clenching, chewing gum or pencils, and nail biting.
- Simple analgesia (paracetamol or NSAID).
- Local measures for pain relief - eg, applying covered ice or a warm flannel or heat pad, or massaging affected muscles.
- Identify sources of stress, and try relaxation techniques.

- Advice on sleep hygiene. See the CKS topic on insomnia for more information.
- Provide sources of information and advice.

Consider additional drug treatment for adults:

- If symptoms are acute and severe, consider a short course of a low-dose benzodiazepine for a maximum of two weeks.
- If there is chronic pain, consider a neuropathic analgesic - eg, amitriptyline or gabapentin.

Referral

Refer to oral medicine or oral and maxillofacial surgery if:

- There is history of trauma or fracture.
- There is markedly limited mouth opening (closed lock) suggesting disc displacement without reduction.

Consider referral to additional specialists if appropriate, such as to:

- A dentist, if there is poor dental health, suspected malocclusion or dental pathology, or for consideration of an occlusal splint (usually worn at night and which may be useful for people who grind or clench their teeth).
- Psychology services for cognitive behavioural therapy (CBT), if there is marked psychological distress or to help with pain-related anxiety.
- Physiotherapy for advice on passive jaw stretching exercises, posture training, and massage, or acupuncture to help relax muscle spasm.

Arrange referral to oral medicine; oral and maxillofacial surgery; ENT surgery; neurology; or a multidisciplinary pain clinic for specialist investigations and management, depending on clinical judgement, if a person has:

- Chronic TMD symptoms lasting for more than three months.
- Persistent or worsening symptoms despite primary care treatment.
- Uncertain diagnosis.

- Marked psychological distress associated with symptoms and/or occlusal preoccupation (persistent hyper-awareness or hypervigilance of their bite).
- Unexplained persistent pain or chronic widespread pain.

Specialist investigations and management

Specialist investigations may include:

- Plain or panoramic X-rays to identify dental pathology, fractures, dislocations, or severe degenerative joint disease.
- CT to assess for degenerative joint disease or subluxation of the TMJ.
- MRI to assess for TMJ disc displacement, subluxation, arthrosis, or synovial proliferation.

Specialist management options include:

- Botulinum toxin injection into the masseter and temporalis muscles of mastication.
- Intra-articular injection of sodium hyaluronate or corticosteroid preparations for degenerative joint disease.
- Surgery options:
 - Arthrocentesis or arthroscopy for non-myogenous TMDs with significant functional impairment.
 - Arthroplasty for more severe TMJ degeneration.
 - Eminectomy or eminoplasty for recurrent TMJ dislocation.
 - Total prosthetic TMJ replacement for end-stage degenerative disease^[11].

Neither occlusal adjustment (selective grinding of the tooth enamel to achieve a more harmonious bite) nor orthodontics are recommended, because of a lack of evidence of benefit.

Prognosis^[2] ^[12]

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. A TMD may respond well to a multidisciplinary approach to treatment.

Symptoms resolve spontaneously in up to 40% of people, and 50–90% of symptoms improve with conservative treatment. Factors associated with chronic TMD pain and a worse prognosis include:

- Being female.
- Increasing age at presentation.
- Higher reported pain intensity.
- More widespread nonspecific symptoms.
- Comorbid psychosocial factors – eg, anxiety or depression.

Further reading

- [BOAMS – British Association of Oral and Maxillofacial Surgeons](#)

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