

**When  
Moving  
Hurts**



**Assess  
Understand  
Take Action**

## **GLOBAL YEAR AGAINST MUSCULOSKELETAL PAIN**

OCTOBER 2009 – OCTOBER 2010

### **Temporomandibular Disorder Pain**

#### **Introduction**

Temporomandibular disorder (TMD) is a collective term embracing a number of clinical problems that involve the masticatory musculature, the temporomandibular joint (TMJ) and associated structures, or both. Pain associated with TMD can be clinically expressed as masticatory muscle pain (MMP) or TMJ pain (synovitis, capsulitis, or osteoarthritis). TMD pain can be, but is not necessarily, associated with dysfunction of the masticatory system (clicking, locking of the TMJ, and limitation of movement).

#### **Epidemiology and Economics**

TMD-related facial pain has been reported in 4–12% of the general population (female : male ratio is 2:1), while only 1.4–7% seek treatment (4 times more females), and signs and symptoms peak in 20–40-year-olds. Progression to severe and/or chronic pain is rare and is associated with greater psychological disturbance; the impact on an individual's quality of life and physical function is significant when chronicity does occur. Disabling TMD pain results in significant loss of workdays and health care-related costs.

#### **Pathophysiology**

Many aspects of the etiology of TMD are unclear. In contrast to a dental/occlusal cause, there is definite support for a biopsychosocial and multifactorial background, illustrating the complex interaction between biological (e.g., hormonal) mechanisms, psychological states and traits, environmental conditions, and macro- or microtrauma.

In MMP, overloading (parafunctions, clenching), (micro-)trauma, or local inflammation of muscles releases neurotransmitters that sensitize the peripheral and central nervous system. In conjunction with altered pain-regulating mechanisms (also influenced by female hormones), such sensitization may lead to localized or more generalized spread of muscle pain. Recently, genetic factors (involving *COMT* gene haplotypes) have also been implicated in the onset of MMP.

TMJ arthralgia may result from trauma or from intrinsic and extrinsic overloading of the TMJ (as in tooth clenching) that may overcome the adaptive capacity of the joint tissues. Alternatively, the adaptive capacity of the TMJ may be reduced by intrinsic factors such as reduced blood supply and nutrition. Genetics and gender have also been implicated in the pathophysiology of osteoarthritis. The production of free radicals, proinflammatory and nociceptive neuropeptides, enzymes, bone morphogenetic proteins, and growth factors will lead to inflammation, pain, and progressive tissue changes.

#### **Clinical Features**

MMP is a regional, dull, aching pain, present especially in the jaw-closing muscles and around the ear, which may occur at rest and can be aggravated during mandibular function. Pain may be more pronounced in the morning or evening, with an intensity of 3–7 on a 10-cm scale. Reported associated symptoms are limitation of movement, headache, fullness of the ear, and neck pain (but a cause-effect relation has not yet been established). MMP may be part of generalized muscle pain, as in fibromyalgia.

TMJ arthralgia is a more localized and sharp pain of moderate intensity, situated in the TMJ and surrounding tissues, radiating mostly to the ear region. The pain is aggravated during loading and function of the joint and may limit normal movement and function. TMJ pain is often associated with a displaced or dysfunctional articular disk

that causes joint clicking and/or locking, which may be an additional cause of limitation of movement. TMJ osteoarthritis may be part of generalized arthritis, and may be accompanied by crepitation.

If chronic pain develops, both MMP and TMJ arthralgia may be accompanied by central sensitization and psychological problems such as depression, somatization, and anxiety.

### Diagnostic Criteria

The Guidelines of the American Academy of Orofacial Pain (2008) and the Research Diagnostic Criteria (RDC-TMD, 1992) suggest the following criteria:

- MMP: A complaint of muscle pain in the jaw, temple, face, or periauricular area, with tenderness on palpation in at least 3 of 20 predetermined muscle sites.
- TMJ arthralgia: A complaint of pain over the TMJ, including pain with function or with assisted or unassisted mandibular movements. Pain on palpation of the joint over the lateral pole and/or via external auditory meatus. No coarse crepitus.
- TMJ osteoarthritis has the same criteria as for TMJ arthralgia, supplemented by coarse crepitus or positive imaging findings.
- Psychosocial comorbidity in MMP or TMJ pain is rated using the Graded Chronic Pain Scale and measurement scales for depression, anxiety, and nonspecific physical symptoms.

### Diagnosis and Treatment

TMD-related pain is diagnosed from a history and clinical examination. Except for imaging, technical examinations (e.g., electromyography, occlusal analysis) are not warranted. The symptoms are usually self-limiting, with a benign natural course. Management aims at providing optimal circumstances for healing and adaptation to take place. Non-invasive, reversible therapies that fit in the biopsychosocial approach include:

- Education of the patient, active self-care, follow-up
- Physical therapy, physical self-regulation programs
- Intra-oral occlusal appliances
- Medication (analgesics, nonsteroidal anti-inflammatory drugs)

In patients with chronic TMD, these therapies must be accompanied by:

- Psychological support, e.g., cognitive-behavioral therapy, relaxation therapy
- Low-dose tricyclic antidepressants or selective serotonin reuptake inhibitors

In patients with persistent TMJ arthralgia, arthrocentesis might be considered, while TMJ surgery is rarely, if ever, indicated for pain treatment.

### References

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