Background and overview of Temporomandibular Joint (TMJ) problems

Myofacial pain dysfunction syndrome and internal derangement

- Myofacial pain dysfunction syndrome is essentially a musculoskeletal problem resulting from over activity in the muscles of mastication leading to painful swelling and reduced function.

- Internal derangement results from mechanical damage to the internal workings of the temporomandibular joint specifically damage to the articular meniscus.

TMJ problems are exceptionally common with as many as 70% of people suffering from one or more signs or symptoms (muscle or joint pain, joint noises, limitation of mouth opening) at least once in their lifetime. They arise from either acute or chronic trauma to the temporomandibular joint apparatus. Essentially the joint meniscus, which normally moves smoothly in between the head of the mandibular condyle and the base of the skull, becomes lax in its attachment, producing intermittent joint noises and occasional joint stiffness during function. Provided the meniscus can be recaptured when the jaw is opened and closed maximal mouth opening is usually maintained with minimal pain despite joint noises and crepitus being present resulting in the common scenario of the painless clicking joint. However, if the meniscal attachment is severely compromised the meniscus becomes displaced anterior to the head of the condyle and maximal mouth opening is reduced. Moreover, the pain receptors in the posterior part of the meniscus, which are normally not stimulated during function, come to lie in between the mandibular condyle and fossa producing pain during function.

Psychological and emotional factors may precipitate and perpetuate TMJ disorders. A small but significant number of patients with psychologically associated TMJ disorders are clinically depressed. There is a very well recognised association between anxiety or stress-induced parafunction with daytime or nocturnal bruxism (tooth grinding and clenching) and TMJ problems or from parafunctional habits such as fingernail biting and pencil chewing due to over activity of the lateral pterygoid muscle pulling on the meniscus. Pain, swelling and spasm in the muscles of mastication (myofacial pain dysfunction syndrome) leading to trismus (reduced and painful mouth opening) is a particular feature of this group of patients. Bruxism and/or myofacial pain may adversely affect quality of life.

TMJ problems may arise from an acute injury, such as widely opening the jaw such as following a wide yawn or a laugh, or following surgery such as tooth extraction or tonsillectomy. Indeed, there are case reports of patients sustaining damage including dislocation of the TMJ after general anaesthesia or intravenous sedation for non-oral procedures such as cataract removal. There is also very good evidence that temporomandibular joint problems can and do arise as a result of facial trauma. In the majority of cases this is a result of direct trauma to the face, particularly the lower jaw. As the mandible is essentially one bone with two joints, any direct trauma to one side produces indirect trauma to the other and again it is quite conceivable that a blow on one side can result on problems bilaterally.

There is a mounting body of evidence to suggest that temporomandibular joint dysfunction can also arise as a result of violent hyperextension/flexion (whiplash) injury sustained to the head and neck without there necessarily having to be any facial contact with another object. While a few studies exist that suggest that hyperextension/flexion injury is unlikely to result in temporomandibular joint disorder or if it does it is uncommon the weight of published evidence supports a causal relationship
between whiplash and either the initiation of TMJ disorders in a previously asymptomatic joint or
the exacerbation of a pre-existing problem. In my own clinical practice I have encountered
numerous patients who have developed a classical internal derangement following a whiplash type
injury sustained in a road traffic accident. In the majority of cases victims were restrained drivers or
front seat passengers in stationary vehicles that sustained a rear or side impact.

The overwhelming majority of TMJ disorders are mild and self-limiting and settle following
conservative treatment such as analgesics and rest, physiotherapy, jaw exercises or occlusal splints
with little active treatment being required. Patient with myofacial pain dysfunction syndrome,
particularly where psychological and/or emotional factors are prominent frequently respond to
tricyclic antidepressant medication. However, a small minority of patients, particularly those with
severe internal derangements with pain and reduced function require surgery. Many of these will
settle following a simple joint lavage (arthrocentesis/arthroscopy) under general anaesthetic. A
smaller number require open joint surgery to repair, reposition or remove the damaged meniscus.
Very occasionally following severe damage to the joint, particularly if there has been an
intracapsular fracture following acute trauma the diseased painful joint needs to be excised and
replaced with a prosthetic one. This situation is analogous to hip joint replacement for fracture or
arthritis.

Cross Sectional Diagram of Temporomandibular Joint

![Cross Sectional Diagram of Temporomandibular Joint](image-url)
References