

Temporomandibular disorders – a surgeon's view

BY PETER KORCZAK

The temporomandibular joint (TMJ) is unique, in that it has a fibrocartilaginous intra-articular disc and has a ginglymoarthrodial action. The disc is designed to allow for the gliding movement down the posterior slope of the articular eminence with little, if any, actual articulation with the fossa. Temporomandibular disorders (TMD) may have a myogenous origin, relating to the effect of the muscles of mastication, or an arthrogenous element related to the joint and its immediate structures, but they may coexist. It is estimated that some 60-75% of the population may exhibit one or more signs of TMD; however, not all manifest the signs which would satisfy the criteria for a diagnosis of TMD. About 10% of the population have enough signs to merit a diagnosis of TMD. It is interesting that of these about 80-90% are female.

Myogenous TMD as a result of muscle hyperactivity, such as clenching and bruxism, may lead to the arthrogenous form as a result of overloading of the joint, causing disc displacement, tearing of the disc and ultimately arthrosis of the joint surfaces.

Diagnosis and investigation

The diagnosis is based on the presence of symptoms such as periauricular pain related to chewing, joint noises, limited mouth opening and locking, and headaches which are usually temporal.

Previous trauma to the jaw, concomitant neck, shoulder and back problems, ENT symptoms of Eustachian

tube dysfunction and tinnitus, stress, other musculoskeletal problems of arthritides and fibromyalgia, can all be contributory factors.

Blood investigations are only helpful if systemic diseases such as rheumatoid arthritis, temporal arteritis or connective tissue diseases are suspected,

Plain radiography is useful as a screening tool for bony involvement, but not for disc disorders. Ultrasound imaging is helpful but requires skilled interpretation. Disc morphology and displacements are better identified by MRI scanning (Figure 1). Arthrogenous TMD is best investigated by CT scanning, particularly in advanced cases where planning for joint replacement is envisaged. Arthroscopy, as an invasive diagnostic tool is useful in patients with internal derangements not responding to conservative regimes; and may also be therapeutic by division of adhesions, lavage of the joint and allowing repositioning of a displaced disc.

Management

Medical

Most TMDs are self-limiting, as with other joint strains. Rest, nonsteroidal anti-inflammatory drugs (NSAIDs), heat and massage will work for acute episodes. Patients should be advised to adhere to a soft diet, refrain from opening the mouth widely to bite into foodstuffs, avoid chewing gum and pens, stifle yawns and have good neck support whilst sleeping. Chronic disorders,

however, require additional modalities, including drug therapy, such as tricyclic antidepressants (TCADs), splint therapy, cognitive behavioural treatments, hypnotherapy, transcutaneous electronic nerve stimulation, ultrasound treatments, relaxation therapies, e.g. electromyographic biofeedback, etc. Many patients are also depressed and require appropriate counselling, but it should be noted that a number of the commonly used selective serotonin reuptake inhibitors (SSRI) antidepressants include myalgia and arthralgia as side-effects. It is difficult to manage TMDs if the patient has other chronic pain issues, therefore management involving a chronic pain team with appropriate support is essential.

NSAIDs used regularly can be helpful; some patients require narcotic analgesics for acute pain but these should be used sparingly. TCADs have been used for many years and successfully manage the chronic pain and muscle spasms associated with TMD. Botulinum toxin injections have also been shown to be effective, but the long-term use of this has not been assessed.

Many patients derive benefit from occlusal splints (Figure 2) for bruxism. They appear to work by rebalancing the occlusal forces to reduce the muscle tensions.

Hyaluronic acid injections have been suggested as a means of effecting cartilage repair but no studies have shown significant improvements.

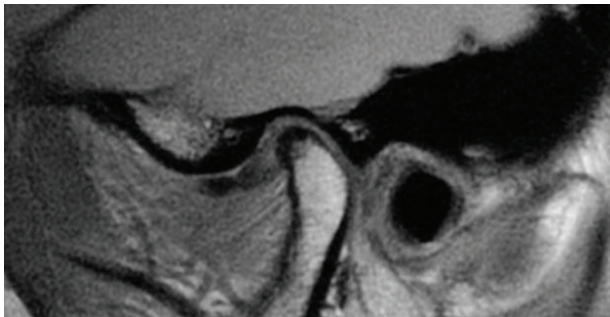


Figure 1: TMJ MRI scan.



Figure 2: Soft lower occlusal splint.

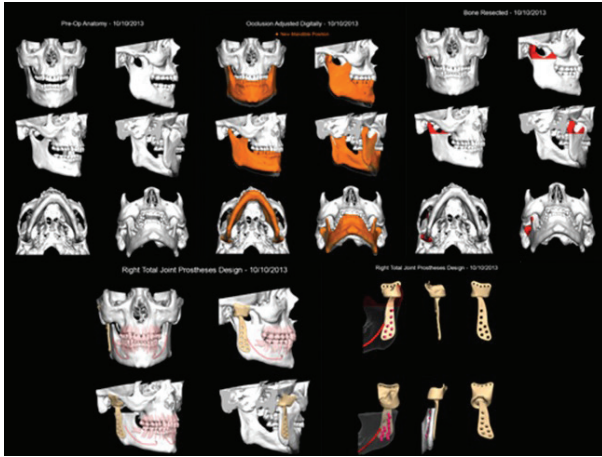


Figure 3: Total TMJ replacement plan.

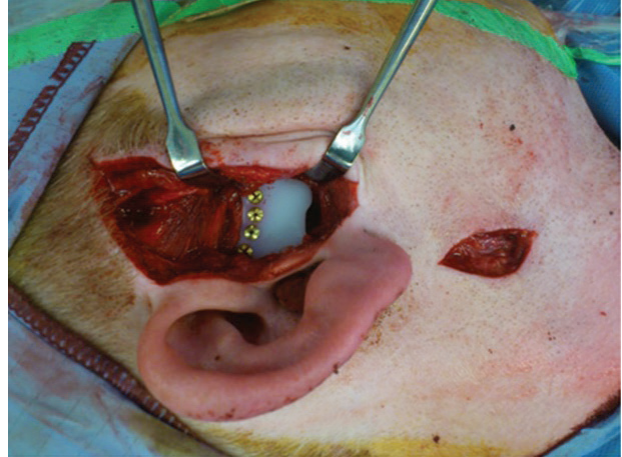


Figure 4: TMJ fossa prosthesis.

Surgical

As the disorder progresses to chronicity, it becomes more difficult to manage. However, the main aim is to avoid surgical intervention unless there is sufficient evidence to support its benefits. One has to remember the role of Teflon disc replacements and the Vitek prosthesis to show the harm that surgery can produce. Modern methods of surgical management can, however, still lead to complications and longer-term sequelae.

Arthrocentesis

This is a minimally invasive technique of washing the upper joint space with a physiological solution. However, it does not afford the benefit of direct visualisation of the joint as in arthroscopy.

Arthroscopy

Arthroscopy, either with the On-Point system or standard rigid scopes, allows direct visualisation of the upper joint space, confirmation of MRI findings and with rigid arthroscopy, the ability to remove adhesions, fibrous bands and allow freer movement of the joint post-surgery. Up to 80% of patients report improved function and reduced pain. Complications of surgery can include damage to the otological structures and fifth or seventh cranial nerves. These are generally temporary.

Open surgery

Open surgery is clearly indicated in trauma to the condyle, ankylosis, recurrent dislocations, etc. Unless there is clinical evidence of internal derangement or arthrosis of the joint which could benefit from surgical intervention, surgery should be avoided. Some patients with significant radiographic evidence of erosion and collapse of the condyle seem

to manage their condition. Therefore it is prudent to intervene surgically only when the patient has symptoms that cannot be managed conservatively.

At present, if the disc is degenerate, a repair by disc plication or repositioning can be attempted, but if the disc is thinned and fragmented, there is no clear solution to removal of the disc. Previously autogenous cartilage grafts, dermal grafts, temporalis muscle / fascia grafts have been used but generally do not survive long-term, and the arthritic process is likely to continue. The disc degenerates and the condyle collapses with anterior lipping.

As a result the next stage is a total joint replacement. A number of devices have been developed, but currently the Biomet and Concept devices seem to be the most popular. Both consist of a titanium condylar component articulating with an ultra high molecular weight polyethylene fossa component. Although stock prostheses exist, the majority of surgeons are using custom-made devices (Figure 3) as a means of ensuring excellent fit and precision of function for a unique joint (Figure 4). Despite good results for pain reduction and improvement of function the devices may require replacement during the patient's life and as many patients are young this will mean multiple replacements. As with all implanted devices the risk of infection exists and the surgery is not without complications. Commonest are otological, facial nerve palsy, fifth nerve damage and malocclusion. Some patients who fall into the myogenous group who progress to arthrosis may continue to experience pain and limited movement and continue to overload the prosthesis, thereby resulting in its premature failure. This is therefore more of a challenge.

Summary

The management of patients with temporomandibular disorders is both difficult and challenging but can be very rewarding. The majority of cases can be managed simply with advice, reassurance and basic conservative measures. It takes time to do this effectively and therefore initial consultations may take at least half an hour. The result, however, is a satisfied patient and a timely discharge. Those that require more careful follow-up and management need to develop a rapport with the treating clinician and therefore require a more empathetic approach. The typical surgical brusqueness is not appropriate in this situation.

There is still much to understand about the temporomandibular joint and its disorders and future advances in technology may allow us to regenerate damaged discs, and to replicate the patient's own TMJ and jaw to avoid artificial substitutes. Prevention is always better than cure and in this respect stress management is a very important aspect of care.



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Declaration of competing interests:
None declared.