Clinical review

Fortnightly review

Temporomandibular disorders: a clinical update

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Temporomandibular disorders is a collective term used to describe a number of related disorders affecting the temporomandibular joints, masticatory muscles, and associated structures, all of which have common symptoms such as pain and limited mouth opening. General practitioners will sometimes see patients who present with either persistent or recurrent chronic facial pain. Having eliminated the possibility of headache or ear or sinus problems, the next step is to consider the possibility of temporomandibular joint pain and dysfunction, particularly if the pain is accompanied by clicking jaw joints and limited mouth opening. This article reviews the clinical features of temporomandibular disorders and details current treatments for these.

Summary points

- The three cardinal features of temporomandibular disorders are orofacial pain, joint noises, and restricted jaw function
- Although up to 70% of the general population may have at least one sign, only about 5% of those with one or more signs will actually seek treatment
- The clinical course of temporomandibular disorders does not reflect a progressive disease but rather a complex disorder that is moulded by many interacting factors such as stress, anxiety, and depression, which serve to maintain the disease
- Non-surgical treatments such as counselling, pharmacotherapy, and occlusal splint therapy continue to be the most effective way of managing over 80% of patients
- General medical practitioners who deal with temporomandibular disorders should be familiar with the different families of drugs that can be prescribed to relieve symptoms; these include non-steroidal anti-inflammatory drugs, opiates, tranquillisers, and antidepressants

Methods

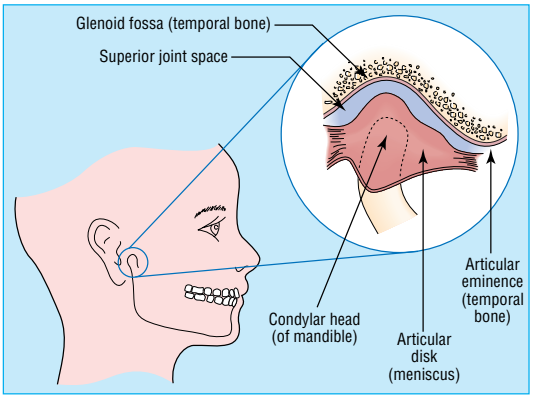
This review is based on my clinical experiences derived from the United Kingdom, the United States, and Australia, where I have developed a special interest in the management of patients with temporomandibular disorders. The published reports I have selected are from those I have collected over many years. For the Medline search, I use the following keywords: temporomandibular disorders, temporomandibular joint, internal derangement, myofascial pain dysfunction, and facial arthromyalgia.

Epidemiology

About 60-70% of the general population has at least one sign of a temporomandibular disorder, yet only around one in four people with signs is actually aware of, or reports any, symptoms.[1–8] Furthermore, only about 5% of people with one or more signs of a temporomandibular disorder will actually seek treatment.[1 3 4 6 7] Most of those who seek treatment for temporomandibular disorders are female—they outnumber male patients by at least four to one.[3 5 6] Although temporomandibular disorders may occur at any age, patients most commonly present in early adulthood.[1 3–8]

Types of disorder

The three most common temporomandibular disorders are myofascial pain and dysfunction, internal derangement, and osteoarthrosis. Myofascial pain and dysfunction is by far the most prevalent. It is primarily a muscle disorder resulting from oral parafunctional habits such as clenching or bruxism. These habits are sometimes related to psychogenic disorders such as headache, chronic back pain, and irritable bowel syndrome. Stress, anxiety, and depression are key features of myofascial pain and dysfunction. The term internal derangement describes a temporomandibular disorder in which the articular disc (fig) is in an abnormal position, resulting in mechanical interference and restriction of the normal range of mandibular activity. Osteoarthrosis is a localised degenerative disorder that affects mainly the articular cartilage of the temporomandibular joint and is often seen in older people.



Anatomy of the temporomandibular joint

Aetiology

The aetiology of the most common types of temporomandibular disorders is complex and is still largely unresolved. Malocclusion and trauma—whether acute, such as after an assault, or chronic and repetitive, such as tooth grinding or clenching—are often cited as possible causes. However, there is a clear lack of substantial evidence. Psychogenic factors have also been implicated, but, like trauma and malocclusion, these are often considered as exacerbating factors rather than the primary cause of temporomandibular disorders.[1 2] It is well established that very few patients with malocclusion, mandibular trauma, or psychogenic related illnesses actually go on to develop temporomandibular pain and dysfunction.[8] Hence, there is speculation that only some patients who are vulnerable to temporomandibular disorders will develop pain and dysfunction after an exacerbating event such as trauma. However, the inherent features that may help identify those patients who are especially susceptible to temporomandibular disorders remain unknown.

Clinical features

There are three cardinal features of temporomandibular disorders—orofacial pain, joint noise, and restricted jaw function. Pain is the most common presenting complaint and is by far the most difficult problem to evaluate.[9–11] Joint noise, however, is quite common in asymptomatic people in the general population, and is of little clinical importance in the absence of pain.[11 12] Restricted jaw function encompasses a limited range of mandibular movements in all directions. Like pain, restricted jaw function causes considerable anxiety for the patient, who faces difficulties in everyday activities such as eating and speaking. Patients describe either a generalised tight feeling, which is probably a muscular disorder, or the sensation that the jaw suddenly "catches" or "gets stuck," which is usually related to internal derangement.

Headaches, earaches, tinnitus, and neck and shoulder pains are just a few of a number of non-specific symptoms that are often reported by patients with temporomandibular disorders. However since these symptoms are not considered to be specific for temporomandibular disorders, other possible causes should be sought and ruled out.[1 2 8 13–15]

Clinical evaluation

History

The main complaint may include orofacial pain, joint noises, restricted mouth opening, or a combination of these, in addition to other less specific problems such as headache and tinnitus. Pain should be evaluated carefully in terms of its onset, nature, intensity, site, duration, aggravating and relieving factors, and, especially, how it relates to the other features such as joint noise and restricted mandibular movements. More specifically, pain that is centred immediately in front of the tragus of the ear and projects to the ear, temple, cheek, and along the mandible is highly diagnostic for temporomandibular disorder. The pain may be accompanied by a click or grating sound in the preauricular region during mandibular functions such as chewing or yawning. A history of limited mouth opening, which may be intermittent or progressive, is also a key feature of temporomandibular disorders.

Chronic head, neck, and back pain; irritable bowel syndrome; and idiopathic pruritus are sometimes found in patients with temporomandibular disorders and should be sought by the doctor to help establish the possibility of a psychogenic cause. The doctor should also ask the patient about underlying influences such as stress, anxiety, depression, or important life events so that he or she can get a clearer picture of any psychogenic basis to the disorder.[11 13 15 16] In general, the longer the duration of the symptoms and the greater the number of treatments, and in particular "failed" treatments, the smaller the likelihood that the patient will respond well to further treatment.[16]

Clinical examination

The patient should be evaluated for tenderness in those areas of the head and neck that are accessible to palpation. Palpation is accomplished by placing the finger tips in the preauricular region just in front of the tragus of the ear. The patient is then asked to open their mouth and the finger tip will fall into the depression left by the translating condyle. Examination of the masticatory musculature may also be accomplished by digital palpation. Areas of tenderness, trigger points, and patterns of pain referral should be noted.

Joint sounds and their location during opening, closing, and lateral excursions of the mandible may be either palpated or detected with a stethoscope placed over the preauricular area. Mandibular function may be evaluated by noting whether the line of vertical opening is straight and smooth or deviates with jerky movements. The range of painless maximal vertical opening (normal range 42-55 mm interincisal distance) should be recorded.

Investigations

Investigations are mainly required to eliminate the possibility of other abnormailties that may mimic temporomandibular disorder symptoms.[2 14] Despite the limitations, plain radiographs of the temporomandibular joint such as high level orthopantomograms and transcranial projections are useful ways of visualising any gross pathological, degenerative, or traumatic changes in the bony component of the temporomandibular joint complex.[17] In recent years, magnetic resonance imaging has been used increasingly to

investigate temporomandibular disorders, in particular, internal derangements of the temporomandibular joint.[18 19] Many other investigations such as computed tomography[20 21] and arthroscopy[22 23] have been advocated, but arranging these should be left to specialist oral and maxillofacial surgeons.

Diagnosis

Myofascial pain and dysfunction generally presents with diffuse pain that is cyclic and found in several sites in the head and neck, particularly the muscles of mastication. Pain is frequently worst in the morning, and the patient will often report sore teeth from clenching. There is often a history of stress and difficulty in sleeping. The patient will present with diffuse muscle tenderness and a decreased range of mandibular movements with wear facets on the teeth.

Internal joint derangement, however, presents with continuous pain that is localised to the temporomandibular joint and is exacerbated by jaw movement. Mechanical interferences in the joint, such as clicking and locking, will often result in restricted mandibular opening or deviation of mandibular movements during opening and closing.

Crepitus or grating sounds emanating from the joint(s) during mandibular function is pathognomonic of temporomandibular joint osteoarthrosis in the elderly. Where the condition is painful, it is referred to as osteoarthritis. Computed tomograms of the temporomandibular joint will often show degeneration and flattening of the condylar head. Most patients seem to cope well with osteoarthrosis as it rarely leads to limited mandibular function. Where computed tomograms show similar condylar changes in younger patients, other arthridities, such as rheumatoid arthritis, should be considered and investigated further.

Differential diagnosis

When examining patients with suspected temporomandibular disorders, the practitioner must bear in mind the possibility of other common disorders such as dental pain; disorders of the ears, nose, and sinuses; neuralgias; headaches; and diseases of the major salivary glands all of which may mimic the symptoms of temporomandibular pain and dysfunction. What distinguishes temporomandibular disorders from other possible diseases is the pain, which is specifically centred in and around the preauricular region and may be accompanied by clicking or grating sounds with mandibular function and restricted mouth opening.

Treatment planning

The clinical course of temporomandibular disorders does not reflect a progressive disease, but rather a complex disorder moulded by many interacting factors that serve to maintain the disease.[1 8 12 24–26] The main goals of treatment for temporomandibular disorders are to reduce or eliminate pain or joint noises, or both, and to restore normal mandibular function. This is best achieved when other contributing factors such as stress, depression, and oral parafunctional habits (such as bruxism) are addressed and incorporated into the overall treatment strategy.[27] The doctor must establish whether the fundamental problem is organic or psychogenic as this will dictate treatment. Psychogenic disorders are mostly found in patients with myofascial pain and dysfunction. These patients need psychotropic medication and psychotherapy, which is described below.

Treatment

Non-surgical treatment of temporomandibular disorders continues to be the most effective way of managing over 80% of patients. There are numerous non-surgical treatments for temporomandibular disorders. These involve not one but a number of different specialist practitioners who come together under the umbrella of a multidisciplinary team. Although each treatment will be discussed separately, for optimal success they are best used in combination, depending on the patient's needs.[1 27]

Explanation and reassurance

Probably the most important part of the treatment of temporomandibular disorders is to explain to the patient the cause and nature of the disorder, and to reassure them of the benign nature of the condition. Many patients will benefit from the reassurance that the symptoms of the temporomandibular disorder they are experiencing is not a "cancer." A thorough evaluation should effectively rule out more sinister possible causes.

Patient education and self care

A self care routine should include the following: limitation of mandibular function, habit awareness and modification, a home exercise programme, and avoiding stress. Voluntary limitation of mandibular function is encouraged to promote rest or immobilisation of muscular and articular structures—much the same as an athlete would rest an injured joint. Hence, the patient is advised to eat soft foods and avoid those that need a lot of chewing, and is discouraged from wide yawning, singing, chewing gum, and any other activities that would cause excessive jaw movement. Massaging the affected muscles and applying moist heat will promote muscle relaxation and help soothe aching or tired muscles. Patients should also be advised to identify the source(s) of stress, and try and change their lifestyle accordingly.

Drug treatment

If used properly as part of a comprehensive management programme, drugs can be a valuable help in relieving symptoms.[1 25 28 29] No single drug has been proved to be effective for all cases of temporomandibular disorders. Practitioners treating patients with temporomandibular disorders should be conversant with the different families of drugs including non-steroidal anti-inflammatory drugs, opiates, muscle relaxants, tranquillisers, and antidepressants.

The analgesic effects of non-steroidal anti-inflammatory drugs is specific only in cases of temporomandibular disorders where pain is the result of an inflammatory process such as synovitis or myositis. For moderate to severe pain, opiates are best prescribed for a short period because of they can be highly addictive. At the doses usually prescribed clinically, opiates are

Drug treatment for temporomandibular disorders

Indications	Active ingredient	Proprietary name (dose)	Prescription
Acute pain (<3 months): inflammatory conditions of masticatory muscles and temporomandibular joints	Ibuprofen	Brufen (400 mg)	400 mg 3 times daily for 7 days
	Naproxen	Naprosyn (250 mg)	250 mg 3 times daily for 1 month
	Diclofenac sodium	Voltaren (25 mg)	Up to 150 mg daily in 3 divided doses for 1 month
Chronic pain (>3 months): including evidence of anxiety and depression	Diazepam	Valium (2.5 mg, 10 mg)	2-5 mg 3 times daily for maximum of 10 days
	Dothiepin hydrochloride	Prothiaden (25 mg, 75 mg)	Begin with 75 mg; increase to 200 mg in 3 daily divided doses for 1–3 months
	Nortryptyline	Aventyl (10 mg, 25 mg)	Begin with 25 mg; increase to 100 mg in 3 daily divided doses for 3 months
	Imipramine hydrochloride	Tofranil (10 mg, 25 mg)	25 mg three times daily for 1-3 months
	Tranylcypromine sulphate	Parstelin (10 mg)	10 mg twice daily

more effective in dampening the patient's emotional response to pain than eliminating the pain itself. Where high levels of emotional stress are associated with temporomandibular disorders, tranquillising drugs such as benzodiazepines, or less commonly phenothiazines, are used to help the patient cope with stress by reducing their perception or reaction to it. Low doses of tricyclic antidepressants also help chronic orofacial pain such as that found in longstanding cases of temporomandibular disorders (table). Tricyclic antidepressants are best prescribed in gradually increasing doses over three and sometimes up to six months.

The danger of drug abuse is compounded by the "take as needed" philosophy of prescribing. This tends to provide brief periods of relief, but with more frequent pain cycles, decreased effectiveness, and ultimately overuse or abuse of the medication.[25 28 29] Medication prescribed for temporomandibular disorders should be taken at regular intervals—not "as required"—and for a specified period of time.[29]

Occlusal therapy

The most common form of treatment provided by dentists for temporomandibular disorders is occlusal appliance therapy. This may be referred to as a bite raising appliance, occlusal splint, or a bite guard. It is a removable device, usually made of hard acrylic, that is custom made to fit over the occlusal surfaces of the teeth. Although occlusal appliance therapy has been shown clinically to alleviate symptoms of temporomandibular disorders in over 70% of patients, the physiological basis of the response to treatment has never been well understood.[30 31]

Physiotherapy

The aim of physiotherapy is to restore normal mandibular function by a number of physical techniques that serve to relieve musculoskeletal pain and promote healing of tissues.[32] Close cooperation with a physiotherapist who is well versed in the management of musculoskeletal disorders of the head and neck is essential.

Behavioural therapy

Where persistent habits exacerbate or maintain the temporomandibular disorder and these cannot be modified easily by simple patient awareness, a structured programme of cognitive behavioural therapy may be required. Behavioural modification strategies may include counselling on lifestyle, relaxation therapy, hypnosis, and biofeedback.[33]

Psychotherapy

Occasionally, temporomandibular disorders may be the somatic expression of an underlying psychological or psychiatric disorder such as depression or a conversion disorder.[34 35] The best clue to this possibility is when a patient's suffering seems to be excessive or persistent, beyond what would be normal for that condition. In these patients, referral to a psychiatrist or clinical psychologist is a mandatory part of the overall management strategy.

Surgical treatment

Published reports show that about 5% of patients undergoing treatment for temporomandibular disorders require surgery.[3 6] A range of surgical procedures is currently used to treat temporomandibular disorders, ranging from temporomandibular joint arthrocentesis and arthroscopy to the more complex open joint surgical procedures, referred to as arthrotomy.[3 7] Oral and maxillofacial surgeons with a special interest in this area often prefer patients to have undergone a period of non-surgical treatment before seeking a surgical opinion. The benefits and limitations of each of the surgical procedures are readily determined on an individual case basis.[36 37]

Conclusion

The general medical practitioner has an important part to play in the diagnosis and management of patients with temporomandibular disorders since a substantial proportion will attend their general medical practitioner for an initial consultation. General medical practitioners should therefore be familiar with the key features of temporomandibular disorders and be prepared to play a part in managing these patients, especially in the areas of drug treatment and counselling.

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A memorable patient

Someone else's problem

Annie had come from a neighbouring psychogeriatric hospital with a huge, infected pressure sore. She was in her 80s, doubly incontinent, and demented. Dressing changes were a great challenge to the nursing staff, owing to Annie's combative skills including a formidable ability to spit several feet. However, after several months the wound was clean and healthy. The visiting plastic surgeon decided that she was now ready for skin grafting and asked me to arrange it.

As a keen new houseman I blithely said that I would, not foreseeing the difficulties that lay ahead. Theatres would be undergoing routine maintenance on the day in question and all operations were cancelled. I tracked down a free orthopaedic theatre at another hospital, but, unfortunately, no general surgery was done there, so I had to find lodgings for Annie. The acute trauma ward seemed the only suitable place. I eventually received permission from a staff nurse for Annie to go there for her immediate preoperative and postoperative care, and, yes, we would take her back as soon as possible. I now needed a doctor who would be willing to adopt her temporarily. I spoke to an orthopaedic registrar who said that he doubted whether the ward would be prepared to take her. Assuring him that they would he reluctantly obliged. Sorted, I thought.

I should not have been so optimistic. The first problem arose when Annie arrived at the trauma ward. The sister rang me up to demand, "What business have you sending your crumble to my ward?" I assured her that it had all been arranged, and with earnestness asked if she would please look in the diary. There then followed an unedifying dialogue on the inappropriateness of demented crumble being on an acute trauma ward. Eventually, she was persuaded and Annie was allowed out of the ambulance. She was later taken to the operating theatre as planned, but I had not reckoned on the malevolence of the on call orthopaedic registrar. Annie's graft took four hours and when she was finally ready to come back to the ward, it was after 5 pm. He was also disdainful of crumble and refused to allow Annie back to the ward. Uselessly, I pointed out that it had all been agreed and, in any case, the anaesthetist had forbidden her transfer back to us until the following day. "Where is she supposed to go?" "That's your problem." Eventually, my registrar was able to negotiate a bed on the gynaecology ward.

It had been a long day, a day of stress and disillusionment. I realised that some people did not matter. A frail, demented old lady had been maltreated because she was crumble—in other words, unimportant, inconsiderable, and, in fact, loathsome. My bleep went off. I was surprised, as I was not on call and it was now 9 pm. "Annie's back," the surgical staff nurse laconically informed me. The gynaecological senior house officer, who also disliked crumble, especially other people's crumble, had discharged Annie shortly after her arrival from the operating theatre.

Of course, I was naive. I have come across this attitude many times since then, although I still find it baffling and surprising. There is a eugenic streak in some NHS staff that excludes unworthies such as Annie from receiving the care they deserve, and indeed, have paid for. Unless and until attitudes change, the elderly and frail will continue to receive such treatment at the hands of those who would be more at home in Nazi Germany than in the modern NHS.

We welcome articles up to 600 words on topics such as *A memorable patient, A paper that changed my practice, My most unfortunate mistake,* or any other piece conveying instruction, pathos, or humour. If possible the article should be supplied on a disk. Permission is needed from the patient or a relative if an identifiable patient is referred to. We also welcome contributions for "Endpieces," consisting of quotations of up to 80 words (but most are considerably shorter) from any source, ancient or modern, which have appealed to the reader.