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Review Article

TMJ pain and cryoanalgesia

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ABSTRACT

Temporomandibular (TMJ) joint pain is a complex issue involving several factors in a spectrum including myofascial pain, internal derangement and degenerative disease, all of which are reciprocally affected by psychological factors.

Current assessment of TMD (temporomandibular disorder) can be assisted by standardised protocols, but often there is a combination of disease processes which each need to be addressed. Initial management should always be conservative with a preference for non-invasive measures which do no harm and have evidential support. Subsequent management of myofascial pain could involve tricyclic anti-depressants or botulinum injection into areas of muscle spasm.

Joint related pain is diagnosed by relief of pain following intra-articular local analgesia. Where this is successful arthroscopy/arthrocentesis are successful in relieving the pain in up to 90% of cases. In addition arthroscopy is an accurate diagnostic tool. Where this fails, open surgery is less successful and ultimately joint replacement may be required. Where the latter are not indicated, but pain is relieved by LA, cryoanalgesia to the joint capsule may be beneficial.

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1. Introduction

TMJ pain is a complex phenomenon which may be related to muscle spasm, internal derangement, degenerative disease or a combination of these. Psychological problems can both cause and be caused by this pain and should be managed accordingly. Diagnosis is paramount and international systems to aid in diagnosis are helpful, but cumbersome to use in everyday practice.

Initial management regardless of cause should be with conservative management. The evidential base for various aspects of this is limited, but numerous meta-analyses have explored these areas and several areas of guidance can be found in the literature. Management without evidence should at worst do no harm.

Reassurance and rest are the initial mainstay of management. Often patients will have parafunctional habits, and advice in terms of management of these is beneficial. Explaining that the majority of problems are not related to arthritis offers reassurance and even this alone will “cure” around 40% of patients. Tooth grinding, whilst long described in dental school to “stabilise the occlusion” shows no evidence of being better than doing nothing and as it is destructive should be avoided.¹ Bite splints work regardless of shape or design, provided they cover the full occluding dentition.² Failure to cover the occlusion can lead to malocclusion. Hard or soft there is no benefit of either and there is certainly no evidence that using them to manage a click adds anything to the patient's outcome. These should be persisted with nightly for at least 6 weeks.

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Non-steroidal anti-inflammatories aid pain relief and reduce joint inflammation. Topical is as effective as systemic and leads to fewer side effects.^{3,4} They should be used regularly, 4 times a day, for at least 4 weeks to have benefit.

If these measures fail to control the pain the next stage requires diagnosis whether the majority of pain is joint or muscle related. Whilst the clinical examination goes some way to aiding this decision, a simple injection of LA into the joint can help. If pain is relieved then arthroscopy/arthrocentesis should be planned. This is beneficial in relieving up to 90% of patients and provides at least an accurate diagnosis.^{5,6}

Psychological input should be considered in some cases and referral to a clinical psychologist or psychiatrist may be indicated.

2. Myofascial pain

If conservative measures fail and the patient has clear areas of palpable muscle spasm or has myofascial pain elsewhere in the body then tricyclic medication starting at a low dose (10 mg) and increasing in monthly 10 mg increments should be first line care. The pain free dose is maintained for 6 months then the patient is weaned off.

Second line management could be with botulinum injection into the affected muscles.⁷ This seems to completely relieve around 30%, improve a further 50% and make no difference in 20%.

If both these measures fail then referral to the pain management team is suggested.

3. Arthroscopy and arthrocentesis

The management and outcomes with arthroscopy will be discussed elsewhere, but needless to say, in experienced hands it gives relief in up to 90% with an accurate diagnosis confirmed in those where arthroscopy fails.^{5,6,8}

4. Open joint surgery

Whilst previous studies have shown good outcomes with open surgery it has become apparent that when used following failed arthroscopy, open surgery is far less successful – around 60%.⁹ With increasing numbers of patients operated on based on a “treat the pathology” basis rather than “I always do a...” basis a better idea of which patients will have a successful outcome with open surgery and which should bypass this to joint replacement will become apparent. However, longer term outcomes from joint replacement need to be available before this management technique will become acceptable to all.

5. Cryoanalgesia

This technique has limited indications as it achieves at best short term relief of pain. Described as a case report some years ago, the only case series shows a “cure” in 3 of 18, relief in 13

for a median duration of 14 months and no benefit in 2.¹⁰ The rationale of this technique is to control the pain fibres to the lateral capsule and the terminal portion of the auriculotemporal nerve. Unfortunately the nerve starts on the medial side of the joint and gives off fibres as it loops around the posterior capsule such that it is 1/3 the size by the time it passes over the lateral capsule.

The technique may be beneficial in patients with intractable pain who do not have appropriate indication for joint replacement, are awaiting funding for this procedure or are unfit for this procedure, as the technique can be performed under LA.

A preauricular approach in the precartilagenous plane exposes the base of the zygomatic arch and subsequently the capsule as a right angled triangle at the base. Three 90 second freeze thaw cycles are applied in an inverted L fashion and arthrocentesis will remove any inflammatory mediators.

Complications were not seen in this study, however the author has seen several cases referred for opinion who have had temporal branch palsy.

6. Summary

Management of TMD related pain requires accurate diagnosis and appropriate evidence based management to reduce unnecessary harm. A period of conservative management should be followed in myofascial pain with medical management. Internal derangement and degenerative disease may benefit from arthroscopy, open surgery or joint replacement. Those with intractable pain unfit for complex surgery may benefit from cryoanalgesia. Alternatively, close liaison with the local pain team or psychiatrist may be required.

Conflicts of interest

The author has none to declare.

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