

Cryoanalgesia in the management of intractable pain in the temporomandibular joint: a five-year retrospective review

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Abstract

Cryoanalgesia is a controversial adjunct to the management of chronic pain, but we know of no studies that have investigated its effect in the management of temporomandibular joint (TMJ) pain. In this five-year retrospective study we treated 17 patients who had severe pain that had failed to respond to all forms of conventional conservative treatment and were not appropriate for simple open operation. None had a clear indication for open operation on the joint or had too severe disease to warrant a simple procedure. Preliminary diagnostic injections of bupivacaine to the TMJ relieved the pain. We applied the cryoprobe in the region of the auriculotemporal nerve and TMJ capsule. There was a small but insignificant improvement in mean mouth opening together with a significant ($p=0.000$) improvement in visual analogue pain scores (VAS) from 6.8 (range 4–10) to 2.0 (range 0–7). Two patients had no change in their pain scores, and 2 had complete resolution of their pain. The mean number of pain-free months after treatment was 7 (IQR 3–15). Three patients had long-term pain relief, and 12 temporary relief; 6 of these subsequently had successful relief after total replacement of the TMJ. One patient had further cryoanalgesia, one was referred for specialist pain management, and one controlled the pain with nortriptyline. Of the 17 cases studied, 2 had temporary complications after cryoanalgesia. Cryoanalgesia is a useful adjunct to the management of intractable pain in the TMJ. Short-term pain relief can be achieved, and long-term relief is possible in some, deferring more complex and costly treatments.

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Introduction

Pain in the temporomandibular joint (TMJ) is a common clinical problem. The pain arising from the muscles associated with the joint has been described as aching, burning, throbbing, or general stiffness. It can be felt on one or both sides of the head and neck. Muscle pain may be associated with trigger points in the muscles, or may be more diffuse as in the preauricular or temporal areas.¹

Pain from within the TMJ itself tends to be more localised. It has been described as being sharp, tends to vary little during the day, but is worsened by movement of the joint. Most cases respond well to conservative measures involving simple reassurance, rest, and regular pain relief with non-steroidal anti-inflammatory drugs (NSAID). Sometimes a bite-raising appliance is helpful. However, some patients fail to respond and may require arthrocentesis, arthroscopy, or an open operation on the joint. However, open operation is not a solution for patients whose primary complaint is pain with no functional deficit. A small proportion fail to respond to any conventional treatment and can be described as having intractable pain, which may interfere with eating

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and drinking, and such patients can be seen in a pain clinic where the main treatment is medication. A group of patients with intractable TMJ pain, however, have a distinct neurogenic component to their symptoms, which can be illustrated by the fact that their pain is controlled when local analgesic is infiltrated into the intra-articular space.

Cryoanalgesia is the therapeutic use of extreme cold by the application of a cryoprobe to peripheral nerves in an attempt to produce a reversible therapeutic nerve blockade. The coolants (usually carbon dioxide or liquid nitrogen) act through the cryoprobe and are not in direct contact with the tissues. It has been used in the management of trigeminal neuralgia in patients whose pain cannot be managed medically. By stimulating proprioceptors in the auriculotemporal nerve treatment may alter activity in the pterygoid muscles; this relieves muscle spasm and pain referred to the joint. The use of cold in the application of brief, intense stimulation to abolish severe, prolonged pain is a form of hyperstimulation analgesia.² By freezing the auriculotemporal nerve, cryoanalgesia offers patients with recalcitrant TMJ pain a blockade of the pathways by which the pain travels. If the blockade is sufficient for a period it may allow complete resolution of pain after breakdown of established pain pathways in the brain.

We have retrospectively reviewed our experience of using cryoanalgesia for the management of intractable TMJ pain.

Patients and methods

We retrospectively reviewed the casenotes of every patient treated for TMJ pain by cryoanalgesia at the Queens Medical Centre, Nottingham between 2002 and 2006. The outcome was assessed by measurement of the following: mouth opening (mm) before and after treatment; pain scores before and after treatment on a visual analogue pain score (VAS, 0–10 cm rule); duration of symptomatic relief after cryoanalgesia (months); long term outcome; and complications.

Patients involved in the study had been diagnosed with intractable TMJ pain, and each had failed to respond to conventional conservative treatment including arthroscopy and arthrocentesis, and were not deemed candidates for open operation. None had a clear surgical indication for open operation, or had too severe disease to warrant a simple open procedure. The technique was considered to be the last resort before joint replacement. These patients were given preliminary diagnostic injections of intra-articular bupivacaine and assessed for temporary pain and sensory relief both subjectively and by the surgeon. If the result of the nerve block relieved the pain, patients were listed for cryoanalgesia and informed consent was obtained.

Details of the patients are given in Table 1.

Technique (Figs. 1–4)

Patients were treated under general anaesthesia. A preauricular incision was made and the area dissected until the capsule

Table 1

Characteristics of the 17 patients. Data are number of observations, except where otherwise stated.

Variable	Number
Sex	
Male	2
Female	15
Mean (range) age (years)	40 (29–63)
Causes of pain in the TMJ	
Myofascial	5
Degenerative changes	4
Atypical	3
Neuropathic	1
Persistent juvenile arthritis	1
Post-traumatic	1
Postoperative	1
Unknown	1

TMJ = temporomandibular joint.



Fig. 1. Marking of the preauricular skin.

was reached. Three freeze-thaw cycles of 90 s duration were applied in each case in an inverted L fashion to the posterior and lateral portion of the capsule. Cryoanalgesia was followed by arthrocentesis with heparinised saline 200 ml at 150 mm Hg pressure, and the incision was closed.

The patients were followed up routinely at 6 weeks and up to one year, with data being collated up to June 2008.

Results

The data were recorded and analysed with the help of the Statistical Package for the Social Sciences (SPSS Version 15.0,

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