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Review

How do I manage restricted mouth opening secondary to problems with the temporomandibular joint?

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Abstract

Restricted mouth opening is a common problem that presents to secondary care, and management depends on the primary cause. The most common differential diagnoses related to the temporomandibular joint (TMJ) include muscle spasm secondary to pain, anchored disc phenomenon, irreducible anterior disc displacement, rheumatoid diseases, and ankylosis. In this paper each is considered in turn.

Keywords: TMJ pain; Trismus; TMJ arthroscopy; TMJ discectomy; TMJ replacement; TMJ ankylosis; TMJ anchored disc phenomenon; TMJ anterior disc displacement; MRI scan; CT scan

Introduction

Management of restricted mouth opening depends on the primary cause, and includes anchored disc phenomenon in younger patients, irreducible anterior disc displacement usually in somewhat older patients, and degenerative disease in elderly patients. Across all age groups rheumatoid diseases and ankylosis can also present. Initial management in all cases should be conservative with rest, non-steroidal anti-inflammatory drugs (NSAID) and a bite splint[1] unless clinical findings and orthopantograms (OPG) clearly show collapse of the joint or ankylosis. When these fail, arthroscopy or arthrocentesis is often beneficial particularly in diseases related to the disc or lubrication of the joint. Failed arthroscopy at least provides a diagnosis and can further guide management. Diagnosis can be supplemented by magnetic resonance imaging (MRI)[2] although the position of the disc and mobility do not necessitate surgical correction. Open joint surgery (discectomy, condylar shave, or eminoplasty) is indicated when diagnostic arthroscopy confirms a torn disc or damage to the surface of the joint, and when symptoms fail to improve. Where ankylosis or collapse of the joint is possible then use of three-dimensional computed tomography (CT) is invaluable to evaluate the surfaces of the joint and the relation to underlying structures. Vascular imaging may be helpful when joint replacement is considered and ankylotic tissue extends medially. Total joint replacement is the final common pathway when open surgery, and management of ankylosis or rheumatoid diseases fail. Outcomes in the medium term are good, but as long-term outcomes beyond 20 years are still unknown, replacement should be used only as a last resort and according to guidelines from the National Institute for Health and Clinical Excellence (NICE).[3]

Patients who present to secondary care with limited opening (trismus) should initially have a full clinical examination to discover whether the primary cause is articular or extra-articular. The latter includes infective or inflammatory causes with secondary muscle spasm. The history should show whether there is pain, restriction, locking, and joint noise. Symptoms of the other joint being involved, local problems with the head and neck, or other systemic diseases should also be investigated. Examination should include assessment

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of the movement of each joint, measurement of mouth opening and lateral deviation, and palpation for muscle spasm, joint noise, and tenderness. Lateral deviation helps to ascertain whether there is movement in the upper joint space; there is loss of contralateral movement where this is involved.

Muscle spasm

Masseteric spasm is common secondary to infections in the region of the angle of the mandible. It presents acutely and is often associated with facial swelling. The primary cause should be managed appropriately.

Patients with secondary myofascial pain sometimes have restricted opening. They will have tenderness and there will be areas of palpable spasm in the masticatory muscles. Initial management is with rest, NSAID, and nocturnal bite splints. Low dose tricyclic medication or botulinum injections[4] into the area of spasm should be considered if a 3-month period of conservative management fails.

Anchored disc phenomenon

First described in 1991,[5] anchored disc phenomenon is probably more common than most non-specialists would consider. Patients have acute, severe, restricted opening of less than 25 mm, and unlike many TMJ disorders it is as common in men as in women and is most common in adolescents and young adults. While initial management should be conservative, early consideration for arthrocentesis under pressure using 200 ml of fluid will provide a cure in over 90% of cases. Arthroscopy may show evidence of the surfaces of the joint being stuck together (fibrillations), although often no abnormality is found. Arthroscopy involves the manipulation and measurement of intraoperative mouth opening, which will cause the appearance of fibrillations where the surfaces have been forced apart. Arthrocentesis can be repeated if necessary when intraoperative mouth opening is good, but the patient does not improve in the short term. Early treatment in this manner leads to a lower risk of the long-term side effect of restricted opening.

Irreducible anterior disc displacement

This was once considered to be the main cause of acute "closed lock". The patient may initially have clicking, which progresses to locking and subsequent restriction according to the classic course. Increasingly these patients are being recognised as having problems related to lubrication in the joint, and initial conservative management is often successful.[6]

MRI in patients who fail to respond to conservative management will often show that the disc has displaced anteriorly and does not reduce when the mouth is opened.[2] However, when asked to move the mandible from side to side, movement is often reasonable, which suggests that the disc is possibly being held anteriorly by a pterygoid muscle spasm or intra-articular pain and subconscious restriction. An MRI study on patients who are asked to deviate either way rather than to protrude would be interesting as it may show a different outcome. However, MRI is not therapeutic and often under diagnoses and over diagnoses tears in the disc.

Subsequent arthroscopy or arthrocentesis not only aids diagnosis, but also elicits a cure in over 80%.[7] Arthroscopic examination often shows evidence that the surfaces of the joint have been stuck together and fibrillations are visible. Occasional fibrosis can be broken down with the scope, or rarely a torn disc may be discovered.

Failure to respond to arthroscopy may indicate open surgery depending on the findings. Fortunately, patients with an arthroscopically diagnosed torn disc (Wilkes stage 5) can recover and this finding should not always indicate operation regardless of outcome.

Once the joint is opened, the upper and lower joint space should be explored and any adhesions released. If the condylar head is irregular with osteophytes they should be smoothed (condylar shave or condyloplasty), and if the eminence is excessively steep or has areas of lost cartilage it can be reduced to provide more free movement (eminoplasty). Irreparable damage to the disc necessitates discectomy. The author does not routinely replace the disc, as this tends to occur naturally with scar tissue over 6 months. It causes discomfort for up to 6 months but gives an early improvement in function. Interposition with a temporalis flap causes scarring in the muscle, which in itself may restrict opening. Other interpositional grafts have been considered but none has been consistently successful,[8] and each has its own related morbidity from the harvest site.

The author's own audit of outcome after failed arthroscopy and subsequent open operation shows success in roughly 60%, and this is increasingly being seen in other practices where arthroscopy, not open operation, is considered the first option.[19] Primary open operation should therefore be avoided as arthroscopy is often successful irrespective of the Wilkes stage.[7,9]

The final common pathway if open operation fails is total joint replacement, assuming that the NICE criteria have been met.[3,10] Open operation should be considered only once and any abnormality should be treated at this stage. If it is unsuccessful then further operation is also likely to be unsuccessful, as all the causes should have been dealt with initially. Repeated open operation has been shown to cause an increased likelihood of dysaesthetic pain, and also reduces the success of total joint replacement.

Rheumatoid diseases

Rheumatoid disorders do not commonly present in the TMJ. They should be managed with the rest of the disease under the care of the rheumatologist, potentially with disease-