Management of acute dislocation of the temporomandibular joint in dental practice

Précis
Temporal mandibular joint dislocation may present acutely to the dentist. This article discusses its presentation and management.

Abstract
Acute dislocation of the temporomandibular joint is a situation that, although rare, may present to the dentist in practice at any time. A number of activities, such as removal of a tooth, may cause dislocation. The event is painful and distressing for the patient, their family and the dental team. Prompt management minimises discomfort, distress and long-term morbidity to the patient. We describe the aetiology of acute dislocation and outline a number of techniques that will aid the clinician in dealing with this event.

Introduction
The temporomandibular joint or TMJ is a ginglymo-arthrodial joint whose articulation involves both sliding and hinge type movements. In the closed position, the condyle of the mandible lies in the glenoid fossa of the temporal bone. A fibrocartilagenous disc lies between these bones. The joint is encapsulated by fibrous tissue. A number of weak ligaments, as well as the four muscles of mastication (masseter, temporalis, medial and lateral pterygoid) aid in the movement of the joint.1 The ligaments of the joint (lateral, sphenomandibular and stylomandibular) are only condensations of fascia and are not true ligaments (Figure 1). Dislocation of the joint may be uni- or bilateral. It may also be anterior, posterior, superior or lateral. Anterior dislocations are by far the most common. The other dislocation types are commonly associated with trauma and concurrent fractures. Anterior dislocations occur when the condyle leaves the glenoid fossa and moves to lie anterior to the articular eminence of the temporal bone (Figure 2). In normal closing a complex series of muscle activities occur whereby the mandibular condyle is moved posterior to the articular eminence before being translated superiorly into the glenoid fossa. In dislocation this sequence is broken and the condyle instead moves superiorly first prior to retraction. A variety of activities...
may lead to acute anterior dislocation. These generally involve maximal opening of the mandible and can include yawning, mastication, laughing, dental treatment, procedures involving general anaesthesia and even sedation. The potential for dislocation exists in practice with wide or repeated opening of the TMJ.

**Presentation**

A patient who dislocates within the dental practice or who arrives as an emergency will generally exhibit a number of signs and symptoms. The patient will be locked open and unable to bring their teeth together (Figures 3 and 4). This will be associated with pain and spasm, as the muscles of mastication attempt to correct the alteration. The patient will be unable to speak clearly. A depression in the pre-auricular area may also be seen (Figure 5). Radiographic examination (e.g., OPG) would confirm the anterior position of the condyle but should not be needed for diagnosis (Figure 6).

**Management**

A number of techniques exist to aid in the management and reduction of the dislocation. Central to all techniques is reassurance and explanation to the patient. The patient should be calmed and the procedure and good prognosis explained. Once reassurance is achieved, the clinician should attempt manual reduction as soon as possible. A delay in reduction will cause increased muscle spasm and associated pain. A delay often inhibits simple reduction and necessitates referral for reduction under sedation or general anaesthesia.

**Classic technique**

The clinician aims to direct a downwards and backwards force to the mandible. This is achieved by placing the clinician’s thumbs on the outer aspect of the occlusal surface of the mandibular molars bilaterally, and then pushing gently, with increasing pressure downwards. At the same time, with the fingers, gentle upwards pressure is placed on the chin (Figure 7). The patient’s mandible should be at the level of, or below the clinician’s elbow to allow for adequate but gentle pressure. The effort required is such as to overcome the muscular spasm and guide the condyle down along the front of the articular eminence and back into the glenoid fossa. The patient needs to work with you and follow your movements. The patient may also experience a brief increase in pain during the procedure but immediate relief upon the reduction. The dentist should avoid placing their fingers on the occlusal surface of the teeth as the reduction may cause the patient to snap shut and inadvertently bite the dentist’s thumbs.

**Alternative techniques**

Although the classic technique is generally successful and most commonly used, a number of alternative techniques have been described. In the ipsilateral approach, both thumbs are placed on one posterior side and then the force is applied in the same way as before. This allows for unilateral reduction and is repeated on the opposite side to allow for complete bilateral reduction. Another ipsilateral approach has been described, which comprises an extra-oral component. In this approach, the displaced condyle is located extra-
orally and a downward force is placed on this using the clinician’s thumb to direct the condyle inferiorly along the articular eminence. This may also be combined with the other thumb exerting a posterior force intraorally similar to the classic technique (Figure 8). Once again this allows for unilateral before bilateral reduction. An interesting and completely different technique that has been described is the wrist pivot reduction. In this technique the clinician grasps the mandible bilaterally by placing his/her thumbs in the menton region of the mandible and resting the other fingers of both hands on the occlusal surfaces of the mandibular teeth. Then with an upward force directed at menton and a downward force on the teeth, the clinician’s wrist will pivot towards the patient and allow the condyles to reduce.

If the reduction has been successful, any planned treatment should be cancelled and the patient sent home following reassurance and advice on analgesia. The patient should be advised to eat a soft diet for two to three days and to avoid activity involving maximal opening. Dental treatment may recommence in two weeks. If the dislocation occurs again, the patient should be referred to an oral and maxillofacial surgeon for a surgical opinion.

Advanced management
If the above techniques are applied swiftly and carefully, an uncomplicated and speedy reduction should be possible. Unfortunately this is not always the case. The muscle spasm or pain or both encountered by the patient may be too great for them to undergo a simple reduction. In a similar fashion, a patient may present to the clinician with an open lock that has occurred some time previously. This delay may also limit the use of the above techniques due to prolonged muscle spasm, although an attempt should still be made.
If the clinician is unable to reduce the dislocation, referral to the local maxillofacial surgeon, dental hospital, or accident and emergency department is generally required. In this setting, conscious sedation will be used in combination with the aforementioned techniques to overcome the difficulties in reduction. Local anaesthetic techniques in the hospital setting have also been described, which involve neural blocks of the involved muscles to allow for reduction. Rarely, a surgical approach involving general anaesthetic may be required if the management proves problematic. Chronic dislocation can occur in some patients and is managed surgically in a variety of ways that aim to improve the stability of the joint, induce local muscle scarring or allow unrestricted reduction, e.g., eminectomy. Alterations are generally made to either the ligaments, musculature or bony anatomy of the joint.

Summary
Although a rare occurrence, acute dislocation of the TMJ is a painful and distressing event that can arise in dental practice. The clinician should be familiar with and confident in attempting reduction so as to minimise patient distress and reduce the need for referral. A number of techniques may be performed, which have been shown to be successful in achieving this aim.

References