Anterior bilateral temporomandibular joint dislocation: an emergency presentation

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Abstract

Anterior dislocation of the temporomandibular joint (TMJ) though an infrequent presentation at the emergency department; often demands an immediate reduction to relieve discomfort and prevent adverse long-term sequelae. A simple and effective technique to reduce the dislocation is successfully demonstrated by putting the operator's thumbs over the molar teeth of the patient and pushing the dislocated jaw downward and backward. We report the case of a patient who presented at our accident and emergency department with bilateral anterior TMJ dislocation and was successfully reduced with this simple technique.

Keywords: Temporomandibular joints (TMJ), dislocation

Introduction

Although TMJ dislocation is an infrequent presentation to the emergency department, immediate reduction is often necessitated to relieve the pain and discomfort of the patient[1,2]. Temporo-mandibular dislocation is a well-recognized complication of insertion of relatively large diameter object in the mouth[3,5].

Normal TMJ function depends upon coordinated muscle contraction around an intact condyle and disc complex[2,4]. Normal function involves both rotation of the mandibular condyle and translation of the condyle along the articular eminence[5]. Anterior dislocation of the temporomandibular joint is the most common form of TMJ dislocation[2,5]. It occurs when the mandibular condyle is displaced anteriorly beyond the articular eminence.

Early recognition and treatment of this condition would reduce the incidence of long-term sequalae such as fibrosis of the joint capsule[1,4,5]. Hence, we report the case of a young woman with acute bilateral anterior TMJ dislocation following insertion of torch light handle in the mouth who presented to our accident and emergency department. To the best of our knowledge, this is the first of such report from our centre.

Case Report

A 32 year old woman was referred to the accident and emergency of the Lagos University Teaching Hospital from a General Hospital with a 17 hour history of inability to close her mouth. She stated that this occurred after insertion of torch light handle in the mouth while trying to serve dinner (torch light in **(Figure 1)** estimated diameter was 100mm). She denied any previous history of trauma, surgery, illness or occurrence of TMJ dislocation.

Clinical examination showed a young woman in discomfort that was unable to close her mouth, had drooling of saliva and protruded chin without any lateral deviation of the mandible **(Figure 2)**. She was not able to speak except with pain. A palpable pre-auricular depression consistent with condylar dislocation from the glenoid fossa was present bilaterally **(Figure 3)**. Based on the patient's history and clinical examination, a diagnosis of anterior bilateral TMJ dislocation was made.

Conventional Hippocratic transoral reduction technique without sedation or anaesthesia was attempted successfully. This involved the operator while facing the patient, applied firm downward pressure with padded gloved thumbs over the occlusal surfaces of the patient's inferior molars bilaterally, together with an upward and backward force applied to the underside of the chin with the fingers as described in various references. Crepe bandage was fitted to support the jaw and prevent recurrence of the problem. The patient was told to refrain from opening her mouth widely for several weeks and to support her jaw when yawning. The use of a soft diet was also recommended and 50mg twice daily of diclofenac potassium tablet after meal for 7 days was prescribed following reduction of the dislocation to allow recovery.

Post operative review was uneventful and on examination a week later there was full range of mandibular movement. She was later reevaluated monthly for about 3 months with no further episodes of TMJ dislocation reported. The patient was subsequently discharged in good condition.

Figure 1. The torch light that was inserted in the mouth

Figure 2. The patient at presentation

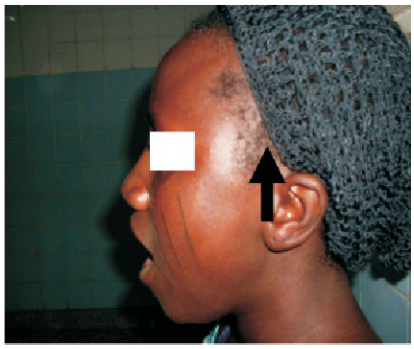

Figure 3. Arrow pointing at pre-auricular depression

Figure 4. View of patient immediately after reduction of the dislocation.

Discussion

TMJ dislocation is an infrequent presentation to the emergency department[1,2]. Lowery et al reported a prevalence of less than 0.1% over a 7 year period at two accident and emergency centres. TMJ dislocation though an infrequent problem at emergency department, often demands immediate reduction to relieve pain and discomfort of the patient[1,2].

Acute dislocation of the temporomandibular joint is the displacement of the condyle out of the glenoid fossa that is not self reducing[2,4,5] . TMJ dislocation represents 3% of all reported dislocated joints in the body[5]. Our patient is female, this agrees with previous reports that the highest incidence of dislocated TMJ is in females[3,5]. The age presentation however falls outside the reported peak age incidence of 20 to 29 years[3,5]. The reason for the high incidence of TMJ dislocation in females is not yet well understood.

Multiple causes for TMJ dislocation have been published in the literature[5]. Potential causes of TMJ dislocation includes any action that may involved the mouth being maximally open such as yawning, trying to chew large food bolus[2,3,4,5]. It can be initiated by prolonged wide opening such as dental treatment, vomiting, singing, screaming, and laughing and during an epileptic seizure[4,5]. Ugboko et al (2005) showed that excessive mouth opening while yawning is the commonest cause of temporomandibular joint dislocation in Nigerians. The literature has implicated other causes of TMJ dislocation, these include trauma when the mouth is open manipulation of the mandible while patient is under general anaesthesia, intravenous sedation, Ehlers-Danlos Syndrome, trauma and tetanus[2,6,7]. TMJ dislocation is a well-recognized complication of direct laryngoscopy [6]. Patients undergoing psychiatric or psychological chemotherapy have been reported to experience TMJ dislocation as a side effect of certain medications[4]. Excessive tooth abrasion, severe malocclusion and loss of dentition (leading to over closure) have been associated with TMJ dislocation[4].

The TMJ is a ginglymoarthrodial joint with superior and inferior chambers separated by a fibrocartilageneous disc[2]. The TMJ combines gliding and hinge motions. Dislocation can occur anteriorly, posteriorly, laterally or superiorly[2,4,5]. Several reports have demonstrated that anterior dislocation is the most common type of TMJ dislocation [2,5,6].

The mechanism of anterior bilateral TMJ dislocation has been widely discussed in the literature[2,5]. Dislocation may occur when there is a lack of coordination of muscular action in the first phase of closing from maximal opening[4]. The protractor muscles (lateral pterygoids) fail to relax at the initial stage of closing, before the elevator muscles (temporalis and masseter) contract to elevate the mandible[2,4,9]. Such a situation might have arisen when trying to fit relatively large diameter torchlight into the mouth, as occurred in this patient. The condyle travels anteriorly along the eminence and become locked in anterior superior aspect of the eminence (infratemporal fossa)[2,4,5,6]. Kai et al (2006) using arthrographic fluoroscopic examination further demonstrated that the anterior bands of the disc mechanically obstruct the anteriorly displaced condyles from posterior movement into the articular fossae to various degrees at open-mouth position[8].

Once established, the dislocation is perpetuated by painful spasm of the masticatory muscles, maintained by neural reflexes from the injured joint structures[2,4,9]. These reflex spasms spread bilaterally over the entire group of masticatory muscles[2,4,5]. Trismus results and the condyle cannot return back to the glenoid fossa [2,4,9] .

Although radiographs, particularly a panoramic view have been demonstrated to be extremely useful to confirm the diagnosis of anterior dislocation of the mandible, diagnosis can often be made by clinical signs and symptoms[6]. Our patient presented to us with the classical clinical presentation of inability to close the mouth, pre-auricular depression of the skin, drooling of saliva, difficulty talking, protruded chin and severe TMJ pain as reported in the literature[2,4]. Deviation of the chin to the contralateral side occurs in a unilateral dislocation[4].

The conventional Hippocratic method been well described in various emergency medicine and oral surgery

textbooks[4,9]. This involve placing protected thumbs on the occlusal surface of the patient's molars, wrapping the fingers around the fingers laterally around the mandible and then applying a constant inferior and posterior force, gliding the condyles back into the glenoid fossa[4,9]. Similar results have been accomplished with this maneuver, standing behind or to one side of the patient [9].

Various modifications of this method have been reported, all require the same principle of overcoming of the pterygoid, masseter and temporalis muscles to achieve reduction[4,9]. To protect the operator's hand fingers during reduction, some investigators have suggested the use of bite block[4,9]. This might prevent accidental human bite to the operator in event of sudden closure of the mandible due to spasm. Furthermore, an author ref suggested placing the fingers on the external oblique ridge instead of the molars' occlusal surfaces to avoid operator injury. Although bite block was not used in this particular patient neither was the external ridge utilized, the fingers of the operator were however, protected with thick layers of gauze.

The use of this conventional reduction method without anaesthesia has been successfully demonstrated in emergency and acute conditions[1,2,5]; however, if this is impossible, reduction under anaesthesia or intravenous sedation are possible options[2,9]. Reduction with local analgesia alone or augumented by muscle relaxants such as diazepam, or under general analgesia with the aid of a muscle relaxant have been successful attempted in the literature[9]. Unilateral injection of local anaesthetics might be adequate to achieve reduction[9]. The mechanism of action is the elimination of painful neuromuscular reflex bilaterally to the masticatory muscles, thus, permitting the patient to close the mouth and retract the mandible into normal position[4,9]. Bradley et al[9] suggested that this local analgesia should also be extended to include the motor nerves of the major masticatory muscles whose spasm is perpetuating the dislocation. This was demonstrated by injecting deeply in the midpoint of the sigmoid notch which anaesthesize the motor supply of the masseter. The needle may then be moved posteriorly towards the lateral pterygoid muscle and subsequently antero-superiorly to involve the deep temporal nerves, posterior to the coronoid process, where they enter the temporalis muscle[9]. Reduction under sedation with intravenous diazepam or under general anaesthetic and muscle relaxant should enable the operator to success if the above fails[5,6,9].

Once reduced, some form of limitation of the mandibular movement for 7 to 14 days with maxillomandibular fixation, crepe bandage or cervical collar in case of a child have been suggested in the literature[4,6,9]. This is aimed to allow inflammation and oedema to subside and stabilize the joint[4,6,9].

The follow up was uneventful possibly due to our treatment regime and the patient's compliance with post operative recommendations that included refraining from habitual insertion of such large diameter object in the mouth.

Conclusion

Although TMJ presentation is an infrequent presentation at emergency departments, this report highlights the importance of recognizing such patients and possessing the requisite TMJ dislocation reduction skill maneuver in A/E department repertoire. This report also highlights the danger of inserting sizeable objects in the mouth such as torch light which can likely cause jaw dislocation.

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