Conservative Management of Chronic TMJ Dislocation: An Old Technique Revived

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Abstract A temporomandibular joint (TMJ) dislocation is a condition in which the mandibular condyle is displaced from its articulations and requires manipulation by another individual to return to its normal position. TMJ dislocation is subdivided into acute, chronic recurrent or chronic persistent dislocations. Conservative (closed) or surgical (open) manipulation may be required to reduce the dislocated condyle. We present two cases of bilateral chronic protracted TMJ dislocation since 2 months. Following several unsuccessful attempts of manual reduction the patients were managed conservatively by placing posterior acrylic bite blocks and application of elastic traction which reduced the dislocated condyles satisfactorily in 2–3 weeks time. Every case of prolonged dislocation has its own unique features. Conservative approaches should be attempted initially, more radical treatment being used after these have failed.

Keywords TMJ dislocations · Mandibular condyle

Introduction

Dislocation of the TMJ is the dislodgement of the head of the condyle from its normal position in the glenoid fossa. It can be partial (subluxation) or complete (luxation), bilateral or unilateral, acute, chronic protracted or chronic recurrent [1]. The pathogenesis of mandibular dislocation is variable; however, it generally involves exertion of excessive force upon the mandible. Miller and Murphy [2]

placed predisposing factors into the following six categories:

(1) birth-related (congenital weakness of articular ligaments), (2) iatrogenic (prolonged dental procedures, traumatic extractions, injudicious use of mouth prop, manipulation under general anesthesia, and improper use of laryngoscope or bronchoscope), (3) trauma, (4) drug-induced (reported with use of reserpine and phenothiazines), (5) physiologic (yawning, sneezing), and (6) systemic (epilepsy, involuntary muscle contraction). Anterior dislocations are the most common and occur due to displacement of the condyle anterior to the articular eminence of the temporal bone [1].

Acute dislocation presents within 2 weeks and it is readily reducible by the Hippocratic maneuver. After 2 weeks, spasms and shortening of the temporalis and masseter muscles occur and reduction becomes difficult to achieve manually. This leads to commencement of chronic protracted dislocation [1].

Case Reports

Case 1

A 29-year-old female presented to the department of Oral Surgery, unable to close her mouth since last 2 months. On examination, lower jaw was protruded with no occlusion and an open bite of 1 cm. Bilaterally, there was preauricular hollowing. The diagnosis of prolonged dislocation of the TM joint was made and confirmed radiographically. OPG revealed bilateral anterior dislocation of TMJ with the condylar heads high up in front of the base of the eminence (Fig. 1). An attempt to reduce the dislocation manually failed. It was then decided to go for open

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Fig. 1 Pre-treatment OPG showing bilateral dislocation of the TMJ

Fig. 3 Proper occlusion achieved after 2 weeks

Fig. 2 After placing the lower denture with posterior bite blocks and elastic tractions

reduction under general anaesthesia. But since the patient had to wait for several weeks to get the operation schedule she was counseled for conservative management using posterior acrylic bite block and elastic traction. After receiving consent from the patient, upper and lower jaw impressions were made. Plaster model was prepared and a lower denture with bilateral posterior bite blocks of 10 mm height was fabricated. In the meantime upper and lower arch bar wiring was done. The denture was then inserted and class III elastic tractions were applied on either side with anterior box elastics (Fig. 2). Patient was advised to massage the masseters and apply hot fomentation over the TMJ region and recalled after 1 week. On 1 week follow up, the mandible seemed to have moved little posterior. OPG revealed the bilateral condylar heads just below the articular eminence. The elastic bands were changed. Patient was again evaluated after 1 week. This time the depression on the both preauricular region disappeared with correction of the anterior cross bite (Fig. 3). OPG was taken which revealed reduction of both condylar head into the glenoid fossa (Fig. 4). Elastic bands were removed. To avoid re-dislocation, cervical collar was applied and patient was advised to avoid excessive jaw movements. After

Fig. 4 OPG after 2 weeks showing reduction of condylar heads into the glenoid fossa

1 week, the arch bars were removed and the cervical collar was maintained for further 1 week.

Case 2

A 62-year-old female presented to the department of Oral Surgery, with similar complaints and features as in case 1. Her OPG revealed bilateral anterior dislocation of the TMJ. Manual reduction by Hippocrates maneuver was attempted using 5 mg diazepam. However, after several attempts reduction could not be achieved.

Considering the patient's age and the fitness for surgical intervention, patient was counseled for conservative management using posterior acrylic bite block and elastic traction. After receiving consent from the patient, the patient was managed in a similar way as in case 1. In this case reduction was achieved in 3 weeks.

Discussion

A dislocation of the TMJ is defined as the dislodgment of the head of the condyle from its normal position in the glenoid fossa [1]. The diagnosis of TMJ dislocation is often clinically based. Typical signs and symptoms seen in

patients with TMJ dislocation include mandibular pain, an inability to occlude, anterior cross bite, and prominent preauricular depressions. However, diagnosis is confirmed by radiograph [3].

Akinbami [1], classified dislocation based on relationship of the head of mandibular condyle to the articular eminence seen on clinico-radiological evaluation into three types (I–III).

Type I	The head of condyle is directly below the tip of the eminence
Type II	The head of the condyle is in front of the tip of the eminence
Type III	The head of the condyle is high up in front of the base of the eminence

The aim of treatment should be directed towards returning the condyles to their original position and conservative methods should be the first line of choice [4].

Early conservative reduction by Hippocrates maneuver with or without local anaesthetics and sedatives is the best treatment. Reduction using this method can be achieved in most cases. However, in some long standing cases manual reduction is difficult. As the duration of dislocation increases, the joint cavity fills with connective tissue, cartilaginous changes occur, adhesions develop between joint surfaces, and there is shortening of the masticatory muscles. Temporalis muscle fibrosis and impingement of the coronoid have also been reported to increase the difficulty of reduction [6].

A variety of conservative surgical techniques have been described for reducing chronic protracted dislocations, including the use of a bone hook passed over the sigmoid notch or inserted into bur holes placed at the angles. A Bristow elevator placed through a temporal incision can be used to apply posterior pressure to the anterior aspect of the condyle, which may force it to move posteriorly [5].

Another conservative treatment is the use of anterior elastic traction with a cork acting as a fulcrum in the molar region to move the condyles posteriorly beneath the anterior slope of the eminence [6]. This unique approach has been reported by Rao [7], who reduced a chronic mandibular dislocation using arch bars and posterior bite splints with strong anterior wiring and Class III vector for the posterior wires. Similar principle was used by Wijmenga et al. in 1986 [4]. They used an intraoral vitallium splint with a fulcrum in the molar region and a plaster head cap and extraoral traction were applied. The aim was to move the condyles into a caudal direction and to stretch the capsule and ligaments. After 3 days, once the capsule and ligaments had been stretched sufficiently, closed reduction under general anesthesia was easily performed.

Another conservative treatment modality involves the injection of local anesthetic in long-standing dislocated

joints. This appears to overcome the muscle spasm that is initiated by pain producing stimuli in the region of the joint, as the anesthetic disrupts the sensory side of pain or the muscle stretch reflexes [5].

Surgical methods are open reduction [4], condylar resection or reduction, increase or decrease in the height of the eminence, removal or repositioning of the meniscus [2], sometimes extended with coronoidectomy [4].

The presented cases were type III TMJ dislocation based on Akinbami's classification (bilateral condylar head located well anterior and superior to the articular eminence) (Fig. 1). After several attempts of unsuccessful manual reduction, we treated the patients with posterior acrylic bite blocks and elastic traction during the interim period required for getting an operation schedule, using the technique traditionally applied by Rao (1980) [7] and Wijmenga et al. (1986) [4]. Due to continuous traction by elastics, the joint ligaments and shortened muscles were stretched, repositioning the condyle in the glenoid fossa. The method worked successfully in both our cases. Even if this kind of management is time consuming and require frequent follow-up, the method is safe as compared to inherent risks of surgery under general anaesthesia. The method is especially suitable in elderly patients not fit for surgical intervention and/or general anaesthesia, patients with poor financial status and in government hospital setups where the patients need to wait for several weeks to months for a surgery date, further deteriorating their condition. This waiting period can be utilized for this technique of conservative reduction as done in our cases. In cases of failure to reduce, the patient can be taken up for surgery on the planned date.

In the presented cases, as both the condyles were reduced to their normal position in 2–3 weeks time (which otherwise were scheduled for surgical reduction), we found this old conservative technique effective in the management of chronic protracted dislocation of TMJ.

Conclusion

Surgical management of TMJ dislocation may not always be feasible due to various factors like patient co-morbidities, lack of operating theater, lack of surgical skill, financial status, etc. Thus, it is important to have a knowledge of various conservative methods of reduction in our armamentarium. We recommend the use of bite blocks with elastic traction for TMJ reduction prior to surgical intervention.

Conflict of interest None declared.

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Ethical approval Not required but patient consent was taken.

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