CASE REPORT

Conservative management protocol for chronic recurrent TMJ dislocation in mentally challenged young adult: Case report

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Abstract

Temporomandibular joint (TMJ) dislocation is a common problem faced in outpatient setting by maxillofacial surgeons and dentist. It is an excruciating pain instance that appears when condyle becomes locked to anterior superior aspect of the articular eminence. It may be acute or chronic as well as it may show unilateral or bilateral involvement. Dislocation of the both TMJs is more prevalent with the mandible in a straight open position, whereas with a single-sided dislocation, the mandible is deviated to the opposite side, with a partially open mouth. Dislocation of the TMJ represents 3% of all cases of reported dislocated joints in the body. The Management of chronic recurrent TMJ dislocation can be done by surgical (Invasive) and nonsurgical (Conservative) methods. Non-surgical (conservative) methods comprise physiotherapy, occlusal splint, and avoidance of yawning, laughing which can cause large-mouth-opening prescribing muscle relaxants and soft diet, injection of sclerosing agents such as 5% sodium morrhuate and 5% ethanolamine oleate, autohemotherapy into the TMJ pericapsular tissues, and injection of botulinum toxin into the masticatory muscles. There are currently neither abundant scientific literature nor acceptable treatment protocol for the management of TMJ dislocation in mentally compromised individuals. We propose a new management protocol for chronic recurrent TMJ dislocation using autologous blood injection and immobilization with the help of bandages in a mentally compromised young adult through this case report.

Keywords:
Autologous blood injection, hypermobility, reclamation autohemotherapy, recurrent temporomandibular joint dislocation, sclerotherapy

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Introduction

Temporomandibular joint (TMJ) dislocation is a common problem faced in outpatient setting by maxillofacial surgeons and dentist. It is an excruciating pain instance that appears when condyle becomes locked to anterior superior aspect of the articular eminence. It may be acute or chronic as well as it may show unilateral or bilateral involvement. Acute mandibular dislocation can be commonly treated using conservative therapy so that they can relocate the condyle in the glenoid fossa by manual pressure applied to the mandible in initially downward and then upward direction. A condition can be called as chronic recurrent TMJ dislocation when condyle dislocate continuously within glenoid fossa multiple times that are not self-limiting but progressive without treatment interventions. The episodes TMJ dislocation triggered by routine activities such as yawning and laughing as well as instances comprises prolonged mouth opening such as dental treatment and general anesthesia procedures.

Dislocation of the both TMJs is more prevalent with the mandible in a straight open position, whereas with a single-sided dislocation, the mandible is deviated to the opposite side, with a partially open mouth. Dislocation of the TMJ represents 3% of all cases of reported dislocated joints in the body.

Chronic recurrent TMJ dislocation is caused by a combination of factors comprising leniency of the TMJ ligaments, TMJ capsule fragility, an abnormal size of the eminence, excessive muscle activity/spasms, trauma, and unusual chewing motion that interfere with translation of condyle back to its original position.

The consequence of recurrent TMJ dislocation is a progressive internal derangement of TMJ which is caused due to injury to the disc, capsule, and ligaments. Myriad treatment options are available for the management of chronic recurrent TMJ
dislocation which can be broadly classified into surgical (invasive) and non-surgical (conservative) methods. Non-surgical (conservative) methods comprise not only physiotherapy, occlusal splint, and avoidance of yawning, laughing which can cause large-mouth-opening prescribing muscle relaxants and soft diet but also injection of sclerosing agents such as 5% sodium morrhuate and 5% ethanolamine oleate (EO), autohemotherapy into the TMJ pericapsular tissues, and injection of botulinum toxin into the masticatory muscles.[6]

Prolotherapy is a method of strengthening lax ligaments by injecting various types of sclerosing or proliferative solutions. It is also known as “sclerotherapy,” “proliferative injection therapy,” “regenerative injection therapy,” or “ligament sclerotherapy.” Autologous blood and EO are used as proliferant solutions.[6,8]

Classical surgical protocol includes the mechanical tightening of the capsule, the fastening of the joint parts, the creation of mechanical interference in the condylar parts, the elimination of interference in the condylar path by eminectomy, reduction of lateral pterygoid muscle pull by myotomy with simultaneous implantation of a silastic sheet, capsular plication, and temporalis tendon scarification. Redirectioning of the temporalis tendon, deepening of the glenoid fossa by resection of the disc, and condylotomy are also surgical (invasive) regime used for the management of chronic recurrent TMJ dislocation.[1,9]

The aim of this article is to propose a new management protocol for chronic recurrent TMJ dislocation using autologous blood injection and immobilization with the help of bandages in a mentally compromised young adult through this case report and to report observations and results of this conservative technique.

Case Report

An 18-year-old female patient was referred to the Department of Oral and Maxillofacial Surgery, K.D. Dental College and Hospital, Mathura, with a chief complaint repeated locking of lower jaw and being unable to close the mouth [Figure 1].

On taking case history revealed that the patient was mentally challenged, she had difficulty in following the instruction as well as giving appropriate response. She also had deformed thoracic vertebrae, parent of patient brought previous computed tomography scan brain which revealed calcification foci in the brain. General examinations also revealed brownish-black scaly patches over the arms. The medical history revealed that various clinicians tried to manage this distressing condition by means of manual reduction at multiple occasions, but none of them were successful in eliminating this condition. Once chronic dislocation locked that the lower jaw patient was unable to close the mouth. History of this distressful condition dates back to about 4–5 years when the patient experienced this for 1st time. The patient had no history of previous fracture of mandible.

Autohemotherapy for chronic TMJ dislocation was made based on clinical examination, radiographic investigations, and case history. As the patient was mentally challenged and had difficulty in following the instructions, invasive surgical treatments as well as conservative treatments such as intermaxillary fixation using Erich’s arch bar, occlusal splint, and Dautery’s procedure cannot be used. Hence, prolotherapy using autologous blood injection therapy was decided for the management of chronic recurrent TMJ dislocation.

The patient draped in appropriate manner at first followed by scrubbing the skin overlying the auricular area and TMJ with antiseptic solution. Auriculotemporal nerve was anesthetized using local anesthetic agent, 3–4 ml local anesthetic agent lidocaine HCl 2% + epinephrine 1:200,000 is delivered at a point just anterior to the tragus [Figure 3a]. After achieving signs and symptoms of anesthesia, 4–5 ml of blood is drawn from the antecubital fossa for autologous blood injection. The articular fossa is identified and access superior joint space, pericapsular tissue achieved by injecting 19 gauge needle at a point which is arbitrarily 10 mm anterior and 2 mm inferior to canthotragal line [Figure 3b]. A 2 mL of autologous blood was
injected into the upper joint space and 1 mL around pericapsular tissue. Concurrently, opening the mouth and manipulation of the mandible forward was done to open the joint space. Same procedure is performed on opposite side simultaneously. Immobilization is achieved by placement of barrel bandage, as intermaxillary fixation using Erich’s arch bar or ivy eyelet wiring avoided with regard to mental status of patient. The patient showed decrease in episodes of dislocations but not completely resolved even after restricted mouth opening for 2 weeks hence the decided to repeat the procedure.

After performing the new management protocol for recurrent dislocation of the condyle using autologous blood injection followed by immobilization with the help of bandages for short period of time, pain and episodes of dislocation subsided along with patient began closing mouth on itself without any external support which clearly indicates successful management of recurrent dislocation of the TMJ [Figure 4].

**Discussion**

Mandibular hypermobility is a situation described as an excessive laxity of the TMJ that permits excessive mandibular motion. The mandibular hypermobility is divided into subluxation and dislocation. In subluxation, the condyle travels beyond articular eminence, which is usually end point of condylar motion. Whereas, in dislocation, condyle dislocates continuously within glenoid fossa due to which mandible locks while opening the mouth. The patient seeks treatment for dislocation as early as possible because this condition is self-limiting.

Absolute destruction of localized structure by sclerosants is essential in lymphangioma, vascular malformation, and renal and hepatic cysts, but the use of sclerosant in TMJ is very specific, only restriction of the sliding of the condyle over the articular eminence is required instead of destruction of localized structure. Scar formation and contraction are acceptable.

The autologous blood injection is an sclerosant/proliferant solutions based on hypothesis in which mandibular movements is restricted by inducing fibrosis in superior joint space and pericapsular tissues by injecting autologous blood into TMJ. 

In the current case report, we discovered that the mandibular range of motion reduced after autologous blood injection in TMJ, the patient was able to close the mouth itself without any external support, complains of pain also resolved that these findings are similar to those reported in review literature.

Louis Schultz in 1937 popularized prolotherapy for the management of painful subluxation of the TMJ after treating 60 patients, encouraging results were obtained through this study. It involves the injection of an irritant solution into a joint space, weakened ligament, or tendon insertion, to resolve complaint of pain. Autologous blood injection is commonly used prolotherapy solution for the treatment of TMJ subluxation and was first described in 1964 by Dr. Brachmann.

The mechanism of the action of autologous blood is creation of injury which mimics natural wound by injecting blood into the TMJ, which later begins the development of inflammatory cascades that cause fibrosis induction, adhesion formation, and periarticular soft-tissue scarring, with the restriction of mandibular motion to avert initial stretching of newly formed fibrous tissue.

Degenerative damage of joint, chondrocyte apoptosis, and cartilage degeneration can cause permanent joint destruction such destruction may occur by injecting autologous blood into TMJ as per few review literature but in vivo study on rabbit by Çandırlı et al. rejected the theory of permanent joint destruction due autologous blood injection through results obtained in their study.

Immobilization of mandibular movement has synergistic effect with prolotherapy for management of painful subluxation of the TMJ, as reduced movement accelerate the fibrosis in and around the TMJ.

Immobilization can be achieved by placement of barrel bandage, intermaxillary fixation using Erich’s arch bar or ivy eyelet wiring, etc. The protocol for mandibular movement restriction ranges from 7 days to 1 month.
Choice of immobilization depends on mental state of the patient, degree of cooperation by patient, duration of immobilization, status of dentition, patient’s oral hygiene habits, etc., by taking consideration mental status and other factors we decided to achieve immobilization through use of barrel bandage, which was applied for 3 weeks from first session of autologous blood injection. The method and duration of immobilization used in our case report are according to the review literature.

It is recommended to use 2 cc in the superior joint space and 1 cc in the pericapsular tissue or 2 cc autologous blood injection into the superior joint space, whereas other researchers suggest range of volume from 2 cc to 4 cc in the upper joint space and 1.0 to 1.5 cc into pericapsular structures for the management of subluxation of the TMJ.\cite{2,5}

In our case report, we use autologous blood which injected 2 cc in the superior joint space and 1 cc in the pericapsular tissue as per recommended dosage. Repetition of autologous blood injection is a controversial topic, as there is no universally accepted protocol formulated till now. Researcher Machon et al. advocated that prolotherapy should be repeated only if there is reoccurrence of subluxation on contrary, Schulz et al. recommended repetition of autologous blood injection twice a week for 3 weeks regardless of recurrent attack.\cite{4,6}

In the following case report, we decided to repeat the procedure of prolotherapy on the basis of the presence of episodes of dislocation and intensity of pain. There were no potential disadvantage and complications of this technique recorded during the active treatment period as well as follow-up period. Regular follow-up was done at an interval every weeks initially, later after completion of therapy, follow-up was done at an interval of 2 weeks for about 1 year. The findings and results of this case study give addition of new combined approach for the management of chronic recurrent TMJ dislocation among mentally compromised individual to review literature.

**Conclusion**

Autologous blood injection is an effective prolotherapy method in the non-surgical management of chronic recurrent TMJ dislocation. It is not only successful in complete resolution of episodes of dislocations along with significant tightening of TMJ but also reduces the mouth opening and pain was reported in our case report. It is simple, non-invasive yet effective method in the management of chronic recurrent TMJ dislocation. It has fewer to almost no side effects and complications. Autologous blood injection can be used as primary therapy in cases where the patient demands non-surgical therapy or those cases which are unfit for invasive therapy due to local or systemic factors. Cases, where it is not primarily used, it can be at least used, used as early treatment prior surgical interventions. Through our experience, we can conclude that autologous blood injection can be successfully used even in mentally challenged individual along with immobilization without any undue complications or side effects. Limitations of this study include size of the sample and lack of comparison with other techniques. Hence, more clinical studies and research are required in upcoming years to prove its efficiency of this treatment modality.

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