

Autologous Blood Injection for Treatment of Recurrent TMJ Dislocation: Novel Technique

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ABSTRACT

Purpose: Many different surgical techniques for the treatment of chronic recurrent temporomandibular joint (TMJ) dislocation have been described. We discuss a technique of autologous blood injection to the TMJ for treatment of chronic recurrent TMJ dislocation. **Materials and Methods:** Forty two patients diagnosed with chronic recurrent TMJ dislocation were treated by bilateral injections of autologous blood into the upper joint space and around the TMJ capsules bilaterally. They consisted of 10 males and 32 females, with an average age of 32.7 years old (range, 17-68 years). Average duration of symptoms was 11 months (range, 2 months to 4 years). Average number of episodes of dislocation was once a day (range, every mouth opening to once a week). Nine of the patients were able to self-reduce the dislocation, whereas others required assistance. **Results:** Eighty percent had a successful outcome and required no further treatment at their 1-year follow-up. **Conclusion:** This procedure has proven to be safe, simple, and cost effective for the treatment of TMJ dislocation

Keywords: autologous blood injection, TMJ dislocation.

INTRODUCTION

Dislocation of the temporomandibular joint (TMJ) occurs when the condylar process moves anterior over the articular eminence, and can't be returned voluntarily to its normal position. In this situation, the mouth remains open due to the muscle action of the elevator muscles. Luxation of the joint refers to complete dislocation, while subluxation is a partial dislocation actually a form of hypermobility. Most commonly, luxation takes place during normal life activity when the mouth opened too widely like yawning, during tooth extraction, or during general anesthesia procedures.¹ This condition may be acute or chronic and recurrent chronic.² Acute mandibular dislocation is managed by pressing the mandible downwards and then pulling it back upwards to relocate the condyle in the glenoid fossa. If the condyle continues to dislocate many times, it is described as chronic recurrent TMJ dislocation. Dislocation of TMJ is generally of idiopathic origin, while many theories tried to explain its onset. It is commonly associated with poor development of the articular fossa, laxity of the temporomandibular ligament or joint capsule, or excessive activity of the lateral pterygoid and infrahyoid muscles due to drug use or disease.³

Many surgical and nonsurgical techniques have been applied for treatment of patients with chronic recurrent TMJ dislocation. The nonsurgical methods depend on restriction of the mandibular motion, injection of botulinum toxin, and injection of sclerosing agents^{4,5} however the nonsurgical methods are not always successful; therefore, multiple surgical interventions⁶⁻⁷ have been tried including capsular plication, reduction or augmentation of the articular eminence, lateral pterygoid myotomy, and condylectomy.

Autologous blood injection into the TMJ had been reported as a successful method in treatment of patients with recurrent TMJ dislocation.⁸ This technique has recently been reintroduced by many authors, as Machon et al.⁹, Hasson et al¹ and Kato et al.¹⁰

The aim of this study was to report our experience with autologous blood injection technique as a simple, safe, and cost effective modality in treatment of chronic recurrent TMJ dislocation.

PATIENTS AND METHODS

This was a prospective study conducted by the authors in two centers; the Maxillofacial Surgery Unit, Sohag University Hospital and

Maxillofacial Surgery Unit, Assiut University Hospital.

The study included 42 patients. Those complaining of bilateral chronic recurrent TMJ dislocation. They were diagnosed as chronic recurrent TMJ dislocation depending on the clinical and radiological examinations in form of panoramic view and CT scan. The patients were 10 males and 32 females, with an average age of 32.7 years (range from 17 to 68 years). Their maximal mouth opening, measured between maxillary and mandibular incisal edges, ranged between 34 and 47 mm, with an average of 40.5.

Average duration of symptoms was 11 months (range, 2 months to 4 years). Average number of episodes of dislocations (range, every mouth opening to once / week). 9 of the patients were able to self-reduce the dislocation, whereas others required assistance.

Technique (fig. 1): The skin overlying the TMJ was scrubbed via an antiseptic solution, and local anesthesia was given to the auriculotemporal nerve. The articular fossa was located at a point 10 mm anterior to the tragus of the ear and 2 mm inferior to the tragal-canthal line. At this location, a 18-gauge needle was inserted into superior joint space. While the patient opens his mouth, the joint space was flushed with 3 ml of saline. The patient was asked to close and open the mouth several times to take off the fluid through the same needle. 3ml of autologous blood was withdrawn from the patient, 2ml blood was injected into the SJS, and 1 ml injected into pericapsular tissues. The same procedures were repeated for the opposite joint. After completion of the injection procedures, an elastic bandage was applied and left for one week. All patients were instructed to restrict their mouth opening and to eat only soft foods for 7 days. Analgesia is given to the patient when needed. The patients were asked to return for follow-up at one week, 2 weeks, 4 weeks, 3 months, 6 months, and 1 year after receiving their injections. The follow-up parameters included clinical examination, measuring the maximal mouth opening, and making panoramic radiographs. The data were collected and analyzed to evaluate the value of autologous blood injection for management of chronic recurrent dislocation of the TMJ.



Fig 1. Site of injection.

RESULTS

26 patients reported no dislocation of the TMJ after a single injection during the whole follow up period.

16 patients started to dislocate, 7 of them started to dislocate after 2 weeks, 3 started to dislocate after 4 weeks while the remaining 6 patients started to dislocate after 3 months. All of them received a 2nd injection, and 7 of them reported no dislocation after the second injection while the remaining 9 patients continued to dislocate. Of these 9 patients, 5 patients refused the 3rd injection while the remaining 4 received a 3rd injection however they continue to dislocate.

So that, at the end of the follow up period, 33 patients (80%) of patients had no dislocations of their TMJ either after a single injection (26 patients) or after 2 sessions (7 patients) and the remaining 9 patients (20%) continue to dislocate.

In general the technique is well tolerated by the patients with no complications in the follow up period. There were no scars, no deviation on mouth opening and no facial nerve affection.

The maximal post injection mouth opening is 35 mm with an average decrease about 5 ± 2 mm.

DISCUSSION

Hypermobility of the mandible is divided into luxation, subluxation and dislocation. Subluxation differs from dislocation in that during subluxation, the condyles ride over the articular eminence without staying locked there while in dislocation the condyles move anterior to the articular eminence and cannot be returned voluntarily.¹¹ While the subluxation usually does

not concern the patients, the dislocation interferes with the patient's daily activities. Chronic recurrent dislocation of the TMJ occurs mainly because of laxity of the TMJ ligaments, abnormal eminence size, and muscle hyperactivity. Surgical treatment, e.g. eminectomy, is used in managing of such cases with a success rate up to 85%. However, this is an invasive technique, requiring a hospital stay, general anesthesia, skin incision and bone handling, with an increased risk of complications such as facial nerve injury, altered sensation, swelling, pain, infection, and unpleasant scar.¹²

The use of autologous blood injection in treatment of TMJ dislocation gives a success rate up to 80%. Although it is less successful than eminectomy, it is a less invasive technique, rapid, cost-effective with less much complications.

At the terminal of the follow-up period, 1 year, the results of the current study have demonstrated that injection of autologous blood to both superior joint space and pericapsular tissues gives a success rate (80%). These consequences are in accord with that mentioned by Machon et al.⁹

The use of a single-needle to flush the joint before blood injection is recommended rather than the traditional 2-needle approach, as the risk of blood flowing out through the second point of injection is absent. Therefore, the blood injected into the SJS is retained inside the joint compartment. As well, it reduces the risk of injuring the facial nerve.

CONCLUSION

We could conclude from this study that injection of autologous blood to the TMJ in patients with chronic recurrent dislocation is a simple, safe, and cost-effective technique. Furthermore, it has several advantages, including no tissue dissection and fewer postoperative complications. Furthermore, this technique does not require admission to a hospital or general anesthesia, as it can be carried out under local anesthesia in an outpatient clinic. For such advantages, we recommend the use of autologous blood injection as an initial attempt to treat recurrent TMJ dislocations.

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