



Case Report

Autologous blood injection as a modality of the treatment of temporomandibular joints dislocation: A case report

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ABSTRACT

Many specific surgical procedures have been identified for treating the dislocation of chronic recurrent temporomandibular joints (TMJs). This article addresses an autologous blood injection (ABI) procedure for the TMJ diagnosis of chronic recurrent TMJ dislocation. A 22-year-old patient reported with chronic TMJ dislocation for 3 months. Autologous blood was injected into upper joint space and surrounding pericapsular tissue under local anesthesia. The patient was followed up regularly. The treatment was successful and the patient had no more dislocation of TMJ as inferred from favorable improvement in mouth opening. Autologous blood infusion (ABI) within the articular capsule and/or pericapsular space or joint depression, is one of the most negligibly intrusive treatments methodology for repetitive separations of TMJ, was as of now presented.

Keywords: Temporomandibular joint dislocation, Autologous blood injection, Temporomandibular joint, Joint

INTRODUCTION

Temporomandibular joint (TMJ) is one of the most complex facial structures with diagnosis and management of its anomalies posing unique challenges. Dislocation of the TMJ is a condition which occurs when condyle moves and stays ahead of the eminence. Chronic dislocation of TMJ can happen even during daily activities such as laughing and yawning.^[1,2] It might also happen after too much opening of the mouth while undergoing general anesthesia (GA) and dental treatment. Various surgical and non-surgical procedures have been used in the literature to treat patients with chronic dislocation of TMJ. Conservative methods^[3,4] include limitation of mandibular movements, local anesthetic applications, injection of botulinum toxin into the mastication muscles (causes denervation of muscle that draws the chin down), and injection of sclerosing agents (tincture of iodine, alcohol, and sodium psylliate). Non-surgical methods of treatment are not always helpful; so, multiple surgical procedures, including capsular placcation, reduction or increase of articular eminence, temporalis tendon scarification, lateral pterygoid myotomy, and condylectomy,^[5] have been tried. Some clinicians^[6,7] successfully treated cases of persistent TMJ dislocation with autologous blood in the TMJ in the past.

Brachmann in 1964 first reported autologous blood injection (ABI) as a modality of treatment of TMJ dislocation.^[8] This treatment modality was reintroduced in 2001 by Hasson and Nahlieli.^[9] In 2014, Oshiro *et al.* reviewed clinical and MRI fines after ABI for chronic TMJ dislocation

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therapy.^[10] They found that ABI was minimally invasive, effective, and safe to treat. The concept behind ABI is to restrict mandibular movements by causing fibrosis in the upper joint area, pericapsular tissue, or both, by injecting blood into TMJ. The patient's own blood is pumped into TMJ in this cautious process, thereby preventing the risk of an allergic reaction and post-operative infection. Machon *et al.*^[11] and others have recently reintroduced the technique. The purpose of this study was to evaluate the infusion of ABI in the management for chronic TMJ dislocation.

TECHNIQUE

This procedure can be performed on local anesthesia (LA), LA along with sedation, or GA. The operating surgeon should physically define a path from the ear tragus to the angle of the eye after positioning the patient in the normal way. Along this axis is located the articular fossa (AF) point, 10 mm anterior to ear tragus and 2 mm lower than axis. The patient is given LA of the auriculotemporal nerve, and a 19-gauge needle is placed into the AF region. On injecting Marcaine 0.5%, 3 cc of saline is pumped, allowing the upper compartment to distend. The exact position of needle is indicated by forward (protrusive) placement of the mandible while injecting saline. "The nineteen-gauge needle stays in position AF, while 5 cc of blood is drained from the cubital fossa of the individual and the syringe is attached to the previously implanted needle and blood is injected – 4 cc in the upper compartment and 1 cc in surrounding pericapsular tissue. After that is applied an adhesive bandage and leaves for the 1st post-operative day. Individuals are advised to suppress their mandibular activity for 1 week after the operation." Soft diet has been recommended for the same 7 days, and antibiotics with cephalosporin and anti-inflammatory nonsteroidal medications have been prescribed for a week. Mouth opening exercises were advised before the opening and normal excursive movements.^[9]

CASE REPORT

A 22-year-old female patient reported with a complaint of lock jaw frequently for 3 months. While examining, the patient had initially mouth opening of 26 mm measured inter-incisal. There was slight deviation present on the left side while opening mouth. There was no clicking or popping sound present. No joint tenderness present.

The patient was made to seat on the dental chair at an angulation of 45°. The target site as prepared, scrubbed with betadine. From middle of tragus to outer canthus of eye, a straight line was made and points were noted on canthotragal line. A point 10 mm from the mid-tragus was marked and 2 mm below the line which corresponds to posterior superior joint cavity as mentioned above. Local anesthetic

2% lidocaine with vasoconstrictor was injected at marked entrance point near the pre auricular region. Using 5 ml syringe blood was drawn from the cubital vein and 3 ml was injected into joint space and 2 ml into the pericapsular tissue. Procedure was repeated bilaterally.

DISCUSSION

Dislocation/subluxation of TMJ happens when either one or both condylar head is displaced anterior to the articular eminence. It might be reduced when it comes back to temporomandibular fossa or might remain irreducible when one or more condyle remains displaced. In such cases, the role of masticatory (elevator) group of muscles with or without lateral divergence, the mouth presents an anterior open bite, depending on whether the dislocation is single sided or present on both sides. Acute mandibular dislocation is manually treated by moving the mandible downward, backward, and upward, to relocate the condyle into the temporomandibular fossa. When this occurs spontaneously, it is termed as chronic TMJ dislocation. Pathogenesis includes a variety of reasons such as laxity of TMJ, weakening of capsule (TMJ),^[12] an abnormal projection of articular eminence, muscle spasms/hyperactivity, trauma, and unusual chewing movements which does not facilitate the backward translation of head of the condyle. Repeated dislocation causes damage to articular disc, the joint capsule, and ligaments leading to internal derangement of TMJ.

Brachmann *et al.* treated 60 patients successfully by injecting autologous blood into the TMJs.^[8] In the year 1973, Schulz treated 16 patients injecting autologous blood in the affected TMJ, 2 times weekly for a continuous period of 3 weeks preceded by immobilization using intermaxillary fixation (IMF) for 4 weeks.^[6] He stated that in 1-year review, 10 individuals were symptomless. Jacobbi-Hermanns^[7] in the year 1981 stated her findings with 19 patients who given only a single ABI and had undergone IMF for the next 2 weeks. After a follow-up period of 18 months, 17 patients were good and also symptom free. At present, Hasson^[9] presented case scenarios of successful treatment of three patients. Kato *et al.*^[13] also treated one of their patients successfully using ABI.

Injecting blood into the TMJ follows the mechanism of bleeding in joints like various other parts in the body, for example, the elbow or knee joint. Primarily, the joint capsule and its surrounding tissues of periarticular region are expanded by the injected blood. An inflammatory reaction occurs within a few hours or days which lead to release of inflammatory mediators from the injured and dead cells, platelets which ultimately result in dilation of adjacent blood vessels and plasma leakage. This causes swelling of the remaining surrounding structures and tissues, and the swelling makes the movement of the joint difficult thus causes decrease in patient's complaint. The blood clot and loose fibrous tissue formed, help to maintain the



Figure 1: Post-operative. Maximum inter-incisal opening (a) 1st week: 26 mm, (b) 2nd week: 29 mm, (c) 3rd month: 32 mm, (d-f) no occlusal discrepancy present.

firmness of joint. In the end, maturation of this tissue occurs causing a permanent restricted movement of joint.^[14] Moreover, this exposure of blood to cartilage leads to cartilage matrix turnover disruption and reduction in chondrocyte metabolism and ultimately results in localized contraction. However, after a traumatic injury to the TMJ, mouth opening exercises/physiotherapy is practiced to prevent the accumulation of inflammatory mediators within the joint, which is in contrast to the cases of deliberate hemarthrosis. The blood which is injected in the artificially created wound leads to an inflammatory reaction, which further proceeds to fibrosis and adhesion of joint space. The end result is scarring of joint and in the adjacent soft tissue leading to mandible immobilization to avoid early stretching of newly developed fibrous tissue.^[7] Those contraindicating this theory assume that even a minor exposure of cartilage to the intra-articular blood may lead to permanent joint destruction,^[15] such as degenerative joint damage,^[16] cartilage degeneration, and apoptosis,^[17] of which joint destruction may eventually continue.

Injecting autologous blood in the management of recurrent TMJ dislocation was found efficacious. Since there is no dissection of tissue, post-operative complications such as facial nerve palsy, altered sensation (dysesthesia),

inflammation, any kind of infection, and pain which subsequently reduces and becomes non-existent.^[11]

The patient came back for review during the 1st week, 2nd week, and after 3 months with a maximum inter-incisal opening of 33 mm with no complaint of dislocation [Figure 1].

CONCLUSION

This technique of injecting autologous blood to the TMJ is an effortless, secured, and inexpensive procedure helpful in treating 80% of patients with recurrent TMJ dislocation successfully. The operating surgeon is advised and motivated to perform this procedure when the individual comes with a history of chronic recurrent TMJ dislocation, before going for an invasive surgical technique.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

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