

## People's University Protocol for Autologous Blood Injection for Chronic Recurrent Temporomandibular Joint Dislocation

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### Abstract

### Review Article

Dislocation of the jaw joint or temporomandibular joint (Jaw Joint or TMJ) occurs when one or both mandibular condyles are displaced in-front of the articular eminence. Autologous blood injection as a treatment for chronic recurrent TMJ dislocation was first reported by Brachmann, in 1964. There is a requirement for the clinicians to follow a set guideline for such injections. Based on the clinical outcome with such patients, a management protocol for autologous blood injection for chronic recurrent temporomandibular joint dislocation is proposed.

**Keywords:** Jaw Joint, Temporomandibular Joint, TMJ, Autologous Blood, Dislocation.

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## INTRODUCTION

Dislocation of the jaw joint or temporomandibular joint (TMJ) occurs when one or both mandibular condyles are displaced in front of the articular eminence. It may be self-reducing when it returns extemporaneously to the glenoid fossa, or non-reducing when condyle(s) remain dislocated [1, 2]. Different non-surgical and surgical techniques have been used for treating patients with chronic recurrent TMJ dislocation. The various conservative modalities and surgical interventions are summarized [Table 1][3].

### Etiology of TMJ hypermobility

Dislocations of the TMJ are most often idiopathic. The common reasons associated include poor development of the articular fossa or reduced eminence height, laxity of the temporomandibular ligament or joint capsule, excessive activity of the lateral pterygoid and/or infrahyoid muscles due to drug use or disease, disorders of collagen metabolism such as ligamentous hyperlaxity and Ehler-Danlos syndrome [3].

In the past various authors have reported successful treatment of patients with chronic recurrent TMJ dislocation by injecting autologous blood (AB) in and around the joint. AB injection as a treatment for

chronic recurrent TMJ dislocation was first reported by Brachmann, in 1964. [4]. Machon *et al.* injected autologous blood into the upper joint space and around the TMJ capsules bilaterally for twenty-five patients diagnosed with chronic recurrent TMJ dislocation and reported eighty percent with a successful outcome and required no further treatment at one year follow-up. We propose a standardized protocol for AB injections for chronic recurrent TMJ dislocation under local anesthesia (LA) as a day care procedure and its mechanism of action.

### Protocol

The peri-auricular region should be prepared with 5% povidone-iodine following strict aseptic measures. Auriculotemporal nerve block should be administered through the skin just anterior to the junction of the tragus and ear lobe with 1.5 ml of LA solution (2% Lignocaine with 1:200000 Adrenalines). The marking for the needle insertion should be placed using skin marking ink to draw a line from the tragus to outer canthus. The 21 gauge needle should be inserted into the joint space 2 mm below and 10 mm in front of the mid-tragal point of Holmlund-Hellsing line; a second 21-gauge needle should be inserted into the superior joint space, 20 mm anterior to the tragus and 5 mm inferior to the tragal– canthal line followed by

lavage of the superior joint space with 200 ml of Normal Saline solution from the inflow needle to confirm the needle location in superior joint space [5]. After the lavage the second needle should be withdrawn. 3 ml of whole blood should be drawn from the patients' antecubital fossa intra-operatively. AB should be injected following arthrocentesis procedure where 2ml should be deposited via the inflow needle into superior joint space. Remaining 1ml AB should be injected in pericapsular area followed by placement of a pressure dressing after needle withdrawal. The same procedure should be performed on the contralateral joint. The injection should be undertaken once in four to six weeks up to 4-6(maximum) injections. The patients should be instructed to minimize mandibular function post-operatively. Depending on clinical improvement, repeated injections (4-6 maximum) may be administered before considering surgery as an option.

#### Mechanism of Action

The aim of ABI is limiting the movement of the mandible. The mechanism of ABI occurs by formation of a local fibrous tissue in the peri-capsular and possibly in the superior joint space similar to wound

healing. The injection leads to formation of adhesions in the joint cavity and induces fibrosis in periarticular tissues. However, this mechanism has not been fully understood. Some studies claimed that the contact of cartilage surface with blood cause changes in chondrocyte metabolism leading to cartilage destruction and is debatable. The pathophysiology of ABI around TMJ resembles that of knee/elbow joint bleeding. First the capsule swells and stretches. In few hours to days, an inflammatory reaction is initiated via mediators released from neighbouring platelets, and other cells leading to swelling in the neighbouring tissues causing difficulty in motion for the joint [6-8].

#### Post-operative care

The patients should be advised to minimise jaw movements for 7-10 days with consumption of soft diet. Barton's like bandage can be placed for 3 days after ABI injection. A non-steroidal anti-inflammatory (NSAID) should be avoided in the post-operative phase instead an opioid like tramadol may be used for pain management. A long term follow up of minimum one year is required to document recurrent episodes of dislocation and alter the treatment plan.



**Fig-1:** Jaw Joint tomogram of a patient with chronic recurrent temporomandibular joint dislocation (D Bhargava et al. Protocol for autologous blood injection for chronic recurrent temporomandibular joint dislocation).

**Table-1: Various conservative and surgical interventions for dislocation of the temporomandibular joint (TMJ)**

Conservative methods	Surgical interventions
<ol style="list-style-type: none"> <li>1. Restriction of the mandibular motions</li> <li>2. Application of local anesthetics</li> <li>3. Injection of botulinum toxin to muscles of mastication,</li> <li>4. Injection of sclerosing agents</li> <li>5. Injection of autologous blood</li> </ol>	<ol style="list-style-type: none"> <li>1. Capsular plication</li> <li>2. Reduction or augmentation of the articular eminence</li> <li>3. Temporalis tendon scarification</li> <li>4. Lateral pterygoid myotomy</li> <li>5. Condylectomy.</li> </ol>

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