Original Article

Autologous Blood Injection for the Treatment of Recurrent Temporomandibular Joint Dislocation

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ABSTRACT

Objective: To assess the autologous blood injection in the treatment of recurrent temporomandibular joint dislocation

Study Design: Randomized control clinical trial

Place and Duration of Study: This study was conducted at the Oral and Maxillofacial Department Gajju Khan Medical College, Bacha Khan Medical Complex, Swabi from March 2019 to March 2020.

Materials and Methods: Fifteen patients with bilateral recurrent dislocation were selected. Bilateral arthrocentesis was performed which was then followed by 2ml of autologous blood injection into the joint space tand 1ml injection into the pericapsular area. Postoperative evaluation was gone by history and physical examination for rate of recurrence, maximal mouth opening, frequency of laxation and complications.

Results: Seven patients were male and 8 patients were female. Twelve (80%) patients had successful outcome with no dislocation and no further treatment was required while in 3(20%) patients there was recurrent dislocation.

Conclusion: Autologous blood injection for the treatment of recurrent temporomandibular joint dislocation is simple, safe and effective procedure. With good patient's compliance we recommend the use of autologous blood injection in the treatment of recurrent dislocation especially before going for more invasive procedures for correction.

Key Words: Arthrocentesis, Autologous blood, Temporomandibular joint dislocation, Mouth opening

Citation of article: Aamir M, Ali F, Khan M, Khan IA, Khan U. Autologous Blood Injection for the Treatment of Recurrent Temporomandibular Joint Dislocation. Med Forum 2020;31(6):17-20.

INTRODUCTION

By definition the temporomandibular joint dislocation occurs when the mandibular condyle travels anteriorly with respect to glenoid fossa that is anterior to the articular enimamnce. Temporomandibular joint dislocation is very distressful situation as there is pain with associated loss of the mandibular functions. Many times its happens due to excess everyday activates such as loud laughing, yawning, wide opening of mouth while eating, vomiting, emotional distress and the situation or procedures which require continuous mouth opening such dental procedure.[1]

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Received: April, 2020
Accepted: May, 2020
Printed: June, 2020

The exact pathogenesis is unknown while combinations of multiple factors have been attributed to the chronic temporomandibular joint dislocation. These factors include hyperactivity of the masticatory muscles, trauma, laxity of the temporomandibular ligaments, loosing of the joint capsule, abnormal shallow of glenoid fossa eminence, long standing arthritis, psychotic disorders and abnormal chewing habits.[2]

In clinical examination these patients have incompetent lip seal, unable to close the mouth, called as "open lock", difficulty or unable to speak with drooling saliva and associated with pain in preauricular region. Patients are usually anxious and on palpation there will be hollowness in the pre auricular region. In acute cases pain is more prominent than chronic cases.[3]

Conservative non surgical as well surgical treatment has been employed for the treatment of temporomandibular joint dislocation. Non surgical treatment includes, muscle relaxants with restriction of mandibular movements, soft diet, botulinum toxins application, local anesthesia injection, injection of the sclerosing agents etc. When the conservative treatment fails to achieve the treatment goal, the surgical treatment is employed which includes capsule plication, lateral pterygoid myotomies, enimectomies, temporalis muscle's tendon relief with condylotomies.[4]

Autologous blood injection has been described in the literature with good clinical outcome. Aim is to induce

the fibrosis by organization of the clotted blood in the joint and along with pericapsular area which may lead to the restrict mobility of mandible and reduce chances of dislocation. Combination of the organized clot and fibrosis leads to joint stiffness.[5]

This technique is non invasive, simple can be employed at outdoor basis under local anesthesia with less discomfort to the patient.[2] Due to limited available for its efficacy therefore it is intended to documents our experience regarding efficacy of autologous blood injection is the temporomandibular joint dislocation.

MATERIALS AND METHODS

In this randomized control clinical trial total of 15 patients were taken on outdoor basis from Department of Oral and Maxillofacial Surgery, Gajju Khan Medical College Swabi from 15th march 2019 to 15th march 2020. Patients with recurrent joint dislocation, both male and female, age between 8 years and 75 years, failure of previous conservative treatment were included in the study. Those patients having age more than 75 with systemic disease which contraindicate intervention, coagulopathies, previous joint trauma, previous surgical intervention, and joint infection were excluded. Confirmation of the dislocation was done by clinical examination with radiograghpic assessment by lateral mandibular view and orthopentomogram. After history taking, informed consent was taken and inter incisal distance was measure from the tips of upper and lower incisors. Pre auricular area was prepared by povidone iodine antiseptic solution. Auriculotemporal nerve block was done by lidocain 1:100000. A line is drawn from lateral canthus to mid of tragus (Holmlund-hellsing Line) on either side. Point A was marked 10mm anterior and 2mm inferior to this line. Point B was marked 20mm anterior and 2mm inferior to this line. Both at point A and Point B, 18 gauge needle were inserted up to 1 inch deep in to the joint. Joint lavage was done with normal line. Six milliliter of the blood was drawn from peripheral antecuboidal vein and point B needle was drawn out. Blood of 2ml was injected into the joint space at point A and then needle was drawn 1cm and more 1ml blood was injected around the joint space. Same procedure was repeated on the other side as well. Patient was counseled for soft diet and limitation of joint movements and anti inflammatory with antibiotics were prescribed. Patients were followed for 1 week, 1month and 6 months for mouth opening and clinical outcome of recurrence.

RESULTS

The mean age of the study was 53.13±17.43 years. The mean Duration of disease and follow up was 21.07±12.7 months and 19.60±4.54 months respectively (Table 1). The females (n=8, 53.3%) were more than males (n=7, 46.7%). Most of patients have no history of previous treatment for dislocation of TMJ (n=9, 60%). Most common previous treatment modality was bandage to restrict mouth opening (n=3, 20%). In 3 cases (20%) there was mild pain after autologous blood injection. Post treatment recurrence was found in 3 cases (20%) (Table 2).

Table No.1: Mean and standard deviation of age, disease duration, follow up period, mouth and frequency of dislocation per week in patients undergoing autologous blood injection.

Variable	Mean±SD	Range
Age (years)	53.13±17.43	8-75
Duration of disease in months	21.07±12.7	6-48
Period of follow up in months	19.60±4.54	12-26
mouth opening before (mm)	40.53±3.88	36-49
mouth opening after (mm)	38.53±3.8	34-47
Frequency of dislocation per week	5.2±2.88	3-15

Table No.2: Frequency of gender, history of previous treatment, complications and Post treatment recurrence

Variable	**No.**	**%**
Gender		
Male	7	46.7
Female	8	53.3
History of previous treatment		
Nil	9	60.0
Bandage to restrict mouth opening	3	20.0
IMF, medications	1	6.7
medications, bandage to restrict mouth opening	1	6.7
injections & medications	1	6.7
Complications		
Mild Pain	3	20.0
No	12	80.0
Post treatment recurrence		
Yes	3	20
No	12	80

Table No.3: Post treatment recurrence stratified by gender

Gender	Post treatment recurrence				P value
	Yes		No		
	No.	%	No.	%	
Male	1	14.3	6	85.7	0.605
Female	2	25.0	6	75.0	

The frequency of Post treatment recurrence stratified by gender showed that the difference was not statistically significant (P=0.605). (Table 3) Similarly, the frequency of Post treatment recurrence stratified by age groups showed that the difference was not statistically significant (P=0.212). (Table 4)

Table No.4: Post treatment recurrence stratified by age group

Age (years)	Post treatment recurrence				P value
	Yes		No		
	No.	%	No.	%	
Below 39	-	-	2	100	0.212
40-50	-	-	3	100	
51-60	1	20.0	4	80	
61-70	2	66.7	1	33.3	
70 & above	-	-	2	100	

DISCUSSION

Recurrent temporomandibular dislocation is a chronic debilitating condition in which many times patient's need assistance for mandibular reduction. Various non surgical treatments have been employed before undergoing the surgery correction. For the sclerosis of the joint literature suggests tincture iodine, sodium psylliate alcohol etc but major possibility of the side effects and complications these sclerosing agents are not utilized usually.[6]

Schaulz in 1973 used the autologous blood injection for the treatment of recurrent temporomandibular joint dislocation. In this study they used to inject twice a week followed by mandibulomaxillary fixation for 4 weeks. In this study patients were followed upto 1 year and were asymptomic.[7] More recently Bayoumi el[8] injected autologous blood in 15 patients. One year follow-up was done and there was more than 80% recovery with the improvement in 12 patients. Treatment results were physically evaluated with average 34mm mouth opening.[8] All these finding are in coherence with our study where we treated 15 patients with no recurrence was observed in 12 patients with significant improvement in the symptoms.

The study conducted by yoshida et al[9] treated 21 patients with autologous blood injection. Mean rage for duration of symptomic cases were 31moths. Only 3 patients in this study had recurrent dislocation after 36 months of followup.[9] Coherence to our study more than 80% where successfully treated with autologous blood.

Jacobi hermanns et al[10] 1981 treated 19 patients with the autologous blood injection in the temporomandibular joint dislocation. In this study patients were followed for 18 months and 17 patients were asymptomatic with significant improvement.

Daif[11] compared by superior joint injection with superior joint space combined with pericapsular injection. In this study the success rate was more in the superior joint space combined with pericapsular injection.[4] Our study has similar fining and in coherence with the previous studies.[4, 11]. In the study conducted by Coser and his colleagues[12] 11 patients were selected for autologous blood injection. There was reduction in interincisal mouth opening. This study suggests that the formation of the fibrosis at temporomandibular joint. It was suggested that initial decrease in mouth opening may be due to fear and anxiety of the patients post treatment. We also observed mean decrease in maximal mouth opening. Basic aim of the injection is the restriction of mandibular movements by formation of fibrosis through organization of blood clot. Though success of the procedure cannot be evaluated cases radiographically or experimentally mostly but can be proved most of the times thorough patient history clinical observation. Study also suggests that blood come in contact with articular cartilage changes the metabolism of the chondrocytes and thus causes destruction of the cartilage.[13] In other study conducted, selected 10 patients for the management of recurrent TMJ dislocation. Bilateral Arthrocentesis was performed and was followed by 2ml of autologous blood injection in to the superior joint space and 1ml of into pericapsular tissues. Patients were followed by history, clinical examination and MRI finding. There was 80% success in this study. Arthrocentesis having additional advantage of relieving the adhesion with washing out inflammatory substances with relief intra joint pressure. It relieve the pain and the clicking of the joint with relatively good outcome with the autologous blood injection.[14]

In accordance with the above mentioned studies, Study we conducted included 15 patients in which 12 out of 15 patients showed successful results. First arthrocentesis was done which was followed by autologous blood injection. The results were evaluated by history and physical examination of the patient as mentioned in the studies. Post interventional complication was only pain which was observed in 3 patients.

CONCLUSION

Autologous blood injection in for the treatment of recurrent temporomandibular dislocation is simple, safe and effective procedure. With good patient's compliance we recommend the use of autologous blood injection in the treatment of recurrent temporomandibular dislocation especially before going for more invasive procedures for the correction of temporomandibular joint dislocation.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Lund JP. Orofacial Pain: From Basic Science to Clinical Management. Carol Stream, Quintessence Publishing Co Inc; 2001.
2. Vasconcelos BC, Porto GG, Neto JP, Vasconcelos CF. Treatment of chronic mandibular dislocations by eminectomy: follow-up of 10 cases and literature review. Medicina oral, patologia oral y cirugia bucal 2009; 14(11):e593-6.
3. Sharma NK, Singh AK, Pandey A, Verma V, Singh S. Temporomandibular joint dislocation. National J Maxillofac Surg 2015 6(1):16.
4. Machon V, Abramowicz S, Paska J, Dolwick MF. Autologous blood injection for the treatment of chronic recurrent temporomandibular joint dislocation. J Oral Maxillofac Surg 2009;67(1): 114-9.
5. O Driscoll SW, Giori NJ. Continuous passive motion (CPM): theory and principles of clinical application. J Rehab Res Develop 2000; 37(2): 179-88.
6. Candirli C, Yüce S, Cavus UY, Akin K, Cakir B. Autologous blood injection to the temporomandibular joint: magnetic resonance imaging findings. Imaging Sci Dent 2012; 42(1):13-8.
7. Schulz S. Evaluation of periarticular auto-transfusion for therapy of recurrent disloca-tions of the temporomandibular joint. Dtsch Stomatol 1973;23:94–8.
8. Bayoumi AM, Al-Sebaei MO, Mohamed KM, Al-Yamani AO, Makrami AM. Arthrocentesis followed by intra-articular autologous blood injection for the treatment of recurrent temporomandibular joint dislocation. Int J Oral Maxillofac Surg 2014;43(10):1224-8.
9. Yoshida H, Nakatani YI, Gamoh S, Shimizutani K, Morita S. Clinical outcome after 36 months of treatment with injections of autologous blood for recurrent dislocation of the temporomandibular joint. Br J Oral Maxillofac Surg 2018; 56(1):64-6.
10. Jacobi-Hermanns E, Wagner G, Tetsch P. Investigations on recurrent condyle disloca-tion in patients with temporomandibular joint dysfunction: a therapeutical concept. Int J Oral Surg 1981;10: 318–23.
11. Daif ET. Autologous blood injection as a new treatment modality for chronic recurrent temporomandibular joint dislocation. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2010;109:31-6.
12. Coser R, da Silveira H, Medeiros P, Ritto FG. Autologous blood injection for the treatment of recurrent mandibular dislocation. Int J Oral Maxillofac Surg 2015;44(8):1034-7.
13. Hooiveld M, Roosendaal G, Wenting M, van den Berg M, Bijlsma J, Lafeber F. Short-term exposure of cartilage to blood results in chondrocyte apoptosis. Am J Pathol 2003; 162(3):943-51.
14. Patel J, Nilesh K, Parkar MI, Vaghasiya A. Clinical and radiological outcome of arthrocentesis followed by autologous blood injection for treatment of chronic recurrent temporomandibular joint dislocation. J Clin Exp Dent 2017;9(8):e962.