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Original Research

Assessment of the efficacy of Bupivacaine and Methylprednisolone for Arthrocentesis of TMJ disorders

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ABSTRACT

Background: The signs and symptoms of TMD involve orofacial and preauricular pain, as well as limitation of mouth opening, TMJ bruit during function and displacement of articular disc. The present study was conducted to assess efficacy of bupivacaine and methylprednisolone for arthrocentesis of TMJ disorders. **Materials & Methods:** The present study was done on 72 patients with TMJ disorders. Patients were divided into 2 groups of 36 each. Group I patients received bupivacaine and group II patients received methylprednisolone acetate. Pain was assessed using VAS scale and mouth opening was determined. **Results:** Out of 72 patients, males were 30 and females were 42. The mean VAS score pre- operatively in group I was 8.2, after 1 month was 4.1 and after 3 months was 2.0. Similarly in group II was 9.1, 4.0 and 1.2 respectively. The difference was significant (P< 0.05). The mean mouth opening in group I was 25.2 mm and in group II was 25.6 mm, post- operatively 1 month was 35.8 mm in group I and 40.2 mm in group II, after 3 months was 41.5 mm in group I and 46.3 mm in group II. The difference was significant (P< 005). **Conclusion:** Authors found significantly reduction in pain score and increase in mouth opening with methyl prednisolone as compared to bupivacaine following treatment.

Key words: Methyl prednisolone, mouth opening, VAS

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INTRODUCTION

The temporomandibular joint connects the lower jaw, called the mandible, to the bone at the side of the head—the temporal bone. If we place your fingers just in front of your ears and open your mouth, we can feel the joints. Because these joints are flexible, the jaw can move smoothly up and down and side to side, enabling us to talk, chew and yawn. Muscles attached to and surrounding the jaw joint control its position and movement.[1]

The TMJ continues in its function as usual until it is disturbed by external influences that affect the function of the joint, such as mechanical, psychological, occupational, and habits. The human body continues to try to repair its aggression; but if this continues, the body loses the ability to repair its aggression and the signs & symptoms begin to appear. The signs and symptoms of TMD involve orofacial and preauricular pain, as well as limitation of mouth opening, TMJ bruit during function and displacement of articular disc.[2]

Some authors have reported intra-articular corticosteroid injections to reduce pain and improve function. SH, which has a high molecular weight and high viscosity, has also been shown to reduce friction and pain and improve joint mobility by restoring soft-tissue lubrication; to play role in anti-inflammation and buffering, and to repair articular cartilage nutrition. Bupivacaine exhibit both anti-inflammatory and

analgesic properties. Intra-articular application has been found to be more effective than oral and intravenous application in terms of analgesia.[3] The present study was conducted to assess efficacy of bupivacaine and methylprednisolone for arthrocentesis of TMJ disorders.

MATERIALS & METHODS

The present randomized control prospective study was conducted in the department of Oral Surgery. It comprised of 72 patients with TMJ disorders such as internal disc arrangement and disc adhesions of both gender. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 36 each. Group I patients received bupivacaine and group II patients received methylprednisolone acetate. Pain was assessed using VAS scale. In all patients, a straight line with patent blue and toothpick is drawn close to the skin that goes from the medial portion of the ear tragus to the lateral corner of the eye. In this line, two needle insertion points are marked. The first, more posterior point will be at a distance of 10 mm from the tragus and 2 mm below the cantotragal line. The second point will be 20 mm in front of tragus and 10 mm below this same line.

A sterile mouth opener was placed on dental arcades contralateral to the arthrocentesis side to allow jaw head displacement downward and to the front, helping the approach to the posterior recess of upper TMJ compartment. A 30/0.7 or 40/1.2 needle is inserted in the most posterior point, connected to a 5 mL syringe where 1 to 2 mL of bupivacaine in group I and methylprednisolone in group II was administered aiming at distending the joint space. Another needle is introduced in the distended compartment, in front of the first needle, connected to a 60 cm solution extensor coupled to a flexible and transparent aspiration rubber, allowing the visualization of the solution, its fluidity as well as orienting the flow of the joint lavage solution. Then, a serum extensor coupled to a 50 mL syringe is connected to the needle. Following this procedure, patients were recalled regularly to evaluate pain using VAS score. Maximum mouth opening was also compared. Results thus obtained were analyzed statistically. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 72		
Gender	**Males**	**Females**
Number	30	42

Table I shows that out of 72 patients, males were 30 and females were 42.

Graph I Distribution of patients

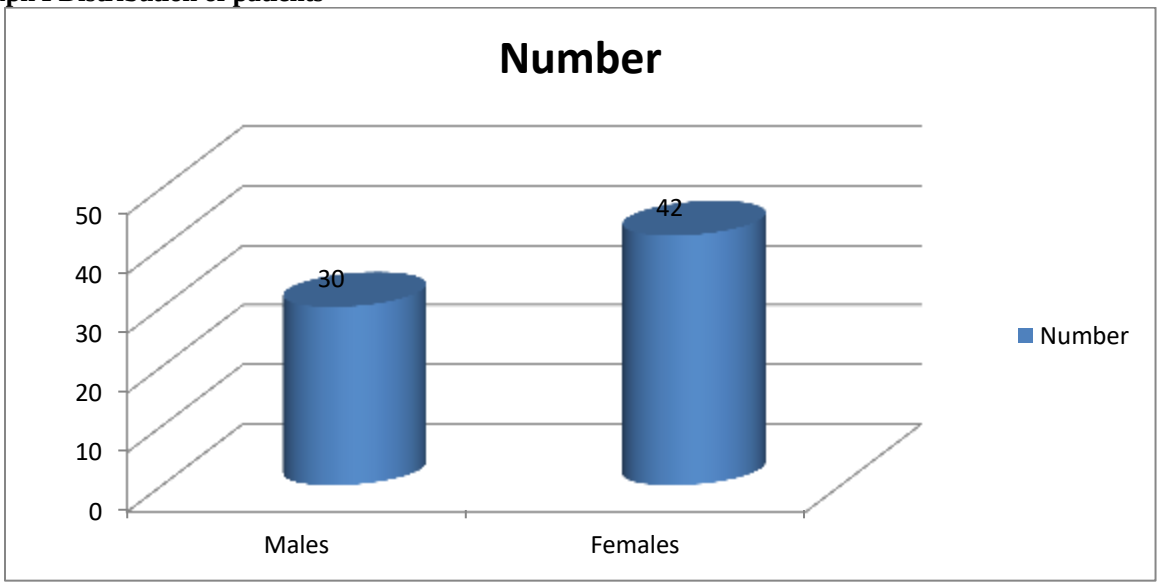


Table II Comparison of pain score

VAS (Mean)	Group I	Group II	P value
Pre-operatively	8.2	9.1	0.01
Post- operatively 1 month	4.1	4.0	
Post- operatively 3 months	2.0	1.2	

Table II, graph II shows that mean VAS score pre- operatively in group I was 8.2, after 1 month was 4.1 and after 3 months was 2.0. Similarly in group II was 9.1, 4.0 and 1.2 respectively. The difference was significant (P< 0.05).

Graph II Comparison of pain score

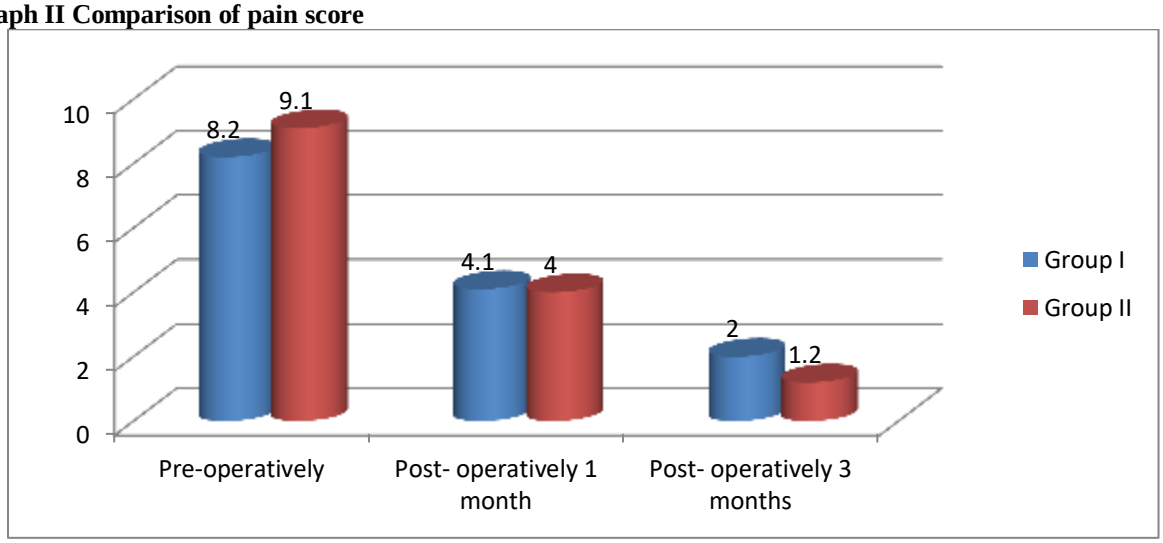
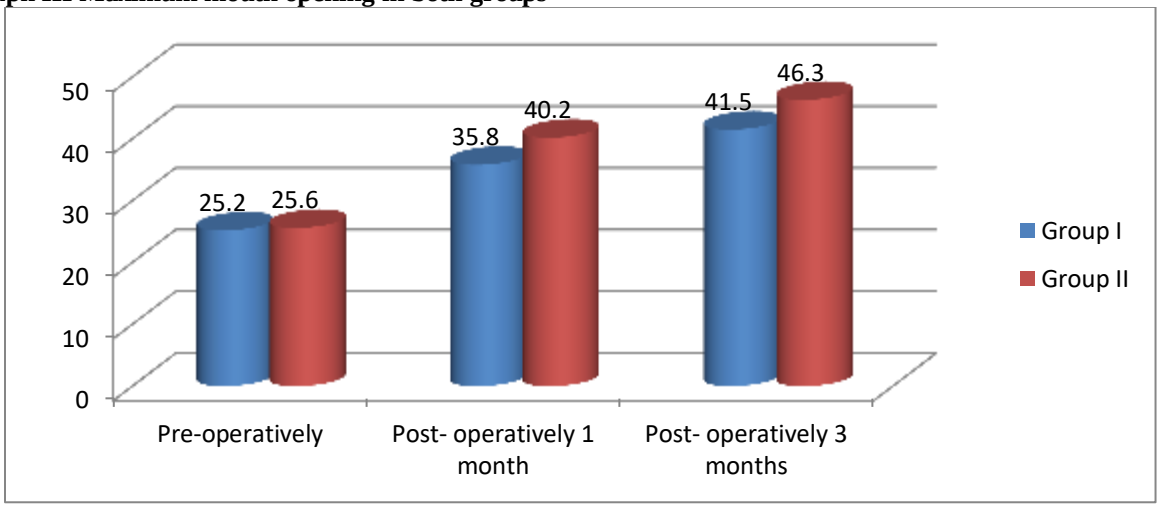


Table III Maximum mouth opening in both groups

Mouth opening (mm) (Mean)	Group I	Group II	P value
Pre-operatively	25.2	25.6	1
Post- operatively 1 month	35.8	40.2	0.01
Post- operatively 3 months	41.5	46.3	0.01

Table III, graph III shows that mean mouth opening in group I was 25.2 mm and in group II was 25.6 mm, post-operatively 1 month was 35.8 mm in group I and 40.2 mm in group II, after 3 months was 41.5 mm in group I and 46.3 mm in group II. The difference was significant (P< 005).

Graph III Maximum mouth opening in both groups



DISCUSSION

Temporomandibular joint disorders (TMD) are a group of musculoskeletal conditions, which are considered the main cause of non-dental originated orofacial pain. These disorders comprise the second most common musculoskeletal pain condition following, low back pain. Its prevalence has been reported to have a wide range from 16.3 to 68% in the adolescences and up to 43% in general adult population.[4] TMD is a disease of multifactorial origin. Studies have shown that these conditions are associated with anxiety and depression, parafunctional oral habit, poor socioeconomic level, and genetic factors.[5] Women are more likely to develop TMD, probably due to the influence of behavioral, hormonal, anatomic, and psychosocial causes. TMD is characterized by a various sign and symptoms directly related to the joint, which are pain or tenderness in the region of the temporomandibular joint (TMJ) and pre-auricular areas, limitation in the mouth opening, or TMJ sounds during jaw movement.[6] The present study was conducted to assess efficacy of arthrocentesis in patients with TMJ disorders.

In present study, out of 72 patients, males were 30 and females were 42. Emes et al[7] compared clinical and radiological effects of simple arthrocentesis or combined with tenoxicam in patients with disc displacement without reduction (DDWR). Twenty-four TMJ of 21 DDWR patients were studied and randomly distributed in Group A, where only arthrocentesis was performed (14 TMJ in 14 patients) and Group AT, who received injection of 2 mL tenoxicam, in addition to intra-articular arthrocentesis (10 TMJ in 7patients). Patients were evaluated before the procedure, in the 7th postoperative day, in the 2nd, 3rd and 4th weeks and in the 2nd, 3rd, 4th 5th and 6th postoperative months. Joint pain intensity was evaluated by the visual analog scale (VAS). Maximum mouth opening was recorded. Both treatments provide increase in maximum mouth opening and decreased joint pain. There has been no statistically significant difference between groups.

We found that the mean VAS score pre- operatively in group I was 8.2, after 1 month was 4.1 and after 3 months was 2.0. Similarly in group II was 9.1, 4.0 and 1.2 respectively. Giraddi et al[8] evaluated TMJ arthrocentesis with and without hyaluronic acid injection to treat disc displacements with reduction and with closed lock. The first group received arthrocentesis and the second arthrocentesis associated to 1 mL hyaluronic acid injection in upper TMJ compartment. Patients were evaluated before, soon after the procedure and from the 1st to the 24th month of evolution. Mandibular function and TMJ noises were evaluated. Pain intensity was measured by VAS. Maximum mouth opening and lateral jaw movements were also measured every control visit. Both techniques have provided mouth opening gains, lateral jaw movement improvement and have decreased pain and joint noises. The authors have concluded that the combination of arthrocentesis and hyaluronic acid injection was superior as compared to arthrocentesis alone.

We found that mean mouth opening in group I was 25.2 mm and in group II was 25.6 mm, post- operatively 1 month was 35.8 mm in group I and 40.2 mm in group II, after 3 months was 41.5 mm in group I and 46.3 mm in group II.

There may be zygomatic branch or facial nerve temporal branch paresis caused by local anesthetic block or the edema itself; zygomatic or buccal branch paralysis due to needle trauma; postoperative edema caused by intra-articular solution leakage; periauricular hematoma; perioperative bleeding by vascular injury; bradycardia and extradural hematoma.[9,10]

CONCLUSION

Arthrocentesis is a minimally invasive, short and low cost procedure, performed in the medical office under local anesthesia with or without sedation. Authors found significantly reduction in pain score and increase in mouth opening with methyl prednisolone as compared to bupivacaine following treatment.

REFERENCES

1. Sena MF, Mesquita KS, Santos FR, Silva FW, Serrano KV. Prevalence of temporomandibular dysfunction in children and adolescents. Rev Paul Pediatr. 2013; 31: 538–545.
2. Adèrn B, Stenvinkel C, Sahlqvist L, Tegelberg Å. Prevalence of temporomandibular dysfunction and pain in adult general practicepatients. Acta Odontol Scand. 2014; 72: 585–590.
3. Brennan P A, Ilankovan V. Arthrocentesis for temporomandibular joint pain dysfunction syndrome. J Oral Maxillofac Surg. 2006;64(6):949-51.
4. Diraçoğlu D, Saral IB, Keklik B, et al. Arthrocentesis versus nonsurgical methods in the treatment of temporomandibular disc displacement without reduction. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2009;108(1):3-8.
5. Nitzan DW. Arthrocentesis--incentives for using this minimally invasive approach for temporomandibular disorders. Oral Maxillofac Surg Clin North Am. 2006;18(3):311-28.
6. Monje-Gil F, Nitzan D, González-Garcia R. Temporomandibular joint arthrocentesis. Review of the literature. Med Oral Patol Oral Cir Bucal. 2012;17 (4):e575-81.
7. Emes Y, Arpinar IS, Oncu B, Aybar B, Aktas I, Al Badri N. The next step in the treatment of persistent temporomandibular joint pain following arthrocentesis: A retrospective study of 18 cases. J Craniomaxillofacial Surg. 2014;42:65–9.
8. Giraddi GB, Siddaraju A, Kumar B, Singh C. Internal derangement of temporomandibular joint: an evaluation of effect of corticosteroid injection compared with injection

of sodium hyaluronate after arthrocentesis. J Oral Maxillofac Surg. 2012;11:258–63.
9. Alkan A, Bas B. The use of double-needle canula method for temporomandibular joint arthrocentesis: clinical report. Eur J Dent. 2007;1(3):179-82.
10. Guarda-Nardini L, Manfredini D, Ferronato G. Arthrocentesis of the temporomandibular joint: a proposal for a single-needle technique Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2008;106(4):483-6.