International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2016): 79.57 | Impact Factor (2015): 6.391

Arthrocentesis for the Treatment of Internal Derangement (Evaluatet Clinico-Arthrography)

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1. Introduction

The normal mouth opening which is about 40-50mm arise from the unique-construction of the temporomandibular joint (TMJ).Any Obstaclewithin the domain of the TMJ will interfere with it's maneuverability and limit mouth opening. We have three types of painful intra articular disorders of the TMJ,

1) Internal derangement (anterior disc displacement with and without reduction).
2) Deterioration of the tmj stractures (osteoarthritis-and rheumatoid arthritis).
3) Anchord disc phenomenon in which the disc is stick to the glenoid fossa preventing sliding movment of the condyle. The structural associated with the functional limitation caused by disc displacement have been demonstrated by arthrography and mri(westessonpl, 1993).

Arthrocentesis is used to manage TMJ problems in patients who don't respond well to non surgicaltherepy. Themajor indications for use are 1-acute or chronic limitation of motion dueto anterior displaced disc and *2*-hypomobility dueto restriction of condylar translation in the upper joint space, 3- patients with normal range of motion despite an anterior disc displacement with reduction who nonstheless have chronic pain. Arthrocentesis may also be used to manage pain and dysfunction in patients who have undergone previous invasive procedures that failed to releve pain with limitation of function. The altertion of the biochemical environment within the intra capsular space by arthrocentesis to relieve variorus vasoactive pain mediators is also another strong indication for treatment. Arthrocentesis my bridge the gap between non surgical therapy and invasive TMJ surgery. Frost DE, 1999.

There are few published reports of out conies for arthrocentesis of the TMJ. Nitzan et al 's study in 1991 was the first published. They reported a technique with a success rate 91.8% in treatment of internal derangcmat most recently, Dimitroulis et al in 1995 evaluated the efficiency of TMJ arthrocentesis and lavage for treatment of acute persistant closed lock of TivlJ. Norman Trieger in 1999, show the efficiency of TMJ arthrocentesis in the management of the symptoms of rheumatoid arthritis.

Arthrocentesis is an easy, minimally invasive, and highly efficient procedure to decrease joint pain and incease the range of mouth opening in patients with closed lock of the temporomandibalar joint. This can be performed under local anesthesia in the out patient clinic. Clinical trials suggested Arthrocentesis, arthroscopiclysis and lavage, and arthrotomy, has been effective for TMJ signsand symptoms. Tumor necrosis factor (TNF) is a potent proinflamatory cytokine that has been recoverd from symptomatic human Tmj's by Arthrocentesis. This cytokin has been implicated with the progression of degenerative joint disease. Shafer Dm in 1994 estimate that atotalarthrocentesis volume of approximately loonil is sufficient for therapeutic lavage of the superior joint space of the humen TMJ. Also brady kin in concentration during arthrocentesis was effectively reduced. Mu'rakamik in 1998 suggested that BK might be key regulator of arthralgia and synovitis of the TMJ. Zrdeneta G in 1997 reported that the protein ' concentration in the lavage fluids used for arthrocentesis of patients with TMD fell in a volume dependent manner and that approximately 1.00ml of total perfusate is sufficient for therapeutic lavage.

2. Aims of Study

To evaluate the efficiency of arthrocentesis of TMJ. And for treatment of synovitis, to decrease the pain and increase mouth opening, and to show more predictable results clinically and arthrographies.

3. Patients and Methods

This study was performed in the hospital of specialized surgery, department of maxillo- facial surgery from November 2005-March 2006.

Ten patients were clinically suspected of having TMJ disc displacement with reduction (internal derangement type 1), these patients have pain (VAS=50), limitation of mouth opening (30mm) with slight clicking. These patients are eight females and two males average age 35 years), these patients have limited mouth opening for average 6 mouths with pain, they get medical drugs physiotherapy, soft diet, and occlusal appliance with no benefit.

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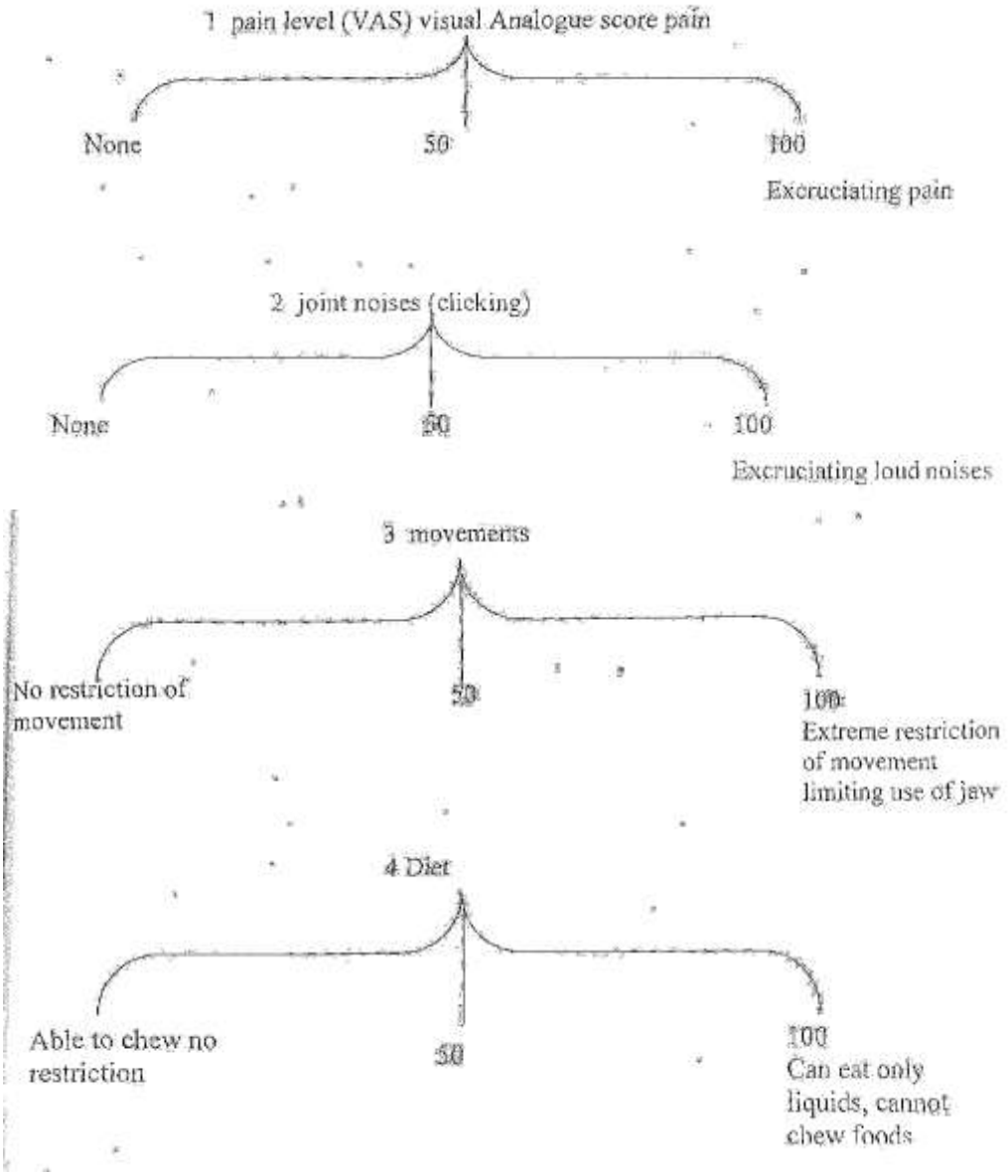

Surgical procedure

Superior joint space arthrocentesis of the affected TMJs was performed, the preauriculor region was cleaned with a povidone - iodine swab and isolated with sterile towels. A local anesthetic solution consisting of 2% lodocaine was used to infiltrate the peri capsular and provide regional anesthesia for the arthrocentesis procedure. Care was taken to avoid placement of the local anesthetic solution into the TMJ. After the onset of regional anesthesia, an 21 - guage needle was placed into the superior joint space, the patient was asked to open and close his or her mouth, If the needle was properly placed, the resulting positive and

in the needle hub. After verification of the correct placement of the needle, a second 21-guage needle was placed into the superior joint space in a similar fashion. The hub of first needle was occluded to verify the correct positioning of the second needle. Once correct placement of both needles into the superior joint space was verified inflow and outflow extension tubes were attached. The inflow at a constant rate of 2 to 4 ml/min.

A 100 ML of normal saline was allowed to flow freely through the superior joint to complete the arhrocentesis procedure. Both needles then withdrawn, and manual pressure was applied to the preauricular region to arrest any bleeding that may have resulted from the procedure.

Post operative care

The patients practiced opening the mouth as wide as they could. Antibiotic were prescribed to be taken 3 dialy for 3 days and a non steroidal for 7 clays. Occlusal appliance therapy for about 1 to 2 months postoperatively, patient instructed diet to full liquids for 1 week and subsequently to advance to soft foods as tolerated. Active range of motion exercises were instituted at 24 hours, post operatively.

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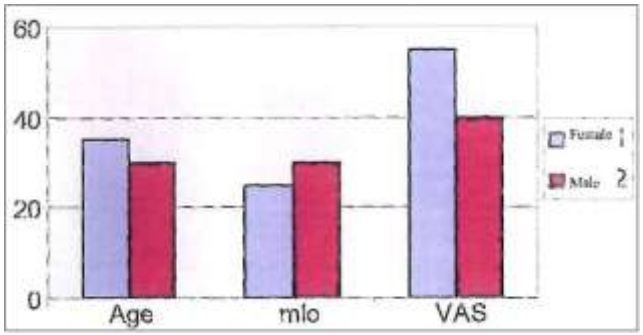
Arthrograph of patient which show anterior displacement with reduction (closing)

Patient with painfull limited mouth opening



According to the gender, there is showing a significant differences in VAS between females & males, **mIo,** there is slight difference.

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Local ansthesia was introctaeed to the patient

The picture show the arthroceiitesis (lavage)

All the patients show a significance decrease in the joint pain in the first week and increase in maximum mouth opening (MMO) to 38m.m,

1) Pain level (VAS)=25m.m
2) Joint noise (clicking) disappear
3) NO deviation of the mandible, to?theafe.Gt.ed; side.
4) Lateral movement 6m on
5) Patients able to tfte^ sofLdiet.

After one month

There is marked increase in MMO to 42 mm. pain level is less. The patients were able to eat hard and soft and soft food. According to arthrography which show normal joint, the posterior band of the disc is superior to the condoyle (Emshoff, 2003).

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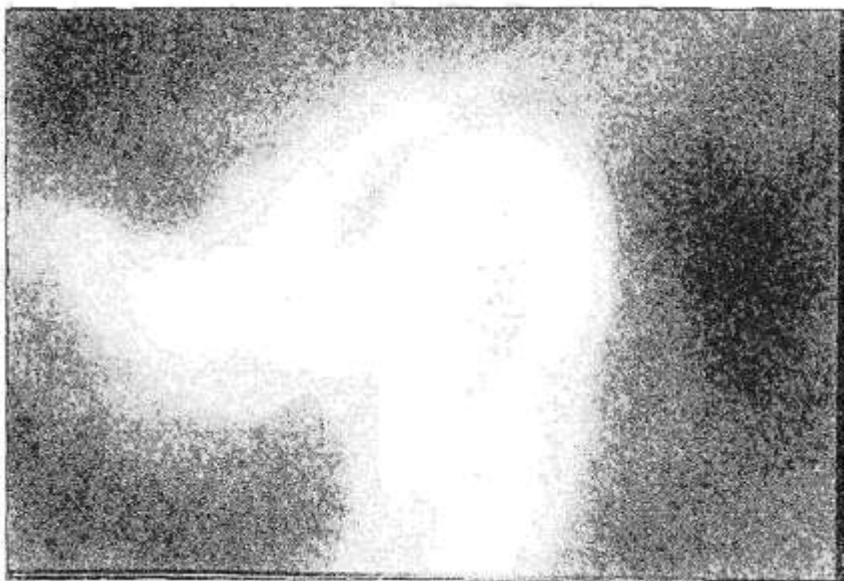
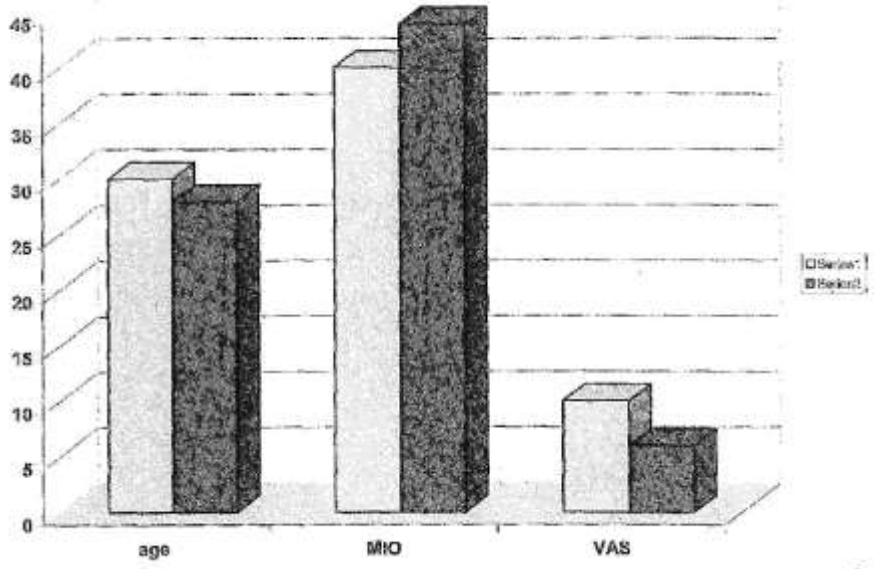
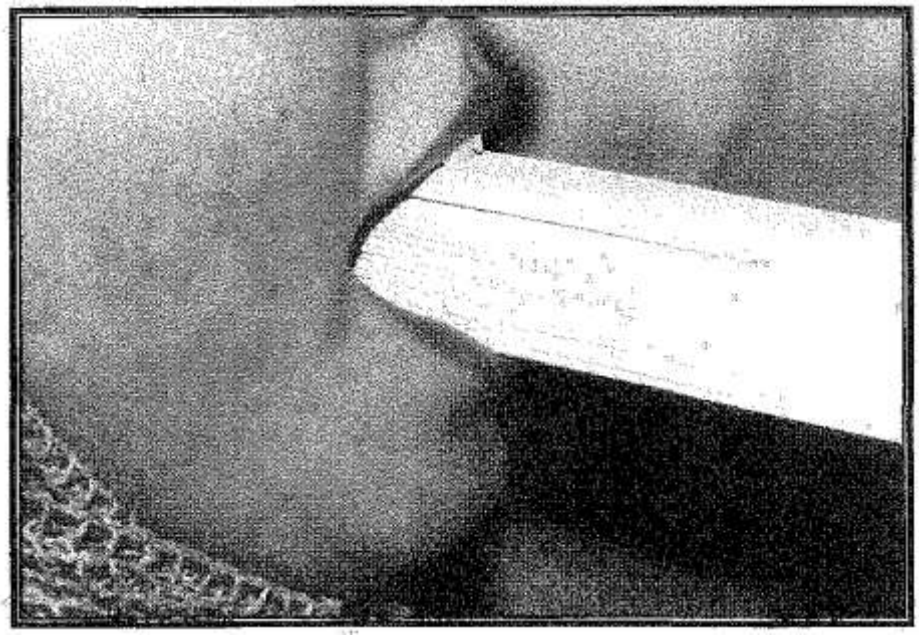




After one month m l0 in female, 40 average 42 mm in male VAS infemale 10mm Average 8m.m VAS in male 6mm



The patient has a maximium mouth opening (40mm) after on mount

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4. Discussion

According to the gender difference in the prevalence of TmJ dysfunction have been well documented. In our studies shows that males have cured quickly of pain and maximum mouth opening than females showed that only one visit and 50ml of normal saline is enough for decrease pain and increase mouth opening and they did not have occlusal appliance. Because previous studies show more protein in TmJ females then TmJ males.

According *to* our study showed that patients who taken occlusala appliance and patients not taken occlusal appliance have been cured at the same time.

Patient who have bilateral arthrocentesis, need more than two visit for Lavage and show less respond *to* arthrocentesis than of one joint affected but they have well cured using in addition to arthrocentesis, mandibular manipulation which is beneficial in anteriorly displaced disc.

Our. studies showed that most patients undergone more than 60ml is sufficient for arthrocentsis of Tmj and show good results in decreasing pain and increase mouth opening.

According to the less invasive technique for the treatment of internal derangement, Fridrich in 1996 do a comparison between arthrocentesis and arthroscopy, he explained that the success rate for TMJ arthroscopy, as determined by decrease, pain and improve range of motion have varied from 79% to. 93%, but the success rates up to 91% have been reported with the use of arthrocentesis.

5. Conclusion

Arthrocentesis is less invasive surgical procedures and highly efficient for the treatment of internal derangement especially(type 1) and it is considered superior to arthroscopy; balloon pumping technique, and mandibular manipulation for the treatment of internal derangement in cases which are not respond to medication and physiotherapy(conservative treatment).

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