

ARTHROCENTESIS LYSIS AND LAVAGE OF TEMPOROMANDIBULAR JOINT - REVIEW.

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Abstract: *Temporomandibular joint pain and its disc disorder are the quite difficult in diagnosis and treatment planning where the pathological variation of the temporomandibular space infection varies from one region to the other. the adhesion of the temporomandibular joint space can be treated with arthrocentesis which was earlier done arthroscopy by ohinski and niten et al over 1991 in tmj.*

Keyword: *arthrocentesis, lysis and lavage, temporomandibular joint, tmj pain* **Material and method:** *Over 46 articles where selected for review following comprehensive search of the literature from pubmed central.*

1. INTRODUCTION:

Temporomandibular joint is a connection of skull and mandibular bone the temporal bone and the mandible. Although being bilateral it acts as one unique function. Temporomandibular joint is also known as “ginglymodiarthroidal” joint .since it is both a ginglymus (hinging joint)and an arthroidal (sliding movement).

Temporomandibular joint is a dysfunction of tmj and associated masticatory system can be a source of acute or chronic orofacial pain and dysfunction .temporomandibular joint disorder is often difficult to determine but shows its presence by three cardinal signs of tmj i.e., a)limitation of mandibular movement b)pain with mandibular function c)joint sound.

Pain may be due to combination of factors such as genetics ,arthritis or jaw injury also tends to clench or grinds their teeth(bruxism). Temporomandibular pathology are classified as temporomandibular disorder ,temporomandibular joint diseases, masticatory muscles disorder, headache and associated structure.

Anterior and anteriomedial disc displacement is an consequence of acute disc displacement . In this condition disc deforms and become impossible to reduce and poses as obstacle in normal movement of the condyles.

Many conservative methods fails to prove the success of the procedure.so, in 1975 a surgical procedure namely arthroscopy of tmj described by ohinski became a first line of surgical procedure for temporomandibular joint lysis and lavage .latter the modification of the arthroscopy by arthrocentesis in 1991 by nitzen which was already performed in earlier in 1960s in long bones .

The temporomandibular joint arthrocentesis represents a form of minimally invasive surgical technique for who suffering from internal dearrangement of the tmj. which is simple , inexpensive and highly efficient procedure.

Arthrocentesis is the method of flushing out of tmj by placing needles into the upper joint compartment using la or sedation.

Initially arthrocentesis of tmj is used for acute lock jaw and anterior disc displacement without reduction .latter ,due to its better result this procedure evolved as a first line. successful treatment depends on accurate assessment , comprehensive avaluation and diagnosis.

MATERIAL AND METHODS: Over 46 articles where selected for review following comprehensive search of the literature from pubmed central.

2. DISCUSSION:

Ohnishi in 1975 was the first to introduce arthroscopy. technique of TMJ arthrocentesis with pumping irrigation and hydraulic pressure to the upper joint cavity was given by **Murakami et al.**³² (1987)

Rehman and Hall suggested the use of a single Shepard cannula with two ports and two lumens.

TMJ arthrocentesis and lavage originated from the successful results of TMJ arthroscopy. Since the first publication on arthrocentesis by **Nitzan and Dolwick**³⁵ in 1990

Al-Khotani et al. show that disc displacement with reduction is the most common TMJ problem.

Nitzan et al.(1991)³⁶ then described a technique whereby two needles instead of one were introduced into the upper joint space.

Dolwick¹⁷ (1997) defined internal derangement as “an abnormal relationship of the articular disc to the mandibular condyle, fossa and articular eminence.” This disorder has clinical features such as pain, joint sounds, restriction of joint function during movements, and irregular or deviating jaw function.

Dolwick(1997)⁷ reported that lysis of adhesions is achieved by intermittent distension of the joint space by momentary blocking of the outflow needle and injection under pressure during lavage using the traditional technique described by Nitzan et al.(1990)³⁵

Frost et al.(1999)¹³ reported that arthrocentesis is the first line procedure for the treatment of acute and chronic closed lock of the TMJ in internal derangement.

Alpaslan and Alpaslan(2001)¹ found that arthrocentesis with injection of sodium hyaluronate seemed to be superior to arthrocentesis alone, particularly in patients with closed lock TMJ

Nishimura et al (2001)⁴² concluded that the pre- operative VAS pain score was a predictor of the effectiveness of arthrocentesis. In contrast to Emshoff's study, they found that the pain on the VAS in successful cases was significantly lower than that in unsuccessful cases and suggested that high levels of pre- operative pain reduce the effectiveness of the arthrocentesis.

Nitzen et al(2002)²⁴ Canthotragal line drawn is drawn from center of the tragus 10mm and below 2mm the tragal line and is about 25mm from skin to the centre of the joint.

Laskin(2003)²⁸ mentioned that it is usually difficult to insert the second needle anterior to the first one, and therefore, he had inserted the anterior needle in the posterior recess of the upper joint compartment by placing it 3–4 mm anterior to the first one and suggested this technique to be much easier than the previous method. However, if the second needle is entered anterior

to the first one, it is inserted into a narrower region of the upper joint compartment, and this may cause damage to the articular disc leading to failure of the outflow of irrigating solution. **Tuncel(2003)** similarly showed the effectiveness of arthrocentesis followed by multiple injections of HA in early-stage reducing disc displacement. In that study, patients with early-stage reducing disc displacement of the TMJ received HA injections 2 times a week, with only the first administered after arthrocentesis.

Yura et al.(2003)⁵² reported that lowpressurearthrocentesis (6.7 kPa)was unsuccessful in patients with severe adhesions, whereas arthrocentesis under sufficient pressure (40 kPa) released them.

Laskin et al.(2003)²⁸ suggested that because access to the anterior recess is not necessary, as it is when the entire joint must be visualised during arthroscopy, it is easier merely to insert the anterior needle 2–3mm in front of the posterior needle

A turning point occurred in 1997, when Nitzan³⁸ described another category that resulted in limitation of mouth opening, namely the anchored disc phenomenon. This disorder causes the disc to stick tightly to the fossa, thus preventing the gliding movement of the condyle.The increase in MMO from preoperative to 3 months postoperatively was 9.6 ± 4.67 mm for Group 1 and 12.6 ± 9.01 mm for Group 2, which was statistically significant for within the group analysis. This was in accordance with the study done by **Cavalcanti do EgitoVasconcelos et al. 2006.**

Guarda-Nardini et al.(2007)¹⁹ suggested that a single-needle technique should be used for both injection and aspiration of fluid in the posterior recess of the upper joint space

Zardeneta *et al.*,(1997)⁵³ in their study, reported that approximately 100 mL of total perfusate is sufficient for therapeutic lavage of the joint. However, in the study by **Kaneyama et al.,(2007)**²⁷ they suggested that the ideal lavage volume of perfusate for arthrocentesis is between 300 and 400 mL.

Alkan and Etoz(2010)⁴ proposed a new technique, in which the posterior point of entry for the first needle was the same while the point B is inserted 7 mm anterior from the middle of the tragus and inferior along the canthotragal line 2mm. This point B was adjusted parallel and 3 mm posterior to the first until bony contact was made

a technique using a single needle for both injection and ejection of irrigating solution has been described and gave interesting results over a short period

Manfredini et al(2010)³⁰ indicated that 5 weekly 2-needle arthrocentesis procedures plus low-molecular-weight HA achieved the highest improvement among 6 different treatment protocols in a clinical trial in patients with TMJ degenerative disease.

Oreroglu et al.(2011)⁴³ use a concentric-needle cannula system, i.e., using 2 different gauge needles placed in a concentric manner for SPA in TMJ and found it to be the least traumatic and perhaps the most feasible and cost-effective method for TMJ lavage.

Thomas et al.(2012)⁵⁰also suggested in their study that arthrocentesis is a very useful technique for treatment of acute closed lock of TMJ.

Grossman et al(2017)¹⁸ demonstrated that the variables of pain intensity, pain duration, and MMO had a significant effect on arthrocentesis outcomes. Besides, they evaluated the elimination of joint effusion as the outcome variable instead of the clinical symptoms and

concluded that the higher pain levels and low MMO negatively affect the outcome of arthrocentesis by means of eliminating joint effusion.

Nishimura et al(2001)⁴² and **Grossmann et al,(2017)**¹⁸ we found that the success rate of the arthrocentesis was better in patients with pre- procedure pain levelsof ≥ 3 and MMOs ≤ 35 mm. In patients, those who have severe clinical symptoms repeated arthrocentesis could be more helpful with combined anti- inflammatory drugs. Patients with high degree of VAS and severe limited MMO could be informed about the possibility of additional interventions before the arthrocentesis.

In a long-term study by **Lee et al**, simultaneous wearing of splint after arthrocentesis showed a better result than preoperative splint treatment . So further long-term study is needed for determining the relationship between the splint use and arthrocentesis.

3. CONCLUSION:

The arthrocentesis technique in temporomandibular joint is highly effective in pain reducing and in maximal mouth opening . Different type technique and different methods of arthrocentesis lysis and lavage are required a prolong observation.

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