

Arthrocentesis Versus Glucocorticsteroid Injection for Internal Derangemnet of Temporomandibular Joint

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Abstract:

Temporomandibular disorders (TMDs), which have the potential to be a significant source of impairment, are one of the leading causes of persistent facial pain. The two types of therapy options for temporomandibular joint (TMJ) disorders are surgical intervention and conservative maintenance. Invasive open techniques and minimally invasive procedures can be used in surgical management including arthroscopy, arthrocentesis, and intra-articular steroid injection. The basic idea of arthrocentesis is to insert two needles into the upper joint space and then wash the area with physiological saline or Ringer's solution. Many temporomandibular diseases are treated using arthrocentesis of the temporomandibular joint. Glucocorticoid injection into the joint is another therapy option. Corticosteroids were shown to have a significant anti-inflammatory action on synovial tissues, and they are known to lessen effusion, lessen discomfort, and increase range of motion. The goal of this study was to assess the existing studies on the efficiency of two minimally invasive treatments for the therapy of internal TMJ derangement: arthrocentesis and glucocorticosteroid joint injection.

Keywords: Arthrocentesis, Diseases, Glucocorticoid Injection, Pain, Temporomandibular Joint

INTRODUCTION:

Temporomandibular joint (TMJ) disorders affect the way the jaw operates, manifesting as limited mouth opening, uncomfortable chewing, and TMJ locking.^[1] When the natural relation between the articular disc and the condyle head changes, it can lead to a variety of clinical problems, including derangements of the condyle-disc system, which are known as intra-articular temporomandibular disorders.

'Hey' first used the word "internal derangement" in 1814 to refer to a broad orthopaedic term for a localised mechanical problem in the joint. Later, it was more precisely used to refer to the displacement of the TMJ disc. It is possible for the disc to move without reduction (with or without intermittent locking) or with reduction (with or without limited opening), leading to a variety of presentations.^[2]

The objectives of intervention for internal derangement include reducing or eliminating joint noises, increasing the restricted mouth opening, and regaining standard TMJ activity. Soft diet, behaviour modification, medication, inter-occlusal splints, intra-articular infusions, physical therapy, arthrocentesis, arthroscopy, and open joint surgery are among the treatment options.^[3] The goal of this review was to compare the effects of arthrocentesis and glucocorticosteroid (GCS) injections in the management of internal derangement of TMJ.

Arthrocentesis:

As a successful yet minimally invasive means of treating patients with symptomatic internal derangement, arthrocentesis was developed.^[4-6] Murakami used a simple needle pumping approach to induce hydraulic distention of the upper joint space in order to explain TMJ arthrocentesis for the first time in 1987.^[7] The upper joint space was afterwards lysed and lavaged using 2 needles, at least 300 ml of Ringer Lactate's solution, and an inflow needle, an outflow needle, by Nitzan and Dolwick.^[4] The lysis and hydraulic distention reduces adhesions,

enhances motion range, and promotes lubrication and synovial fluid flow. Inflammatory mediators, cytokines, matrix metalloproteinases, proteolytic enzymes, and debris are all removed via lavage. The efficacy rates vary between 70 and 95 percent.^[4-6] 26 individuals with abrupt onset sustained reduction in mouth opening and MRI evidence of articular discs glued to the glenoid fossa were the subjects of Sanroman's study.^[8] Patients with this tethered disc phenomena responded well to both arthroscopy and arthrocentesis.

Despite the seriousness of the joint condition, the Western world views TMJ arthrocentesis as the cure-all for all TMJID. Nevertheless, in practise, arthrocentesis only has a few uses and is ineffective for treating advanced joint disease. Acute onset closed lock has been linked to greater performance.^[9] Arthrocentesis has its constraints and cannot be used for direct joint viewing, biopsy, debridement, or excision of diseased tissue, despite arthrocentesis requiring minimal surgical skill and being less expensive to execute.^[10] Arthroscopy offers direct visibility, documenting, and, if necessary, the ability to execute a level 2 or 3 procedure concurrently.

Glucocorticosteroid injections:

Temporomandibular disorders comprise a wide range of pathological conditions and functional changes which can affect the muscles of mastication or the joint itself.^[11] The management of such patients includes conservative and surgical modalities. Surgery is considered when conservative treatment (analgesics, surgical splints, heat therapy, and soft diet) fail.

Research on TMJ injections have revealed that in patients with limited mouth opening and pain, an intra-articular steroid injection reduces pain and improves mouth opening.^[12] As corticosteroids are known to block the generation of arachidonic acid, the reduction in prostaglandin E synthesis results in a reduction in pain.^[13] The well-documented local adverse reactions of corticosteroids, are infections, obliteration of the articular

cartilage, chemical condylolysis, and the increased incidence of a previously established TMJ disease.^[14]

DISCUSSION:

Many investigations and studies have established that arthrocentesis, a very effective, generally straightforward, and minimally invasive treatment, is a safe and straightforward method for treating IDTMJ both in short-term and a long-term follow-up time (originally described by D. W. Nitzan).^[4]

In order to treat internal TMJ derangement, AbdulRazzak (2020)^[15] examined the efficiency of two minimally invasive techniques: arthrocentesis and local single joint administration of GCS. In this investigation, 30 patients with internal derangement, which was validated clinically and by a cone beam CT scan, ranged in age between 18 and 42. Two categories of 15 patients each were formed from the patients. One cohort (group A) underwent arthrocentesis using a Shepard's cannula and lactated Ringer's solution. Other group (group B) received a GCS administration using a 1 ml/40 mg methylprednisolone acetate vial. When contrasted to arthrocentesis, the GCS administration had less success treating TMJ internal derangement, according to the findings of a 4-month clinical follow-up. The results of arthrocentesis and lavage, however, were positive.

Singh et al.^[16] released a study in 2022 contrasting the effectiveness of arthrocentesis with intra-articular steroid administration for the treatment of temporomandibular disorders. They sought to compare and determine which of the two procedures was more effective while evaluating the effectiveness of intra-articular steroid injection and arthrocentesis in patients with internal temporomandibular joint derangement (IDTMJ). Twenty individuals with IDTMJ who were eligible for inclusion but were not progressing to conservative therapy underwent arthrocentesis or intra-articular steroid injection at randomly. The outcomes of these two operations were then evaluated. The findings of the study, along with those of many other studies, suggest that both therapeutic approaches are effective in easing the signs and symptoms of patients with IDTMJ, with arthrocentesis offering marginally stronger pain relief and improved mouth opening especially in comparison to intra-articular injection with corticosteroid over a period of 3 months, which was a time frame taken into account for recognising the protracted effects of the methods used. Also, both treatment approaches demonstrated to be cost-effective.

FUTURE DIRECTIONS:

In the interest of effectively handling individual patients, practitioners must be meticulous in determining the correct diagnosis and etiology of TMJID. Because of the dearth of surgeons skilled in various procedures, India currently falls short in providing the entire range of TMJ therapies. For oral and maxillofacial surgeons, there are outstanding teaching opportunities and practical training programmes. To bring India up to par with the nations

around the world, our knowledge of TMJID therapy must constantly be expanded.

CONCLUSION:

Though there are not many studies available comparing arthrocentesis and GCS injection, based on the available literature, arthrocentesis appears to be superior and more effective than GCS injections. The TMJ arthrocentesis is a minimally invasive procedure that sits between conservative and surgical treatment. It is a straightforward procedure that requires few tools and may be repeated. It also has a low frequency of problems. Because of this, it is now widely used and well regarded in the treatment of temporomandibular joint internal abnormalities.

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