

Human Journals

Review Article

September 2021 Vol.:19, Issue:3

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Evaluation of The Effectiveness of Arthroscopy in The Surgical Treatment of Temporomandibular Disorder: Literature Review



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Submitted: 21 August 2021

Accepted: 26 August 2021

Published: 30 September 2021

Keywords: Arthroscopy; Surgical Treatment; Temporomandibular Disorder

ABSTRACT

The etiology of temporomandibular disorders (TMDs) is multifactorial and may be related to emotional tension, occlusal disturbances and interferences, postural changes, masticatory muscle dysfunction, and intrinsic changes in the structures that make up the temporomandibular joint (TMJ). Given the above, this study aims to gather and disseminate updated knowledge on the assessment of the effectiveness of arthroscopy in the surgical treatment of TMD through a review of the scientific literature. This is a literature review, of a qualitative nature, where an electronic search for publications in the PubMed and Scielo databases was performed. The scientific literature has shown that TMJ arthroscopy is a conservative and effective surgical approach that exhibits good clinical results, allowing for a postoperative period with fewer complications. It is noteworthy that puncture points are safer than pre- or post-auricular incisions, which can compromise noble structures, such as the facial nerve. However, there are limitations of this procedure, such as discoplasties in cases of anterior disc dislocation, discoplasties with graft replacement, tumor exeresis, and condyle fractures, requiring open surgery.



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INTRODUCTION

The stomatognathic system is formed by bones, ligaments, muscles, and teeth, which participate in chewing, speaking, tasting, and breathing, among others. It is noteworthy that one of its most active components is the temporomandibular joint (TMJ), composed of a ginglymoidal and arthroal portion. The articular disc, articular eminence, mandibular fossa, and condyle are present on their articular surfaces. The posterior part of the articular eminence and the condyle are surrounded by fibrocartilage, an extremely resistant tissue. The articular disc is also composed of fibrocartilage, being thinner in the intermediate zone; this structure is avascular and not innervated, except for the peripheral edge (Basso, 2018; Spillere, 2020).

Regarding the etiology of temporomandibular disorders (TMDs) it is stated that it is multifactorial and may be related to emotional tension, occlusal disturbances and interferences, postural changes, masticatory muscle dysfunction, intrinsic changes in the structures that make up the TMJ, or even the combination of these factors, characterizing symptomatology that is difficult to diagnose and treat, involving painful manifestations and lack of movement coordination (Franco, 2019; Ferreira, 2020).

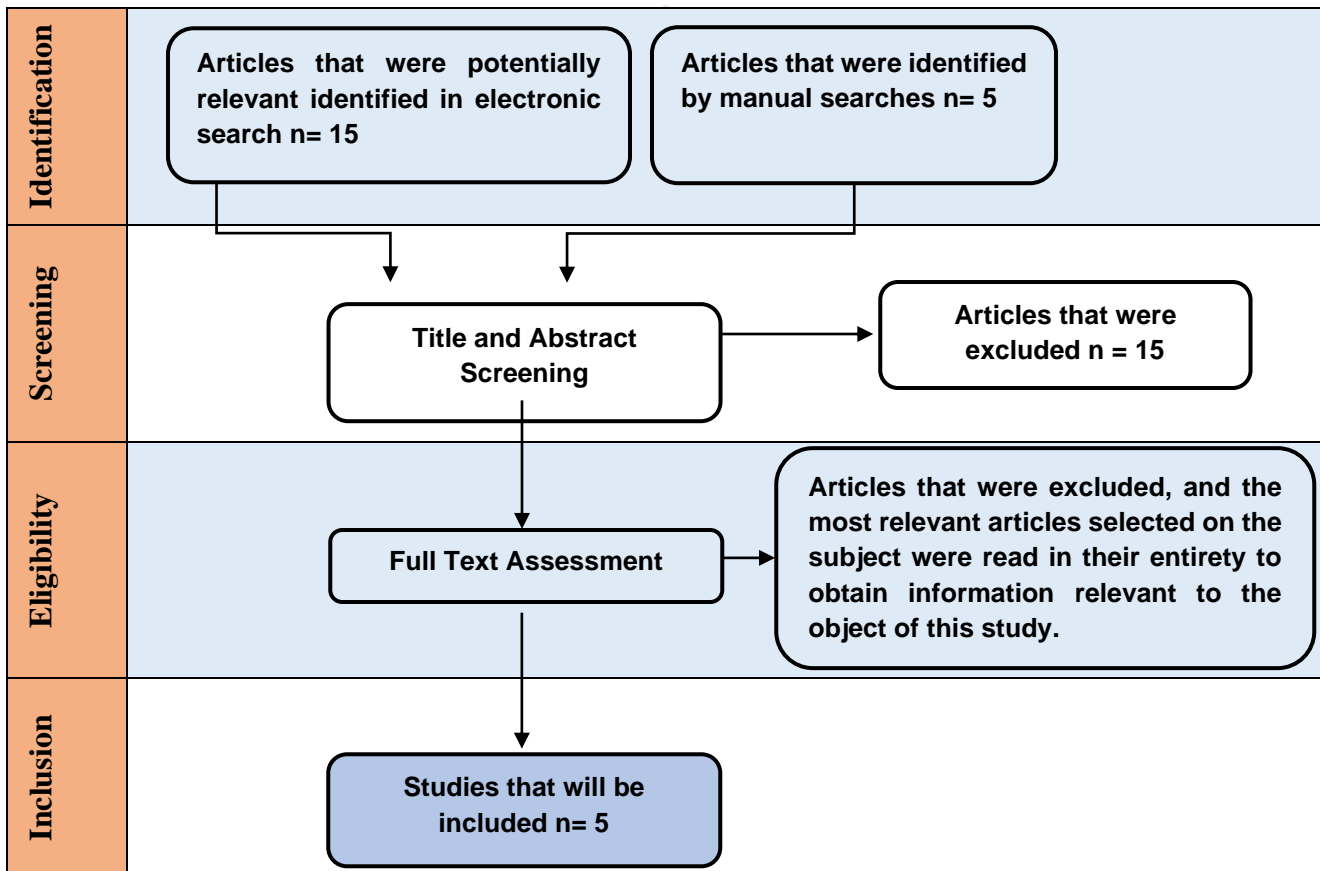
Signs and symptoms peak around 20-40 years of age. Progression to acute and/or chronic pain is associated with greater psychosocial distress, sleep disturbances, and comorbidities. Another factor to be taken into account is that TMJs are sites of other pathologies common to other synovial joints such as arthritis, arthrosis, and benign and malignant neoplasms (Torres, 2017; Franco, 2019; Ferreira, 2020).

Ohnishi (1970) developed a technique for direct visualization of the TMJ using a small arthroscope, derived from knee arthroscopes, and other researchers and clinicians have also developed access techniques using various anatomical repairs. It is noteworthy that TMJ arthroscopy is a less aggressive treatment modality than arthrotomy, showing a more predictable postoperative period. Given the above, this study aims to gather and disseminate updated knowledge on the assessment of the effectiveness of arthroscopy in the surgical treatment of TMD through a review of the scientific literature.

MATERIAL AND METHODS

This is a literature review, of a qualitative nature, characterized by the observation and recording of the effectiveness of arthroscopy in the surgical treatment of temporomandibular disorders, where an electronic search for publications in the PubMed and Scielo database was performed using the following words key, obtained according to the Medical Subject Headings (MeSH): (arthroscopy, surgical treatment, temporomandibular disorder), with the Boolean operator “AND”. The following inclusion criteria were adopted for the search for studies: Reporting that surgical treatment is effective for temporomandibular disorders; Deal with aspects related to the indications, contraindications of attroscopy; have been released from January 2015 to January 2021 and published in Portuguese and English. As exclusion criteria, articles not related to the topic, which were not available in full and which were published in duplicate (Table 1).

Table 1. Inclusion and exclusion criteria for the present study.



Source: Authors (2021).

RESULTS AND DISCUSSION

RESULTS

The results of this literature review, such as data on authors, year of publication, journal, country of publication, study objective, type of study, and work results are shown in Table 2.

Table 2. Main information from the evaluated studies (n = 5).

Author and year of publication	Journal	Country of publication	Study objective	Kind of study	Results
Smolka (2005)	J. Oral Maxillofac. Surg	Switzerland	The study was designed to evaluate the outcome of standard arthroscopic lysis and lavage for internal derangement with various levels of severity by comparing the preoperative staging with arthroscopic findings and subsequent success rates.	Clinical study	The arthroscopic findings showed a correlation between increasing scores and advancing stage. Postoperatively, the patients could be classified into 2 groups with either satisfactory or poor clinical outcomes. The overall success rate was 78.3% (18/23). The success rates were slightly lower for patients with advanced stages than for those of stages II and III. Patients

					unresponsive to the treatment were found in all stages.
Martins (1993)	Rev Bras Ortop .	Brazil	Considerations were made about the anatomy, physiology, and pathology of the TMJ; history, evolution, instrumental and material; and arthroscopic images of various intra-articular pathologies are presented.	Literature Review	TMJ arthroscopy has revolutionized the surgical approach to this complex joint. The rapid development of research and technology will lead, in the short term, to an expansion of the universe of application of arthroscopic TMJ surgery.
González-García	J. Oral Maxillofac. Surg	Spain	This study evaluates the complications of arthroscopy in patients with internal derangement of TMJ.	Retrospective study	Special care must be taken to reduce complications within the upper joint space using adequate instrumentation and by paying attention to essential points of the arthroscopic technique.
Silva (2014)	Rev Asso	Brazil	Evaluate mouth opening	Clinical study	Arthroscopic lysis and lavage proved to be a

	c Paul Cir Dent.		improvement, pain improvement, articular disc positioning, and complications after arthroscopic TMJ lysis and lavage.		minimally invasive treatment, with efficient and stable results in the treatment of patients with internal TMJ disorders, refractory to conservative therapy, promoting an improvement significant in mouth opening amplitude, decreased pain in function, it improves the position of the articular disc.
Silva (2015)	Brazi lian Journ al of Otorh inolar yngol ogy	Brazil	Evaluate the improvement of mouth opening, pain relief during function, articular disc position, and after lysis and arthroscopic TMJ lavage.	Prospecti ve study	Arthroscopic lysis and lavage exhibited a high success rate with low internal morbidity and TMJ derangements.

Source: Authors (2021).

DISCUSSION

The TMJ is responsible for performing various facial movements, such as talking and chewing. The presence of dysfunctions in these structures can cause several functional disorders in the patient (Smolka, 2005). Torres (2017) highlighted in his study that the pathophysiology of TMD is related to dental/occlusal causes. In TMD, a complex interaction is observed between environmental, emotional, behavioral, and physical factors, parafunction and micro-traumas, which are responsible for the release of inflammatory mediators and neuropeptides in muscles, which can sensitize the peripheral and central nervous system (Smolka, 2005; Torres, 2017).

Along with altered pain regulation mechanisms, such factors can lead to localized or more generalized muscle pain (Smolka, 2005; Torres, 2017). However, some therapeutic resources can be used in the treatment of TMD, among them; manual therapy maneuvers such as myofascial relaxation, mobilizations, joint manipulations, and massage therapy stand out as simple, inexpensive, and highly relevant resources in the treatment of dysfunction (Basso, 2018; Spillere, 2020).

In therapeutic maneuvers for TMDs, there are non-invasive surgical techniques such as arthroscopy that can alleviate the painful symptoms of these patients. This method works by video laparoscopy, making recovery faster and less painful. In arthroscopy, two small cuts are made, and one of them, a camera is introduced that transmits the images to a monitor and, thus, it is possible to see the internal parts of the joints. The use of arthroscopy for the treatment of TMD occasionally occurs for patients who have not had satisfactory results with conventional treatments and who do not have pathologies that require major surgeries (Torres, 2017; Franco, 2019; Ferreira, 2020).

CONCLUSION

The scientific literature has shown that TMJ arthroscopy is a conservative and effective surgical approach that exhibits good clinical results, favoring a postoperative period with fewer complications. It is noteworthy that puncture points are safer than pre- or post-auricular incisions, which can compromise noble structures, such as the facial nerve. However, there are limitations of this procedure, such as discoplasties in cases of anterior disc dislocation, discoplasties with graft

replacement, tumor exeresis, and condyle fractures, requiring open surgery. Future studies are needed to investigate the application of arthroscopic TMJ surgery and its long-term results.

REFERENCES

1. BASSO, D. Efeito da reeducação postural global no alinhamento corporal e nas condições clínicas de indivíduos com disfunção temporomandibular associada a desvios posturais. **Revista Fisioterapia e Pesquisa**, v.17, n.1, p.63-8, 2018.
2. FRANCO, A. L. Fisioterapia no tratamento da dor orofacial de pacientes com disfunção temporomandibular crônica. **Revista de Estomatologia**, v.1, n.1, p.10, 2019.
3. FERREIRA, F. V.. Desordens temporomandibulares: uma abordagem fisioterapêutica e odontológica. **Revista Stomatos**, v.15, n.28, 2020.
4. GONZÁLEZ-GARCÍA, R. Complications of Temporomandibular Joint Arthroscopy: A Retrospective Analytic Study of 670 Arthroscopic Procedures. **J Oral Maxillofac Surg**, v.64, n.11, p.1587-1591, 2006.
5. MARTINS, W.D. Artroscopia da articulação temporomandibular. **Rev Bras Ortop**, v. 28, n.8, p.547-552, 1993.
6. OHNISHI, M.: Newly designed needle scope system for the arthroscopic surgery by double channel sheath method. **J Jpn Soc TMJ** 1: 1-8, 1989.
7. SILVA, P. A. Lise e lavagem artroscópica da ATM - uma análise de 102 pacientes e 175 articulações. **Rev Assoc Paul Cir Dent**, v.68, n.2, p.132-136, 2014.
8. SILVA, P. A. A prospective study of 138 arthroscopies of the temporomandibular joint. **Brazilian Journal of Otorhinolaryngology**, v.81, n.4, p. 352-357, 2015.
9. SMOLKA, W. Arthroscopic lysis and lavage in different stages of internal derangement of the temporomandibular joint: correlation of preoperative staging to arthroscopic findings and treatment outcome. **J Oral Maxillofac Surg**, v.63, n.471, p.8-30. 2005.
10. SPILLERE, A. Tratamento fisioterapêutico na disfunção da articulação temporomandibular (ATM). **Rev Bras Fisioter**, v.1, n.1, p.10, 2020.
11. TORRES, F. Efeitos dos tratamentos fisioterapêutico e odontológico em pacientes com disfunção temporomandibular. **Fisioter. Mov.** v. 25, n. 1, p.117-125, 2017.