INTERNAL DERANGEMENTS OF THE TMJ: AN UPDATE

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ABSTRACT
Objectives: To review the literature on internal derangements of the temporomandibular joint and describe the characteristics of common TMJ internal derangements. Material and methods. A review of the literature about TMJ internal derangements was carried out and a total of 39 papers were evaluated summarizing major aspects of each study. Results: A total of 8 internal derangements including capsulitis, retrodiscal pain, disk attachment pain, disk displacement without reduction, arthralgia, osteoarthritis, osteoarthrosis and synovial chondromatosis are commonly described in the literature. Some of these disorders may be diagnosed clinically. However, more complex disorders including arthralgia, disk displacement without reduction and synovial chondromatosis need more sophisticated methods to obtain an accurate diagnosis. Conclusions: 1. There are more than 8 internal derangements of the temporomandibular joints presenting with different clinical, epidemiological and diagnostic characteristics. 2. Diagnosis of such categories is carried using history and description of sign and symptoms, magnetic resonance and tomographic images and more sophisticated methods. 3. The treatment of such disorders include splints, counseling, drugs, self care, warm, physiotherapy, TENS, local anesthetics and even surgery.
Keywords: TMJ. Internal Derangements

RESUMO
Objetivos: Revisar a literatura sobre distúrbios internos da ATM e descrever as características clínicas dos distúrbios internos que ocorrem mais frequentemente. Materiais e métodos: Foi feita uma revisão da literatura sobre distúrbios internos articulares para realizar este estudo, tendo sido utilizados um total de 39 artigos Resultados: Um total de 8 distúrbios internos articulares inclusive capsulite, retrodiscite, dor nas inserções no disco articular da ATM, deslocamento anterior do disco sem redução, artralgia, osteoartrite, osteoartrose e condromatose sinovial foi descrito. Alguns destes distúrbios podem ser descritos clinicamente enquanto que outros, como deslocamento anterior do disco sem redução, artralgia e condromatose sinovial, precisam métodos mais sofisticados inclusive ressonância magnética para um diagnóstico mais preciso. Conclusão: Existem mais de 8 distúrbios internos articulares da ATM que apresentam diferentes características clínicas, epidemiológicas e diagnósticas. O diagnóstico destas categorias de distúrbios é realizado usando história e descrição dos sinais e sintomas, ressonância magnética, tomografia e outros métodos mais sofisticados. O tratamento de tais distúrbios inclui o uso de placas oclusais, drogas, aconselhamento, autocuidados, calor, fisioterapia, TENS, anestésicos locais e ocasionalmente cirurgia.

Palavras-chave: ATM. Distúrbios Internos.

INTRODUCTION

Regarding both anatomy and function, the temporomandibular joint (TMJ) is considered by both clinicians and researchers an unique and especial articulation of the body. Both diagnostic and treatment of TMJ disorders are still subjected to considerable controversy (MELO-BARBOSA, 2009). The terms "Internal derangements of the temporomandibular joint" were introduced in the dental literature by many researchers including Farrar and Mcarthy (1979), Bell (1985) and Nitzan and Dolwick (1991), to denote abnormal anatomical and functional relationships between some components of the temporomandibular joint which may result in inflammation, pain and joint noises. The importance of the study of TMJ-ID has great relevance if we consider their high prevalence in the general population particularly in an age range between thirty and forty years (CONTI; MIRANDA; ORNELLAS, 2000). Additionally, TMJ-IDs are also related with a combination of signs and symptoms located close and far from the TMJs, including headaches, cervical pain, facial pain, joint noises and even earache (TAUCCI-BIANCHINI, 2007).

LITERATURE REVIEW

Temporomandibular joint

The most important components of the temporomandibular joint include the joint condyle and disk, capsular ligament, internal and external ligaments, retrodiskal tissues, and its innervation and vascularization. In the normal TMJ, the meniscus fits over the head of the condyle. The thinner central portion of the meniscus is related to the anterosuperior aspect of the condyle when the teeth are in occlusion (ÖR-YUCETAS, 1986). The posterior region of the temporomandibular joint is highly innervated and vascularized and its major function is to cushion the impact on the joint related to the diversity of functions of the masticatory system including eating, swallowing, breathing and posture. On the other hand such region is extremely vulnerable to parafunctional habits which may produce pain and inflammation (MOLINA et al., 2003). Temporomandibular disorders or TMDs is a collective term used to describe a number of disorders occurring in the temporomandibular joint, adjacent masticatory muscles (TAUCCI-BIANCHINI, 2007) and even cervical muscles (MELO-BARBOSA, 2009).

Internal joint derangements

TMJ-IDs is also a collective term used to describe a number of inflammatory and painful disorders occurring into the temporomandibular joint. The term also describes a functional and anatomical abnormally between the condyle and the joint disk (MARIZ et al., 2005). Gulen et al., (2009), used the terms "Internal Derangements" to denote an abnormal relationship between the mandibular condyle, articular eminence and the joint disk. In a classic study of TMJ internal derangements, Nitzan-Dolwick (1991), classified such disorders in four types: Stage 1 or disk-displacement with reduction characterized by single or reciprocal clicking, Stage II or disk displacement with reduction and intermittent locking, characterized by severer pain, periodic locking and presence of reciprocal clicking, Stage III or disk displacement without reduction characterized by no joint noises, severe limitation of jaw opening and permanent

locking, and Stage IV or disk displacement without reduction and perforation of the posterior attachment. Some researchers (MOLINA et al., 2003) do not pay too much attention to the stage of internal joint derangements and prefer to classify such disorders as capsulitis, retrodiskal pain, disk-attachment pain, disk displacement without reduction and locking, locking with a normal shape and position of the disk, adhesions, arthralgia and osteoarthritis.

Specific internal joint derangements

Capsulitis is one of the most common disorders in TMJ-IDs (MOLINA et al., 2003) and is associated with a local inflammation in the external layer of the capsule usually associated with synovial inflammation. Pressure, micro or macro-trauma, parafunctional habits, border jaw opening may be the most common causes of TMJ capsulitis. Retrodiskal pain is pain and inflammation occurring in highly innervated and vascularized tissues located in the posterior area of the temporomandibular joint. Such a disorders is highly dependent on pressure, distension, posterior condylar position and compression of some anatomic components in the retrodiscal pad. There is a high prevalence of retrodiskal pain in patients presenting with parafunctional habits and craniomandibular (CMD) disorders (MOLINA et al., 2003). External macro-trauma, repetitive micro-trauma from parafuncional habits, loss of posterior dental support combined with oral parafunctions inducing a posterior condylar position are other biomechanical factors associated with retrodiskal pain (FERNANDES NETO et al., 2006). Some researchers (MOLINA et al., 2003; BELL 1985), claim that some sign and symptoms characteristics of retrodiskal pain include pain on closing the jaw in the maximal intercuspal position, pain on manipulating the mandible to centric relation (CR), pain if performing a border lateral jaw movement to the affected side, pain on manipulating the mandible in the CR position, symptom which is interrupted by placing cotton rolls in the posterior teeth which distract the joint condyle and this alleviated the pain, and finally, pain on palpating the mandible via external auditory canal.

Disk-attachment pain is a more chronic advanced internal joint derangement characterized by severe inflammation, a gradual decrease in jaw opening, presence of unilateral or bilateral reciprocal clicking, difficulties with treatment using conventional modes of therapy , intermittent pain mainly on function, jaw deviation to the affected side and finally periods of transient locking (MOLINA et al., 2003). Mean jaw opening in disk-attachment pain patients is close to 40mm with some minor variations. Disk displacement without reduction occurs when the displaced disk is located anterior and probably inferiorly and medially when related to the position of the joint condyle in maximal intercuspal position. The anteriorly displaced disk does not return to a normal position during closure. On the other hand, the condyle is not able to perform full anterior and inferior translation during opening, thus, resulting in partial jaw opening. The condyle is not able to pass under the displaced disk and its thicker posterior band (FERNANDES NETO et al., 2006). Patients with such a disorder present with a limited jaw opening (25-30mm), chronic pain, deviation of the midline to the affected side, inability to move the jaw to the opposed side, no joint noise during the acute phase and crepitus as DDWoR becomes more chronic, indicating the onset of degenerative disorders. It is not known if arthralgia occurs following DDWoR, or just before the development of Osteoarthritis. Arthralgia can be defined as an early inflammatory – degenerative advanced disorder of the TMJ, which precedes the development of TMJ osteoarthritis. Even though arthralgia is characterized by the presence of burning pain, the clinical management is quite similar to other TMJ-IDs (MOLINA et al., 2003). Bell (1985), has the point of view that arthralgia is associated with an inflammatory-

degenerative process which causes erosion and gradual destruction of the cartilage, thus preceding, the development of osteoarthritis.

TMJ osteoarthritis or TMJ-OA is classically described as an inflammatory-degenerative process not rarely associated with macro or micro-trauma, although systemic components are also considered in the pathophysiologic process. Excessive pressure on the TMJ condyle may result in progressive destruction and degeneration of the fibrous articular layer covering and protecting the joint condyle leading to a decrease in the elastic strength of the joint fibrous cartilage, thus setting the stage for other advanced degenerative changes in the joint cartilage. Because the degenerative process in osteoarthritis occurs gradually being more commonly observed in older adults, we think of osteoarthritis as a chronic, insidious and slow inflammatory process affecting disk, condyle and articular eminence. Such point of view is reinforced by one study emphasizing that osteoarthritis has a gradual onset and the disorder is self limited (FERNANDES NETO et al., 2006). TMJ-OA is radiographically characterized by irregularities of the articular surfaces, ostephytosis, deformity and is frequently seen in joints with longstanding disk displacement without reduction. It is suggested as a source of pain, but it is also often seen in subjects with no symptoms (YAJIMA et al., 2007). TMJ osteoarthritic patients seem to present higher level of pain as compared to non osteoartritic subjects (YAJIMA et al., 2007) indicating the inflammatory and degenerative nature of the condition.

Osteoarthrosis is defined as a purely degenerative disorder occurring in the joint tissues and even in the subchondral bone representing a severe alteration in the anatomy of the joint. It is characterized by excessive pressure on some tissues of the TMJ, thus leading to degeneration of the fibrous articular tissue recovering the joint condyle. There is also a decrease in the elastic strength of the fibrous cartilage, increased osteoclastic activity and thinning and perforation of the condylar head (FERNANDES NETO et al., 2006). Osteoarthrosis may be diagnosed when the remodeling often occurs unilaterally, the symptoms appear to worsen as the day goes on, crepitation as distinct from clicking is often present and radiographic evidence is frequent: flattening,sclerosis, osteophytes and erosion (BARKIN-WEINBERG, 2000). Synovial chondromatosis is characterized by a metaplasia of the cartilage. It is quite rare, has a benign character affecting mainly the temporomandibular, knee, shoulder joint and very rarely, the temporomandibular joints. Some researchers including BONATTI et al., (2008), believe that synovial chondromatosis is an embryologic disorder, that is, a metaplasia of the cartilage originating in the remnants of the synovial tissue. Major symptoms in such a disorder include pain, increase in joint volume, rigidity of the joint and adjacent muscles, crepitus, functional limitation of the jaw. Such symptoms are chronic and progressive in nature.

Etiology and mechanisms

In the first years in the study of temporomandibular disorders, BELL (1985), mentioned that some researchers suggested that the lost of posterior teeth and a change in the vertical dimension of occlusion resulting in a posterior and inferior condylar position could induce trauma, inflammation and pain in the retrodiskal tissues. Most temporomandibular disorders including internal joint derangements are the result of both muscles and joint derangements closely related to emotional tension or anxiety, bruxing behavior and other parafunctional habits, muscle spasm, occlusal disharmony and iatriogenic factors (SONIS, FAZIO, FANG, 1995). Regarding pathophysiological mechanism implicit in TMJ-IDs, some studies (HOBEICHE et al., 2008, ISBERG et al., 1986, ISRAEL et al., 1999) defend the notion that impingement and compression,

inflammatory changes in the retrodiskal tissues, inflammatory changes in the synovial membrane fluid resulting in joint effusion and capsulitis, are some of the early mechanism in TMJ-ID pathosis. Additionally, a recent investigation (ISRAEL et al., 1999), defend the point of view that increased loading on the TMJs is capable of breaking the balance between synthesis and degradation of cartilage, increasing degradation of proteoglycans and a change in the secretion of synovial fluid, thus leading to abnormal lubrication and setting the stage for a degenerative disorder. Additionally, other factors including adhesions, destruction and deformation of parts of the disk, and degenerative/inflammatory processes, are also involved in the process of TMJ-IDs (MARIZ et al., 2005). The histopathologic change of the soft tissue in the TMJ is caused by chronic disc displacement. The joint disc is avascular and has poor capacity for repair resulting in progressive degeneration and deformity (HOBEICHE et al., 2008). In those cases in which an ongoing degenerative process is observed, synovitis, destruction of cartilage, expression of cytokine receptors, secretion of cytokines in the synovial fluid, can be found (GÜLEN et al., 2009).

Signs and Symptoms and examination

Because many internal derangements occur into the temporomandibular joint, there is a profusion of signs and symptoms including inflammation, pain, abnormal jaw movements and joint noises (GÜLEN et al., 2009). Other recognized sign and symptoms include tenderness in the adjacent masticatory muscles, a lower threshold for pain and decreased mouth opening (SONIS, FAZIO, FANG, 1995). Pain during active jaw movements, muscle stiffness during waking up in the morning and crepitus, are common signs of internal joint derangements of the TMJ (GARCIA et al., 2008). Gingival retraction, abnormal occlusion, ear disorders, abnormal tenderness in most masticatory muscles and even headache, have also been reported in patients presenting with TMJ-IDs (MELO-BARBOSA, 2009). In a recent study, researchers (MOLINA et al., 2003), evaluated the description of pain in patients with different TMJ-IDs, and concluded that TMJ pain can be described as dull, aching, sharp, electric shock and even as burning. Dull and aching pain are characteristics of the first stages of TMJ – IDs, and periodic locking and sharp pain are regarded as characteristics of intermediate stages of the disease, locking, burning pain and crepitus are seen in advanced stages of the disease (MOLINA et al., 2003). Regarding joint noises, patients may describe clicking, crepitus and popping sensations (RAMOS et al., 2004). REHMAN-HALL (2009) and VASCONCELOS et al. (2002), emphasize the profusion of sign and symptoms in TMJ-IDs patients and report that jaw locking, fatigue of the jaw muscles and even cervical pain, occur very frequently in such patients.

Symptoms related to temporomandibular (TMJ) dysfunction and internal derangements decrease with age and are often remitting and self-limiting (PEREIRA, LUNDH, KOPP, 1994). Manual palpation of every chewing muscle and use of a stethoscope to diagnose the quality of joint noises, and history of sign and symptoms are essential components of the examination process in patients presenting with TMJ-IDs (CONTI; MIRANDA; ORNELLAS, 2002). TMJs palpation to assess presence and quality of pain and joint noises, examination of the degree of jaw opening, are also key components of the examination process as such data can be correlated with specific internal joint derangements (VASCONCELOS et al., 2002). Use of images are sometimes necessary to confirm or deny the presence of functional and/or morphologic changes in the joint. Such images include transcranial, tomographic and even MRI. Panoramic radiographies can be used to have a complete view of both the maxilla and mandible. Magnetic resonance imaging or MRI, is of especial interest when the clinician

or specialist is interested in observing dysplasia and degeneration of the joint disk, edema and inflammation in the posterior area of the joint, inflammatory bony changes, osteophytes, arthrose and other major changes in the joint. MRI is also a very useful method to assess the form and position of the joint disk both during rest and function.

Diagnosis and treatment

The diagnosis of TMJ-IDs can be established paying careful attention to the characteristics which are unique of a particular TMJ disorder, the use of diagnostic biomechanical tests, taking the history of sign and symptoms, obtaining a full description of the pain, investigating the response to specific modes of therapy which are key elements in the diagnostic process. HOBEICHE et al., (2008), reported that in the case of non reducing disk displacement, clinical examination, panoramic radiographs and MRI findings are used in the diagnosis of such specific disorder. Because there is a number of internal joint derangements with different clinical and biomechanical features, treatment should be customized to target specific disorders. In other words, there are many modes of therapy for TMJ-IDs including anti-inflammatory and analgesic drugs, warm, electrical nerve stimulation, occlusal splints, limitation of jaw function, soft diet, and anesthetics to the joint and muscles are some of the most popular modes of therapy (MOLINA et al., 2003). When Osteoarthitis sign and symptoms persist, soft diet, aspirin and other anti-inflamatory drugs, anti-anxiety drugs and a stabilization splint are indicated to decrease inflammation and loading, muscle hyperactivity and occlusal forces applied to the teeth. Surgical intervention may be indicated in some cases. In cases of disk displacement without reduction counseling to increase awareness about parafunctional habits, replace posterior teeth, use of a repositioning device, warm, manipulation of the jaw, drugs for anxiety and inflammation are indicated (FERNANDES NETO et al., 2010,). Surgery may be indicated in specific cases of TMJ-ID, but some clinicians (ISRAEL et al, 1999) claim that such method of treatment do not eliminate or reduce the causes of TMJ-ID, for example, parafunctional habits. Clinical experience also suggests that some clinicians prefer to use surgery even when the disorder can be treated with a conservative approach.

Arthrocentesis is a conservative surgical procedure aiming at eliminating inflammatory mediators and biochemical waste products in the upper joint compartment, thus reducing pain and inflammation. Fluid pressure produced during arthrocentesis encourage condylar movement impaired by intra-capsular adhesions and lavage eliminates disk fragments in the upper part of the joint (DIETER et al., 2008). Arthrocentesis associated reduction in pain is thought to be caused by the removal of inflammatory substances within the joints and the increased disc mobility which prevents adverse load concentration on the supporting tissue (HOBEICHE et al., 2008). Arthrocentesis does not eliminate the causes of TMJ-IDs and excellent results could be achieved using splints, anti-inflammatory drugs , soft diet and transcutaneal electrical nerve stimulation.

Goals of this study

The goals of this study are to provide a thorough description of the most important internal derangements of the TMJs based on a review of the current literature on the subject.

MATERIALS AND METHODS

This study is based on a review of a monograph about internal derangements of the TMJs, presented to UnirG Dental School by a senior dental student. Additionally, other papers on the subject were reviewed so as to present a more significant discussion about topics implicit in the subject of TMJ-internal derangements. Thus, we reviewed a total of 39 papers on this topic. Only the most prominent papers on the subject were reviewed so as to provide for the reader, solid concepts on the different disorders which encompass the full concept of internal derangements of the TMJs.

RESULTS

Based on the review of about 39 papers about TMJ-IDs, the following results can be presented:

1. Many TMJ-IDs can be described and include capsulitis, retrodiskal pain, disk attachment pain, disk displacement with and without reduction, arthralgia, osteoarthritis and osteoarthrosis;
2. TMJ-IDs are caused by a diversity of factors;
3. Many mechanisms operate in TMJ-IDs to cause inflammation, pain and changes in form and position of the joint disk;
4. There are many signs and symptoms in patients presenting with TMJ-IDs. Such signs and symptoms are used to establish an accurate diagnosis;
5. Pain in TMJ-IDs varies in both quality and severity;
6. Treatment of TMJ-IDs, varies greatly and is characterized by its complexity.

DISCUSSION

1. Many internal derangements can be described in the temporomandibular joints: A diversity of TMJ-IDs types can be observed in CMD patients ranging from capsulitis and retrodiskal pain to arthralgia and osteoarthosis. Such disorders have been described in many studies. This observation has support in one investigation (KURITA; WESTESSON; TASAKI, 1992; WESTESSON, 1992), indicating that various types of internal derangement, as well as degenerative joint disease are the most common findings when imaging the temporomandibular joints in patients presenting with clinical symptoms such as clicking, locking, limitation of opening and pain. Additionally, Nitzan-Dolwick (1991), described patients presenting with pain and severe limitation in jaw function and established a classification system of TMJ internal joint derangements as follows: Disk displacement with reduction (Stage 1), disk displacement with reduction and intermittent locking (Stage II), disk displacement without reduction (Stage III) and disk displacement without reduction and perforation (Stage IV). Eriksson-Westesson (1983), evaluated 50 patients presenting with clicking or clicking with transient or permanent limitation of opening and reported different frequencies of patients presenting with anterior disc displacement with reduction unilateral/bilateral and patients presenting with anterior disc displacement without reduction unilateral/bilateral. Additionally, Chosegros et al., (1996), described patients presenting with disc displacement with and without reduction, fibrous adhesions, synovitis, fibrocartilaginous lesions with no exposure of bone, fibrocartilaginous lesions with exposure of bone and hypermobility.

2. There are many factors causing internal derangements of the TMJs: TMJ-IDs are caused by a number of factors including micro and macro-trauma, overloading from parafunctional jaw habits, occlusal abnormalities, muscle hyperactivity and spasm, jaw

deformities. Most probably, a combination of factors is more determinant to increase the vulnerability of the many components of the TMJs to displacement, pain and inflammation . This assumption has partial support in one study (MOLINA et al., 2003), indicating that overloading of the joints may be one factor for the development of disk-attachment pain signs and symptoms. Patients presenting with disk attachment pain and bruxism exhibit a diversity of signs and symptoms as compared to patients presenting CMDs without bruxing behavior. TMJ-IDs may also occur as a result of mandibular hyperextension, resulting from yawning, overextension during dental treatment, third molar removal, intubation, anesthesia or trauma (EVERSOLE-MACHADO, 1985).

3. A diversity of mechanisms operate leading to inflammatory and degenerative changes: Compression, degradation, destruction, formation of anatomical irregularities, release of biochemical mediators, formation of inflammatory fluid and stimulation of nociceptive nerve endings are prominent mechanism in the development of TMJ-IDs. Such observation has support in other studies indicating the role of inflammation in the retrodiskal and synovial membrane of the TMJ (YAJIMA et al., 2007). Furthermore, the results of one investigation (SUENAGA et al., 1998), indicate that compression of the highly vascular and innervated posterior disk attachment , inflammatory and edematous changes in the posterior disk attachment and synovitis of the joint capsule are also major mechanism leading to pain in patients with TMJ-IDs. One study (BARKIN-WEINBERG, 2000), reported that as the retrodiscal tissue continues to be stretched and loaded, it becomes subject to thinning, and perforation. Increased loading may stimulate remodeling, involving increased synthesis of proteoglycans and collagen fibrils. Overloading may disturb the equilibrium between form and function and lead to tissue breakdown (DE BONT; DIJKGRAAF; STEGENGA, 1997).

4. Many signs and symptoms can be observed in patients presenting with TMJ-IDs: There is a number of signs a symptoms indicating the presence of TMJ-IDs including pain, joint noises (clicking, popping, crepitus), locking, jaw deviation, earache and even headaches. This assumption is reinforced by one study (MOLINA et al, 2003), in patients presenting disk-attachment pain and indicating that signs and symptoms in those patients include severe pain, impaired jaw movements, intermittent or transient locking and severe chewing disorders.

5. TMJ-IDs are characterized by a significant variation in pain quality: Pain in TMJ-IDs can be described as chronic or acute, continuous or intermittent, dull, aching, sharp or burning and mild, moderate or severe. Dull and mild pain seems to be characteristic of the first stages of internal derangements whereas more severe pain is characteristic of advanced stages TMJ-IDs. This observation is reinforced by one study (YAJIMA et al., 2007), indicating that severer pain is observed in osteoarthritic patients s compared to non-osteoarthritic individuals. Joint pain is milder in less advanced TMJ internal derangements, for instance dull pain can be observed in capsulitis and retrodiskal pain and severer aching, sharp and burning pain can be diagnosed in more chronic joint disorders. Pain in TMJ-IDs with capsulitis occurs mainly when the joint capsule is stretched (DE BONT; DIJKGRAAF; STEGENGA, 1997). The point of view about different degrees and description of joint pain in TMJ-ID patients is reinforced by one study indicating that there is heterogeneity of patients presenting with TMJ pain dysfunction (GREENE et al, 1969).

6.Treatment of TMJ-IDs is varied and complex: Because many different disorders with different clinical characteristics and degrees of severity can occur in TMJ-ID patients, treatment should be designed to relieve signs and symptoms of a particular disorder. Clinical practice demonstrates that even in a restricted anatomic area, the diversity of internal joint derangements can be characterized, diagnosed and

treated. The treatment of TMJ-IDs can be focused in the elimination of pain, improve jaw position, decrease the role of parafunctional jaw habits and improve occlusal relationships. Such approaches can be attained using drugs, occlusal splints, counseling, jaw exercises, anesthetics, conservative surgical methods, transcutaneal electrical nerve stimulation and prosthetic treatment. As a general rule, conservative methods including splints and anti-inflammatory drugs, are more popular than non-conservative methods (Joint surgery). Nitzan-Dolwick (1991), believe that a major part of the success of surgical arthroscopy in the treatment of severe closed lock is attributable to the lavage rather than to the surgical instrumentations per se. In cases of chronic closed lock, intra-capsular lysis using probes between the disc and fossae is necessary to release superior compartment adhesions (BARKIN-WEINBERG, 2000).
Many surgeons agree that conservative treatment of internal derangements using splints or biofeeeback methods or both, should be initiated and failure to relieve symptoms after 3-6 months with conservative methods constitutes the criteria for surgical intervention including disk repositioning, meniscoplasty, lavage and arthrocentesis (EVERSOLE-MACHADO, 1985).

CONCLUSIONS

Based on the review of the literature, the following conclusions can be drawn: 1) The terms “TMJ-IDs” encompass a wide variety of internal disorders involving the joint disk, retrodiscal pad, the articular condule and the bony eminence. 2) Internal derangements of the TMJ is a wide concept used to describe capsulitis, retrodiskal pain, disk attachment pain, disk displacement with and without reduction, locking with a normal shape and position of the joint condyle, arthralgia, osteoarthritis and osteoarthrosis. 3) The etiology of TMJ-IDs is multifactorial and include excessive loading, micro/macro-trauma, parafunctional habits and other causes. 4) Compression, impingement, inflammation, degradation and degeneration are the most common mechanisms in internal derangements of the temporomandibular joints. 5) The treatment of TMJ-IDs is very complex and depends on a particular case. Conservative and surgical methods, pharmacological methods (antiinflammatory and analgesic drugs), splints, TENS, local anesthetics and self care, are the most common methods recommended in the current literature.

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