Treatment of Intermittent Locking of the Jaw in Wilkes Stage II Derangement by Arthroscopic Lysis and Lavage

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Purpose: This study evaluated the efficacy of a standardized arthroscopic lysis and lavage in decreasing the intermittent locking and transient pain episodes that characterize patients with early- to intermediate-stage internal derangement (Wilkes stage II).

Patients and Methods: This is a retrospective analysis of the medical records of 27 patients (39 joints) treated by arthroscopic lysis and lavage in the authors' department during a 2.5-year period. Patients were diagnosed preoperatively as having mild internal derangement (Wilkes stage II) that was unresponsive to previous conservative therapy. Three outcome variables were used to assess the efficacy of treatment: *1)* frequency of intermittent locking or catching episodes, *2)* severity of pain, and *3)* maximal interincisal opening.

Results: Ninety-two percent of patients reported improvement regarding the locking and catching episodes. Most patients (77%) denied experiencing any locking episodes during the follow-up period, and 15% reported experiencing locking episodes but with less frequency or severity. The median duration of symptoms for patients who were freed from locking episodes was 16 months compared with 36 months for patients who still had locking episodes after treatment ($P = .059$). Mean pain values (visual analog scale, 0 to 10) decreased from 7.5 preoperatively to 3.2 postoperatively ($P < .0001$). For maximal interincisal opening, there was no significant difference after treatment (mean, 39.4 mm preoperatively vs 41.3 mm postoperatively; $P = .06$). Success was defined as a decrease in locking episodes, a decrease of pain, and maintenance of normal interincisal opening (>36 mm). The overall success rate was 81.4% (22 of 27 patients).

Conclusion: Arthroscopic lysis and lavage is an efficient treatment modality for treating mild internal derangement of the temporomandibular joint. It decreases the frequency of locking episodes and decreases transient pain periods.

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Mild internal derangement of the temporomandibular joint (TMJ; Wilkes stage II) is characterized by normal or close-to-normal range of motion interrupted by episodes of jaw locking or catching and painful clicking. These episodes are intermittent and transient. At this stage, there is no limitation in mouth opening or function except during the locking or pain episodes. One of the main complaints of patients is a decrease in quality of life owing to intermittent locking and transient pain. In his original article, Wilkes[1] classified this condition as early- to intermediate-stage internal derangement (stage II).

The question of how efficient arthroscopic lysis and lavage in the treatment of the initial stages of internal derangement has not been answered definitively.[2-4] Most studies evaluated patients with advanced stages of internal derangement, namely chronic closed lock (Wilkes stage IV) and derangement with

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degenerative changes (Wilkes stage V).[5-21] Many studies evaluated various arthroscopic procedures ranging from simple lysis and lavage to advanced operative arthroscopies without differentiation between the different treatments.[22-31] Many studies did not report clear diagnoses for the study population or did not differentiate between the different diagnoses and stages when reporting the results.[22-30] To the authors' knowledge, there are only 5 studies in the literature that specifically evaluated the efficacy of arthroscopic lysis and lavage to treat the initial stages of internal derangement, namely Wilkes stage II.[32-36] None of these studies addressed the issue of intermittent locking episodes.

This study evaluated the efficacy of a specific arthroscopic procedure (arthroscopic lysis and lavage) in the treatment of early-to intermediate-stage internal derangement (Wilkes stage II only). Patients should be evaluated primarily for elimination of intermittent locking episodes and decrease of transient pain. At this stage, usually there is no constant limitation in mouth opening.

Patients and Methods

This is a retrospective analysis of data from medical records. During a 2.5-year period (April 2010 to September 2013), 65 patients with various TMJ diagnoses underwent arthroscopic lysis and lavage in the authors' department. Of these, 27 patients were classified as having mild internal derangement (Wilkes stage II) and were included in the study. Patients with bilateral involvement who had a diagnosis of Wilkes stage III, IV, or V on 1 side were not included in the study.

Classification according to the Wilkes criteria was based on preoperative clinical and imaging evaluation and intraoperatively by arthroscopic findings. The preoperative clinical findings of patients with stage II were mainly clicking and beginning transient locking or catching episodes accompanied by pain. These locking episodes lasted seconds to minutes to hours and were released spontaneously or by jaw manipulation by the patient. Clinically, patients with Wilkes stage II derangement were distinguished from those with stage III derangement in that the latter presented with locking episodes that lasted for days to weeks, and usually their mouth opening did not reach normalcy between locking episodes. As a guide for proper clinical differential, stage III internal derangement was considered a subacute closed lock that intermittently opened or acute closed lock.

Preoperative imaging consisted of computerized tomographic (CT) scans or magnetic resonance (MR) imaging. All images were evaluated by a radiologist who specialized in head and neck radiology. The MR scans depicted a reducing disc displacement, and in some cases mild disc deformity was observed. There were no signs of degeneration (narrowing of joint cavity, flattening of articular surfaces, subchondral sclerosis, osteophytes, etc). MR examinations included at least closed- and open-mouth proton density-weighted images in the sagittal oblique plane, closed-mouth T1-weighted images in the true coronal plane, and closed-mouth T2-weighted images in the axial plane. All images were obtained in a 3-mm section thickness. CT scans were performed in the axial plane with a slice no thicker than of 1.2 mm and reformatted sagittal oblique and coronal planes. Open- and closed-mouth positions were obtained. Similar to MR images, none of the CT scans visualized any signs of degeneration. All imaging (CT and MR) was performed in the few months preceding the operation.

Intraoperative arthroscopic findings of the study population were consistent with mild internal derangement of the joint. None of the patients were excluded from the study group after arthroscopic evaluation. The findings consisted of normal synovium with mild degrees of hyperemia and hypervascularity. Mild retrodiscal synovial redundancy was observed in some cases. In the open-mouth position, the roofing of the condyle by the disc was in the range of 100%, producing the characteristic "white-on-white appearance," whereas in the closed-mouth position, the roofing was decreased. Three cases exhibited fine adhesions in the anterior recess. The shape and texture of the disc were normal in all cases. There were no signs of chondromalacia or subchondral bone exposure in any of the cases.

The medical records contained the following information: measurement of maximal interincisal opening (MIO), a subjective evaluation of pain by a visual analog scale (VAS) ranging from 0 to 10, and a verbal evaluation of the frequency and severity of the locking or catching episodes. All patients were asked verbal questions regarding the frequency and severity of the locks. Patients rated the frequency of their locking episodes preoperatively as occurring on a daily, weekly, or monthly basis and rated the severity of the locking episodes as lasting for seconds, minutes, hours, or days. At the follow-up evaluations, patients were asked whether they experienced any locking episodes since treatment and, if so, whether the frequency and severity of the locks were less than, similar to, or worse than preoperatively. To evaluate the efficacy of treatment, the preoperative and postoperative values were compared. The follow-up evaluation conducted at approximately 6 months postoperatively was used to evaluate the response to treatment. The evaluations were performed by the same surgeons performing the operations.

Before advancing to arthroscopy, all patients underwent conservative nonsurgical therapy consisting of