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Arthroscopic Treatment of Patients with Anterolateral Impingement of the Ankle with and without Chondral Lesions

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ABSTRACT

Anterolateral impingement syndrome is defined as chronic pain in the ankle secondary to soft tissue impingement, hypertrophy, or tearing of the lateral and anterolateral ligaments of the ankle. The purpose of the present study was to evaluate the results of arthroscopic treatment of anterolateral impingement syndrome and its association with chondral lesions. In this case series study, 23 patients with anterolateral impingement syndrome underwent arthroscopic debridement of the ankle. Simple radiography and magnetic resonance imaging were applied for all the patients to diagnose the spur condition and to exclude patients with other possible lesions. All the patients were evaluated preoperatively and at interval visits of 2, 4, and 6 weeks and 3 and 6 months postoperatively according to the American Orthopaedic Foot and Ankle Society criteria and Meislin score. The mean patient age was 38.13 ± 6.85 years. Significant differences were seen between the mean American Orthopaedic Foot and Ankle Society scores, which was 59.21 before surgery and 83.56 and 88.13 at 3 and 6 months postoperatively, respectively. No significant differences were seen between the American Orthopaedic Foot and Ankle Society scores of the patients with or without chondral lesions. Arthroscopic treatment of anterolateral impingement syndrome is recommended as the treatment of choice and is still considerably effective in patients with chondral lesions.

Intra-articular inversion injury to the ankle is a relatively common lesion, especially among athletes. Although these lesions are self-limited in most patients and recover after conservative treatment, repeated traumatic injuries or tensions lead to soft tissue impingement lesions that can become chronic in 1.2% to 2% (1–3). Anterolateral impingement syndrome refers to the condition in which the patient experiences chronic pain secondary to hypertrophy or disruption of the anterolateral ligament or capsule of the ankle (2). The condition is diagnosed through the patient's medical history, careful examination, and, in certain cases, magnetic resonance imaging, and, finally, arthroscopy. Anterolateral impingement syndrome of the ankle is commonly treated with conservative therapy, including nonsteroidal inflammatory drugs, rest, and physiotherapy (1,2,4–6). In certain cases, however, when the condition is unresponsive to medical treatment after a minimum of 3 months, arthroscopic debridement of the ankle, relief of the soft tissue impingement, and anterolateral osseous spurs of the ankle can be helpful (2,3,7–15). Arthroscopy is a useful technique in the diagnosis and treatment of anterolateral impingement syndrome of the ankle and in the diagnosis of its complications such as chondral lesions. This can profoundly improve patients' quality of life, help them to return to daily routines, and upgrade their socioeconomic situation (14).

In an effort to evaluate the outcomes after arthroscopic treatment of anterolateral ankle impingement syndrome, with or without chondral lesions, we undertook a review of a series of patients who had undergone this procedure.

Patients and Methods

A retrospective case series study was conducted of all patients with anterolateral impingement syndrome of the ankle referred to the orthopaedic clinic in Poursina Hospital in Rasht, Iran, from March 2008 to March 2011. Patient selection was determined by eligibility and additional follow-up visits was performed by 1 surgeon (M.M.K.) in an orthopaedic academic hospital (Poursina Hospital, Guilan University of Medical Sciences). The data collection was performed by the same surgeon in a single surgeon's practice.

The diagnosis of anterolateral impingement syndrome of the ankle was confirmed by clinical examination, duration of chronic ankle pain for more than 3 months, and tenderness of anterolateral region of the ankle of the joint that worsened with

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dorsiflexion. All the patients had a history of 1 or repetitive traumatic inversion injuries of the ankle and were unresponsive to conservative therapy with nonsteroidal anti-inflammatory drugs, physiotherapy, and intravenous injections for a minimum of 3 months. Bilateral cases were excluded from the study. Of 39 potentially eligible patients, 23 were entered into the study. All the patients underwent simple radiographic examination of the frontal and lateral aspects of the ankle and magnetic resonance imaging to evaluate the osseous spurs condition and to rule out other possible lesions. The impingement of the osseous spurs in the ankle was evaluated at 4 levels using Scranton and McDermott (16) criteria:

Grade I: Impingement of soft tissue or tibial spur less than 3 mm
Grade II: Tibial spur more than 3 mm
Grade III: Fragmentation or tibial and talar spurs more than 3 mm
Grade IV: Tibiotalar osteoarthritis (excluded from the study)

All the patients were examined for instability of the talofibular ankle and synovial joints. The patients with ankle impingement syndrome because of ankle sprain grade I to III (Scranton criteria) were included. The patients with malalignment of the ankle joint or osteoarthritis of the ankle (Scranton criteria, grade IV) were excluded from the present study. Some patients had slight inflammation of the ankle joint and slight limitation in dorsiflexion movement. All the patients fulfilling these criteria were selected for arthroscopic treatment.

After receiving general or spinal anesthesia, all the patients underwent arthroscopic surgery in the supine position with a sand bag under the ipsilateral position of the hip. The operation involved the standard portals of the anterolateral and anteromedial impingement of the ankle joint, debridement of the synovial hypertrophy, and anterolateral scarring and scraping of any possible spurs using a 4-mm 30° lens. After synovial debridement, any chondral changes in chondral consistency (eg, chondral softening, abrasion, fissuring, or defect) were observed and detected with the help of the probe. The patients stayed immobilized using elastic bandages and ice packs for 24 hours postoperatively. From the second day after surgery, the patients were allowed to bear weight as tolerated. From the third week postoperatively, rehabilitative physiotherapy was initiated, with ankle movement and muscle strengthening exercises. From 6 weeks postoperatively, the patients were allowed to begin their sport training. The patients were examined at 2, 4, and 6 weeks and again at 3 and 6 months postoperatively.

In each examination, the following information was recorded: age, gender, radiographic information of the ankle, the possible presence of any chondral lesions and arthroscopy complications, including surgical infection as confirmed by serous or pus discharge and nerve (sensory branches of the superficial peroneal nerve) damage to the ankle joints, confirmed by paresthesia. The function of the ankle was recorded in a predetermined questionnaire using the American Orthopaedic Foot and Ankle Society (AOFAS) (1,17) and Meislin criteria (8) at 3 and 6 months postoperatively. The AOFAS scoring system includes main indexes such as pain, patient ambulatory function, and ankle joint movement limitations. It involves up to 100 scores for each patient and is classified as excellent (90 to 100), good (80 to 89), fine (70 to 79), and poor (<70). Meislin criteria have 3 indicators pain during rest and function, clinical examination findings, and patient self-evaluation (Table 1). The confidentiality of patient information and ethical issues were considered, and all patients provided written informed consent.

The demographic characteristics (age and gender) and criteria were recorded and were statistically analyzed using the Statistical Package for Social Sciences software package for Windows, version 19.0 (SPSS, Chicago, IL). All quantitative numeric values are expressed as the mean ± standard deviation. The chi-square test was used to compare differences in the qualitative parameters. To evaluate the differences between patients with and without chondral lesions, they were categorized into 2 groups. The Mann-Whitney *U* test was applied to compare the AOFAS score within the groups. To analyze the trend of the AOFAS score changes between groups, the repeated measures analysis test was used and to evaluate the value of these changes, analysis of variances was performed. In all statistical tests, the α level was set at 0.05.

Results

A total of 23 patients, with a mean age of 38.13 ± 6.85 years (range 27 to 54; 15 females and 8 males), underwent arthroscopy. The mean AOFAS score increased from 59.21 ± 10.25 before surgery to 83.56 ± 7.87 (range 65 to 97) and 88.13 ± 68 (range 71 to 98) at 3 and 6 months follow-up, respectively (p <.001). Of the 23 patients, 19 (82.6%) had a poor score (<70) before surgery, and no patients with a poor score after surgery. Excellent scores were observed for 5 patients (21.7%) at 3 and 10 patients (43.5%) at 6 months postoperatively (Table 2).

Considering the chondral lesions, we found a significant increase in the AOFAS scores in both groups (10 patients [43.5%] with and 13 patients [56.5%] without chondral lesions) postoperatively (p <.001). Although the mean score of the patients without chondral lesions was greater, the comparison of the trend and value of the AOFAS mean scores of the 2 groups showed no statistically significant differences (p >.05) (Fig.).

According to the Meislin criteria, the results at the 3-month follow-up visit were graded as excellent in 9 patients (39.1%), good in 9 (39.1%), fair in 4 (17.4%), and poor in 1 patient (4.4%). The results at 6 months postoperatively were excellent in 12 (52.2%), good in 9 (39.1%), and fair in 2 (8.7%) patients. No result was regarded as poor, and no differences were found between patients with or without a chondral lesion (p >.05). No other complications were observed, except for 1 case of neural damage, which completely recovered after 2 months.

Discussion

Soft tissue impingement of the ankle is the most common cause of chronic pain in the lateral or anterolateral ankle joint secondary to intra-articular inversion injury of the ankle. Nearly 3% of all intra-articular inversion injuries to the ankle lead to anterolateral impingement of soft tissue (8). Reports have been published of 3 types of soft tissue impingement lesions: meniscus lesions, synovial lesions, and anteroinferior tibiofibular distal ligaments (8,18). Arthroscopy has been documented to be effective in the diagnosis and treatment of patients with anterolateral soft tissue impingement of ankle unresponsive to conservative treatment (8).

Soft tissue lesions of the ankle can cause pain unresponsive to nonoperative therapy. Because such lesions do not have pathologic manifestations and are diagnosed from the patient history and clinical examination and radiologic test findings, it is very challenging for the physician to diagnose them. Thus, arthroscopy of the ankle as a diagnostic and therapeutic tool is crucially important for the physician. Research reports indicate excellent outcomes of 75% to 96% recovery with a follow-up of 25 to 39 months after arthroscopy (1,2,5,19,20). After arthroscopic treatment of soft tissue impingement of the ankle on 41 patients, Urgüden et al (14) reported 21 patients as excellent, 16 as good, 2 as fine, and 2 as weak according to the Meislin criteria and an 89.6 mean score according to the AOFAS criteria. Hassan (8) reported an AOFAS mean score of 34 before surgery and 89 postoperatively after arthroscopic treatment of 23 patients with soft tissue impingement lesions. According to the results of the present study, 91.3% received good to excellent scores 6 months postoperatively, which has also been reported in other studies. The AOFAS mean score was 59.21 ± 10.25 before surgery, which increased to 83.56 ± 7.87 and 88.13 ± 7.68 at 3 and 6 months postoperatively, respectively, suggesting the effectiveness of arthroscopic treatment of soft tissue impingement syndrome of the ankle.

Table 1
Meislin criteria

Rating	Pain at Rest or with Activity	Physical Examination	Self-assessment
Excellent	None	Normal	Normal
Good	None	No tenderness, minimal swelling,	Greatly improved
Fair	Minimal pain with activities	Minimal/moderate tenderness, moderate swelling, instability	Somewhat improved
Poor	Pain at rest, moderate/severe; pain with activity	Severe swelling, limitation of range of motion	Unchanged or worse