Arthroscopic Treatment of Anterior Ankle Impingement

Keith Jacobson, DPM[a,*], Alan Ng, DPM[a,b], Kyle E. Haffner, DPM[c]

KEYWORDS

- Ankle arthroscopy • Anterolateral ankle impingement
- Anterior ankle impingement • Chronic ankle pain
- Soft-tissue ankle impingement

Ankle impingement was first described in 1942 by Morris as athlete's ankle and was later coined footballer's ankle by McMurray.[1,2] Today, anterior ankle impingement syndrome describes the condition in which anatomic structures become entrapped in and around the ankle joint leading to chronic pain and potentially decreased range of motion. Ankle impingement can be caused by either soft-tissue or osseous pathology and is often classified by the location within the ankle joint. The most common areas of ankle impingement include anterolateral, anterior, and posterior. This article discusses common etiologies, clinical and diagnostic evaluation, treatment options, and outcomes for anterior ankle impingement.

ANTEROLATERAL ANKLE IMPINGEMENT

There are more than 23,000 inversion ankle sprains daily in the United States and it is the most frequently observed injury in athletics.[3] Approximately 20% of patients will have residual or chronic ankle pain.[3] Studies have shown that 50% of all basketball players with ankle sprains had residual symptoms, with 15% experiencing compromised playing performance.[4–6] It is estimated that 3% of all ankle sprains lead to anterolateral impingement.[7] Some think the term chronic ankle sprain should be replaced by anterolateral impingement of the ankle.[8] The 3 most common types of soft-tissue lesions that have been documented to cause anterolateral impingement are meniscoid lesions, synovitis, and distal anterior inferior tibiofibular ligament impingement.

The authors have nothing to disclose.

[a] Private Practice, Advanced Orthopedic and Sports Medicine Specialist, 8101 East Lowry Boulevard, Suite 230, Denver, CO 80230, USA
[b] Highlands Presbyterian St Luke's Podiatric Medicine and Surgery Residency Program, 1719 East 19th Avenue, 5-C East, Denver, CO 80218, USA
[c] West Houston Medical Center Podiatric Medicine and Surgery Residency Program, 12121 Richmond Avenue, Suite 417, Houston, TX 77082, USA
* Corresponding author.
E-mail address: kjacobsontx@comcast.net

Clin Podiatr Med Surg 28 (2011) 491–510
doi:10.1016/j.cpm.2011.05.002 **podiatric.theclinics.com**
0891-8422/11/$ – see front matter

Meniscoid Lesion

In 1950, Wolin and colleagues[9] were the first to describe a cause for anterolateral impingement. The study consisted of 9 patients with chronic pain and swelling to the anterolateral aspect of the ankle after an inversion ankle sprain. Upon surgical examination, patients were found to have a soft-tissue mass consisting of hyalinized tissue that the investigators identified as meniscoid lesions because of its resemblance to a torn knee meniscus. These fibrous adhesions are well-developed bands of scar tissue that occur from the anterior talofibular ligament and extend into the ankle joint, resting in the lateral gutter (**Fig. 1**). Upon removal of the meniscoid lesions, Wolin noted improvement of the patient's symptoms. Initially thought to be torn ends of a ligament, histopathologic analysis revealed no ligamentous tissue.[8] Several investigators have noted and attributed meniscoid lesions to the cause of anterolateral ankle pain.[10,11]

Synovitis

Synovitis may also occur after an inversion ankle sprain.[8] The sprain may damage the anterior talofibular ligament (ATFL), anterior inferior tibiofibular ligament (AITFL), or the calcaneal fibular ligament without causing frank instability. Improper treatment and rehabilitation will lead to inadequate healing, allowing repetitive motion to cause inflammation at the ligament ends. Over time, continued activity allows the synovium to enlarge, causing impingement in the lateral gutter and chronic lateral ankle pain (**Fig. 2**).[8] Hemorrhagic synovitis can occur because of mild capsule tearing resulting in hematoma formation. The hematoma eventually is resorbed by the synovium, causing synovitis. In Ferkel and Fisher's[12] study of 31 patients with anterolateral ankle impingement, all had either hypertrophic or hemorrhagic synovitis. Subsequent studies have noted a majority of patients having synovitis present with anterolateral ankle impingement. Recently, an intraoperative classification was developed to describe impingement in the lateral gutter. This classification was based on the degree of obstruction in the lateral gutter. It ranged from normal (no abnormal soft tissue present) to severe (excessive anterolateral soft tissue preventing any visualization before shaving/debridement). In a study consisting of 41 patients with anterolateral impingement, 7 patients were noted to have what the investigators termed "synovial shelves," which was described as a hypertrophic band of synovium extending from the anterolateral aspect of the fibula over the lateral shoulder of the talus to the anterior ankle.[13] It has been noted that early resection of impinging synovium inhibits the progression of the cascade to chronic synovitis and scar-tissue formation.[14]

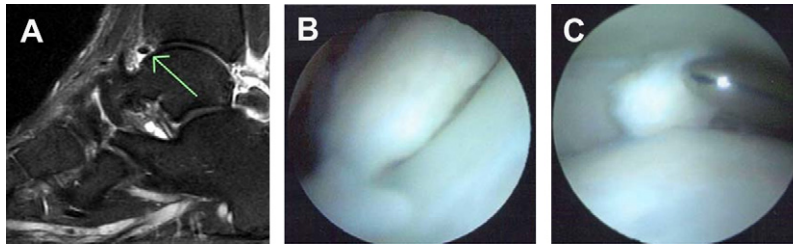

Fig. 1. Meniscoid lesion. (*A*) Sagittal T2 MRI demonstrating anterior joint effusion with a loose body (*arrow*) noted on the anterior lip of the tibia. Joint effusion with increased signal intensity is noted around os trigonum. (*B*) Arthroscopic image reveals meniscoid lesion. (*C*) After partial resection with probe demonstrating no associated articular damage.