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Chronic isolated distal tibiofibular syndesmotic disruption: Diagnosis and management

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Abstract

Background: The current study outlines the pathology and treatment of persistent problems following isolated distal tibiofibular syndesmotic injuries.

Methods: A retrospective study was conducted to review patients with isolated chronic syndesmotic disruption who were managed in the authors' institute during 4 years, from January 2001 to January 2005. Patients with concomitant bony injuries or lateral ankle instability were excluded.

Results: The study included eleven patients with isolated syndesmotic disruption. All were males, with average duration of symptoms 4.7 years. Reconstruction of syndesmosis was achieved by semitendinosus tendon in all patients. The average hospital stay was 3.6 days, and the average follow up period was 3.1 years. According to West Point Ankle Score system, the average score after treatment was 95.4.

Conclusion: Chronic isolated tibiofibular syndesmotic disruption appears amenable to accurate diagnosis and delayed stabilization. Arthroscopic management of the associated intraarticular pathology followed by reconstruction of torn syndesmosis can offer an excellent outcome.

Keywords: Distal; Tibiofibular; Syndesmosis; Disruption

1. Introduction

The distal tibiofibular syndesmosis is composed of the anterior and posterior tibiofibular ligaments, the interosseous membrane with its corresponding ligament, and the transverse tibiofibular ligament [1–4].

The integrity of the distal tibiofibular syndesmosis is a primary determinant of a precise relationship of the ankle mortise needed for normal articular motion of the ankle joint. Without these ligamentous restraints the distal tibiofibular joint widens and can result in an asymmetric ankle mortise [1,5,6].

Disruption of the syndesmosis to any degree is recognized as an important cause of ankle instability and may result in a prolonged disability following ankle injuries [2,7,8]. Lateral displacement of the talus relative to the tibia of 1–2 mm has been shown to result in a decreased tibiotalar contact area. This reduction in contact area may lead to degenerative joint changes. Therefore, a correct diagnosis of tibiofibular diastasis followed by accurate reduction of the syndesmosis is crucial in the treatment of such injury [6,9].

External rotation of the talus has been defined as the major mechanism for syndesmotic disruption causing distal tibiofibular diastasis [4,7,8]. This type of injury is a rare finding in the absence of ankle fracture. Moreover, it is far less common than lateral ligamentous injury despite the wide range of ankle motion [2,10].

The diagnosis of isolated distal tibiofibular syndesmotic disruption is based on the radiographic appearance of the affected area, such as that observed by anteroposterior and mortise radiography. Plain radiographs, however, can be misleading [2,3,6,8]. Recently radionuclide imaging and

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MRI have been found to be useful in the detection of syndesmotic injuries [2,4,7].

Ankle arthroscopy has become a standard procedure in diagnosing and treating ankle disorders. It excels intraoperative stress radiography in detecting syndesmotic disruption. It also provides assessment of different planes of instability and assists anatomic reduction of the syndesmosis [3,7,11].

According to the authors' knowledge, the diagnosis and treatment of chronic isolated disruption of tibiofibular syndesmosis have been reviewed by few authors. In an attempt to draw attention to this rare condition as well as its detection, and to know if its symptoms can be improved by delayed reduction and stabilization, the authors in the current study evaluated patients who had persistent symptoms following isolated tibiofibular syndesmotic disruptions regarding history, clinical and radiological examinations, arthroscopic findings, and treatment results.

Fig. 1. MRI (T1 image) is showing coronal section of the ankle joint of a patient in the study with chronic tibiofibular syndesmotic disruption. The black arrow is directed to the syndesmotic ligament hypertrophy. Ti = Tibia, Ta = Talus.

2. Material and methods

A retrospective study was conducted to review patients with chronic isolated distal tibiofibular syndesmotic disruption who were managed in the authors' institute, during the period from January 2001 to January 2005. Patients with concomitant bony injuries or evidence of lateral instability of the same ankle were excluded.

The study included eleven patients, with an average age of 31.5 years (range, 19–44). All patients were men. All patients presented to our clinic with chronic unilateral ankle pain following trauma. Additional symptoms were sense of ankle instability in nine patients, ankle stiffness in two, and occasional attacks of ankle locking in three. The mechanism of injury was twisting trauma in seven patients, which was specified by five patients as external rotation injuries. One patient gave history of direct trauma while three patients could not remember the mechanism of injury. Normal daily activities were affected in nine patients, while sport activities were affected in all patients.

All patients in the current study were subjected to thorough clinical examination upon first presentation to the foot and ankle section in the authors' institute. Clinical examination revealed tenderness over anterior joint line of the ankle in all patients, swelling in six patients, and limitation of dorsiflexion of the affected ankle in five patients. Examination included also dedicated tests for ligamentous laxity of the ankle to rule out lateral instability of the ankle. External rotation stress test was performed by externally rotating the ankle to reproduce pain at the disrupted distal tibiofibular syndesmosis [12]. Translation of the fibula on the tibia in the anterior posterior plane and relative increase in the side motion of the talus, which indicate the integrity of the syndesmosis [7], were also observed during clinical examination.

Radiological assessment of all patients in the study included plain X-ray films in the standing position and Magnetic Resonance Imaging (MRI). Assessment was achieved by musculoskeletal radiologist and the first author. Anteroposterior, lateral, and mortise views were taken for the affected ankle and the contra lateral ankle for comparison. More than 2 mm of distal tibiofibular diastasis in mortise view was considered abnormal [13]. MRI was done for all patients in the study to rule out ligamentous injuries around the affected ankle. Moreover, it could show syndesmotic ligaments hypertrophy (Fig. 1) and confirm radiographic findings as anterior lip osteophytes of the distal tibia (Fig. 2).

All patients in the current study had persistent symptoms in spite of the considerable amount of conservative treatment

Fig. 2. MRI (T2 image) is showing sagittal section of the ankle joint of a patient in the study with chronic tibiofibular syndesmotic disruption. The black arrow is directed to the anterior lip osteophyte of the distal tibia. Ti = Tibia, Ta = Talus.