Chronic Ankle Instability (Medial and Lateral)

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KEYWORDS

• Ankle instability • Ankle sprain • Medial ankle ligaments • Lateral ankle ligaments

KEY POINTS

- Up to 40% of patients with ankle sprains develop symptomatic instability.
- Arthroscopy as a diagnostic adjunct allows functional testing and assessment of the instability pattern (distinction of isolated medial/lateral or combined pathologies).
- Treatment of acute medial injuries and the postoperative protocol of the deltoid ligaments should be more restrictive than for the lateral ankle ligaments.
- The aim of surgical treatment is to restore the anatomy. Tenodesis procedures should be avoided.
- In severely altered conditions of the ligaments, tendon grafts can be used to restore joint stability.

INTRODUCTION

Ankle sprains are among the most common injuries, comprising up to one-third of all sport injuries.[1] A recent study, analyzing the ankle sprains presenting to emergency departments in the United States has shown an incidence of 2.15 per 1000 person-years.[2] Independent of the initial treatment strategy and the number of ligaments involved, up to 40% of the patients suffering from lateral ligament injuries end up having chronic ankle instability (CAI).[3]

Factors that may contribute to the development of CAI are functional and/or anatomic deficiencies. Functional deficiencies may be owing to impaired proprioception,[4] muscular imbalance,[5] or an impaired neuromuscular control, such as a delayed muscular reaction of the joint bridging muscles.[6] Suggested predisposing anatomic factors include hindfoot varus,[7] pathologic ligament laxity,[8] and an osseous configuration of the ankle joint, where the talus is less restrained in the ankle mortise.[9]

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The aim of this article is to summarize the different entities and various therapy approaches in CAI.

DIAGNOSIS OF CHRONIC ANKLE INSTABILITY

History and Clinical Findings

The diagnosis of CAI is based on the patients' medical history and clinical findings. Patients often complain of experiencing insecurity, instability, and "giving way" on uneven ground, leading to limitations in daily activities and difficulties in sports. Recurrent sprains, pain, tenderness, and at times bruising over the lateral or medial aspect or both of the ankle are common symptoms. Approximately 30% of patients suffering from CAI may be asymptomatic between the events, whereas others may present with chronic lateral and/or medial pain, tenderness, swelling, or "giving way."[10] Clinical tests such as the talar tilt test or anterior drawer test are positive in patients with structural ligament insufficiency, whereas these tests may be negative when only functional ankle instability is present.[11]

Imaging

Plain, weight-bearing, anteroposterior and lateral radiographs of the ankle joint are recommended to exclude fractures and malalignment. If a deformity is present, additional radiographs—dorsoplantar and lateral views of the foot and a hindfoot alignment view—are recommended. Particularly in chronic and recurrent instability, the physician must exclude osseous contributing factors such as frontal plane deformity of the hindfoot (varus/valgus) or forefoot-driven hindfoot deformities (such as the plantar flexed first metatarsal in a cavus foot leading to a hindfoot varus). Further imaging such as MRI may exclude osteochondral lesions and concomitant pathologies of the tendons. Particularly in CAI, comorbidities of the peroneal tendons are frequent. These comorbidities can be detected by MRI with a sensitivity of 84% and a specificity of 75%.[12] However, MRI has been shown to be clearly less reliable in detecting ligamentous deficits than arthroscopic assessment.[13]

Intraoperative Diagnostic Measures

Operative treatment is initiated with the completion of diagnosis using intraoperative fluoroscopy and arthroscopy, with the patient under anesthesia. Clinical tests include the talar tilt in the mortise and the anterior drawer test (**Fig. 1**). Stress views may additionally allow assessing syndesmotic stability.

In the United States, nearly one-half of the patients undergo arthroscopic evaluation before ligament reconstruction.[14] Arthroscopy has been found to be helpful to detect intraarticular damage, such as injuries to the syndesmosis, cartilage, and distal tibiofibular joint.[15–19] Therefore, a majority of the authors recommend arthroscopic evaluation to define the extent and origin of instability (medial/lateral) and to exclude intraarticular damage.[15,20,21]

In a large majority of patients, injury to the ligament is observed at the proximal insertion site. Intraoperatively, a bare area of periosteum on the lateral/medial malleolus, around the region of the detached ligament (the insertion site), is characteristically found. Functional arthroscopic testing includes:

- Axial traction to quantify the opening of the tibiotalar space
- Anterior drawer test to assess the medial and anteromedial instability
- Tilt test (valgus stress) to detect laxity or instability of the medial ligaments
- Tilt test (varus stress) to detect laxity or instability of the lateral ligaments