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Intraoperative Evaluation of Distal Tibiofibular Syndesmotic Joint

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Clinical Image

Acutely injured ankles are one the most common skeletal injuries and account for 9% to 18% of all the fractures treated in emergency departments [1,2]. These injuries can involve the distal tibiofibular syndesmosis that can lead to instability requiring specific treatment beyond fixation of the fracture. The syndesmosis is usually injured by external rotation of the ankle with hyper-dorsiflexion of a pronated or supinated foot [3]. These injuries occur in up to 10% of ankle sprains and up to 23% of all ankle fractures [4].

Pre-operative radiographic measurements such as tibiofibular overlap, tibiofibular clear space, medial and superior clear space

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Figure 1 Syndesmosis is observed for tibiofibular clear space under fluoroscope in anteroposterior mortise view.

are of little value in detecting syndesmotic injury because these depend on ankle rotation during radiography [5]. Jenkinson et al concluded that intraoperative fluoroscopic stress examination increases the rate of detection of syndesmotic injury [6]. A biomechanical cadaveric study concluded that intraoperative hook test is more reliable, because of the greater displacement when performing this test, than the external rotation stress test [7].

Frederic J. Cotton first described the hook test to test the integrity of ankle syndesmosis intraoperatively [8]. After appropriate fixation of fibula, to perform this test a bone hook is used to distract the fibula in sagittal plane by applying manual force. A counter force is applied to tibia to prevent tibial motion. Syndesmosis is observed for tibiofibular clear space under fluoroscope in anteroposterior mortise view (**Figure 1**). Tibiofibular clear space exceeding the 5 mm indicates an unstable syndesmosis [7,8].

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