

Role of MRI in the Diagnosis of Injury to the Lisfranc Ligament Complex

Christopher Kreulen, MD, MS, Eric Giza, MD, Eva Escobedo, MD, Cyrus Bateni, Michael Doherty, MD

Category: Sports

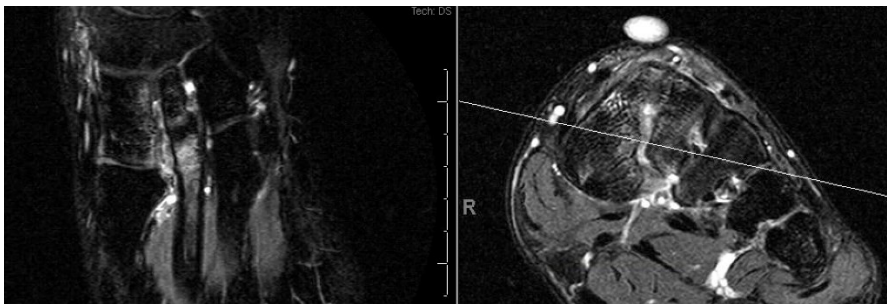
Keywords: Lisfranc, Magnetic Resonance, Ligament

Introduction/Purpose: Subtle Lisfranc ligamentous injuries are difficult to diagnose and magnetic resonance is becoming a useful tool. The purpose of this study is to evaluate the efficacy of magnetic resonance (MR) imaging for the diagnosis of injuries of the Lisfranc ligament complex.

Methods: The radiology database was searched between Jan 1, 2010 and Mar 10, 2015 to identify patients over the age of 18 years who had MR imaging of the foot for suspected injury of the Lisfranc ligament complex. MR images were reviewed by 2 fellowship trained musculoskeletal radiologists, whom were blinded to the original radiology reports. Findings were categorized as: no injury or injury present. Injury was deemed to be present if 2 of the 3 components of C1-M2 ligament showed disruption or signal alterations on T1 and T2 weighted images. Disagreements were resolved by consensus. Correlation was made with surgical findings whenever performed. In patients not undergoing surgery, the presence or absence of injury was determined by clinical examination performed by an orthopedic surgeon and follow-up. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of MR for diagnosis of Lisfranc ligament complex injury was determined.

Results: Of 60 patients, 9 were excluded due to a lack of follow-up. Lisfranc injury was determined to be present on MR in 26 patients and 18 underwent surgery. Injury was confirmed in 16, and 2 were intact. 2 patients underwent closed reduction and were clinically determined to be injured. 6 of the injured 26 patients were sprained and not injured/torn on clinical evaluation. Of the 25 patients determined to have no injury on MR, 24 were intact clinically. 1 patient had a Lisfranc injury on follow-up. Sensitivity, specificity, PPV and NPV of MR for detection of significant Lisfranc injury were 94.7% (CI: 73.9% to 99.9%), 75% (CI: 56.6% to 88.5%), 69.2% (CI: 55% to 80.5%) and 96% (CI: 77.9% to 99.4%) respectively.

Conclusion: MR has a high sensitivity and negative predictive value for diagnosis of injury to the Lisfranc ligament complex. MR of the foot should be considered in patients with clinical suspicion of injury to the Lisfranc ligament complex, and it is highly accurate in excluding such injuries.



Foot & Ankle Orthopaedics, 3(3)
DOI: 10.1177/2473011418S00297
©The Author(s) 2018