The Role of MRI in the Assessment of Chronic Lateral Ankle Instability: Are Reports Underestimating Peroneal Tendon Pathology?

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Introduction/Purpose: Chronic lateral ankle instability is a common problem in foot and ankle surgery, especially in patients with neutral or varus alignment of the hindfoot. Peroneal tendinopathy is a common associated condition with reported incidence as high as 77%. Not all surgical approaches allow for assessment of the peroneal tendons intraoperatively, and so physical exam and imaging, by either ultrasound or MRI, often plays an important role in pre-operative planning. We evaluated the usefulness of MRI reports in identifying peroneal tendon pathology in patients with lateral ankle instability. Specifically, we aimed to identify the most commonly missed lesions, as well as the sensitivity of an MRI report at detecting any peroneal pathology, as we reason this finding to have the great effect on preoperative planning.

Methods: We performed a retrospective chart review of all patients who had undergone surgery for lateral ankle instability at our institution in the past 7 years (January 1, 2009 to December 31, 2015). We used intraoperative peroneal pathology as our gold standard for diagnosis, and identified cases via the operative report. We defined peroneal pathology as peroneus brevis/longus rupture, split lesion, tenosynovitis, or tendinopathy not otherwise specified. Additionally, we assessed for low insertion of the peroneus brevis muscle belly. Then we examined all cases of intraoperative peroneal pathology that had a preoperative MRI report. We correlated MRI reports to intraoperative peroneal findings aiming to assess the accuracy of MRI reports in diagnosing peroneal pathology in patients undergoing surgical treatment for chronic lateral ankle instability.

Results: We identified 76 patients with intraoperative peroneal pathology and preoperative MRI reports. Forty-six had some form of peroneal pathology noted on their MRI report (60.5% sensitivity, 39.5% false negatives). MRI report had a 53.3% (16/30) sensitivity for detecting peroneus brevis split lesions, and a 46.2% (30/65) sensitivity for peroneal tenosynovitis or tendinopathy not otherwise specified. Additionally, 41 cases of low insertion of the peroneus brevis muscle belly were found intraoperatively, but MRI report failed to identify any of these specifically. Of the 30 patients who had intraoperative peroneal pathology without such findings on their MRI report, 93.3% (28/30) had peroneal tenosynovitis or tendinopathy not otherwise specified, while 26.7% (8/30) had a peroneus brevis split lesion and 6.7% (2/30) had a peroneus longus split lesion.

Conclusion: Our findings suggest that MRI reports may not be accurate in describing the presence of peroneal tendons pathology in patients with chronic lateral ankle instability. With a false-negative rate of nearly 40%, it is likely that MR imaging underestimates peroneal pathology in these patients. This is clinically significant as certain limited surgical approaches such as the “smile” incision, do not allow intraoperative assessment of the peroneal tendons. Our study findings encourage surgeons to review MR images preoperatively and to use a surgical approach that allows peroneal tendon assessment when repairing the lateral ankle ligaments.

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