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Clinical Significance of Magnetic Resonance Imaging and Ultrasonography in Preoperative Planning for Posterior Ankle Impingement Syndrome in Ballet Dancers

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Summary:
MRI and ultrasonography are very useful device to diagnose FHL tendon injury in ballet dancers.

Abstract:
OBJECTIVE
Classical ballet dancers are required to place their feet and ankles in position that are at the extremes of the ranges of the motion of the joints. That's why they often suffer from posterior ankle pain which is called dancer's heel, dancer's tendinitis. The clinician must assess flexor hallucis longus (FHL) tendon injuries accurately whether they need surgical intervention (or not). The purpose of this study is to investigate clinical significance of magnetic resonance imaging (MRI) and ultrasonography on the FHL tendon injury in ballet dancers.

MATERIALS & METHODS
We reviewed consecutive 29 feet of 27 dancers who had endooscopic or open surgery and preoperative MRI and ultrasound studies of their ankles because of posterior ankle pain during August 2011 and May 2014. The patient population consisted of 26 women and 1 man who had an average age of 23.8 years (14 to 55) at the surgery. Most of them were amateur ballet dancers, who practice more than three times a week. FHL tendon was evaluated on MRI (Signa EXCITE HD echo speed plus, 1.5T) using the following grading system as Conti did for posterior tibial tendon dysfunction: 0, normal ; 1, longitiduinal split, 2; intramural degeneration, 3; complete tear. We classified type 0 as negative, and types 1, 2, and 3 as positive. In all cases, ultrasonography was perfomed by one senior author (EH) the day before surgery. Patients were placed in a supine position with their ankle externaly rotated, and analyzed FHL in a longitudinal view if FHL tendon were swollen or not. All the operations were performed by the senior author (EH) and the condition of FHL was determined intra-operatively for the presence of substantial injury.

RESULTS
Preoperatively, MRI findings were that type 0: 4 feet, type 1: 11 feet, type 2: 14 feet, type 3: 0 foot. At surgery, substantial injury was identified at 22 of 29 feet. Senstivity was 100% (22/22), and specificity was 55% (4/7). Three cases which MRI showed positive findings with no substantial injury on FHL, sonography showed normal findings on the FHL.

DISCUSSION
Peace et al (2006) reviewed MRI features of posterior ankle impingement syndrome in ballet dancers. Besides, ultrasonography was reported as a useful device for therapeutic injection in a tendon sheath of the FHL (Amir, 2006). There were no reports which correlated MRI, ultrasonography findings with surgical findings on posterior ankle impingement syndrome. This study shows that MRI combined with ultrasonography findings can provide accurate diagnosis on the FHL tendon injury in classical ballet dancers preoperatively.