

**Andrew Lopez, MD**

**Tripler Army Medical Center Orthopedic Residency**

## **CORRELATION OF STRESS RADIOGRAPHS TO INJURIES ASSOCIATED WITH LATERAL ANKLE INSTABILITY**

**INTRODUCTION:** Ankle instability is one of the most common sports related injuries and a large percentage of patients report residual symptoms after recovery from the initial injury to their lateral ligaments. Stress radiographs have demonstrated superior efficacy in the evaluation of ankle instability and proven useful in guiding treatment. The purpose of this study is to determine if there is a degree of instability evidenced by stress radiographs that is associated with pathology concomitant with ankle ligamentous instability.

**METHODS:** A retrospective review of 87 consecutive patients aged 18-74 who had stress radiographs performed at a single institution between 2014 and 2020 was performed. These manual radiographic stress views were then correlated with MRI and operative findings. The degree of widening on the talar tilt stress radiograph, millimeters of anterior translation on the anterior drawer stress radiograph, presence of an OLT, presence of a peroneal tendon tear or tendonitis, and documentation of operative management of an OLT or peroneal tendon were recorded and statistical analysis was performed.

**RESULTS:** While there were no statistical associations based upon the anterior drawer translation, the talar tilt angle was associated with several outcomes. A statistically significant association was determined for the mean and median stress radiographic values and the presence of peroneal tendonitis or peroneal tendon tears. Patients with the diagnosis of peroneal tendonitis had a larger talar tilt on average than patients without peroneal tendonitis (mean=11.8° vs. 7.5°). Similarly, patients with peroneal tears also had larger tilt angles on average than those without tears (mean=13.8° vs. 8.2°). A talar tilt test of < 10° did demonstrate a NPV of 98% when evaluating the presence of a peroneal tendon tear. Additionally, a significant inverse relationship was found between the presence of an osteochondral defect and increasing degrees of instability. Patients with an OLT had a median talar tilt of 6° while patients without an OLT had a median talar tilt of 9°. This inverse relationship remained significant for larger OLTs and for OLTs that underwent operative management.

**DISCUSSION and CONCLUSION:** Ankle instability remains a complex diagnosis with known associated conditions. Although valuable in the clinical evaluation of ankle instability, stress radiographs are not an independent predictor of conditions associated with ankle instability. While there was an association between larger degrees of instability and the presence of peroneal pathology, there was not a degree of instability that was predictive of additional pathology. An inverse relationship between the presence of OLTs and higher degrees of instability was also demonstrated. While stress radiographs may assist the surgeon in defining mechanical instability, this imaging study alone cannot be utilized to rule out or rule in concomitant pathology that is associated with ankle instability.

**Key Words:** Ankle stress radiographs; Lateral ankle instability; Osteochondral defect; Arthroscopy; Peroneal tendinopathy

**Core Tip:** Ankle Stress Radiographs were predictive of intraoperative findings. Specifically, they may assist the surgeon in clinical decision making regarding osteochondral lesions of the talus and peroneal tendon pathology.