OSTEOCHONDRAL AND LIGAMENT INJURY PATTERNS IN ANKLE FRACTURES: A MULTI-CENTER STUDY

Carreira D¹, Shaw D¹, Harris T², McCullough K³, Kreulen C¹, Martin R⁵, Acevedo J⁶

**Background:** When treating ankle fractures, the presence of talar osteochondral lesions and the extent of ligamentous injury is associated with the severity of injury. The Danis-Weber classification system has been used to predict potential ligament damage.

**Purpose:** The purpose of this study is to validate the ligament injury patterns that have been proposed to occur with the Danis-Weber Classification and identify the cartilage injury pattern that occurs on the talus with each fracture type.

**Study Design:** Retrospective Cohort Study.

**Methods:** A prospective, multi-center foot and ankle arthroscopy registry was queried for patients who underwent arthroscopic treatment of ankle fractures from 2017 to 2020. Pre-operative and intra-operative findings were noted, including the Danis-Weber fracture classification, presence and location of osteochondral damage, and unstable deltoid, and/or syndesmotic ligaments. Kendall’s tau-b, a nonparametric correlation coefficient for ordinal variables, was used to measure the strength and direction of association between Weber fracture type and the presence of a syndesmotic injury, deltoid ligament tear, medial malleolus fracture, or osteochondral lesion. The locations of osteochondral damage were compared as percentages.

**Results:** 73 subjects were prospectively collected as part of a multicenter ankle arthroscopy database. Average subject age was 43 years (SD = 17) with 59% female and 41% male. A significant association between the presence of a syndesmotic injury and fracture type was identified, with syndesmotic injuries more likely occurring with a Weber C fracture (73%, rτ = 0.44, p < 0.0005). A significant association was not identified between Weber classification and a deltoid tear (23%, rτ = 0.74, p = 0.47) or medial malleolus fracture (32%, rτ = -0.001, p = 0.79). Location of the talar osteochondral lesions were as follows: 22% medial-anterior, 22% lateral-anterior, 22% lateral-central, 17% central-anterior, 9% medial-central, 4% later-posterior, 4% central. There was no significant association identified between Weber classification and the location of the osteochondral injury (p = 0.99).

**Discussion/Conclusion:** Concurrent injuries with syndesmotic disruption, deltoid ligament tears, medial malleolus fractures, and osteochondral lesions have been proposed to be associated with Weber C ankle fractures. However, in this multicenter study, only syndesmotic injuries were associated with the Weber C classification. This study found similar rates of medial malleolus fractures and osteochondral lesions in Weber B and C type fractures.

**Presenting author:**
RobRoy Martin – martinr280@duq.edu

¹Peachtree Orthopedics, Atlanta, GA; ²University of California Los Angeles, Los Angeles, CA; ³Orthopaedic and Sports Medicine Clinic of Kansas City, Kansas City, MO; ⁴University of California Davis, Davis, CA; ⁵Duquesne University, Pittsburgh, PA; ⁶Southeast Orthopedic Specialists, Jacksonville, FL.