Rethinking Avascular Necrosis After Displaced Talus Fractures and Dislocations

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INTRODUCTION: The purpose of this study was to investigate the relationship of AVN of talus fractures on postoperative outcomes at least two years after the initial injury.

METHODS: Eighty patients with talus injuries treated from 2007-2017 at a single level I trauma center were reviewed retrospectively. Injuries included fractures of the talar neck, body or head, and talus dislocations without a fracture. Patients were followed for an average of thirty-four months post-surgery. Variables analyzed include anatomic location, fracture classification, timing of surgery, and reduction quality. Outcomes measured include development of AVN, degree of collapse, union, posttraumatic arthritis, and secondary reconstructive surgery (SRS). Patients were invited for a clinical review with outcome measures (AOFAS and SF36). Data were analyzed using Mann Whitney-U and regression tests.

RESULTS: Eighty patients were reviewed. Of the 80 patients, 31 developed AVN (39%) and 20 of the 80 required SRS (25%). Of the 20 SRS cases AVN was an indication for in 6 cases (30%). Of the 31 AVN cases, 28 (90%) demonstrated less than 25% collapse of the talar dome, with the 3 demonstrating more than 25% collapse. Age at time of surgery and higher number of incisions were associated with AVN (B=0.073 p=0.002 and B=1.369 p=0.039). Timing of surgery, or anatomic reduction was not associated with the development of AVN (B=0.507 p=0.413 and B=0.943 p=0.332). AVN was not associated AOFAS or SF36 scores (U=33 p=0.573 and U=19 p=0.683). Non-anatomic reduction was associated with higher rates of SRS (B=-2.098 p=0.018, B=1.718 p = 0.032).

DISCUSSION AND CONCLUSION: Radiographic evidence of AVN was common after fractures and dislocations of the talus. However, the development of AVN did not alter the rate of SRS or functional outcomes at follow up. This may be explained by the fact that most AVN patients (90%) had less than 25% collapse. Factors associated with AVN development included age at surgery and the number of incisions. The development of AVN had no detrimental clinical impact in this study.