Low rate of conversion to arthroplasty or arthrodesis after operative treatment of talus fractures

Erika Roddy¹, William M Hannay, David J Dalstrom², Bruce J Sangeorzan³, Stephen K Benirschke⁴, Reza Firoozabadi⁵ ¹University of Washington, ²Harboview Medical Center, ³Harborview Med Ctr-U of W Dept of Ortho, ⁴Harborview Hospital, ⁵UW Medicine

INTRODUCTION:

Talus fractures are rare injuries. To date, there is limited literature on outcomes after modern operative treatment of talus fractures. The purpose of this study was to report on the short-term, mid-term, and long-term rates of salvage treatment (conversion to arthroplasty or arthrodesis) after operative treatment of talus fractures.

METHODS: This was a retrospective cohort study of all patients with a talus fracture treated surgically at a level one trauma center between 2008 and 2018. Detailed demographic, injury, and radiographic data were collected as well as data on reoperations performed at our center. Attempts were made to contact all patients to ask if they underwent subsequent reoperation after they completed follow-up at our center.

RESULTS: A total of 338 patients with surgically treated talus fractures were identified. Of these, 222 (65%) were men. The average age was 35 (SD 10). There were 195 (57%) talar neck fractures, of which 13 were Hawkins I, 54 were Hawkins II, 71 were Hawkins IIB, 39 were Hawkins III, and 18 were Hawkins IV. There were 113 talar body fractures, 5 talar head fractures, and 30 lateral process fractures. Two hundred and one (59%) patients had an ipsilateral foot or ankle fracture. The mean duration of follow-up was 5 years. Forty-nine percent of patients had radiographic evidence of arthritis at most recent follow-up and sixty three patients (18%) developed avascular necrosis. Using Kaplan Meier survival analysis, the rate of failure (conversion to arthroplasty, arthrodesis, or amputation) was 1% (95% CI 0-3%) at 1 year, 3% (95% CI 1-6%) at 2 years, 10% (95% CI 6-15%) at 5 years, 13% (95% 9-20%) at 10 years, and 15% (10-22%) at 16 years. (Figure 1) All failures occurred within 11 years of injury, and 80% occurred within 5 years. Higher Hawkins classification, the presence of avascular necrosis with talar dome collapse and presence of radiographic arthritis were associated with increased likelihood of conversion. Avascular necrosis without dome collapse was not associated with increased likelihood of conversion. Age at time of injury was not associated with subsequent conversion. DISCUSSION AND CONCLUSION:

Rates of conversion to arthroplasty or arthrodesis remain lower than anticipated even at 14 years after operative treatment of talus fractures. Higher Hawkins classification and avascular necrosis with talar dome collapse are associated with increased risk of conversion.