Talar Neck Fractures with Body Extension Have a Higher Risk of Avascular Necrosis

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INTRODUCTION:

The objective of this study was to determine if talar neck fractures with proximal extension (TNPE) into the talar body have higher rates of avascular necrosis (AVN) than isolated talar neck (TN) fractures.

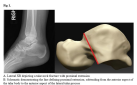
METHODS: A retrospective review of patients sustaining talar neck fractures at a level I trauma center from 2008-2016 was performed. Fractures were characterized as TN or TNPE. TNPE was defined as a fracture that originates on the talar neck and extends proximal to a line subtended from the junction of the talar neck and the articular cartilage dorsal to the anterior portion of the lateral process of the talus (**Figure 1**). Fractures were also classified according to the Hawkins classification as modified by Canale and Kelly, and Vallier for analysis. Demographic data, mechanism of injury (MOI), injury and radiographic characteristics including development of AVN, collapse, and Hawkins sign were collected and analyzed.

RESULTS:

There were 137 fractures in 130 patients with 80 (58%) fractures in the TN group and 57(42%) in the TNPE group. Mean follow-up was 15.4 months (median 10 months). There were more open fractures (p = .039) and more males in the TN group (p = .008). There were similar Hawkins type proportions between groups (p = .224). Overall, AVN occurred in 43 (31.4%) fractures, while collapse occurred in 11 (8.0%) fractures. Twenty-eight (49%) fractures from the TNPE group developed AVN, significantly more than the 15 (18.8%) TN patients who developed AVN, with a Risk Ratio (RR) of 2.11 (p = <.001) (Table 3). Similarly, the TNPE group had a higher rate of collapse (RR = 1.87, p=.029) and non-union (RR = 1.87, p= .006) (Table 4). Open fracture was significantly associated with both TNPE (p =.039, RR of 1.6) and with AVN (p = .014, RR of 2.4), as shown in Table 5. However, when evaluating closed fractures only, there was still a significant difference with a 45% AVN rate in the TNPE group compared to a 16% AVN rate in the TN group (p=<.001, RR of 2.26).

DISCUSSION AND CONCLUSION:

Our results demonstrated a significantly higher rate of development of AVN, subsequent collapse, and non-union in patients with TNPE when compared to isolated TN fractures. The worse radiographic outcomes associated with TNPE can be used for patient counseling.



Radiograph depicting increased sclerosis of the talar dome when compared to adjacent bone