2022 NEHS Annual Meeting Abstract Submission

COMPLETE

NEHS Vice President, Daniel Mastella, M.D., is currently accepting abstract submissions for presentation at our Annual Meeting on December 2, 2022.

This meeting will be held at the Sturbridge Host Hotel in Sturbridge, MA.

Therapists, NPs, and PAs are also encouraged to submit.

THE DEADLINE FOR SUBMISSION IS OCTOBER 15, 2022

RESIDENTS AND FELLOWS ONLY. Please indicate if you want your paper to be considered for the prestigious H.Kirk Watson, M.D. Founder's Award. The abstracts for award consideration will be presented in the morning and the award will be presented in the afternoon.

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* ABSTRACT TITLE

Preoperative bone density measurements from computed tomography (CT) scans predict 3-month healing of surgically treated scaphoid nonunions: A multicenter cohort study

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2*** Name of who will present abstract at NEHS meeting on December 2, 2022 Please note that the same person cannot present more than one abstract at the meeting.**

Chelsea Messinger

* Please indicate if the presenter is:

Not currently a resident or fellow

* List full names of abstract authors

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* ABSTRACT - should include background information and a description of methods, programs, or practices.

Introduction: In scaphoid fractures, sclerotic bone densities suggest progression towards nonunion. As 10% or more of scaphoid nonunions fail surgical treatment, there is a need to understand which scaphoid nonunions are likely to heal. Relative bone density (RBD) of scaphoid poles relative to the triquetrum has been shown to predict nonunion in nonoperatively managed subacute scaphoid fractures. We hypothesized that RBD would predict 3-month healing of scaphoid delayed unions or nonunions treated by open reduction and internal fixation (ORIF).

Methods: We identified a retrospective cohort of non-united adult scaphoid fractures treated with ORIF between 6 weeks and 2 years after injury at two academic medical centers from 2003-2021 (N=73). Bone density was measured by 2 observers from pre-operative CT scans using standard clinical radiology software. RBD was calculated as the ratio of mean bone density in the fracture fragments relative to the triquetrum for each fragment and the difference between proximal and distal fragments. Predictive accuracy for healing at the scheduled 3-month visit using optimal RBD cutoffs was described for the sagittal plane, coronal plane, and their mean using sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).

Results: 73 patients met inclusion and exclusion criteria for the cohort and 64 (88%) had a recorded 3-month outcome. Of those with a recorded outcome, 12 (18.8%) were non-healing at 3 months. PPVs for healing ranged from 0.82-0.93 and NPVs ranged from 0.18-0.33 for all predictors. The difference between mean RBD of the proximal and distal fragments had the highest positive predictive value of 93% (PPV 0.93; NPV 0.27; c-statistic 0.55), followed by the mean RBD of the proximal fragment alone (PPV 0.85; NPV 0.25; c-statistic 0.63).

Conclusions: The difference in RBD between proximal and distal fragments can identify fractures that are very likely to be healing at 3 months. However, this measure is not predictive for fractures with difference RBDs above the cutoff.

Please attach files with diagrams and/or photos to support your abstract (10 MB limit)

* Please attach the abstract presenter's CV

messinger_cv_100622.pdf