2023 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 1, 2023.

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, 2023

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.

CREATED

PUBLIC
Oct 15th 2023, 4:02:42 pm

IP ADDRESS

*** ABSTRACT TITLE**

Compartment Syndrome in Distal Radius Fractures: A Case Series of No-Tourniquet Fixation

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*** Name of who will present abstract at NEHS meeting on December 1, 2023 Please note that the same person cannot present more than one abstract at the meeting.**

Thomas Cervantes

*** Please indicate if the presenter is:**

Resident

*** List full names of abstract authors Please note - one of the lead authors must be present at the meeting to answer questions about the paper.**

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

Distal radius fractures associated with high-energy mechanisms and polytrauma are at higher risk of developing forearm compartment syndrome. Although overall incidence of forearm compartment syndrome with distal radius fractures is low (reported at 0.25%), this fracture pattern is the most common cause of compartment syndrome in adults. A systematic review conducted by Kalyani et al. found that distal radius fractures accounted for 37.5% of all fractures associated with forearm compartment syndrome, and 14.3% of overall causes. In these scenarios prompt fasciotomy is indicated, in addition to open reduction internal fixation of the fracture. In reviewed studies, skin grafting was required for wound management in 61% of cases, versus delayed primary closure in the remaining 39%. We hypothesize use of upper extremity tourniquet and the resulting post-tourniquet ischemic swelling contributes to inability to perform primary closure. Here we present a case series of distal radius open reduction internal fixation performed without tourniquet to facilitate primary closure after fasciotomy for compartment syndrome.

A total of seven patients were identified over an 18-month period from 2019-2020 who presented with symptoms of forearm compartment syndrome after distal radius fracture. Mechanisms included mechanical fall from height, motorcycle accident, crush injury from roller machinery, and crush injury between heavy equipment. Five cases had additional fractures on the ipsilateral extremity. All patients had open reduction and internal fixation with a volar locking plate, with the exception of one who underwent open reduction percutaneous pinning. Six also had carpal tunnel release performed. All cases were performed without tourniquet inflation and underwent volar forearm fasciotomy. Six patients had primary closure of all wounds; one patient required placement of negative pressure wound therapy and eventual split thickness skin grafting. The operative procedure was performed within 1 day of the injury for five patients; one patient had delayed presentation (3 days post-injury), and the other had fasciotomy & carpal tunnel release performed on the day of injury with ORIF performed 3 days later. All patients had uneventful healing of the closure. Three patients hand normal sensation at last follow-up, whereas three patients had reduced sensation of a single digit. One patient had significant median and ulnar nerve decreased sensation.

Open reduction and internal fixation of distal radius fractures without torniquet use has been described in the literature as a demonstration of wide-awake, local anesthesia, no tourniquet technique, AKA WALANT. The noted benefits include ability to perform stability testing after fixation under physiologic forces, assessment of flexor pollicis longus glide to ensure no irritation, and early identification of any iatrogenic nerve injury. In this case series we demonstrate the additional benefit of eliminating post-ischemic tissue hyperemia to facilitate primary closure after volar fasciotomy for compartment syndrome. This was found to be successful in six out of seven patients; the exception was a case with severe crush injury resulting in brachial artery occlusion requiring saphenous vein bypass grafting.

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

* Please attach the abstract presenter's CV