

**Timing of Treatment of Open Distal Radial Fractures in Adults***Jarid Tareen, MD<sup>1</sup>; Adam Kaufman, MD<sup>2</sup>; Raymond Pensy, MD<sup>3</sup>;**Robert O'Toole, MD<sup>4</sup>; W Andrew Eglseder, MD<sup>4</sup>;**<sup>1</sup>University of Maryland Medical Center, Gaithersburg, Maryland, USA;**<sup>2</sup>Biltmore Lake, North Carolina, USA;**<sup>3</sup>University of Maryland Medical Center, Brinklow, Maryland, USA;**<sup>4</sup>Shock Trauma Center, Baltimore, Maryland, USA*

**Purpose:** Controversy exists regarding the ideal timing of the treatment of open distal radial fracture (DRFs). Two options exist after initial irrigation and debridement: (1) immediate, definitive open reduction and internal fixation (ORIF) or (2) external fixation and delayed ORIF. We hypothesized that there would be increased infection rate in group 1.

**Methods:** We retrospectively reviewed 7 years (2005-2012) of our prospectively collected database to identify all patients 16-65 years old with open DRFs and >3 months of clinical follow-up consistent for CDC (Centers for Disease Control and Prevention) definition of acute surgical site infection. The study group included 92 patients (94 fractures) with an average follow-up of 30 months. All patients were classified as either (1) immediate ORIF (n = 64) or (2) delayed ORIF (n = 32). The decision treatment was made based on the preference of the attending surgeon on the on-call night. Demographics, injury characteristics, and associated injuries were similar in the two study groups (P >0.20). The primary outcome measure was return to the operating room for surgical site infection. The secondary outcome was unplanned reoperation.

**Results:** In contrast to our hypothesis, 23% of patients (n = 7) in the staged group had infections requiring surgery compared to only 11% (n = 7) in the immediate ORIF group (P = 0.13, Pearson chi-square two-tailed). There was a trend toward increased reoperation rate in the staged group (50%) versus the unstaged group (33%) (P = 0.11). Both groups had similar functional outcomes as judged by range of motion and QuickDASH (an abbreviated version of the Disabilities of the Arm, Shoulder and Hand).

**Conclusion:** This relatively large case series on this topic demonstrates that fractures treated with immediate ORIF yield infection and reoperation rates similar to those fractures that are treated in a staged fashion. As a result, we conclude that initial debridement and internal fixation in these high-energy fractures is safe and has the potential benefit of sparing the patients an additional procedure that would otherwise be needed if treated in a staged fashion.