Risk of Reoperation after Primary Revision Digit Amputation Performed in the Emergency Department versus Delayed Treatment in the Operating Room

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HYPOTHESIS

Patients treated with primary revision digit amputation in the operating room (OR) have a decreased risk of secondary revision amputation compared to those treated in the Emergency Department (ED) due to the availability of anesthesia staff, surgical instruments, and controlled sterile environment.

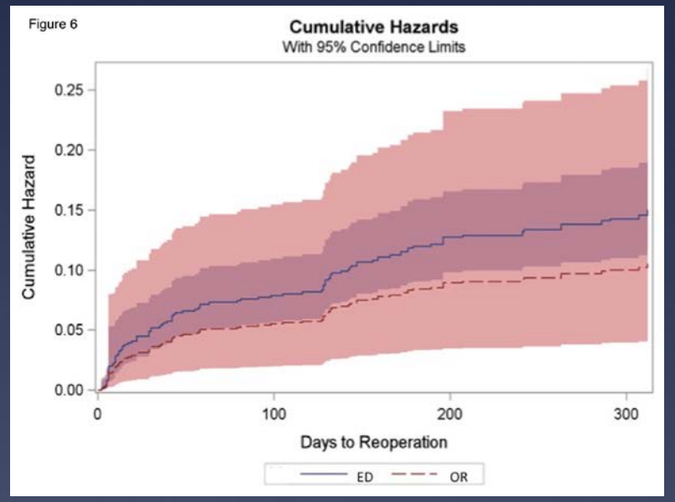
METHODS

After IRB approval, our institution's ED database was reviewed for all patients presenting with flexor tendon zone 1 and 2 traumatic digit amputations over a 6-year period, from January 2010 to December 2015. Patients were reviewed for demographics, comorbidities, site of treatment (ED versus OR), and complications requiring secondary revision. Conditional Cox Proportional Hazard regression with sandwich estimation, where digits were nested within patients, was used to model hazard of revision relative to insurance status, presentation (ED vs. OR), skilled vs. unskilled labor, and work-related vs. non-work related. Significance was established at the .05 level and all interval estimates were calculated for 95% confidence.

RESULTS

537 patients with 677 digits were initially treated with revision amputation: 481 patients with 586 amputations were revised in the ED, while 56 patients (10.4%) with 91 amputations were revised in the OR. 74 patients with 83 amputations (78 zone 1, 5 zone 2) required secondary revision within 1 year of primary revision amputation; of these, 68 patients had been treated in the ED and 6 patients in the OR. The patient incidence of secondary revision within 1 year of primary revision amputation performed in the OR was 10.7%, compared to 14.1% for the ED. No increased risk of unplanned secondary revision amputation was observed for patients treated in the ED compared with the OR, (HR 0.723, CI 0.1455-1.148, p=0.4811) (Figure 1). Those who had a work-related injury had a 1.9-fold increased risk of revision relative to those whose injury was not work-related, (HR 1.904, CI 1.06-3.422, p=0.0312). Those with insurance had a 1.6-fold increased risk of revision relative to those without insurance, this approached significance, (HR 1.553, CI 0.903-2.672, p=0.1119)(Table 1).

Figure 6



Risks of Unplanned Secondary Revision Amputation Censored at 1 year from Primary Revision Amputation

	Hazard Ratio	Confidence Interval	P Value
Insurance Status			
Insured vs Uninsured	1.553	(0.903-2.672)	0.1119
Work Status			
Work related vs Non-work related	1.904	(1.06-3.422)	0.0312†
Occupation			
Skilled vs Unskilled laborers	1.516	(0.589-3.903)	0.3888
Retired vs Active Laborers	0.508	(0.187-1.376)	0.1828
Location			
ED vs OR	0.723	(0.1455-1.148)	0.4811

† A statistically significant variable

SUMMARY

-Performing a revision fingertip amputation in the ED, rather than the OR, is not an independent predictor of need for secondary revision.

-Patients with work-related injuries, or who have insurance, have an increased risk of unplanned secondary revision amputation.

-As health care costs continue to rise, efficient utilization of resources is increasingly important. These results support avoiding unnecessary use of operating room time and staff for primary revision digit amputations.