

Incidence and Timing of Complications Requiring Secondary Revision after Primary Revision of Traumatic Digit Amputations

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HYPOTHESIS

While complications after revision digit amputation following traumatic finger or thumb amputation have been reported, most series have been small. Therefore, we aimed to determine whether soft tissue defects following traumatic amputations were the most frequent cause for reoperation of revision amputations in a large study population.

METHODS

After IRB approval, our institution's Emergency Department (ED) database was retrospectively examined for all patients presenting with traumatic finger and thumb amputations from January 2010 to December 2015. All patient information was entered into REDCap, including demographic information, handedness, work related injury, medical comorbidities, mechanism of injury, Verdan flexor tendon zone(s) of amputation, site of initial definitive management (ED versus operating room), and the type and timing of complications requiring unplanned secondary revision amputation.

RESULTS

537 patients with 677 traumatic digit amputations were initially treated with primary revision amputation. 81 (15.1%) patients with 91 (13.4%) digit amputations underwent unplanned secondary revision for at least one complication (TABLE 1). Of these, complications included: 32 digits (4.7% of all digits) with soft tissue coverage at an average of 29 days (range 2-241 days), 21 digits with nail deformity at an average of 179 days (range 42-671 days), 9 digits with neuroma at an average of 215 days (range 42-503 days), 7 digits with neuroma and nail deformity at an average of 133 days (range 37-242 days). Other infrequent complications included nail deformity and cosmesis (4, average 144 days), cosmesis alone (4, average 140 days), scar contracture and function (3, average 378 days), scar contracture (4, average 195 days), infection and soft tissue coverage (2, average 15 days), and 1 digit complicated by neuroma and cosmesis, neuroma and soft tissue coverage, cosmesis and soft tissue coverage, and infection at 707, 91, 10, and 22 days respectively (FIGURE 1).

All Complications Requiring Secondary Revision Amputation After Primary Revision Amputation			
Complication(s)	Number (Incidence) of Patients	Number (Incidence) of Digits	Average Time to Presentation (days)
Soft Tissue Coverage	28 (5.2%)	32 (4.7%)	28.9
Nail Deformity	21 (3.9%)	21 (3.1%)	179.2
Neuroma	8 (1.5%)	9 (1.3%)	214.7
Nail Deformity and Neuroma	7 (1.3%)	7 (1.0%)	132.6
Nail Deformity and Cosmesis	3 (0.6%)	4 (0.6%)	144.3
Cosmesis	3 (0.6%)	4 (0.6%)	140
Scar Contracture and Function	3 (0.6%)	3 (0.4%)	378
Scar Contracture	2 (0.4%)	4 (0.6%)	195.5
Infection and Soft Tissue Coverage	2 (0.4%)	2 (0.3%)	15
Neuroma and Cosmesis	1 (0.2%)	1 (0.2%)	707
Neuroma and Soft Tissue Coverage	1 (0.2%)	1 (0.2%)	91
Cosmesis and Soft Tissue Coverage	1 (0.2%)	2 (0.3%)	10
Infection	1 (0.2%)	1 (0.2%)	22
Total with Complications	81 (15.1%)	91 (13.4%)	
No Complications	456 (84.9%)	586 (86.6%)	
Total	537	677	

SUMMARY

Following primary revision digit amputation, the incidence of all complications requiring secondary revision was 15.1% of patients and 13.4% of digits.

Soft tissue coverage was the most common early complication that required secondary revision, affecting 4.7% of primarily revised digits at an average of 28 days after the index procedure.

Neuroma and nail deformity were the two most common late presenting complications requiring secondary revision at an average of 215 and 179 days respectively.

At the time of index procedure, the patient may be counseled on the potential complications requiring secondary revision and the timing of such complications.

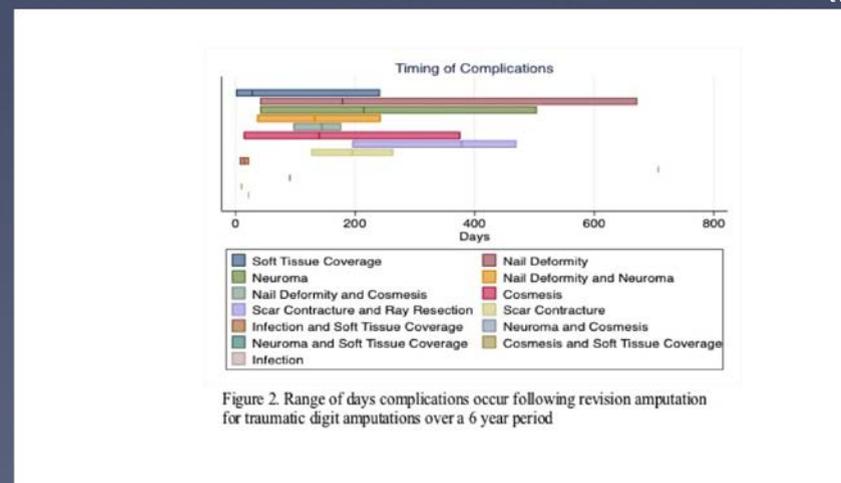


Figure 2. Range of days complications occur following revision amputation for traumatic digit amputations over a 6 year period