

## **Surgical and medical morbidity following failed non-traumatic partial foot amputation in diabetic patients**

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**Introduction/Purpose:** Maximal limb preservation is often the goal in choosing partial foot amputation (PFA) as a treatment for diabetic foot infections. Some of these patients will go on to experience multiple hospital admissions, IV antibiotic courses, surgical debridements, re-amputations and other medical complications. This study describes the treatment course of these patients starting at second partial foot amputation and ending at 5 year follow-up.

**Methods:** A retrospective cohort was built from a database of all amputation procedures performed on diabetic patients at the University of Iowa Department of Orthopedics from 2000 – 2015. The cohort was evaluated over time frame starting at second PFA (index procedure) and ending at 5 years after index procedure. Of 264 patients who underwent partial foot amputation, 49 experienced two lower extremities PFA between January 2000 and December 2011 (cut-off used to allow minimum of 5 years post-PFA). Demographic data was recorded at index PFA and included surgical dates, laterality, surgery type, diagnoses at time of initial surgery, and death date. A chart review collected information on 5 year post-index PFA incidence of: non-surgical hospitalizations, antibiotic administrations, total contact cast applications, and complications (such as osteomyelitis and acute renal failure).

**Results:** Thirty-two (65%) of the second partial foot amputations (index) were ipsilateral and 17 were contralateral to first partial foot amputation (pre-index procedure). Eighteen (37%) of the partial foot amputation patients eventually experienced transtibial / transfemoral amputations in the 5 years following index PFA. Eleven (22%) had at least a third partial foot amputation (and as many as 7) during study period. Sixteen (32%) patients had 17 transtibial / transfemoral amputations within 5 year time frame. 11 of the 17 (65%) TT / TF procedures were ipsilateral to index (second) PFA. Seven (17%) of the patients died.

**Conclusion:** Maximal limb preservation may not be beneficial in all cases, particularly in the case of repeat PFAs. This cohort of repeat PFA patients demonstrated a complicated medical course with long periods of hospitalization, leg immobilization in cast, and home-going antibiotics (requiring PICC). This study suggested that over a 5 year period following second PFA, patients on average experienced at least 31 days in TCC, 17 days hospitalized and underwent one additional amputation procedure. These are likely underestimates due to follow-up or outside hospital cares. A large number of patients (18 or 37%) ultimately required higher-level amputation. There is a potential morbidity with PFA that may not be communicated to patients when making these decisions. In this cohort, the average days to second PFA was 360 days. 18 of 49 repeat PFA patients underwent transtibial or transfemoral amputation within 5 years of their initial PFA. The morbidity of the interim medical course over 5 years added to the poor quality of life after PFA.

Total Patients 2nd Procedure	60	Total Patients 3rd Procedure	12
Average Duration between first and second procedure	425	Average duration between 2nd and 3rd Procedure	782
Total Patients Admitted on 2nd Procedure	39	Total Patients Admitted on 3rd Procedure	12
Average Stay 2nd Procedure if admitted	7	Average Stay 3rd Procedure if admitted	5
% Patients admitted on 2nd procedure	65%	% Patients admitted on 3rd procedure	100%
Longest stay 2nd procedure	33	Longest stay 3rd procedure	17
Max Time to 2nd procedure	2499	Max Time to 3rd procedure	1972
Min Time to 2nd Procedure	11	Min Time to 3rd Procedure	210
<b>Total TCCs after 1st procedure, before 2nd procedure</b>	<b>138</b>	<b>Total TCCs between after 2nd procedure, before 3rd procedure or outcome</b>	<b>164</b>
Average #TCC per all patients between 1st and 2nd	2.3	Average #TCC per all patients between 1st and 2nd	2.7
Average #TCC per patients (excluding those not cast) between 1st and 2nd	6.6	Average #TCC per patients (excluding those not cast) between 1st and 2nd	7.8
Total Number Hospital Admissions after 1st procedure, before 2nd procedure *note that 2nd procedure is often an admission and not counted in this tally	61	Total Number Hospital Admissions after 2nd procedure, before 3rd procedure or outcome *note that 2nd procedure is often an admission and not counted in this tally	99
Average # Hospitalizations after 1st procedure	1.0	Average # Hospitalizations after 2nd procedure, before 3rd procedure or outcomes	1.65
Average # Hospitalizations (excluding those never hospitalized)	1.9	Average # Hospitalizations (excluding those never hospitalized)	3
Total Days hospitalized after discharged from 1st procedure	195	Total Days hospitalized after discharged from 2nd procedure	586
Average Days Hospitalized after discharged from 1st procedure	3.25	Average Days Hospitalized after discharged from 2st procedure	9.8
Average Days Hospitalized (excluding those never hospitalized) after 1st procedure	6.1		