

Amputations Occur Frequently After High-Energy Open Midfoot Injury

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Purpose: Tarsometatarsal fractures and dislocations are uncommon and are often secondary to high-energy mechanisms. In cases with substantial soft-tissue compromise, these injuries can be limb-threatening. The purpose was to describe a series of patients with midfoot injuries that were treated with amputation primarily or secondarily.

Methods: 160 adults with tarsometatarsal fractures and dislocations were treated over 19 years at a single Level-I trauma center. Demographics, comorbidities, and injury characteristics were recorded for patients who underwent amputation. Indications for primary amputations were massive bone and/or soft-tissue destruction. Secondary amputations were performed after an initial attempt at limb salvage resulted in deep necrosis and/or infection. Amputations performed primarily for another ipsilateral lower extremity injury were excluded.

Results: 19 patients (11.9%) underwent amputation, including 13 primary amputations (mean age 41 years) and 6 secondary amputations (mean age 45 years). All 19 patients were male. Two had diabetes mellitus (1 primary, 1 secondary amputation), and 1 was neuropathic at baseline (1 secondary amputation). Tobacco use was common (68%). Primary amputations occurred after crush injuries (n = 5), motorcycle crash (n = 3), pedestrians struck (n = 2), and 1 patient each with motor vehicle collision, gunshot, and lawnmower injury. Five patients with motorcycle crash accounted for 83% of the secondary amputations. 17 injuries (90%) were open, with all Gustilo-Anderson type 3C injuries and 5 of 9 type 3B injuries treated with primary amputation. 17 of the 30 open injuries identified in the entire midfoot injury cohort (57%) ultimately underwent amputation. Concomitant ipsilateral forefoot injuries were present in 68% and hindfoot injuries in 32% of amputees. Eight (61.5%) of the primary amputations were transtibial. Secondary amputations included transtibial (n = 2), Chopart (n = 2), Lisfranc (n = 1), and transmetatarsal (n = 1) and were performed after a mean of 40.7 days following injury (range, 26 to 77 days).

Conclusion: Amputations at various levels, either primarily due to unsalvageable injuries, or secondarily due to wound or infectious complications, were commonly required in this series of high-energy Lisfranc injuries. Injuries treated with primary amputation most commonly occurred after crush or motorcycle crash. Over half of open Lisfranc injuries ultimately underwent some form of amputation, warranting early counseling of patients regarding the limb-threatening nature of their injury.