

Patient-Reported Outcomes following Lower Extremity Trauma: A Cross Sectional Study from 25 Countries

Natasha S. McKibben¹, Sabrina Wang, Moreen W. Njoroge, Ahlam Khattab², Franca Kraenzlin³, Tim De Jong, Scott Hollenbeck⁴, Mark Gage, Lily Mundy

¹Oregon Health & Science University, ²Division of Plastic and Maxillofacial Surgery, ³Department of Plastic and Reconstructive Surgery, ⁴Duke University

INTRODUCTION:

Lower extremity traumatic injuries can have a devastating impact on patients. Treatment ranges from fracture surgery only to soft-tissue reconstruction and amputation. A new patient-reported outcome (PRO) instrument, the LIMB-Q, has been developed and validated specifically for lower extremity trauma patients. Function, satisfaction, and quality of life outcomes have not previously been measured in lower extremity trauma patients using a PRO instrument developed and validated specifically for this patient population.

METHODS:

Cross-sectional data was collected in patients after lower extremity injury distal to the mid-femur from 25 countries. The primary outcome was the LIMB-Q, a novel PRO instrument developed specifically for lower extremity trauma patients. Patient demographics and LIMB-Q scores were tested across treatment groups using ANOVA (significance $p < 0.05$). An adjusted multivariate linear regression controlled for age, gender, race/ethnicity, income, education level, marital status, etiology, polytrauma, work status, laterality, and time from injury. Stratified analysis was performed for unilateral above knee (AKA) and below knee amputations (BKA) in a univariate and multivariate analysis.

RESULTS:

In total, 706 patients were included with a mean age of 41 years (range: 18-85) with 45.5% ($n=321$) undergoing fracture only surgery, 32.9% ($n=232$) requiring soft-tissue reconstruction, and 21.7% ($n=153$) requiring amputation. Multivariate linear regression showed significant differences in the Function ($p=0.005$, 95% CI[0.63, 3.40]), Symptoms ($p=0.009$, 95% CI[0.41, 2.82]), Life Impact ($p < 0.001$, 95% CI[-1.71, 4.51]), Psychological ($p=0.002$, 95% CI[0.93, 3.92]), and Work Life ($p=0.005$, 95% CI[0.95, 5.34]) scales of the LIMB-Q by treatment groups, with highest scores in the fracture group followed by the soft-tissue reconstruction group. The lowest scores were in the amputation group. In unilateral amputation patients, LIMB-Q scores did not differ significantly between AKA ($n=31$) and BKA ($n=68$) patients on multivariate regression analysis.

DISCUSSION AND CONCLUSION:

In an international sample of patients from 25 countries, with a PRO instrument developed and validated specifically for lower extremity trauma patients, satisfaction, function, and quality of life were highest in patients requiring fracture surgery only. In patients with limb-threatening injuries, outcomes were better following limb-salvage than following amputation. There was no quality of life benefit to a BKA in comparison to an AKA in our sample. This represents the first PRO data of lower extremity trauma patients using an instrument developed and validated specifically for this patient population.