



Outcomes and Disability After Massive Proximal Upper Extremity Reconstruction in a Resource-Limited Setting

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Abstract

Background At Ganga Hospital in Coimbatore, India, a unique approach is applied to treat massive upper limb injuries. However, long-term outcomes of complex reconstruction performed in the resource-limited setting are not known. This hinders understanding of outcomes and disability from these injuries and prevents systematically addressing care delivery around upper extremity trauma in the developing world. This project aims to analyze the details of the unique Ganga Hospital reconstruction experience and use patient-reported outcome measures for the first time in this patient population to evaluate post-injury recovery and disability.

Methods Forty-six patients were evaluated 6 months or more after massive proximal upper extremity reconstruction at Ganga Hospital. Patients completed functional tests, Jebsen–Taylor test (JTT), and patient-reported outcomes (PROs)—Michigan Hand Questionnaire (MHQ), Disability of Arm, Shoulder, and Hand questionnaire (DASH), and Short-Form 36 (SF-36). Correlations between metrics were assessed with Pearson’s correlation coefficients. Linear regression modeling evaluated associations between severity, reconstruction, and outcomes.

Results MHQ and DASH results correlated with functional test performance, JTT performance, and SF-36 scores (Pearson’s coefficients all ≥ 0.33 , $p \leq 0.05$). In this cohort, mean MHQ score was 79 ± 15 and mean DASH score was 13 ± 15 , which are not significantly different than scores for long-term outcomes after other complex upper extremity procedures. The following factors predicted PROs and functional performance after reconstruction: extent of soft tissue reconstruction, multi-segmental ulna fractures, median nerve injury, and ability for patients to return to work and maintain their job after injury.

Conclusions Complex proximal upper extremity salvage can be performed in the resource-limited setting with excellent long-term functional and patient-reported outcomes. PRO questionnaires are useful for reporting outcomes that correlate to functional and sensory testing and may be used to assess post-traumatic disability.

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