

## A Systematic Review of Patient-Reported Outcomes and Return to Work after Surgical vs. Non-surgical Midshaft Humerus Fracture

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**Abstract :** Background: Patients with humeral shaft fractures have two different treatment options. Surgical therapy has lesser risks of non-union, mal-union, and re-intervention than non-surgical therapy. These positive clinical outcomes of the surgical approach make it a preferable treatment option despite the risks of radial nerve palsy and additional surgery-related risk. We aimed to evaluate patients' outcomes and return to work after surgical vs. non-surgical management of shaft humeral fracture. Methods: We used databases, including PubMed, Medline, and Cochrane Register of Controlled Trials, from 2010 to January 2022 to search for potential randomised controlled trials (RCTs) and cohort studies comparing the patients' related outcome measures and return to work between surgical and non-surgical management of humerus fracture. Results: After carefully evaluating 1352 articles, we included three RCTs (232 patients) and one cohort study (39 patients). The surgical intervention used plate/nail fixation, while the non-surgical intervention used a splint or brace procedure to manage shaft humeral fracture. The pooled DASH effects of all three RCTs at six (M.D: -7.5 [-13.20, -1.89], P: 0.009) I2:44%) and 12 months (M.D: -1.32 [-3.82, 1.17], p:0.29, I2: 0%) were higher in patients treated surgically than in non-surgical procedures. The pooled constant Murley score at six (M.D: 7.945[2.77,13.10], P: 0.003) I2: 0%) and 12 months (M.D: 1.78 [-1.52, 5.09], P: 0.29, I2: 0%) were higher in patients who received non-surgical than surgical therapy. However, pooled analysis for patients returning to work for both groups remained inconclusive. Conclusion: Altogether, we found no significant evidence supporting the clinical benefits of surgical over non-surgical therapy. Thus, the non-surgical approach remains the preferred therapeutic choice for managing shaft humeral fractures due to its lesser side effects.

**Keywords :** shaft humeral fracture, surgical treatment, Patient-related outcomes, return to work, DASH

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