

Should Displaced Scapular Body Fractures Be Operatively Treated? A Randomized Controlled Trial

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Purpose: Scapular body fractures are uncommon and usually result from high-energy trauma with associated injuries. Increasing debate exists as to the best treatment for displaced scapular body fractures. The primary purpose of this study was to compare radiographic and functional outcome in operative versus nonoperative treatment of displaced scapular body fractures.

Methods: Over a 6-year period of time, 39 displaced, defined as >2-cm displacement or medialization, >45° angulation, or glenopolar angle (GPA) difference >10°, patients with scapular body fractures were consented, randomized, and treated. 18 were treated nonoperatively (NonOp) and 21 were operatively (Op) treated with a modified Judet approach and 2.7-mm plates and screws. If an associated double shoulder suspensory instability (DSSI) injury was present, the nonscapular injury was treated operatively and the scapular injury treatment was randomized. Regular clinical and radiographic follow-up occurred at determined intervals up to 2 years. Functional outcome measurements were performed with SMFA (Short Musculoskeletal Function Assessment) and DASH (Disabilities of the Arm, Shoulder and Hand). Muscle strength testing was performed with Cybex® equipment.

Results: More males (27) than females (12) were consented but had equal distribution between groups. Average age was 45 years (range, 18-75) with an older age in the NonOp (51) than the Op (40) group. An associated DSSI was present in 22% of NonOp and 24% of Op. Associated injuries were glenoid (2), humeral (1), and rib (22). OTA Classification was A3 (5), B1 (17), and B2 (17). Average initial injury measurements were translation (15 mm), medialization (17 mm), shortening (29 mm), angulation (26°), and GPA 30°. Op had anatomic reconstruction in all patients. At 6 weeks postop, forward flexion (155° vs 113°, $P = 0.03$) and adduction (105° vs 69°, $P = 0.03$) were better in the Op than NonOp. At 1 year, abduction was better ($P = 0.03$) in the Op (172°) than the NonOp (145°). Cybex® muscle testing measurements were statistically similar at all data points except Op External Rotation Total Work was better than NonOp ($P < 0.05$) at 6 weeks. Functional outcome measurements with SMFA and DASH were statistically similar at all data intervals. No complications occurred in the Op group, but two complications in the NonOp (both with associated displaced rib fractures) required operative intervention (exostectomy) for prominent lateral scapular border. One clavicle plate required hardware removal for prominence.

Conclusion: Operative fixation of displaced scapular body fractures perform well clinically and with minimal complications. Despite having poor radiographic parameters and reduced range of motion with abduction and forward flexion, nonoperative intervention of displaced scapular body fractures have similar functional measurements of SMFA and DASH. Nonoperative treatment of displaced scapular body fractures with associated ipsilateral displaced rib fractures may benefit from scapular body operative intervention.