Outcomes of Conservative Management of Humeral Shaft Fractures

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Purpose: The outcomes of conservatively managed humeral shaft fractures, using a humeral brace, were reviewed in our department; the aims of the study were to identify the proportion of humeral shaft fractures, which were treated successfully with the brace, and to identify the rate of nonunion or delayed union.

Methods: All patients who had sustained a humeral shaft fracture over the past 5 years were identified using an electronic patient database. Medical records and radiographs were reviewed to determine what proportion of patients were treated conservatively with the humeral brace, obtain demographic details, as well as assess fracture pattern and outcome of treatment.

Results: In total there were 66 patients with humeral shaft fractures managed conservatively over the study period. The mean patient age was 63.5 years and 60.5% of patients were female. 77.5% of fractures were sustained following low-energy injuries, 9.5% were sustained following medium-energy injuries, and 13.5% high-energy injuries. The fracture pattern was spiral in 57.5% of cases, transverse in 41.5% of cases, and comminuted in 1% of cases. The mean time to immobilization in the brace was 11.9 weeks. When fracture union occurred this was at a mean 12.9 weeks. There were 3 cases of established nonunion (4.5%) and 20 cases of delayed union (30.3%), of which 18 patients underwent surgical fixation. Risk factors for developing a delayed or nonunion included transverse fracture pattern (1.3 relative risk [RR]), high-energy injury (2.5 RR), male gender (1.3 RR), and increased fracture displacement or angulation.

Conclusion: Our study has demonstrated that although conservative treatment of humeral shaft fractures is an acceptable treatment modality there is a significant rate of delayed or nonunion. Patients at increased risk of this with high-energy and displaced transverse fractures should therefore be considered for primary surgical fixation.