Hemiarthroplasty for the Treatment of Distal Humerus Fractures: Short-term Clinical Results

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Abstract: Total elbow arthroplasty is the current gold standard of treatment for unreconstructable distal humerus fractures; however, longevity of the implant remains a concern in younger, more active patients. Distal humerus hemiarthroplasty offers an alternative and may allow for more durable results. The authors retrospectively evaluated the short-term clinical outcomes of 10 patients who underwent elbow hemiarthroplasty for distal humerus fractures. This short-term review suggests that distal humerus hemiarthroplasty may be an effective treatment for certain distal humerus fractures. Additional studies must be conducted to further define the role of elbow hemiarthroplasty for the treatment of complex fractures of the distal humerus.

Management of distal humerus fractures can be challenging. With the goal of restoring a painless, functional, and stable elbow joint, the gold standard of treatment for distal humeral fractures is open reduction and internal fixation (ORIF). Fracture comminution or osteoporosis may compromise the stability of the construct and lead to poor clinical outcomes. In these situations, total elbow arthroplasty may offer a superior option in situations when satisfactory elbow reconstruction is unachievable. However, total elbow arthroplasty is only recommended in patients older than 70 years due to concerns of aseptic implant loosening. In addition, risks of periprosthetic fracture and the generation of polyethylene wear that occurs with linked implants may compromise sustained clinical success of the total elbow arthroplasty. Patients undergoing total elbow arthroplasty must also maintain an extremity-specific sedentary lifestyle, sacrificing the ability to use their operative extremity for any significant weight-bearing activities. Hemiarthroplasty eliminates the need for an ulnar component and placement of polyethylene and may allow for a more durable treatment option in the younger patient population.

The purpose of the current investigation was to retrospectively evaluate the short-term clinical outcomes of 10 patients who underwent distal humeral hemiarthroplasty for unreconstructable distal humerus fractures. The authors hypothesized that the use of a distal humerus hemiarthroplasty for unreconstructable elbow fractures would allow for excellent clinical outcomes comparable with historic control groups of total elbow arthroplasty for treatment of unreconstructable distal humeral fractures.

Materials and Methods
All research was approved by the institutional review board and performed in accordance with the ethical standards set forth by the university committee on human experimentation. Between August 2008 and February 2012, ten patients underwent distal humerus hemiarthroplasty as a Federal Drug Administration off-label use. Inclusion criteria for distal humeral hemiarthroplasty included low distal humeral fractures with comminution and poor bone quality that were deemed unreconstructable by the senior author (J.M.I.). All fractures demonstrated an intact radial head and coronoid process, intact sigmoid notch cartilage, intact or reconstructable medial or lateral columns, intact or repairable collateral ligaments, and an intact elbow extensor...