Distal Humeral Fractures Treated with Non-Custom Total Elbow Replacement –7 year Follow-up

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Background

Some fractures of the hip and shoulder are reliably treated by joint replacement in older patients. With improved implant design and function in elective surgery, some have reported reliably good outcomes in the treatment of such fractures with joint replacement. We hypothesized that functional and clinical outcome results would improve with age, and the purpose of this retrospective review was to analyze patients with distal humeral fractures primarily treated with a total elbow arthroplasty.

Materials and Methods

We retrospectively reviewed 43 acute fractures, in 43 patients, treated with total elbow arthroplasty as their primary treatment option at our institution, with an average age 67 years. Co-existent pathology was present in 29 patients. The fractures were classified as: type A (5 cases), type B (5 cases), and type C (33 cases), based on the AO classification. fourteen patients died during the review period. The average follow-up was seven years (range 2 to 15 years). Post-operative review consisted of both clinical and radiographic assessment. Clinical function was assessed using the Mayo Elbow Performance Score (MEPS) and antero-posterior and lateral radiographs.

Results

At final review the flexion arc was an average of 24° (range 0° to 75°) to 132° (range 100° to 150°), and the MEPS averaged 93/100 for the whole group. Heterotopic ossification was present to some extent in 7 cases (14%), with radiographic abutment in two cases (4%). Sixty five percent of patients had neither a complication nor any further surgery from the time of index arthroplasty to the current follow-up review. Thirty one percent had a single complication, most of which did not require further surgery. Ten further surgeries were required in ten cases, five soft-tissue related and five implant / bone related. Five implants (10%) required revision arthroplasty.

Conclusion

Complex distal humeral fractures should primarily be assessed for the reliability with which they can be reconstructed with osteosynthesis. If the predicted reliability of osteosynthesis is compromised for the reasons of fracture complexity or poor bone quality, especially in the physiologically older, lower demand patient, total elbow arthroplasty should be considered. Our data on morbidity, complications, and reliable functional outcomes support the approach and recommendation of total elbow arthroplasty for acute elbow fractures when the strict criteria are observed.