Distal Humerus Hemiarthroplasty of the Elbow for Comminuted Distal Humeral Fractures in the Elderly Patient

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**Background:** The purpose of our study was to evaluate the objective and subjective outcomes, as well as the radiographic results after elbow hemiarthroplasty (HA) for comminuted distal humerus fractures in elderly patients.

**Methods:** Ten female patients with a mean age of 75.2 years were treated with elbow HA either for osteoporotic, comminuted distal humerus fractures (n = 8) or for early failed osteosynthesis of distal humerus fractures (n = 2). The mean follow-up period was 12.1 months. All patients were examined and evaluated using the Mayo Elbow Performance Score and the Disabilities of the Arm, Shoulder, and Hand score. Radiographic postoperative outcomes were assessed performing anteroposterior and lateral radiographs of the injured elbow.

**Results:** According to the Mayo Elbow Performance Score, nine patients achieved “good” to “excellent results” and only one patient revealed a “fair” clinical outcome. The mean Disabilities of the Arm, Shoulder, and Hand score was 11.5 (range, 0–30). The flexion of the affected elbow was 124.5° (range, 60°–90°), the extension deficit was 17.5° (range, 5°–30°), the pronation was 80.5° (range, 60°–90°), and the supination was 79.5° (range, 50°–90°). The following postoperative complications were seen: one triceps weakness, one transient ulnar nerve irritation, one superficial wound infection, and two heterotopic ossifications. None of the patients required explanation of the prosthesis. There was no evidence of loosening, radiolucency, or proximal bone resorption, whereas one patient developed progressive osteoarthritis of the proximal ulnar and radial articulation.

**Conclusions:** Elderly patients treated with elbow HA revealed good to excellent short-term clinical outcomes. A high rate of complications occurred but most complications found were minor and reoperation rate was low. Our results must be regarded as a report on our first experience with HA. As cartilage wear is just a question of time especially in active patients, we cautiously recommend HA only for elderly and multimorbid low-demand patients.

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**Key Words:** Distal humerus fracture, Osteoporosis, Arthroplasty, Hemiarthroplasty.

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**T**he management of comminuted distal humeral fractures continues to pose a big surgical challenge for orthopedic surgeons despite the tremendous growth of knowledge in this field. The aim of surgical intervention is the restoration of a painless, functional, and stable elbow joint to assure patients’ independence. Usually, these goals are achieved by open reduction and internal fixation (ORIF) with anatomic reconstruction of the articular surface of the elbow. Despite improvement of osteosynthesis implants, secondary loss of reduction, non-unions, and the development of heterotopic ossifications (HO) are common complications,1–3 which mainly occur in elderly patients with osteoporotic bone.4–6 Therefore, total elbow arthroplasty (TEA) is gaining importance in the surgical management of comminuted fractures in elderly populations with poor bone quality, because it has been proven clinically effective.7–11 Frankle et al.4 reported better outcomes with decreased duration of surgery when treating elderly women with distal humerus fractures with TEA when compared with ORIF. The possibility to treat comminuted distal humerus fractures and their sequelae with distal humerus hemiarthroplasty (HA) is less established, although it was first published in 1947.12–17 As there were no specific implants for that indication available at that time, humeral components of the TEA systems were used. The Latitude Total Elbow System (Tornier) now allows HA with anatomic humeral spools (Figs. 1 and 2). The rational for HA is to reduce duration of surgery and the risk of potential complications in a population of elderly and multimorbid patients.

Although HA was considered and described to be a treatment option in comminuted articular distal humeral fractures in the elderly patient in the recent past,18,19 there are few studies in the current literature regarding the clinical and radiographic outcomes. The purpose of our study was to review the preliminary results of our first series of patients treated with Latitude HA for comminuted distal humeral fractures and report our first experience.

**MATERIALS AND METHODS**

Ten female patients were treated with Latitude HA in our Departments of Trauma Surgery during a 2-year period...