

Biepicondylar Fracture of the Humerus in an Adult Female: A Case Report

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Biepicondylar fracture of the humerus is very rare in adults. To date, there have been limited evidence of this injury in the English literature. We report a case of a 65-year-old female with a biepicondylar fracture of the left distal humerus without dislocation. Open reduction and internal fixation with K-wires, cannulated screw, and suture anchor were performed. We obtained stability of the elbow and a satisfactory functional outcome. Because this type of injury is associated with varus and valgus instability, operative reduction and fixation are essential in order to gain stability and early recovery of normal function.

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Key Words: Humeral fracture; Medial humeral epicondyle; Lateral humeral epicondyle

Distal humerus fractures are relatively uncommon in adults, accounting for approximately 2% of all fractures. The most common fracture pattern is an extra-articular type, which comprises just under 40% of all distal humerus fractures.¹⁾ However, medial and lateral epicondylar fracture of the distal humerus on the same side is extremely rare in adults. To the best of our knowledge, there have been only six cases reporting humeral biepicondylar fracture and its treatment in children.²⁻⁷⁾ However, it has never been reported in adults. Herein, we present a case of humeral biepicondylar fracture in a 65-year-old female patient.

Case Report

A 65-year-old female came to the outpatient clinic of Inje University Sanggye Paik Hospital after falling on to her left arm. Before coming to our clinic, she was seen by a primary care physician in another hospital and had been put in a long arm splint without any attempts of reduction maneuver. She presented a painful and grossly swollen elbow. On physical examination, her upper extremity was neurologically intact and there was no

outside wound. She complained of pain on palpation over the medial and lateral epicondyles of the distal humerus. It was impossible to apply the stress test to evaluate for any instability of the elbow due to severe pain. The patient's visual analogue scale (VAS) score was 6 out of 10 on the numeric rating scale (NRS)-11 and Mayo elbow performance score was 20. Radiographs demonstrated fractures of the medial and lateral epicondyles without elbow dislocation. The fracture of the lateral epicondyle of her humerus was extended into the capitellum on a computed tomography scan (Fig. 1).

Under general anesthesia, varus and valgus stress test on the elbow was performed at 30° of elbow flexion; significant instability was noted. Surgical treatment was recommended and carried out. Open reduction and internal fixation of both the medial and lateral epicondyles were performed using separate medial and lateral approaches. Fracture fragments from the lateral epicondyle were attached to the lateral collateral ligament. Fixation was achieved by using a K-wire and a cannulated partial threaded screw. The ulnar nerve was identified and protected during the medial approach. The medial collateral ligament was

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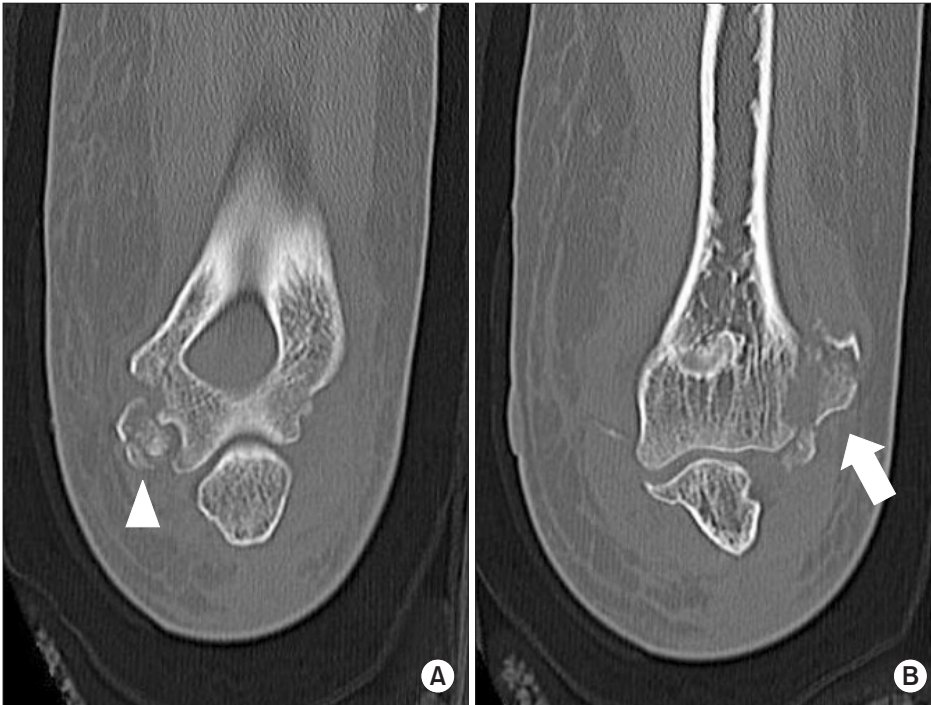


Fig. 1. Preoperative computed tomography scan. (A) Medial epicondyle fracture (arrowhead). (B) Lateral epicondyle fracture (arrow).



Fig. 2. Postoperative anteroposterior (A) and lateral (B) X-ray views of the left elbow.

attached to the fracture fragments. Fixation was carried out by using a K-wire and a suture anchor since the fragments were too small to fix with screws (Fig. 2). After three weeks of immobilization, a limited range of active and passive range of motion (ROM) was allowed with an elbow hinge brace. The patient received daily physical therapy, and her ROM—both active and passive—gradually increased.

At the final follow-up 13 months postoperatively, ROM of the elbow joint was 0° to 130°. The union of the fracture sites was seen on radiographs (Fig. 3). She feels comfortable using her elbow in daily life (combing hair, performing hygiene) without any complications. The VAS score of the patient was 1 out of 10 on the NRS-11 and Mayo elbow performance score was 85.



Fig. 3. Final follow-up anteroposterior (A) and lateral (B) X-ray views of the left elbow.

Discussion

The principal finding of this case report shows that biepicondylar fracture of the distal humerus is unstable according to the varus and valgus stress test; therefore, operative reduction and fixation are essential in order to gain stability and recover normal function. We obtained the stability of the elbow and satisfactory clinical results by performing open reduction and internal fixation.

Biepicondyle humerus fracture was reported by only a few authors in the literature. All of these cases reported children and, as far as we could reach, we did not find any case that involved adults in the medical literature.²⁻⁷⁾ Although the mechanism of this injury has not been clearly elucidated, the following can be assumed. Medial epicondyle fracture is commonly caused by a valgus stress producing traction on the medial epicondyle through the flexor-pronator tendon. Valgus stress may be produced by a fall on the outstretched hand. Lateral epicondyle fracture can frequently result from a strong varus force on the elbow or sudden severe tension on the extensor muscles of the forearm. A fall on outstretched hand and internal rotation of the humerus over the fixed forearm on the ground produce a combination of valgus forces and rotational avulsion forces on both epicondyles.^{3,4,7)}

Our observations must be interpreted within the frameworks of the limitations. The clinical outcome of this patient must be

compared and contrasted with another patient; however, to the best of our knowledge, there are no comparable clinical reports to date of this injury in the literature.

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