

## Appendix

### *Surgical Technique and Postoperative Protocol*

A posterior midline skin incision was used, and a lateral fasciocutaneous flap was developed. A common extensor tendon-splitting approach was employed when the lateral ulnar collateral ligament (LUCL) was intact, and the radial collateral and annular ligaments were incised while protecting the LUCL. In patients with a disrupted LUCL, a Kocher interval between the extensor carpi ulnaris and anconeus was used to facilitate LUCL repair. Appropriate implant size is critical to elbow function. While overlengthening can result in decreased elbow motion and higher radiocapitellar contact pressures, underlengthening can result in elbow or forearm instability and poor load-sharing with the ulnohumeral joint. The fractured native radial head was used to size the thickness and diameter of the radial head replacement. The minor diameter of the radial head was used to select the implant diameter. Other reference points to assist in confirming the correct implant length were direct visualization of the lateral ulnohumeral joint space, the relationship between the tip of the coronoid and the implant, and radiographic assessment of the medial ulnohumeral joint space. The radial neck was reamed, and a stem that was 1 mm smaller than the reamer size was used. Careful repair of concomitant LUCL injuries was routinely performed.

Postoperatively, patients were managed with immobilization in a removable long arm splint with the elbow at 90° of flexion. Early active motion was initiated within a week from surgery. The position of forearm rotation for rehabilitation depended on associated ligamentous injuries at the elbow. Splinting was used in the setting of concomitant injuries and for the management of persistent stiffness as required.

### *Complications*

Eleven patients developed complications, and two of them required secondary surgery. One required open contracture release and coronoid screw removal fourteen months postoperatively, and the other had open contracture release and ulnar nerve decompression nineteen months postoperatively. In the immediate postoperative period, two patients had a sensory ulnar neuropathy and one had a posterior interosseous nerve palsy, all of which completely resolved within six months from the time of surgery. At five and seven years postoperatively, two patients developed delayed ulnar neuropathy and both were treated nonoperatively. One patient developed a complex regional pain syndrome in the early postoperative period that had completely resolved at the time of final follow-up; however, her self-reported outcomes remained poor. One patient developed a 60° flexion contracture of the elbow, and another developed a proximal radioulnar synostosis secondary to severe heterotopic ossification, but both patients opted not to have further surgery. One patient had malalignment of the elbow with capitellar erosion and severe ulnohumeral arthritis, which was first evident at the three-year follow-up evaluation and was nonprogressive at the nine-year follow-up evaluation (Figs. 4-A through 4-F). This may have been due to initial trauma to the capitellar cartilage or to persistent instability leading to degenerative changes. No patient had an infection requiring subsequent surgery or antibiotics. At the time of the final follow-up, no radial head implants had been removed or revised, resulting in an implant survival rate of 100% at a minimum of five years. ■