

Fig. E-1

Exposure obtained with the EDC splitting approach. A burr was used to score the border of the visualized articular surface of the radial head in maximal pronation and in maximal supination. E = EDC, r = radial head, and c = capitellum.

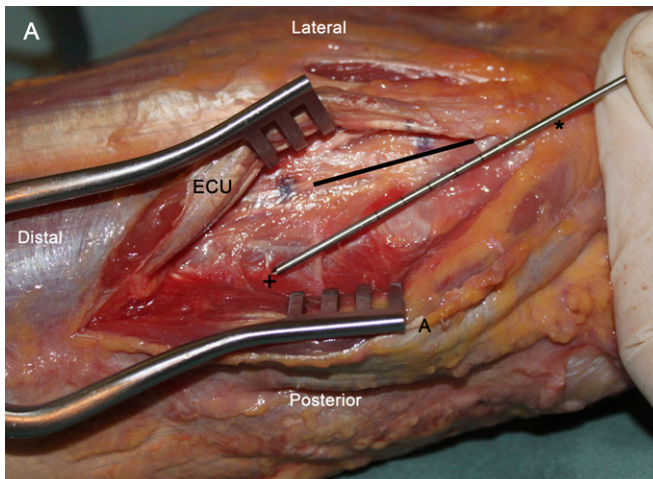


Fig. E-2A

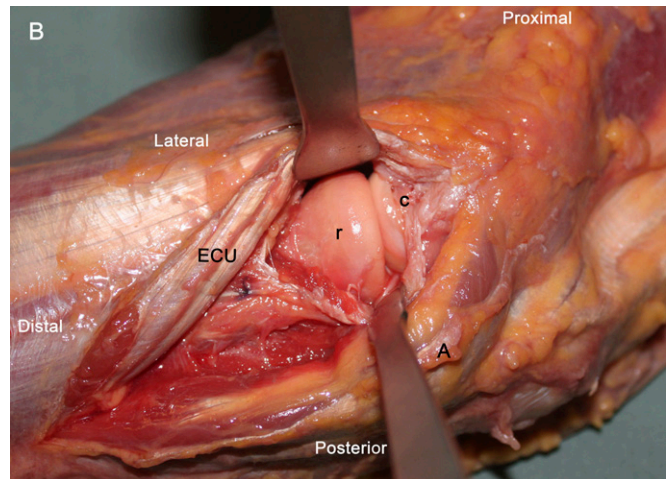


Fig. E-2B

**Fig. E-2A** Superficial surgical dissection through the Kocher interval between the extensor carpi ulnaris (ECU) and anconeus (A). The ECU has been elevated anteriorly. The wire overlies the path of the lateral ulnar collateral ligament (LUCL) from its origin on the lateral epicondyle (\*) to its insertion on the tubercle of the supinator crest of the ulna (+). The black line outlines the site of the capsulotomy, located ~1 cm above the tubercle of the supinator crest to avoid injury to the LUCL. **Fig. E-2B** The modified Kocher approach. The capsular incision was made anterior to the lateral ulnar collateral ligament (LUCL). Mini Hohmann retractors were used on either side of the radiocapitellar joint to simulate intraoperative conditions. The inferior mini Hohmann retractor is retracting the cut annular ligament and the intact LUCL posteriorly. ECU = extensor carpi ulnaris, r = radial head, c = capitellum, and A = anconeus.

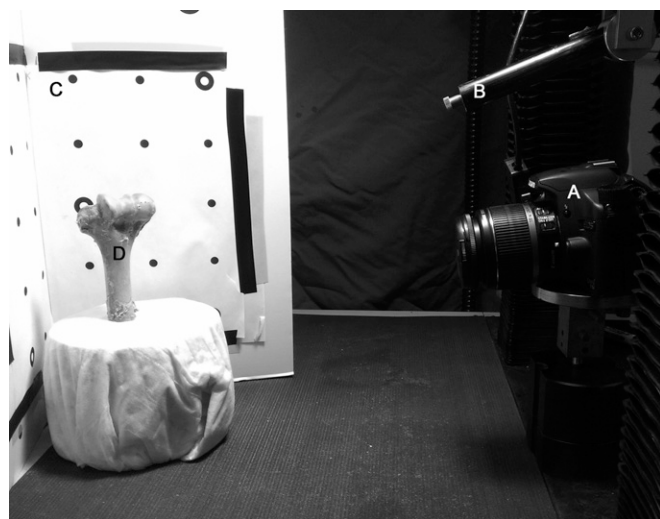


Fig. E-3

Scanning setup including the camera (A), linear laser (B), and reference frame (C) with a proximal humeral specimen (D). The laser was mounted on a servoelectric load frame to allow reproducible motion during scanning. The bone within the reference frame was rotated for each scan to obtain a collection of surface models that were subsequently merged to obtain a complete three-dimensional model.

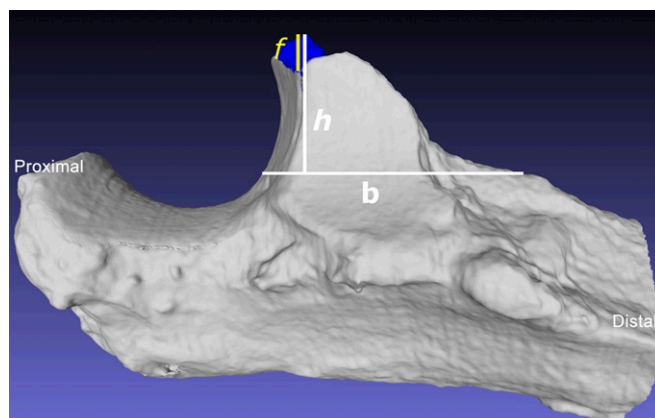


Fig. E-5

Coronoid height measurement. The base of the coronoid process (b) was defined as a line between the trough of the trochlear notch on the proximal aspect of the ulna and the distalmost aspect of the brachialis insertion at the midline in the coronal plane. The perpendicular distance from the coronoid base (b) to the coronoid tip was used to measure the coronoid height (h). The exposed height of the coronoid (f) was measured as the distance from the coronoid tip to the marking on the coronoid along a line parallel to the coronoid height (h).

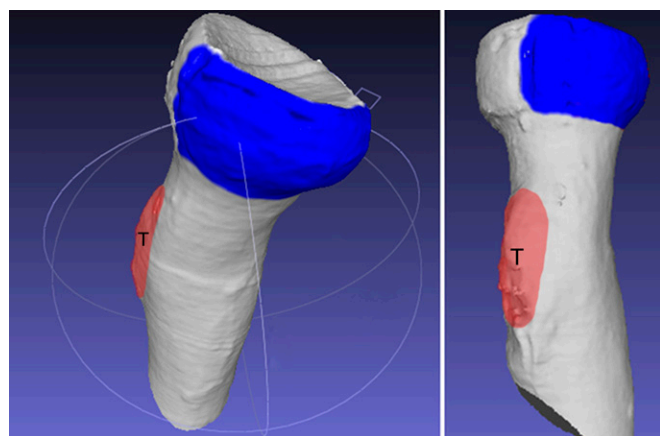


Fig. E-4

The area highlighted in blue represents the articular surface area of the radial head exposed by the modified Kocher approach. The surface area was measured from the junction of the radial head and neck to the most proximal aspect of the radial head. The tuberosity (T) is highlighted in red.