

OTA Boot Camp
Distal Humerus Fractures
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- I. Anatomy
 - a. Longitudinal medial and lateral columns
 - b. Lateral column extends to the distal aspect of the trochlea – articular surface does not extend proximally on posterior surface
 - c. Medial column stops 1 cm short of the trochlea – articular surface more posterior
 - d. Simplified anatomy: trochlea as the articulating axis between two bony columns
 - e. Disruption of any arm of this triangle significantly weakens the entire construct

- II. Fracture Classification
 - a. AO comprehensive classification is widely accepted for these fractures
 - b. Most literature focus is on C1, C2, C3 fractures

- III. Operative Management
 - a. Planning and posterior approach from lateral or prone or supine position
 - b. Posterior approach, olecranon Osteotomy for most C1, C2, C3 fractures
 - c. Special equipment: osteotome, oscillating saw, precontoured plates, long screws and drill bits

- IV. Olecranon Osteotomy
 - a. Incomplete chevron osteotomy with oscillating saw; finish with osteotome
 - b. Predrill precontoured plates

- V. Principles of fixation
 - a. Reconstruct articular surface
 - b. Reconstruct medial and lateral columns – provisional K-wires
 - c. Fixation must allow early ROM – parallel or 90-90 plates OK

- VI. Fixation challenges
 - a. Small distal fragments
 - b. Screw must avoid articular cartilage – headless screws helpful
 - c. Plate fit critical
 - i. Precontoured plates extremely helpful – multiple vendors
 - d. Ulnar nerve – document whether transposed
 - i. OK to leave if no pressure from hardware
 - ii. Usually subQ if need to transpose

- VII. Partial articular fractures
 - a. Less complex than complete articular fractures
 - b. Tailor approach to fracture – medial or lateral or posterior
 - c. Interfragmentary fixation

Notes:

- VIII. Postoperative Management
 - a. Early motion out of sling
 - b. Gravity assisted extension, active flexion

- IX. Results
 - a. Jupiter, Allgöwer – 1985
 - Low energy fractures – good functional outcome
 - “Good” means 15 to 140 degrees of motion, no limit to supination or pronation
 - Exertional pain in 1 out of 4 patients
 - 34 type C patients
 - 13 excellent (motion normal, no pain, no disability)
 - 14 good (pain with activity)
 - 3 poor
 - b. Overall, moderate functional difficulties even in those with good outcomes – really haven’t improved dramatically in 3+ decades

- X. Complications
 - a. Fixation failure and nonunion – at junction of articular fragments and shaft
 - Repair with stable fixation (Helfet JBJS 85A, Ring JBJS 85-A)
 - b. Nonunion of olecranon Osteotomy with tension band fixation
 - Improved with precontoured proximal ulnar plates
 - c. Infection – rare
 - d. Stiffness
 - i. Much more problematic than post-traumatic arthrosis
 - ii. Capsulectomy, open or arthroscopic, improves function

- XI. Total Elbow Arthroplasty
 - a. Evidence of primary success for elderly, osteoporotic patients with “unfixable” fractures using noncustom prosthesis
 - b. Preferred in low demand patients, but also increasingly a salvage option for all comers

Notes: