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
     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: