

Postoperative Protocol For Distal Humerus Fracture ORIF-- Dr. Trueblood

Indications: Nonoperative treatment of fractures below the shaft of the humerus in adults associated with high rates of stiffness, nonunion, and malunion. Requiring an extended period of immobilization, this mode of treatment is usually reserved for the advanced elderly, those with very low functional demands, or with comorbidities that make surgery of any sort problematic. Stabilization and compression of fracture fragments using internal fixation offers the patient an opportunity to salvage an otherwise ruined extremity, to regain early, functional range of motion, and maintain anatomic alignment of the joint surface which serves to delay, if not prevent, the development of post-traumatic osteoarthritis. It is the treatment of choice for all intra-articular fractures of the distal humerus and for the majority of fractures between the end of the shaft and the joint surface (supracondylar fractures).

Technique: An extensile approach to the distal humerus is typically used to access the posterior elbow. Full thickness flaps are elevated medially and laterally off of the elbow. The ulnar nerve is identified on the medial border of the triceps and is longitudinally decompressed from the arcade of Struthers to the FCU aponeurosis and the medial intermuscular septum is excised. Circumferential neurolysis is then performed and the first branch to the FCU mobilized to allow for tension-free anterior transposition. The triceps is then mobilized from the distal humerus and the elbow capsule and olecranon fossa fat pad are excised. The radial nerve is identified at the spiral groove proximally and protected for the duration of the case. An olecranon osteotomy may be necessary for visualization of very low or comminuted, intra-articular distal humerus fractures. The fracture is exposed and the joint surface reduced to anatomic alignment, often with buried, subchondral screws. The articular segment is then provisionally reduced to the shaft and held with bone clamps and temporary wires. Medial and lateral plates are then applied to the distal humerus which are initially secured to the distal segment. Compression is provided through the plate and the final construct secured with a maximal number or points of fixation in the distal, articular segment and an optimal working length for proximal fixation. The wounds are irrigated and, if it was necessary, the olecranon osteotomy is repaired with low profile fixation. Wounds are then irrigated again and closed over deep drains, using a fascial sling off of the flexor-pronator mass to secure the subcutaneous transposition of the ulnar nerve. Sterile dressings are applied and the patient is placed in a splint in 70 degrees of flexion. The patient is admitted for postoperative pain control, drain management, and iv antibiotics. They will typically be stable for discharge the next day.

Immediate postoperative period:

- Full time splinting.
- Full hand extension to tight fist 10x/ hour while awake.
- Non-weight bearing to operative extremity. No resisted extension exercises.

1st therapy visit at 3-5 days postop--

- *Therapy 1-2x/week x 6 weeks.*
- Dressing down. Instruct in non-adherent dressing changes to be done daily.
- May shower if incisions are dry. Water runs off skin and patient pats incisions dry with clean towel (not to be used for the rest of the patient's body).
- Splint: off-the-shelf cubital tunnel brace in 90 degrees of flexion. This is to be worn at all times except during ROM exercises.
- AROM/ AAROM of elbow with gravity assisted extension of elbow. AROM/ PROM of shoulder, wrist, and hand.
- Limit elbow flexion to 90 degrees for first 4 weeks.
- Light putty exercises for grip once full ROM of digits is restored.
- Edema control.
- Modalities prn.
- Review postoperative precautions.

1st postoperative visit at 2 weeks postop--

- Pain Assessment/ Rx adjustments or refills as needed.
- Stitches out. Steri-strips applied.
- Review postoperative limitations/ precautions.
- Therapy Rx
- Work Note: No lifting, pushing, pulling. Must wear splint at all times. No driving/ operating machinery. No contact sports.
- Expected Return to Work:
 - Sedentary: 2 weeks
 - Light Manual: 8 weeks
 - Heavy Manual: 3 months.

Therapy 2-6 weeks

- Continue splint.
- AROM/ AAROM with gravity assisted extension of elbow. AROM/ PROM of shoulder, wrist, and hand.
- May advance elbow flexion *ad lib* after 4 weeks.
- modalities prn
- HEP

2nd postoperative visit at 6 weeks--

- X-ray (3 views of elbow): advance activity when nontender at fracture site and bridging bone at 3+/4 cortices
- Pain Assessment/ Rx adjustments or refills as needed.
- Review postoperative limitations/ precautions.
- Follow-up in 6 weeks

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- Therapy Rx
- Work Note: 20# lifting. No contact sports.
- Expected Return to Work:
 - Sedentary: 2 weeks
 - Light Manual: 8 weeks
 - Heavy Manual: 3 months.

Therapy 6-12 weeks

- 1-2x/week x 6 weeks
- AROM/ PROM of elbow, wrist, and hand.
- If >20degree lack of extension or elbow flexion <130 at 8 weeks, add a static progressive splint to address this deficit.
- Start progressive general strengthening of shoulder, elbow, wrist, and hand.
- When is at least 10-130 degrees of flexion and elbow flexion/ extension strength = 80% of contralateral, may advance patients with heavy manual laboring jobs to work hardening. Other patients may advance to HEP.
- modalities prn
- HEP

3rd postoperative visit--

- x-rays: 3-views of elbow.
- pain assessment, VAS
- DASH score
- Work note: no restrictions. Patients with very high demand, manual laboring jobs may require further work hardening.
- MMI at one year from surgery