



Duke Orthopaedics: Upper Extremity Division

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Proximal Humeral Fracture Management

The first two weeks for all proximal humerus fractures managed non-operatively entails complete shoulder immobilization in a sling until the patient is seen in clinic for radiographic assessment. Subsequent progression will depend on if the fracture is categorized as **unstable** (more displacement/more fragments) or **stable** (such as an impacted fracture, or minimally-displaced 2-part fracture) which will be determined by Dr. Klifto. **If not otherwise specified unstable protocol is the default.** At all points in recovery, motion progression should not create pain in the involved shoulder nor create a feeling of movement across the fracture site.

KEY CLINICAL CONCEPTS IN REHABILITATION

1. Rehabilitation activities should not ever create a feeling of motion at the fracture site; any pain with rehab activities should be less than 3/10 and transient with resolution within one hour of such activity
2. Full passive motion should be restored in all planes prior to beginning the active assisted to active motion progression
3. Full active motion with good mechanics should be restored prior to strengthening exercises

UNSTABLE PROXIMAL HUMERAL FRACTURE MANAGEMENT

Unstable proximal humeral fractures require 4 weeks of complete shoulder immobilization in a sling, followed by initiation of the rehab process if cleared following radiographic assessment.

PHASE 1 Patient returns to the Duke Shoulder Clinic at 4 weeks for radiographs (4-8 week)

GENERAL GUIDELINES AND PRECAUTIONS

- ☒ Remain in sling at all times other than PT (home or clinic) and personal hygiene until cleared by MD to discontinue sling use
- ☒ No active motion or active use of the arm
- ☒ **PAIN-FREE** Passive elevation - max to 140; ER max to 40
- ☒ No internal rotation (vertebral or at 90)

GOALS

- ☒ Protect fracture site with immobilization to optimize healing environment
- ☒ Encourage motion in pain free range up to stated limits to prevent stiffness while healing in immobilization

EXERCISES

- ☒ Passive forward elevation up to max 140 (supine well arm assisted; table top step back; table top supported using well arm to slide)
- ☒ Passive external rotation with arm at neutral (alongside of body) up to max 40 (seated well arm assisted; supine cane assisted with arm supported into scapular plane)
- ☒ May begin aquatics for Basic UE program with slow speed of motions; avoid hook and rotate exercise and cross body adduction (hug yourself)
- ☒ Pendulum, elbow, wrist, hand and scapular retraction

CRITERIA TO PROGRESS TO PHASE 2

- ☒ Pain-free passive forward elevation to 140; ER to 40
- ☒ Clearance by MD based on evidence of early callus at 6-8 week radiograph assessment

PHASE 2 Patient returns to the Duke Shoulder Clinic at 6 weeks for radiographs (8-12 weeks)

GENERAL GUIDELINES AND PRECAUTIONS

- ☒ Wean from sling gradually at home first, then in community if cleared by MD
- ☒ Avoid lifting more than 5 lbs
- ☒ Avoid weight bearing on affected arm

GOALS

- ☒ Emphasis on restoring passive range of motion.
- ☒ Restore full passive motion of the glenohumeral joint first, then progress to active assisted, then active motion through the full range
- ☒ Restore functional use of the arm for ADL's below shoulder level (feeding, grooming...)
- ☒ Protect healing fracture from stress overload

EXERCISES

- ☒ **PAIN-FREE** Passive range of motion without range limits for elevation, ER(0); ER(90) and IR toward full motion in all planes
- ☒ Continue aquatic program in all planes and may gradually increase speed of motion
- ☒ Forward elevation progression: supine active assisted, active, to incline, to vertical supported, to vertical unsupported (after full passive range is established)
- ☒ ER/IR AROM against gravity when full passive range is established
- ☒ Scapular protraction and retraction
- ☒ Active motion through short arc from balanced position and rhythmic stabilization in balanced position (90 deg elevation in supine)

CRITERIA FOR RETURN TO WORK/SPORT

- ☒ Per MD clearance based on demands of such, status of fracture healing, status of motion and strength – determined on a case by case basis

PHASE 3 Patient returns to the Duke Shoulder Clinic at 12 weeks for radiographs (12 weeks +)

GENERAL GUIDELINES AND PRECAUTIONS

- ☒ Per MD clearance based on sufficient fracture healing

GOALS

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- ☑ AROM to equal PROM for elevation with normalized mechanics and no pain against gravity (in vertical position) and also for ER at neutral and 90 degrees
- ☑ Strength to equal opposite UE in all major muscle groups
- ☑ Functional return to work/sport; GFR > 90%; DASH <10%

EXERCISES

- ☑ Continue stretching to end range as tolerated in all planes until full motion is achieved if this has not already been accomplished
- ☑ Begin strength progression with light band/hand weight resistance for all major upper extremity muscles, including rotator cuff and scapular stabilizers
- ☑ Begin functional progression as needed specific to sport and work demands

STABLE PROXIMAL HUMERAL FRACTURE MANAGEMENT

PHASE 1 Stable Fractures (impacted or minimally displaced two part fractures) (2-4 weeks)

GENERAL GUIDELINES AND PRECAUTIONS

- Sling immobilization at all times except therapy (home or clinic) and personal hygiene
- No active use of the involved arm
- NO rotation of the involved arm (internal or external)
- PAIN-FREE PROM forward elevation – max 90 degrees elevation

GOALS

- Protect fracture site from movement to optimize healing environment
- Decrease risk for stiffness associated with immobilization
- Promote distal circulation of hand and forearm
- Education patient about activity guidelines and rehab progression/expectations

EXERCISES

- Active grip, wrist flexion/extension; forearm pronation/supination; elbow flexion/extension; scapular retraction/protraction as tolerated
- Small circle pendulum clockwise and counterclockwise
- Passive forward elevation to 90 degree maximum

CRITERIA TO PROGRESS TO PHASE 2

- Pain not increased with passive elevation to 90 degrees AND
- Clearance based on radiographic evidence of lack of fracture fragment displacement at 4 week radiographic assessment

Phase 2-4 correspond to Phase 1-3 for the Unstable Fracture Guidelines:

Phase 2 for Stable is Phase 1 for Unstable

Phase 3 for Stable is Phase 2 for Unstable

Phase 4 for Stable is Phase 3 for Unstable

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