Upper Extremity Division
Christopher Klifto, MD

Proximal Humeral Fracture with Open Reduction Internal Fixation Rehabilitation Framework

The following is a basic framework from which to work during rehabilitation following open reduction and internal fixation of proximal humeral fractures. However, it is critical to communicate with the surgeon in order to be aware of the quality of the bone and fracture repair, any concomitant procedures that might have been performed, etc, that might impact the progression that is appropriate for each specific patient.

Safe Zones established intraoperatively by the surgeon

- These ranges can start on Post-op day 1, but may require a few weeks to achieve depending on patient comfort
- Passive range of motion limits:
- **140/40 Program:** Max. forward flexion to 140^{o} ; Max. External rotation to 40^{o}
- **130/30 Program:** Max. forward flexion to 130^{o} ; Max. External rotation to 30^{o}
- No abduction

If concomitant biceps tenodesis is done with ORIF for proximal humeral fractures, avoid resistance to elbow flexion for 6 weeks, and for the initial couple of weeks, have elbow flexion/extension range of motion be supported by the well arm.

Phase I: Passive Motion – 0-6 weeks post-op

Goals:

- PROM – 140/130 degrees of flexion, ER of 40/30 by the end of week 6 (see above)
- Decrease pain, Decrease muscle atrophy, Educate regarding joint protection
- Provide the patient with instructions for home exercises 3-5 x per day

Precautions:

- Stay within safe zone determined at surgery (see above)
- Sling with abduction pillow at all times, removed only for 3-5x/day exercises, showering, and dressing

Teaching:

- Emphasize home, passive well-arm assisted PROM (FF and ER as above)
- Instruct in regular icing techniques or cold therapy device (use as much as possible out of 24 hours for 8-10 days)
- Ice packs for 20 - 30 minutes intervals, especially at the end of an exercise session
- Monitor for edema in forearm, hand, or finger

Exercises:

- Pendulum exercises
    - *With the arm hanging, the patient gently swings the hand forward and backward, then side-to-side, and then clockwise and counterclockwise*
- Passive, forward flexion, in front of the plane of the scapula as pain allows per safe zone above (140/40 or 130/30): supine well arm, table slides, or table walk back motion all allowed
- Passive external rotation with the arm supported in the plane of the scapula: may be supine with cane assistance, seated and supported on arm rest with motion performed by well arm; or propped on counter top and step around
- Active scapular retraction, elevation in sitting or standing
- Active elbow, wrist, hand ROM - Grasping and gripping lightweight objects

Phase II: Active Range of Motion (6-10 weeks post-op)

Goals:

- Full range of motion by end of week 10. After 6 week physician visit, patient and therapist can move beyond the safe zones as pain allows if radiographic evidence supports sufficient healing.
- Emphasis should on range of motion before strengthening.
- Improve strength, Decrease pain, Increase functional activities, Scapular stabilization

Precautions:

- No sling use

Teaching:

- Encourage continued stretching at home. Limited only by pain
- Ice after exercise as needed.

Exercises:

- Encourage patient to use smooth, natural movement patterns
- Continue to work on Passive ROM as in Phase I and progress beyond precautionary range limits
- Begin AROM and AAROM (using a cane), progressively, to full range of motion when passive motion is normalized – progress active motion to reclined then sitting position
- Begin internal rotation with hand slide up spine, sleeper stretch gently
- Side lying ER against gravity
- Encourage normal scapular mechanics with active motion
- Add Theraband exercises or light dumbbell weights (2lbs) for flexion, extension, external rotation after passive and active motion is restored
- Scapulothoracic strengthening (prone extension, prone T, etc.)
- Aquatic therapy, if available, can begin no earlier than 1 month post op if wound is completely healed.
    - Week 4-6: Stay within established safe zone listed above. Passive motion only
    - Week 6 +: Shoulder fully submerged – slow, active motions for flexion, elevation, ER/IR and horizontal abduction/adduction out to scapular plane, range of motion limited by pain only.

Phase III: Final Strengthening – 10+ weeks

Goals:

- If acceptable motion has been achieved (>160 FF, >60 ER, IR T12 or above), then Maximize strength—otherwise continue with stretching program
- Improve neuromuscular control
- Increase functional activities

Precautions:

- No sudden, forceful resisted IR (e.g. golfing, wood splitting, swimming) until >3 months post-op

Teaching:

- Continue home stretching minimum 1x per day to maintain full range of motion

Exercises:

- Continue to increase difficulty of theraband and dumbbell exercises as tolerated
- Increase resistance exercises – must be light enough weight that >20 reps are achieved per set
- Continue aerobic training as tolerated, and modalities as appropriate
- Continue to progress home program

NOTES:

1. With proper exercise, motion, strength, and function continue to improve even after one year.
2. The therapy plan above only serves as a guide. Please be aware of specific individualized patient instructions as written on the prescription or through discussions with the surgeon.
3. Please call Dr. Klifto if you have any specific questions or concerns **919-403-3057**
4. The patient's "Home exercise stretching program" (critical for first 10 weeks) is attached.