ORTHOPEDICS & SPORTS MEDICINE
BAYCARE CLINIC®

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Distal Humerus Fracture ORIF

Phase 1 – Early Protection of Repair (0 - 4 Weeks)

Goals for phase 1
- Protect healing structures
- Minimize pain and edema
- Begin ROM to uninvolved joints
- Educate patient in home program

Other considerations:
- Associated injuries are common with distal humerus fractures, so it is important to always check specific MD orders and operative notes for variations in the orthosis and protocol
- Typically, the surgical approach requires a longitudinal incision through the triceps, so this repair is protected for 2 weeks with no elbow flexion and splinting at 30 degrees of extension. However occasionally the triceps will need to be detached and repaired completely. In this case the patient would need to be splinted for a longer period in 30 degrees extension and elbow flexion would be delayed until 4 weeks post-op.
- Initial assessment should include sensory testing as ulnar nerve injuries can be common and occasionally a patient may have had an ulnar nerve transposition with this surgery

Orthosis
- The patient is fitted with a hinged elbow orthosis with forearm neutral
  - 0-2 weeks: locked at 30 degrees of flexion
  - 2+ weeks: locked at 90 degrees of motion
- Patient is fitted with a wrist hand orthosis if extensor mechanism was violated, see MD orders or surgical report
- In cases of associated injuries or if the patient is too large or small to achieve a good fit in the prefabricated hinged elbow orthosis, the patient may be fitted with a long arm orthosis with elbow at 30 degrees of flexion and forearm in neutral at 0-2 weeks and modified to 90 degrees after 2 weeks

Edema Management
- Light compressive dressing or sleeve may be applied to elbow, forearm, and wrist
- Manual Edema Mobilization (MEM) as needed

Wound Care
- Keep incisions clean and dry
- Educate patient in sterile dressing changes as needed

Scar Management
- Scar mobilization may be initiated two days following suture removal if incision is well-healed with no open areas and no drainage; apply scar remodeling products as needed

ROM
- 2-3 weeks (if indicated by MD):
- Begin gentle active / active assistive elbow flexion and extension. Begin with patient in supine and progress to seated position to pain tolerance or unrestricted outside of brace
- Begin gentle active / active-assistive forearm rotation with elbow at 90 degrees of flexion and forearm supported on a table
- A/PROM to wrist, digits and shoulder as needed to prevent and resolve stiffness
- Patient is issued a home program for gentle active exercises outside orthosis 5-6x/day for 10 min sessions

Phase 2 –Progress to full ROM (4 - 6 weeks)

Goals for phase 2

- Continue pain and edema control
- Continue scar management
- Restore full active ROM

Other Considerations

- Passive ROM may begin sooner than 6 weeks if cleared by MD if there is excessive elbow stiffness however avoid early aggressive passive stretching which may increase risk of heterotopic ossification

Orthosis

- Allow full elbow ROM in the hinged elbow orthosis at 4 weeks. Continue orthosis at all times except for home exercises and hygiene.

Continue phase 1 scar and edema management as needed

ROM

- Continue phase 1 A/AAROM elbow, forearm and wrist exercises and slowly progress to composite multidirectional ROM as tolerated

Modalities

- Fluidotherapy for heat, ROM, and desensitization
- Paraffin may be used for deep heat prior to ROM

Strengthening

- Submaximal shoulder and hand strengthening avoiding stress on repair

Phase 3 –Strengthening and Return to Full Function 6+ weeks

Goals for phase 3

- Restore full active and passive ROM
- Gradually discontinue splint and return to functional activity
- Restore strength
- Return to work

Orthosis

- ORIF: discontinue hinged elbow orthosis
- Wrist hand orthosis is discontinued
- After fracture healing has been confirmed a static progressive elbow extension orthosis may be considered if a patient continues with limitations

ROM

- Initiate unrestricted passive ROM and stretching to elbow and forearm
- Avoid early aggressive passive stretching which may increase risk of repair failure and heterotopic ossification (HO)
- Continue with A/AA/PROM of elbow and forearm to maximize end range motion
- After 6 weeks if the patient has excessive stiffness static progressive splinting may be considered but must be cleared with MD to confirm fracture healing

Modalities

Continue heat modalities as needed to improve range of motion and tissue mobility

Strengthening

- 6-7 weeks: Initiate isometrics to elbow, forearm, and wrist
- 8 weeks: Initiate isotonic strengthening for elbow, forearm and wrist starting with 1-pound weight. Emphasis initially should be on low weight and high repetitions to increase endurance. Continue shoulder and hand strengthening.
- 10 weeks: Initiate functional strengthening and work simulation as tolerated

Functional Activity

6-8 weeks: Gradually return to all activities of daily living emphasizing pain-free use of the involved arm
8-10 weeks: Gradually return to home management and work activities including functional lifting with MD consent

Work Conditioning

After 10 weeks and with MD consent a comprehensive work conditioning program for patients with high demand / heavy manual labor occupations may be appropriate

References

Bindra R., Brininger T. Advanced Concepts of Hand Pathology & Surgery: Applications to Hand Therapy Practice. (2010). ASSH, Rosemont, IL

Skirven, T. M. (2011). *Rehabilitation of the hand and upper extremity*. Philadelphia, PA: Elsevier/Mosby.

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