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Scaphoid Fracture—Post-operative Management

Due to poor vascular supply of the proximal scaphoid, nonunion and delayed union of scaphoid fractures are common. Surgical intervention is often indicated if there are signs that the fracture will not heal with immobilization, the fracture is displaced or the fracture is located in the middle to proximal third of the bone. Surgical fixation will vary depending on the location and time since injury and may involve closed reduction with K-wires, ORIF and bone grafting using non-vascularized cancellous bone from the iliac crest or vascularized bone from the distal radius.

Phase 1- Pre-Cast Removal Phase

Goals for phase 1

- Protect healing fracture through casting
- Edema and pain control
- Prevent stiffness and restore ROM in uninvolved joints

Other Considerations

Therapist should monitor cast to ensure it does not become too tight or restrict motion

Cast / Orthosis

- Patient is placed in a thumb spica cast with thumb IP joint free for 4-16 weeks depending on the stability and location of the fracture and the surgical fixation used
- If the patient is referred to therapy prior to cast removal, therapy is primarily focused on edema and pain management and ROM to uninvolved joints

Edema Management

- Coban or finger socks may be issued to reduce edema in digits
- Manual Edema Mobilization (MEM) to promote edema reduction

ROM

- Active and passive ROM to uninvolved joints including shoulder, elbow, thumb IP joint and digits 6x/day or as needed to reduce stiffness

HEP

- Edema control
- ROM to uninvolved joints as needed

Modalities

- Ice to reduce pain and swelling



Phase 2 – Initiate ROM (Initial therapy visit - 3-4 weeks)

Goals for phase 2

- Protect healing fracture
- Edema and pain control
- Restore AROM and joint mobility
- Improve in functional abilities

Other Considerations:

Always check MD orders and MD progress notes for variations in the protocol. If the scaphoid fracture is not showing enough evidence of healing, ROM may be delayed.

Orthosis

- When the surgeon determines that the fracture shows evidence of clinical and radiographic healing, the cast will be removed, and the patient will be referred to therapy. This may be up to 16 weeks post-op.
- Initial therapy visit: forearm-based thumb spica orthosis is fabricated with the IP joint free.

Manual Therapy

- Manual Edema Mobilization (MEM) to promote edema reduction
- Scar management

AROM

- Initial therapy visit: Initiate gentle pain-free AROM to forearm, wrist, and thumb 6-8x/day, begin with dart-throwing motion and single joint ROM and progress to composite motions, include active wrist extension with simultaneous finger flexion to isolate wrist extensors and prevent substitution of digit extensors
- 2 weeks after initiating AROM: Begin AAROM and gentle PROM to forearm, wrist and thumb 6-8x/day, slowly progress from single joint passive exercises to composite wrist and digit motion to reduce extrinsic tightness

Modalities

- Heat modalities to promote flexibility of tissues as needed



Phase 3 – Maximize ROM and Restore Strength and Function (+3-4 weeks after initial therapy visit)

Goals for phase 3

- Maximize ROM
- Restore strength
- Return to activities of daily living and full duty work

Other Considerations:

Always check MD orders and MD progress notes for variations in the protocol. If the scaphoid fracture is not showing enough evidence of healing, strengthening and discontinuation of splint may be delayed.

Criteria for return to work, function, sport

- Return to heavy work or sports per physician approval

Orthosis

- 4 weeks after initial therapy visit: Discontinue wrist hand orthosis except as needed for heavy activities & sports activities.
- 4 weeks after initial therapy visit: Static progressive splinting may be initiated if needed to increase wrist and digit motion

ROM

- Continue A/AA/PROM wrist, forearm & uninvolved joints as needed

Strengthening

- Initiate forearm, wrist and hand strengthening 3-4 weeks after beginning ROM depending on pain level
 - Begin with forearm and wrist isometrics and advance to progressive isotonic strengthening
 - Include putty exercises for grip and pinch strength
 - Include progressive strengthening to elbow and shoulder
 - Include proprioception exercises for wrist stabilization (i.e. roll marble around the inside of a lid, baton twirl, swing a rope attached to a weighted ball, flexbar oscillations, gyroball, body blade)

Modalities

- Continue heat modalities as needed to promote flexibility of tissues

Work Conditioning

- Initiate a comprehensive work conditioning program for patients with high-demand heavy manual labor occupations when appropriate only with surgeon approval

References

Cannon, Nancy M. et. al. Diagnosis and Treatment Manual for Physicians and Therapists, 5th Ed. The Hand Rehabilitation Center of Indiana. Indianapolis, Indiana. 2001.

Skirven, T. M., Ostermans, A. L., Fedorczyk, J. M., & Amadio, P. C. (2011). *Rehabilitation of the Hand and Upper Extremity* (Vol. 1). Philadelphia, PA: Elsevier.

This protocol was reviewed and updated by Brian Klika, MD, Lacey Jandrin, PA, Andrew Kirkpatrick, MD, Tiffany Terp, PA, and the Hand Therapy Committee 8/9/2021.