

Objectives and Indications

Upper extremity injuries and surgical procedures often involve a long, difficult course of rehabilitation. Traumatic injuries of the hand and wrist may require “staged” procedures. A primary procedure may be performed to reduce fractures and promote bone healing. This usually involves protracted immobilization which is detrimental to soft tissue and joint mobility. After fractures have healed, a secondary procedure such as a capsulectomy or tenolysis may be performed to restore range of motion of the affected joint(s). Acute use of hand or wrist CPM following these secondary procedures can be critical to ensure that range of motion that is restored surgically is maintained post-operatively.

Supporting Documentation

IMPROVED PATIENT COMPLIANCE FOLLOWING FLEXOR TENDON REPAIR:

Title: Continuous Passive Motion Following Flexor Tendon Repair

Source: *J Hand Surg Br* 14 (B): 406-11, November 1989

Authors: Bunker TD, Potter B, Barton NJ

Overview: Bunker et al. (1989) incorporated CPM into a postoperative flexor tendon repair protocol. The authors prefer CPM for early mobilization over non-CPM passive mobilization and active mobilization protocols because the latter depend on highly motivated and cooperative patients. CPM for the hand allows the surgeon and clinician to more easily circumvent the poorly motivated patient while gaining improved results.³

REDUCTION OF EDEMA:

Title: Effects of Continuous Passive Motion and Elevation on Hand Edema

Source: *Am J Occup Ther* 44 (10): 914-21, October 1990

Author: Giudice ML

Overview: Giudice (1990) compared CPM with elevation to elevation alone at 30 minute intervals. He found CPM with limb elevation to be a more effective treatment for the reduction of hand edema than limb elevation alone. The author not only found CPM to be an effective modality in the reduction of edema but also found the potential benefits of increased ROM and decreased finger stiffness.⁸

PROM THERAPY IN BURN PATIENTS:

Title: Prospective Outcome Analysis of a Protocol for the Surgical and Rehabilitative Management of Burns to the Hand

Source: *Plast Reconstr Surg* 100 (6): 1442-51, November 1997



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Author: Barillo DJ, Harvey KD, Hobbs CL, Mazingo DW, Cioff WG, Pruitt BA

Overview: Barillo et al. (1997) evaluated the effectiveness of burn treatment protocols in a burn center. CPM was used effectively in this study for the PROM component of the protocol because the motion could be controlled resulting in safe recovery which is a significant concern in this population. In addition to the physiological benefits and safety advantages the authors also reported cost effectiveness stating: “*The cost effectiveness of hand CPM devices becomes apparent when one physical therapist may provide ROM exercises simultaneously to several patients for extended periods of time.*”²²

References and Additional Studies

1. Adams KM, Thompson ST: Continuous Passive Motion Use in Hand Therapy. *Hand Clinics* 12 (1): 109-121, February 1996.
2. Barillo DJ, Harvey KD, Hobbs CL, Mazingo DW, Cioff WG, Pruitt BA: Prospective Outcome Analysis of a Protocol for the Surgical and Rehabilitative Management of Burns to the Hand. *Plast Reconstr Surg* 100 (6): 1442-51, November 1997.
3. Bunker TD, Potter B, Barton NJ: Continuous Passive Motion Following Flexor Tendon Repair. *J Hand Surg Br* 14 (B): 406-11, November 1989.
4. Covey MH, Durrer K, Marvin JA, Heimbach OM: Efficacy of Continuous Passive Motion (CPM) Devices with Hand Burns. *JBCR* 19 (4), July/August 1988.
5. Frykman GK, Matsushima D, Waylett-Rendall J, Unsell RS: CPM Improves Range of Motion After PIP and MP Capsulectomies. *Abstract-American Society for Surgery of the Hand, 44th Annual Meeting*, September 13-16, 1989.
6. Frykman GK, Unsell RS, Yahiku H: Continuous Passive Motion after Metacarpophalangeal Implant Resection Arthroplasties. *Abstract— Therakinetix In Motion* 5, January 1991.
7. Gelberman RH, Nunley JA, Osterman AL, Breen TF, Dimick MP, Woo SL-Y: Influences of the Protected Passive Mobilization Interval on Flexor Tendon Healing. *Clin Orthop* 264: 189-96, March 1991.
8. Guidice ML: Effects of Continuous Passive Motion and Elevation on Hand Edema. *Am J Occup Ther* 44 (10): 914-21, October 1990.
9. Takai S, Woo SL, Horibe S, Tung DK, Gelberman RH: The Effects of Frequency and Duration of Controlled Passive Mobilization on Tendon Healing. *J Orthop Res* 9 (5): 705-13, September 1991.
10. Thien T, Becker J, Theis JC: Rehabilitation After Surgery For Flexor Tendon Injuries in the Hand. *Cochrane Database Syst Rev* 18 (4): CD003979, October 2004.