KPT KASSIMIR Physical Therapy

HANDPRINT

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Gary has been a certified hand therapist since 1998 and is practicing physical therapy for over 15 years since graduating from Long Island University. He started KPT March of 1997 and has grown the practice in areas of general orthopedics, sports rehab and developed the KPT hand center providing custom molded splinting and hand therapy. Gary splits his time between treating patients and administrative work, but is always available for his patients. He resides in Reisterstown with his wife Sherri, twin 11 year old daughters Vicki and Ali, and 7 year old daughter Marisa.

The Complex PIP Complex

The proximal interphalangeal joint (PIP) is the most commonly injured joint in the hand and must be treated with respect in order to prevent permanent hand dysfunction and pain. The PIP joint is a very small, but highly complex joint that requires close attention after injury. Early referral and management of these injuries helps maximize recovery and prevent complications, especially fixed flexion contractures.

Understanding the anatomy surrounding the joint and the intrinsic mechanism is extremely important in order to manage these injuries. "Anatomy is Power!" See figure 1.

Hands are vulnerable to high impact, speed and stress in sports. Minor injuries such as the "jammed finger or coach's finger" may not be so simple to treat and may become problematic if not treated acutely. More complex PIP joint injuries may require surgery, immobilization, wound care and scar management and most often it is the soft tissue, not the bone that is the problem in rehabilitation. Immobilization in extension is best when possible to prevent flexion contractures. As the surgeons restore the normal anatomy, it is up to the hand therapist to restore function.

The following describes common injuries to the PIP joint and associated complications and deformities.

Dorsal PIP dislocations are usually caused by PIP hyperextension where the volar plate is stretched or ruptured. This is usually accompanied by injury or rupture to at least one collateral ligament as well. Protection by Velcro buddy strapping or taping after the joint is reduced helps guide finger ROM, and if treated early, doesn't require surgery. A Swan Neck deformity (see figure 2) can result from volar plate instability which is a hyperextension deformity at PIP, and flexion of the DIP. Complex dorsal PIP dislocations require greater protection like an Oval 8/figure 8 splint for 1-3 weeks which prevents hyperextension or blocks extension by –15 degrees and allows full finger flexion.

Volar PIP dislocation poses another problem for the PIP joint causing the central slip to be stretched or torn. The acute central slip rupture should be splinted in full PIP extension. During this period it is important to do early active and passive DIP flexion exercises to limit lateral band displacement.

The unsplinted finger with a PIP extension lag can develop into a fixed flexion contracture or Boutonniere Deformity (Flexed PIP with DIP in hyperextension, see figure 3). Interruption of the extensor mechanism of the digit by rupture of the central slip causes: 1. Loss of function of the triangular ligament, 2. Volar migration of the lateral bands, 3. Extension forces causing hyperextension of the DIP, and 4. Increased PIP flexion forces by the unopposed FDS tendon. A most disabling element of the Boutonniere deformity is loss of prehension caused by decreased DIP flexion.

Dealing with a flexion contracture can be a challenging task and takes careful management. Any aggressive stretching of the joint can respond with increased swelling of the PIP, greater scar tissue development and a stiffer joint. A combination of splinting treatments may work to restore full PIP

Match the following numbers with the corresponding letters in Figure 1.

1. Triangular ligament
2. Dorsal hood
3. Terminal tendon
4. Lateral bands
5. Interosseous muscle
6. Lumbrical muscle
7. Long extensor tendon

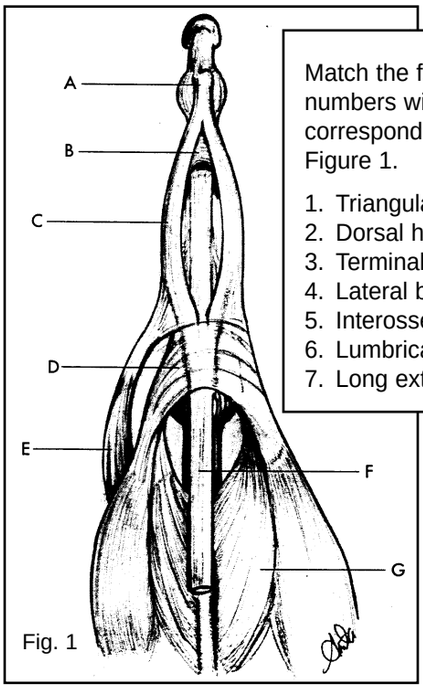

Fig. 1

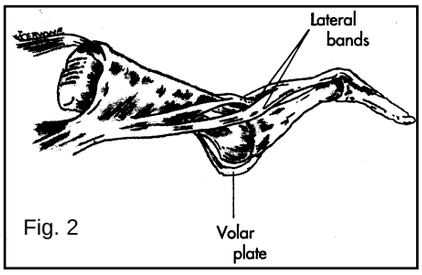

Fig. 2

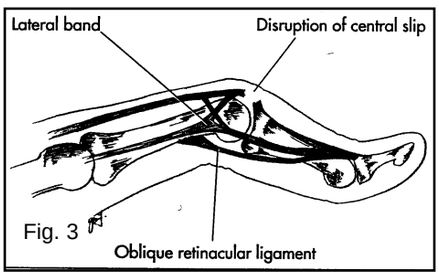

Fig. 3

Answers:
1. B; 2. D;
3. A; 4. C;
5. G; 6. E;
7. F

extension such as serial casting, dynamic extension spring (LMB) splints, or the Joint Jack splint which is static progressive splint. Joint mobilization, sub aqueous ultrasound and/or other modalities, AROM and PROM can be performed for optimal recovery. Achieving full extension may take weeks to several months and once achieved, the PIP joint must be held in full extension 24/7 for 4-6 weeks to allow the central slip to heal. During this period, the MP and DIP joints are kept free and strong attention is devoted on A/PROM of the DIP into flexion to stretch a commonly tight Oblique Retinacular Ligament (ORL).

A PIP collateral ligament injury requires splinting to prevent an angulation deformity from lateral forces on the joint. The ulnar and radial collateral ligaments can be protected during the day by buddy straps to allow flexion and extension and prevent lateral force. A night splint in full extension keeps the ligament at full length for healing and allows inflammation to subside.

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PIP fractures and fracture dislocations require setting the fracture and holding the position by splints, casts, k-wires or screws. After a period of immobilization and the fracture is stable, therapy begins to restore soft tissue gliding and prevent scar adhesions, decrease edema and increase ROM through early controlled mobilization.

At the Kassimir Physical Therapy hand therapy center, we carefully evaluate the patient, assess the problems, set treatment goals, plan a treatment program for the clinic and at home, splint as needed and plan for return to previous functional levels. A variety of treatments are used in order to control pain and edema, provide scar management, restore tendon gliding, improve ROM and strength, coordination and dexterity and address sensation as needed.

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New Website/email

Check out our brand new website at **www.kptrehab.com**, where you'll find FAQ's, office information, and related links. If you have any questions or suggestions, you can email the office at info@kptrehab.com an0d we will respond in a timely manner. Your feedback is important to us at Kassimir Physical Therapy, where our emphasis is on *"ultimate rehab… through personal, committed care".*

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As with most cases, hand therapy is time sensitive. Early referral really makes a difference to maximize recovery and prevent deformity. The longer an injured finger goes untreated the worse the prognosis for recovery. The ultimate goal is to return the individual or athlete to their activity, job or sport quickly, safely and functioning to their maximal potential.

References available upon request. Special thanks to Steven Friedman, MD for editorial assistance.

Biometrics

Our practice is now equipped with The Biometrics E-Link, which is a computer-based rehabilitation and testing program. The computer exercise software includes upper extremity activity modules that are interactive in nature and provide motivation and feedback. It can be used for range of motion, strengthening, endurance exercise and testing for the upper extremity. Force plate feedback is also used for weight bearing of the lower extremity. If you'd like more information, please contact our office.

New P.T.s

Kassimir Physical Therapy (KPT) is pleased to welcome two new physical therapists to our staff this year, bringing our number of licensed therapists to six. In July, Jennifer Bozek, MPT, joined our staff as a recent graduate of Clarkson University Graduate School in Potsdam, New York. Kenneth Friedman, MS, PT started in September, with four years of experience, and has held exciting positions as one of the head therapists for many of the Broadway shows, such as Chicago, The Lion King, and Cats.

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Wednesday	8:00 a.m.	–	6:00 p.m.
Thursday	8:00 a.m.	–	9:00 p.m.
Friday	8:00 a.m.	–	6:00 p.m.
Saturday	8:00 a.m.	–	12:30 p.m.

Call for Updated Provider List and Referral Pads

Many Insurance Plans Accepted