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First Contact Management of Traumatic Hand Injuries

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ABSTRACT

Performing a comprehensive history and physical examination is the first stage in treating any hand injury. This includes finding out the mechanism and timing of the injury, hand dominance, tetanus status, the patient's occupation, and baseline function. It is critical that the primary care physician oversee initial care in order to promote prompt healing and reduce long-term morbidity. It's crucial to identify injuries that need to be sent to hand surgeons as away. To enable prompt therapy of such an accident, direct phone communication between the on-call hand surgeon and the primary care physician is crucial.

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INTRODUCTION

Performing a comprehensive history and physical examination is the first stage in treating any hand injury. This includes finding out the mechanism and timing of the injury, hand dominance, tetanus status, the patient's occupation, and baseline function. A detailed evaluation should be carried out during the physical examination in comparison to the unaffected hand. It is important to record any unusual posture, angulation or rotational deformities, or scissoring. Independent examinations of tendons and ligaments should be carried out, and motor function should be recorded. Depending on the kind of damage, assessing capillary refill and moving 2-point discrimination should be part of the neurovascular state assessment. It may be necessary to do lateral, oblique, and anterior-posterior x-ray scans in order to rule out fractures, dislocations, and foreign substances [1, 2].

The reduction and immobilization of fractures, collecting post-reduction x-ray images, gaining soft tissue covering, treating and avoiding infection, and guaranteeing tetanus prophylaxis are the fundamentals of handling traumatic hand injuries [3].

NAIL BED INJURIES

High-force crush injuries (from things like automobile or house doors) and high-speed laceration injuries (from things like band saws) are the most prevalent causes of nail bed injuries. The germinal matrix is where fingernails are formed, and damage to this tissue can lead to long-term nail malformation. It's critical to consider the extent and size of the deformity, as well as the presence or absence of exposed bone, while evaluating fingertip injuries [4, 5].

One of the most frequent injuries observed by primary care physicians is incomplete nail plate avulsion through the eponychial surface. The eponychial surface is topped by the proximal nail plate. This damage might indicate a fracture of the distal phalanx as well as a laceration of the underlying nail matrix. In this instance, a tiny absorbable suture is used to stitch the underlying nail bed after the nail plate is removed. After being cleaned, the original nail plate is replaced with a "free nail plate splint." A freshly formed nail will push this out in two to four months [6].

FINGERTIP AMPUTATIONS

The degree of amputation with regard to the distal phalanx can be used to categorize fingertip amputations. Even though the exposed bone in these fractures may appear horrible, they frequently don't need to be treated right away. In order to offer them with final care, they can be cleaned and dressed, and

patients can be referred for an expert examination in a matter of days [7].

Figure 1. Finger reconstruction, cross flap

Providing long-lasting covering, maintaining finger length and feeling, and reducing discomfort and donor-site morbidity are the cornerstones of treating fingertip amputations. For defects less than 1 cm, secondary intention healing may take place if there is no exposed bone. Every wound has to be completely irrigated and free of non-vitalized tissue. It is important to achieve hemostasis; frequently, local direct pressure will do [7].

The bone may frequently protrude over the edge of the soft tissue incision. In such circumstances, treatment is simple. Using a bone rongeur, the bone is cut proximally till the soft tissue wound margin reaches past the bone. After that, the wound is dressed every day for the following two to three weeks, during which time the soft tissues shrink, covering the bone and re-epithelializing the wound [8].

There have been several methods explained for achieving soft tissue covering. These consist of pedicled flaps, cross-finger flaps, and V-Y advancement flaps. Hand surgeons are required to oversee these surgeries [9].

Changes of dressing for open wounds at the fingertip on a daily basis are very uncomfortable. The open wound is first dressed with a single layer of petrolatum gauze under a metacarpal or digital block, then with a saline compress and dry gauze. The petrolatum gauze below is left in place after the exterior dressing is saturated and removed 48 to 72 hours later during the subsequent appointment. This promotes wound epithelialization and lessens the discomfort associated with subsequent dressing changes. Following the initial dressing change, the patient is advised to wrap the wound with dry gauze and soak the finger in warm salt or magnesium sulfate baths for one to two minutes each day. Daily baths reduce the amount of microorganisms on the wound and guard against infection. Two weeks later, the dressing made of petrolatum gauze lifts off the little wound as it epithelializes beneath it [10].

TENDON LACERATIONS

Avulsion, burn, biting, avulsion, crush damage, and deep abrasion can all cause extensor tendon lacerations. Tendon lacerations may frequently be seen with ease by manipulating the affected joint and surrounding skin. since of the location of the clinched hand, closed-fist injuries involving teeth, sometimes known as "fight bites," are frequently overlooked since the laceration is close to the skin wound. Until proven differently, an open wound above a knuckle should be regarded as a human bite. It is best to let these wounds untended and let secondary intention do its healing work. A significant side effect of a human bite is septic arthritis, which has to be sent to a doctor very once. To rule out the possibility of a fractured tooth inside the joint, an x-ray scan should be performed [11].

Treatment for extensor tendon tears should involve x-rays to rule out fractures and foreign substances as well as tetanus prophylaxis. Tendon lacerations that are more than 50% of the tendon width should be healed after complete irrigation and debridement since they run the danger of rupturing later [12].

There are two types of flexor tendon injuries: closed and open. Jersey finger is an avulsion of the flexor digitorum profundus at the distal phalanx. The incapacity to bend the DIP joint may serve as the basis for a clinical diagnosis. Due to the intricate architecture, close closeness of the neurovascular bundles, and need of a low-friction repair to guarantee unhindered tendon glide, patients with flexor tendon injuries should be sent to experts as soon as possible [13].

CONCLUSION

Hand trauma is prevalent in otherwise healthy individuals. We've covered a few of the frequent and rare hand injuries that primary care doctors face, along with their therapy and referral guidelines. It is critical that the primary care physician oversee initial care in order to promote prompt healing and reduce long-term morbidity. It's crucial to identify injuries that need to be sent to hand surgeons as away. To enable prompt therapy of such an accident, direct phone communication between the on-call hand surgeon and the primary care physician is crucial.

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