Hand injuries

X-rays should include at least three views (posteroanterior, lateral and oblique), and with finger injuries the individual digit must be x-rayed.

GENERAL PRINCIPLES OF TREATMENT

Most hand injuries can be dealt with under local or regional anaesthesia; a general anaesthetic is only rarely required.

Circulation If the circulation is threatened, it must be promptly restored, if necessary by direct repair or vein grafting.

Swelling Swelling must be controlled by elevating the hand and by early and repeated active exercises.

Splintage Incorrect splintage is a potent cause of stiffness; it must be appropriate and it must be kept to a minimum length of time. If a finger has to be splinted, it may be possible simply to tape it to its neighbour so that both move as one; if greater security is needed, only the injured finger should be splinted. If the entire hand needs splinting, this must always be in the 'position of safety' – with the metacarpo-phalangeal joints flexed at least 70 degrees and the interphalangeal joints almost straight. Sometimes an external splint, to be effective, would need to immobilize undamaged fingers or would need to hold the joints of the injured finger in an unfavourable position (e.g. flexion of the interphalangeal joints). If so, internal fixation may be required (K-wires, screws or plates).

Skin cover Skin damage demands wound toilet followed by suture, skin grafting, local flaps, pedicled flaps or (occasionally) free flaps. Treatment of the skin takes precedence over treatment of the fracture.

Nerve and tendon injury Generally, the best results will follow primary repair of tendons and nerves. Occasionally grafts are required.

Mallet finger injury

After a sudden flexion injury (e.g. stubbing the tip of the finger) the terminal phalanx droops and cannot be straightened actively. Three types of injury are recognized: avulsion of the most distal part of the extensor tendon; avulsion of a small flake of bone from the base of the terminal phalanx; and avulsion of a large dorsalbone fragment, sometimes with subluxation of the terminal interphalangeal (TIP) joint.

TREATMENT
The TIP joint should be immobilized in slight hyperextension, using a special mallet-finger splint which fixes the distal joint but leaves the proximal joints free.

tendinous avulsions splint constantly for 8 weeks and then only at night for another 4 weeks.

Bone avulsions splint, but 6 weeks should suffice as bone heals quicker than tendon. Operative treatment is generally avoided, even for large bone fragments, However, if there is subluxation then K-wires or small screws are used to fix the fragment in place.

COMPLICATIONS
Non-union This is usually painless and treatment is not needed.
Persistent droop treated by tendon repairsupported by K-wire fixation of the joint
Swan neck deformity Imbalance of the extensor mechanism

OPEN INJURIES OF THE HAND

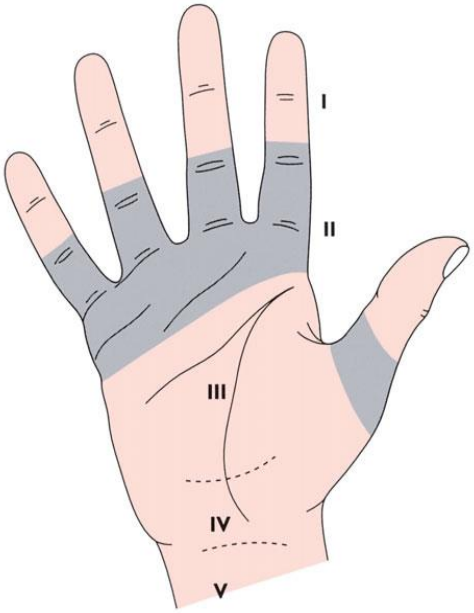
Primary treatment
A. PREOPERATIVE CARE

The patient may need treatment for pain and shock. If the wound is contaminated, it should be rinsed with sterile crystalloid; antibiotics should be given as soon as possible. Prophylaxis against tetanus and gas gangrene may also be needed. The hand is lightly splinted and the wound is covered with an iodine-soaked dressing.

B. WOUND EXPLORATION

C. TISSUE REPAIR

1. Fractures are reduced
2.Joint capsule and ligaments are repaired.
3.Artery and vein repair
4.Severed nerves are sutured
5.Extensor tendon repair
6.Flexor tendon repair



The zones of injury

I – Distal to the insertion of flexor digitorum superficialis.
II – Between the opening of the flexor sheath (the distal palmar crease) and the insertion of flexor superficialis.
III – Between the end of the carpal tunnel and the beginning of the flexor sheath.
IV – Within the carpal tunnel.
V – Proximal to the carpal tunnel.

Cuts above the wrist (Zone V), in the palm (Zone III) or distal to the superficialis insertion (Zone I) generally have a better outcome than injuries in the carpal tunnel (Zone IV) or flexor sheath (Zone II). Division of the superficialis tendon noticeably weakens the hand and a swan neck deformity can develop in those with lax ligaments. At least one slip should therefore always be repaired.

C.AMPUTATION Amputationshould be avoided unless the damage involves many tissues and is clearly irreparable

Indications A finger is amputated only if it remains painful or unhealed, or if it is a nuisance (i.e. the patient cannot bend it, straighten it or feel with it), and then only if repair is impossible or uneconomic.