



SPLINTING TECHNIQUES

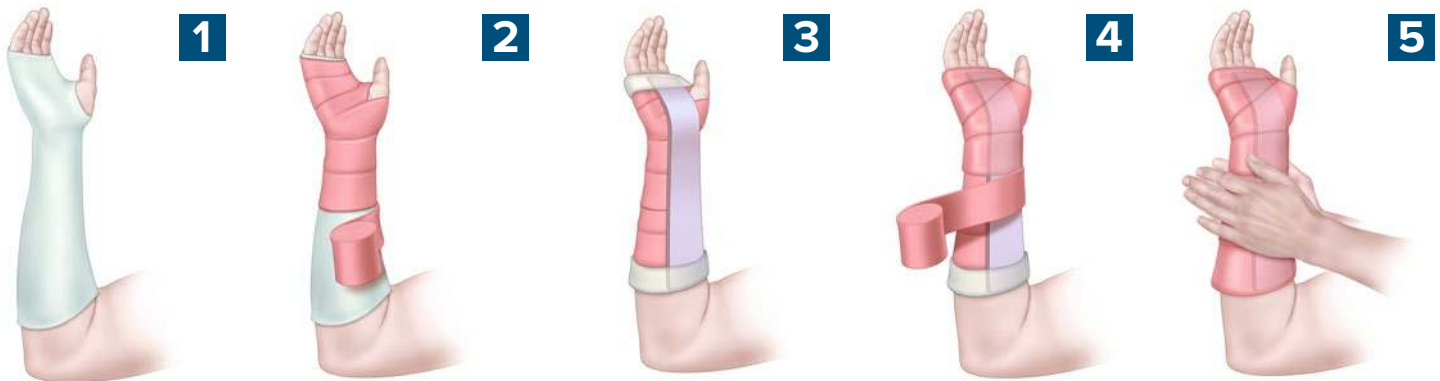
BASELINE MATERIALS

- Stockinette
- Splinting material
- Plaster
 - Upper extremity: 8–10 layers
 - Lower extremity: 10–12 layers
- Fiberglass
- Padding
- Elastic bandaging
- Bucket/receptacle of water (the warmer the water, the faster the splint sets)
- Trauma shears

BASELINE PROCEDURE

Measure and prepare the splinting material.

- Length: Measure out the dry splint on the contralateral extremity
- Width: Slightly greater than the diameter of the limb



1
Apply the stockinette to extend 2" beyond the splinting material.

2
Apply 2–3 layers of padding over the area to be splinted and between digits being splinted. Add an extra 2–3 layers over bony prominences.

3
Lightly moisten the splinting material. Place it and fold the ends of stockinette over the splinting material.

4
Apply the elastic bandaging.

5
While still wet, use palms to mold the splint to the desired shape.

6
Once hardened, check neurovascular status and motor function.

POSTERIOR LONG ARM SPLINT



INDICATIONS

- Olecranon fractures
- Humerus fractures
- Radial head and neck fractures

CONSTRUCTION

- Start at posterior proximal arm
- Down the ulnar forearm
- End at the metacarpophalangeal joints

APPLICATION

- Cut hole in stockinette for thumb
- Elbow at 90°
- Forearm neutral position with thumb up
- Neutral or slightly extended wrist (10–20°)

VOLAR SPLINT



INDICATIONS

- Soft tissue injuries of the hand and wrist
- Carpal bone fractures
- 2nd–5th metacarpal head fractures

CONSTRUCTION

- Start at palm at the metacarpal heads
- Down the volar forearm
- End at distal forearm

APPLICATION

- Cut hole in stockinette for thumb
- Forearm in neutral position with thumb up
- Wrist slightly extended (10–20°)
- Like holding a can

SUGAR TONG SPLINT



INDICATIONS

- Distal radius and ulna fractures

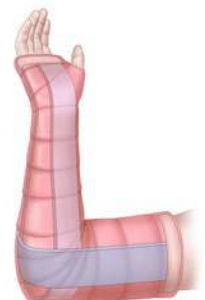
CONSTRUCTION

- Metacarpal heads on the dorsal hand
- Around elbow
- End at volar metacarpal phalangeal joints

APPLICATION

- Cut hole in stockinette for thumb
- Elbow at 90°
- Forearm neutral with thumb up
- Slightly extended wrist (10–20°)

DOUBLE SUGAR TONG SPLINT



INDICATIONS

- Complex and unstable forearm and elbow fractures

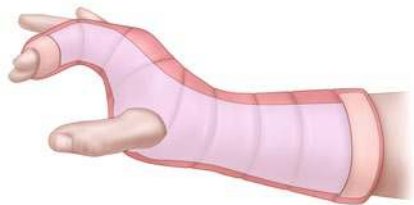
CONSTRUCTION

- Forearm splint: as above
- Arm splint
 - Start at anterior proximal humerus
 - Around elbow
- End at posterior proximal humerus

APPLICATION

- Cut hole in stockinette for thumb
- Elbow at 90°
- Forearm neutral with thumb up
- Slightly extended wrist (10–20°)

RADIAL GUTTER SPLINT



INDICATIONS

- Fractures and soft tissue injuries of index and 3rd digits
- Fractures of the neck, shaft and base of the 2nd and 3rd metacarpals

CONSTRUCTION

- Starts at mid-forearm
- Down the radial forearm
- End mid-distal phalanx of 2nd and 3rd digits

APPLICATION

- Cut hole in stockinette and splinting material for the thumb
- Hand in position of function
- Forearm in neutral position
- Wrist slightly extended
- MCP 50° of flexion
- Proximal interphalangeal and distal interphalangeal joints 5°–10° flexion

THUMB SPICA SPLINT



INDICATIONS

- Injuries to scaphoid, lunate, thumb and 1st metacarpal
- Gamekeeper's/Skier's thumb
- De Quervain tenosynovitis

CONSTRUCTION

- Start at mid-distal phalanx of thumb
- End at mid-forearm

APPLICATION

- Cut hole in stockinette for thumb
- Cut wedges on both sides of splinting material at MCP joint
- Forearm in neutral position with thumb in wineglass position

ULNAR GUTTER SPLINT



INDICATIONS

- Fractures and soft tissue injuries of 5th digit
- Fractures of the neck, shaft, and base of 4th and 5th metacarpals

CONSTRUCTION

- Start at mid-forearm
- Extend down ulnar forearm
- End at mid-distal phalanx
- Include the 4th and 5th digits

APPLICATION

- Hand in position of function
- Forearm in neutral position
- Wrist slightly extended
- MCP 50° of flexion
- Proximal interphalangeal and distal interphalangeal joints 5–10° flexion
- If boxer's fracture: flex the metacarpal phalangeal joints to 90°



MALLET FINGER

INDICATION

- Mallet Finger

CONSTRUCTION

- Splint only the distal interphalangeal joint

APPLICATION

- Splint distal interphalangeal joint in hyperextension
- DIP must remain in continuous extension for 6–8 weeks



FINGER SPLINTS

INDICATION

- Phalanx fractures
- Tendon repairs

CONSTRUCTION

- Splint across fractured phalanx or repaired tendon

APPLICATION

- If tendon repair: splint in flexion or extension, depending on tendon repaired

POSTERIOR KNEE SPLINT



POSTERIOR ANKLE & STIRRUP SPLINTS



INDICATIONS

- Patients with legs too large for knee immobilizer
- Angulated fractures
- Injuries that require urgent operative fixation

CONSTRUCTION

- Start just inferior to buttocks crease
- Down the posterior leg
- End approximately 6cm above the malleoli

APPLICATION

- Slightly flexed knee

INDICATIONS

- Grade 2–Grade 3 ankle sprains
- Fractures of distal fibula and tibia
- Reduced ankle dislocations
- Can add stirrup splint for unstable ankle fractures

CONSTRUCTION—POSTERIOR ANKLE

- Start at plantar surface of the metatarsal heads
- Extend up posterior leg
- End at the level of the fibular head

CONSTRUCTION—STIRRUP

- Laterally, start 3–4cm below the level of fibular head
- Extend under the plantar surface of foot
- End at medial and lateral side of leg to just below fibular head

APPLICATION

- Place with the patient in the prone position
- Ankle at 90°
- Place posterior ankle splint first

SPLINTING COMPLICATIONS

- Compartment syndrome
- Ischemia
- Neurologic injury
- Thermal injury
- Pressure sores, skin breakdown
- Infection
- Dermatitis
- Joint stiffness

RESOURCES

Boyd A, Benjamin H, Asplund C. Principles of Casting and Splinting. *Am Fam Physician*. 2009 Jan 1;79(1):16–22.

AUTHOR

R. Ian Ross, MD
Stanford/O'Connor Hospital, Primary Care Sports Medicine Fellow, 2017
2016–17 Chair, EMRA Sports Medicine Division
Member, U.S. Figure Skating Sports Science & Medicine

ILLUSTRATOR

Matthew Holt
Bodyrender

Eiff MP, Hatch RL. Fracture Management for Primary Care. Philadelphia, PA: Elsevier/Saunders, 2012.

REVIEWER

Anna L. Waterbrook, MD, FACEP, CAQ-SM
University of Arizona
Associate Professor, Dept. of Emergency Medicine
Associate Program Director, South Campus Residency Program
Associate Program Director, Sports Medicine Fellowship
Assistant Team Physician, Intercollegiate Athletics
2016–18 Chair, ACEP Sports Medicine Section