PEDIATRIC ORTHOPEDIC SPLINTING GUIDE

Children's® MINNESOTA

The Kid Experts™

Level I Pediatric Trauma Center

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Materials

- Cotton cast padding/crinkle padding
- Stockinette
- Fiberglass or plaster (plaster is preferred)
- Elastic bandage (avoid metal clips in pediatrics)
- Gel-formulated dressings
- Scissors
- Water in a basin (about ½ to ¾ full)
- Towels

Step-by-Step

1. Make sure you have all of your materials. Measure before beginning to minimize patient discomfort. *You can almost always measure the contralateral extremity for size.*
2. Have someone hold (if possible). If needed, utilize family but frequently check to make sure that the correct alignment is maintained.
   – If you flex the extremity after cast padding is applied it will bunch.
3. Place gel formulated dressings over prominences if needed (i.e., malleoli, heel, olecranon). You can cut these down to size. Adhesive cast padding is NOT meant to be placed directly on the skin and is painful to remove.
4. Place stockinette on. Cut out areas of flexion so it doesn't bunch (e.g., antecubital fossa, anterior ankle).
5. Wrap 100% cotton under cast padding. As you wrap, remember that you can rip the side that the tension is drawn to in order to help it lie flat. *You do not want wrinkles.*
6. Cut fiberglass/plaster to size (if you have not done so) — *trim back fiberglass if prefabricated.*
   – If left untrimmed, the fiberglass will cause skin breakdown.
7. Wet fiberglass/plaster.
   – If plaster, make sure to smooth out. Pat fiberglass dry with a towel. You will want to use warm water. The cooler the water, the longer it takes to dry. Too hot can burn the patient.
8. Place on extremity.
   – If using fiberglass, you may need to cut the corner to get it to lie smoother on certain areas (e.g., around elbow). Plaster will form as needed.
9. Wrap with cotton cast padding over top if plaster splint. This helps with the removal process later. The elastic bandage will stick to the plaster if the cotton cast padding is not there.
10. Fold over edges of stockinette to encompass the edges.
11. Wrap with elastic bandage, *do not pull tight* — this allows for swelling.

Next Steps

- Reassess color, sensation, motion, pulses.
- Educate patient and family on splint/cast care including keeping it dry and not putting any objects inside the splint.
- Consult with orthopedics if needed (see physician access information on back page).
- Facilitate transfer for definitive management (if applicable).

Short Arm Splint (Volar Splint)

Most frequently used

Indications

Non-displaced, minimally displaced or buckle fracture of distal radius.

Purpose

Considered definitive treatment for buckle fractures.

Patient positioning

Seated in chair or on exam table/ED gurney.

Measuring guide

Proximal 1/3 of forearm to palmar crease and proximal MCP joints.

Application tips

- Wrist in neutral position, splint should not cover MCP joints.
- Wrap cast padding through the palm at least three times.
- Wrap cast padding down the arm, overlapping by 1/2 width.
- Pad bony prominences.

Next steps

- Reassess color, sensation, motion, pulses.
- Transfer for definitive management, if displaced or unstable.

Sugar-Tong Splint

Indications
Acute distal radial and ulnar fractures or fractures post-reduction.

Purpose
Stabilize forearm and wrist injuries by preventing forearm rotation and wrist motion.

Patient positioning
Seated in chair or lying on exam table/ED gurney.

Measuring guide
Start at palmar crease, down arm, around elbow and back to hand, ending just under the MCP joints.

Application tips
- Splint with elbow at 90-degrees, thumb up.
- Follow Splinting How-To.
- Wrap cotton cast padding from palmar crease to mid-humerus including the elbow.
- Add extra padding to elbow and condyles.
- Cut thumb hole in stockinette.

Next steps
- Post-reduction X-rays after splinting.
- Reassess color, sensation, motion, pulses.
- Transfer for definitive management if displaced or unstable.

Long Arm Posterior Splint

Indications

- Olecranon fracture.
- Distal humeral fractures.

Purpose

Immobilize and provide greater stability for acute elbow and forearm injuries.

Patient positioning

Seated in chair or lying on exam table/ED gurney.

Measuring guide

Start at palmar crease to axilla.

Application tips

- Splint with elbow at 90-degrees, thumbs up, forearm neutral position.
- Wrap cotton cast padding from MCP joints to the axilla.
- Pad bony prominences.
- Sling should be used after splint application.

Next steps

- Reassess color, sensation, motion, pulses.
- Consult with orthopedics.
- Transfer for definitive management, if recommended by orthopedic surgeon.

Coaptation Splint

Indications

Midshaft humerus fracture (not generally used in kids <10)

Purpose

Provide stability and immobilization for midshaft humerus fractures in older children and adults

Patient positioning

Upright, seated

Measuring guide

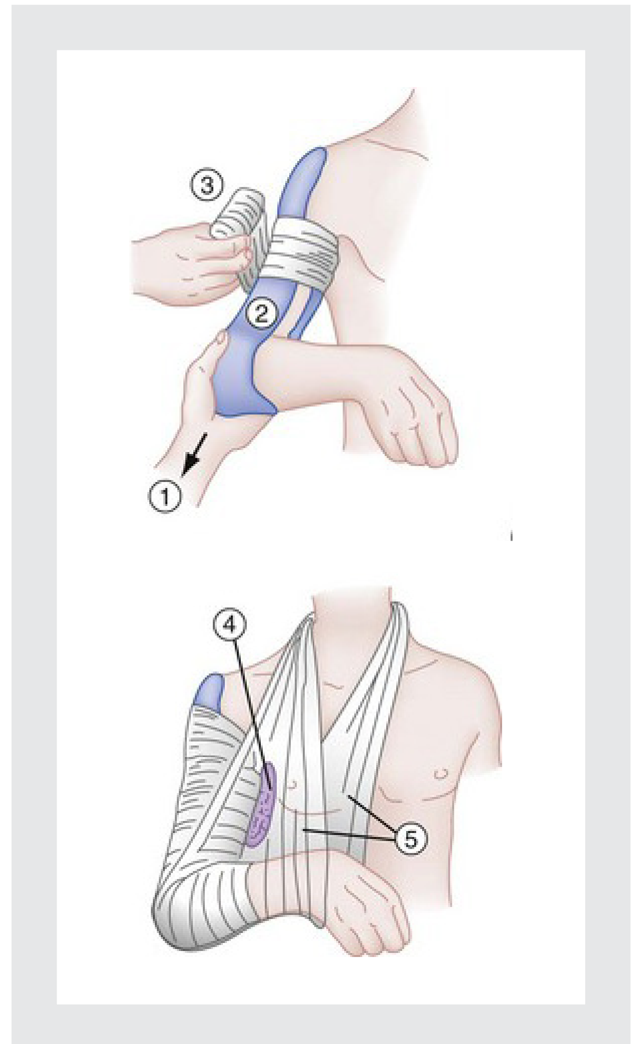
Axilla down around elbow, up over shoulder to base of neck

Application tips

- Ensure all edges of most proximal splint are covered to ensure no free sharp edges
- Add ABD pad into axilla

Next steps

- Reassess color, sensation, motion, pulses
- Consult with orthopedics
- Transfer for definitive management, if recommended by orthopedic surgeon



Short Leg Splint

(Defined as posterior slab with stirrup)

Indications

- Distal tibia/fibula, foot or ankle fractures.
- May or may not be definitive treatment.

Purpose

Immobilization of the foot and ankle.

Patient positioning

Sitting on edge of bed with leg hanging down or lying down.

Measuring guide

From base of the toes to three finger-widths distal to the knee .

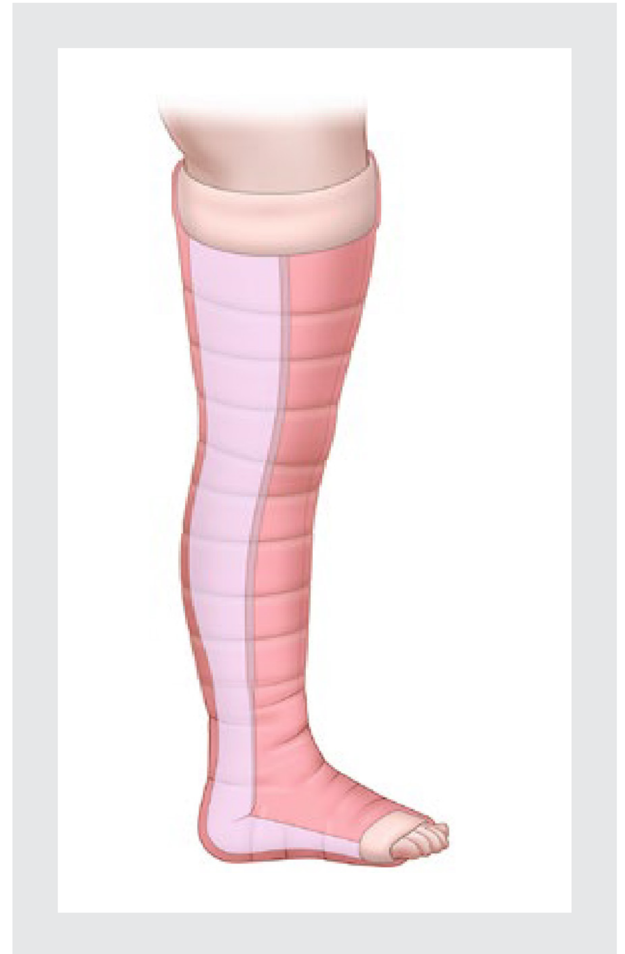
Application tips

- Compression of the peroneal nerve may occur with pressure at fibular neck.
- Pad bony prominences.

Next steps

- If post-reduction, X-rays.
- Reassess color, sensation, motion, pulses.
- Consult with orthopedics.
- Transfer for definitive management, if recommended by orthopedic surgeon.

Long Leg Splint



Indications

Femur fractures

- For distal 1/3 femur fractures, splint should extend proximal into the groin (could consider a knee immobilizer if stable).
- For proximal or midshaft, splint should extend to mid-torso with elastic bandage around abdomen.
  - Traction is generally not recommended in any pediatric age group unless required to maintain pulses.
  - If patient arrives with traction placed in the field, would recommend transitioning to a splint as soon as reasonably able.

Purpose

Decrease movement, provide support, prevent further damage before definitive management occurs.

Patient positioning

Splint should be applied when patient is lying flat in the bed supine; Several helpers may be needed depending on patient's size.

Measuring Guide

Splint extends from 2–3" below gluteal crease to the base of the toes.

Application Tips

- Pad bony prominences, especially the heel.
- Post-splint application X-ray to ensure that splint is high enough.
  - When in doubt, make it longer than you think.

Next Steps

- Reassess color, sensation, motion, pulses.
- Consult with orthopedics.
- Transfer for definitive management, if recommended by orthopedic surgeon.

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