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Musculoskeletal Trauma
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Immobilizing a Long Bone
(1) Manually stabilize the injured limb.
(2) Assess distal circulation, sensation, and motor function (CSM).
(3) Measure the splint. It should extend several inches beyond the joints above and below the injury.
(4) Apply the splint and immobilize the joints above and below the injury.
(5) Secure the entire injured extremity.
(6a) Secure the foot in the position of function . . .
(6b) . . . Or, if splinting an arm, secure the hand in the position of function. This is the position the hand would be in if the patient were holding a palm-sized ball. A roll of bandage can be placed in the patient's hand to help maintain the position of function.
(7) Reassess distal CSM.
Immobilizing a Joint
(1) Manually stabilize the injured limb, in this case an injured elbow.
(2) Assess distal pulse, motor function, and sensation (CSM).
(3) Select the proper splint material. Immobilize the site of injury and bones above and below.
(4) Secure the splint.
(5) Reassess distal CSM.
Applying a Vacuum Splint
(1) Stabilize the extremity and check distal circulation, sensation, and motor function (CSM).
(2) Apply the splint to the extremity and secure it with the straps.
(3) Remove the air from the splint with the pump provided by the manufacturer.
(4) Reassess distal CSM.
Applying a Sling and Swathe
(1) Prepare the sling by folding cloth into a triangle.
(2a) Position the sling over the top of the patient's chest as shown. Fold the injured arm across his chest.
(2b) . . . If the patient cannot hold his arm, have someone assist him until you tie the sling.
(3) Extend one point of the triangle beyond the elbow on the injured side. Take the bottom point and bring it up over the patient's arm. Then take it over the top of the injured shoulder.
(4) If appropriate, draw up the ends of the sling so that the patient's hand is about 4 inches above the elbow.
(5) Tie the two ends of the sling together, making sure that the knot does not press against the back of the patient's neck. Pad with bulky dressings. (If spine injury is possible, pin the ends to the patient's clothing. Do not tie them around the neck.)
(6) Check to be sure you have left the patient's fingertips exposed. Then assess distal circulation, sensation, and motor function (CSM). If the pulse has been lost, take off the sling and repeat the procedure. Then check again.
(7a) To form a pocket for the patient's elbow, take hold of the point of material at the elbow and fold it forward, pinning it to the front of the sling. Or . . .
(7b) . . . If you do not have a pin, twist the excess material and tie a knot in the point.
(8) Form a swathe from a second piece of material. Tie it around the chest and the injured arm, over the sling. Do not place it over the patient's arm on the uninjured side.
(9) Reassess distal circulation, sensation, and motor function (CSM). Treat for shock, and provide high-concentration oxygen. Take vital signs. Perform detailed assessments and reassessments as appropriate.
Splinting an Injured Humerus
VARIATION ONE: Apply a sling and swathe. If you have only enough material for a swathe, bind the patient's upper arm to her body, taking great care not to cut off circulation to the forearm.
VARIATION TWO: If you have only a narrow or short length of material to use as a sling, apply it so that it supports the wrist only.
Splinting Arm and Elbow Injuries
SIGNS: The elbow is a joint and not a bone. It is composed of the distal humerus and the proximal ulna and radius, which form a hinge joint. You will have to decide if the injury is truly to the elbow. The location of deformity and tenderness will direct you to the injury site.
ELBOW IN OR RETURNED TO THE BENT POSITION  

1. Move the limb only if necessary for splinting or if the pulse is absent. Stop if you meet resistance or significantly increase the pain.
ELBOW IN OR RETURNED TO THE BENT POSITION (2) Use a padded board splint that will extend 2 to 6 inches beyond the arm and wrist when placed diagonally.
ELBOW IN OR RETURNED TO THE BENT POSITION (3) Place the splint so it is just proximal to the elbow and wrist. Use cravats to secure it to the forearm, then the arm.
ELBOW IN OR RETURNED TO THE BENT POSITION (4) A wrist sling can be applied to support the limb. Keep the elbow exposed. Apply a swathe, if possible.
ELBOW IN A STRAIGHT POSITION  (1) Assess distal circulation, sensation, and motor function (CSM).
ELBOW IN A STRAIGHT POSITION (2)
Use a padded board splint that extends from under the armpit to a point past the fingertips. Pad the armpit.
ELBOW IN A STRAIGHT POSITION  (3)
Place a roll of bandages in the patient's hand to help maintain the position of function. Place the padded side of the board against the medial side of the limb. Pad all voids.
ELBOW IN A STRAIGHT POSITION  (4) Secure the splint. Leave the patient's fingertips exposed.
ELBOW IN A STRAIGHT POSITION

(5) Place pads between the patient's side and the splint.
ELBOW IN A STRAIGHT POSITION  (6) Secure the splinted limb to the body with two cravats. Avoid placing the cravats over the suspected injury site. Reassess the distal circulation, sensation, and motor function (CSM).
Splinting Forearm, Arm, and Hand
SIGNS:
• Forearm. Deformity and tenderness. If only one bone is broken, deformity may be minor or absent.
• Wrist. Deformity and tenderness.
• Hand. Deformity and pain. Dislocated fingers are obvious.
CARE: Injuries occurring to the forearm, wrist, or hand can be splinted using a padded rigid splint that extends from the elbow past the fingertips. The patient's elbow, forearm, wrist, and hand all need the support of the splint.
CARE: Tension must be provided throughout the splinting. A roll of bandages should be placed in the patient's hand to ensure the position of function. After rigid splinting, apply a sling and swathe.
ALTERNATIVE CARE: Injuries to the hand and wrist can be cared for with soft splinting by placing a roll of bandages in the hand to maintain the position of function, then tying the forearm, wrist, and hand into the fold of one pillow or between two pillows.
ALTERNATIVE CARE: An injured finger can be taped to an adjacent uninjured finger or splinted with a tongue depressor. Some emergency department physicians prefer that care be limited to a wrap of soft bandages. Do not try to “pop” dislocated fingers back into place.
Applying an Air Splint
(1) Check distal circulation, sensation, and motor function (CSM). Grasp the hand of the patient's injured limb as though you were going to shake hands and apply steady tension.
(2) While you support her arm, your partner gently slides the splint over your hand and onto the patient's injured limb. The lower edge of the splint should be just above her knuckles. Make sure the splint is free of wrinkles.
(3) Continue to support the arm while your partner inflates the splint by mouth to a point where you can make a slight dent in the plastic when you press it with your thumb.
(4) Continue to assess distal circulation, sensation, and motor function (CSM).
Applying a Bipolar Traction Splint
(1) Take Standard Precautions.
(2) Manually stabilize the injured leg.
(3) Assess circulation, sensation, and motor function (CSM).
(4) Adjust the splint to the proper length and position it next to the injured leg.
(5) Apply the ischial securing device.
(6) Apply an ankle hitch.
(7) Apply manual traction.
(8) Secure support straps, as appropriate.
(9) Reevaluate the ischial securing device.
(10) Reassess CSM function.
(11) Secure the patient's torso to the long board to immobilize the hips.
(12) Secure the splint to the long board to prevent movement of the splint.
Applying the Sagar Traction Splint
(1) Place the splint medially.
(2) The length of the splint should be from groin to 4 inches below the heel. Unlock the clasp to extend the splint.
(3) Secure the thigh strap.
(4) Wrap the ankle harness above the ankle (malleoli) and secure it under the heel.
(5) Release the lock and extend the splint to achieve the desired traction (in pounds on the pulley wheel).
(6) Secure the straps at the thigh, lower thigh and knee, and lower leg. Strap the ankles and feet together. Secure the patient to the spine board.
Two-Splint Method
Bent Knee
(1) Assess distal CSM.
(2) Stabilize the knee above and below the injury site.
(3) Place the padded side of the splints next to the injured extremity. Note that they should be equal in length and extend 6 to 12 inches beyond the mid-thigh and mid-calf.
(4) Place a cravat through the knee void and tie the boards together.
(5) Using a figure-eight configuration, secure one cravat to the ankle and the boards, and the second cravat to the thigh and the boards. Reassess distal CSM.
One-Splint Method
Straight Knee
(1) Assess distal CSM.
(2) Stabilize. The padded board splint should extend from the buttocks to 4 inches beyond the heel.
(3) Maintain stabilization and lift the limb.
(4) Place the splint along the posterior of the limb.
(5) Pad the voids.
(6) Use a 6-inch roller bandage or cravats to secure the injured leg to the splint.
(7) Place the folded blanket between the patient's legs, groin to feet.
(8) Tie the patient's thighs, calves, and ankles together. Do not tie the knot over the injured area.
(9) Reassess the distal CSM.
(10) Provide emergency care for shock, and continue to administer high-concentration oxygen.
(11) Monitor distal pulse and vital signs.
Two-Splint Method
Straight Knee
(1) Stabilize the injured limb, and assess distal CSM.
(2) Measure the padded board splints, medial from groin, lateral from iliac crest, both to 4 inches beyond the foot.
(3) Position the splints.
(4) Pad the groin.
(5) Secure the splints at the thigh, above and below the knee, and at mid-calf. Pad all voids.
(6) Cross and tie two cravats at the ankle or hitch the ankle. Reassess distal CSM, care for shock, and provide high-concentration oxygen.
Two-Splint Method
Leg Injuries
(1) Assess the distal CSM. Measure the splints. They should extend above the knee and below the ankle.
(2) Apply manual traction (tension) on the leg, then place one splint medially and one laterally. Padding is toward the leg.
(3) Secure the splints, padding the voids.
(4) Reassess distal CSM.
(5) Provide emergency care for shock, and administer high-concentration oxygen. Transport on a long spine board.
One-Splint Method
Leg Injuries
(1) Assess distal CSM. Measure the splint.
(2) Lift the limb off the ground.
(3) Apply manual traction (tension).
(4) Secure the splint to the injured leg.
(5) Reassess distal CSM.
(6) Care for shock, and continue to administer high-concentration oxygen. Package the patient and prepare to transport.