Indications

Pain, edema or deformity in extremity or spine. All cases of significant head trauma and all unconscious trauma patients. Follow spinal immobilization algorithm.

Precautions

1. All patients with impaired mental status or altered level of consciousness must be examined thoroughly and treated very conservatively because these patients may not be aware of pain from a serious injury.
2. Note circulation and neurologic exam distal to suspected injury prior to and after immobilizing and moving the patient.
3. Make sure the obvious injury is the only injury. It is particularly easy to miss fractures proximal to the obvious one.
4. Do not move or transport a patient with suspected spine or long bone fracture/dislocations until immobilization is completed, unless the risks of scene and patient condition outweigh the benefits of taking the time to achieve immobilization. .
5. Once immobilized a patient must not be left unattended. Immobilized patients no longer have the ability to maintain their airways should they vomit or become obstructed.
6. Once patient is immobilized, all efforts should be directed toward maintaining that immobilization until a physician clears the patient and removes the immobilizing devices. Giving medications to relieve pain and spasm will help ensure a cooperative patient.

Technique - Cervical/spinal Immobilization:

1. Apply following primary assessment if indicated. Document LOC and sensation and movement of all extremities prior to immobilization.
2. Advise patient of procedure and purpose before and during immobilization.
3. Use at least three people to immobilize.
4. Gently straighten and support head in neutral position. Do not use force to straighten or attempt to move or straighten if patient experiences any increase in pain. Do not use traction in any manner while straightening or supporting.

Immobilization

5. Obtain secure immobilization by choice of equipment. Stiff-neck or other firm collar may be used but is not mandatory. Patient must be immobilized on board, scoop, Vacuum mattress, KED, etc. that extends from at least the patients occiput to the sacrum. The patient must be secured by straps, kling, etc., such that the patient may be turned as a unit (log rolled) in the event of vomiting or airway distress. The head and neck must be further secured by a head bed, towel rolls, blankets, foam rolls, etc. and tape.
6. Due to its comfort and superior lateral support, a vacuum mattress is the preferred device for spinal immobilization. To place a patient on the device, first smooth the mattress and remove most of air to make the mattress semi-rigid. Log-rolling is an acceptable method of moving the patient to the mattress; however, due to its greater width, it is essential to further move the patient in order to make sure they are centered. This can be accomplished either by using a sheet lift or by using sideways zig-zag movements along the long axis of the mattress. Once the patient is centered, let air back into the mattress to insure effective distribution of padding. Secure the straps, starting with the torso and moving to the feet. Once the straps are secured, remove the air until the mattress is fully rigid. Some manual support may be needed along the sides of the mattress prior to deflation to make sure it conforms to the patient. If the patient is to be moved a significant distance prior to being secured on the gurney, the vacuum mattress may be supplemented by a long spine board for additional longitudinal support.
7. Patients should have a pad inserted behind the occiput for comfort and to aid in securing the patients head in a neutral position. The thickness of the pad will vary depending on what height neither flexes nor extends the neck.
8. Manual support of the head and neck is an acceptable alternative to a collar if sufficient personnel are available. The patient must still be secured to a LSB.
9. An immobilized patient's airway is of critical importance, therefore monitoring of the airway and immobilization should be assigned to a trained, experienced and reliable person.
10. Patients with injuries to the lower spine will be secured to a board, scoop, etc. However if the patient has no complaint of neck pain and no mechanism for cervical injury, the immobilization of the head and neck can be omitted.
11. Don't forget to document how much sensation and function the patient has during the transport.

Technique - Extremity Immobilization

1. Check pulse movement and sensation distally prior to splinting. If you find pulselessness or significant neuro deficits, consult medical control prior to splinting. They may advise manipulation to restore circulation.
2. Identify and dress open wounds prior to immobilization.
3. Severely angulated mid-shaft fractures may be straightened by gentle, continuous traction if necessary for immobilization, extrication or transport.
4. Joint injuries should be immobilized in position as found.
5. With open fractures, retraction of bone ends is not desired, but may be required for secure immobilization.
6. Maintain gentle, continuous longitudinal traction and support during immobilization.
7. Pad splint to prevent pressure points.
8. Immobilize joints above and below a possible fracture.
9. Immobilization should not compromise circulation but should be secure enough to prevent movement during transportation.
10. Check pulse and sensation following immobilization and during transport.

Technique - Traction Splinting (Sager Splint)

1. Use only on mid-shaft femur fractures without fracture to pelvis or lower leg. Do not delay transport for the application of a traction splint if there are other significant injuries.
2. Expose fracture site. Check distal pulse, movement and sensation. Dress wounds prior to immobilization.
3. Position appropriately. Laterally is usually most comfortable for men.
4. Apply manual traction and secure groin strap.
5. Apply and adjust ankle hitch.
6. Extend splint to apply traction. Extend enough to achieve maximum increase in patient comfort.
7. Position and secure straps on leg.

8. Check pulses, circulation and sensation after application and during transport.
9. Recheck traction periodically during transport.

Notes

1. Any patient with a suspected cervical/spinal injury must be immobilized completely. It is inappropriate to apply a cervical collar and walk the patient or transport in a sitting position.
2. Traction splints should be used only on easily straightened mid-shaft femur fractures. They should not be used on angulated injuries near the knee.
3. PASG can be used effectively on leg fracture and pelvic fractures.
4. Aligning body parts together can be a very effective way of immobilizing: Arm to trunk or leg to leg. Padding will increase comfort; this method can be very useful in children when traction devices and pre-made splints do not fit.