

Los Angeles City Fire Department

Training Bulletin # 87

Date of Issue 7-93

Revision Date

SPINAL IMMOBILIZATION

REVISION OF SPINAL IMMOBILIZATION PROCEDURES AND USE OF OCCIPITAL PADDING FOR CERVICAL ALIGNMENT IN ADULTS

Effective spinal immobilization of head and spinal trauma victims is critical to reducing injury associated morbidity and mortality. Except where contradicted, proper immobilization requires the patient's head and spine to be secured to a backboard in a neutral in-line position before the patient is moved.

The following information addresses recent changes in the Department of Health Services' Spinal Immobilization Skill Techniques and guidelines on use of occipital padding for cervical alignment in adults.

Spinal Immobilization Skill

Spinal immobilization techniques requires two individuals (one lead member and one assistant). Additional personnel may be utilized as field conditions dictate. The lead member shall ensure the following procedures are performed:

- Step No. 1 Explain procedure to patient.
- Step No. 2 Assess motor and sensory function of fingers and toes.
- Step No. 3 Instruct assistant to apply the cervical collar and maintain continuous stabilization.
- Step No. 4 Position board next to patient.
- Step No. 5 Assume position at the patient's side with one hand on the patient's farthest shoulder and the other at the patient's farthest hip.

- Step No. 6 In a single motion, roll the patient toward the rescuer while maintaining body alignment.
- Step No. 7 With the patient on his/her side, slide the board next to the patient.
- Step No. 8 In a single motion roll the patient onto the board, maintaining body alignment.
- Step No. 9 Secure patients chest, hips, and knees to the board.**
- Step No.10 Secure head and neck to the board using occipital padding, as needed, to maintain cervical alignment for adults.**
- Step No.11 Reassess motor and sensory function of fingers and toes.**

**GUIDELINES FOR USE OF OCCIPITAL PADDING FOR CERVICAL ALIGNMENT
ADULT SPINAL TRAUMA PATIENT**

Use of proper spinal immobilization techniques are imperative whenever care is provided to patients who may have sustained head or spinal column injury. Minimal manipulation of the spinal column and maintenance of the head in neutral position, which is defined as normal anatomical position of the head and torso that one assumes when standing and looking straight ahead, are the objectives of spinal immobilization. Experience has shown that the current recommended technique of placing the patient directly on the backboard without occiput padding results in extension of the neck and occiput pain.

Multiple studies have concluded that neutral cervical alignment on adult patients may be effectively achieved through use of padding between the patient's occiput and backboard (see Figure 1). The adult patient will, on average, require 1.5 inches of padding, with women requiring less padding (average 1.3 inches) than men (average 1.7 inches). The prehospital care provider should visually determine the appropriate depth of occiput padding.

Materials which may be used as padding include, but are not limited to, folded towels, folded linen, or dressing materials. Padding should be placed and secured under the patient without manipulation of the spinal column. This may be accomplished by placing the padding on the backboard prior to log rolling or positioning the patient onto the backboard.

Review of Trauma Injury to the Spine

Indicators of the need to consider spinal immobilization include:

A. Mechanism of injury

The major causes of spinal column trauma include, but are not limited to:

Adults

- Automobile accidents
- Shallow water diving accidents
- Motorcycle accidents
- Falls

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Pediatric

- Falls from heights
 - Falls from bicycle or tricycle
 - Being struck by a motor vehicle
- B. Presence of other injuries which indicate violent forces may have acted upon the spine (i.e., head and neck injury, etc.).
- C. Signs and symptoms of head and spinal injury:
- Pain to the neck and back.
 - Pain on movement to neck and back.
 - Pain on palpation of posterior neck and back.
 - Deformity of spinal column.
 - Guarding and splinting of neck or back.
 - Paralysis; tingling of legs or arms at any time post injury.

Injuries of this nature may result in a variety of damage including:

- Vertebral compression fractures.
- Fractures producing sharp fragments of bone which may lie in the spinal column.
- Subluxation (a partial or complete dislocation of the vertebra from its normal alignment in spinal column).
- Stretching and tearing of the ligaments and muscle that hold the vertebrae in alignment.

Conclusion

Effective immobilization to reduce the severity of spinal column injury is best achieved through diligent application of the proper immobilization techniques. The above revised procedures and use of occiput padding will afford more precise spinal immobilization.