



Appendix 8

Specialist Trauma Transfer Guidelines - 8.2 Spinal Trauma

8.2 Spinal Trauma

Indications for Transfer of Spinal Trauma

- Significant spinal fracture
- Minor spinal cord or nerve root damage

Presence of neurological deficits

Overriding Principles of Spinal Trauma Management:

- All patients with evidence of, or potential for, spinal injury should be admitted to hospital.

In the prehospital setting;

- All major trauma (including isolated spinal trauma) should be triaged to the MTS, within the defined safety and logistic constraints (Appendix 7.3).

In the context of interhospital transfer;

- Major trauma (as defined in Appendix 7.4) including a spinal injury should be transferred from the first assessing Emergency Department to the MTS. In the presence of spinal cord deficit, subsequent transfer to the Victorian Spinal Cord Service at Austin and Repatriation Medical Centre will occur at the earliest appropriate time, that is once the patient is medically stable.
- Isolated spinal cord trauma, with a neurological deficit, should be transferred to the Victorian Spinal Cord Service at Austin and Repatriation Medical Centre at the earliest appropriate time, generally in less than 12 hours.
- Spinal cord trauma with other injuries that do not meet the criteria which define Major Trauma (Appendix 7.4), should be transferred to the Victorian Spinal Cord Service at Austin and Repatriation Medical Centre at the earliest appropriate time, generally in less than 12 hours.

Surgical stabilisation of the spine, in the presence of spinal cord deficit, may occur at either the MTS or the Austin and Repatriation Medical Centre. This decision will always be made following consultation between the MTS and Victorian Spinal Cord Service.

Prehospital Management

- Always consider spinal injury, especially injury to the cervical or thoracolumbar junction, in the unconscious patient.
- Rapid clinical assessment:
 - ⇒ Respiratory pattern-diaphragmatic breathing.
 - ⇒ Voluntary movement and sensation in limbs.
 - ⇒ Blood pressure.

- Extrication from vehicle:
 - ⇒ Maintain spinal alignment, especially avoid flexion and rotation.
 - ⇒ Avoid movements which increase pain.
 - ⇒ If cervical injury suspected, apply cervical collar or substitute, for example, a rolled up jacket (apply in all major trauma cases till radiologically cleared).
- Transport to designated trauma service:
 - ⇒ If conscious, place in supine position. If respiratory distress is aggravated, place in the head-up position (unless hypotensive).
 - ⇒ If unconscious, clear and control airway.
 - ⇒ Where GCS < 9, the patient should be intubated.
 - ⇒ If unconscious and intubation not possible, place in lateral position with neck support.
 - ⇒ Protect airway from obstruction and/or inhalation.
 - ⇒ Administer supplemental oxygen.
 - ⇒ Immobilise patient with a spinal board and semi-rigid collar.
 - ⇒ Arrange appropriate lifting device (Kendrick Extrication Device, Russell Extrication Device or similar) to aid immobilisation during vehicle extrication and transport.

Primary Hospital Management

- Emergency resuscitation: airway, breathing, circulation.
- Always consider spinal injury on:
 1. History (mechanism of injury).
 2. Clinical examination:
 - ◆ Vital signs-especially bradycardia and hypotension.
 - ◆ Respiratory pattern-diaphragmatic in high cord injury.
 - ◆ Neurological examination for example:
 - * Motor response in limbs (usually flaccid paralysis).
 - * Sensory level to pain, joint position, touch-check perineal sensation and anal tone.
 - * Altered sweat level/pattern.
 - * Plantar response.
 - * Priapism.
 - * Elevated shoulders in cervical injury.
 - * Anal tone-flaccid in cauda equina lesion, reduced in cord lesion.
 - * Urinary retention.
- Suspect other injuries:
 - ⇒ Head injury-beware of deterioration in GCS indicating concurrent head injury.
 - ⇒ Haemopneumothorax or ruptured aorta with thoracic spinal injury.
 - ⇒ Ruptured abdominal viscus with thoracolumbar injury-particularly beware of retroperitoneal injury (esp. duodenal) with lap type seatbelts.
 - ⇒ Symptoms and signs of such injuries may be masked in a patient with a complete spinal cord lesion.
- Early notification of Major Trauma Service or the Victorian Spinal Cord Service at A&RMC (12) regarding transfer and/or management advice (see A29).
- Management of acute spinal injury:
 - ⇒ If cord injury is suspected, advice should be sought from a Major Trauma Service or the Victorian Spinal Cord Service.
 - ⇒ All hypotension is hypovolaemia until proven otherwise. Hypotension may be normal in a high cord injury, however surgical shock may be present from other injuries such as a splenic tear or ruptured aorta.

- ⇒ A high spinal cord injury above T6 is likely to be hypotensive (approx. 90mmHg). This is initially related to vasodilation with relative hypovolaemia and requires some blood volume expansion. There may be blood loss from other injuries, which needs replacement on its merits. Volume replacement must be undertaken in a controlled manner and is best accomplished using central venous pressure monitoring. In high spinal cord injury, a degree of hypotension is acceptable provided it is stable and urine output is satisfactory.
- ⇒ Insert large bore nasogastric tube.
- ⇒ Insert urinary catheter and monitor urinary output.
- ⇒ Arterial blood gases are essential. Avoid hypoxia, monitor vital capacity and beware respiratory failure from sputum retention or fatigue.
- ⇒ Careful lift or logroll every 2 hours to avoid trophic skin ulcers.
- ⇒ Maintain normothermia: warm intravenous fluids.
- ⇒ Discuss indication for steroids with Major Trauma Service or the Victorian Spinal Cord Service.

Information Sources

- *The Management of Acute Neurotrauma in Rural and Remote Locations*; The Neurosurgical Society of Australasia, RACS, 1995.
- AUSTIN & REPATRIATION MEDICAL CENTRE, VICTORIAN SPINAL CORD SERVICE

(12) Ring Austin and Repatriation Medical Centre on 03 9496 5000 and page Spinal Consultant or Registrar through swith (24 hours).