Ring Around The Collar: Update on EMS C-Spine Management

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~14,000 New Spinal Cord Injuries /yr.
4-5,000 Die During Initial Event

$417,000 first year expenses
Lifetime Costs….? Million
Morbidity/Mortality Induced by Care Givers?

— “….25%”


Indications for Cervical Spine Immobilization:
  – Clinical Signs and Symptoms
  – Mechanism of Injury

NEXUS Study
  – Highly Reliable Criteria
Spinal immobilisation for trauma patients (Review)

Kwan I, Bunn F, Roberts I, on behalf of the WHO Pre-Hospital Trauma Care Steering Committee

The effect of spinal immobilisation on mortality, neurological injury, spinal stability and adverse effects in trauma patients remains uncertain. Spinal immobilisation is a major cause of preventable death in trauma patients, and spinal immobilisation, particularly of the cervical spine, can contribute to airway compromise, the possibility that immobilisation may increase mortality and morbidity cannot be excluded. Large prospective studies are needed.

- All Blunt Traumatic Spinal Cord Injuries to Univ of New Mexico or University of Malaysia.
- UNM – ALL patients were spinal immobilized in the field
- Univ Malaysia – NO patients were spinal immobilized in the field
RESULTS:

- “There was less neurologic disability in the unimmobilized Malaysian patients (OR 2.03; 95%CI 1.03-3.99; p=0.04). This corresponds to a <2% chance that immobilization has any beneficial effect.”
Mandible Injury
Rapid Deceleration Injury
High Cervical Dissociation

  - 21% of Victims of MVC had neck injuries, most at craino-cervical junction.

  - 24% of victims of MVC had fatal neck injuries, most dislocations at the atlanto-occipital junction.

- 14 High Cervical Injury, 6 Died
**Dreiangel et al.** Occipitocervical dissociative injuries: common in blunt trauma fatalities and better detected with objective computed tomography-based measurements


- 74 patients who expired w/in 21 days of admission and had CT exams

- On review of CT’s:
  - 37 (50%) had one or more major c-spine injury
  - ONLY ONE WAS DIAGNOSED BEFORE DEATH!
Hypothesis: collar creates distraction?
Head Hinges upon Collar edge
BOTTOM LINE:

C-Spine Injuries are low-frequency/high-criticality events.

NO evidence to support how we care for potential c-spine patients today

NEW evidence strongly suggests what we are doing may be harmful
Take Away:

- Be Selective (Using Recognized Criteria),
- Use Properly Sized Collar
- The Spine is NOT Protected Until the Entire Head/Neck/Thorax Complex is Immobilized.
- Towel Rolls are Light Weight, Versatile, and Inexpensive and Effective.