THE DISTRACTED NECK

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DISCLOSURE

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NOTHING TO DISCLOSE
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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

National Emergency X-Radiography Utilization Study (NEXUS)

Hypothesis:
Blunt trauma victims have virtually no risk of cervical spine injury if they meet very specific criteria
NEXUS

21 Centers enrolled 34,069 Blunt trauma victims who underwent cervical spine radiography

NEXUS Criteria

- No neuro deficit
- Normal level of alertness
- No evidence of ETOH/Tox
- No posterior midline tenderness
- No other distracting painful injury

NEXUS - Results

- 818 (of 34,069 – 2.4%) patients with fracture identified
- All except 8 (0.023%) were identified by clinical decision rule
- Sensitivity 99% (95% CI 98-99.6%)
- No clinically significant fractures were missed
8 Patients Not Identified By NEXUS Rules

NEXUS-ER Doc Results

- Application of NEXUS criteria would reduce imaging by 12.6% in emergency departments.
- Average emergency physician could expect to see a missed fracture every 125 years of practice.

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

High Cervical Dissociation

  - 21% of Victims of MVC had neck injuries, most at crano-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. The Spine Journal Volume 10, Issue 8, August 2010, Pages 704-707

- 74 patients who expired w/in 21 days of admission and had CT exams
- On review of CT’s:
  - 35% had one or more occipitocervical soft tissue c-spine injuries

Hypothesis: collar creates distraction?
Spine immobilization is indicated in prehospital trauma patients who sustain an injury with a mechanism having the potential for causing spinal injury and who have at least one of these clinical criteria:
- altered mental status
- evidence of intoxication
- a distracting painful injury (e.g., long-bone extremity fracture)
- neurologic deficit
- spinal pain or tenderness

Appropriate patients to be immobilized with a back-board may include those with:
- Blunt Trauma and ALOC
- Spinal paint or tenderness
- Neurologic Complaint
- Anatomic deformity of the spine
- High-energy MOI and any of the following:
  - Drug or alcohol intoxication
  - Inability to communicate
  - Distracting injury

Patients for whom immobilizations on a backboard is not necessary include those with all of the following:
- Normal LOC (GCS=15)
- No spine tenderness or abnormality
- No neurologic findings or complaints
- No distracting injuries
- No intoxication
Patients with penetrating trauma to the head, neck or torso and no evidence of spinal injury should not be immobilized on a backboard.

Spinal precautions can be maintained by application of a rigid cervical collar and securing the patient firmly to the EMS stretcher, and may be most appropriate for:

- Patients who are found to be ambulatory at the scene
- Patients who must be transported for a protracted time, particularly prior to interfacility transfer
- Patients for whom a backboard is not otherwise indicated

BOTTOM LINE:
C-Spine Cord 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.