

SPINE EVALUATION AND CLEARANCE

Basic Principles

General

1. Entire spine is immobilized during primary survey.
2. Radiographic clearance of the spine is not required before emergent surgical procedures. Presence of a spinal column injury is simply assumed until excluded.
3. Secondary and tertiary exams include examination of the spine for tenderness as well as testing all motor roots, sensation and reflexes.
4. Tertiary exams are performed only on alert and unimpaired patient without distracting injuries.
5. If any spine fractures are found, entire spine must be radiographed.
6. Patients with radiographic injury will have spine consultation for focused pre-operative evaluation regarding relative instability and severity of injury prior to intubation when possible.
7. Patients remain on spine precautions until spine is cleared.

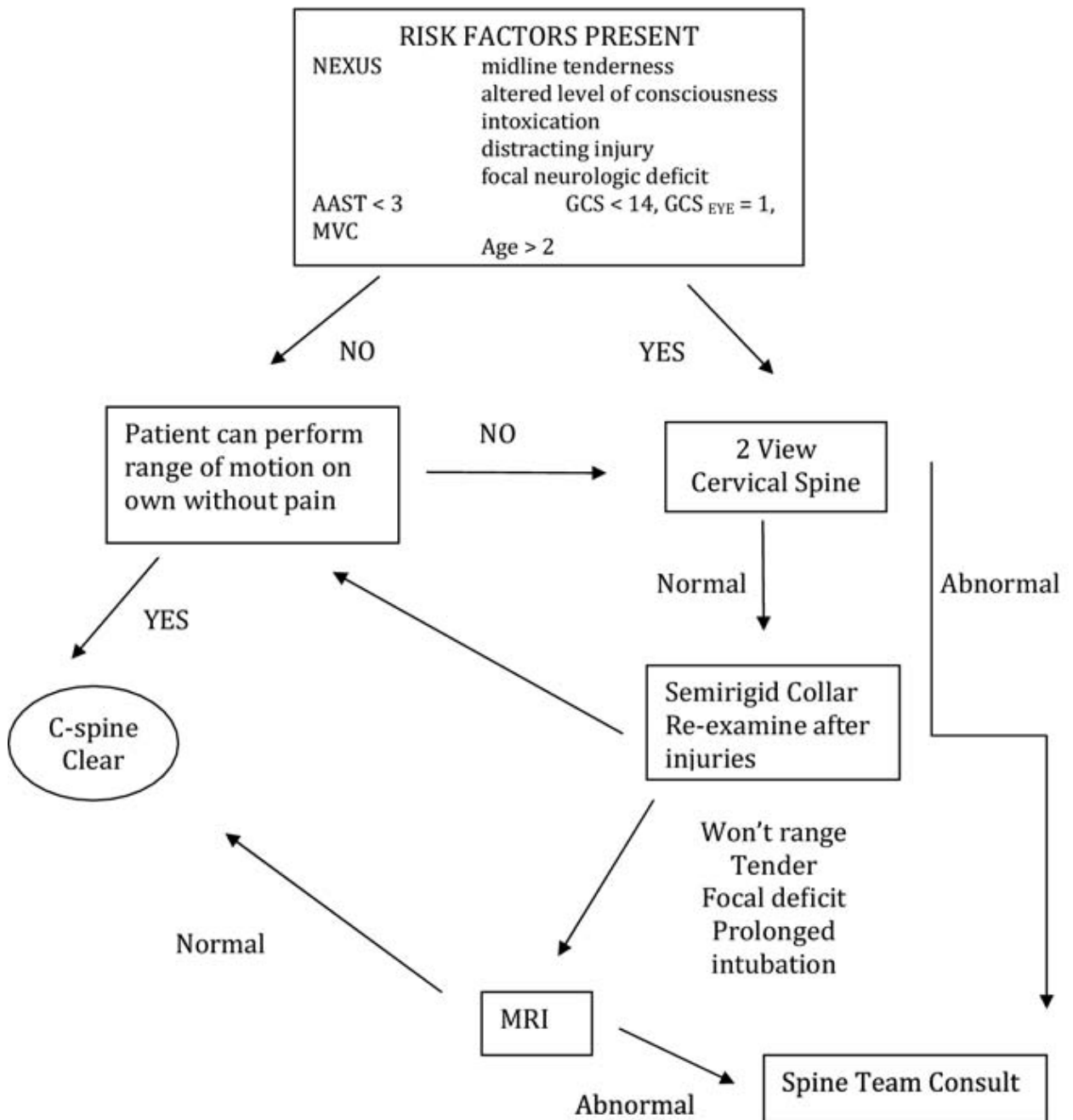
Cervical

1. C-spines are not cleared until after the tertiary exam is completed.
2. Cervical CT scan is the preferred radiographic modality when physical exam is not adequate in patients > 8 years of age. Children under age 8 should have spines and undergo clinical exam. If unable to clear spines by radiographs and clinical exam. Maintains spinal precautions and perform an MRI of the spines.
3. IF spine clearance cannot be achieved within 2 hours, rigid collars should be removed and replaced with semi-rigid pressure reducing collar.
4. Enter patients in cervical algorithm for C-Spine clearance.

Thoraco-Lumbar

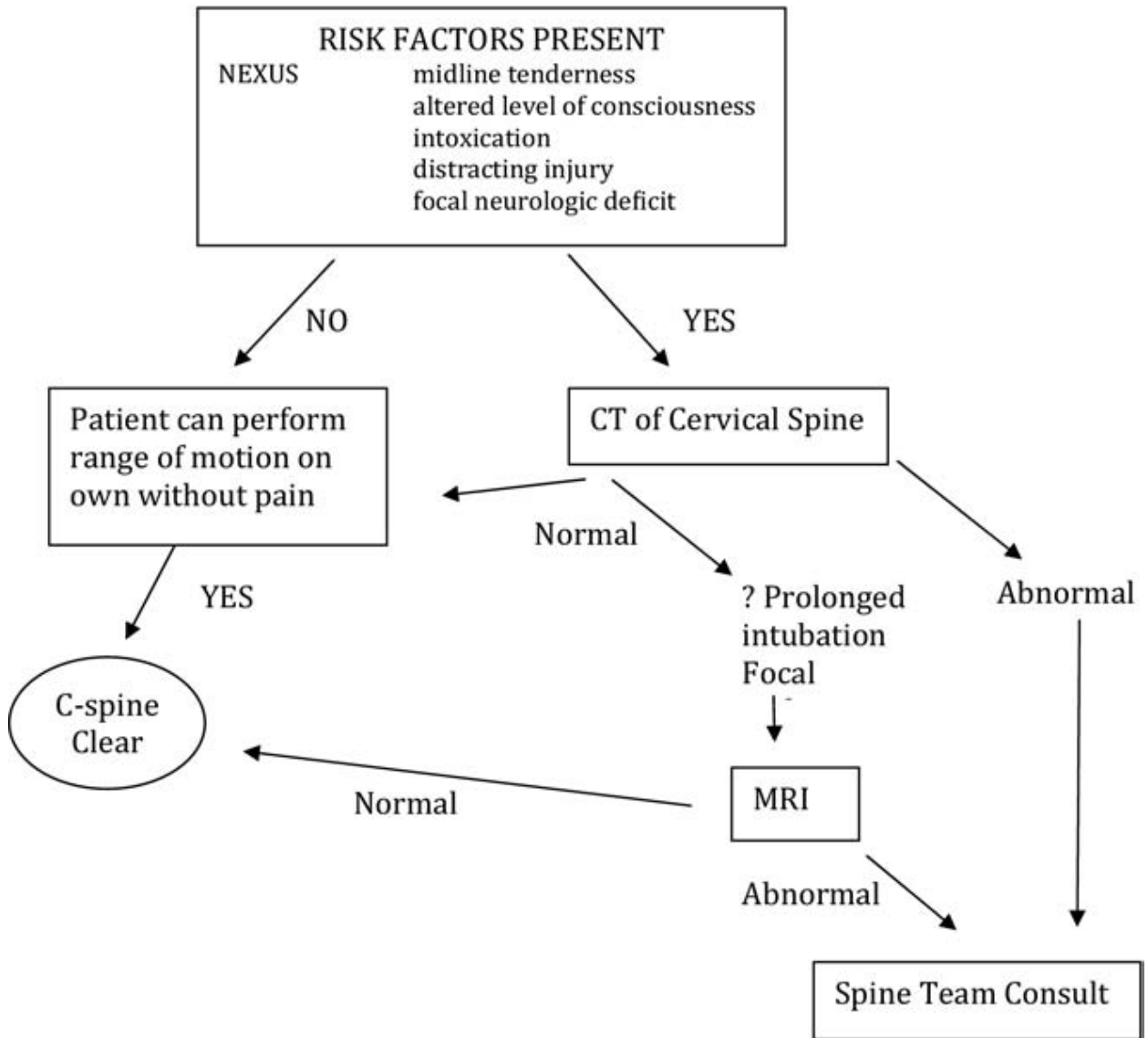
1. CT scan of thoracic and lumbar spines if there are clinical findings on secondary or tertiary exams or an unreliable exam. Multi-detector CT-scan with reformatted axial collimation is superior to plain films.
2. Radiographic Thoraco-Lumbar clearance is not needed prior to OR for non spine surgery. Thoracic & Lumbar clearance may however be required for some non supine positioning in the OR, depending upon acuity and case type.
3. Tertiary exam is necessary to clear thoracic and lumbar spines.

Cervical Spine Clearance Algorithm for Infants and Children



Reference: N. Kreykes, R. Letton, University of Oklahoma, Oklahoma City, OK.
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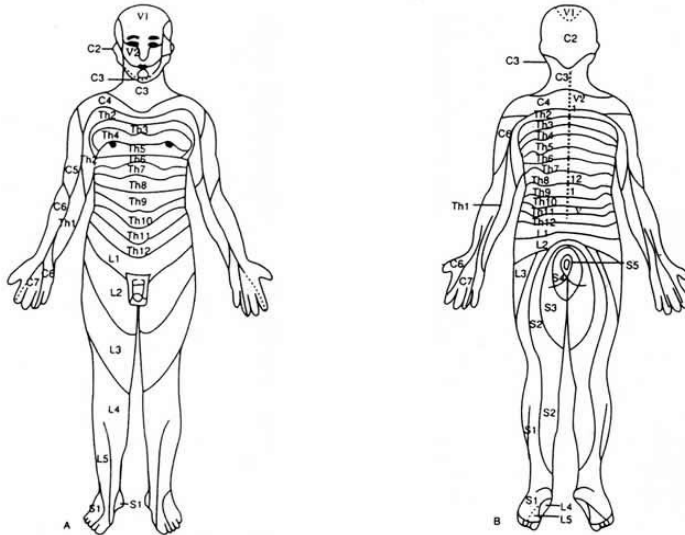
Cervical Spine Clearance in Adolescents and Teens



Reference: N. Kreykes, R. Letton, University of Oklahoma, Oklahoma City, OK.
Seminars in Pediatric Surgery, Vol 19, No 4, November 2010

Initial Management of Spinal Cord Injury

1. Priorities: Airway, Breathing & Circulation
2. Maintain complete spine immobilization using:
 - a. Semi-rigid cervical collar
 - b. Modified logroll – maintaining spine in neutral position at all times
 - c. Remove patient from long board within 2 hours.
3. *If patient is hypotensive – determine cause and treat hypovolemia with fluids and definitive surgical intervention as directed.
4. If hypotension due to Neurogenic Shock confirmed, consider inotropic agents to maintain blood pressure.
*Effort must be made to reduce secondary injury.
*Methylprednisolone use – insufficient evidence to support routine use
5. Patient should be removed from long spine board & placed on pressure reducing surface within 2 hours of trauma room arrival.
6. Radiographic studies to determine location of injury include:
 - a. Plain films
 - b. Spiral CT scan
 - c. MRI
7. Determine if injury is complete or incomplete and fracture is stable or unstable.
8. Fully document complete neurological exam during secondary survey & prior to OR if possible.
9. Document level of sensory and motor function using dermatomes.



10. Obtain Spine Surgery (Orthopedic or Neurosurgery) consult.
11. Place urinary catheter to monitor urinary output & prevent bladder distension.
12. Place gastric tube to prevent gastric distension & aspiration.
13. Physical Medicine and Rehab consult on admission to begin a timely transfer to Acute Spinal Cord Injury Rehabilitation.

