Clinician’s Guide to Cervical Spine Trauma

Ronald J. Wisneski, MD
Sally Betz, RN, MS
Jeffrey Caterino, MD
Michael Luttrull, MD

August 31, 2011
Second Edition

Contents

- C-Spine Clearance in the Evaluable Patient
- C-Spine Clearance in the Non-Evaluable Patient

Quality Measures

- No missed clinically significant C-spine injuries
- Number of spine consults
- Appropriate use of MRI studies
- Patient satisfaction outcomes measures

Note: Data are collected in the Trauma Registry

Disclaimer: Clinical practice guidelines and algorithms at The Ohio State University Medical Center (OSUMC) are standards that are intended to provide general guidance to clinicians. Patient choice and clinician judgment must remain central to the selection of diagnostic tests and therapy. OSUMC’s guidelines and algorithms are reviewed periodically for consistency with new evidence; however, new developments may not be represented.

Copyright © 2011. The Ohio State University Medical Center. No part of this publication may be reproduced in any form without permission in writing from The Ohio State University Medical Center.

If you have questions, please contact Quality and Operations Improvement at QualityUpdates@osumc.edu or 293-8430.
Prior to Arrival at Trauma Center

- Resuscitation / ATLS protocol
- Spine stabilization
  - Place semi-rigid C-collar; immobilize entire patient on long spine board with proper padding
  - Maintain C-spine precautions (log roll, elevating HOB via reverse Trendelenburg only)

EVALUABLE PATIENT CRITERIA (must fulfill all criteria)

- Glasgow Coma Scale score = 15
- Not intoxicated
- No distracting injury (preventing patient’s full concentration on exam)
- Reliable / cooperative clinical exam

Determine if patient has neurological deficits and/or C-spine bony tenderness (not soft tissue)

No Neurological Deficit Present

- No neurological deficit and without C-spine (bone) tenderness / pain
  - Imaging*
    - No C-spine imaging required
  - Follow-Up
    - Attending physician or experienced resident (trained in Nexus: Neurosurgery, Orthopedics, Trauma):
      - Clears the C-spine.
      - Documents clearance in medical record.
      - Removes C-collar

Neurological Deficit Present

- Neurological deficit referable to spine injury
  - Imaging*
    - Emergent CT of cervical spine
    - Emergent CT of TL spine (can be extracted from concurrent chest, abdomen, and pelvis CT if available)
  - Follow-Up
    - Emergent Spine consult**
      - Need for MRI to be determined by spine specialist

* Determine if thoracolumbar spine (TL spine) imaging is needed, per Thoracolumbar Spine Guideline.

ALGORITHM 1: EVALUABLE CERVICAL SPINE INJURY PATIENT

- This algorithm applies to patients meeting Trauma Activation Criteria.
- All blunt trauma patients should be considered as having a cervical spine injury until proven otherwise.
This algorithm applies to patients meeting Trauma Activation Criteria.

All blunt trauma patients should be considered as having a cervical spine injury until proven otherwise.

Prior to Arrival at Trauma Center
- Resuscitation / ATLS protocol
- Spine stabilization
  - Place semi-rigid C-collar; immobilize entire patient on long spine board with proper padding
  - Maintain C-spine precautions (log roll, elevating HOB via reverse Trendelenburg only)

Non-Evaluable Patient Criteria (any of the following)
- Glasgow Coma Scale <15
- Intoxicated
- Distracting Injury (preventing patient's full concentration on exam)

Determine if patient has neurological deficits and/or C-spine bony tenderness (not soft tissue)

Imaging*
- Emergent CT of cervical spine
- Emergent CT of TL spine (can be extracted from concurrent chest, abdomen, and pelvis CT if available)

If any abnormality, obtain Urgent Spine Consult**

Normal imaging studies but not moving extremities
- Emergent MRI at suspected level of injury (if evaluation of entire spine required, request MRI Spinal Trauma Survey)
  - If MRI normal, physician may remove C-collar after documenting patient's "Cervical spine radiographic clearance" in medical record
  - If MRI abnormal, obtain emergent Spine consult**

Normal imaging studies but with focal neurological deficits consistent with cord and/or nerve root injury
- Emergent MRI at suspected level of injury (if evaluation of entire spine required, request MRI Spinal Trauma Survey)
- Emergent Spine consult**

Normal imaging studies and no focal neurological defects
- If patient is likely to become evaluable within 24 hours (i.e., intoxicated without neurological injury), continue spine precautions and reevaluate once intoxication resolved, based on either the Evaluable or Non-Evaluable guidelines
- If patient is unlikely to become evaluable within 24 hours, physician may obtain non-emergent MRI
  - If MRI normal, physician may remove C-collar after documenting patient's "Cervical spine radiographic clearance" in medical record
  - If MRI abnormal, obtain Spine consult**

Non-Evaluable Patient Criteria
- Distracting Injury (preventing patient's full concentration on exam)

Algorithm 2: Non-Evaluable Cervical Spine Injury Patient

* Determine if thoracolumbar spine (TL spine) imaging is needed, per Thoracolumbar Spine Guideline.