

## UAB Trauma Spine Evaluation Guidelines

### **Purpose:**

Provide standardized process for the initial evaluation of potential spine injuries in patients that present following traumatic injury.

### **Cervical Spine Management:**

The cervical spine should be immobilized in an appropriately fitted rigid cervical collar (Philadelphia Rigid Collar) for blunt trauma mechanism. Immobilization is to continue until an appropriate evaluation is performed.

When patients present from the field with a rigid field collar in place, this should be replaced expeditiously with a Philadelphia Rigid collar to avoid skin breakdown. Ideally this is changed after the patient is rolled and prior to CT imaging when clinically feasible.

**Penetrating** trauma patients, including penetrating wounds to the neck, do **NOT** need cervical immobilization with a C-collar. If a penetrating trauma patient arrives with a C-collar in place, it may be removed immediately after determining if there is any blunt mechanism component to their trauma burden (i.e assault, fall from height, etc).

### **Imaging Work-up:**

Patients with a blunt mechanism of injury or penetrating neck injury will be evaluated with CT imaging that includes a CT Angiogram of the neck and CT Cervical Spine.

Patients with thoracic or lumbar spine tenderness on physical exam and all altered patients will have Thoracic and Lumbar Spine Reformat CT's obtained.

### **Cervical Clearance in the Alert Patient:**

1. Review CT findings to ensure no cervical abnormalities noted on CT cervical spine or CT angiogram
2. Assess to ensure patient is non-distracted
  - a. Alert and oriented
  - b. Pain well controlled with no distracting injuries
  - c. Clinically sober
  - d. Ensure pt has no neurologic deficits
3. Clinical exam for clearance:
  - a. Assess for midline cervical tenderness to palpation
  - b. Have patient flex and extend neck, then turn left and right passively then against resistance (your hand)
  - c. If patient has no pain with any of these maneuvers then remove C-collar
  - d. If patient has pain with any of the maneuvers then leave C-collar in place
4. Management of patients with no CT abnormality but fails clinical c-spine clearance
  - a. Continue cervical immobilization
  - b. If being admitted, can repeat exam for clearance on tertiary survey. If pain persists then obtain MRI C-Spine to evaluate for ligamentous injury
    - i. Alternative is to continue cervical immobilization in Aspen with outpatient trauma follow-up in 2 weeks for repeat exam and an MRI if pain persists

- c. If otherwise ready for discharge, preference is to obtain MRI C-Spine to evaluate for ligamentous injury
  - i. Alternative is to continue cervical immobilization in Aspen with outpatient trauma follow-up in 2 weeks for repeat exam and an MRI if pain persists

#### **Cervical Spine Management in the Obtunded Patient:**

1. Review CT findings to ensure no cervical abnormalities noted on CT cervical spine or CT angiogram. Consult Spine for any abnormalities as defined below
2. Order Aspen collar for continued cervical immobilization pending improved mental status to clinically clear collar
3. If cervical clearance needed for operative interventions then proceed to MRI C-Spine and remove cervical collar if both CT C-Spine and MRI are negative for traumatic injury

#### **Note:**

Some Neurosurgery attendings will clear the collar based on negative CT C-spine imaging. While trauma service does not routinely clear based on CT C-spine, it is acceptable to remove the collar based on Neurosurgery Attending clearance.

#### **Spine Consults:**

The following patients require Spine consultation which is covered by either the Ortho-Spine or Neurosurgery-Spine service:

1. Patients with neurologic deficit
  - a. All patients with a motor or sensory deficit require urgent Spine consultation regardless of spine radiographic findings
  - b. The need for stat MRI studies and MAP management (>85mmHg) should be clarified with the Spine consult service
2. Any cervical spine fracture
  - a. Includes cervical spinous process and transverse process fractures
3. Any thoracic or lumbar spine fracture other than isolated transverse or spinous process fractures

#### **Neurovascular Consults:**

1. Patients with CTA evidence of blunt cerebrovascular injury to the carotid or vertebral arteries should have an immediate consult to the Neurovascular Surgery Service
2. Management usually consists of daily ASA 81mg but will be defined by the neurovascular service
3. Clarify frequency of neurologic checks with neurovascular team to determine admission needs (ICU for q1hr, Step down for q2hr, floor for q4 hr).

#### **Discussion:**

The above protocol is the consensus management guideline developed by UAB Trauma with coordination with our Spine consultants and has been developed based on the needs of our Trauma service. There is a large body of literature surrounding clearance of the spine as well as a practice management guideline developed by the Eastern Association for the Surgery of Trauma (EAST). The UAB Trauma guidelines are more conservative regarding cervical clearance then the NEXUS Clinical Criteria and the EAST PMG which support select cervical clearance without radiographic evaluation. Those criteria are provided here for awareness.

**NEXUS Clinical Criteria:**

Supports Cervical Spine clearance without radiographic evaluation if **NONE** of the following are present:

1. Tenderness at the posterior midline of the cervical spine
2. Focal neurologic deficit
3. Decreased level of alertness
4. Evidence of intoxication
5. Clinically apparent pain that might distract the patient from the pain of a cervical injury, i.e. distracting injury

Additionally, the EAST PMG suggests that in the obtunded patient, c-spines can be cleared if a high-quality CT scan shows no injuries.

**REFERENCES:**

1. "Prehospital Spine Immobilization for Penetrating Trauma-Review and Recommendations From the Prehospital Trauma Life Support Executive Committee"  
Stuke, Pons, Guy, Chapleau, Butler, McSwain  
*J.Trauma*. 2011 Sept; 71(3); 763-770
2. Patel MB et al Cervical Spine Collar Clearance in the Adult Obtunded Trauma Patient: A Practice Management Guideline from the Eastern Association for the Surgery of Trauma. *Journal of Trauma*. 2015; 78(2):430-441