Guideline - initial management of C-Spine injury

Assessment

Suspect c-spine injury if injured patient c/o pain, stiffness of neck, torticollis

Unconscious / altered conscious patient involved in accident / polytrauma patient, patient with injuries involving head and face.

Local tenderness and restricted active neck movement are important findings indicative of c-spine injury.

Do Not attempt to test for passive movement of neck.

X-Ray:
AP, Lateral, Open mouth view, and other relevant x-ray.

MUST SEE C1 to T1.
Swimmers view if C1 to T1 not visible. Alternatively get mid line zonogram / tomogram or CT.

Do not try to get stress views of spine at this stage. It is done at three to four weeks post injury when indicated.

Normal c-spine x-ray:

<table>
<thead>
<tr>
<th>lateral film</th>
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<tbody>
<tr>
<td>maintenance of cervical lordosis</td>
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<tr>
<td>Pre-vertebral soft tissue shadow: &lt;3mm at C3 level, &lt; than width of corresponding vertebra at C6</td>
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<tr>
<td>ADI 2-3 mm in adult, 4-5 mm in children</td>
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<tr>
<td>smooth and unbroken anterior and posterior vertebral line and spinolaminar line</td>
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<td>converging spinous processes</td>
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<table>
<thead>
<tr>
<th>AP film</th>
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<tr>
<td>aligned spinous processes</td>
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<tr>
<td>equidistant spinous process, and disc space</td>
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<tr>
<th>Open mouth view:</th>
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<tr>
<td>centrally placed dens with congruous and symmetrical C1 C2 lateral mass joints</td>
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C-Spine Instability

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<tr>
<td>Angulation &gt;11° between adjacent bodies in lateral film</td>
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<tr>
<td>Anterior/posterior translation &gt;3.5mm of vertebral bodies in lateral film</td>
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<tr>
<td>Widening of spinous process on the lateral view</td>
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<tr>
<td>Widening / fracture of facet joints</td>
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<td>Rotation of facets on the lateral view- bow tie sign</td>
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<tr>
<td>Lateral tilting of vertebral bodies on AP</td>
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- Abnormal disc narrowing / or increased disc space.
- neurological deficit
- severe damage/ fracture of anterior or posterior element of spine
- fracture of dens,

**Management:**

- **ATLS principles, Neurogenic shock, spinal shock**
- **Documentation of neurology, vital sign, breathing**
- **Do not turn and twist or flex the neck, - keep it extended.**
- in the presence of neurology
  - NPO
  - pressure care
  - bowel and bladder care
- **Cone’s calliper traction** for displaced cervical fracture or fracture dislocation with or without neurology ie. unstable spine (weight not to exceed 2 kg for head and C1 and plus one kg add for each vertebral level. – upper level when two level injury; decrease the weight to half once reduction achieved)
- get CT scan of skull in small children before putting a cone’s calliper to assess the thickness of skull.
- **continuous monitoring (neurology and vital signs) during reduction**
- **Split mattress** to be used to keep the neck extended.
- tortocollis with normal looking x-ray – **Halter neck traction**
- undisplaced hangman’s fracture – **Halter neck traction**.
- normal looking x-ray with increased pre-vertebral soft tissue shadow – **Hard Collar**
- normal looking x-ray but with local neck pain – **Soft Collar**.
- **Do not discharge the patient without consultant’s opinion.**