

## Cervical Spine Injuries and Neck Pain



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## Cervical Spine Injuries and Neck Pain

- Common problem
- Potentially very serious
- Injuries may involve multiple structures:
  - Ligaments, disks, muscle, bone, facet joints, spinal cord, or nerve roots



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## Cervical Spine

Anatomy



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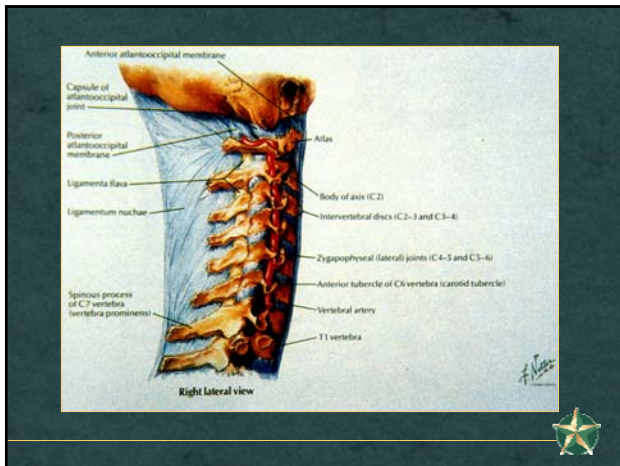
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**Acute Injuries**

Severe Injuries  
Fractures and Dislocations



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## Cervical Spine Injuries Unconscious Patient

- Very serious problem
- Always assume a cervical spine injury
- Follow spine injury protocol with head and neck support, log roll, and back board



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## Cervical Spine Injuries Mechanism of Injury

- Axial loading
- National Football Head and Neck Injury Registry
  - Formed in 1975
  - Data led to rule changes:
    - Banning spearing
    - No head first contact



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## Cervical Spine Injuries Fractures and Dislocations

- Dislocations or subluxations:
  - Can be mild or severe, may be associated with fractures
  - Involve serious ligament and soft tissue injuries with potential instability
  - Facet dislocations or jumped facets are very serious
  - Neurological risk, careful neurological exam
  - Many will need surgical treatment



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## Cervical Spine Injuries Fractures and Dislocations

- **Fractures:**
  - May involve vertebral body, lamina, facet joint, or spinous process
  - Can be mild or very severe
  - Fracture and dislocation combination usually is the worst case scenario
  - Neurological risk, careful neurological exam
  - Many may need surgical treatment



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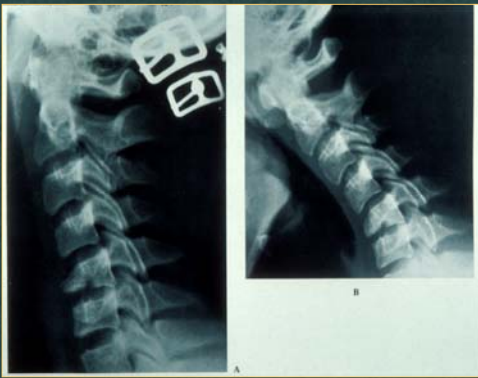
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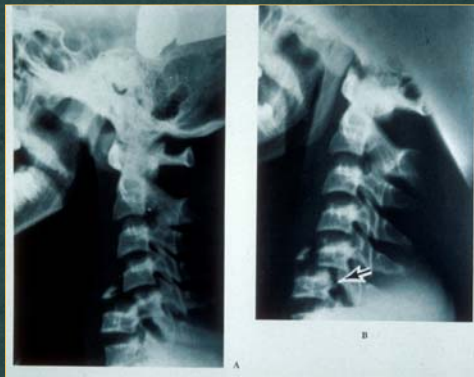
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# Physical Exam



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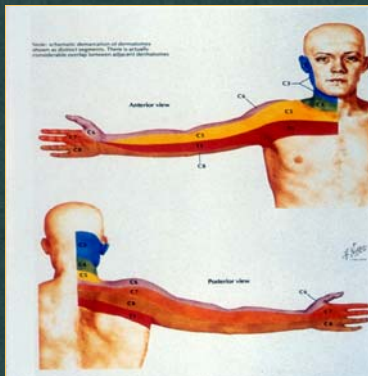
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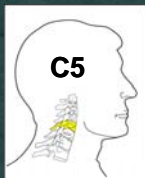
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## C5 Neurologic Level



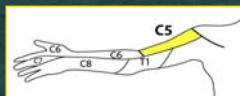
Motor



Reflex



Sensation



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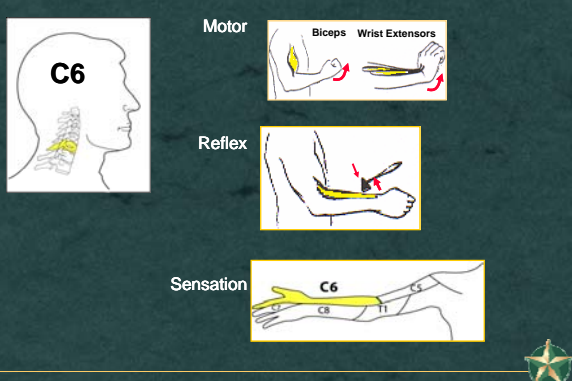
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### C6 Neurologic Level



**Motor** Biceps Wrist Extensors

**Reflex**

**Sensation** C6 C5 C8 T1

The diagram for C6 shows a profile of a head with the cervical spine highlighted in yellow. The motor section shows the biceps and wrist extensors. The reflex section shows a hand reflex. The sensation section shows a hand with the C6 dermatome highlighted in yellow, along with labels for C5, C8, and T1.

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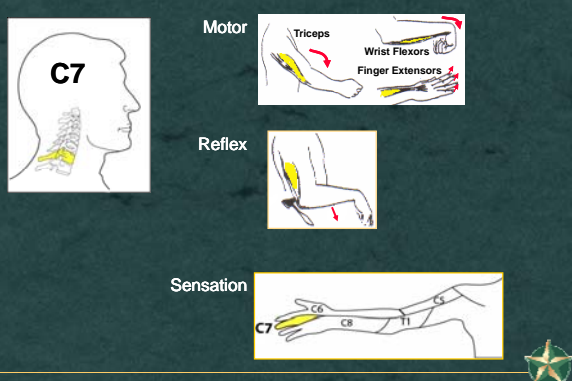
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### C7 Neurologic Level



**Motor** Triceps Wrist Flexors Finger Extensors

**Reflex**

**Sensation** C7 C6 C8 T1

The diagram for C7 shows a profile of a head with the cervical spine highlighted in yellow. The motor section shows the triceps, wrist flexors, and finger extensors. The reflex section shows a hand reflex. The sensation section shows a hand with the C7 dermatome highlighted in yellow, along with labels for C6, C8, and T1.

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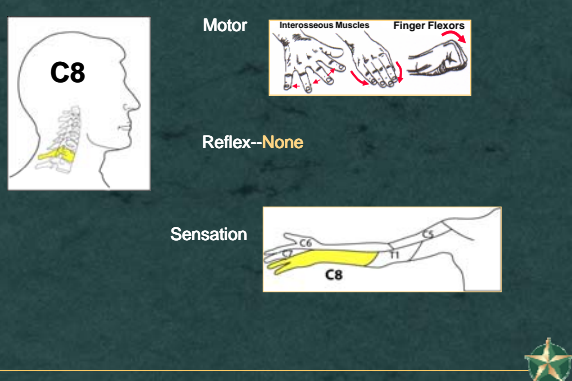
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### C8 Neurologic Level



**Motor** Interosseous Muscles Finger Flexors

**Reflex--None**

**Sensation** C8 C7 T1

The diagram for C8 shows a profile of a head with the cervical spine highlighted in yellow. The motor section shows the interosseous muscles and finger flexors. The reflex section is labeled 'None'. The sensation section shows a hand with the C8 dermatome highlighted in yellow, along with labels for C7 and T1.

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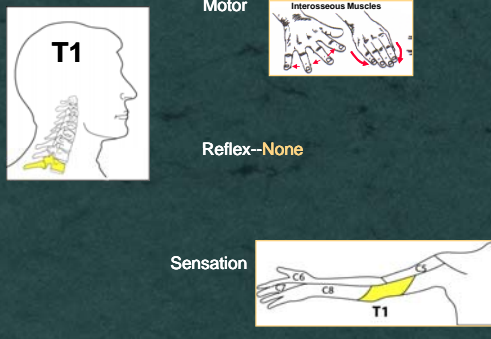
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### T1 Neurologic Level




The diagram illustrates the T1 neurologic level. On the left, a profile of a human head and neck shows the T1 vertebra highlighted in yellow. To the right, three components are shown: 1. Motor: A diagram of hands with red arrows indicating the interosseous muscles. 2. Reflex: Labeled as 'None'. 3. Sensation: A diagram of a hand and forearm with yellow shaded areas on the palm and forearm, labeled with 'C6', 'C8', and 'T1'.

Motor: Interosseous Muscles

Reflex--None

Sensation



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### General Types of Injuries Cervical Sprain

- Common injury
- Ligament, muscle, soft tissue injury
- Localized neck pain, stiffness
- No numbness or weakness
- Treatment: rehab.
- Return to play: normal ROM



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### General Types of Injuries Cervical Disk Injuries

- May include tears or herniations
- Radicular pain and/or numbness, weakness
- Persistent symptoms
- Treatment varies, depends on severity: rehab, medications, injections, or surgery



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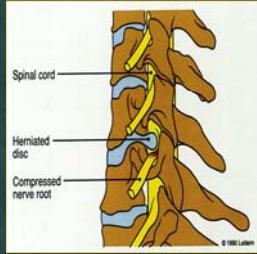
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### Cervical HNP



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### General Types of Injuries Nerve Root/Brachial Plexus Neuropraxia

- Burner or stinger
- Temporary weakness and numbness
- Cervical nerve root compression (C6)
- Stretch injury
- Return to play only when symptoms are COMPLETELY resolved
- Best prevention is in good shoulder pads



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### General Types of Injuries Cervical Cord Neuropraxia

- Rare severe condition
- Symptoms usually bilateral or involving the lower extremities, transient quadriplegia
- On severe cases may last over one week
- Needs evaluation with MRI and frequent neurological examinations
- Treatment based on severity and MRI findings



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