



IWCAC 60th Symposium

Traumatic Spine Injuries

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CHANGING MEDICINE.
CHANGING LIVES.®

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Disclosures

Proprio – Consultant

Globus Medical – Consultant

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Learning Objectives

1. How to approach a trauma patient with a spine injury
2. Non-operative interventions
3. Goals of surgery
4. How to deal with complications
5. Considerations for work related injuries

Case

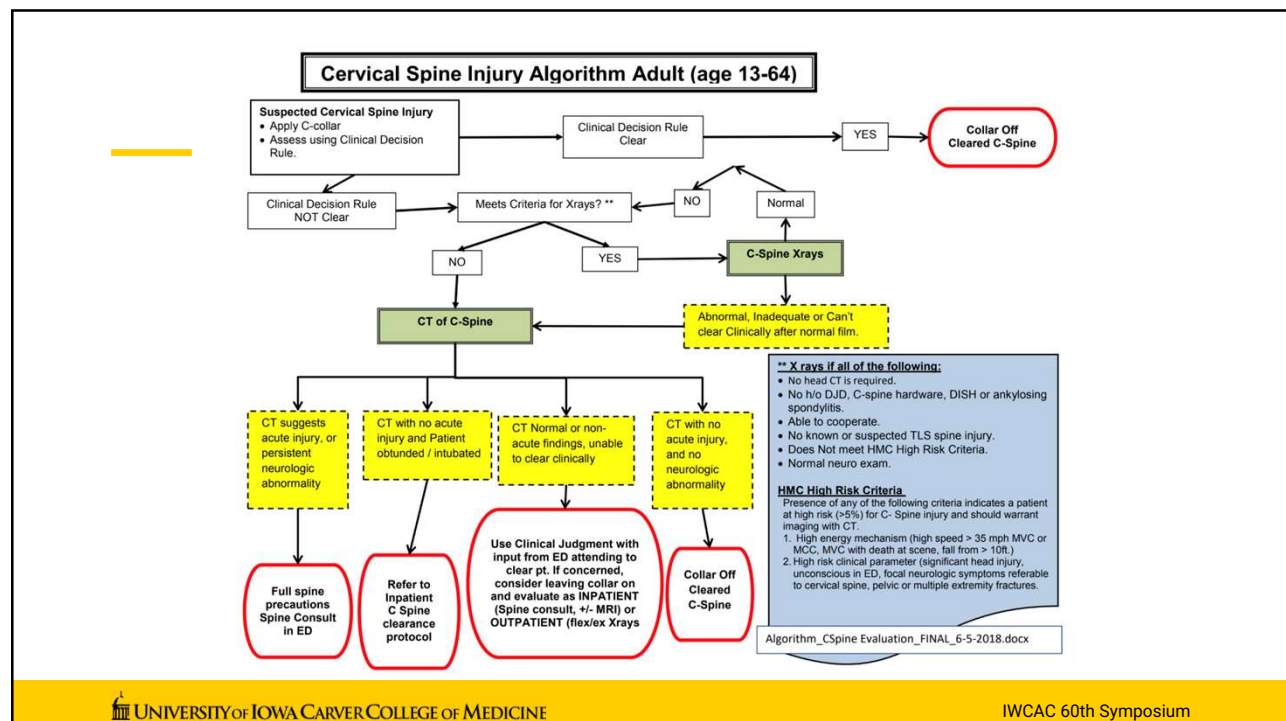


How to approach a trauma patient

- ATLS
- Resuscitation
 - Who is responsible?
- Early Recognition
 - Education of staff
- Contribution of underlying comorbidities

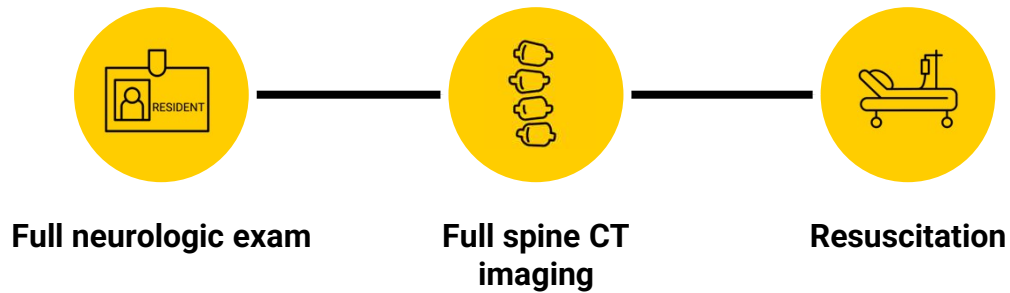


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Evaluation



Examination

- What does it mean to perform a full spine exam?
 - ASIA classification
 - Reflexes
- How often should a patient be examined?
 - Rates of neurologic change
 - Evolution of spinal cord injury

ASIA Exam

Patient Name _____
 Examiner Name _____ Date/Time of Exam _____

ASIA
 AMERICAN SPINAL INJURY ASSOCIATION

STANDARD NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY

ISCOS

MOTOR
 KEY MUSCLES (Nerve roots)

Upper Limb: C5 (Elbow flexors), C6 (Wrist extensors), C7 (Elbow extensors), C8 (Finger flexors), T1 (Finger abductors)

Lower Limb: L2 (Hip flexors), L3 (Knee extensors), L4 (Ankle dorsiflexors), L5 (Long toe extensors), S1 (Ankle plantar flexors)

SENSORY
 KEY SENSORY POINTS

Light Touch: C2-C8, T1-T12, L1-L5, S1-S5
 Pin Prick: C2-C8, T1-T12, L1-L5, S1-S5

NEUROLOGICAL LEVEL
 The most caudal segment with normal function

COMPLETE OR INCOMPLETE?
 COMPLETE: No sensory or motor function is preserved below the neurological level and includes the sacral segments S4-S5.
 INCOMPLETE: Sensory or motor function is preserved below the neurological level and/or sacral segments S4-S5.

ASIA IMPAIRMENT SCALE

Zone of Partial Preservation
 Sensory: A, B, C, D, E
 Motor: A, B, C, D, E

Grade	Definition
A	Complete. No sensory or motor function is preserved in the sacral segments S4-S5
B	Incomplete. Sensory but not motor function is preserved below the neurological level and includes the sacral segments S4-S5
C	Incomplete. Motor function is preserved below the neurological level, and more than half of key muscles below the neurological level have a muscle grade less than 3 (Grades 0-2).
D	Incomplete. Motor function is preserved below the neurological level, and at least half of key muscles below the neurological level have a muscle grade greater than or equal to 3.
E	Normal. Sensory and motor functions are normal.

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Mechanism of injury

- High energy mechanisms
- Ground level falls
- Concurrent injuries



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Goals of Treatment

Spine Function

- Provides stability
- Range of motion
- Protection of neural elements

Treatment

- Provide biomechanical support
- Save motion segments
- Necessity of decompression

Non-operative management

- Orthosis
 - C collar
 - CTO
 - TLSO
 - CTLO
- Casts
 - Minerva
 - Riser
- Halo

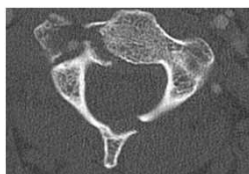


Goals of Surgery



Type of Injury

High energy vs Low energy



Extent of injury

Single segment vs multiple segments



Degree of deformity

Minimally displaced vs spondyloptosis

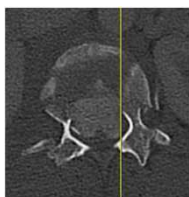


Bone Quality

Presence of osteopenia or osteoporosis

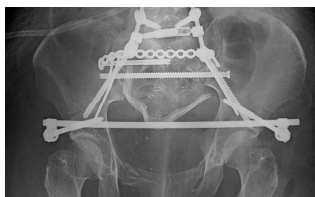
Courtesy of Rick Bransford

Goals of Surgery



Location of dural compression

Anterior vs posterior compression



Coordination with subspecialties

Working closely with neurosurgical or orthopedic trauma colleagues on combo cases



Surgeon capabilities

Understanding what you are capable of and what surgical procedures are within your comfort zone

Know when enough is enough?

Higher energy patterns



Lower energy patterns



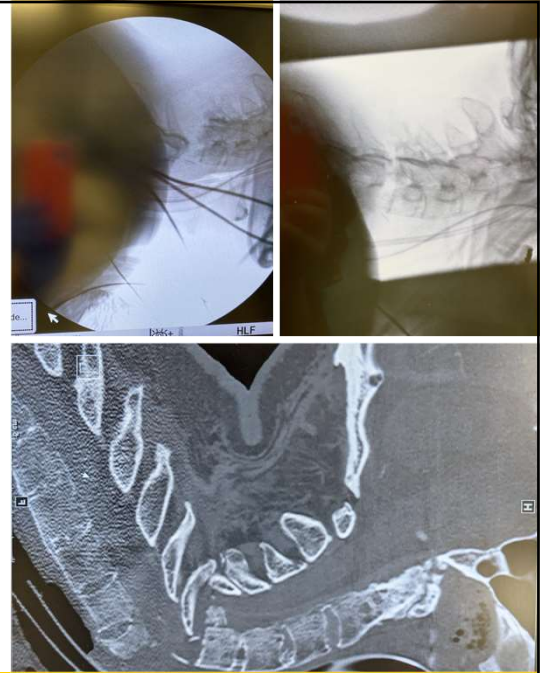
Complications

- Screw pull out
- Fixation Failure
- Continued neurologic deficit
 - Utility of repeat imaging
- Spinal cord injury



Handling difficult situations

- Know your resources
- Identify issues prior to starting
- Intraoperative complications
 - Take control of the situation
 - Stay calm



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How to best optimize your team



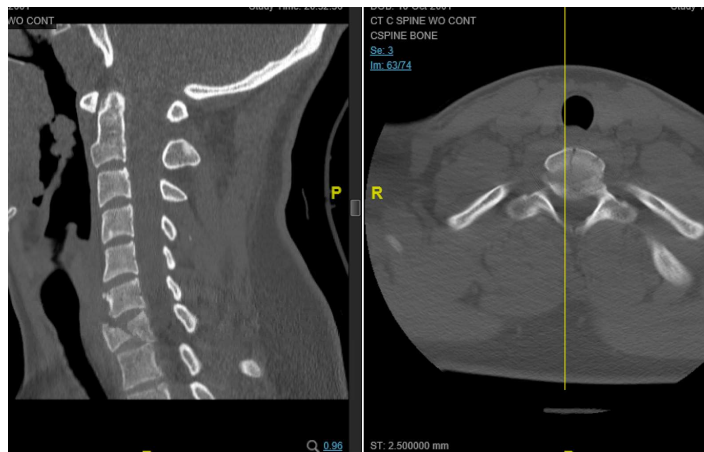
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Consideration for work related injuries

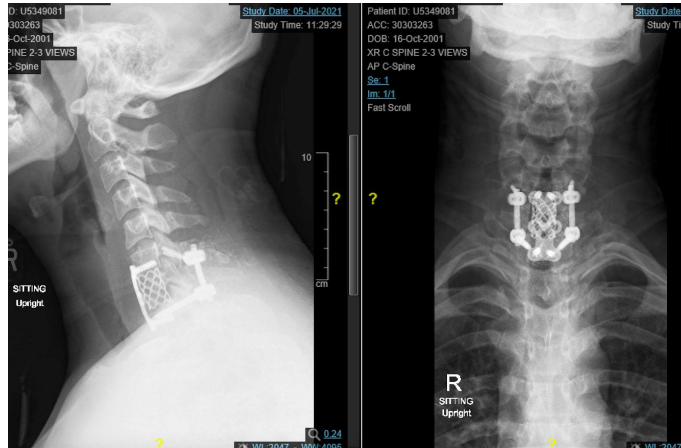
- Back pain is the most common workers' compensation claim
- Multiple studies suggest that acute opioid use after a workplace injury is a risk factor for chronic disability
- Chronic opioid use has higher medical expenditures per patient and has increased rates of psychiatric comorbidities, failed back syndrome, and additional surgery



Case

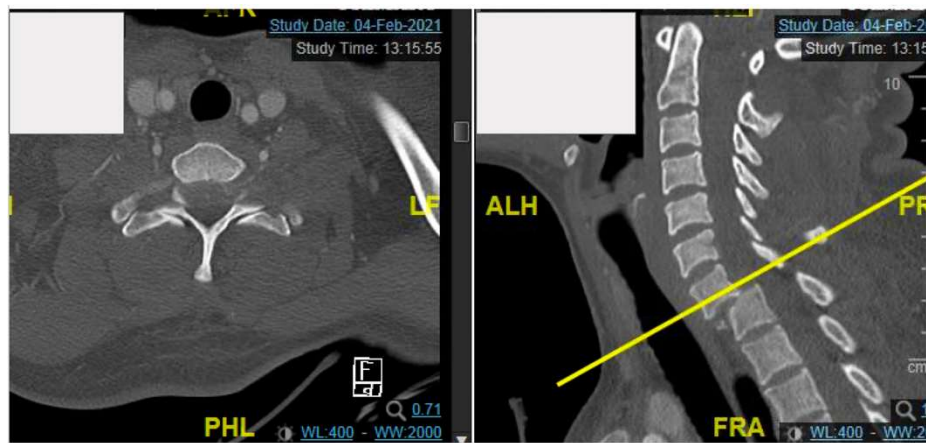


Case



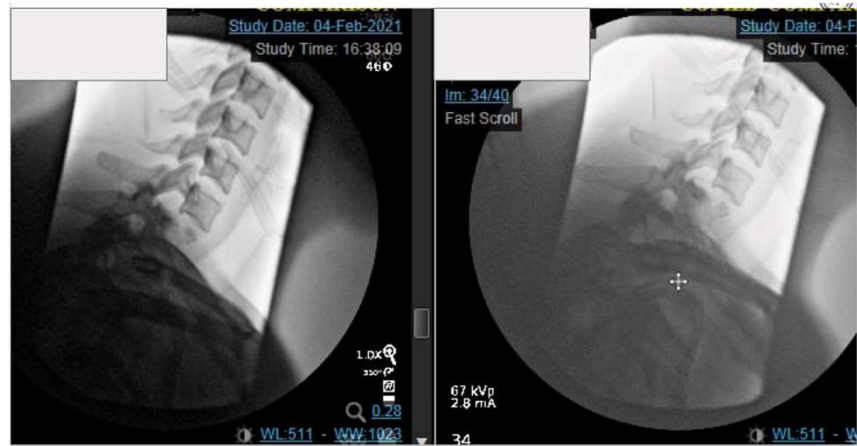
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Case



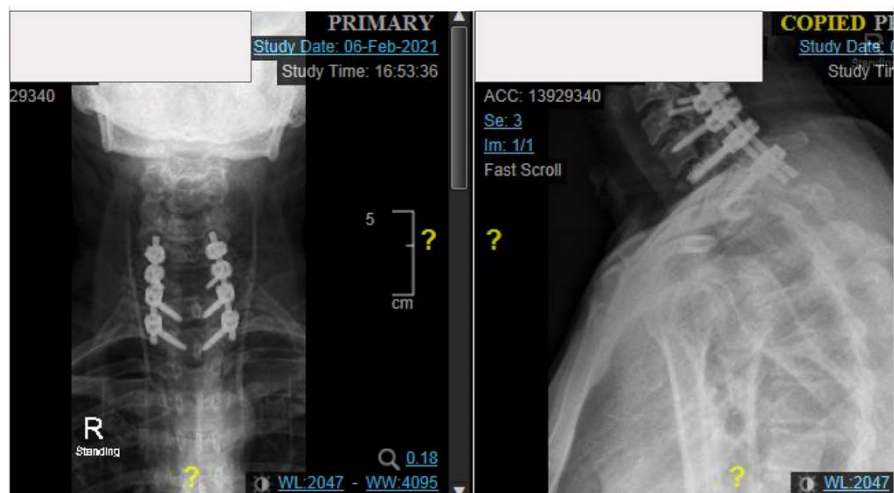
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Case



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Case



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Summary

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Thank you

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