Spinal cord injury

- Non-hemorrhagic with only high signal on MR due to edema.
- Hemorrhagic with areas of low signal intensity within the area of edema.
- Strong correlation between the length of the spinal cord edema and the clinical outcome.
- The most important factor however is whether there is hemorrhage, since hemorrhagic spinal cord injury has an extremely poor outcome.

Acute traumatic central cord syndrome (ATCCS)

- **Imaging Findings**
  - Best diagnostic clue: T2WI shows high signal in cord
  - Location: Predominates at C3-4 through C5-6 levels
  - Loss of CSF signal (narrow canal and/or swollen cord)
- T2* GRE
  - Low signal indicates hemorrhage, and predicts permanent injury (not central cord syndrome)
- CT
  - Spondylosis or congenital canal stenosis
  - Typically no fracture
  - May be normal

Etiology

- Hyperextension force
- Compression of cervical cord by buckling of ligamenta flava
  - With pre-existing canal narrowing
    - Congenital or acquired
- Spur, disc or ligamentous ossification predispose
- May have normal canal
- Most often seen in young athletes.

Presentation

- Most common signs/symptoms
  - Acute posttraumatic arm weakness, especially hands, with bladder dysfunction
  - Other signs/symptoms
    - Varying degrees of leg weakness
    - Variable sensory loss
    - Leg spasticity as residual

Treatment

- Initial stabilization if spinal instability suspected.
- Decompression if focal stenosis from disc or focal spur.
- Steroid therapy in first 24 hours may have a role.

Prognosis

- Complete resolution to slight residual weakness and spasticity.
- Generally complete or near complete reversal of the acute paralysis.
- Prognosis is age related.
- Most under age of fifty recover completely.
- Those over age of seventy usually have significant residual deficits.
- Cord compression or extensive edema on MRI indicate worse prognosis.