



# MRI for suspected cervical spine trauma

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**The patient with moderate to severe cervical spine trauma will be evaluated in the A&E department with detailed CT and sometimes also MRI.**

Those with mild to moderate trauma might be seen by their GP in the acute, subacute or delayed circumstance.

High resolution CT is the mainstay of cervical trauma imaging as it is optimal for displaying fractures, displacements and facet dislocations, however CT does not show the cord and is very suboptimal for soft tissues including discs, ligaments and muscles.

**MRI may be additionally useful in the following situations:**

- Suspected cord injury with or without abnormal CT
- Neurological deficit with negative CT or out of proportion to CT findings
- Persisting significant pain with normal CT e.g. whiplash injury
- Traumatic disc protrusion
- Suspected vertebral artery injury (MR or CT angiogram)
- Sub acute or chronic sequelae of trauma



**Figure 1:**  
C4-5 Dislocation  
Ruptured anterior and posterior longitudinal ligaments. Cord compression and oedema. Prevertebral haematoma. Ruptured interspinous ligaments. (Wikipedia)



**Figure 2:**  
Subluxation C5-6  
Ruptured posterior longitudinal ligament. Cord oedema. Facetal dislocation. (Kerr Seminars Musculoskeletal Radiology 2006)



**Figure 2**



Figure 3a:  
Displaced fractured odontoid posterior  
longitudinal ligament intact. Cord intact. (Looby  
Radiology Clinics Nth America 2011)

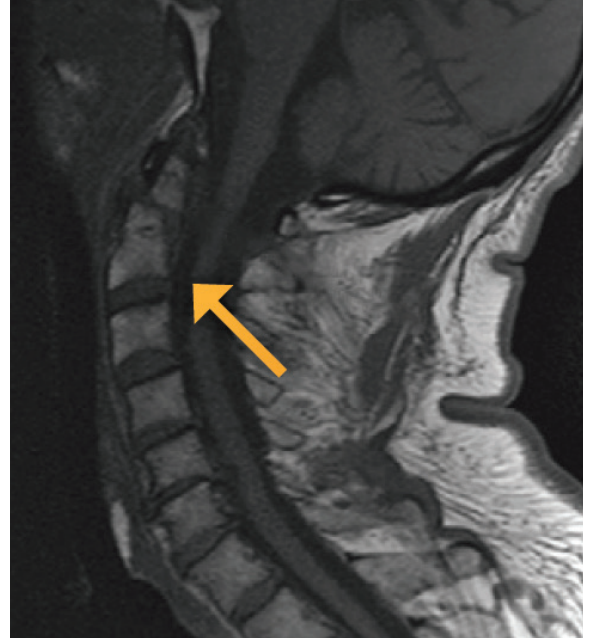


Figure 3b

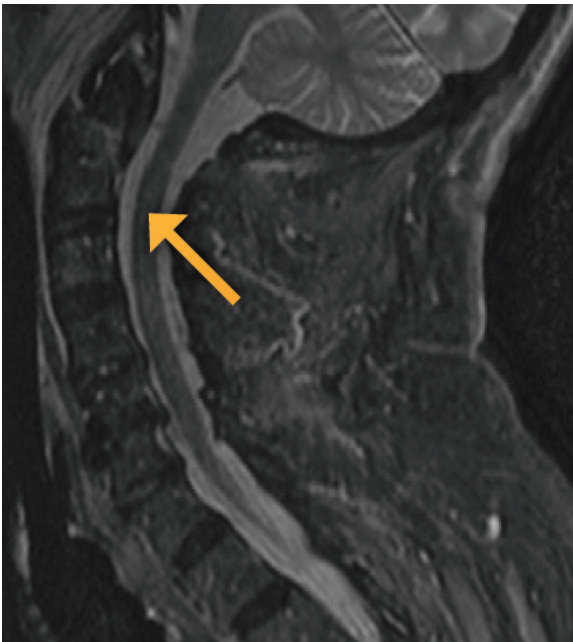
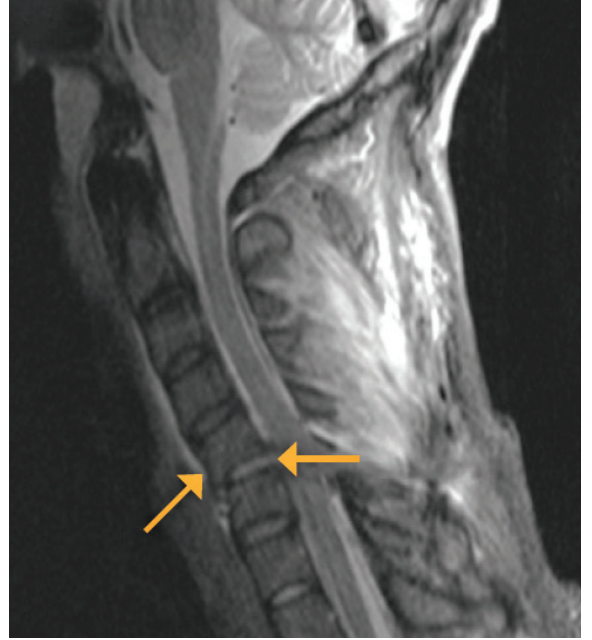


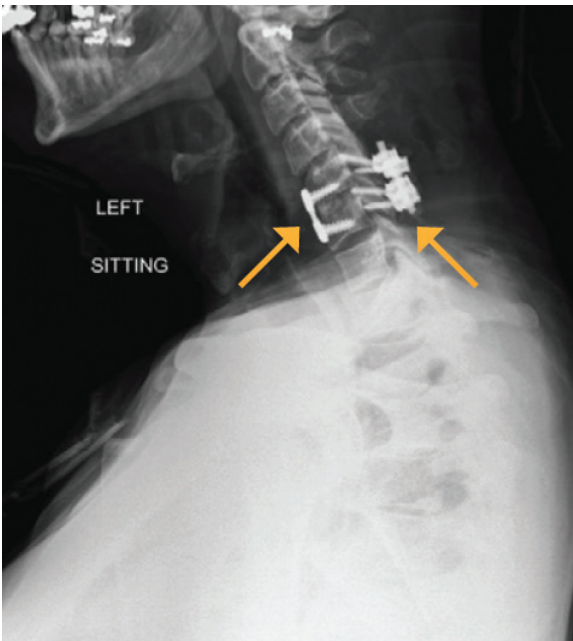
Figure 3c



**Figure 4a:**  
Patient with neck pain after high speed collision: CT normal.



**Figure 4b:**  
MR shows C5-6 subluxation, anterior longitudinal ligament, posterior longitudinal ligament and interspinous ligament disruption.



**Figure 4c:**  
Post orthopaedic fixation.  
(Looby Radiology Clinics Nth America 2011)



Figure 5a:  
Whiplash Injury. Subtle compression fractures  
and oedema T1 and T2.(Anderson Radiology  
2012)

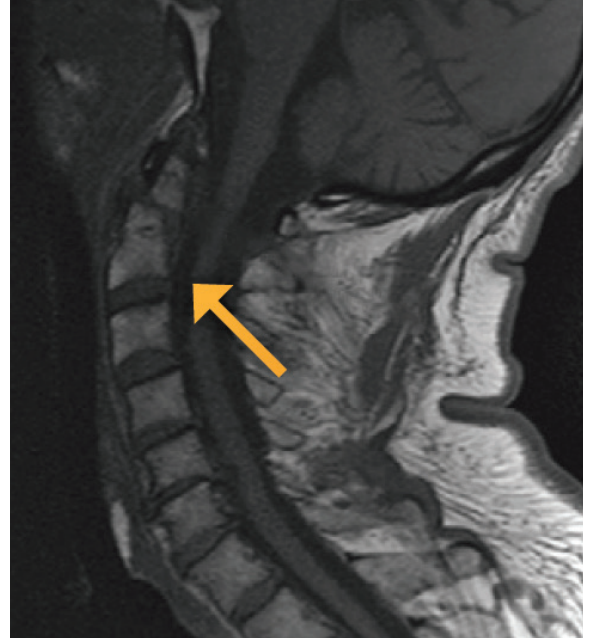


Figure 5b

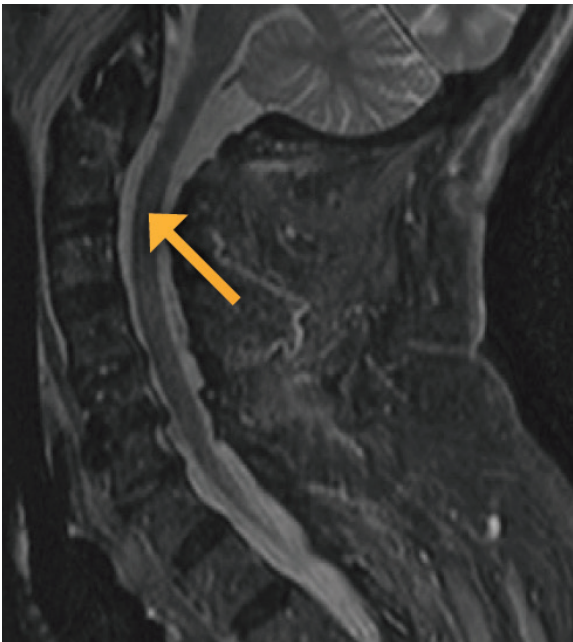
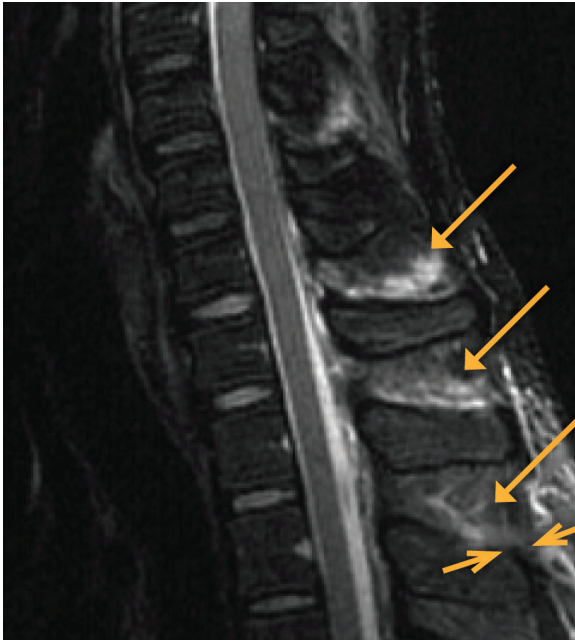


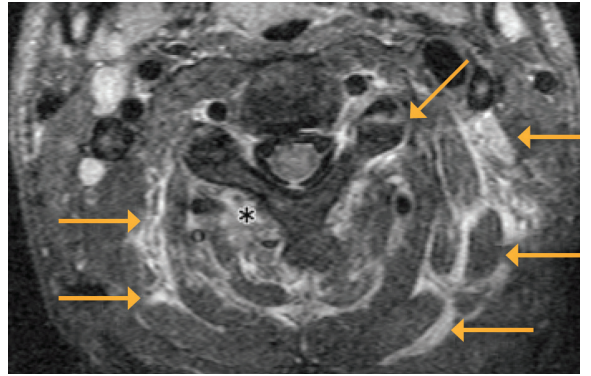
Figure 5c



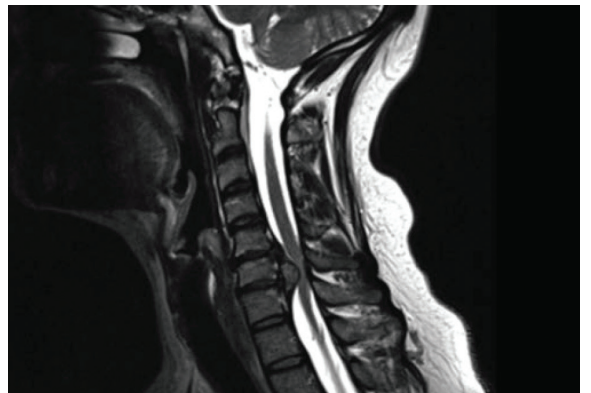
**Figure 6:**  
Whiplash Injury  
Torn interspinous ligaments C6-7-T1-T2.  
(Minz Seminar Musculoskeletal Radiology 2004)



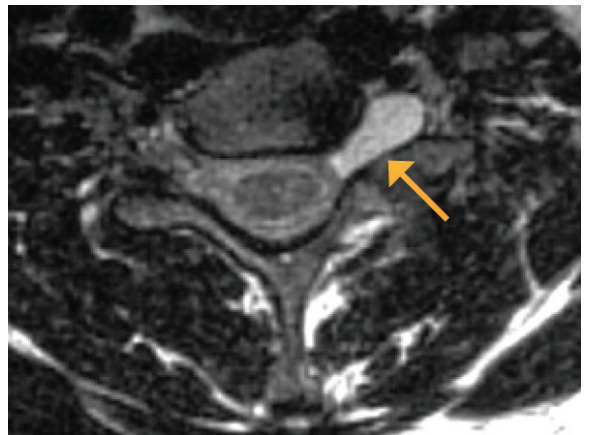
**Figure 8:**  
Occluded right vertebral artery in a patient with a C1 fracture.  
(Castillo Applied Radiology 2007)



**Figure 7:**  
Whiplash Injury. Extensive intermuscular haematoma. Damaged left C2-3 facet joint.  
(Anderson Radiology 2012)



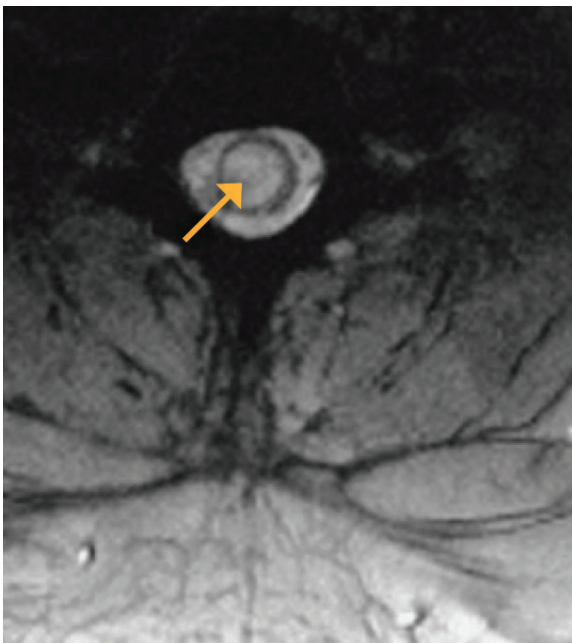
**Figure 9:**  
Acute disc protrusion with cord compression.



**Figure 10:**  
Left T2 nerve root avulsion with pseudomeningocele.  
(Minz Seminar Musculoskeletal Radiology 2004)



**Figure 11a:**  
Chronic post traumatic  
syringomyelia following severe cord trauma with  
paraplegia 20 years previously.  
(Kerr Seminar Musculoskeletal Radiology 2006)



**Figure 11b**



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