

INTRUDUCTION

The clinician managing patients who have suffered trauma to the spine requires to have several questions answered by imaging studies. In the acute stage, a complete assessment of the injury to the bony, ligamentous, disc and neural tissues will determine the stability of the injury and help to decide the nature of clinical management, either conservative or surgical, and, if the latter, also help in determining the surgical approach. In the long term, imaging may be required to assess the success or otherwise of any surgical intervention and to investigate post-traumatic complications such as progressive deformity, pain or worsening neurology. Magnetic resonance imaging (MRI) is established as a vital imaging technique and can answer many of the questions posed above (**Saifuddin A., 2001**).

MR imaging typically serves as a problem-solving technique when CT is unable to adequately assess the cause of neurological deficits, determine acuity of a fracture, and assess for presence of ligamentous injury. When neurological findings are present that are not adequately explained by CT, the typical clinical questions remaining to be answered are whether spinal cord injury has occurred and whether an extra-axial lesion (e.g., epidural hematoma or intervertebral disc herniation) is present (**Provenziale J., 2007**).

Cervical spine MR imaging has been shown to be an excellent technique for evaluating soft-tissue injuries and is considered the reference

standard in this regard. Traumatologists have agreed on the use of MR imaging in patients with a neurologic deficit. Cervical MR imaging performed after conventional radiography did not miss a ligament injury or permit any delayed diagnoses. In most cases, however, cervical spine MR images obtained for trauma have been compared with radiographs principally, dynamic fluoroscopic images rarely, and complete cervical spine CT scans almost never. Historically, the exclusion of cervical spine injuries in patients with blunt trauma has been one of the major challenges facing traumatologists and emergency medicine physicians. Results indicated that 10% of patients develop neurologic deficits after entering medical care (**Hogan et al., 2005**).

Successful MR imaging of spinal trauma depends on several factors. One of these is the timing of the study. The use of appropriate sequence parameters for MR imaging is also important. These parameters vary widely according to the field strength, coil design, gradient strength, and software capabilities of the MR imaging system used. Thus, each system requires an individualized approach (**Benedetti et al., 2000**).