

PERMANENT SPINAL IMPAIRMENT AND CLINICAL INSTABILITY- ARTICLE



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Trauma, especially if it's related to motor vehicles has led to varied ailments, which remain undiagnosed or poorly diagnosed at times. Whiplash is characterized by acceleration / deceleration; this abnormal movement results in a variety of injuries, which include ligament trauma like that of Anterior & Posterior longitudinal ligament, Alar ligament, facet joint trauma, disk trauma etc. The ligaments, the muscles and the small joints form a system, which offers stability to the entire spine. Any injury or pathology of this system is a major threat to the stability of the spine. **This condition in which the spine fails to maintain its normal displacement pattern under physiological loads is termed as clinical instability.**

Clinical instability induced by trauma predisposes the spine to degenerative pathological conditions that promote osteophyte formation, which stabilize the joint in the future. **White and Panjabi** have done extensive work in this field. They have devised criteria for the evaluation or assessment and diagnosis of a case of clinical instability and various clinical tests have been put forth by stalwarts of this field. Panjabi has put forth a **point value system for the diagnosis of clinical instability**. He allotted 2 points to the lesion or loss of function of the anterior structure of the spine, 2 points to the posterior structure and 4 points to the radiographic criteria, 3 points to the damage of the cauda equina and 2 points to intervertebral translation observed at resting, flexion-extension radiographs and 2 points to the rotation at the sagittal plane and has also allotted a point to dangerous loading on the spine. He concluded that, **cases having a total of more than 5 points qualify for clinical spinal instability**.

While clinical instability is accompanied with lower back pain, stiffness or muscle spasm or painful locking up of the spine, spinal impairment on the other hand is associated with sensory and motor deficits. Based on the level of trauma and the damage, various evaluation methods have been proposed. The **Diagnosis Related Estimates or the DRE, proposed by the American Medical Association** is an important guideline for evaluation. It focuses on etiology, radiculopathies, motion segment alterations and disk herniations and stenosis of varying degrees. **The ROM method of assessment is an easy step by step guidance for assessment**. Measuring the range of motion of the affected spine is followed by classifying it into a specific pathology and then followed by noting the nerve deficits. The inference from all these is combined and a logical diagnosis is arrived.

The **American Spinal Injury Association** has graded the varying degrees of spinal impairment. Grade A being the most severe, refers to a condition of complete spinal injury with both motor and sensory deficits with loss of function in S4 and S5. **Grade B** refers to incomplete spinal injury, where sensory function is preserved and motor function is lost. **Grade C** refers to an incomplete spinal injury, where the muscle grade is less than 3. Active movement of muscles with full range of motion of joints against the gravity is preserved. In **grade D** motor function below neural level is preserved and a muscle grade of more than 3 is present, and **grade E** is a near normal condition with no possibility of a spinal injury.

While, clinical instability does not involve sensory or motor deficits, it leads to minor disabilities, which affect the activities of daily living. Chronic low back pain with muscle guarding and unwillingness to attempt any unusual movement or exercise has a negative impact on the quality of life. On the other hand, advanced cases of spinal impairment pose greater threat to life and permanent disabilities.