

# Spinal cord Injury management: current procedures and the future

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**Background:** The term ‘spinal cord injury’ refers to damage to the spinal cord from trauma, disease, or degeneration. Estimated annual global incidences are 40 to 80 cases per million population; and in Asia are between 6.7 and 246 per million population.

In Iran, the prevalence is 4.4 per 10,000 and annual incidences are 98 per million men and 47 per million women.

The average age at injury is 42.6 years. In many records, 80% of cases are men. Causes are motor vehicle accidents (36–48%), violence (5–29%), falls (17–21%), and recreational activities (7–16%).

While 56.5% of injuries are complete and 43% are incomplete, usually in developing countries cervical spine damage and quadriplegia is common. In developed countries, 58.7% are paraplegic because of thoracolumbar events.

After the initial trauma, the spinal cord undergoes chronological pathologic changes. Primary injury mechanical and secondary injury (cellular and molecular) develop vascular abnormalities, free radicals, lipid peroxidation, excitotoxicity, and electrolyte imbalances, necrotic and apoptotic cell death, and inflammatory/immunologic responses.

**Objectives:** For managing a disease, at first it is necessary to know all available and possible methods, their pros and cons, and knowledge gaps. We sought to review treatment of spinal injuries.

**Materials and Methods:** We downloaded and reviewed more than 170 full textbooks and articles in English from the literature PubMed, and Google scholar websites.

**Results:** There is different in vivo and in vitro managements. The primary approach is to stop injury with surgery or molecular therapeutic interventions. Other procedures are removal of inhibition, compensation for demyelization, promotion of axonal regeneration, enhancing conduction, creation of bridges, rehabilitation and long-term follow-up, and replacement of cells, among others.

**Conclusions:** Available data implies that restorative therapies should focus on multiple targets and different intervals after injury. Yet, if we understand the key and basic origin of the injury, we may develop effective, complete, safe, and continual procedures.

**Keywords:** Spinal cord injury, management, trauma