

Background

The optimal management of acute traumatic cervical spinal cord injury (SCI) is unknown.

Research question

Does early surgery yield better neurological recovery than delayed surgery for patients with pre-existing cervical canal stenosis sustaining acute traumatic spinal cord injury?

Design

Multicenter randomized controlled trial

Methods

We enrolled patients with motor-incomplete cervical SCI with pre-existing canal stenosis (aged 20–79 years; American Spinal Injury Association (ASIA) Impairment Scale C; without bone injury). Participants were allocated (1:1) by computer-based randomization to urgent surgery within 24 hours after admission or delayed surgery (later than 2 weeks post-injury). The primary endpoints were changes from baseline values in the ASIA motor score, total score of the spinal cord independence measure (SCIM), and the proportion of patients able to walk independently at 1 year post-injury.

Results

Among 72 randomized patients, 70 patients (mean [SD] age, 65.1 [9.4] years; 5 women and 65 men) were included in the full analysis population at 1 year post-injury (37 patients assigned to early surgery and 33 to delayed surgery). We found a consistent, but insignificant, trend favoring early surgery than delayed surgery (mean change in ASIA motor score, 53.7 *vs.* 48.5, difference, 5.2; 95% confidence interval, -4.2 to 14.5; $p=0.27$; mean SCIM total score, 77.9 *vs.* 71.3, $p=0.34$; the proportion of ambulatory patients, 70% *vs.* 61.5%; $p=0.51$). A mixed-design analysis of variance revealed a significant difference in the ASIA motor scores between the groups ($p=0.03$). The early surgery group showed greater motor scores than the delayed surgery group at 2, 3, and 6 months post-injury.

Discussion

Among motor-incomplete cervical SCI patients, early surgery produced similar motor regain at 1 year post-injury as delayed surgery, but showed accelerated recovery within the first 6 months.