

Author Year Country Research Design Score Total Sample Size	Methods	Outcome
Uribe et al. (2005) USA Case Control N=69	<p>Population: Median age=56 yr, Time between injury and surgery=3 days.</p> <p>Intervention: Retrospective review of individuals with acute traumatic central cord syndrome (underlying cervical spondylosis and stenosis) who underwent expansile cervical laminoplasty (n=15; ASIA C=8 and D=7) or not (n=14)</p> <p>Outcome Measures: ASIA score preoperatively, postoperatively, and at 3 mo, complications.</p>	<ol style="list-style-type: none"> 1. There were no cases of immediate postoperative deterioration or at 3 mo follow-up. 2. Neurological outcome: 71.4% (10/14) of individuals improved 1 ASIA grade when examined 3 mo post injury.
Ghasemi et al. (2016) Iran Cohort N=41	<p>Population: individuals with Cervical Spinal Cord Injury without instability, spinal cord contusion in magnetic resonance image (MRI), spinal cord compression rate more than 20%, neurologic deficit American Spinal Cord Injury Association ([ASIA] scale from A to D), and follow-up of at least 12 mo.</p> <p>Intervention: cervical laminoplasty (Hirabayashi Technique)</p> <p>Outcome Measures: Preoperative neurological state, clinical outcome, and neurological function were measured using the ASIA impairment scale, Japanese Orthopaedic Association (JOA) grading scale, and Hirabayashi recovering rate</p>	<ol style="list-style-type: none"> 1. Thirty-three (80.4%) individuals showed improvement in ASIA grade at 12-month follow-up. 2. Four (9.7%) individuals in ASIA Grade A and 4 (9.7%) individuals in ASIA Grade D remain unchanged. 3. The mean JOA score improved from 8.4 ± 6.1 points preoperatively to 11.2 ± 5.4 points at 12 mo postoperatively. 4. Improvement in JOA was statistically significant ($P < 0.05$). 5. Those with cervical stenosis had better recovery than those with OPLL
Gu et al. (2014) China Case Series N=60	<p>Population: All individuals had ossification of the posterior longitudinal ligament (OPLL). <i>Group L (n=31):</i> Mean age: 65.7 yr; Gender: males=25, females=6; Injury etiology: Falls (n=21, 68%), Traffic accident (n=7, 23%), Sports (n=3, 9%); Level of injury: Cervical; Level of severity: ASIA B=9, C=16, D=6; Mean time since injury: 3.3 days. <i>Group C (n=29):</i> Mean age: 66.2 yr; Gender: males=24, females=5; Injury etiology: falls=19, traffic accidents=9, sports=1; Level of injury: Cervical; Level of severity: ASIA B=7, C=15, D=7.</p> <p>Intervention: Individuals that underwent laminoplasty (Group L) were compared to those that refused laminoplasty and underwent conservative treatment (Group C). Outcomes were assessed at admission, discharge, 6 mo and final visit (not specified).</p>	<ol style="list-style-type: none"> 1. Motor and sensory scores on AIS were significantly higher in Group L than Group C at all assessments ($p < 0.05$). 2. The only components of SF-36 that significantly improved in Group L at discharge compared to admission were bodily pain and mental health ($p < 0.05$). 3. There were significant differences in all subscales of SF-36 between Group L and Group C at all postoperative assessments ($p < 0.05$). 4. Occupation ratio and canal diameter of OPLL was significantly improved in Group L compared to Group C at all postoperative assessments ($p < 0.05$). 5. High signal intensity levels were significantly better in Group L than Group C from 6 mo onwards ($p < 0.05$).

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	<p>Outcome Measures: American Spinal Injury Association Impairment Scale (AIS), 36-Item Short Form Survey (SF-36), Ossified levels of OPLL, Thickness of OPLL, Canal diameter, Occupation ratio, Lordosis angle, Range of motion (ROM), High signal intensity levels.</p>	<p>6. No significant between-group differences were found for OPLL ossification levels, OPLL thickness, lordosis angle, or ROM ($p>0.05$).</p>
<p>Kawaguchi et al. (2014) Japan Case Series $N_{Initial}=144$, $N_{Final}=124$</p>	<p>Population: Mean age: 59.6 yr; Gender: males=102, females=42; Injury etiology: ossification of posterior longitudinal ligament (OPLL); Level of injury: cervical. Intervention: Individuals underwent a C3-C7 laminoplasty with posterior decompression surgery (PDS). Anterior decompressive surgery (ADS) was required in 11 cases following PDS. Individuals that received only PDS were compared to those that required ADS following PDS. All individuals used a sternal-occipital-mandibular immobilizer (SOMI) brace or neck collar postoperative for up to 1 mo. Outcomes were assessed preoperatively and postoperatively at the following time points: 1 mo, 6 mo, 1 yr, 3 yr, 5 yr, 10 yr, >10 yr. Outcome Measures: Modified Japanese orthopedic association (JOA) score, Rate of recovery, PDS occupying ratio, PDS cervical alignment, Symptoms of ADS.</p>	<ol style="list-style-type: none"> 1. Overall, motor and sensory function of the upper and lower extremities on JOA was significantly improved following laminoplasty (all $p<0.001$). 2. Bladder function and trunk sensory function on JOA also improved following laminoplasty (both $p<0.001$). 3. Long term, JOA rapidly improved up until 5 yr follow-up (average 45% to 60%), and then deteriorated slightly by 10 yr (55%). 4. Following ADS, all individuals improved in JOA scores and had a mean recovery rate of 50.9%. 5. Significant differences between those that required ADS following laminoplasty and those that did not were preoperative-PDS occupying ratio of OPLL ($p=0.001$) and postoperative-PDS cervical alignment ($p=0.035$). 6. The most common symptoms that preluded ADS were severe unilateral pain in upper extremity (82%) and deterioration of cervical myelopathy (55%). 7. Eight of 11 that required ADS had mixed, 2 had continuous, and 1 had segmental ossification, which was significantly different than the PDS only group ($p=0.023$).
<p>Acharya et al. (2010) India Case Series $N_{Initial}=24$, $N_{Final}=21$</p>	<p>Population: Mean age: 52.9 yr; Gender: males=21, females=0; Injury etiology: spondylotic myelopathy; Level of injury: cervical; Level of severity: Nurick Scale (difficulty of walking) =3.7 (between 3 (difficulty in walking which prevented full time employment/ability to do house work) and 4 (able to walk only with someone else help or aid of a frame) Intervention: Individuals were treated with cervical laminoplasty of C2-C6 using the</p>	<ol style="list-style-type: none"> 1. Preoperative, the sensitivity for detection of myelopathy by provocative signs from greatest to least were Babinski response (95%), IBR (91%), Hoffmann sign (86%), and sustained clonus (48%). 1. The sensitivity for hyperreflexia preoperative were patella (95%), Achilles (90%), biceps (48%) and triceps (5%). 2. At 1 yr, 38% presented with provocative signs (Hoffmann=38%, Babinski=5%, IBR=5%, clonus=5%).

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	<p>Hirabayashi technique. Outcomes were assessed preoperative, operative, and postoperative at 2 wk, 6 mo, and 1 yr.</p> <p>Outcome Measures: Hoffmann sign, Inverted brachioradialis reflex (IBR), Sustained clonus, Babinski, Hyperreflexia, Modified Japanese orthopedic association (JOA) score, Nurick scale, Recovery rate, t2 hyper-intensity.</p>	<ol style="list-style-type: none"> 3. In regards to hyperreflexia, the lower limbs retained signs at 1 yr (patella=10%, Achilles=14%) whereas the upper limb did not at all (biceps/triceps=0%). 4. Postoperative, recovery rate improved from 2 wk (28.6%) to 6 mo (60.7%) to 1 yr (61.3%). The mJOA and Nurick scale improved accordingly from 2 wks (10.38, 2.9) to 6 mo (13.29, 1.8) to 1 yr (13.4, 1.7). 5. Of all individuals with radiologic presentation of t2 hyper-intensity on MRI, those with hypo intense cord signal had higher prevalence of Hoffmann sign (100% vs 80%), IBR (100% versus 87%), and Babinski sign (100% versus 93%) compared to normal cord hyper-intensity.