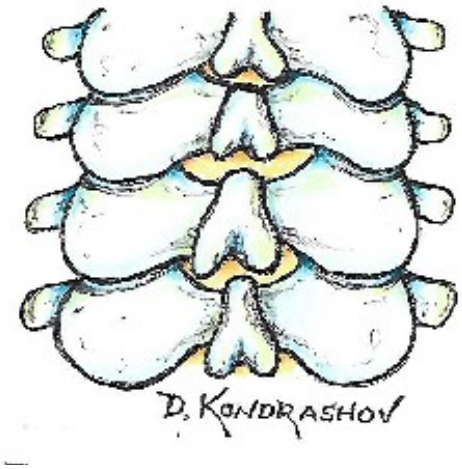
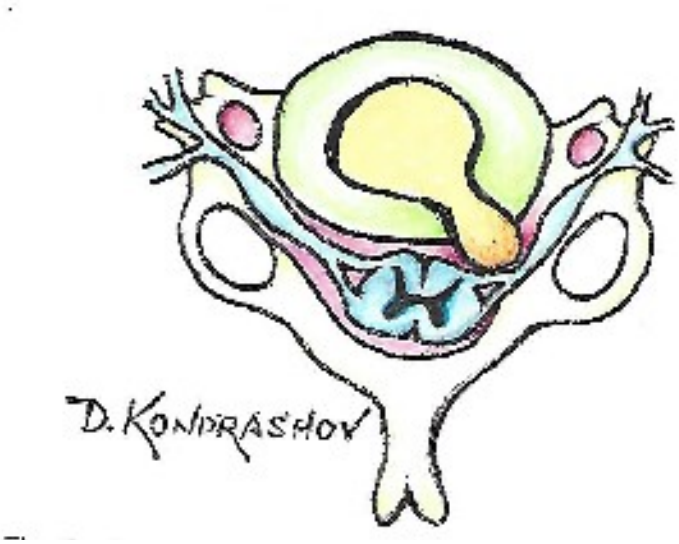
Posterior Cervical Spine Surgery:

Key Points

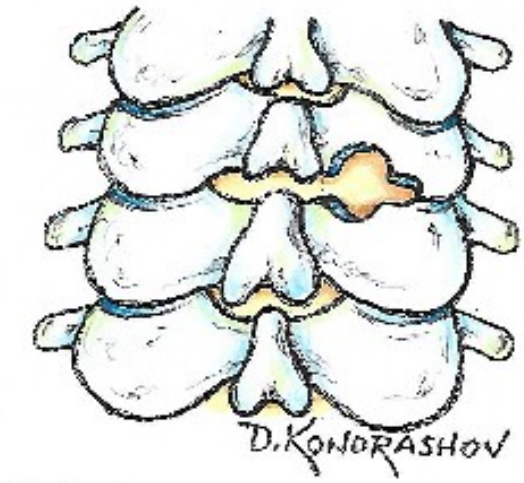
Posterior cervical spinal approaches to provide relief of upper extremity pain, numbness, and weakness include: laminotomy, foraminotomy, laminoforaminotomy, hemilaminectomy, bilateral laminectomy, and laminoplasty. Preoperative patient positioning must be done carefully. Then the posterior cervical spine is exposed (Figure1)



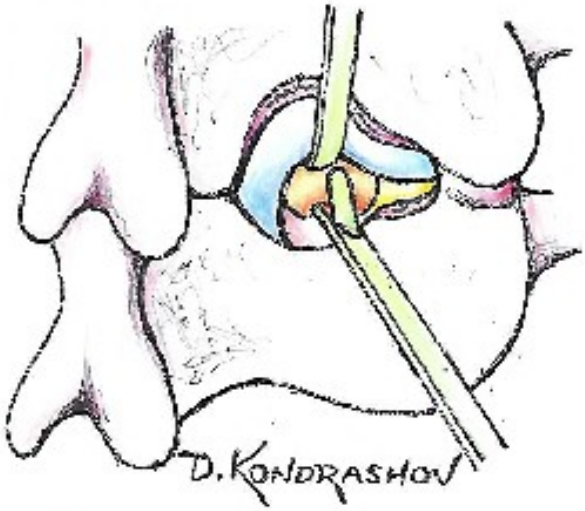
Cervical radiculopathy is often caused by disc herniation compressing the nerve root (Figure 2).



Laminoforaminotomy is performed to remove parts of the superior and inferior laminae at the level of the nerve root compression (Figure 3).



Partial facetectomy is performed carefully so that no more than half of the facet joint is removed. The nerve root is gently retracted and discectomy performed (Figure 4).



Hemilaminectomy (Figure 5) can be performed for radiculopathy when symptoms are unilateral.

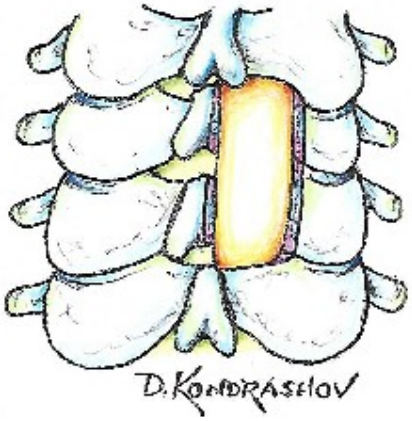


Fig. 5 : Hemilaminectomy

Bilateral laminectomy (Figure 6) can be performed for central spinal stenosis when radiculopathy is bilateral.

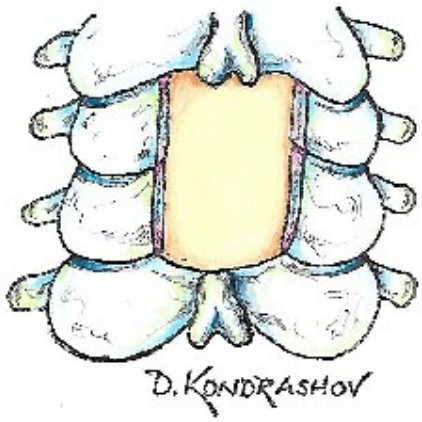


Fig. 6 : Bilateral Laminectomy

Multilevel laminectomies can be performed when the cervical lordosis is preserved. Cervical laminectomy can result in postoperative instability and kyphosis. This is more common when multilevel laminectomies are performed and in younger patients. Disruption of the facet joints leads to higher rate of instability and deformity.

Cervical laminoplasty was first developed in Japan to treat spinal stenosis related to ossification of the posterior longitudinal ligament (OPLL). Laminoplasty can prevent postlaminectomy kyphosis and instability.

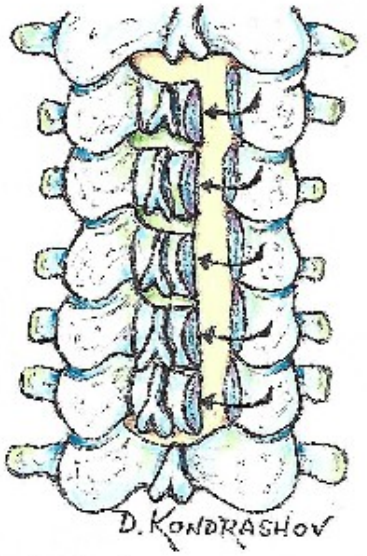


Fig. 7 : Laminoplasty, unilateral open door

Various laminoplasty techniques were developed, including: unilateral open door (Figure 7), open door with suture (Figure 8-1), open door with bone graft (Figure 8-2), open door with small titanium plates and screws (Figure 8-3), and midline open door or French door laminoplasty with bone graft (Figure 8-4).

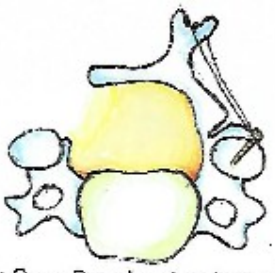


Fig. 8-1 : Open Door Laminoplasty with suture

Fig. 8-2 : Open Door Laminoplasty with bone graft

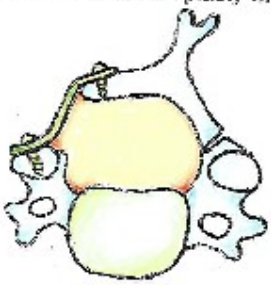


Fig. 8-3 : Open Door Laminoplasty with plate and screws

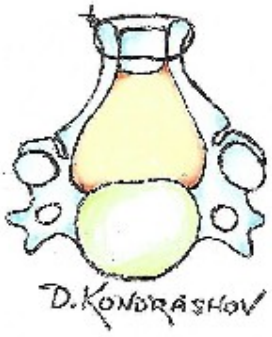


Fig. 8-4 : Midline or French Door Laminoplasty with bone graft

In laminoplasty, the lamina is cut on both sides, cut through completely on one side and partially on the other side, which is then used as a hinge. The freed flap of the lamina is lifted away to relieve pressure on the spinal cord (Figure 7). The lamina is then propped open with suture, bone graft, and small titanium plates and screws (Figures 8-1 through 8-3). Laminoplasty is performed to relieve pressure on the spinal cord from spinal

stenosis resulting from different causes, including ossification of the posterior longitudinal ligament (OPLL), spinal tumors, spinal cord cyst, and syringomyelia. Laminoplasty is contraindicated when there is kyphotic deformity, significant instability, or when the spinal condition is best approached anteriorly as in disc disease, such as disc herniation or fracture.