

Is spinal cord backshift after laminoplasty for degenerative cervical myelopathy correlated to preoperative cervical spine sagittal alignment?

Objective: Among anterior fusion and laminectomy, laminoplasties are a useful tool to treat cervical myelopathy, but their efficiency in non-lordotic spine is debated. This study aimed to evaluate the spinal cord decompression after French-door laminoplasty for cervical degenerative myelopathy, at each level, according to the preoperative morphology of the cervical spine. **Methods:** The anteroposterior diameter of the canal, the anterior and posterior peri-medullary spaces were measured on pre and postoperative MRI for 53 patients. The spinal cord decompression was assessed by measuring the difference between the post and preoperative anterior, posterior and total diameters of the canal. A subgroup analysis according to sagittal morphology (Lordosis, Kyphosis, Straight, Sigmoid) was performed. The relationship between spinal cord backshift and both preoperative C2C7 lordosis and C2C7-SVA distance was also studied.

Results: A significant spinal cord backshift with an increase of the anteroposterior diameter (APD) of the spinal canal, at all levels was found. The mean APD increase was 5.3mm $\pm$ 0.2mm ($p < 0.001$). The maximal decompression was found at the apex of the lordosis, in C4C5 (APD= +6.0mm) and C5C6 (APD= +6.2mm). The subgroup analysis showed a significant spinal cord backshift at all levels operated on for lordotic spines. No statistical link between spinal cord decompression and C2C7 lordosis or C2C7 SVA distance was found.

Conclusions: Cervical laminoplasty allows spinal cord backshift and circumferential decompression regardless of the preoperative cervical spine shape. The technic seems accurate for lordotic spine with no statistical link between cervical lordosis and spinal cord decompression.