



## Commentary



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# A Commentary on “Predicting Neck Dysfunction After Open-Door Cervical Laminoplasty — A Prospective Cohort Patient-Reported Outcome Measurement Study”

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The innovative advantage of this manuscript<sup>1</sup> is that it uses longitudinal data to evaluate the surgical outcomes of laminoplasty for degenerative cervical myelopathy. As the authors state, this is a good thing when dealing with longitudinal data, where data points are collected over time from the same subjects or entities. Furthermore, the good thing about this manuscript is that it was performed by the same surgeon at a single institution, which is good in terms of standardizing the surgical procedure. In multicenter research, it cannot be denied that subtle differences inevitably exist between surgeons, even when it comes to the surgical procedure for laminoplasty. There are also differences in how the posterior neck muscles are handled, how the spinous processes are treated, whether the lamina is made open door or double open door, and how the opened laminae are reconstructed and fixed expansively, etc. Furthermore, by using JOACMEQ (Japanese Orthopedic Association Cervical Myelopathy Evaluation Questionnaire), a patient-centered approach is used, as opposed to the physician-centered approach that has been widely used in the past, and this allows for the accumulation of very objective data. For these reasons, the authors' data analysis can be evaluated as being objective and reliable. As the authors state in the limitation article, due to the small number of cases, in some cases where significant differences were expected, the statistical results only showed a tendency toward significance. This is unfortunate because, as mentioned above, the evaluation method was highly objective, and I look forward to the accumulation of more cases and further statistical results in the future.

Another surprising result was that there were no C5 palsies after laminoplasty in 104 cases. Generally, when more than 100 cases of laminoplasty are collected, a few cases of temporary C5 palsy occur. There are various causes of C5 palsy, and although it is still controversial, if tethering effect of the nerve root due to a posterior shift of the spinal cord after posterior decompression is one of the causes, it may be because author's cases did not involve much posterior shift of the spinal cord after posterior decompression with laminoplasty, and because of the detailed intraoperative techniques used during laminoplasty, such as the width of decompression (although the manuscript does not provide such detailed descriptions).

The authors emphasized a positive K-line during neck flexion as a factor that leads to

good outcomes with laminoplasty. This may mean that if the anterior compression factor is too large, a good spinal cord environment cannot be achieved completely by posterior decompression alone. Regarding the relationship between anterior compression factors and the outcome of posterior decompression, there are reports by Kato et al.<sup>2</sup> using preoperative myelography to measure the angle of the anterior factors (focal apex angle), and Taniyama et al.,<sup>3</sup> using a modified K-line measurement method (method using INTmm) using preoperative T1-weighted sagittal images. Takeuchi et al.<sup>4</sup> reported a 5-year postoperative follow-up study in which they concluded that if the K-line on a lateral x-ray taken in the preoperative extension position is in contact with the origin of the spinous process (K-line back), then over time, the surgical outcome will worsen due to the intrusion of posterior scar tissue.

There are cases in which kyphotic deformity develops over time after laminoplasty, leading to poorer postoperative outcomes. The factors that cause this are currently being discussed in many papers. This corresponds to the relationship between the development of cervical sagittal vertical axis,<sup>5-7</sup> K-line tilt,<sup>8,9</sup> and back muscles and extension range of motion.<sup>10</sup> Cervical kyphotic deformity after laminoplasty alone gradually appears over several years, and in order to maintain good long-term postoperative outcomes for patients, it is very important to select cases in which this cannot be achieved with laminoplasty alone.

Unfortunately, the author's follow-up period after surgery was short, I would like to expect the authors to accumulate more cases and obtain further results from long-term follow-up period.

• **Conflict of Interest:** The author has nothing to disclose.

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