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CORRELATION BETWEEN CERVICAL SPINE SAGITTAL ALIGNMENT AND CLINICAL OUTCOME AFTER CERVICAL LAMINOPLASTY FOR OSSIFICATION OF THE POSTERIOR LONGITUDINAL LIGAMENT

Structured Abstract

Objective: To determine the relationship between cervical spine sagittal alignment and clinical outcomes after cervical laminoplasty in patients with ossification of the posterior longitudinal ligament (OPLL).

Methods: Consecutive patients (n=50) who underwent a cervical laminoplasty for OPLL between January 2012 and January 2013 and who were followed up for at least one year were analyzed in this study. Standing plain films of the cervical spine, CT, and MRI were obtained preoperatively and postoperatively. Cervical spine alignment was assessed with the following three parameters: the C2-7 Cobb angle, C2-7 sagittal vertical axis (SVA), and T1 slope minus C2-7 Cobb angle. The change in cervical sagittal alignment was defined as the difference between the postoperative and preoperative C2-7 Cobb angles, C2-7 SVAs, and T1 slope minus C2-7 Cobb angles. Outcome assessments (Visual Analog Scale [VAS], Oswestry Neck Disability Index [NDI], SF-36, and Japanese Orthopedic Association score [JOA]) were obtained in all patients preoperatively and postoperatively.

Results: The average age was 56.3 years. Mean follow-up duration was 18.4 months. There were 36 male patients and 14 female patients. Cervical laminoplasty for ossification of the posterior longitudinal ligaments helped alleviate radiculomyelopathy. Compared to the preoperative scores, the postoperative VAS and JOA scores improved. After laminoplasty, 35 patients had kyphotic changes, and 15 had lordotic changes. However, cervical sagittal alignment after laminoplasty was not significantly associated with clinical outcomes in terms of the postoperative improvement of the JOA score, SF-36 score, VAS or NDI. Likewise, the change in cervical sagittal alignment was not related to the clinical outcomes.

Discussion: Kyphotic alignment change was found in 70% of patients, while postoperative kyphosis was present in 18% of patients. That is, kyphotic changes do not always occur after cervical laminoplasty, and the lordotic changes are not always associated with good clinical outcomes.

Conclusion: Cervical laminoplasty for ossification of the posterior longitudinal ligaments improved radiculomyelopathy. Cervical laminoplasty increased the likelihood of cervical kyphotic alignment. However, cervical sagittal alignment and clinical outcomes were not clearly related.