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Postoperative fusion status in bone morphology after cervical laminoplasty using the spinous process as spacers

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Background: Laminoplasty is a useful procedure for treating cervical compressive myelopathy. Several kinds of spacers, including artificial spacers and autogenous iliac bone, have been used for laminoplasty. We have used the autogenous spinous process from C6 and C7 as spacers between the bilateral opened laminae.

Research question: The purpose of this study was to evaluate the fusion status in bone morphology, the hinge (lateral gutter) and the relationship between spacers and laminae.

Design: Retrospective observational study.

Methods: Of the 193 patients who underwent laminoplasty at our hospital between June 2020 and May 2024, 111 patients who underwent CT scans 6 months postoperatively were enrolled. Their CT scans were examined for bone fusion about the bilateral hinge and the gap between spacers and laminae. Bony fusion insufficiency was defined as the absence of continuous bone connection on CT.

Results: A total of 111 cases, 55 males and 56 females were enrolled with a mean age of 71 years (45–89 years). Of all patients, 12 (11%) required fixation surgery with instrumentation due to preoperative kyphosis massive or K-line (-) ossification of the posterior longitudinal ligament. At 6 months postoperatively, the bony fusion rate for all subjects was 98% (109 cases) for the hinge space and 75% (83 patients) around spacers. In the fixation cases with instrumentation, 100% of the hinges (12 cases) and 75% (9 cases) around spacers were observed. Neither cases of spacer dislodgement nor revision surgery were observed.

Discussion: Bony fusion at 6 months postoperatively was observed in almost all cases at hinge sides, but in 75 % of around spacer between spacer and laminae. Autogenous spinal processes were useful as spacers between opened laminae. In addition, there was no difference between laminoplasty alone and fixation surgery in the bone fusion between the hinge and the spacers.