

Title: Fusion rate of transected spinous processes after unilateral open door cervical laminoplasty

Objective: To determine how frequent the transected spinous process (SP) fused to the lamina after unilateral open door cervical laminoplasty, and to investigate whether there are any factors to increase the chance of fusion.

Methods: The fusion rates of SPs were retrospectively determined on postoperative CT scans of 75 patients who had undergone C3-6 open door laminoplasty. Demographics were reviewed, and preoperative sagittal parameters including C2-C7 Cobb angle, ROM, C7 slope, and C2 SVA, were also measured on radiographs. During surgical procedures, C3-6 SPs were transected with unilateral preservation of their attaching muscles on the gutter side. The nuchal ligament between C6 and C7 SPs were preserved in several patients (C6-7 nuchal ligament preservation)

Results: The fusion rates of C3, C4, C5, and C6 SPs were 68.2%, 81.2%, 88.6%, and 49.3%, respectively. SPs were always fused to the laminae one level caudal to the original positions (C6 SPs were to the cephalad surface of C7 SPs), except for 3 cases of C6 SP fusion to C6 SP. Patients with C6-7 nuchal ligament preservation had significantly higher fusion rate of C6 SP than those without (70 vs 42%). No demographic and preoperative sagittal parameters were significantly related to SP fusion.

Discussion: Most of transected C3-5 SPs were naturally fused to laminae one level caudal to the original positions, suggesting the importance of leaving SPs with attaching muscles, instead of removing them out. Although the fusion rate of C6 SP was low, preserving nuchal ligament between C6 and C7 may increase its fusion rate.