

## Laminoplasty Versus Laminectomy With Posterior Spinal Fusion for Multilevel Cervical Spondylotic Myelopathy: Matched Cohorts of Regional Sagittal Balance

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#### Introduction

Cervical curvature is an important factor when deciding between laminoplasty or laminectomy with posterior spinal fusion (PSF). This study compares outcomes of laminoplasty and laminectomy with PSF in patients with matched regional sagittal balance.

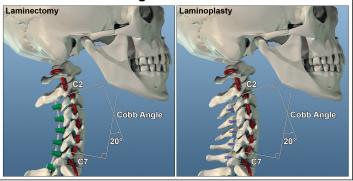
### **Methods**

Adults from 2011 to 2014 undergoing laminoplasty or laminectomy with PSF for cervical spondylotic myelopathy were identified. Matched cohorts were obtained by excluding laminectomy with PSF patients with postoperative cervical Cobb angles outside the range of laminoplasty patients. Perioperative and follow-up outcomes were compared. Subgroup analysis of patients with and without preoperative pain was performed.

### **Results**

A total of 145 patients were included in the analysis: 44 laminectomy with PSF and 101 laminoplasty patients were included. Preoperative Nurick scores were similar (2.1 vs. 2.2) (p=0.738). The laminectomy with PSF group had higher preoperative pain rate (77.1% vs. 46.5%) (p=0.002), higher VAS (6.8 vs. 5.1) (p=0.017), and less cervical lordosis (5.7 vs. 10.1 degrees) (p=0.082). Laminectomy with PSF had higher blood loss (335.3 vs. 198.8 ml) (p=0.001), longer stay (4.2 vs. 3.4 days) (p=0.032), and higher complications (20.0% vs. 7.9%) (p=0.063). At follow-up, laminectomy with PSF had lower mean Nurick score (0.9 vs. 1.6, p=0.029). Among patients with preoperative pain, follow-up pain rates (40.7% vs. 36.2%) (p=0.805) and VAS (5.0 vs. 6.4) (p=0.226) were similar between laminoplasty and laminectomy with PSF patients. In patients without preoperative pain, there was no difference in pain rates (12.5% vs. 16.7%) (p=0.999) and VAS (7.0 vs. 5.7) (p=n/a). Cervical Cobb was similar (7.0 vs. 5.9 degrees) (p=0.663). Mean follow-up was 17.2 months.

# Illustration of cervical posterior spinal fusion and laminoplasty with cervical sagittal Cobb angle of 20 degrees lordosis



### **Conclusions**

Laminectomy with PSF is associated with greater perioperative morbidity but provides greater myelopathy resolution than laminoplasty. With similar postoperative cervical Cobb angles, pain outcomes are similar for both procedures. Cervical alignment should be considered as an important factor in pain outcomes following posterior decompression of CSM.

### **Learning Objectives**

By the conclusion of this session, participants should be able to:

- 1. Describe the importance of cervical alignment follow posterior decompression
- 2. Understand the significance of cervical alignment on neck pain outcomes

### References

- 1. Scheer JK, Tang JA, Smith JS, et al. Cervical spine alignment, sagittal deformity, and clinical implications: a review. J Neurosurg Spine. 2013 Aug;19(2):141-59.
- 2. Highsmith JM, Dhall SS, Haid RW Jr et al. Treatment of cervical stenotic myelopathy: a cost and outcome comparison of laminoplasty versus laminectomy and lateral mass fusion. J Neurosurg Spine. 2011 May;14(5):619-25.