

Title:

Importance of predicting alignment aggravation for indication of cervical laminoplasty in patients with kyphosis

Objective:

Cervical laminoplasty is generally not indicated in patients with kyphosis because of poor outcomes, and postoperative alignment aggravation may be one of the causes. This study investigated whether alignment aggravation resulted in poor outcomes, and risk factors for alignment aggravation are examined to establish more refined indication in patients with kyphosis.

Methods:

Clinico-radiological outcomes of 106 consecutive patients, who had undergone C2-7 laminoplasty were analyzed. Surgical outcomes were assessed, and sagittal parameters were measured on radiographs. Patients were assigned to two groups: kyphosis (n=32) and lordosis (n=74) groups.

Results:

Multivariate analyses revealed that among surgical outcomes, axial pain was significantly frequent in kyphosis group, compared to lordosis group (OR, 17.470; 95% CI, 1.708–

178.655; $P=0.016$). Moreover, axial pain was significantly associated with alignment loss $>0^\circ$ only in kyphosis group ($p=0.010$) but not in lordosis group. Greater value of ROM during flexion minus that during extension (Flex–Ext ROM) had a significant correlation to C2-C7 angle change ($r=-0.565$, $P=0.001$), and was identified as a risk factor for alignment loss $>0^\circ$ in kyphosis group. Receiver operating characteristic curve analysis indicated a Flex–Ext ROM cutoff value of 0.7° for predicting alignment loss $>0^\circ$ in kyphosis group (sensitivity: 77%, specificity: 84%).

Conclusions:

Our study showed the importance of predicting alignment aggravation when considering the indication of laminoplasty in patients with kyphosis. Therefore, the current finding of a Flex–Ext ROM $>0.7^\circ$ for predicting alignment loss $>0^\circ$ could contribute to establishing more refined indication of laminoplasty in patients with kyphosis.