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Cervical Spondylotic Myelopathy with Dynamic Factor Treated by Posterior Decompression and Segmental Fusion

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Background: Dynamic factor or spondylolisthesis were one of the main reasons accelerating cervical spondylotic myelopathy (CSM).

Research question: Laminectomy or laminoplasty were effective for static CSM. However, only posterior decompression alone might result in poor prognosis.

Design: We aimed to clarify the pathophysiology of cervical myelopathy caused by dynamic factor, and analyses the effect of posterior decompression and segmental fusion for radiographic and HRQOL outcome in patients with CSM.

Methods: We prospectively analyzed radiographic and HRQOL data from 2017 to 2023 . Our inclusion criteria were perioperative whole spine radiography, cervical MRI and HRQOL scores. Global spinal alignment was characterized by cervical lordosis (CL), C7 -SVA, T1 slope (T1S), TK, LL, PI, PT, and SS. HRQOL was evaluated by JOA score, NDI and HAD. The indication for fusion was cervical radiographic instability with/without dynamic compression by MRI findings or >3.5mm segmental slip.

Results: A total of 60 CSM patients insisted of 25 with posterior segmental fusion (group A) and 35 without fusion (group B) was analyzed. Mean OP time was longer in group A than that in group B (173.2 vs 112.8 min, $p<0.05$). There were no significant differences in global and cervical radiographic parameters except for preop. and postop. CL (7.0 vs 15.3, 7.8 vs 12.5, $p<0.05$) between group A and group B. There were no significant differences in pre. and postop. JOA score, NDI and HAS between group A and group B. C3/4 or C4/5 pathology was more common in older patients (66.7% vs 20.0%, $p<0.05$). In both age group, cervical alignment and HRQOL were maintain 2 years after surgery. However, global alignment in older patients was deteriorated 2 years after surgery.

Conclusions: C3/4 or C4/5 instability was more common in older CSM patients because of their compensation mechanism for global malalignment. Therefore, posterior decompression with fusion was recommended for older CSM with global malalignment.