

# **DJK and Revision Rates in Multilevel Posterior Cervical Fusions Terminating at the Cervicothoracic Junction: A Retrospective Review**

Mentored Scholarly Activity  
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Conflict of interest statement: I declare that the study and paper content was composed in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Abstract

**Introduction:** Posterior spinal fusion is commonly used to correct cervical pathologies. Following a historical paucity of literature on outcomes regarding posterior spinal fusion surrounding the cervical thoracic junction (CTJ), several recent studies have begun to look at revision rates of fusions ending at C7, versus those continued to thoracic vertebra, and how each technique may be related to adjacent segment disease. Our current study aimed to compare revision rates as well as distal junctional kyphosis (DJK) between two groups of patients with posterior fusions terminating at C7 versus those terminating at T1, T2, or T3. This study was conducted to evaluate the hypothesis that revision rates, DJK, and measured radiographic outcomes will have similar outcomes between these two groups.

**Methods:** A single center review of medical records was used to identify patients who underwent posterior spinal fusion. Patients were included who had an index procedure within the past 10 years, at least 1 year of follow-up, and at least three segments instrumented. Patients were divided into two groups. Group 1 (G1) included those fusions terminating at C7, and group 2 (G2) included fusions terminating at T1, T2, or T3. Revision rates were assessed, additional procedures were noted, and radiographic measurements were made including cervical lordosis (CL), cervical sagittal vertical axis (cSVA), distal junctional kyphosis (DJK), and T1 cervical lordosis mismatch (T1S-CL).

**Results:** A total of 91 patients were identified who met criteria, 53 in group 1, and 38 in group 2. There was no significant difference in revision rate (G1: 9.4% vs G2: 2.6%  $P=0.39$ ), or in patients who met criteria for distal junctional kyphosis (G1: 5.8% vs G2: 5.2%  $P=0.9$ ). Radiographic measurements showed no statistically significant

differences, except for distal segment kyphosis which showed a significant increase in G2 when compared to G1 (G1: 0.82°, P=0.31 vs. G2: 2.5°, P=0.0001).

Conclusion: This study resulted in no statistically significant difference in revision rates, distal junctional kyphosis, or other radiographic parameters detected between patients with posterior cervical fusions terminating at the C7 level compared to those terminating at the first three thoracic levels.

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