Presentation #1

Is Preoperative Duration of Symptoms a Significant Predictor of Functional Status and Quality of Life Outcomes in Patients Undergoing Surgery for the Treatment of Degenerative Cervical Myelopathy?

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Introduction: Longstanding compression of the spinal cord in patients with degenerative cervical myelopathy (DCM) may result in irreversible neural tissue damage. This study aims to analyze whether a longer duration of symptoms influences surgical outcomes and to determine the optimal timing for decompressive surgery.

Methods: Three hundred and fifty patients with symptomatic DCM were prospectively enrolled in either the CSM-North America or International study at 12 sites in North America. For each patient, extensive demographic information was collected, including age, co-morbidities, and a self-reported estimate of preoperative duration of symptoms. Postoperative functional status and quality of life were evaluated at 6-, 12- and 24-months using the modified Japanese Orthopaedic Association (mJOA), Nurick grade, Neck Disability Index (NDI) and Short-Form-36 (SF-36) Physical (PCS) and Mental (MCS) Component Scores. Change scores between baseline and 12-month follow-up were computed for each outcome measure. Duration of symptoms was dichotomized into a “short” and “long” group at several cut-offs. An iterative mixed model analytic approach procedure was used to evaluate differences in change scores on the mJOA, Nurick, SF-36 MCS and PCS and NDI between duration groups in 1-month increments. Two models were constructed: 1) an unadjusted model between duration of symptoms and surgical outcome and 2) a model adjusting for significant independent covariates identified through stepwise regression analysis.
Results: Our cohort consisted of 201 (57.43%) men and 149 (42.57%) women, with a mean age of 57.49 ± 11.77 years (range: 29–87 years). The mean duration of symptoms was 25.71 ± 36.68 months (range: 1-240 months). In unadjusted analysis, patients with a duration of symptoms shorter than 4 months had significantly better functional outcomes based on the mJOA (p = 0.04) than patients with a longer duration of symptoms (> 4 months). On average, patients with < 4 months symptom duration improved by 3.71 on the mJOA, whereas those with a duration 4 months or longer only exhibited a 2.96 mean gain, difference of 0.75 (95%CI .03 to 1.47). Twelve months was identified as the next important cut-off beyond which patients had significantly worse outcomes on the mJOA. In adjusted model, patients with < 12 months symptom duration improved by 3.37 on the mJOA, whereas those with a duration 12 months or longer exhibited a 2.85 mean gain, difference of 0.52 (95%CI .01 to 1.03. Duration of symptoms was not associated with Nurick or SF-36 PCS or MCS in either the unadjusted or adjusted models (Figure 1).

Conclusions: Patients who are operated on within 4 months of symptom presentation have better mJOA outcomes. It is recommended that patients with DCM are diagnosed in a timely fashion and referred early for surgical consultation. Our study does not support the traditional conservative “watchful waiting” approach to symptomatic patients with DCM.

![Figure 1](image)

Figure 1. Unadjusted (left) and Adjusted (right) Analysis between Duration of Symptoms and Change in mJOA between Baseline and 1-year Follow-up

Each point on the x-axis reflects a different cut-off between “short” and “long” duration of symptoms. Points below the green dashed line have p-values <0.1. These graphs help to identify important cut-offs beyond which there is a negative impact on outcome.