

## O-05

### **Integrating Neck Pain Scores Improves the mJOA for Predicting Quality of Life in Degenerative Cervical Myelopathy**

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**Background:** The modified Japanese Orthopaedic Association score (mJOA) remains the most widely used tool for assessing degenerative cervical myelopathy (DCM), despite limitations such as ceiling effect and inability to capture multidimensional outcomes. Recent evidence emphasize neck pain as a crucial determinant of outcome in DCM, underscoring the need for its integration into current assessment tools.

**Question:** Does adding neck pain scores to the mJOA classification improve the prediction of health-related quality of life (HRQoL) outcomes?

**Design:** Ambispective analysis of three large multicenter international DCM studies.

**Methods:** The harmonized dataset was partitioned into training and validation sets (3:1 split) using stratified sampling. In the training cohort, a regression model was developed using mJOA scores and neck pain severity as independent predictors and the achievement of minimal clinically important difference (MCID) in the Neck Disability Index (NDI) as the primary binary outcome. Conditional probabilities from the model redefined mild, moderate, and severe mJOA categories. Model performance was assessed using ROC analysis and AUC metrics.

**Results:** The cohort included 1,047 patients (mean age: 56.79 ±11.39), with 61.5% reporting mild, 19.7% moderate, and 18.8% with severe neck pain. Incorporating neck pain scores significantly altered mJOA classifications, resulting in a novel classification schema. Among patients with severe neck pain, only 5.5% were classified as mild, compared to 17% using the original mJOA system. The revised mJOA demonstrated superior discrimination in predicting SF-36 Physical (AUC: 0.62 vs 0.56, p<0.05) and Mental Component Summary scores (AUC:0.62 vs 0.56, p =0.01).

**Discussion:** Incorporating neck pain severity into the mJOA scoring system significantly improves predictive accuracy for HRQoL outcomes following surgery in DCM patients.

**Figure 1.** ROC Curves A.) mJOA; B.) SF-36 PCS; C.) SF-36 MCS

Fig. 1

