



The Minimal Clinically Important Difference of the Modified Japanese Orthopaedic Association Scale in Patients with Degenerative Cervical Myelopathy Undergoing Surgery

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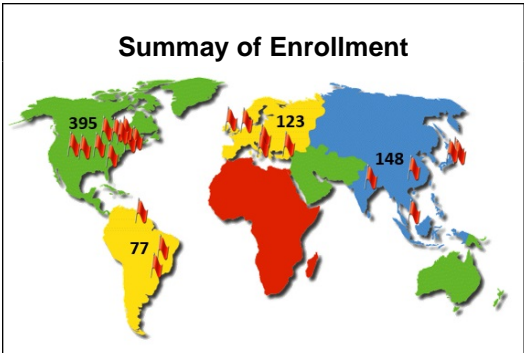


Introduction

The modified Japanese Orthopaedic Association (mJOA) is the most frequently used clinician-administered tool to assess functional status in patients with degenerative cervical myelopathy (DCM). By defining its minimum clinically important difference (MCID), clinicians can better evaluate treatment outcomes for this condition.

Clinical Questions

1. What is the MCID of the mJOA in patients undergoing surgery for DCM?
2. Does the MCID of the mJOA vary based on myelopathy severity?



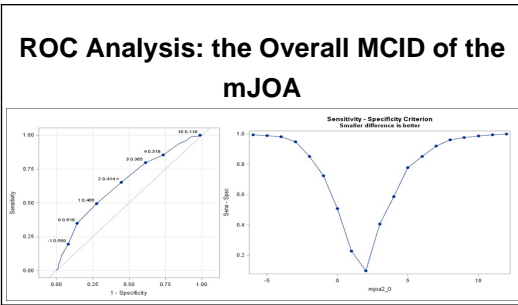
Methods

Three methods were used to determine the MCID of the mJOA: 1) distribution-based, 2) anchor-based and receiver operating characteristic (ROC) analysis and 3) professional opinion. Data was derived from patients enrolled in either the AOSpine CSM-North America or CSM-International multicenter studies at 26 global sites. All patients had symptomatic DCM with at least one clinical sign of myelopathy and all received surgical decompression of their cervical spine.

1. What is the MCID of the mJOA?

A. Distribution Based Methods

The standard deviation of the preoperative mJOA was 2.71. Based on the half standard deviation method, the MCID is estimated as 1.36. The SEM was calculated as 1.21.

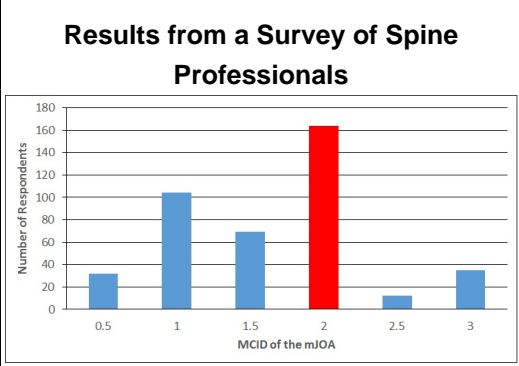


B. Anchor-based methods and ROC analysis

The mJOA at 12-months ater surgery was compared between patients who "slightly improved" on the Neck Disability Index and those who were "unchanged." ROC analysis was performed to compute a discrete integrer value for the MCID that yielded the sallest difference between sensitivity and specificity.

C. Survey of AOSpine International

A survey of AOSpine International was conducted to determine what spine professionals viewed to be the MCID of the mJOA. the mean response was 1.65±0.66. A MCID of 2 was the most commonly selected answer (n=164, 39.42%). However, this was not a convincing majority as 104 (25.00%) and 69 (16.59%) participants chose 1 and 1.5, respectively

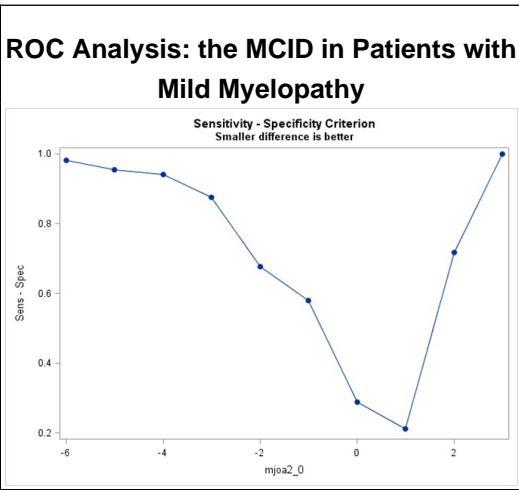


2. Does the MCID of the mJOA vary based on myelopathy severity?

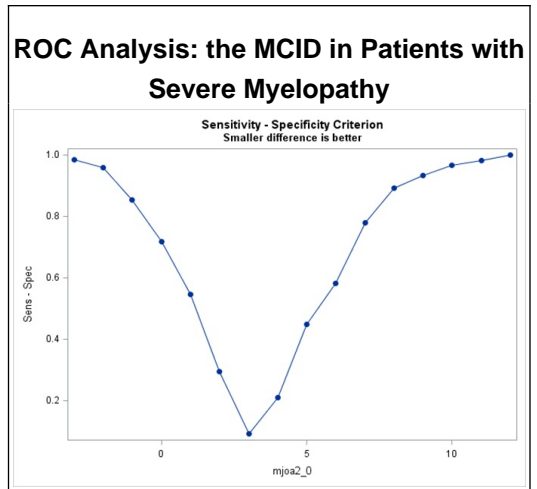
The sample was divided into three groups based on myelopathy severity: mild (mJOA=15-17), moderate (mJOA=12-14) and severe (mJOA<12). Anchor-based methods and ROC analysis were conducted for each severity group.

| Change in mJOA in different NDI subgroups | | | | |
|---|---------------------|--------------------------|--------------------------------|----------------------------|
| Change in mJOA | Worsened (NDI<-7.5) | Unchanged (-7.5≤NDI<7.5) | Slightly Improved (7.5≤NDI<15) | Markedly Improved (15≤NDI) |
| All Patients | 1.71±2.87 | 1.56±2.37 | 2.67±2.50 | 3.20±2.82 |
| Mild (mJOA: 15-17) | -0.56±2.34 | 0.57±1.64 | 1.00±2.22 | 1.15±1.67 |
| Moderate (mJOA: 12-14) | 1.56±2.37 | 1.77±2.45 | 2.21±1.53 | 2.76±1.94 |
| Severe (mJOA<12) | 3.18±2.84 | 2.43±2.62 | 4.19±2.34 | 4.90±3.11 |

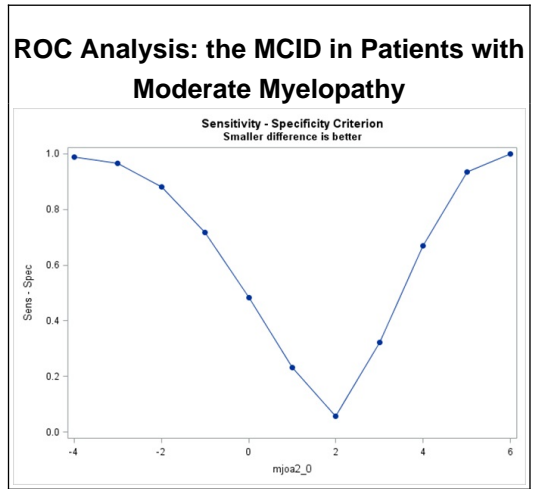
A. Mild Myelopathy (mJOA=15-17)



B. Moderate Myelopathy (mJOA=12-14)



C. Severe Myelopathy (mJOA<12)



Conclusions

The MCID of the mJOA is estimated to be between 1 and 2 points and varies with myelopathy severity. This knowledge will enable clinicians to identify meaningful functional improvements in DCM patients. Furthermore, this information can help better interpret results of previous therapeutic studies.