



International Variations in the Clinical Presentation and Management of Cervical Spondylotic Myelopathy: One-Year Outcomes of the AOSpine Multicenter Prospective CSM-I Study

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Introduction

While cervical spondylotic myelopathy (CSM) is the commonest cause of spinal cord impairment worldwide, little is known regarding international variations in clinical presentation, management and outcomes of this condition. To address this key issue, we undertook a prospective multicenter study of CSM patients undergoing surgical treatment.

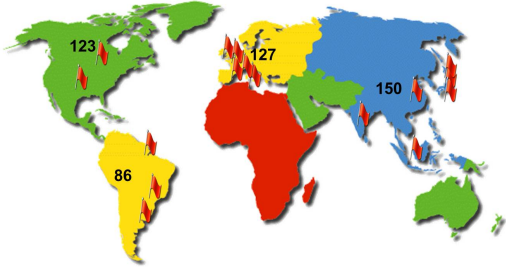
Methods

486 patients from **16** sites with clinically confirmed CSM and imaging evidence of cord compression (MRI or CT-myelogram) were enrolled in the prospective cohort study. Patients underwent anterior surgery (discectomy/corpectomy and instrumented fusion) or posterior surgery (laminectomy and fusion or laminoplasty) based on the judgment of the operating surgeon.

One year follow-up data of **389** patients were evaluated for the following outcomes evaluations:

- modified Japanese Orthopaedic Assessment scale (mJOA)
- Nurick Score
- Neck Disability Index (NDI)
- SF36v2
- Assessment of treatment complications

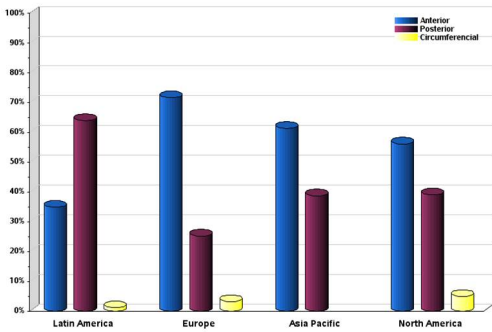
Subject Accounting by Regions



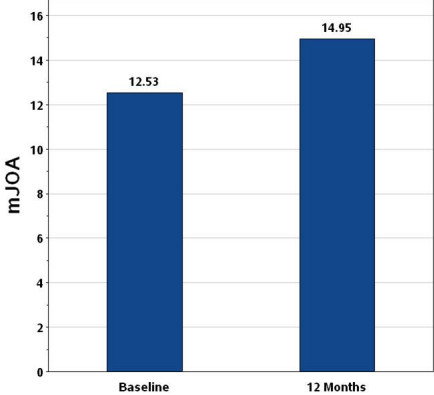
Regional Differences in Demographics

Variable	North America (N=123)	Latin America (N=86)	Europe (N=127)	Asia Pacific (N=150)	P value
Age	59.6±11.6	54.6±10.9	57.4±11.8	53.8±12.2	<.0001
Female	42.2%	33.7%	40.9%	26.0%	.0173
Gender					
Surgery					<.0001
Anterior	56.1%	34.8%	71.6%	61.3%	
Posterior	39.0%	63.9%	25.2%	38.7%	
Circumferential	4.9%	1.2%	3.1%	0%	
Number of levels	4.2±1.4	3.9±1.2	3.2±1.0	3.4±1.3	<.0001

Surgical Technique by Region



12 Month Outcomes (N=389) – mJOA



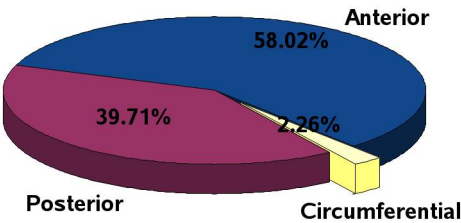
Regional Differences in Outcomes

Variable	North America (N=106)	Latin America (N=72)	Europe (N=97)	Asia Pacific (N=114)	P value
mJOA	3.0 (2.6)	2.0 (2.6)	1.3 (2.3)	3.0 (2.7)	<.0001
NDI	10.8 (19.3)	11.6 (18.3)	9.4 (22.5)	19.3 (17.7)	0.010
Nurick	1.5 (1.5)	0.9 (1.4)	1.2 (1.3)	1.5 (1.5)	<.0001
SF36v2 PCS	7.2 (9.0)	9.2 (10.0)	5.2 (9.2)	9.8 (10.3)	<.0001
SF36v2 MCS	6.8 (9.5)	8.3 (12.1)	4.1 (9.8)	9.2 (10.6)	<.0001

*Values in table show changes in outcome between baseline and 12 months adjusted for baseline predictors.

**Values in parentheses are standard deviation.

Overall Surgical Techniques



Changes between Baseline and 12-Months Outcomes

	Laminectomy and Fusion (N=108)	Laminoplasty (N=66)	P-value
mJOA	2.3 (2.8)	3.0 (2.6)	0.1462
Nurick Score	1.3 (1.5)	1.2 (1.3)	0.5733
NDI	11.9 (17.9)	13.3 (21.9)	0.7179
SF-36v2 PCS	7.7 (9.5)	8.5 (9.5)	0.6600
SF-36v2 MCS	6.9 (10.7)	7.9 (9.1)	0.5678

Baseline and 12-Months Outcomes Among Patients Receiving Decompressive Surgery for CSM

	Baseline (N=486)	12 month (N=389)	P-value
mJOA	12.5 (2.8)	14.9 (2.6)	< .0001
Nurick Score	3.3 (1.2)	2.0 (1.6)	<.0001
NDI	38.0 (20.2)	24.6 (18.7)	<.0001
SF-36v2 PCS	35.2 (8.5)	43.5 (10.2)	<.0001
SF-36v2 MCS	38.8 (9.9)	46.5 (10.7)	<.0001

*Values in parentheses are standard deviation.

Conclusions

Surgical treatment for CSM results in sustained improvement in generic and disease HRQOL.

The amount of improvement varied across the regions.

- Subjects from Asia Pacific and Latin America had larger improvements in outcomes than those from North America and Europe.

The impact of differences in age (much younger in Asia/Pacific) and socio-cultural perceptions of disability and impairment likely play a role in these observations