



Impact of Diabetes on Symptoms and Treatment Outcomes in Patients with Cervical Spondylotic

Myelopathy: The Results of the AOSpine North America Multi-Center Prospective Study

Paul M. Arnold MD; Branko Kopjar MD; Michael G. Fehlings MD PhD FRCSC FACS; Sangwook Yoon MD; Alexander R.

Vaccaro MD; Darrel S. Brodke MD; Christopher I. Shaffrey MD, FACS; Eric J. Woodard MD; Robert J. Banco MD; Jens

Chapman MD; Michael Janssen MD; Rick Sasso MD; Christopher Bono MD; Mark B. Dekutoski MD; Ziya L. Gokaslan MD



BACKGROUND

Cervical spondylotic myelopathy (CSM) is the commonest cause of spinal cord impairment.

The impact of diabetes and its associated neuropathy may impact the level of symptoms and the outcomes of treatment in patients with cervical spondylotic myelopathy.

METHODS

A total of 278 patients with clinically symptomatic CSM were enrolled at 12 North American sites in a prospective cohort study. Of these, 42 (15%) had diabetes. Pre-surgery symptoms and treatment outcomes between the patients with and without diabetes were compared using univariate and multivariate models adjusting for demographics, comorbidities, baseline mJOA, Neck Disability Index, SF36v2, Nurick Score, history of CSM, source of stenosis, spinal level, and surgical approach.

RESULTS

- Diabetic patients were older (60 vs 56 years, $P < .005$), less likely to smoke (14% vs. 28%, $P < .05$) and more likely to be on a social security (52% vs 36%, $P < .05$). They presented with a higher Nurick grade (4.4 vs 4.1, $P < .05$).
- There were no differences in mJOA and SF36v2 at the presentation.
- Overall, there was a significant improvement in all outcome parameters at 12 months (these findings are presented elsewhere).
- We found no differences in the level of improvement between the patients with and without diabetes in any of the outcome parameters. These findings remained stable after adjustment for multiple baseline characteristics through multivariate statistical modeling.

RESULTS

Demographics		
Demographics	No diabetes	Diabetes
Age	55.7±11.8	60.1±10.75
Gender – Male	59.8%	57.1%
Race	White	84.8%
	Black/African American	7.6%
	Asian	3.4%
	Other	4.2%
Smoker	28.0%	14.3%

Results Symptom Status			
Outcome	No diabetes	Diabetes	P value
mJOA	12.9 (2.8)	12.2 (2.3)	.1301
Nurick	4.1 (1.0)	4.4 (.9)	.0403
NDI	41.5 (20.5)	43.1 (22.6)	.6804
SF36v2 PCS	36.2 (9.6)	36.5 (9.7)	.8714
SF36v2 MCS	39.8 (10.8)	41.3 (11.2)	.4308

Outcomes at 12 Months			
Outcome	No diabetes	Diabetes	P value
mJOA	2.74 (.17)	2.84 (.42)	.8260
Nurick	1.57 (.10)	1.77 (.25)	.4522
NDI	11.63 (1.32)	9.61 (3.43)	.5834
SF36v2 PCS	5.64 (.68)	2.83 (1.76)	.1380
SF36v2 MCS	5.47 (.69)	3.46 (1.80)	.2996
*Change from Baseline to 12 Months			

LEARNING OBJECTIVES

Diabetes is a significant comorbidity in all patients. Diabetic neuropathy puts potential risk on recovery and success in surgery from CSM.

CONCLUSIONS

Except for a marginally higher Nurick score, diabetes does not seem to affect severity of symptoms at presentation for surgery. More importantly, outcomes of surgical treatment are similar in patients with and without diabetes. We conclude that surgical treatment is effective and recommended for patients with diabetes who have symptomatic spondylotic myelopathy.

ACKNOWLEDGEMENTS

This study was supported by a grant from AO Spine North America, a non-profit foundation.