Surgical Decompression for Cervical Myelopathy Improves Hand Function: A Prospective Observational Study

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Introduction

Cervical myelopathy is a relatively common disease that can affect numerous functional domains. Surgical decompression has been demonstrated to improve functional outcomes. We performed a prospective observational study with a focus on hand impairment in patients with cervical myelopathy to evaluate the degree of both pre-operative impairment and post-operative improvement following surgical decompression.

Methods

All patients treated, at a single center between July 2013 and May 2014, for cervical myelopathy were recruited for enrollment. Patients performed three tests, Jamar Dynamometer, Palmar Pinch gauge test, and Nine-Hole-Peg test, pre-operatively and 6-8 weeks post-operatively to evaluate hand strength and dexterity. Pre-operative test results were compared to standardized population means for each domain to access the degree of pre-operative impairment. Pre-operative and post-operative test results were compared to evaluate for any potential surgical benefit.

Results

33 of 38 enrolled patients completed pre- and post-operative testing. The average patient age was 58.1 years and 52% of patients were male. 70%, 61%, and 91% of patients scored one standard deviation lower than population based means in at least one hand for the Jamar Dynamometer, Palmar Pinch gauge test, and Nine-Hole-Peg test, respectively. Myelopathic patients had significantly worse pre-operative hand function in both hands and in each of the tested domains compared to population controls ($p<0.05$). 52%, 48%, and 91% of patients achieved clinical benefit in at least one hand in the three tests, respectively. Post-operatively, patients had significant improvement in bilateral hand function across each test ($p<0.05$) with the exception of the right-hand Nine-Hole-Peg-Test.

Conclusions

Surgical decompression significantly improves patient hand strength and dexterity in patients with cervical myelopathy.

Learning Objectives

1. Understand the pre-operative hand impairments secondary to cervical myelopathy

2. Understand the effect of surgery on hand function in patients with cervical myelopathy

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