

Abstract

Title

Improvement rates and predictors of clinical outcome following surgery for degenerative cervical myelopathy

Background

Degenerative cervical myelopathy (DCM) is the leading cause of spinal cord impairment in adults.

Research question

What are the improvement rates after posterior surgical treatment for DCM and are there baseline factors that predict clinical outcomes, complications and reoperations after surgery?

Design

This is a national register-based cohort study of 717 patients treated for DCM with laminectomy alone (LAM, n=412) or laminectomy with instrumented fusion (LAM+F, n=305) in 2006 to 2019.

Methods

Evaluated parameters: surgical method (LAM, LAM+F); age at surgery; European myelopathy score (EMS) at baseline, 2 years (y) and 5y; clinical improvement defined as increased EMS by 1-3 points in mild, moderate, or severe myelopathy, respectively; perioperative complications; patient-reported complications (PRC) at 1y; number of operated levels; days to reoperation; preoperative MR parameters (spondylolisthesis – slippage, mm; kyphosis – mK-line interval, mm). Descriptive statistics (improvement rates) and multivariable models fitted

to imputed data (predictors) were used for EMS outcome at 2y and 5y, complications, and reoperations.

Results

Clinical improvement rates: LAM 2y – 62 (40%) of 154 and LAM+F – 2y 49 (42%) of 117 ($p=0.804$); LAM 5y – 23 (35%) of 66 and LAM+F 5y – 18 (30%) of 60 ($p=0.575$). Older age and lower baseline EMS values were negative predictors of both 2y and 5y EMS outcome. LAM+F was associated with more perioperative complications ($p=0.007$). The number of operated levels was associated with more PRC at 1y ($p=0.018$) and a shorter reoperation-free period ($p=0.039$). Kyphosis was a negative predictor of 5y EMS outcome ($p=0.042$).

Discussion

Less than half the patients with DCM improved after surgery. Older age, severe myelopathy, and kyphotic deformity were predictors of worse outcome. Adding fusion and including more levels in the surgical treatment were associated with more complications and earlier reoperations in this frail patient population.