#58 - Posters

Predictor Of Improvement Of Back Pain After Minimally Invasive Decompression For Lumbar Spinal Stenosis

Orthopaedics / Spine / Degenerative Spine Surgery

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Background
In decompressive surgery for lumbar spinal stenosis (LSS), leg symptoms including neurogenic intermittent claudication improve well after surgery, and back pain (BP) also can be frequently relieved. Residual BP after surgery can be a cause of poor surgical outcomes.

Objectives
The aim of this study was to identify potential predictor of BP relief after minimally invasive decompression surgery (MIDS) for LSS.

Study Design & Methods
A total of 136 patients of degenerative LSS with moderate BP (Numeric rating scale (NRS) for BP; 4≤) preoperatively, who underwent tubular surgery for endoscopic decompression, were reviewed (M/F: 81/55, Age: mean 72 years). Primary outcome for BP relief was that the NRS for BP and Oswestry disability index (ODI) reached to the MCID (a 30% reduction from baseline) at 1-year after surgery. Ninety-two patients (67.6%) revealed BP relief at 1–year after surgery. We conducted a comparative analysis on demographic, clinical and radiological factors between the patient groups with and without BP relief. Based on findings of univariable analyses, multivariable logistic regression analysis was applied to identify preoperative predictors for improvement of BP after surgery.

Results
In multivariable logistic regression analysis, NRS of preoperative BP: 7≤ (odds ratio [OR], 3.36; 95% confidence interval [95% CI], 1.45-7.77; p=0.005), without co-existence of intradiscal vacuum phenomenon (IDVP) with LSS segments (OR, 3.36; 95% CI, 1.42-7.94; p=0.006), the change of lumbar lordosis (LL) between on the supine and standing position: 5-degree ≤ (OR, 3.93; 95% CI, 1.43-10.8; p=0.008), and with the exception of Roussouly type 1 LL (OR, 3.72; 95% CI, 1.42-9.73; p=0.007) were significantly associated with improvement of BP after surgery. In addition, the postoperative change of sagittal alignment of the spine in the patient group with BP relief could support the findings of this survey.

Conclusions
We found that the absence of co-existence of IDVP with LSS segments, more severe BP (NRS;7 ≤), a decrease of 5°≤ in the LL on standing position compared to on supine position, and the exception of Roussouly type 1 LL were identified as the potential predictor of BP relief after MIDS for LSS. Patients with these predictors, who undergoes MIDS for LSS, can be advised on the chance of a meaningful improvement in BP after surgery.