Deep Neck Extensors

Deep Neck Extensors: The deep cervical extensors (semispinalis cevicis, multifidus, and rotators) along with the cranio-cervical extensors (rectus capitis posterior major/minor and obliquus capitis superior/inferior) are KEY MUSCLES for cervical spine segmental support due to their relatively small moment arms.

The objective of a study by Liu et al. was to investigate the association between the cross-sectional area (CSA) of the deep extensor muscles (DEM) and postlaminoplasty alignment.

The preoperative CSA of the Semispinalis cervicis muscle (SC) has been reported to correlate with loss of lordosis (LL) after laminoplasty, with a CSA <154.5 mm2 associated with a 10 degrees LL.

Laminoplasty patients at the University of California San Francisco between 2009 and 2018 by 2 spine surgeons were retrospectively studied. Patients with previous cervical spine surgery or nondegenerative diagnoses were excluded. Measurements included the C2-C7 angle, T1 slope, and cervical sagittal vertical axis. Preoperative DEM CSA was measured on magnetic resonance imaging. Variables associated with lordosis were analyzed with univariate analysis and multivariate logistic regression, and association between postoperative Cervical spine alignment and the musculature was evaluated.

Seventy-six patients with a mean age of 64 years were included. The average follow-up was 22.53 months. The overall average CSA of the DEM was 2274.55 mm2 and that of the SC was 275.64 mm2. Means of both CSAs were higher in men (P<0.001). Linear regression showed no correlation between LL with CSA of the DEM or the SC (r=0.005, P=0.119; r=0.001, P=0.095). Univariate and multivariate regression showed no differences in the CSA of the DEM and SC between groups with and without LL (P=0.092, 0.117 and 0.163, 0.292). There was no correlation in LL with sex or body mass index (P>0.05).

Preoperative CSA of the deep neck extensors may not predict lordosis after cervical laminoplasty. The correlation between the preoperative SC CSA and postoperative Cervical spine alignment may not be as strong as previously reported [1].

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Liu J, Xie R, Ruan H, Rivera J, Li B, Mahmood B, Lee J, Guizar R 3rd, Mahmoudieh Y, Mummaneni PV, Chou D. The Preoperative Cross-sectional Area of the Deep Cervical Extensor Muscles Does Not Predict Loss of Lordosis After Cervical Laminoplasty. Clin Spine Surg. 2021 May 24. doi: 10.1097/BSD.0000000000001199. Epub ahead of print. PMID: 34029263.