

## **TI: POSTOPERATIVE HISTODYNAMIC RELAXATION OF CERVICAL SPONDYLOTIC MYELOPATHY**

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Pathophysiology of long tracts dysfunction in cervical spondylotic myelopathy (CSM) is unclear. It was previously proposed that kinematic Poisson effect is responsible for walking disability of CSM patients. We hypothesized that reversal of Poisson effect depends on the type of decompression, and can be confirmed by subaxial cervical spinal cord shortening and pia mater envelope shrinkage.

Patients suffering from CSM Nurick 3-5, with preoperative tethering and postoperative untethering were included. Patients that underwent expansile cervical laminoplasty (ECL) or anterior cervical corpectomy and fusion (ACCF) were assessed according to 30-meter walking track (30mWT), Nurick and mJOA scales. Kinematic MRI 3-D subaxial spinal cord reconstructions were 3D-modeled in order to confirm preoperative pincer clamping and follow up unclamping, to measure subaxial spinal cord length (SCL) and pia envelope area (PEA).

35 patients divided in the ECL (N=19) and ACCF (N=16) groups were operated on from September 1, 2008 to August 31, 2013. Patients improved according to Nurick and mJOA without differences between groups. Follow-up 30mWT analysis showed greater decrease in steps number and time in ECL group, creating the basis for further imaging analysis. MRI analysis showed that SCL [mm] shortened more [ $4,47 \pm 1,87$  vs  $1,5 \pm 2,5$ ,  $t=-4,02$ ;  $p=0,0003$ ] and PEA [ $\text{mm}^2$ ] shrank more [ $95,58 \pm 43,73$  vs  $22,94 \pm 33,11$ ,  $t=-5,45$ ,  $p<0,0001$ ] in the ECL group. Multivariate logistic analysis has shown that  $\Delta$  30mWT-time and  $\Delta$  PEA is a very predictive model while area under the ROC curve is 0.98.

Our results created nidus for further research of postdecompression spinal cord relaxation.