

Minimally Invasive Spinal Surgery (MISS) - MED technology

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Microendoscopic decompression surgery was originally developed for treatment of lumbar disc herniation (MED), and has also been used for spinal stenosis (MEL). However, only small number of studies is available on the use of this approach for treatment of cervical or thoracic degenerative spinal diseases. Most recently, we published two articles regarding to these surgical results [1, 2]. On the other hand, Epstein whistled a warning to an easy selection of the microendoscopic decompression for thoracic spinal disease [3]. Epstein describes a complicated case of combined OPLL and OLF, however microendoscopic MISS requires determination of the appropriate surgical indication for the treatment.

It is also important to emphasize the crucial of training and surgical experience as microendoscopic decompression surgery has a steep learning curve. Microendoscopic MISS is harder to perform in the cervical/thoracic regions than in the lumbar region, Furthermore, this technique requires surgical skill because of the narrow operative field (16 mm diameter), two-dimensional visualization, and the need to differentiate between the anatomical features of the lumbar and cervical/thoracic spine.

Structured training on the use of the tubular retractor and endoscope (or microscope) system for surgeons is needed to improve surgical outcomes in microendoscopic MISS. The authors have implemented a system in our institute in which two surgeons are trained each year, and over 1000 microendoscopic MISS are carried out annually. A surgeon who has performed more than 100 microendoscopic MISS on the lumbar spine

is permitted to carry out procedures on the cervical/thoracic spine under the guidance of a specialist. A surgeon should adopt the most proficient technique to the patient. The authors will continue to refine the technique for microendoscopic MISS to enable it to become a widely used approach in degenerative spinal diseases.

1. Oshima Y, Takeshita K, Inanami H, et al. (2014) Cervical Microendoscopic Interlaminar Decompression through a Midline Approach in Patients with Cervical Myelopathy: A Technical Note. *Journal of neurological surgery Part A, Central European neurosurgery*. doi: 10.1055/s-0034-1373663
2. Baba S, Oshima Y, Iwahori T, et al. (2015) Microendoscopic posterior decompression for the treatment of thoracic myelopathy caused by ossification of the ligamentum flavum: a technical report. *European spine journal*: official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society. doi: 10.1007/s00586-015-4158-9
3. Epstein NE (2014) Medicolegal Corner: When minimally invasive thoracic surgery leads to paraplegia. *Surgical neurology international* 5:S55–8. doi: 10.4103/2152-7806.130667