Lumbar paravertebral muscle

The association between chronic low back pain and morphologic, structural changes of the paravertebral muscles has been widely acknowledged [1) 2) 3) 4)].

Considerable research effort has been directed at investigating the fatty infiltration of the paravertebral muscle, as well as the reduction of muscle volume, as a clinical predictor of post-surgical outcome [5)] and spinal stability [6)].

Additionally, fatty infiltration of the muscle can also be caused by chronic conditions such as age-related sarcopenia [7)] , which is the generalized gradual loss of skeletal muscle mass and strength; it is associated to functional limitation, physical disability, and muscle strength [8) 9)].

In the conventional posterior approach to the lumbar spine, the lamina is exposed by stripping the paravertebral muscles from the spinous process, and the resulting paravertebral muscle damage can produce muscle atrophy and decreased muscle strength.

Chatani developed a novel surgical approach to the lumbar spine in which the attachment of the paravertebral muscles to the spinous process is preserved. In the novel approach, the spinous process is split on the midline without stripping the attached muscles, and a hemilateral half of the spinous process is then resected at the base, exposing only the ipsilateral lamina. Before closing, the resected half is sutured and reattached to the remaining half of the spinous process. Thirty-eight patients with lumbar spinal canal stenosis (LSCS) undergoing unilateral partial laminectomy and bilateral decompression using this novel approach were analyzed. Postoperative changes in the multifidus muscle were evaluated by T2 signal intensity on MR images. MRI performed 1 year after the operation revealed no significant difference in the T2 signal intensity of the multifidus muscle between the approach and nonapproach sides. This result indicated that postoperative changes of the multifidus muscle on the approach side were slight. The clinical outcomes of unilateral partial laminectomy and bilateral decompression using this approach for LSCS were satisfactory. The novel approach can be a useful alternative to the conventional posterior lumbar approach [10)].

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