Erector spinae muscle



The erector spinae is a muscle group of the back in humans and other animals, which extends the vertebral column (bending the spine such that the head moves posteriorly while the chest protrudes anteriorly). It is also known as sacrospinalis in older texts. A more modern term is extensor spinae, though this is not in widespread use.

The erector spinæ is not just one muscle, but a bundle of muscles and tendons. It is paired and runs more or less vertically. It extends throughout the lumbar, thoracic and cervical regions, and lies in the groove to the side of the vertebral column. Erector spinæ is covered in the lumbar and thoracic

regions by the thoracolumbar fascia, and in the cervical region by the nuchal ligament.

This large muscular and tendinous mass varies in size and structure at different parts of the vertebral column. In the sacral region, it is narrow and pointed, and at its origin chiefly tendinous in structure. In the lumbar region, it is larger, and forms a thick fleshy mass.

It consists of two parts: medial longissimus muscle and lateral iliocostalis muscle.

Further up, it is subdivided into three columns. These gradually diminish in size as they ascend to be inserted into the vertebræ and ribs.

The erector spinæ arises from the anterior surface of a broad and thick tendon. It is attached to the medial crest of the sacrum, to the spinous processes of the lumbar and the eleventh and twelfth thoracic vertebræ and the supraspinous ligament, to the back part of the inner lip of the iliac crests, and to the lateral crests of the sacrum, where it blends with the sacrotuberous and posterior sacroiliac ligaments.

Some of its fibers are continuous with the fibers of origin of the gluteus maximus.

The muscular fibers form a large fleshy mass that splits, in the upper lumbar region, into three columns, viz., a lateral (Iliocostalis), an intermediate (Longissimus), and a medial (Spinalis). Each of these consists of three parts, inferior to superior, as follows:

Medial longissimus

Lateral iliocostalis

see Multifidus muscle.

Erector spinae muscle block

see Erector spinae muscle block.

Muscle retraction is an important factor not only for multifidus injury, but also for long-term multifidus atrophy after posterior lumbar surgery; a longer retraction time caused more severe multifidus injury and atrophy. Muscle fibers can be regenerated postoperatively, and denervation might be the reason for muscle atrophy ¹⁾.

To date, it remains unclear whether the preservation of segmental motion by total disc replacement (TDR) or motion restriction by stand-alone anterior lumbar interbody fusion (ALIF) have an influence on postoperative degeneration of the posterior paraspinal muscles or the associated clinical results.

Motion restriction via stand-alone ALIF and motion preservation via TDR both present small changes in the posterior lumbar paraspinal muscles with regard to volume atrophy or fatty degeneration at the index and superior adjacent segments. Therefore, although the clinical outcome was not affected by the observed muscular changes, the authors concluded that the expected negative influence of motion restriction on the posterior muscles compared with motion preservation does not occur on a clinically relevant level.²⁾. Hu ZJ, Zhang JF, Xu WB, Zhao FD, Wang JY, Fan SW, Fang XQ. Effect of pure muscle retraction on multifidus injury and atrophy after posterior lumbar spine surgery with 24 weeks observation in a rabbit model. Eur Spine J. 2015 Dec 19. [Epub ahead of print] PubMed PMID: 26687124.

Strube P, Putzier M, Streitparth F, Hoff EK, Hartwig T. Postoperative posterior lumbar muscle changes and their relationship to segmental motion preservation or restriction: a randomized prospective study. J Neurosurg Spine. 2016 Jan;24(1):25-31. doi: 10.3171/2015.3.SPINE14997. Epub 2015 Sep 11. PubMed PMID: 26360146.

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