**Abstract:**

The approach-related morbidity resulting from iatrogenic erector spinae injury in posterior lumbar surgery has become an increasing concern for spine surgeons. Many studies have explained the injury mechanisms and reported new surgical approaches to prevent this iatrogenic injury from their own point of views, but there is still no systemic information for a thorough understanding of this iatrogenic erector spinae injury that may give spine surgeons practical advices in their individual operations. We consequently reviewed the literature on the anatomy of erector spinae, causes of injury, and relative minimally invasive approaches. We found that the local anatomic structures make the erector spinae vulnerable to injury during posterior lumbar surgery, especially the medial multifidus which is innervated only by the medial branch of the dorsal ramus, with no intersegmental nerve supply as in the other paraspinal muscles, and the injury factors mainly include dissection, retraction, denervation and immobility. Studies suggest the goal of prevention is to preserve the physiological structure of erector spinae and to avoid or limit the injury causes: approaches through spatium intermusculare and approaches with endoscope and tubular retractor system can prevent the erector spinae from injury by less dissection and retraction; non fusion techniques may prevent the erector spinae from disuse atrophy by preserving the segmental motion and the adjacent erector spinae activity.
Iatrogenic injury to the erector spinae during posterior lumbar spine surgery: Underlying anatomical considerations, preventable root causes, and surgical tips and tricks

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