



## RESEARCH ARTICLE

### ERECTOR SPINAE PLANE BLOCK A TREND THAT MUST BE REVIEWED

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#### ARTICLE INFO

##### Article History:

Received 30<sup>th</sup> July, 2020  
Received in revised form  
26<sup>th</sup> August, 2020  
Accepted 24<sup>th</sup> September, 2020  
Published online 30<sup>th</sup> October, 2020

##### Keywords:

Erector spinae plane(ESP)block

#### ABSTRACT

The blockage of the erect muscle fascia (ESP) of the spine is a relatively recent technique that was first described by Forero et al. In September 2016. It has applications in the control of chronic pain with neuropathic component of the thoracic wall, where its original usefulness is born in metastatic rib disease and a defective bonding pathology of multiple coastal fractures. Recent anatomical and radiological research into corpses indicates that the likely site of action for such blockage is in the dorsal and ventral branch of the thoracic spinal nerves. The erecting muscle of the spine is also called sacrospinal and in some texts as a muscular strainer of the spine. ESP is a set of muscles and tendons that extend throughout the entire spine, arises from the anterior surface in the medial portion of the sacrum, at the lumbar level of the spiny apophysis and the thoracic vertebrae 11va and 12va In the lumbar region the erecting muscle of the spine is divided, into three portions: Lateral (muscle Iliocostal), Intermediate (long muscle), Medial (spinal thoracic muscle). In the original description of Doctor Foreo et al. The results were documented with a complete resolution of bone neuropathic pain. ESP blocking is a promise to become a safe, less invasive and useful alternative to clinical application in various pain scenarios.

#### INTRODUCTION

There is a novel blockage on an interfacial plane, for a large number of pathologies that are carried with pain; both acute and chronic, as well as cases for analgesia during and post to a surgical act, no doubt the evidence remains limited, but there are more and more successful reports of spinae erecting muscle blockage (ESP). The blockage of the spinae erect muscle fascia is a relatively recent technique that was first described by Forero et al. In September 2016. It has applications in the control of chronic pain with neuropathic component of the thoracic wall, at least it was in this entity where it was originally used, but since said publication the present blockage is increasingly used for other situations, being mostly for the control of post-surgical pain.

#### The use of this technique as part of an analgesic approach in surgeries such as:

- Original utility in metastatic rib disease, and a second case of defective binding of multiple coastal fractures.
- Radical mastectomy secondary to breast ca
- Reconstruction mastoplasty with the use of expanders
- Hernioplasty ventral
- Hip arthroplasty
- Nephrectomies in paediatric cases
- Thoracentesis/Thoracotomies

- Laparoscopic cholecystectomy
- Analgesia in patients undergoing bariatric procedures
- Caesarean section.

For the compression of this blockage we refer to the original article where Forero et al, in which the anatomy of the ESP blocking action site is documented and explains the application of such intervention by exposing the cases. Recent anatomical and radiological research into corpses indicates that the likely site of action for such blockage is in the dorsal and ventral branch of the thoracic spinal nerves.

**Anatomy:** The erecting muscle of the spine is also called sacrospinal and in some texts as a muscular strainer of the spine. It is important to clarify that it is not a single muscle, but a set of muscles and tendons have a vertical arrangement. They extend along the entire spine and their location is in the lateral foramen of the spine. This set of muscles and tendons varies in size and structure in the different parts of the spine. Its largest portion is at the lumbar level. The erecting muscle of the spine arises from the anterior surface in the medial portion of the sacrum, at the lumbar level of the spiny apophysis and the thoracic vertebrae 11va and 12va, of the supraspine ligament, the back of the inner face of the iliac ridges and lateral ridges of the sacrum, where it binds with the sacral-tuberous ligament and sacral-iliac ligaments posterior.

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In the lumbar region the erecting muscle of the spine is divided, into three portions:

- Side (Iliocostal muscle)
- Intermediate (very long muscle)
- Medial (spinal thoracic muscle)

Most have their origins in one vertebra and insertion into the next. Each upper thoracic spinal nerve is divided into 2 branches: a dorsal and ventral branch, said division is at the outlet of the intervertebral foramen.

**DORSAL BRANCH:** At its exit from the intervertebral foramen this branch subsequently travels through the cost-transverse foramen (which is limited superiorly by the transverse process, inferiorly by the lower rib, laterally by the upper cost-transverse ligament, and medially through the foil and facet joint), and then ascends to the erector of the spine (it is a common term for the 3 muscles of the spine, spinal thoracic muscle, very long and iliocostal). Here it presents a sub-division in lateral and medial branches; the medial branch continues to ascend through the major rhomboid and trapezium muscles in a superficial location before ending up in a posterior skin branch. The lateral skin branch arises from the intercostal nerve near the angle of the rib and this branch ascends to a shallow location, emerging near the middle axillary line where it is subdivided into anterior and posterior branches that irrigate the lateral thoracic wall.

**VENTRAL BRANCH:** It moves laterally like the intercostal nerve, running first to the depth of the inner intercostal membrane and then in the plane between the internal and inner intercostal muscle on the inner face of the rib. The intercostal nerve ends in an anterior skin branch that inerts the anterior chest wall and upper abdomen. In addition to these main branches, each intercostal nerve also results in multiple muscle branches that inert the intercostal muscles, as well as inter-segmental communicating branches. In the original description of Doctor Foreo et al. The results were documented with a complete resolution of bone neuropathic pain presented as an extensive skin blockage of the posterior, lateral and anterior chest wall. Which strongly suggests that the dorsal and ventral branches of the thoracic spinal nerves must have been covered with such blockage. In search of clarifying the findings, a specific axial tomography was corroborated by the use of specific imaging studies where it suggested as an explanation that there was a proximal location near the intervertebral holes, clarifying the extent of the blockade, coupled with this explanation was supported by the data of corpses, where they showed the anterior penetration through the costtransverse foramen and in the vicinity of the origin of the dorsal and ventral branches when the dye was injected into the deep (post) interfascial plane of the erecting muscle of the spine. As a recommendation in the practice of ESP blocking it is important to perform the injection near the midline at the tips of the transverse processes, since the cost-transverse holes are mediaally located to this parasagittal plane. Cross-sectional processes also serve as a convenient sonographic reference point and backing for needle feed, which contributes to the ease and safety of the blockage, this being one of its main advantages, another of them is echo anatomy as it is easily recognizable and there are no structures at risk of needle injury in the vicinity. Ultrasound ESP was originally described to provide thoracic analgesia in the T5 cross-sectional process, however, it currently grows more evidence of its use at other levels for other entities such as; L4, for orthopedic surgery, T9 in case of C-sections, with promising results.

## Conclusion

There is no doubt that ESP blocking is a promise to become a safe and less invasive alternative. As medical evidence grows regarding its use, it generates considerable appeal as it is related to an inherently lower risk of neurovascular and pleural injury, low risk of systemic toxicity by local anesthetic and a relatively simple technique compared to epidural or paravertebral blockage. It has been used in the treatment of acute perioperative pain in a variety of clinical applications including breast, thoracic and abdominal surgeries and trauma and may even offer some benefit in spinal surgery. Although the evidence is currently mostly limited to reporting cases, it seems we can suggest that the trend is towards a favorable outcome, being effective and useful in most cases.

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