



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



HANAA ALY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

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Erector Spinae Plane Block for post-operative analgesia in lumbar spine surgeries

A Thesis

Submitted for Partial Fulfillment of Master Degree
in **Anesthesia, Intensive Care and Pain
Management**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لَسْبَحَانَكَ لَا يَهْتَمُّ لَنَا
إِلَّا مَا عَلِمْتَ إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

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List of Abbreviations

Abb.	Full term
<i>ASRA</i>	<i>American society of regional anesthesia</i>
<i>ATP</i>	<i>Adenosine 5'-triphosphate</i>
<i>BMI</i>	<i>Body Mass Index</i>
<i>Bp</i>	<i>Blood pressure</i>
<i>CNS</i>	<i>Central Nervous System</i>
<i>CPR</i>	<i>Cardiopulmonary Resuscitation</i>
<i>ECG</i>	<i>Electrocardiography</i>
<i>ERAS</i>	<i>Enhanced Recovery After Surgery</i>
<i>ESM</i>	<i>Erector Spinae Muscle</i>
<i>ESPB</i>	<i>Erector Spinae Plane Block</i>
<i>IV</i>	<i>Intravenous</i>
<i>IVC</i>	<i>Inferior Vena Cava</i>
<i>LA</i>	<i>Local Anesthetic</i>
<i>LAST</i>	<i>Local Anesthetic Systemic Toxicity</i>
<i>MOOA/S</i>	<i>Modified observed alertness and sedation scale.</i>
<i>NRS</i>	<i>Numeric Rating Scale</i>
<i>NSAIDs</i>	<i>Nonsteroidal Anti-inflammatory Drug</i>
<i>PACU</i>	<i>Postanesthesia care unit</i>
<i>PCA</i>	<i>Patient-Controlled Analgesia</i>
<i>PM</i>	<i>Psoas Muscle</i>
<i>PONV</i>	<i>Postoperative Nausea and Vomiting</i>
<i>QLM</i>	<i>Quadrates lumborum muscle</i>
<i>TOF</i>	<i>Train of Four</i>
<i>US</i>	<i>Ultrasound</i>
<i>VAS</i>	<i>Visual Analog Scale</i>
<i>VB</i>	<i>Vertebral Body</i>
<i>WHO</i>	<i>World Health Org</i>

INTRODUCTION

Lumbar surgeries refer to any type of surgery involving any lumbar spine or lower back, between one or more of the L₁-S₁ level. The type of surgery performed in the spine including operations for trauma, deformity and myelopathy.⁽¹⁾

Major lumbar spine surgeries cause severe postoperative pain, which typically persists for at least 72 hours. Various studies have reported that maximal pain occurs in the first 4 postoperative hours, and gradually declines by the third postoperative day.⁽²⁾

Postoperative pain is often severe in patients undergoing lumbar surgery, if the postoperative pain of the lumbar spine could not be effectively relieved, it may develop into chronic pain, affecting the quality of life of the patients. Erector spinae plane block (ESPB) as a new trunk fascia block technique was proposed in 2016. ESPB has aroused the interest of many nerve block experts. The specific mechanism is still controversial. Some believe that ESPB can block the posterior root of the spinal nerve and produce part of the Para-spinal block effect with the diffusion of the drug solution.

ESPB is a regional anesthesia technique in which local anesthetic (LA) is injected between the erector spinae muscle and transverse process under ultrasound guidance, blocking the dorsal and ventral rami of the thoracic and abdominal spinal nerves.

The use of opiates and other non opiates analgesic drugs to control pain in the preoperative and post operative periods is

shown to have some disadvantages for the patients like nausea, vomiting, respiratory depression and addiction.

Many scholars have applied ESPB to postoperative analgesia in chest and abdomen. They found that ESPB may reduce postoperative muscle relaxation and analgesic drug use.⁽³⁾ Finneran and co-workers reported that ESPB can provide analgesia for breast surgery. A study reported that ESPB was effective for abdominal analgesia in weight loss surgery.⁽⁴⁾ Similarly, a report showed that ESPB relieved postoperative pain in patients with lumbosacral spine surgery, reducing the use of analgesic drugs.⁽⁵⁾

Some believed that the analgesic effect of ESPB may be better than that of epidural injection.⁽⁶⁾ Reducing the use of analgesic drugs in the perioperative period is beneficial to accelerate the recovery of patients and reduce the cost of hospitalization.

However, few clinical studies have focused on ESPB in lumbar surgery.⁽⁷⁾

What is more, there are differences in the mechanism and effect of block in different parts of the erector spinal muscle. Some scholars question the practicability of ESPB in lumbar surgery. Therefore, it is necessary to systematically summarize the use of ESPB in lumbar spine surgery so as to better understand and promote this technique and benefit patients undergoing lumbar surgery.

AIM OF THE WORK

The present study was designed to assess the analgesic efficacy and safety of ultrasound guided ESPB done at lumbar transverse process level in patients undergoing lumbar spine surgeries for postoperative analgesia.

The analgesic effect of ESPB will be assessed by recording the time passed till the need of first rescue analgesic plus the total morphine consumption during the first 24 hour post-operative “as a primary outcome”, while VAS for pain (ranging from 0 to 10, where 0 no pain and 10 maximum pain) will be evaluated at 0,1, 4, 8, 12,16,20 and 24 hours postoperatively, Unassisted walking time, Patient satisfaction and Post-operative complication like (hematoma formation, nerve injury, local anesthetic toxicity, postoperative nausea and vomiting and hemodynamic instability) as a secondary outcome.

*Chapter 1***POST SPINAL SURGERY PAIN**

The definition of pain has been updated as: An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage and is expanded upon by the addition of six key Notes and the etymology of the word pain for further valuable context.

- Pain is always a personal experience that is influenced to varying degrees by biological, psychological, and social factors.
- Pain and nociception are different phenomena. Pain cannot be inferred solely from activity in sensory neurons.
- Through their life experiences, individuals learn the concept of pain.
- A person's report of an experience as pain should be respected
- Although pain usually serves an adaptive role, it may have adverse effects on function and social and psychological well-being
- Verbal description is only one of several behaviors to express pain; inability to communicate does not negate the possibility that a human or a nonhuman animal experiences pain.⁽⁸⁾