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بسم اللّه الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني

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قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

A Comparison between Sub-sartorial Canal Block and Femoral Nerve Block for Postoperative Analgesia after Arthroscopic Knee Surgery

Thesis

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Mohamed Helmy Elsayed

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List of Abbreviations

Abb.	Full term
ACB	Adductor Canal Block
ACTH	Adrenocorticotrophic hormone
ADH	Antidiuretic hormone
ASA	American Society of Anesthesiologists
CNS	Central nervous system
CYP	Cytochrome P
DRG	Dorsal root ganglia
ECF	Extracellular fluid
ECG	Electrocardiogram
EEG	Electroencephalogram
FNB	Femoral nerve block
FNB	Femoral Nerve Block
IASP	International Association for the Study of Pain
ICF	Intracellular fluid
IL	Interleukin
LA	Local anaesthetics
NRS	Numeric rating scale
PABA	Para-aminobenzoic acid
PACU	Postanesthetic care unit
PAG	Periaqueductal grey
PCA	Patient-controlled analgesia
PNBs	Peripheral nerve blocks
RVM	Rostroventromedial medulla
SD	Standard deviation
SpO2	Pulse oximetry
SPSS	Statistical package for Social Science
TNF	Tumour necrosis factor
TRP	Transient receptor potential
VAS	Visual analog scale
Vd	Volume of distribution
VRS	Verbal categorical rating scale

INTRODUCTION

Knee arthroscopy is a common orthopaedic procedure worldwide, despite its minimally invasive nature compared to the traditional knee surgery, post-arthroscopic pain may be severe, and the patients generally require a significant amount of opioid-based analgesics after such procedures ***(Jaeger et al., 2013).***

Several patients experience narcotic-related complications, such as sedation, respiratory depression, nausea, vomiting and constipation following excessive use of opioid analgesics**.** Peripheral nerve blocks offer effective analgesia and decrease the need for opioids, thereby reducing the complications associated with the use of this class of drug ***(Jenstrup et al., 2012).***

Rehabilitation and early mobilization are essential for successful knee arthroscopic surgery. Uncontrolled pain can lead to slowed mobilization and delayed rehabilitation. However, effective postoperative pain control has been correlated with improved patient satisfaction, better short term outcomes, and decreased length of hospital stay. Rehabilitation and early mobilization are essential for successful knee arthroscopic surgery. Uncontrolled pain can lead to slowed mobilization and delayed rehabilitation ***(Hanson et al., 2013)***.

It has been reported that a significant number of patients have moderate to severe pain 24 hours after ambulatory surgery in general and knee arthroscopy in particular and pain affects the patient's activity level and satisfaction ***(Pavlin et al., 2004).***

Effective postoperative pain control has been correlated with improved patient satisfaction, better short term outcomes, and decreased length of hospital stay ***(Akkaya et al., 2008).***

Appropriate pain management after knee arthroscopy allows for faster recovery, reduces the risk of postoperative complications, and improves patient satisfaction. Contemporary pain management regimens following knee arthroscopy include oral analgesics, periarticular injection, peripheral nerve blocks (PNBs), and intravenous patient-controlled analgesia (PCA) ***(Grosu et al., 2014).***

Femoral nerve block (FNB) is commonly used for analgesia in patients undergoing knee or ankle surgery, it is one of the easiest peripheral nerve blocks to master because the landmarks are generally easy to identify and the nerve is usually found at a superficial depth. However, prolonged motor blockade from FNB is associated with a small but clinically important risk of fall**.** With the advantage of ultrasonography, the adductor canal can be easily visualized at the mid-thigh level, allowing performance of Adductor Canal Block (ACB) with a high success rate that offers almost pure sensory block with minimal motor involvement as part of a multimodal approach to pain control after knee arthroscopy ***(Sørensen et al., 2016)***.

However, a limited number of studies have examined the anatomy and infiltration technique of ACB. In addition, studies comparing ACB to FNB in terms of analgesic efficacy and functional recovery remain limited ***(Jæger et al., 2013).***

AIM OF THE WORK

The aim of the study is to compare the analgesic efficacy and functional recovery of Adductor Canal Block and Femoral Nerve Block in patients who have undergone knee arthroscopy.

ANATOMY OF NERVES OF LOWER LIMB

The four major nerves innervating the lower limb are the femoral nerve, lateral femoral cutaneous nerve, obturator nerve and the sciatic nerve. These nerves are terminal branches of the lumbosacral plexus ***(Collins, 2020)***.

Lumbosacral plexus:

It is formed by the anterior rami of L1-L4 nerves. The anterior rami of L4 and L5 combine to form lumbosacral trunk which joins with anterior rami of S1 TO S3 to form sacral plexus. The lumbar plexus lies within the psoas muscle and its branches descend into the proximal thigh ***(Bicarb, 2010).***

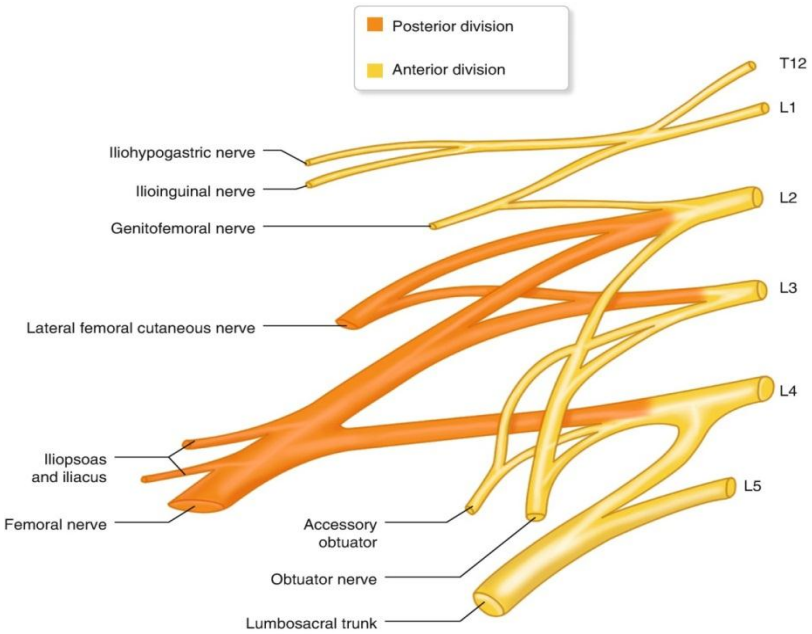

Figure 1: Lumbar plexus formation ***(Gilroy, 2006)***

Femoral Nerve:

It carries contributions from the anterior rami of L2-L4 and is the largest branch of the lumbar plexus ***(Brown et al., 2009)***.

Course:

It descends between the psoas major and iliacus muscle behind the iliac fascia and enters the thigh lateral to the femoral artery under the inguinal ligament. It supplies the iliacus and pectineus muscle in the abdomen. The nerve splits into anterior and posterior divisions in the femoral triangle ***(Capdevilla et al., 2008)***.

Innervation:

The anterior division gives rise to intermediate femoral cutaneous nerve and medial femoral cutaneous nerve which are sensory nerves. Nerve to Sartorius, a motor nerve is also a branch of the anterior division of femoral nerve.

The posterior division supplies the quadriceps femoris which are the extensors of knee. Saphenous nerve arises from the posterior division and gives sensory supply to anteromedial surface of thigh and medial part of lower leg, ankle and foot ***(Sia et al., 2004)***.