



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكروفيلم

# بسم الله الرحمن الرحيم



**MONA MAGHRABY**



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكرو فيلم



# شبكة المعلومات الجامعية التوثيق الإلكتروني والميكرو فيلم



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التوثيق الإلكتروني والميكروفيلم

# جامعة عين شمس

## التوثيق الإلكتروني والميكروفيلم

### قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



### يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



**MONA MAGHRABY**

**Adductor canal block versus intravenous  
patient controlled analgesia for postoperative  
pain control for primary total knee  
arthroplasty**

*A Thesis*

Submitted for partial fulfillment of Master degree  
in ANAESTHESIA

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2021**

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لسبب أنك لا تعلم لنا  
إلا ما علمتنا أنك أنت  
العليم العظيم

صدق الله العظيم

سورة البقرة الآية: ٣٢





## Acknowledgments

*First and foremost, I feel always indebted to **Allah**, the **Most Beneficent** and **Merciful**, who gave me the strength to accomplish this work,*

*My deepest gratitude to my supervisor, **Prof. Dr. Alaa Eldin Abd elwahab Amin Korraa**, Professor of Anesthesia, Intensive Care and Pain Management, Faculty of Medicine, Ain Shams University, for his valuable guidance and expert supervision, in addition to his great deal of support and encouragement. I really have the honor to complete this work under his supervision.*

*I would like to express my great and deep appreciation and thanks to **Dr. Sahar Mohamed Talaat Taha**, Assistant Professor of Anesthesia, Intensive Care and Pain Management, Faculty of Medicine, Ain Shams University for her meticulous supervision, and her patience in reviewing and correcting this work,*

*I must express my deepest thanks to **Dr. Amr Gaber Sayed Sharaf**, Lecturer of Anesthesia, Intensive Care and Pain Management, Faculty of Medicine, Ain Shams University, for guiding me throughout this work and for granting me much of his time. I greatly appreciate his efforts.*

*Special thanks to my **Parents**, my **Wife** and all my **Family** members for their continuous encouragement, enduring me and standing by me.*

* **Mohamed Hamza Elsaid Elsinsar***

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## List of Abbreviations

<i>Abbr.</i>	<i>Full-term</i>
<b>ACB</b>	: Adductor canal block
<b>ASA</b>	: American Society of Anesthesiologists
<b>BMI</b>	: Body mass index
<b>CPR</b>	: Cardiopulmonary resuscitation
<b>CT</b>	: Computed tomography
<b>EPCA</b>	: Epidural patient-controlled analgesia
<b>MPQ</b>	: McGill Pain Questionnaire
<b>NPI</b>	: Numerical Pain Intensity Scale
<b>NRS</b>	: Numeric Rating Scale
<b>PCA</b>	: Patient-controlled analgesia
<b>SD</b>	: Standard deviation
<b>TKA</b>	: Total knee arthroplasty
<b>TKR</b>	: Total knee replacement
<b>VAS</b>	: Visual Analog Scale
<b>VDS</b>	: Verbal Descriptor Scale



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## Introduction

Patients undergoing total knee arthroplasty (TKA) can experience significant postoperative pain. Adequate analgesia facilitates early rehabilitation and improves patient satisfaction. <sup>(1)</sup>

Pain control modalities for post-TKA include intravenous patient-controlled analgesia (PCA), peripheral nerve blockade, and continuous epidural analgesic techniques. All methods have been shown to be efficacious in relieving postoperative pain. However, conventional techniques that use intravenous PCA with morphine and fentanyl are associated with side effects, such as respiratory depression, sedation, pruritus, nausea and vomiting, hypotension, constipation, and urinary retention. <sup>(2)</sup>

Regional blocks of the lower limb using a combination of a sciatic nerve block with a femoral nerve block is an alternative technique to the conventional neuraxial (spinal or epidural) anesthesia, which is problematic as the patients may be septic with unstable cardiovascular system, and spinal/epidural. <sup>(3)</sup>

Anesthesia may drop the blood pressure further. In recent years, adductor canal block (ACB) has been introduced as a pure sensory nerve block for postoperative analgesia

following knee surgery. ACB technique is relatively easy and is performed under ultrasound guidance. <sup>(4)</sup>

Adductor canal blocks (ACBs), which target the saphenous nerve and provide comparable analgesia to femoral nerve blocks with a lesser degree of quadriceps weakness, have been the focus of multiple recent investigation. <sup>(5)</sup>

## **Aim of the Work**

**T**he purpose of this study is to compare efficacy , hemodynamic effects, opiate consumption and side effects of Adductor canal block and intravenous patient-controlled analgesia (PCA) in terms of postoperative primary total knee arthroplasty analgesia.



## Chapter (I)

# Post-Operative Pain

### A. Definition of pain:

Pain is defined by the International Association for the Study of Pain as "an unpleasant sensory and emotional experience arising from actual or potential tissue damage or described in terms of such damage."<sup>(6)</sup>

### B. Physiology of pain

Pain is often classified by its pathophysiology into 2 major types: nociceptive and neuropathic.

1. **Nociceptive pain** involves the normal neural processing of pain that occurs when free nerve endings are activated by tissue damage or inflammation. Pain pathway involves three orders neurons, The majority of the first-order nociceptive neurons make synaptic connections in Rexed layer II (substantia gelatinosa) and the second-order neurons make synaptic connections in laminae IV-VIII. The second-order neurons also receive input from mechanoreceptors and thermoreceptors, the cell bodies of third order neurons lie within the ventral posterolateral of the thalamus which terminate in the ipsilateral postcentral gyrus.<sup>(7)</sup> Nociception involves the four processes of transduction, transmission, perception, and modulation. These processes are highly complex, but a simple