A COMPARITVE STUDY OF COMBINED GENERAL ANESTHESIA WITH LUMBAR PLEXUS BLOCK VERSUS COMBINED GENERAL AND EPIDURAL ANESTHESIA IN PATIENTS UNDERGOING HIP REPLACEMENT SURGERIES

Thesis
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بسم الله الرحمن الرحيم

وقُلِ اعْمَلُوا فَسَيَرَى اللَّهُ عَمَلَكُمْ
ورَسُولُهُ والْمُؤْمِنُونَ

صدق الله العظيم

سورة التوبة آية (105)

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Mohamed Mourad Mohsen Mohamed Ali

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List of Abbreviations

Abb.	Stands for
%	Percent
γ	Gamma
δ	Delta
κ	Kappa
<	Less than
>	More than
°	Degree
μ	Mue/Micron
μg	microgram
AS	Ankylosing Spondylitis
ASA	American Society of Anesthesiologists
BA	Bronchial Asthma
bpm	Beats per minute
BS	Buffered saline
C_{1-8}	Cervical spinal roots
Ca^{++}	Calcium
CGRP	Calcitonin Gene-Related Peptide
cm	Centimeter
CNS	Central Nervous System
Co	Coccygeal
-COO	Ester linkage
CSF	Cerebrospinal fluid
CT scan	Computerized tomography scan
DBP	Diastolic Blood Pressure
DM	Diabetes mellitus

Abb.	Stands for
DRG	Dorsal Root Ganglion
E	Enkephalinergic interneurons
ECG	Electrocardiogram
ed.	Edition
EDTA	Ethylene-Di-Amin-Tetra-acetic Acid
ELISA	Enzyme-Linked Immunosorbent Assay
ENS	Electric Nerve Stimulation
ESR	Erythrocyte sedimentation rate
et al.	And colleagues
FDA	Food and Drug Administration
Fig	Figure
G	Gauge
GABA	Gamma Amino Butyric Acid
Gi	G-Inhibitory protein
hr	Hour
HR	Heart Rate
hrs	hours
HS	Highly significant
HTN	Hypertension
Hz	Hertz
I.M	Intramuscular
I.V	Intravenous
ICP	Intra cranial pressure
IDVA	Intravenous drug abuse
J.	Journal
K^+	Potassium
Kg	Kilogram

Abb.	Stands for
L_{1-5}	Lumbar spinal roots
LAs	Local Anesthetics
LC	locus coeruleus
LOR	loss of resistance
mA	milliamperes
MABP	Mean Arterial Blood Pressure
mg	milligram
min	Minute
ml	milliliter
mm	millimeter
mmHg	Millimeters of Mercury
MRI	Magnetic Resonance Imaging
N	Neuron
Na^+	Sodium
-NHCO	Amide linkage
NMDA	N-Methyl-D-Aspartate
NS	Non-significant
NSAIDs	Non steroidal anti-inflammatory drugs
P	Probability value
PABA	Para-AminoBenzoic Acid
PAG	Peri-Aqueductal Gray
PCA	Patient Controlled Analgesia
PCB	Psoas Compartment Block
PDPH	Postdural Puncture Headache
PGs	Prostaglandins
PLA_2	Phospholipase A2
PNBs	Peripheral Nerve Blocks

Abb.	Stands for
pp	Pages
RA	Rheumatoid Arthritis
RHD	Rheumatic Heart Diseases
RR	Respiratory Rate
RSS	Ramsy Sedation Score
S	Stereoisomer
SD	Standard Deviation
Sig.	Significance
SpO_2	Peripheral Oxygen Saturation
$T_{1\text{-}12}$	Thoracic spinal roots
THA	Total Hip Arthroplasty
VAS	Visual Analogue Scale
Vol.	Volume
Vs.	Versus
X^2	Chi-Square
α	Alpha
β	Beta

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Introduction

Major lower limb surgery is often painful and requires aggressive management. Poorly treated pain can have negative impact on recovery especially owing to disruption in physiotherapy resulting in stiffness of joints and slow progress in mobility. Total hip arthroplasty, one of the most frequently performed surgical procedures ***(Uma et al., 2007).***

Aging of the population is responsible for making total hip arthroplasty (THA) a common procedure, especially due to the greater prevalence of osteoarthritis. Advanced age and associated diseases in those patients represent a challenge for anesthesia and analgesia for THA. The increased stress imposed to the patient by the surgery is a great contribution for the higher incidence of cardiovascular and pulmonary complications. For this reason, the choice of anesthetic technique, which should be easy to execute, should decrease perioperative morbidity, and allow early patient ambulation, is crucial ***(Fischer and Simanski, 2005).***

Although different techniques are used in THA, the best technique based on efficacy and safety has not been determined. General anesthesia, neuraxial blockades, and peripheral nerve blocks (lumbar and sacral plexus blocks) represent the techniques used more often ***(Türker et al., 2003).***

Each technique has different efficacy with advantages and disadvantages. Neuraxial blocks are probably used more often due to the quality and predictability of the anesthetic blockade, low cost, and easiness to perform. However, those techniques are not devoid of risks ***(Horlocker and Wedel, 1998).***

Recently, lumbar plexus blocks for anesthesia and analgesia in THA have received more attention. Excellent analgesia and limited motor and sympathetic blockades, without the adverse effects of local anesthetics and opioids administered in the neuroaxis, and the lower morbidity of hemorrhagic complications than neuroaxial blocks in patients treated with drugs that change coagulation parameters represent the main advantages of peripheral nerve blockade ***(Stevens et al., 2000).***

Pain relief and increased hip mobility and the quality of life in patients with chronic degenerative disease of the hip joint are the objective of total hip arthroplasty (THA). However, in this process postoperative functional rehabilitation determines the success of the treatment ***(Klasen et al., 2005).***

After THA, pain is severe and it is aggravated by movements, especially in the first 24 hours. The choice of anesthetic and postoperative analgesia technique should

promote adequate pain relief after arthroplasty with minimal side effects and allow early mobility and active participation in the rehabilitation process, accelerating functional recovery, ambulation, and hospital discharge ***(Kampe et al., 2001).***

Although different postoperative analgesia strategies are available for THA, the best one, based on the efficacy of pain control and effects on postoperative rehabilitation, has not been determined. Epidural analgesia is probably the technique used more often after THA ***(Singelyn et al., 2005).***