Ultra Sound Guided Ankle Block Versus Sciaticofemoral Block for Anesthesia and Postoperative Analgesia In Diabetic Foot Surgery

Thesis

Submitted for Partial Fulfillment of the Master Degree in Anaesthesiology

By

Hadeer Ahmed Galal Mahmoud

M.B. B.Ch. Ain Shams University

Supervised by

Prof. Dr. Hany Mohamed EL Zahaby

Professor of Anaesthesiology, Intensive Care & Pain Management
Faculty of Medicine, Ain Shams University

Prof. Dr. Dalia Abdel Hamid Nasr El Deen

Professor of Anaesthesiology, Intensive Care & Pain Management
Faculty of Medicine, Ain Shams University

Dr. Mohamed Mohamed kamal abd allah

Lecturer of Anaesthesiology, Intensive Care & Pain Management
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
2018

Acknowledgement

First of all, all gratitude is due to Allah almighty for blessing this work, until it has reached its end, as a part of his generous help throughout my life.

Really, I can hardly find the words to express my gratitude to ***Prof. Dr. Hany Mohamed El Zahaby*** *Professor of Anesthesiology, Intensive Care and Pain Management, Faculty of Medicine, Ain Shams University, for his supervision, continuous help, encouragement throughout this work and tremendous effort he has done in the meticulous revision of the whole work. It is a great honor to work under his guidance and supervision.*

I cannot forget the great help of t ***Prof. Dr. Dalia Abdel Hamid Nasr El Deen****, Professor of Anesthesiology, Intensive Care and Pain Management, Faculty of Medicine, Ain Shams University for her invaluable efforts, tireless guidance and for her patience and support to get this work into light.*

I would like to express special thanks to ***Dr. Mohamed Mohamed Kammal,*** *Lecturer in Anesthesiology, Intensive Care and Pain Management, Faculty in Medicine, Ain Shams University for his faithful supervision, precious help and continuous support throughout this work.*

Last but not least, I dedicate this work to, my family and friends, whom without their sincere emotional support pushing me forwards, this work would not have ever been completed.

Hadeer Ahmed Galal

سورة البقرة الآية: ٣٢

List of Contents

List of Tables

List of Figures

List of Figures cont…

List of Figures cont...

List of Abbreviations

Abb.	Full term
CNS	*Central Nervous System*
HR	*Heart Rate*
Hz	*Hertz*
LA	*Local Anesthetics*
LCN	*Lateral Cutaneous Nerve*
PTN	*Posterior Tibial Nerve*
SBP	*Systolic Blood Pressure*
SD	*Standard Deviation*
SN	*Sciatic Nerve*
US	*Ultrasound*
VAS	*Visual Analogue Scale*
WDR	*Wide Dynamic Range*

Introduction

An infected diabetic foot ulcer is by far the most common form of soft tissue infection encountered in clinical practice. It is caused by direct invasion of the ulcer and the underlying soft tissues by bacterial inoculum. Infected diabetic ulcers can be diagnosed clinically if purulent discharge is present in conjunction with other local signs of inflammation (warmth, erythema, lymphangitis, lymphadenopathy, edema, or pain).The presence of a foul-smelling discharge is suggestive of a mixed infection with anaerobic bacterial extension of the soft tissue infection along the fascial planes may result in abscess formation inside the foot compartments (medial, lateral, and central compartments), and occasionally the infection may extend directly to the heel area, under the dorsal skin ***(Jeffcoate and Harding, 2003).***

Peripheral nerve blocks are widely-used for both surgical anesthesia as well as for postoperative analgesia. Peripheral nerve blocks offer distinct benefits over general or neuraxial anesthesia in certain clinical situations. In addition, Peripheral nerve blocks provide analgesia that may be superior to other techniques for some patients ***(Lin et al., 2013).***

Ultrasound guidance is a reliable and safe technique in peripheral nerve blocks. It also plays a crucial and an increasing role in medicine due its low cost, the absence of ionizing radiation and its high temporal resolution ***(Jerrold et al., 2010)***.

Aim of the Work

The aim of this study is to compare between ultrasound guided ankle block versus ultrasound guided sciatico-femoral block in diabetic foot surgery as regarding efficacy, complications, volume of local anesthetics, quality and the duration of post-operative analgesia.

Chapter 1

Nerve Supply of the Lower Limb

The lumbosacral plexus provides innervation to the lower extremities.

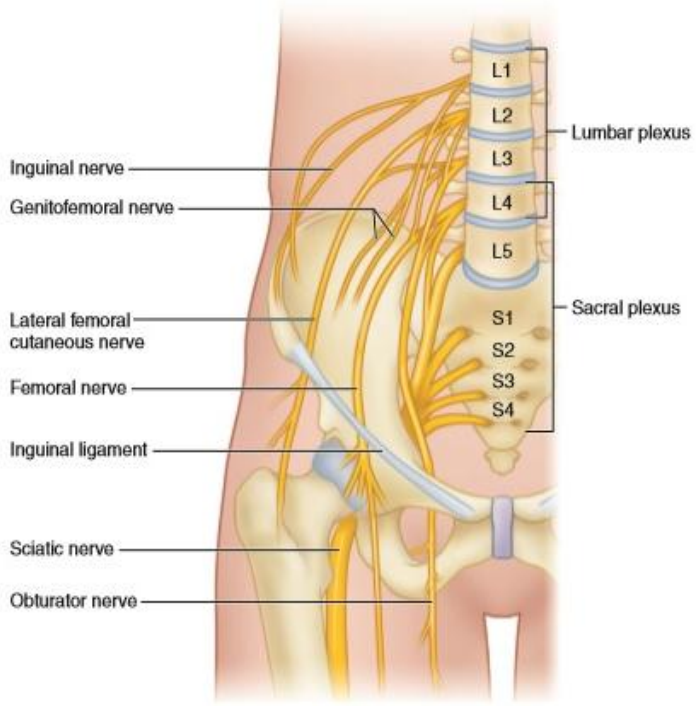

Figure (1): The ventral rami of L1–5 and S1–4 form the lumbosacral plexus, which provides innervation to the lower extremities ***(Anne and Allison, 2010).***

The lumbar plexus is formed by the ventral rami of the spinal nerves L1-4, with occasional contribution from T12 within the body of the psoas major muscle. The plexus and branches then angle caudally to descend within the mass of the psoas major muscle, anterior to the transverse processes of the lumbar vertebrae ***(Moore et al., 2011).***

The L1 nerve root (occasionally with a contribution from T12), splits into an upper and a lower branch. The upper branch then divides into the iliohypogastric and ilioinguinal nerves. The lower branch forms the genito-femoral nerve with a contribution from L2 nerve root. The ventral branches of L2, L3 and L4 form the obturator nerve. The dorsal roots of L2 and L3 have lesser branches, which make up the lateral cutaneous nerve of the thigh, and greater branches, that along with the dorsal root of L4 are the origins of the femoral nerve ***(Anne and Allison, 2010).***

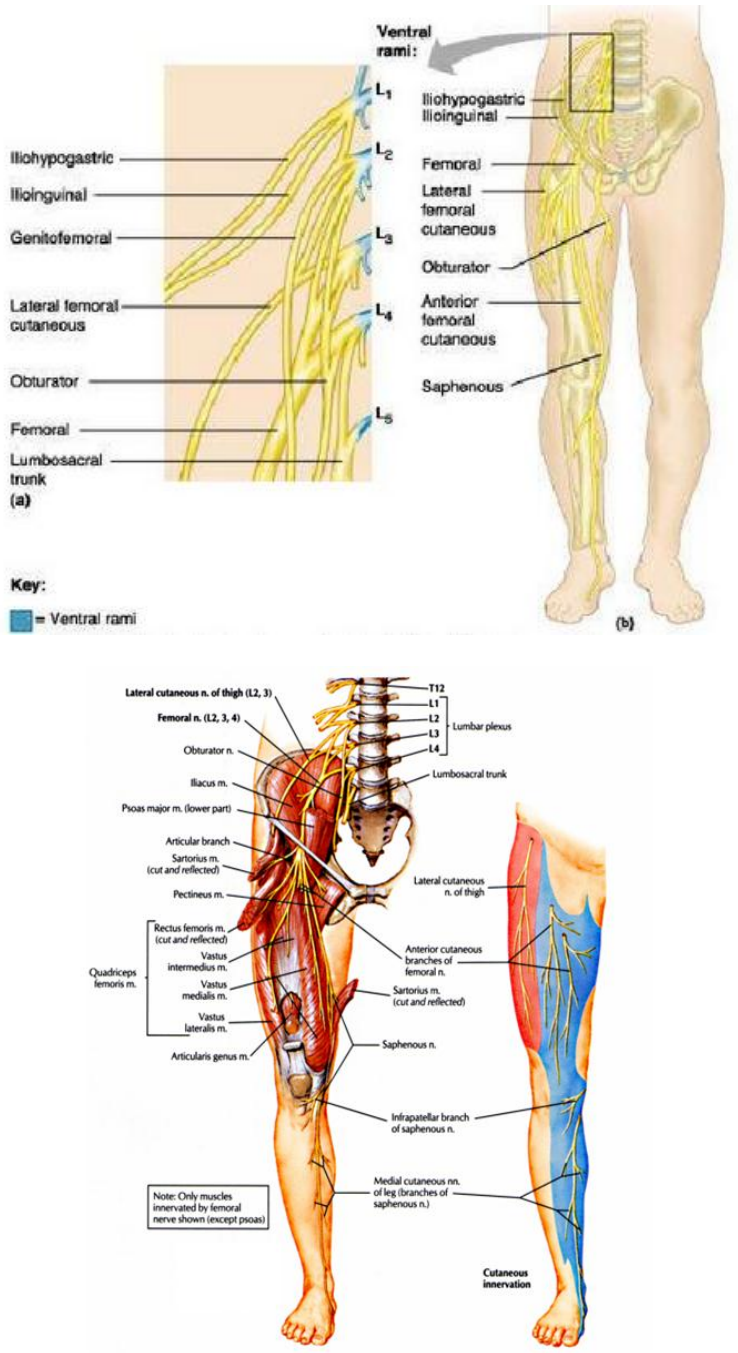

Figure (2): Branches of the Lumbar Plexus ***(John and David, 2005).***

The sacral plexus is formed by the lumbosacral trunk (L4- L5, and S1–S4). It lies anterior to the sacrum and to piriformis muscle but deep to the pelvic fascia. It forms the sciatic and pudendal nerves giving off pelvic branches which are released before the sciatic component leaves through the greater sciatic foramen. These pelvic branches include the posterior cutaneous nerve of the thigh and the nerve to quadratus femoris and superior and inferior gluteal nerves ***(John and David, 2005).***