Comparison between Ropivacaine and Bupivacaine Instillation into Peritoneal cavity to Reduce Post-operative Pain after Laparoscopy in Infertile Women:
Randomized Controlled Trial

Thesis

Submitted for Partial Fulfillment of Master Degree in Obstetrics and Gynecology

By

Christien Magdy Fouad Zaki
M.B.B.CH (2009)
Resident Doctor at Qaliuob Central Hospital

Under Supervision of

Prof./ Mohammad Abd El Hameed Nasr El Deen
Professor of Obstetrics and Gynecology
Faculty of Medicine - Ain Shams University

Dr./ Ahmed Mohamed Mamdouh
Lecturer of Obstetrics and Gynecology
Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University
2017

Acknowledgment

First and foremost, I feel always indebted to **ALLAH**, *the Most Kind and Most Merciful.*

I'd like to express my respectful thanks and profound gratitude to **Prof./ Mohamed Abd El Hameed Nasr El Din,** *Professor of Obstetrics and Gynecology - Faculty of Medicine- Ain Shams University for his keen guidance, kind supervision, valuable advice and continuous encouragement, which made possible the completion of this work.*

I am also delighted to express my deepest gratitude and thanks to **Dr./ Ahmed Mohamed Mamdouh,** *Lecturer of Obstetrics and Gynecology, Faculty of Medicine, Ain Shams University, for his kind care, continuous supervision, valuable instructions, constant help and great assistance throughout this work.*

I would like to express my hearty thanks to all my family for their support till this work was completed.

Last but not least my sincere thanks and appreciation to all patients participated in this study.

Christien Magdy Fouad Zaki

List of Contents

List of Tables

List of Figures

List of Figures (Cont...)

List of Abbreviations

Abb.	Full term
ADRs	*Adverse drug reaction*
BMI	*Body mass index*
CNS	*Central nervous system*
CO2	*Carbondioxide*
CPSP	*Chronic post surgical pain*
DBP	*Diastolic blood pressure*
DHEA	*Dehydroepiandrosterone*
HR	*Heart rate*
HUMI	*Harris-Kronner Uterine Manipulator Injector*
HVAs	*Horizontal visual analogue scale*
IV	*Intravenous*
KTP	*Potassium titanyl phosphate*
LH	*Lutinizing hormone*
MLAC	*Minimum local anesthestic concentration*
ND-YAG	*Neodymium – Yuttrim-aluminium garnet*
NRS	*Numerical rating scale*
NSADIDs	*Non steroidal anti-inflammatory durgs*
PCOS	*Polycystic ovarian syndrome*
PONV	*Postoperative Nausea and Vomiting*
SBP	*Systolic blood pressure*
SD	*Standard deviation*
SP	*Substance P*
VAS	*Visual analogue scale*
VRS	*Verbal rating scale*
VVAS	*Vertical visual analogue scale*

INTRODUCTION

Effective postoperative analgesia is important from the patient's perspective and can also improve clinical outcomes. Recent surveys report only modest success in providing suitable analgesia, as 30% to 86% of surgical patients report moderate to severe pain after a surgical procedure. Although "advanced" analgesic techniques such as epidural analgesia or perineural catheters, can provide superior analgesia, many of these analgesia modalities are labour-intensive and expensive ***(Van Eerden et al., 2017).***

The management of postoperative pain has received much interest in recent years. The degree of postoperative pain, as ultimately perceived by the patient, is mulfactorial and depends on variables such as type and duration of the operation, type of anesthesia and analgesia used, and the patient's mental and emotional status ***(Raichle et al., 2015).***

There are many methods of postoperative pain treatment. The traditional and most widely used is parenteral opioid. Parenteral narcotics in general are associated with nausea, vomiting, constipation, respiratory depression, and sedation. Newer techniques, such as continuous epidural analgesia/patient controlled analgesia, have adverse effects, are expensive, and require trained personnel and special equipment ***(Argoff et al., 2014).***

Preoperative analgesia is an analgesic regimen initiated before the onset of tissue trauma and could have effects that outlast the pharmacokinetic. It is based on the theory of prevention of prevention of central pain sensitization. Different techniques of preoperative analgesia have been reported, including intramuscular, intramuscular, intravenous, epidural and local anesthetics used in peripheral never block, intraperiotenal instillation, or wound infiltration ***(Sekhavat et al., 2011).***

Laparoscopy in infertility is one of the infertility procedure for diagnosis and treatment of infertility. Pain after laparoscopic gynaecology may occur in lower abdomen, back and shoulder. It may be transient or persistent for at least 3 days ***(Norwitz et al., 2010).***

Pain after laparoscopy may be moderate or even sever, some of the patients require more than one opioid treatment ***(Oderda et al., 2012).***

Nostreroidal anti-inflammatory drugs (NSAIDs) for post operative pain management have been previously shown to reduce opioid requirements of patients after these operations. Achieving optimal pain relief after laparoscopy is an important tissue. Postoperative local anesthetics instilled at end of laparoscopic procedures were suggested to be able to prevent postoperative pain at wake up and during the first 12 hours ***(Sinatra, 2010).***

A previous study was done by ***Refaie and Khatab (2005)*** entitled reduction of early postoperative pain after diagnostic laparoscopy with local bupivacaine: a randomized placebo controlled study, aimed to evaluate the effects of preincisional infiltration and intraperitoneal instillation of bupivacaine on early relief of pain after diagnostic laparoscopy, and concluded that Bupivacaine infiltration into the trocar sited and instillation into the peritoneal cavity is beneficial for patients undergoing diagnostic laparoscopy. The effect of these drugs is temporary, but they can significantly decrease early postoperative pain and reduce the need for additional analgesics. Most important, the rate at which patients can be discharged from the hospital only 2hours after surgery is increased significantly.

Also another study done by ***Cruz et al. (2014),*** entitled combination of pre-emptive port-site and intraoperative intraperitoneal ropivacaine for reduction of postoperative pain: a prospective cohort study, aim to evaluate the effectiveness of intraoperatively applied local ropivacaine added to standard analgesic therapy in reducing postoperative pain intensity and opioid requirement under routine hospital conditions; and concluded that addition of pre-emptive port-site plus intraperitoneal ropivacaine to standard postoperative analgesic therapy reduced postoperative pain intensity and opioid consumption in gynaecological laparoscopy.

AIM OF THE WORK

The aim of this work is to compare the efficacy of two local anaeshtetics, ropivacaine and bupivacaine in reducing postoperative pain when instillated into the peritoneal cavity after laparoscopy for infertile women.

Research Hypothesis:

In infertile women undergoing laparoscopy intraperitoneal instillation of ropivacaine may have an efficacy as bupivacaine for reduction of postoperative pain.

Research Question:

In infertile women undergoing laparoscopy does intraoperatineal instillation of ropivacaine similar bupivacaine in reducing postoperative pain?

The aim of this work is to compare the efficacy of two local anaeshtetics, ropivacaine and bupivacaine in reducing postoperative pain when instillated into the peritoneal cavity after laparoscopy for infertile women.

Chapter 1

LAPAROSCOPY

Laparoscopy is one of the most common surgical procedures performed by gynecologists.

Dr. Hans Christian Jacobaeus, a Swedish surgeon, was the first to publish a description of laparothorakoskopie in humans in 1910 ***(Arregu et al., 2012).***

Dr. Bertram M. Bernheim of the Johns Hopkins Hospital, reported a series of the first human laparoscopy performed in the United States, which he called organoscopy ***(Hurd et al., 2009).***

Throughout the 1920s and 1930s, advocates of the procedure continued to develop improved laparoscopic equipment. During this period, Dr. Janos Veress, a Hungarian internist, developed a spring-loaded needle with an inner stylet that automatically converted the sharp cutting edge to a rounded end. The Veress needle continues to be used today to create a pneumoperitoneum ***(Hurd et al., 2009).***

In 1924, Zollikofer used carbon dioxide instead of air to create a pneumoperitoneum *(*Elshazly *et al., 2012)*.

Dr. Kurt Semm, a German gynecologist who specialized in infertility, was the most influential early advocate of modern operative laparoscopy ***(Mettler, 2009).***

Indications of Laparoscopy *(Magos, 2007)*

Diagnostic Laparoscopy

1. Infertility work up
   . Ovulation study
   . Tubal patency
   . Endometriosis
   . Pelvic adhesions
2. Acute pelvic lesion
   . Acute ectopic
   . Acute Appendicitis
   . Acute Salpingitis
3. Pelvic mass. Fibroid
   .Ovarian Cyst
4. Follow up of pelvic surgery
   . Tuboplasty
   . Evaluation of endometriosis
   . Suspected Uterine Perforation
   . To take biopsy

Therapeutic Laparoscopy

- Adhesiolysis
- Aspiration of ovarian cyst
- Ovarian drilling
- Ovarian cystectomy
- Ectopic pregnancy
- Tubal sterilization
- Endometriosis
- Myomectomy

Contraindications of laparoscopy: *(Magos, 2007)*

Absolute:

(1) Mechanical and paralytic ileus causing abdominal distension.

(2) Large intra abdominal mass (more than 14 wks pregnancy).

(3) Lesions more than 6cm (difficult to deal with laparoscopically).

(4) Generalized or upper abdominal peritonitis (managed by laparotomy).

(5) Irreducible external hernia because of danger of ischaemic damage to its contents by pneumoperitoneum.

(6) Cardiac or respiratory failure.

(7) Recent myocardial infarction.

(8) Cardiac conduction defects

(9) Severe obstructive airway disease.

(10) Shock.

Relative:

(1) Multiple abdominal incisions.

(2) Abdominal wall sepsis.

(3) Gross obesity due to technical problems and complications.

(4) Hiatus hernia because of pneumo-mediastinum.

(5) Ischaemic heart disease without failure, the procedure should be kept as short as possible.

(6) Blood dyscrasias and coagulopathies.

Infertility Operations

Hydrosalpinges

Less invasive procedures like needle aspiration of hydrosalpinx fluid, salpingostomy, fimbriolysis, and proximal tubal occlusion have been proposed ***(Campo et al., 2010).***

Tubo-ovarian Abscess

Laparoscopic procedures in women with TOA usually comprise draining and irrigation of the abscess or complete removal of the inflamed tube or adnexa, in addition to pelvic irrigation and lysis of adhesions ***(Molander et al., 2007).***

Lysis of Adhesions

Adhesions may be lysed by blunt or sharp dissection. Minimal use of electrocautery and good hemostasis can help in reducing the chance of adhesions reformation ***(Jha et al., 2013).***

Endometriosis

Endometriosis is classically defined as the presence of uterine endometrial glands and stroma outside the normal location-mainly on the pelvic peritoneum, but also on the ovaries, and in the rectovaginal septum, and more rarely in the pericardium, pleura, and even the brain ***(Keck et al., 2016).***

Endometriosis is commonly found in women of reproductive age ***(Keck et al., 2016).***