EFFECT OF PARACERVICAL NERVE BLOCK VERSUS NONSTEROIDAL ANTI-INFLAMMATORY DRUGS AS AN ANALGESIC METHOD IN OPERATIVE HYSTEROSCOPY

Thesis
Submitted for partial fulfillment of the Master degree in
Obstetrics and Gynecology

By

AHMED MOHAMMED ABD-ALLAH ELMARAGHY
M.B.B.Ch-Ain Shams University-2008
Resident of Obstetrics& Gynecology
Faculty of Medicine- Ain Shams University

Under supervision of

PROF. AHMED ISMAEIL ABOU GABAL
Professor of Obstetrics & Gynecology
Faculty of Medicine - Ain Shams University.

PROF.MOHAMED IBRAHIM MOHAMED AMER
Professor of Obstetrics & Gynecology
Faculty of Medicine - Ain Shams University

DR.SHERIF HANAFI HUSSEIN
Lecturer in Obstetrics and Gynecology
Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University
2013


بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ
أَنتَ الْعَلِيمُ الْحَكِيمُ
صدق الله العظيم
سورة البقرة آية (٣٢)

Acknowledgement

First of all, all gratitude is due to **God** *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 **Dr., Hesham Mohamed Mahmoud EL-Azzazi** *Assistant Professor of anesthesia and intensive care, 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 would like also to express my sincere appreciation and gratitude to **Dr., Karim Youssef Kamal Hakim** *lecturer of anesthesia and intensive care, faculty of medicine , Ain Shams University, for his continuous directions and support throughout the whole work.*

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

Hasnaa Saber

Contents

List of Abbreviations

CNS	Central nervous system
Co_2	Carbon dioxide
Cox	Cyclo-oxygenase enzyme
D&E	Dilatation&Evacuation
GFR	Glomerular filtration rate
GI	Gastro-intestinal
GnRH	Gonadotrophin releasing hormone
HSG	Hysterosalpingogram
LTB4	Leukotriene B4
LTs	Leukotrienes
Nd:YAG	Neodymium Yttrium Aluminium Garnet
NSAIDs	Non-steriodal anti-inflammatory drugs
PGs	Prostaglandins
PID	Pelvic inflammatory disease
PVP	Polyvinyl pyrrolidone
SGR	Substania gelationsa of Rolandi
VAS	Visual analogue scale

List of tables

List of Figures

INTRODUCTION

Hysteroscopy is an important component of the strategy for evaluation of the uterus in women with abnormal uterine bleeding, infertility, and recurrent pregnancy loss, and is essential for performance of many minimally invasive intra-uterine therapeutic interventions including metroplasty, transcervical sterilization, lysis of adhesions, retrieval of foreign bodies, and excision of polyps and submucous myomas**.** Although for a number of years, many clinicians have successfully performed hysteroscopic procedures in the office setting with no or local anesthesia, most continue to provide these services in the context of an institutional operating room setting, usually with the support of an anesthesiologist providing some type of conscious sedation, or regional or general anesthesia. The direct and the indirect costs of performing such procedures in resource-intense environments, along with greater recognition of the risk of general anesthesia, has generated an increased interest in the performance of hysteroscopy in the office setting using local anesthesia***(Malcolm etal.,2010)***.

Although safe, studies of the acceptability of outpatient hysteroscopy have displayed various completion rates ,

ranging between 77% and 97.2% ***(Agostini, 2003;Critchley, 2004;De Iaco, 2000;De Jong, 1990)***.

It was reported that increasing number of hysteroscopies performed in an outpatient setting, but pain was the most common failure to complete the investigation. (***Critchley et al., 2004)***.

In a study on the acceptability and pain of office hysteroscopy, ***DeIaco et al., 2000***observed that this procedure is painful even when if is performed by an experienced surgeon using a non-traumatic technique. The pain experienced can have a negative impact on the patient's ability to fully co-operate with the procedure, therefore limiting the usefulness and completion of the procedure as well as the woman's willingness to undertake other similar procedures***(Ahmad et al., 2010).***

There are several causes of pain during and after hysteroscopy. During hysteroscopy, the first cause of pain is usually cervical manipulation. The cervix is often grasped with an instrument, such as a tenaculum, and may be cannulated and dilated to allow a hysteroscope to pass through. Pain stimuli from the cervix and vagina are conducted by visceral afferent fibers to the S2 to S4 spinal ganglia via the pudendal

and splanchnic nerves, along with para-sympathetic fibers***(Moore et al., 2006)***.

Following cervical manipulation, cannulation and dilatation, distention of the uterus during hysteroscopy can also cause pain ***(Owens et al., 1985)***.Pain from intra-peritoneal structures, such as the uterine body, is conducted by visceral afferent fibers with sympathetic fibers via the hypogastric nerves to the T12 to L2 spinal ganglia***(Moore et al., 2006)***.Destruction of the endometrium and endometrial biopsy can cause further pain as they may induce uterine contraction***(Zupi et al., 1995)***.There may also be additional delayed pain caused by the release of prostaglandins from the cervical manipulation as well as distention of the uterus.

There are numerous studies that have reported varied outcomes in terms of the effectiveness of different pharmacological interventions for pain relief during hysteroscopy. The use of no analgesia; oral and intra-venous analgesia, both non-opioid, for example non-steroidal anti-inflammatory drugs or paracetamol ***(Mercorio et al., 2002)***,and opioid analgesia***(Floris et al., 2007)***;topical analgesia, intra-uterine, para-cervical and transcervical ***(Lauet al.,1999; Mercorio et al., 2002)***.

Dilatation of the cervix and uterine distention account for pain during hysteroscopy. The sensory nerve supply to the uterus is derived from two pathways; the Frankenhauser's plexus (para-sympathetic S2to S4) supplies the cervix and the lower portion of the uterus, while the uterine fundus receives sympathetic nerve supply via the infundibulo-pelvic ligament from the ovarian plexus ***(Ahmed et al.,2010).Lau et al., 2000*** argued that para-cervical anesthesia blocks pain arising from the cervix but fails to block the pain arising from uterine distention. Anatomically, sensory innervation of the pelvic organs is from superior hypo-gastric plexus or pre-sacral nerve. Sensory fibers from the upper part of the vagina, uterus, proximal portion of the tubes, bladder , urethra and rectum run through the para-cervical tissue and within the utero-sacral folds and meet in the hypogastric and pelvic nerves. Thus on the basis of the above anatomical observations, para-cervical block should block not only cervical but uterine pain (***Bonica et al.,1990).*** This confirms the positive results observed by (***Cicinelli et al.,1998.)***

Local anesthesia is an effective option for various minor gynecologic procedures. The relative ease of performing a para-cervical block makes it particularly useful in the outpatient or office setting. The technique for paracervical

block has several variationsrecommending as few as two, to as many as six injections ata depth of 3-7 mm alongside the cervix in the vaginalfornices ***(Nadelberg R,2007)***.

Dilatation of the cervix during hysteroscopy results in prostaglandin release. Therefore, it seems logical to use NSAIDs as prostaglandin synthesis inhibitors prophylactically before the procedure ***(Sharma et al.,2009).***

AIM OF THE STUDY

The aim of the study is to compare the effect of Para-cervical nerve block versus systemic non-steroidal anti-inflammatory drugs as an analgesic measure in operative hysteroscopy.

History of Hysteroscopy

The history of endoscopy began in the early part of the 19th century, at which time Bozzini constructed a device called a light conductor. This instrument enabled him to inspect various passages and body cavities as candlelight was directed by concave mirror through a narrow tube into the cavities.**(Siegler AM,1972).**

The first widely accepted endoscope was presented by Desormeaux in 1865 who subsequently described his experiences in investigating diseases of the lower urological system. Pantaleoni in 1869 inspected the uterine cavity of a 60 year old patient who complained of vaginal bleeding with a metal tube and light attachment. After cervical dilatation, the cylindrical scope 20cm long was inserted into the uterine canal revealing a polypous vegetation which was cauterized under visual control. The present era in endoscopy probably begins in 1879 with Nitze who inserted the illuminator and endoscope directly into the bladder, thereby improving illumination and the field of vision.**(Siegler AM and Kemmann E, 1975)**.

Hysteroscopy couldn't continue at the pace set by cystoscopy because of the limited distention of the uterus as compared with the bladder. Modified cystoscopicequipment

that had inflow-outflow channels or contact hysteroscopy were the only options in the early 1900s. Difficulty in maintaining uterine distention was what primarily hampered the early hysteroscopists, although the use of water and CO_2 were discussed in the 1910s and 1920s by Heineberg and Rubin, respectively. Advances in hysterosalpingography in the 1920s and 1930s results in a decline in further development and interest in hysteroscopy**.(Dunn RC, 1994).**

In subsequent years, however, interest was focused particularly on the irrigating systems by German and French physicians who pursued hysteroscopy as a valuable adjunct in diagnosis. Gauss, Schroder, and Schack made valuable contributions with liquid irrigating media; they measured the intra-peritoneal migration of the irrigating fluid. Segond(1934-1943) added irrigating systems for operative hysteroscopy. Norment(1942-1970) designed a variety of modified instruments so that hysteroscopy would become practical and efficient. One such modification was a rubber ballon attached to the distal portion of the hysteroscope to allow uterine distention without fluid spillage into the peritoneal cavity. Silander(1962) further modified the device with a silasticballon in the distal end of the hysteroscope for the study of patients with endometrial carcinoma and abnormal

uterine bleeding. Norment(1956) also modified the irrigating system for diagnosis and therapy, leading to modern methods utilizing liquid media for uterine distention. Menken(1968) introduced the first high viscosity distending system with polyvinylpyrrol-idone (PVP) (Luviskol 90,4%), a mixtureof linear polymers of different chain lengths and molecular weights. Because the PVP is not biodegradable by the liver and has a yellowish tinge in solution it was not widely used for hysteroscopy. **(Valle RF, 1983)**.

The lack of suitable medium to distend the uterine cavity, which hampered early hysteroscopic development, was positively affected by the introduction of three different media, and instrumentation for performing hysteroscopy began to improve in the early 1970s. Initially, Edstrom and Fernstrom used high-molecular weight dextran which allowed improved intrauterine visualization and intrauterine surgery because of the nonmiscibility of dextran with blood and cervical mucus. Five percent dextrose in water delivered under pressure was introduced by Quinones-Guerrero et al.**(Dunn RC, 1994)**.

Lindemann was the first to study distention of the uterine cavity by CO2 and advice on the standards of CO2 distention and designed the hysteroflator.**(Valle RF, 1983)**.