Diathermy versus Scalpel in transverse abdominal incision in women undergoing repeated cesarean section in Ain Shams Maternity Hospital

Thesis Submitted in partial fulfillment for Master Degree
in Obstetrics and Gynecology

By

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Mohamed Mansour
Zagazig
Date: March /2014

Dedication

To
My family

Contents

List of abbreviations

AC	**:**	Alternating Current
ASUMH	**:**	Ain Shams University Maternal Hospital
BMI	**:**	Body Mass Index
C-Delivery	**:**	Cesarean Delivery
CDMR	**:**	Cesarean Delivery On Maternal Request
CDR	**:**	Cesarean Delivery Rate
COAG	**:**	Coagulation
CRF	**:**	Case Record Form
CS	**:**	Cesarean Section
CTG	**:**	Cardiotocography
ERC	**:**	Ethics and Research Committee
ESU	**:**	Electrosurgical Unit
FBS	**:**	Fetal Blood Sample
HIV	**:**	Human immunodeficiency Virus
IUGR	**:**	Intra Uterine Growth Retradation
MF	**:**	Medium Frequency
PET	**:**	Pre-eclamptic toxemia
RCA	**:**	Royal College of Anaesthetists
RCOG	**:**	Royal College of Obstetricians and Gynaecologists
RCT	**:**	Randomized Controlled Trial
RF	**:**	Radiofrequency
VBAC	**:**	Vaginal Birth After Cesarean

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Protocol of Thesis Submitted in partial fulfillment for Master Degree
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Introduction

Ascalpel is an extremely sharp knife used for surgery and anatomical dissecation **(Nataraj., 2010)**.

The electrosurgery often referred to as surgical diathermy **(Johnson et al., 1997)**. Surgical diathermy was introduced at the beginning of the 20 th century to obviate the inherent disadvantages of steel scalpel, i.e. lack of hemostasis; indistinct tissue planes; increased operative time; use of foreign material (ligature) in the wound, leading to infection risk; possibility of accidental injury in the operations theater **(Kumar et al., 2011)**.

Basic scalpel design has remained almost the same but there have been substantial improvements in the electrosurgical instruments **(Duxbury et al., 2003)**, being haemostatic and convenient **(Sheikh., 2004**).

With increased incidence of blood transmitted disease such as Hepatitis B, Hepatitis C and Human immunodeficiency Virus (HIV) **(Arsalan et al., 2011)**.The risk of transmission to both doctor and patient is quite significan, Thereby avoiding and possibly even completely replacing the scalpel from operative fields looks an attractive option **(Chrysos et al., 2005)**.

Electrocautery is often available in all operation theatres however it has been used less frequently because of fear of tissue

damage leading to more postoperative pain, impaired wound healing, and hypertrophic scaring **(Dixon and Watkin., 1990)**.

There are variable tissue effects such as cutting (also called vaporization), fulguration (also called superficial coagulation or spray coagulation), and desiccation (also called deep coagulation) **(Redwine., 1992)**.

Many studies are conducted to compare electrocautery incision with scalpel incision over skin and many of them showed electrocautery incision is better than scalpel incision in terms of time taken for incision, lesser pain, better wound healing and little blood loss **(Kerans et al., 2001 and Pollinger et al., 2003)**

Cesarean section is the commonest major operation performed on women worldwide **(Hofmeyr et al., 2008)** Operative techniques used for caesarean section vary and some of these techniques have been evaluated through randomised trials **(Mathai and Hofmeyr., 2007).** However there is no study comparing the scalpel incision versus electrocautery in cesarean section, so it was plausible to study this comparison.

1. Protocol outlines

1.1. Title:

Diathermy versus scalpel in transverse abdominal incision in women undergoing repeated cesarean section in Ain Shams maternity hospital.

1.2. Study site (setting):

Ain Shams University Maternity Hospital (ASUMH) where there are approximately (130) women undergoing transverse abdominal incisions.

1.3. Study phase:

This study will be a Randomized Controlled Trial (RCT)

2. Study objectives

2.1. Primary objectives:

The primary objective is to compare the volume of blood loss during the interval from the beginning of skin incision to the end of peritoneal incision by using scalpel or electrosurgery for the creation of transverse abdominal incisions.

2.2. Secondary objectives:

- Wound complication (wounds complicated by any of the following:
  - bursing oedema (accumulation of fluid in tissue).
  - seroma (swelling due to accumulation of serum).
  - hematoma (swelling due to an accumulation of blood), infection, and dehiscence (open of the incision)and skin burn ecchymosis.
- Wound incision time (the interval from the beginning of skin incision to the end of peritoneal incision, recorded by the anaesthesiologic or the surgical team).
- Postoperative pain.
- Time to wound healing.

3. Study design

Randomized Controlled Trials (RCTs) that compare the wound related blood loss and the rates of wound complications in surgical incisions made with a scalpel and incisions made using electrosurgery.

3.1. Population:

Allocation of the study pregnant women will be based on computerized randomization SPPS version 15.01 four windows :SPPS Inc,chicago,IL,2001 to avoid selection bias.

The patients and the nursing personnel will be kept blinded to incision methods used.

The women with previous one cesarean section will be divided into two groups .

Group 'A' which include 60 women will be manage by scalpel incision with disposable blade will be used to incise skin till peritoneum.

In group 'B' which include 60 women will be manage by scalpel incision with disposable blade to incise skin and the deeper tissues will be made by diathermy using stanadard diathermy pen electrode.

3.2. Surgical techniques:

Technique of diathermy incisions.

Diathermy incisions will be done using a small flat blade pen electrode, set on cutting mode and delivering a 120 watt (max) sinusoidal current. Electrosurgical cutting is performed without

pressure or mechanical displacement. The skin blood vessels are usually small and hemostasis is usually satisfactory after the application of pressure. ‘Bleeders’ were controlled by using diathermy, on coagulating mode, and applied to a hemostat on the vessel to avoid skin necrosis and blistering.

If wounds needed to be extended, they were incised using the blade point only, sweeping in an outward direction through dermal and epidermal layer.

Technique of scalpel incision.

Incisions made by the scalpel was by the traditional method, with proper hemostasis by application of pressure to skin blood vessels and by ligating the subcutaneous bleeders.

Supplies and accountability:

The diathermy apparatus and stainsless steel scalpels will be provided by main investigator (not indulged in patient selection or admission into the study) and left in independent site far from usual use.

3.3. Study entry and duration:

3.3.1. Recruitment and randomization:

During the pre-selection phase (whether in emergency room or after admission into hospital), exclusion and inclusion criteria will be applied. Suitable women will be invited to participate in the study then a signed and informed consent will be obtained from them. When the patient's consent is obtained, they are to be included into the study.