Forceps Delivery versus Manual Delivery of the Fetal head During Elective Caesarian Section: a Randomized Controlled Trial

Thesis

Submitted for partial fulfillment of Master Degree ***in***
Obstetrics and Gynecology

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2018

سورة البقرة الآية: ٣٢

First of all, thanks to Allah whose magnificent help was the main factor in completing this work.

I'm greatly indebted to Prof. Essam El Din Mohamed Ammar Professor of Obstetrics & Gynecology, Ain Shams Faculty of medicine for his kind help and guidance throughout the whole work.

I wish to express my deepest gratitude and sincere appreciation to Dr. Mohamed Mahmoud El-Sherbeeny, Assistant Professor of Obstetrics & Gynecology, Ain Shams faculty of medicine, for his close supervision, encouragement and assistance.

Also I wish to express my deepest gratitude and sincere appreciation to Dr. Ahmed Sherif Abdel Hamid, Lecturer of Clinical Pathology Ain Shams faculty of medicine for her close supervision, encouragement and assistance.

And finally this work is dedicated to my Family, especially my Parents and my Husband, for pushing me forward in every step in the journey of my life.

Mustafa Mahmoud Asar

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Introduction

Cesarean delivery is the most common and major obstetric operative procedure worldwide and cesarean rate has been continuously increased (**Cunningham et al., 2010).**

Cesarean section is defined as the surgical termination of pregnancy or delivery by operative opening of uterus **(Lurie, 2005)**.

The cesarean section was first described in Roman times **(Lurie, 2005)**. But only at the start of 20^{th} century did it begin to offer acceptable morbidity and mortality for both mother and baby **(ICHS, 2008).**

This procedure has different techniques to minimize morbidity and to reduce complications **(Rodriguez, 1994).**

In the United States most primary cesarean deliveries are performed for the indication of dystocia in labor. In these cases the fetal head is well engaged and the lower uterine segment has been thinned by the forces of labor. If the fetal head is not deeply engaged in the maternal pelvis, it is usually a simple maneuver to make a transverse lower uterine

segment incision and lift the fetal head to the level of the incision and effect delivery **(Warenski, 1981)**.

There are, however, important clinical differences between an elective cesarean delivery and a primary cesarean performed during active labor. First, with elective cesarean the lower uterine segment has not been effaced and elongated by the forces of labor and it may be more difficult to create an adequate incision for passage of the fetal head. Second, at the time of elective cesarean delivery the fetal head is commonly "floating" above the pelvic brim (unengaged with respect to the maternal pelvis) **(Depp, 1996).**

Most elective cesarean deliveries are performed under regional anesthetic (whether epidural or spinal) for reason of patient safety and satisfaction. The fundal pressure exerted by the surgeon and the assistant in an effort to deliver an unengaged fetal vertex through a thick lower uterine segment is often perceived as uncomfortable, even painful, by the patient **(Depp, 1996).**

Several methods have been described for the delivery of the fetal head at the time of elective cesarean delivery. The most common is simple manual delivery. If this proves to be

difficult, the surgeon will ask for the use of an instrument to facilitate the delivery of the fetal head **(Warenski, 1981).**

Therefore we will conduct a study to compare 2 methods of delivery of the fetal head (forceps-assisted versus manual delivery) at time of elective cesarean section as regards unintended extension of the uterine incision, hemoglobin change 24 hours after cesarean section.

Aim of the Work

The aim of the current work is to compare two different techniques of delivery of the fetal head at time of cesarean section.

Manual and forceps delivery of the fetal head as regards the incidence of unintended uterine extension, hemoglobin change 24 hours after cesarean section.

Research hypothesis:

Forceps may be better than and has less complications than manual delivery of the fetal head at time of elective cesarean section as regards unintended extension, hemoglobin change 24 hours after cesarean section.

Research question:

Is the delivery of the fetal head using forceps is better than manual delivery regarding, unintended extension, hemoglobin change 24 hours after cesarean section?

Cesarean Section

Incisions in the abdominal wall (Laparotomy) and the uterine wall (Hysterotomy). This definition does not include non-surgical expulsion of the embryo or the fetus from the uterine cavity or the tubes following uterine rupture or ectopic pregnancy **(Cunningham et al., 2010).**

The terms cesarean section, cesarean delivery, and cesarean birth may be used to describe the delivery of a fetus through a surgical incision of the anterior uterine wall. Cesarean section is a tautology; both words connote incision, Therefore, cesarean birth or cesarean delivery, are preferable terms **(Richard et al., 2000).**

The surgical techniques for performing cesarean delivery has changed from time to time, from surgeon to surgeon and these changes were involved both of the uterine and skin incisions. Only a small numbers of these techniques have been evaluated in randomized controlled trials (RCTs) **(Sewell and Washington, 1993).**

Historical Background

The exact origin of the term cesarean delivery is unclear. The popular believes that Julius Cesar was born in this manner with the result that the procedure became known as the cesarean operation. Several circumstances weaken this explanation. First, the mother of Julius Cesar lived for many years after his birth in (100 BC) and as late as the 17th century, the operation was almost invariably fatal. Second, The operation, whether done on living or dead women, it is not mentioned by any medical writer before the middle ages **(Cunningham et al., 2010).**

It has been widely believed that the name of the operation is derived from a Roman low, supposedly created by Numa Pompilius (8th century BC), ordering that the procedure be done upon women dying in the last few weeks of pregnancy in hope of saving the child. This explanation holds that this lex regia, later called lex cesarean and the operation itself became known as the cesarean operation. The term cesarean may have arisen in the Middle Ages from the Latin verb caedere (to cut), and the term section is derived

from the Latin verb seco (cut) **(Sewell and Washington, 1993).**

In 1500 AC, the first successful cesarean delivery on a living women was thought to have been performed by Jacop Nufer, who operated on his wife following several days of unsuccessful labour **(Larry et al., 2002).** While the first authenticated cesarean delivery was performed by Trautmann of Wittenberg in 1610, with the mother succumbing to post-operative infection (25) days later **(Larry et al., 2002).**

In 1769, a uterine incision in the lower uterine segment was suggested as early by Robert Wallace, but was not done until a century later **(Sewell and Washington, 1993).**

In 1846, the introduction of diethyl ether anesthetic agent at Massachusetts General Hospital were increased the feasibility of major abdominal operations although, mortality rates for cesarean birth still high secondary to infections and bleeding **(Richard et al., 2000).**

In 1876, Eduardo Porro, an Italian Professor, recommended hysterectomy combined with cesarean birth to control uterine hemorrhage and prevent systemic infection, and it is considered the first major surgical advance in the

technique of the cesarean section **(Steven G. et al., 1996).** Eduardo Porro technique resulted in a dramatic decline in the maternal mortality **(Spreet and Eduardo, 1958).**

In 1882, Max Saenger introduced the technique of suturing the uterus. He advocated performing a vertical incision in the uterus that avoided the lower uterine segment, then he closed the uterus in two layers by using silver wire for the deep suture and fine silk for the superficial serosa .The Saenger technique revolutionized obstetrics, allowing the preservation of the childbearing function **(Larry et al., 2002).**

In 1907, Fritz Frank one of the earliest advocates of the use of a low transverse uterine incision extraperitoneally. Frank argued that his extra peritoneal approach reduced blood loss and infection risk **(Sewell and Washington, 1993).**

In 1912, Kronig recommended a trans-peritoneal approach with a vertical midline incision in the lower uterine segment. He and others touted a maternal mortality rate of less than (4%), while other obstetricians advocated using a