The Impact of Repeated Cesarean Sections on Perioperative Maternal Morbidity

Thesis

Submitted for partial fulfillment of master degree in

Obstetrics and Gynecology

By

AmiraSoliman Ibrahim Gado, M.B.B.Ch

Resident of Obstetrics and Gynecology

Faculty of medicine – Cairo University

Supervised by

Prof. Dr. Ahmed LotfiAboulNasr

Professor of Obstetrics and Gynecology

Faculty of medicine - Cairo University

Prof. Dr. Ahmed Soliman Nasr

Professor of Obstetrics and Gynecology

Faculty of medicine - Cairo University

Dr. Amr Hassan Wahba

Lecturer of Obstetrics and Gynecology

Faculty of medicine - Cairo University

Faculty of medicine

Cairo University

2016

بسم الله الرحمن الرحيم

(وَقُلْ رَبِّ زِدْنِي عِلْمًا)

(صدق الله العظيم)

(سورة طه – 114)

ACKNOWLEDGMENT

First, ultimate thanks to ***ALLAH,*** *the most beneficent and merciful.*

I would like to express my sincere appreciation and gratitude to ***Prof. Dr.AhmedAboulNasr,*** *Professor of Obstetrics and Gynecology, Faculty of Medicine, Cairo University for his support all through the work, valuable guidance, and follow up of the progress of this work.*

Prof. Dr.AhmedSoliman Nasr*Professor of Obstetrics and Gynecology, Faculty of Medicine, Cairo University for his continuous help .I owe him more than I can express. I have been greatly honored by his supervision.*

Profound and ultimate gratitude is expressed to ***Dr. Amr Hassan Wahba,*** *lecturer of Obstetrics and Gynecology, Faculty of Medicine, Cairo University. His continuous help in following up the progress of the work, encouragement and support were certainly the most helpful steps in accomplishing this work.*

Also I cannot forget the motivation and help of my ***family,*** *who supported me in the production of this work.*

AmiraGado

CONTENTS

LISTS

LIST OF CONTENTS

List of Abbreviations

ANC	**Antenatal care**
APH	**Antepartum hemorrhage**
BMI	**Body mass index**
CBC	**Complete blood count**
CDMR	**cesarean delivery by maternal request**
CPD	**Cephalopelvic disproportion**
CTG	**Cardiotocography**
DVT	**Deep venous thrombosis**
IVF	**In vitro fertilization**
EBL	**Estimated blood loss**
EDD	**Expected date of delivery**
HB	**Hemoglobin**
ICU	**Intensive care unit**
PHC	**Primary health care**
PPH	**Post-partum hemorrhage**
PT	**Prothrombin time**
PTT	**Partial thromboplastin time**
SSI	**Surgical site infection**
UKOSS	**United Kingdom Obstetric Surveillance System**
UTI	**Urinary tract infection**
VBAC	**Vaginal birth after Cesarean delivery**
VD	**Vaginal delivery**

List of Figures

List of Tables

ABSTRACT

Rates of cesarean delivery vary internationally, but generally, it has shown a worldwide increase .Repeat cesarean deliveries was found to be associated with increased maternal morbidity, including placenta previa, placenta accreta, hysterectomy, adhesions, bladder injury, postoperative hemoglobin deficit, and need for blood transfusion.

In our study, we evaluated the outcome of emergency cesarean deliveries conducted at Kasr Al Aini hospital and the impact of repeated cesarean deliveries on that outcome.We recruited 300 patients admitted at the casualty department and divided equally into 3 groups (100 patients in each group). Groups were as follow:

- **Group 1**: Patients with primary cesarean delivery (Control group).
- **Group 2**: Patients with previous one cesarean delivery.
- **Group 3:** Patients with previous two or three or higher order cesarean deliveries.

The three groups of singleton pregnancy were compared preoperatively regarding (data sheet, included history, examination and preoperative HB), intra-operatively regarding(operative duration,surgeon,anaesthesia, operative finding and complications), post-operatively regarding (duration of hospital stay,ileus,ICU admission,HB post).

In our study,regarding the surgical outcome:
The operative duration was statistically significantly longer in patients with previous two or more cesarean deliveries (Group 3) than patients with primary cesarean delivery (group 1) or previous one cesarean delivery (group 2) [74.4, 44.4, 56.4 min respectively, $p < 0.001$]. Also, the hospital stay was statistically significantly longer in group 3 than group 1 or 2. (2.90 , 1.29 , 1.27 days $p < 0.001$).
The estimated blood loss was found to be higher in group three than one and two attributed to higher incidence of placenta previa, placenta accrete in group three. The incidence of adhesions (omental and bladder) was statistically

significantly higher in group three, but the incidence of bowel adhesion was the same in group three and two (which was statistically not significant) .
The rate of complications was higher in group three (bladder and bowel injuries, scar dehiscence, placenta previa, placenta accreta ,hysterectomy and post-operative ICU admission).

Conclusion:
As repeated cesarean delivery has been found to be associated with increased maternal morbidity, great effort to reduce primary and repeated caesarean delivery rate should be encouraged as this will reduce the multiple repeated caesarean deliveries rate.

Keywords:
Repeated, Cesarean delivery, Morbidity.

INTRODUCTION

Cesarean delivery is defined as the delivery of a fetus through surgical incisions made through the abdominal wall (laparotomy) and the uterine wall (hysterotomy). It represents an alternative route for delivery when vaginal delivery might pose a risk to the mother or the fetus (Cunningham, 2009).

Rates of cesarean delivery vary internationally, but generally, it has shown a worldwide increase (Betran et al., 2007).

For example, the total U.S. cesarean delivery rate increased from 20.7% in 1996 to reach a high level at 32.9% of all births in 2009 (Martin et al., 2009).

There are several factors contributing to the increased rates of cesarean delivery including: increasing maternal age, increasing rates of induction of labour, a decline in vaginal birth after cesarean delivery due to risk of uterine rupture, decline in vaginal breech delivery, decreased use of operative vaginal delivery and fear from medical-legal concerns (Lockwood, 2004).

There are various indications for cesarean delivery which may be performed for maternal indications or fetal indications or both; however, the leading indications are previous cesarean delivery, breech presentation, dystocia, and fetal distress. These indications are responsible for 85% of all cesarean deliveries (Notzon et al., 1994).

Despite the advancement in anesthesia and surgical techniques making cesarean delivery safer than it has ever been, it can still be associated with short term and long term complications. Compared with a vaginal delivery, maternal mortality and especially morbidity is increased with cesarean delivery to approximately twice the rate after a vaginal delivery (Landon, 2008).

Repeat cesarean deliveries was found to be associated with increased maternal morbidity, including placenta previa, placenta accreta, hysterectomy, adhesions, bladder injury, postoperative hemoglobin deficit, and need for blood transfusion (Greene, 2004, Makoha et al., 2004). One major complication of repeat cesarean delivery is uterine scar rupture during pregnancy with subsequent adverse fetal and maternal consequences (Leung et al., 1993).

In view of the complications associated with repeat cesarean delivery, in developed countries, women are usually offered sterilization at the 3rd cesarean delivery however, this is not applicable in eastern cultures where large families are usually desired and any attempt to limit cesarean deliveries to 2-3 is likely to be rejected resulting in facing high order cesarean deliveries(Rashid and Rashid, 2004).

AIM OF WORK

In this study, we are aiming to evaluate the outcome of emergency cesarean deliveries conducted at Kasr Al Aini hospital and to find out whether the outcome is affected by increasing number of repeated cesarean deliveries.

Objectives:

- Evaluate the surgical outcome of Cesarean deliveries at Kasr Al Aini hospital
- Evaluate the impact of increasing number of Cesarean deliveries on the surgical outcome (including operative time, adhesions, amount of blood loss, postoperative hospital stay) and maternal morbidity (occurrence of complications) in comparison to primary cesarean delivery.

RATES OF CESAREAN DELIVERY

Rate of cesarean delivery worldwide:

Rates of cesarean delivery vary internationally, but generally, it has shown a worldwide increase (Betran et al., 2007) which has been described as "*cesarean birth epidemic*" (Porreco and Thorp, 1996). A continuous rise in the trend of cesarean delivery has been observed in the past 30 years and the procedure has become increasingly common in both developed and developing countries.

In the United States, in 2014, 1.3 million women delivered via cesarean, placing the rate at 32.2%,down just 0.7% from the peak in 2009 (Hamilton et al., 2015). That year, cesarean rates hit 32.9%, capping steady increasesthat started in 1996, when the rate was 20.7%. Thus the rate of cesarean delivery increased by 50% over 13 years (Martin et al., 2011).

In England and Wales, the rate of cesarean delivery increased by fivefold between 1971 and 2001 when 21.4% of all deliveries were by cesarean delivery (Sur et al., 2005). In England, the rate of cesarean delivery continued to rise reaching a rate of 26.2 % in 2013-2014. There has been a rise in the number of elective caesareans (2.5 %) while emergency caesarean rates were down 1.8% compared to the previous year (NHS maternity statistics, 2013-2014).

Table(1): Trends of cesarean delivery rates in England

	2011-12	2012-13	2013-14
Caesarean Rate	25.0%	25.5%	26.2%
Elective	10.2%	10.7%	13.2%
Emergency	14.8%	14.8%	13.0%

(Source: NHS maternity statistics, 2013-2014)