

Analysis of Cesarean delivery at Ain Shams Maternity Hospital Using the Ten Group Classification System

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدق الله العظيم

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List of Abbreviations

Abb.	Full term
<i>ACOG</i>	<i>American College of Obstetricians and Gynecologists</i>
<i>ANC</i>	<i>Antenatal care</i>
<i>BMI</i>	<i>Body Mass Index</i>
<i>CS</i>	<i>Cesarean section</i>
<i>EDHS</i>	<i>Egypt demographic and health survey</i>
<i>FGDs</i>	<i>Focus group discussion</i>
<i>GDG</i>	<i>Guideline development group</i>
<i>ITP</i>	<i>Immune thrombocytopenic purpura</i>
<i>LE</i>	<i>Egyptian pound</i>
<i>MCS</i>	<i>Multicounty Survey</i>
<i>MMR</i>	<i>Maternal Mortality ratio</i>
<i>RCOG</i>	<i>Royal College of Obstetricians and Gynecologists</i>
<i>SAMM</i>	<i>Severe acute maternal morbidity</i>
<i>SMM</i>	<i>Severe maternal morbidity</i>
<i>SSI</i>	<i>Surgical site infection</i>
<i>TOLAC</i>	<i>Trial of labor after cesarean section</i>
<i>VBAC</i>	<i>Vaginal birth after cesarean section</i>
<i>WHO</i>	<i>World Health organization</i>

INTRODUCTION

Cesarean section is an invasive surgical procedure in which a baby is delivered through an abdominal and uterine incision & carries with it many immediate and delayed morbidity and mortality risks (*Rosenberg et al., 2018*).

It's thought that the first successful cesarean section on a living woman was performed by Jacob Nufer in 1500 AC, who as the literature claims operated on his wife several days of unsuccessful labor. While the first authenticated cesarean section was performed by Trautmann of Wittenberg in 1610, with the mother succumbing to post- operative infection twenty five days later (*Farhan, 2013*).

Nowadays, Cesarean section is the most common obstetrical surgery in both developed and developing countries. During the past few decades the worldwide incidence of cesarean sections has increased markedly (*Singh et al., 2018*).

At the national and international level, Cesarean section is considered one of the most frequently used indicators of health care quality. On the basis of this indicator, hospitals and health-care systems are compared with implicit assumption that lower rates reflect more appropriate practice (*Colais et al., 2012*).

No doubt cesarean sections are an important &useful form of surgical intervention for difficult deliveries. However,

rather than as a last resort, today patients & physicians elect to use cesarean section for a variety of reasons (**Rosenberg et al., 2018**).

Fear of litigation, financial incentives related to methods of payment, women's requests for CS, the perception that it is a safe procedure and other explanations have been cited as explanation of this increase (**Long et al., 2018**).

In the latest data, 20% of females give birth by cesarean section. Now, 40.5% in Latin America and the Caribbean and Southern America is the sub-region with the highest rates of Cesarean section in the world with 42.9%. Cesarean section rate in Africa is the lowest average with 7.3% (**Betrán et al., 2016**).

Remarkable increase in rates of cesarean section has been detected in some countries. Egypt, Turkey, Dominican Republic, Georgia and China have all had over 30 percent points increase in their Cesarean section rates over the last 24 years. For example, in Egypt, according to the latest data, more than 50% of all women give birth by cesarean section without much difference between urban and rural areas (**Ministry of Health and Population [Egypt], 2014**).

In USA, cesarean section rates rise from 14.6% in 1996 to 20.3% in 2005. In 2006 rates rise to 31.1% (**Betrán et al.,**

2016). In Ain Shams Maternity hospital, rates were 36.7% in 2003 then raised to 38.4% in 2008 (**Allam et al., 2014**).

Reducing cesarean section rates demands studying of each case to identify which patient group mostly undergoing this procedure (**WHO, 2015**).

For this purpose different classification systems have been described. In 2011, a systematic review of available classifications proved that Robson Ten Group classification is the best classification that fulfill the international and local needs (**Torloni et al., 2011**).

In 2015, WHO considered Robson Ten Group classification system as a global standard for assessing, monitoring and comparing Cesarean section rates (**Betrán et al., 2016**).

A modification to the Robson criteria is proposed for Canadian use, which included sub- classification of women having caesarean section after spontaneous onset of labour, after induction of labour, and before labour (**Farine et al., 2012**).

AIM OF THE WORK

To evaluate the feasibility of using the Robson Ten Group Classification System (TGCS) for cesarean section indications at Ain Shams Maternity hospital.

*Chapter 1***CESAREAN SECTION****History:**

Cesarean section is an invasive surgical procedure in which a baby is delivered through an abdominal and uterine incision & carries with it many immediate and delayed morbidity and mortality risks (*Rosenberg and Trevathan, 2018*).

Historically, The Roman Lex Regia (royal law), later the Lex Cesarea (imperial law) of Numa Pompilius (715–673 BC), required the child of a mother dead in childbirth be cut from her womb (*Raghavendra et al., 2018*).

This seems to have begun as a religious requirement that mothers not be buried pregnant, and to have evolved into a way of saving the fetus, with Roman practice requiring a living mother be in her 10th month of pregnancy before the procedure was resorted to, reflecting the knowledge that she could not survive the delivery (*Claude Moore Sciences Health, 2012*).

Speculation that the Roman dictator Julius Cesar was born by the method now known as C-section is apparently false, although Cesarean sections were performed in Roman times, no classical source records a mother surviving such a delivery. The term has also been explained as deriving from the

verb *cedere*, to cut, with children delivered this way referred to as *cesones* (**Pieter and Dongen, 2009**).

Bindusara (born 320BC, ruled 298–272BC), the second emperor of India, is said to be the first child born by surgery, his mother accidentally consumed poison and died when she was close to delivering him. Chanakya, his father teacher and advisor, made up his mind that the baby should survive. He cut open the belly of the queen and took out the baby, thus saving the baby's life (**Lurie and Samuel, 2005**).

It's thought that the first successful cesarean section on a living woman was performed by Jacob Nufer in 1500 AC. Who, as the literature, claims operated on his wife. While the first authenticated cesarean section was performed by Trautmann of Wittenberg in 1610, with the mother succumbing to post- operative infection 25 days later (**Farhan, 2013**).

The optimum mode of delivery of twins remains controversial. Much will depend on the condition of the pregnancy, the presence of additional fetal or maternal complication, gestational age at delivery and the ultimate presentation of both twins at the time of delivery. The incidence of multiple pregnancy is rising due to high maternal age and the impact of assisted conception (**Dong et al., 2016**).

Surgical Techniques of Cesarean section

As with most surgical procedures, there is no standard technique for cesarean section (*Bonney and Myers, 2010*).

1- Pre-operative preparations:

The cesarean section will need the same pre-operative care as any major surgery plus additional consideration for the fetus. Determination of hemoglobin and hematocrit value is important prior to surgery and blood should be available for immediate transfusion if acquired.

2- Anesthesia:

The gestational age and medical condition of the mother must be taken into consideration prior to the choice of an anesthetic agent. For the safety of the patient, spinal or epidural anesthesia is usually best for cesarean section if the clinical circumstances permit (*Larry et al., 2002*).

3- Position of the patient:

A lateral tilt of around 15 degree is important to avoid supine hypotension and reduced placental perfusion. Arm boards are useful to allow the anaesthetist access to intravenous lines (*Pei et al., 2014*).

4- Catheterization:

Single catheterization before starting the procedure to avoid injury of the bladder is recommended. The use of an indwelling catheter after Cesarean section under epidural is thought to lessen the risk of urine retention and the need for repeat catheterization.

5- The incisions

A- Skin incisions

The size of the abdominal skin incision needs to be adequate for easy delivery of the fetus. While there are no trials on this technical aspect of cesarean section, a 15 cm incision (the size of a standard Allis clamp) is probably the minimal length that allows atraumatic and expeditious delivery of the term fetus (*Baskett et al., 2007*).

1- Vertical Incision:

Traditionally, both transverse and vertical incisions have been used for Cesarean section. Each type has its own advantages. A vertical midline incision allows a less vascular, rapid entry and good exposure of both the abdomen and pelvis (*Baskett et al., 2007*).

2- Pfannenstiel Incision:

This incision is extensively used because of its excellent cosmetic results, along with the benefits of early ambulation and a low incidence of wound disruption, wound dehiscence