Assessment of Uterine Scar after Modified double versus Double Layer Closure of the Uterus

Thesis

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بِسْمِ اللّهِ الرّحمَنِ الرّحيمِ

[...رَبِّ أَوزِعنِي أَن أَشكُرَ نِعمَتَكَ
الّتِي أَنعَمْتَ عَلَيَّ و عَلى والِدَيَّ
و أَنْ أَعْمَلَ صَالِحاً تَرْضَاهُ و أَدْخِلْنِي
بِرَحْمَتِكَ فِي عِبَادِكَ الصَّالِحِينَ]

صدق الله العظيم

النمل.. اية رقم ١٩

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Dina Ahmed Ahmed

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List of Abbreviations

CPD	: Cephalopelvic disproportion
CS	: Caesarean section
CSDs	: Caesarean scar defects
LUS	: Lower uterine segment
MRI	: Magnetic resonance imaging
NIH	: National Institute of Health
PCDS	: Previous caesarean delivery scar
SCSH	: Saline contrast sonohysterography
TOL	: Trial of labor
TVS	: Transvagianl sonography
UI	: Urinary incontinence
VBAC	: Vaginal birth after caesarean section
2D	: Two-dimensional
3D	: Three-dimensional

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Introduction

The cesarean delivery rate has continued to increase over the past several years ***(Sambaziotis et al., 2004).***

Several studies have shown that one caesarean section implies a high risk for caesarean section in the next pregnancy ***(Osser and Valentin, 2010).***

A low transverse incision is the preferred method of caesarean delivery. Traditionally, closure of the uterine incision has been in two layers, although in the past decade an increasing number of obstetricians have moved to single layer closure due to advantage of shorter operative time, decreased blood loss, lower rates of endometritis and shorter hospital stay ***(Cohain, 2004; Durnwald and Mercer, 2008).***

A one layer closure involves a single continuous running or locking layer of absorbable suture. A two layer closure typically adds a fold of muscle on the upper and lower side to cover the first layer, with absorbable suture ***(Bujold et al, 2010; Dodd et al., 2008).***

Many studies have shown an increase in uterine scar disruption after one layer closure The authors introduced a new method for closure of uterine incision at the time of repeat caesarean section, especially, because lower segment is most

thinned out at that time. It consists of full thickness closure by interrupted horizontal mattress sutures in first layer followed by a continuous running suture in the second layer (Modified two layer closure) ***(Hamar et al., 2007; Cheung et al., 2005).***

Cesarean scar defects, deficient uterine scars or scar dehiscence following a Cesarean section, involve myometrial discontinuity at the site of a previous Cesarean section scar ***(Wang et al., 2009).***

Over the past decade, the rate of Cesarean sections has risen. Such a high Cesarean section rate is likely to be accompanied by a similarly high prevalence of Cesarean scar defects ***(Wang et al., 2009).***

It is generally been found that the thicker the uterine scar the lower the rate of complications. One may postulate that a thicker scar is stronger, and thus performs better, than a thinner one ***(Hamar et al., 2007).***

Cesarean section is associated with complications in subsequent pregnancies, such as scar pregnancy with life-threatening bleeding, placenta previa, placenta accreta, increta or percreta, dehiscence or uterine rupture. It is not known whether defects in Cesarean section scars that are visible at transvaginal ultrasound examination of non pregnant women are associated with a higher risk of these complications than apparently intact scars, or whether large defects are associated

with a higher risk of complications than small defects. Cesarean surgery has been reported to be associated with prolonged postmenstrual spotting and chronic pelvic pain ***(Osser and Valentin, 2010).***

The surgical techniques used at caesarean section vary between surgeons ***(The Caesar study, 2010).***

Various techniques for cesarean delivery, especially focusing on closure of the uterus, have been introduced and evaluated ***(Hayakawa et al., 2006).***

In regard to the closure of the wound accurate apposition of all parts must be secured. Some opcrators employ continuous sutures in several layers. This.seems to increase the risk of subsequent gaping of the wound when retraction takes place; and the use of ordinary interrupted sutures does not prevent separation of the wound between the stitches ***(Bell, 2005).***

Ultrasound examination is an objective method for assessment of uterine scar defects ***(Hayakawa et al., 2006).***

Transvaginal ultrasound examination is a highly accurate method for detecting cesarean scar defects for example in association with abnormal bleeding or thinning of the residual myometrium ***(Hayakawa et al., 2006).***

Aim of the Work

To assess uterine scar thickness by trans vaginal ultrasound after double versus modified double layer of closure of the uterus 6 months postpartum.

Caesarean section

Caesarean delivery was practiced for ages and is referred to in the myths and folklore of many ancient nations. The evidence that caesarean section was performed arises from legal texts: a cuneiform tablet dealing with the adoption of a small boy during the 23rd year of the renowned king ***(Lurei et al., 2005).***

-Incidence of caesarean birth:

Caesarean section is one of the most commonly performed operations on the women throughout the world. Despite the additional risks over vaginal delivery, the rates of caesarean deliveries have increased dramatically in recent years from 12% in 1990 to 24% in2008 with no improvement in outcome for the baby ***(Yassmin et al., 2011).***

In some settings, the caesarean section rate (number of caesarean section as proportion to all deliveries) is around 50birthing is a natural process ***(Griffith et al., 2006).***

-Indications of caesarean section

A study to investigate the indications for caesarean section was performed showed the indications of CS and the percentage for each indication for elective and urgent CS (table 1 and 2) ***(Ylva et al., 2010).***

Table (1): Indications for elective caesarean section.

Year	1992		2005	
	n=486	%	N=988	%
Breech/transverse lie	140	28. 8	211	21. 4
Previous CS	111	22. 8	158	16. 0
Narrow pelvis	98	20. 2	29	2. 9
Psychosocial	51	10. 5	380	38. 5
Maternal disease	34	7. 0	81	8. 2
Duplex pregnancy	31	6. 4	25	2. 5
Triplex pregnancy	7	1. 4	1	0. 1
Fetal factor	7	1. 4	31	3. 1
Previous sphincter injury	7	1. 4	72	7. 3

Table (2): Indications for ergent and emergency CS.

Year	1992		2005	
	n=519	%	n=984	%
Presumed fetal compromise	218	42. 0	435	44. 2
Prolonged labor	145	27. 9	292	29. 7
Maternal compromise	85	16. 4	76	7. 7
Fetalmalpresentation	47	9. 1	157	15. 9
Prematurity	19	3. 7	12	2. 3
Uterine rupture	5	0. 9	2	0. 2

TIMING OF ELECTIVE CESAREAN DELIVERY

While term pregnancy is defined as 37 weeks of gestation or later; elective cesarean delivery is typically not performed prior to 39 weeks gestation secondary to the risk of fetal lung non-maturity ***(Tita et al., 2009)*.**

Complications of caesarean sections:

A. Maternal short term risks:

1. Postpartum haemorrhage:

Some half a million women die annually across the world from causes related to pregnancy and childbirth. Approximately one quarter of these deaths are caused by complications of the third stage of labour, i. e. bleeding within the first 24 hours after delivery. This type of haemorrhage is known as primary postpartum haemorrhage. In the developing world, the risk of maternal death from postpartum haemorrhage is approximately one in 1000 deliveries. In the United Kingdom, the risk of death from obstetric haemorrhage is about one in 100, 000 deliveries ***(Mousa et al., 2007). .***

2. Fever, infection, pneumonia, and thromboembolic events:

The risk of these types of postpartum morbidity is consistently increased with caesarean delivery. untilrecently, most studies on postpartum morbidity were limited to inpatients ***(Allen et al., 2006)*** and didn't account for women who experienced complications after hospital discharge ***(Koroukian (2006) and Declercq et al. (2007).***

3. Surgical and traumatic complications:

Included damage to the bladder, ureters, and other abdominal structures. According to the NIH, weak evidence supported a lower risk of surgical complications with elective caesarean section when compared with planned vaginal birth. More recently, however, it's reported a significantly higher rate