ULTRASONOGRAPHIC ASSESSMENT OF THE LOWER UTERINE SEGMENT THICKNESS IN PATIENTS WITH PREVIOUS CESAREAN SECTION

Thesis

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abstract

Others have evaluated the lower uterine segment to detect the presence of scar tissue and its type. Several studies have proved the value of ultrasonography in this context Transvaginal sonography has recently been implicated to predict uterine dehiscence by measuring lower uterine segment thickness prior to the onset of labor.

Key word: PATIENTS PREVIOUS CESAREAN

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INTRODUCTION

There has been a significant increase in Cesarean section (C.S) rate over the last 20 years, which is not uniform but associated with wide variations between &within countries .(***Sachs et al., 1999***).

Regarding Egypt , a significant rise in Cesarean section rate has occurred from 4.6%in 1992 to 10.3% in 2000.However , hospital –based Cesarean deliveries were mush higher in1998 (13.9%) and increased to 22.0% in 2000.Although the Cesarean section rate was slightly higher in private hospitals , the rate has also increased consistently in public hospitals.(***Khawaja et al.,2004)***.

The management of patients with previous Cesarean section causes much controversy among health care providers, patients and insurers.

The maternal and neonatal morbidity increases when vaginal birth after previous Cesarean section (VBAC) attempts fails , which emphasizes the importance of careful case selection .Also the risks of uterine rupture and neonatal mortality are significantly increased ***(Biswas,2003).***

However; a trial of vaginal birth after previous C.S is reported to be a safe and practical method to reduce the rate of C.S. A non recurrent indication of C.S such as breech presentation or fetal distress is associated with a higher success rate of VBAC than recurrent indication such as cephalopelvic disproportion (CPD).Also , prior vaginal delivery is an excellent indicator of successful VBAC especially if vaginal delivery follows the prior C.S.***(Brill and Windrim, 2003).***

Trans-vaginal sonography is a new tool to assess uterine scar thickness in women with a previous Cesarean delivery to determine the critical thickness above which safe vaginal delivery could be ensued. ***(Armstrong et al., 2002)***.

Trans-vaginal sonographic examination provides sensitivity and specificity of 100% and 75% respectively, for a thickness cut – off of 3.5mm & a positive and negative predictive value of 60.7% and 100% respectively. Therefore; it improves the obstetrical

decision –making regarding the trial of labor in women with previous C.S. ***(Montanari et al., 1999).***

The study of***(Asakura et al.,2000)*** have shown that measurement of the thickness of the lower uterine segment using trans-vaginal ultrasound is useful in predicting the absence of dehiscence among gravidas with previous C.S. The measurement was found to be 1.6mm when only the muscle layer of lower uterine segment was measured with vaginal probe .This is comparable to be 3.5mm of full thickness measurement with an abdominal probe ***(Rozenberg et al., 1996).***

AIM OF WORK

The aim of this study is to utilize transvaginal ultrasound to evaluate the thickness of the lower uterine segment in patients with history of previous Cesarean section, and to determine a cut-off value that can be clinically used to allow a safe vaginal delivery. This might have an impact on decision making about the mode of delivery in patients with previous Cesarean section.

CESAREAN SECTION

Definition

Cesarean section is a form of childbirth in which a surgical incision is made though a mother's abdomen (laparotomy) & uterus (hysterotomy) to deliver one or more babies. It is usually performed when a vaginal delivery would put the baby's or mother's life or health at risk; although in recent times it has been also performed upon request for births that would otherwise have been normal***(Finger,2003)***.

This definition dose not includes removal of the fetus from the abdominal cavity in cases of uterine rupture nor in cases of abdominal pregnancy ***(Cunningham et al., 2003).***

Incidence

The **(WHO)** estimates the rate of Cesarean sections at between 10% & 15% of all births in developed countries. In 2004, the Cesarean section rate was about 20% in the United Kingdom. In 2005 the rate was 30.2% in the United States. During 2001-2002, the Canadian Cesarean section rate was 22.5%. In the United States the rate has risen by 46% since 1996 ***(Preliminary Births in US, 2005)***. The overall Cesarean section delivery rate has increased from 18 % in 1994/95 to 22.1% in 2000/01. The primary Cesarean delivery rate has increased from 12.7% to 16.3%, while the rate of vaginal birth after Cesarean section has decreased from 33.3% to 28.5% over the same period. Also the rate of vaginal deliveries following forceps rotation has declined from 1.9% in 1994/95 to 1.3% in 2000/01 ***(Liu et al., 2004).***

Cesarean section rates in Egypt.

Regarding Egypt, a significant rise in Cesarean deliveries has occurred from a low of 4.6% in 1992 to 10.3% in 2000. However, hospital–based Cesarean deliveries were much higher in 1988 (13.9%), increasing to 22% in 2000. Although the Cesarean section rate was slightly higher in private hospital, the rate has also increased consistently in public hospital. This high increase in Cesarean section rates may be partly due to Cesarean sections that are not medically indicated, and it's suggested that physician practice patterns, financial incentives or other profitability factors, and patient preferences should be explored ***(Khawaja et al., 2004)***.

Risks of Cesarean section.

Data from 120 health facilities in 8 Latin countries evaluated maternal, fetal and neonatal morbidity mortality related to the mode of delivery; (31821 Cesarean deliveries & 62486 vaginal deliveries); women undergoing Cesarean deliveries had an increased risk of severe maternal morbidity compared with women undergoing vaginal delivery (odds ratio 2) for intrapartum Cesarean section and (2.3) for elective Cesarean section ***(Villar et al., 2005).***

Silver et al,. (2006). found that women who had multiple Cesarean sections were more likely to have problems with later pregnancies , and recommended that women who want larger families should not seek Cesarean section as an elective way to terminate their pregnancy.

Statistics from the 1990s suggest that less than one woman in 2500 who has a Cesarean section will die, compared to a rate of one in 10000 for a vaginal delivery ***(Robin Elise Weiss, 2006).***

A study published in February 2007 in the *Canadian Medical Association Journal* found that women who have planned Cesarean section on demand had an overall rate of severe morbidity of 27.3 per 1000 deliveries compared to an overall rate of severe morbidity of 9 per 1000 planned vaginal deliveries. The planned Cesarean group had increased risks of cardiac arrest, wound haematoma, hysterectomy, major puerperal infection, anesthetic complication, & venous thromboembolism over those in the planned vaginal delivery group ***(Liu and Shiliange, 2007).***

A study published in the *Journal Obstetrics and Gynecology* found that women who had just one previous Cesarean section were more likely to have problems with their second birth. Women who delivered their first child by Cesarean section had increased risk of malpresentation , placenta previa , ante-partum hemorrhage, placenta accrete, prolonged labor , uterine rupture, preterm birth, low birth weight and stillbirth in their second delivery***(Kennare and Robyn,2007).***

Indication of Cesarean sections

Cesarean section is recommended when vaginal delivery might pose a risk to the mother or baby.

Reasons for Cesarean section delivery include:

- Precious fetus.
- Abnormal presentation (transverse position, brow,).
- Placental abnormalities (placenta previa, placental abruption).
- Cord prolapsed.
- Contracted pelvis.
- Sexually transmitted infection.
- Macrocosmic baby.
- Multiple births.
- Failed induction of labor.
- Prolonged labor or a failure to progress (dystocia).
- Apparent fetal distress.
- Failed instrumental delivery by forceps or ventouse.
- Uterine rupture.
- Prior problems with the healing of the perineum from previous childbirth.
- Previous Cesarean section (though this is controversial).

However, different providers may disagree about when a Cesarean section is required. For example, some care providers may be much quicker to cite failure of progress than others. Disagreement like this, help in explaining why Cesarean rates for some physicians & hospitals are much higher than those for others. The medico-legal restriction on vaginal birth after Cesarean, have also increased the Cesarean section rate. ***(Hamid ME, 2002).***

Maternal indications:

❖ Ante partum hemorrhage

Where complete placenta pravia is present, delivery almost invariably will be via Cesarean section. Much controversy has surrounded the route of delivery with a partial or marginal placenta pravia. If vaginal delivery is considered , a double step examination should be performed with the operating team ,anesthesia and pediatrics personnel present in the event that an emergency procedure becomes necessary ***(Karen AR and Mary Sullivan,1992).***

A placental edge less than 2 cm from the internal os is likely to need delivery by Cesarean section , especially if it is posterior or thick ***(RCOG Guide lines, 2005).***

In abruption placenta, if the infant is alive and the uterus is rigid, the abruption is probably large but less than 50%and the chances of fetal distress are more than 90%. In this case, the patient should be prepared for immediate C.S ***(Chamberlain, 2001).***

❖ Cephalo-pelvic disproportion(CPD)

Labor dystocia is the most frequent indication for primary Cesarean delivery in the United States. An analysis of labor dystocia as a contributing factor to the Cesarean rate is difficult ***(Cunningham et al., 2001).***

❖ Previous vaginal surgery

It is considered an indication for CS on the basis of the hypothesis that stretching of the vagina and pressure exerted by the descending fetus may interfere with the previous reconstructive procedure, especially after repair of vesicovaginal fistula ***(Karen and Mary Sullivan, 1992).***

❖ Preservation of urinary continence

Childbearing is an established risk factor for urinary incontinence among young and middle age women (***Rortveit et al., 2003).*** Vaginal delivery represents a potent determinant of stress urinary incontinence, carrying more than twice the risk of Cesarean section ***(Goldberg et al., 2005).***

❖ Previous uterine scar

Years ago, the routine was *once a Cesarean always a Cesarean*, but this is not true nowadays. ***Myerscough, (1988)*** revised that *once a Cesarean always a hospital delivery.* In recent years, several papers described trial of labor in patients with previous C.S but under certain precautions. However, trial of labor remains controversial at the dawn of the 21st century ***(Flamm, 2001).***

❖ Diabetic pregnant mother

The incidence of delivery by Cesarean section was as high 58% among established diabetics and 33%with those with gestational diabetes .There is an increased evidence of the safety of waiting for the onset of spontaneous labor provided that diabetes is well controlled and pregnancy is uncomplicated, however, they should be delivered when they reach the expected date of delivery to avoid fetal complication resulting from prolongation of pregnancy ***(Eden et al., 1998).***

❖ On -Demand Cesarean section

High numbers of women wish to give birth by Cesarean section. This is probably an expression of the change in society's attitudes. This wish is correlated with patient's age more than 35 years, high level of education, previous infertility, smoking, quality of information and desire for more comprehension ***(Mancuso et al., 2006).*** Also the biological data, personal birth experience and working environment influence the attitude towards elective Cesarean section ***(Faas-Fehervary et al., 2005).***