

Fetomaternal morbidity related to multiple cesarean sections

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Objective: To observe the effects of repeat cesarean sections on mother and fetal outcomes.

Methodology: This observational study was conducted in the Obstetrics and Gynecology Department, District Headquarter Hospital, Rawalpindi, Pakistan from Feb 2019 to Jan 2020. The study included recurrent cesarean patients, divided into three groups; Group I women (n = 300) who had 2 births by C-section, Group II (n = 185) included women who had 3 births by C-section, and Group III (n = 45) included women who had four or more C-section. Case records were analyzed for demographic and clinical features such as age, duration of surgery, parity, and hospitalstay prenatal complications and estimated blood loss (EBL) during surgery. Intraoperative complications were observed in terms of severe adhesions, scar separation, placenta praevia, morbid adherent placenta, surrounding intestinal

damage, anesthetic complications, the need for blood transfusions and fetal outcomes.

Results: A significant increase was observed in women with more than two cesarean births in adhesions, placenta adhesion, placenta praevia and obstetric hysterectomy requirements. We could not find a significant increase in surgery time, injuries to surrounding structures, need for blood transfusions, and anesthesia complications between the three groups.

Conclusion: Women with recurrent cesarean sections are at risk of developing intraoperative complications that may increase the risk of fetal and maternal morbidity, but their greater number does not constitute an additional risk.

Keywords: Cesarean section, morbidity, fetomaternal, adhesions.

INTRODUCTION

Caesarean section (CS) is childbirth through a surgical incision made through the abdominal wall (laparotomy) and the uterine wall (hysterectomy).^{1,2} The phrase “caesarean section” is a tautology, since both the words “caesarean section” and “section” come from verbs signifying cut.^{3,4} CS has evolved from an unsuccessful attempt to save the fetus to a patient whose physician and patient are involved in making decisions.^{5,6} The frequency of CS is increasing worldwide, while maternal morbidity and mortality are increasing. According to the universal trend, the birth rate also increases.^{5,6}

The continuous increase in the CS birth rate did not because an increase in patients with uterine injuries.⁷ Repeated CS is the most common indication. In the local study, a cesarean delivery rate of 35% was observed, and 31% was due to repeated C-type cuts. Although maternal death due to CS is less common, reports of short- and long-term consequences of an increase in C birth rate in the reproductive population are contradictory.^{8,9}

The utmost intolerable impediments after frequent CS are the jeopardy of scar rupture during pregnancy and

the enlarged incidence of abnormal placement, unplanned perinatal hysterectomy is typically accomplished as a last option to control life-threatening hemorrhage, which is often caused by placenta accreta, placenta praevia, uterine rupture and uterine atony.^{10,11} Some authors found no increase in maternal morbidity in women with multiple births in cesarean delivery history, and therefore encouraged them to continue their pregnancy.^{11,12} Due to increased safety of anesthesia, safe antibiotics and blood transfusions, many cesarean deliveries occur without incidents.

METHODOLOGY

This cross-sectional observational study was carried out in the Department of Obstetrics and Gynecology, District Headquarter Hospital, Rawalpindi, Pakistan from Feb 2019 to Jan 2020. The patients were divided into three groups, including women who had 2 births by C-section. Group II included women who had 3 births by C-section, and Group III included women who had four or more births by C-section. G I had 300 patients, G II 185 patients, G III 45 patients.

Case records were analyzed for demographic and clinical features such as age, duration of surgery, parity,

hospital stay, prenatal complications and EBL during surgery. Perinatal features including birth weight, Apgar score after 5 minutes, preterm delivery below 36 weeks, no delivery and no admission to the ICU. Severity of adhesion, scar rupture, placental abnormalities, bladder and intestinal injury, hysterectomy, anesthetic complications, blood transfusion, urinary tract infection, wound incidence, genital tract infection and maternal death were recorded.

The degree of pelvic adhesions was classified by the surgeon for surgery according to the classification of American Fertility Society Classification of adnexal adhesions. Department policy is to perform elective cesarean surgery in patients who have previously had two or more cesarean sections between 37 and 38 weeks of gestation, unless there are other indications for preterm labor. Generally, the Pfannenstiel incision is used to open the abdominal cavity and a transverse incision is made in the lower part of the uterus. In our department, the visceral and peritoneal peritoneums are not closed after cesarean section to decrease postoperative infection. Augmentin is used as a prophylactic antibiotic after cord clamping later to

childbirth.

Statistical Analysis: Data were analyzed on SPSS version 21. Fisher's exact test was used for the analysis of discrete variables, and the Kruskal Wallis test was used for the analysis of continuous variables.

RESULTS

Women who previously had four or more divisions were older with significantly higher parity than those who had previously had two or three cesarean sections. However, in three groups it was the same with prenatal complications in the mother. In addition, no significant difference was observed in surgery time, postoperative hospital stay and EBL during surgery (Table 1).

Table 2 shows that women in the third group showed a significant increase in placental adhesion, uterine scar dehiscence, and adhesion formation compared to the other two groups. There was no significant difference between the three groups in the percentage of intraoperative and postoperative complications. In the first group, there were four deaths of the mother due to pulmonary embolism.

Table 1: Operative and demographic data of the study.

| Demographics | G I (n = 300) | G II (n = 185) | G III (n = 45) | P-Value |
|--------------------------------------|-----------------|----------------|-----------------|---------|
| Maternal Age (years) | 30.1 ± 4.21 | 31.23 ± 4.10 | 32.07 ± 2.96 | 0.0001* |
| Parity | 3.17 ± 0.61 | 4.07 ± 0.41 | 5.05 ± 0.71 | 0.0001* |
| Per Operative Blood loss (cc) | 483.71 ± 270.76 | 480.6 ± 245.57 | 541.64 ± 389.44 | 0.1955 |
| Operative time (min) | 45 ± 11.25 | 44.38 ± 15.26 | 48.93 ± 27.07 | 0.6128 |
| Antenatal Complications | | | | |
| Bleeding | 9 (3.00%) | 9(5.14%) | 3(7.89%) | 0.456 |
| Leaking | 28 (9.59%) | 12(6.86%) | 2(5.26%) | 0.232 |
| Associated Medical Disorder | | | | |
| GDM | 5 (1.71%) | 6(3.43%) | 1(2.63%) | 0.566 |
| PIH | 16 (5.48%) | 11(6.29%) | 4(10.53%) | 0.625 |
| Diabetes Mellitus | 3 (1.03%) | 3(1.71%) | 1(2.63%) | 1 |
| Anemia | 20 (6.85%) | 12(6.86%) | 2(5.26%) | 0.868 |
| Anti HCV positive | 12 (4.11%) | 8(4.57%) | 2(5.26%) | 1 |
| Hep B positive | 10 (3.42%) | 9(5.14%) | 3(7.89%) | 0.456 |
| Per Operative Blood loss (cc) | 483.71 ± 270.76 | 480.6 ± 245.57 | 541.64 ± 389.44 | 0.1955 |
| Operative time (min) | 45 ± 11.25 | 44.38 ± 15.26 | 48.93 ± 27.07 | 0.6128 |
| Hospital stay (days) | 3.87 ± 1.61 | 3.81 ± 1.21 | 3.95 ± 1.10 | 0.3154 |

Table 2: Maternal mortality and morbidity in study groups.

| Complications | G I (n = 300) | G II (n = 185) | G 3 (n = 45) | P-Value |
|-------------------------------------|---------------|----------------|--------------|---------|
| <i>Preoperative Complications</i> | | | | |
| Scar Dehiscence | 92 (31.51%) | 52 (29.71%) | 12 (31.57%) | 0.907 |
| Placenta Praevia | 26 (8.90%) | 20 (11.42%) | 8 (21.05%) | 0.015* |
| Placental Adherence | 0 (0.00%) | 4 (2.28%) | 3 (7.89%) | 0.029* |
| Adhesions | 143 (48.97%) | 99 (56.57%) | 27 (71.05%) | 0.033* |
| <i>Intraoperative Complications</i> | | | | |
| Bladder Injury | 16 (5.48%) | 11 (6.28%) | 4 (10.52%) | 0.58 |
| Gut Injury | 4 (1.37%) | 4 (2.28%) | 0 (0.00%) | 0.652 |
| Need for Blood transfusion | 17 (5.82%) | 10 (5.71%) | 5 (13.15%) | 0.283 |
| Caesarean Hysterectomy | 0 (0.00%) | 4 (2.28%) | 2 (5.26%) | 0.043* |
| Anesthesia Complications | 0 (0.00%) | 3 (1.71%) | 0 (0.00%) | 0.422 |
| <i>Postoperative Complication</i> | | | | |
| Urinary tract infections | 49 (16.78%) | 33 (18.85%) | 8 (21.05%) | 0.787 |
| Endometritis | 21 (7.19%) | 12 (6.85%) | 3 (7.89%) | 1 |
| Wound Infection | 18 (6.16%) | 10 (5.71%) | 3 (7.89%) | 0.902 |
| Wound Dehiscence | 17 (5.82%) | 9 (5.14%) | 3 (7.89%) | 0.793 |
| Hematoma | 13 (4.45%) | 14 (8.00%) | 4 (10.52%) | 0.118 |
| Maternal Death | 4 (1.37%) | 0 (0.00%) | 0 (0.00%) | 0.422 |

Table 3: Fetal characteristics and outcome.

| Fetal Characteristics | G I (n = 300) | G II (n = 185) | G III (n = 45) | P-Value |
|-------------------------|---------------|----------------|----------------|---------|
| Gestational Age (weeks) | 37.80 ± 1.3 | 37.61 ± 1.14 | 37.61 ± 0.61 | 0.0021* |
| Birth weight (kg) | 3.07 ± 0.55 | 3.07 ± 0.57 | 3.17 ± 1.21 | 0.3984 |
| Apgar score | | | | |
| 1 min | 6.69 ± 0.76 | 6.52 ± 1.04 | 6.66 ± 0.71 | 0.106 |
| 5 min | 8.54 ± 1.20 | 8.42 ± 1.24 | 8.46 ± 1.15 | 0.3503 |
| Perinatal Death % | 32 (10.96%) | 12 (6.86%) | 2 (5.26%) | 0.232 |
| NICU % | 16 (5.48%) | 10 (5.71%) | 5 (13.16%) | 0.168 |
| Premature Delivery % | 22 (7.53%) | 13 (7.43%) | 3 (7.89%) | 0.955 |

Table 3 shows the features of the fetus and the results of the three study groups. There was no significant difference between the three groups except for gestational age. There was no significant difference between birth weight, Apgar score of 1 and 5 minutes, and ICU hospitalization time, preterm delivery and perinatal mortality.

DISCUSSION

Cesarean delivery is an important obstetric surgery that is controversial with the increase in the C-delivery ratio around the world and has gained popularity in recent years.^{11,12} This can be attributed to the increased delivery of the CS and the reduced delivery of the vagina after the CS has become popular.^{13,14} In Muslim

countries such as Pakistan, pregnant women have more than three C. births.

District Headquarter Hospital, Rawalpindi is a tertiary hospital that cares for the population of the city of Rawalpindi. Each year, an average of 12000 sections is performed in the hospital for all complex obstetric and treated cases. The main complications of multiple CS include placenta accrete, rupture of the scarred uterus and intraoperative complications are intestinal or bladder injury. Unfortunately, there are no indications about the maximum number of cesarean births a woman can get before she risks a serious complication.^{15,16}

In our study, scar dehiscence (defined as the presence of a widow in part of uterine scar with intact membranes) did not differ statistically in three groups. This is similar to another study in which the incidence of scarring did not increase with the increase in the number of births.^{17,18} In the Kirkinen review, 27 patients who previously had three or more CSs had uterine scar fenestration, but some studies showed a frequency of 1 to 10% in women who received more than 5 cesarean sections.^{17,18}

It is noteworthy that our patients did not have risk factors for scar dehiscence as seen in polyhydramnios and multiple pregnancies. We observed that the increasing number of C births led to greater adhesion formation.¹⁹ Various studies show the formation of dehiscence at different rates. In our study, overall was observed in 57%. Many studies have highlighted preterm labor as an important risk factor for placenta previa.^{20,21} This risk increases from 0.26% for unscarred uterus to 10% for at least four deliveries. The same is shown in our study. However, another study by Khurshida et al showed that the increase in the number of births did not increase the incidence of placenta accreta. This study also showed a relationship between previous deliveries and placenta accreta. Many studies have shown that the placenta accreta has become an increasingly frequent complication of pregnancy, especially due to the increase in the number of deliveries in the last fifty years.^{22,23}

This may be due to the belief that uterine scars caused by previous operations result in deficient decasualization, making the uterus prone to abnormal placenta adherence.²⁴ This study also showed a relationship between earlier C delivery and placenta accreta and hysterectomy. Immediate hysterectomy was performed on patients with placenta accreta and previa.

No significant morbidity was observed in patients after hysterectomy. Knight et al and Lyell estimated the risk of perinatal hysterectomy in several women. The study was in line with our findings. The relationship between

fetal results and previous cesarean births has been previously discussed by other researchers.

CONCLUSION

Women with multiple cesarean surgeries are at risk of developing multiple intraoperative complications that may increase the risk of feto- maternal morbidity, but their increased number does not pose any additional risks.

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