

Study of Intraoperative Complications Associated With Repeat Cesarean Sections At A Tertiary Care Hospital in Eastern India.

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Abstract: Introduction: Cesarean sections can cause significant complications. Due to increased complications associated with vaginal birth after cesarean section, prior-cesarean section forms a major indication for cesarean section.

Objectives: To study the intraoperative complications and immediate fetal outcome in women with previous cesarean sections undergoing repeat cesarean section and to compare the complications in women with previous one with those in women with previous two or more cesarean sections.

Methods: It was an observational study conducted over a period of one year on 325 women with the history of previous caesarean section (one or more) and who underwent repeat caesarean section. The women were divided into two groups. Group 1: Those with previous one caesarean sections. Group 2: Those with previous two or more caesarean sections. The intraoperative complications and fetal outcome were noted, the data analysed and compared in between the groups.

Results: The most common intraoperative complication observed in this study was adhesions. There was statistically significant increase in the incidence of adhesions with increase in the number of cesarean sections. No significant difference was found among the two groups in the incidence of other complications.

Conclusion: The incidence of almost all intraoperative complications is higher in women with previous cesarean sections. There is a higher risk of adhesions and associated difficulty in delivery of the baby in women with previous two or more cesarean sections.

Keywords: intraoperative complications, repeat cesarean section, adhesions.

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I. Introduction

Cesarean section is the most commonest obstetric operative procedure. A Caesarean section is usually performed when a vaginal delivery would put the baby's or mother's life or health at risk, although recently it has also been performed upon maternal requests with no obstetric or medical indication. When medically justified, caesarean section can effectively prevent maternal and perinatal mortality and morbidity.[1] The concern for the caesarean rates is due to its rapid increase over the past few decades. For nearly 30 years, the international healthcare community has considered the ideal rate for caesarean sections to be between 10% and 15%. This was based on the statement by a panel of reproductive health experts at a meeting organized by the World Health Organization (WHO) in 1985 in Fortaleza, Brazil.[2] According to WHO guidelines published in 2015, at population level, caesarean section rates higher than 10% are not associated with reductions in maternal and newborn mortality rates. The guidelines also state that caesarean sections can cause significant and sometimes permanent complications, disability or death particularly in settings that lack the facilities and/or capacity to properly conduct safe surgery and treat surgical complications.[3-5] Caesarean sections should ideally only be undertaken when medically necessary. The trend in caesarean section rates is constantly rising in both developed and developing countries.[6,7] The reasons are multifactorial like increase in maternal age and associated medical risk factors, maternal requests for caesarean section and changing obstetric practices like increase in rate of induction of labor and continuous electronic fetal monitoring. Due to increased complications associated with vaginal birth after caesarean section (VBAC), prior-cesarean section forms a major indication for repeat caesarean section. Previous caesarean section accounts for 8-40% of repeat caesarean sections. Both repeat caesarean and a trial of labor after caesarean section (TOLAC) carry risks including maternal hemorrhage, infection, operative

injury, hysterectomy, and death. With increasing number of trials of labor after cesarean, there were reports of uterine scar dehiscence or rupture and associated maternal and/or neonatal morbidity and mortality.[8-10] A successful VBAC has fewer complications than an elective repeat cesarean while a failed TOLAC has more complications than an elective repeat cesarean. The risk of uterine rupture during a TOLAC is low—between 0.7% and 0.9%—but if it occurs, it is an emergency situation. A uterine rupture can cause serious injury to a mother and her baby. The present study aims to assess the types and frequencies of intra operative surgical complications and immediate fetal outcome associated with repeat cesarean sections which will be helpful in identifying the magnitude of the problem and in improving patients' care.

II. Material And Methods

This was a prospective observational study conducted in the Department of Obstetrics and Gynaecology, Kurji Holy Family Hospital, Patna, Bihar, India. The study was over a period of one year. A total of 325 women were included in the study. Pregnant women admitted in the Department of Obstetrics and Gynaecology with the history of previous caesarean section (one or more) and who underwent repeat caesarean section in our hospital during the study period were randomly selected and included in the study. Pregnant women with the history of any other major open abdomino-pelvic surgeries were excluded from the study. Pregnant women with multiple pregnancy, polyhydramnios, abruptio placenta and with any major medical illness like severe hypertension, jaundice, heart disease and severe anemia were also excluded from the study. A proforma to note the intraoperative complications and fetal outcome was attached to the postoperative record sheet and duly filled by the operating doctor or the assisting doctor. The case records of the women were analysed for the following parameters:

- (a) Demographic and clinical features, including age, parity, number of registered cases, number of previous caesarean sections, years after previous caesarean section, gestational age, the mode of operation whether elective or emergency, no of abortions
- (b) Fetal outcome including birthweight, Apgar score at 5 minutes, preterm birth below 37 weeks of gestation, number of admissions into neonatal intensive care unit (NICU), number of still births.
- (c) Operative complications including adhesions, severity of adhesions, excessive blood loss during surgery, thin LUS, scar dehiscence, incidence of placental previa and accreta, scar rupture, incidence of caesarean hysterectomy, bladder or bowel injury.

Women with the history of previous one caesarean section with a non recurrent indication and with singleton cephalic presentation at term attending our out patient department (OPD) are counseled about the risks and benefits of trial of labor versus elective repeat caesarean section. Patients who give informed consent undergo a trial of labor after proper maternal and fetal assessment and under careful supervision by staff and duty doctors. Emergency caesarean section is carried out for non progress of labor and fetal distress in these women. Women attending our OPD with the history of previous one caesarean section not willing for trial of labour and women with the history of previous two or more caesarean section are posted for elective repeat caesarean section at 38 completed weeks or earlier if they present with any complications or complaints indicating early delivery. If women with similar history come in labour, they are posted for emergency repeat caesarean section. Caesarean sections in low risk cases in our hospital are performed by Resident doctors and attended by Senior Consultants in case of any difficulty or complication. In high risk cases (eg: previous caesarean section with placenta previa) caesarean sections are performed by Senior Consultants themselves. All women in this study who underwent repeat caesarean section are divided into two groups on the basis of number of previous caesarean sections.

Group 1: Those with previous one caesarean sections.

Group 2: Those with previous two or more caesarean sections.

Demographic data, operative data, intraoperative complications and fetal outcome were analysed according to the number of previous caesarean sections.

III. Statistical Analysis

Chi square test, ANOVA and multiple regression analysis were employed on SPSS package to ascertain statistical significance. Appropriate tests were used to compare women with previous one, previous two and previous three LSCS.

IV. Results

210 women (64.61%) in this study had previous one lower segment caesarean section, 107 (32.92%) women had previous two LSCS, and only 8 women (2.46%) had previous three LSCS. There was no case with more than three previous caesarean sections. More number of women (n=172, 52.92%) in the study had emergency LSCS than elective LSCS (n=153, 47.04%). The most common intraoperative complication observed

in this study was adhesions. (Fig:1).Adhesions were observed in 34.76% of women, dense adhesions in 12%. The incidence of placenta previa, placenta accreta, thin LUS and scar dehiscence observed in women with previous cesarean sections in this study was 4.3%,2.46%, 18.46% and 7.69% respectively. There was only one case of scar rupture (0.3%) in this study seen in women with previous two LSCS. Excessive blood loss was seen in 8% of women in this study.(Fig:1) Most common (46.15%) cause of excessive blood loss was atonicity of uterus, other causes being traumatic and adherent placenta.Caesarean hysterectomy was done in 5 (1.53%) cases. Three women among previous one LSCS cases and 2 women among previous two and previous three LSCS cases had cesarean hysterectomy. All the 5 cases had adherent placenta leading to life threatening haemorrhage necessitating hysterectomy. Bladder injury occurred only in a single case (0.3%) with previous one LSCS. There was one case with bowel injury (0.3%). Seventy babies (21.53%) were born with low birth weight (<2.5 kg). Preterm caesarean sections were performed in 59 (18.15%) cases in this study.

Adhesions were more in women with previous two or more cesarean sections (41.73%) than in women with previous one cesarean section (30.95%) and the difference was statistically significant. The incidence of scar dehiscence, placenta praevia and cesarean hysterectomy was slightly more among women with previous two or more cesarean sections but the difference was not statistically significant. (Table:1 and Fig:2)

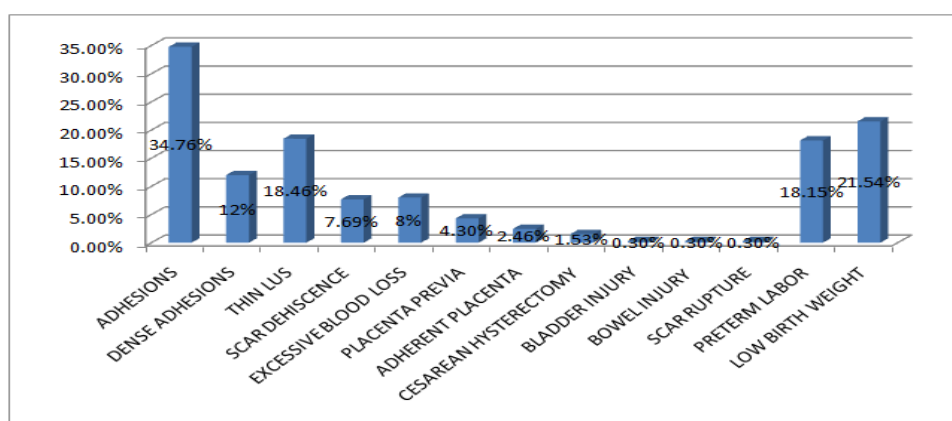


Fig 1:Incidence of intraoperative complications among women with repeat cesarean sections.

Table 1:Comparison of intraoperative complications among women with previous one cesarean section (Group 1) and women with previous two or more cesarean sections (Group 2)

Complications	Total Number	Group 1 N (%)	Group 2 N (%)	P-Value
Adhesions	113	65 (30.95)	48 (41.73)	< 0.05
Dense Adhesions	39	14(6.66)	25 (21.73)	< 0.05
Thin Lower uterine segment.	60	39 (18.57)	21(18.26)	>0.05
Scar Dehiscence	25	16 (7.61)	9 (7.82)	>0.05
Scar Rupture	1	0	1 (0.3)	>0.05
Placenta Previa	34	8 (3.8)	6 (5.21)	>0.05
Adherent Placenta	8	6 (2.85)	2 (1.74)	>0.05
Excessive Blood Loss	26	17 (8.09)	9 (7.82)	>0.05
Cesarean Hysterectomy	5	3 (1.42)	2 (1.73)	>0.05
Bladder Injury	1	1 (0.3)	0	>0.05
Bowel Injury	1	1 (0.30)	0	>0.05
Preterm Labor	59	34 (16.19)	25 (21.73)	>0.05
Low Birth Weight	70	40 (19.10)	30 (26.50)	>0.05

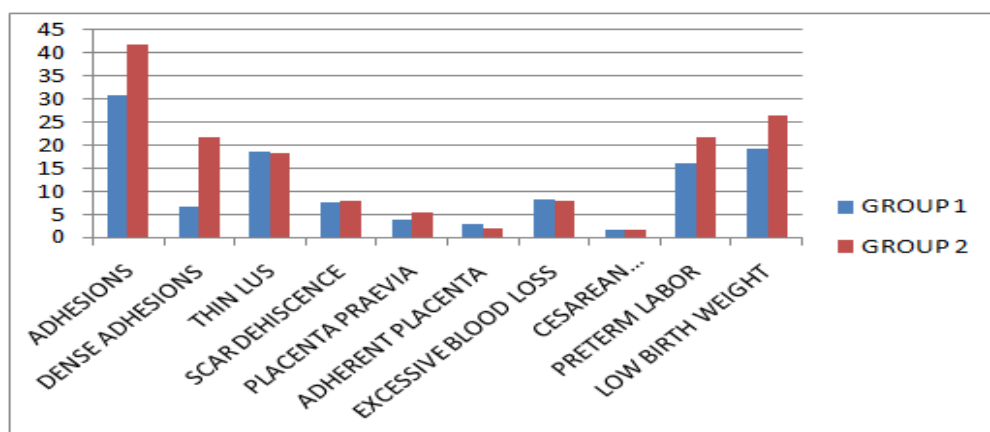


Fig 2: Comparison of intraoperative complications among women with previous one cesarean section (Group 1) and women with previous two or more cesarean sections (Group 2)

V. DiscussionAnd Conclusion

There is a widespread concern about the increasing proportion of births by caesarean section. Increasing rates of primary caesarean section have led to an increased proportion of women with a history of prior caesarean delivery. Prior caesarean delivery is the most common indication for caesarean and accounts for more than one-third of all cesareans. This makes necessary awareness of the potential complications that are associated with repeat caesarean delivery. Multiple caesarean sections predispose to an increased risk of intraoperative complications like scar dehiscence, uterine rupture, severe intra-peritoneal adhesions, significant hemorrhage, placenta praevia, placenta accreta, bladder injury and hysterectomy. Data regarding maternal complications during repeat caesarean section is of utmost importance to counsel women before undertaking a trial of labor or performing a planned repeat caesarean section. Also knowledge regarding complications is important for considering tubal ligation, a permanent birth control method after repeat caesarean section which will prevent further unwanted pregnancy and its associated complications.

No women in this study had more than three previous caesarean sections. The reason is that in our country where small family size is the norm and where large percentage of population do not seek antenatal care, pregnant women with previous two or more caesarean sections are counseled and encouraged for tubal ligation due to the risks associated with repeat caesarean sections. Most of them undergo bilateral tubal ligation after having two or three live issues mostly during their second, third or else during their fourth caesarean section. So it is unusual to find a woman with more than three previous LSCS. This is in contrast to other countries like Saudi Arabia where having a large family is encouraged by social and cultural influences; it is not unusual to see women planning for their sixth or seventh caesarean section. [11,12,14]

Number of women who underwent emergency caesarean section in our study (52.92%) was more than those who underwent elective caesarean section (47.04%). This may be because a large number of cases in our study are unbooked (47.38%) who arrived the hospital with labor pains for delivery and were not willing for trial of labor or are referred from other centres for tertiary care. In our country where antenatal care seeking rate is still poor, last moment reporting and transfer to tertiary care unit is very high, a large proportion of cases of previous caesarean section are usually emergency.

The most common complication observed was adhesions. Adhesions were observed in 34.76% of women, dense adhesions in 12%. Dense adhesions may lead to other complications like excessive bleeding, organ injury, difficulty and delay in delivering the baby, long term complications like chronic pelvic pain. Generally, the incidence of adhesions is within the 46–65% range, depending on the number of caesarean sections. [15] Significant difference was observed in our study in the incidence of adhesions and of dense adhesions between women with previous one and previous two or more caesarean sections. Several studies reported that increasing number of caesarean sections increase the adhesion rate. [16-18]

The incidence of placenta praevia and placenta accreta was 4.3% and 2.46% respectively. 1% to 5% incidence of placenta praevia was reported in other studies. [19,20] Many factors may be responsible for increased incidence of placenta praevia in cases of repeat caesarean section as compared to general obstetric population. Firstly, placenta praevia is associated with increased parity. Secondly, the presence of caesarean section scar may result in poor decidualization at the scar site which promotes trophoblastic invasion into the myometrium. The myometrial invasion prevents the placental migration when the uterus grows and lower segment develops. This leads to increased risk of placenta praevia by 2-3 folds in the presence of previous scar. There was no significant difference in the incidence of placenta praevia and placenta accreta among the two groups in our study. Similarly, some publications report no association between placenta accreta and the number of caesarean

sections.[18,21,22]It has been suggested that a single caesarean section is enough to interfere with normal desidualisation at the scar site leading to adherent placenta. Also other associated factors like previous abortions may cause adherent placenta in women with no caesarean section or with less number of caesarean sections.In contrast to our study, a study by Clark EA et al reported increase in the rate of placenta previa and placenta accrete with the number of caesarean sections.[23]

The incidence of caesarean hysterectomy in our study was higher as compared to most other studies.[11-13]This may be because a higher proportion (57.14%) of cases of placenta previa in our study were accreta. Also because our hospital being a tertiary hospital gets referral cases from rural and urban areas in and around the city. All cases in this study that underwent hysterectomy were unbooked. All the 5 cases had adherent placenta leading to life threatening haemorrhage necessitating hysterectomy. No significant difference was observed in the present study in the rate of caesarean hysterectomy between group 1 and 2. Similar to our study, other studies showed no significant increase in the rates of caesarean hysterectomy as the number of caesarean sections increased..[11-13,24]However, few studies noted that an increasing number of caesarean sections are associated with an increasing risk for hysterectomy.[17,25]

The incidence of thin scar in the present study was 18.46% and scar dehiscence was 7.69%. There was only one case of scar rupture (0.3%) in this study. Inadequate scar thickness and dehiscence is a relatively common finding in a case of previous caesarean section even if caesarean section is performed in the absence of uterine contractions. In one study, the risk of scar dehiscence was 3.33% and that of thin scar was 23.33% in women with repeat caesarean section.[26] Similar to our study, a few studies demonstrated no difference in rates of scar dehiscence or scar rupture with increasing number of caesarean sections.[11,19] However, in another study, incidence of scar dehiscence was found successively increased with increasing number of caesarean sections.[14]

Excessive blood loss was seen in 8% of women in this study. The difference between the two groups is not statistically significant. In a study by Rouse DJ et al, blood loss increased with increasing number of caesarean sections.[27] In another study, lower order caesarean sections significantly increased the need for transfusion.[28] In the present study, bladder injury occurred only in a single case (0.3%) with previous one LSCS and was due to severe adhesions between bladder and uterus associated with placenta accreta. Bowel injury is a rare complication of caesarean section. In the present study there was only one case with bowel injury (0.3%) and it was due to dense adhesions between the bowel and anterior abdominal wall in women with previous one LSCS. In contrast to the present study, peripheral organ damage correlated with an increasing number of caesarean sections.[18]

Preterm caesarean sections were performed in 59 (18.15%) cases in this study, most of them were after 34 completed weeks of gestation. There was no difference in Apgar scores and need for admission to NICU among the two groups in the present study. There was no case of still birth in this study. High number of preterm caesarean sections may be due to higher number of patients presenting to emergency with complications like premature rupture of membranes, preterm labour pains and pain in the scar site with scar tenderness on examination. There were mixed results observed in other studies. According to a national prospective cohort study in UK, neonates of mothers having multiple repeat caesarean sections were significantly more likely to be born prior to 37 weeks.[29] Some studies noted no significant differences in the Apgar score of delivered babies, neonatal admission to intensive care unit and in the perinatal death rate.[11,30]

Overall maternal risks are increased in repeat caesarean section but successful delivery is possible if women are managed in a tertiary care hospital. All women who have experienced a prior caesarean birth should have strict routine antenatal checkup and should report to the hospital in case of complaints like pain, leaking or bleeding at the earliest. They should be counselled about the maternal and perinatal risks and benefits of planned vaginal birth after caesarean and elective repeat caesarean section when deciding the mode of birth. Women must be informed about the related risks of multiple repeated caesarean sections and tubal ligation needs to be encouraged. Elective repeat caesarean section should preferably be done at 39 completed weeks of gestation to avoid the risk of preterm birth. Women undergoing repeat caesarean section with placenta previa should be counselled about the associated risk of excessive blood loss, need for blood transfusion and possibility of caesarean hysterectomy in case of life threatening haemorrhage.

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