

Intraoperative Complications in Lower Segment Caesarean Section at Tertiary Care Centre

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Conflict of interest: Nil

Abstract:

Objectives: The present study was to evaluate the various risk factors and intraoperative complication in lower segment caesarean section at tertiary care centre.

Methods: A detail assessment such as age, parity, detailed obstetric history, course of present pregnancy, indication of previous caesarean, antenatal, intra and post-operative complications in previous pregnancy, any history of surgical procedure like D and C, findings of physical and obstetric examination, investigations (ultrasonography especially for placental localization) were taken. Surgical findings, additional procedures, complications were noted.

Results: Mean maternal age of primary CS and repeat CS was highly statistically significant differenced ($p=0.003$). Gestational age ($p=0.846$), time taken for surgery (0.32) and approximate blood loss ($p=0.226$) between primary CS and repeat CS women was not statistically significant. Placenta previa 2 (25%), obstructed labour 2 (25%) and second stage arrest 2 (25%) were the most common indication of primary caesarean section. Scar tenderness 13 (32.5%), placenta previa 8 (20%), fetal distress 7 (17.5%), CPD 5 (12.5%), and malpresentation 4 (10%) were the most common indication of repeat caesarean section. Out of total 48 cases of CS, adhesion 28 (58.33%), extension of uterine incision 17 (35.42%), advance bladder 9 (18.75%), excess blood loss 12 (25%) and uterine dehiscence 6 (12.5%) were the most common intraoperative complications.

Conclusions: Intra operative complication was greater in repeat CS as compared to primary CS. Adhesion, extension of uterine incision, advance bladder and excess blood loss were the most common intra operative complication in repeat CS. Therefore, A repeat cesarean section should be elective and well planned beforehand wherever necessary to reduce the incidence of intraoperative and postoperative complications. We should also encourage vaginal birth and try to reduce in number of unnecessary primary caesarean sections.

Keywords: Primary CS, Repeat CS, Intra Operative Complication.

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Introduction

Caesarean section (CS) is most common obstetric surgery performed worldwide to save life of pregnant patient as well as fetus with a continuously increasing incidence for the last two decades giving the women, an obstetrical status of "previous cesarean section". However, CS are associated with increased risk of maternal and perinatal morbidity and mortality. It is associated with PPH, sepsis, peripartum hysterectomy in present pregnancy and adherent placenta, uterine rupture and death in future pregnancies [1].

The incidence of caesarean section varies from country to country and from hospital to hospital within the same country [2]. Over the past 30 years, the incidence of caesarean section has augmented from 5% to 25% or even more than 50% in some countries [2]. The risk and safety associated with caesarean delivery differs around the world [21].

Innovations in operative and anesthetic techniques to provide good maternal-fetal safety have made caesarean section a common intervention in obstetrics. But its complications, especially maternal intra and postoperative, are not exceptional [3].

Multiple cesarean deliveries are associated with more difficult surgeries with increased blood loss. The risk of major complications increases with cesarean delivery number [4]. Scarring and adhesion formation is known to cause increase in the complications depending up on the number of previous cesarean section. Caesarean section is associated with risks of postoperative adhesions, incisional hernias (which may require surgical correction) and wound infections. The risk of the surgery may be increased due to a number of factors. Along with risk of anesthesia, intra operative risks like blood loss requiring blood transfusion due to

various causes like adhesions, extension of uterine incision, adherent placenta [5]. Objectives of our study was to evaluate the various risk factors and intraoperative complication in lower segment caesarean section at tertiary care centre.

Statistical Analysis: Data was analyzed by using latest version of SPSS software. T-statics was used and Chi square test was applied. P-value was taken less than or equal to 0.05 for significant differences ($p \leq 0.05$).

Material & Methods

The present study was conducted in the Department of obstetrics & Gynaecology, Madhubani Medical College & Hospital, Madhubani, Bihar during a period from January 2025 to June 2025. A total of 48 women were undergone lower segment caesarean section during study period

Inclusion Criteria:

- Patients posted for LSCS, had intraoperative surgical complication (e.g. adhesions, thinned lower uterine segment, advanced bladder, extension of uterine incision, scar dehiscence, excess blood loss, uterine rupture, bladder injury, caesarean hysterectomy).

Exclusion Criteria:

- Patients with history of previous abdominal surgeries other than caesarean section.

- Cases presenting with rupture uterus.

Methods: A detail assessment such as age, parity, detailed obstetric history, course of present pregnancy, indication of previous caesarean, antenatal, intra and post-operative complications in previous pregnancy, any history of surgical procedure like D and C, findings of physical and obstetric examination, investigations (ultrasonography especially for placental localization) were performed. Surgical findings, additional procedures, complications were noted after completing lower segment caesarean sections.

Statistical Analysis

Data was analysed with the help of SPSS version 21 software. Mean and standard deviations were observed. P-value was taken less than or equal to 0.05 ($p \leq 0.05$) for significant differences.

Results

A total of 48 lower segment caesarean section delivery was performed during study period. Among them 8 women undergone primary caesarean section due to some complications. And 40 women had undergone repeat caesarean section. Mean maternal age of primary CS and repeat CS was highly statistically significant differenced ($p=0.003$). Gestational age ($p=0.846$), time taken for surgery (0.32) and approximate blood loss ($p=0.226$) between primary CS and repeat CS women was not statistically significant.

Table 1: Comparison of Baseline variables among both groups

Variables	Primary CS (N=8)	Repeat CS (N=40)	P-value
Maternal Age (years)	22.46 $\pm$ 4.64	26.28 $\pm$ 2.8	0.003
Gestation Age (weeks)	38.4 $\pm$ 2.9	38.2 $\pm$ 2.6	0.846
Time taken for Surgery (mins)	53.3 $\pm$ 25.4	61.68 $\pm$ 21.46	0.332
Approximate Blood Loss (ml)	420.48 $\pm$ 72.5	458.12 $\pm$ 80.4	0.226

In the present study, Placenta previa 2 (25%), obstructed labour 2 (25%) and second stage arrest 2 (25%) were the most common indication of primary caesarean section. Scar tenderness 13 (32.5 %),

Placenta previa 8 (20%), fetal distress 7 (17.5 %), CPD 5(12.5 %), and malpresentation 4(10 %) were the most common indication of repeat caesarean section.

Table 2: Indication of caesarean section

Indication (N=48)	Primary CS (n=8)	Repeat CS (N=40)	P-Value
Placenta previa 10(20.83%)	2 (25%)	8 (20%)	0.753
Scar tenderness 13(27.08%)	0	13 (32.5 %)	0.061
Fetal distress 7(14.58%)	0	7 (17.5 %)	0.205
Obstructed labour 3(6.25%)	2 (25%)	1 (2.5 %)	0.017
CPD 6(12.5%)	1 (12.5 %)	5(12.5 %)	1.000
Malpresentation 5(10.42%)	1 (12.5 %)	4(10 %)	0.834
second stage arrest 4(8.33%)	2(25 %)	2(5%)	0.064

In the present study, most common complication of primary CS was extension of uterine incision 6(75%). Adhesion 28(70%), extension of uterine incision 11(27.5 %), advance bladder 9(22.5%),

excess blood loss 9(22.5%) and uterine dehiscence 6(15%) were the most common complications of repeat caesarean section women.

Table 3: Showing the Complications

Complications (N=48)	Primary CS (n=8)	Repeat CS (N=40)	P-Value
Extension of uterine incision 17(35.42%)	6(75 %)	11(27.5 %)	0.011
Advance bladder 9(18.75%)	0	9(22.5%)	0.141
Adhesion 28(58.33%)	0	28 (70%)	0.000
Excess blood loss 12(25%)	3(45.45 %)	9(22.5 %)	0.183
Bladder injury 1(2.08%)	0	1(2.5%)	0.654
Placenta accreta 1(2.08%)	0	1(2.5 %)	0.654
Caesarean hysterectomy 4(8.33%)	1 (12.5%)	3(7.5%)	0.643
Uterine dehiscence 6(12.5%)	0	6(15%)	0.246

Out of 48 cases of caesarean section, adhesion 28(58.33%), extension of uterine incision 17(35.42%), advance bladder 9(18.75%), excess blood loss 12(25%) and uterine dehiscence 6(12.5%) were the most common intraoperative complications. Few cases had more than one intraoperative complication.

Discussions

The caesarean patient in fact combines the risks of giving birth and those of abdominal surgery. Thanks to advances in obstetrics, antibiotic prophylaxis and heparin prophylaxis, postoperative complications of caesarean section are increasingly controlled, while intraoperative complications are serious and can compromise the vital prognosis and the obstetrical and functional future of the parturient [6,7].

During a caesarean delivery women are at an increased risk of injury than they are during a vaginal birth. The risk increases with the increasing number of caesarean sections, parity, early marriages, early conception, short intervals between subsequent pregnancy, undernourishment, inadequate ante-natal checkups, high prevalence of illiteracy and poverty especially in our Indian women. The risk of complications increases with increasing number of cesarean section, the well-known complications are intraabdominal dense adhesions, morbid adherent placenta, uterine dehiscence/ uterine scar rupture with subsequent adverse fetal and maternal outcome, bowel and bladder injury and cesarean hysterectomy [8,9].

In our present study, 48 cases of lower segment caesarean section were studied. Mean maternal age of primary and repeat CS cases were 22.46 ± 4.64 and 26.28 ± 2.8 years respectively. Mean gestational age of primary and repeat CS cases were 38.4 ± 2.9 and 38.2 ± 2.6 weeks respectively. Common indication of CS was scar tenderness 13(27.08%), placenta previa 10(20.83%), fetal distress 7(14.58%), CPD 6(12.5%) and malpresentation 5(10.42%).

In study Nidhi G, [10] intraoperative morbidities encountered were adhesions (38.33%), advanced bladder (20%), excess blood loss (10%), placenta accrete (1.67%), thinned out scar (5%), bladder

injury (1.67%). No cases of uterine rupture, bowel injury or caesarean hysterectomy noted.

Due to scarring complication like adhesions, dehiscence, scar rupture, hemorrhage, and injury to adjacent structures are common and their rate may range from 4.3 to 12.5% [4,11]. Also intraperitoneal adhesions have shown to have an incidence of 5.5% to 42.5% [22]. Adhesions are fibrous, band-like structures that form intraabdominally and are very common surgical sequelae. Although peritoneal adhesions develop in the overwhelming majority of intra-abdominal and pelvic surgery. The incidence of adhesion development increases with the number of CS performed is shown in many studies. The most common adhesions found in the group are between bladder and uterus and also between uterus and omentum [12]. Adhesions give rise to acute morbidity in form of bleeding during surgery, increased duration of surgery and injury to surrounding structures. Hemorrhage is the most frequent complication of the cesarean section during or after the surgical event. However, there is no consensus on the actual incidence, worldwide; it is estimated that around 75% of obstetric hemorrhages occur in cesarean section. Low insertion of placenta, placental accreta, placenta abruption, hypotonia/uterine atony, multiple pregnancy, fetal macrosomia, polyhydramnios, uterine scar, arterial hypertension, multiparity, obesity, chorioamnionitis, prolonged labor, poor technique and prolonged surgical time are most frequent risk factors that are associated with bleeding as a complication of the cesarean section [13]. The rates of excessive bleeding after cesarean delivery are generally low, but do appear to increase as the number of previous cesarean delivery increases. The reasons for excessive blood loss after cesarean delivery include uterine atony, adhesions, placenta accreta and trauma [14]. Scar dehiscence is another important complication. Scar dehiscence in other studies, such as Nazaneen S et al. [15] (7.69%), Ramkrishnarao MA et al. [23] (6.62%), similar findings were noted in our present study.

In our present study, adhesion 28(58.33%), extension of uterine incision 17(35.42%), advance bladder 9(18.75%), excess blood loss 12(25%) and uterine dehiscence 6(12.5%) were the most common intraoperative complications.

Incidence of intra-operative complications in repeat C/S increases with increasing maternal age. Among the complications adhesions and abnormal placentation has been frequently observed, which has been justified in many studies [16]. Frequency of placenta previa was found to be higher in women aged 35 years and above (51.27%) in a study conducted by Jillani K, Shaikh F, Siddiqui SM, Siddiqui MA [16], furthermore this has been justified by Zhang.J, Savitz. D who showed that women aged 34 years or older had 2-3 times more incidence of placenta previa in relation to women less than 20 years of age [16].

Multiple cesarean sections predispose to an increased risk of severe dense adhesions, scar dehiscence, uterine rupture, abnormal placentation, significant hemorrhage, bladder injuries and cesarean hysterectomies. In a study conducted by Farkund, showed that incidence of complications were more in women with 2 previous cesarean sections, the most common complications was dense adhesions (35.5%), followed by thinned out lower uterine segment (16.6%), ruptured uterus (1.1%) and bladder injury (1.1%). But incidence of abnormal placentation was more with 3 or more cesarean sections (2%) as compared with previous 2 cesarean sections [17].

Moreover, the study underscores the importance of rigorous infection control practices and possibly tailored antibiotic prophylaxis to address the higher risk of postoperative infections, especially in patients with elevated BMI [18]. A systematic review by Smith et al. (2019) reported that repeat cesarean sections carry a higher risk of surgical complications like adhesions, which were noted to complicate subsequent surgeries and increase operative time and blood loss [19]. Similarly, excessive bleeding as a prevalent complication aligns with findings from Jones et al. (2021), who observed a significant association between repeat cesareans and increased intraoperative hemorrhage, emphasizing the need for careful surgical planning [20].

Conclusions

The present study concluded that the intra operative complication was greater in repeat CS as compared to primary CS. Adhesion, extension of uterine incision, advance bladder and excess blood loss were the most common intra operative complication in repeat CS. Therefore, A repeat cesarean section should be elective and well planned beforehand wherever necessary to reduce the incidence of intraoperative and postoperative complications. We should encourage vaginal birth and try to reduce in number of unnecessary primary cesarean sections.

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