

Peri-Operative Complications And Surgical Outcomes In Repeat Cesarean Section: A Retrospective Analysis

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Abstract

Introduction: Repeat cesarean sections are becoming increasingly common due to the global rise in cesarean deliveries. While cesarean sections can be life-saving for both mother and baby, the risks associated with multiple procedures tend to increase. This study aims to evaluate these complications and outcomes to guide safer practices.

Methods: This observational cross-sectional study was conducted Department of Obstetrics & Gynaecology, Chittagong Medical College & Hospital, from December 16-June '17. All the pregnant women who underwent repeat Caesarean section in Chittagong Medical College Hospital, Chittagong during the study period were considered as the study population. A total of 100 study subjects were selected by consecutive convenient sampling techniques. Data analysis was done by SPSS (Statistical Package for Social Sciences) 16. In all cases, p -value <0.05 was considered significant.

Result: most repeat cesarean sections (70%) lasted about 1 hour, with 99% utilizing the Pfannenstiel incision. Adhesions were observed primarily with the bladder (8%), peritoneum (5%), and omentum (5%). A lower transverse uterine incision was used in 99% of cases, while 5% experienced scar dehiscence. Challenges during fetal delivery occurred in 5% of cases, and 3% had difficulty entering the peritoneal cavity. Placental abnormalities like placenta previa were noted in 6% of cases, and placental adherence (accreta or percreta) was found in 3%. Urinary bladder injuries occurred in 2% of cases. Blood loss was below 1 liter in 95% of surgeries, but 3% required significant transfusions. Elective tubal ligation was performed in 15% of cases, and some patients underwent additional procedures like Lynch surgeries or uterine artery ligations (3%).

Conclusion: Notable complications are observed in repeat cesarean sections, including adhesions with the bladder, scar dehiscence, and challenges during fetal delivery. Additionally, placental abnormalities, such as placenta previa and abnormal adherence, highlight the complexities associated with repeat procedures. Most patients experienced minimal blood loss, with 95% losing less than 1 liter.

Keywords: Peri-Operative Complications, Surgical Outcomes, Repeat Cesarean Section

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I. Introduction

Cesarean section (C/S) is defined as the delivery of a baby by an abdominal and uterine incision after the age of viability [1]. The incidence of primary C/S has been increasing all over the world in the last three decades, in some countries almost one-third of all deliveries [2,3]. Besides the medical indications, the reasons for this increase are multifactorial and not well-understood [4]. Changes in maternal characteristics and professional practice styles, increasing malpractice pressure, as well as economic, organizational, social, and cultural factors have all been implicated in this trend [5,6]. Additional concerns and controversies surrounding C/S include inequities in the use of the procedure, not only between countries but also within countries, and the costs that unnecessary cesarean sections impose on the financial burden on the health system [7,8]. Moreover, improved safety of anesthesia, antibiotics, availability of blood products, and pre-and postoperative monitoring may play a significant additive role in the increasing trend of C/S [9,10]. Since 1985, the international healthcare community has considered the ideal rate for Caesarean sections to be between 10% and 15% and estimated that there are no benefits to the outcome of pregnancy exceeding this range [11]. However, the rate has shown an uprising trend with significant regional variations [12]. The study of Betrán AP et al. estimates the most recent

Caesarean section rate. The average global rate of C/S is 18.6%, ranging from 6.0% to 27.2% in the least and most developed regions, respectively. The lowest rates of C/S are found in Africa (7.3%) and the highest rates of C/S are found in South America (42.9%) [8]. The rate of C/S in the Southeast Asia region has shown almost similar propensity. The study by Neuman M et al. analyzed the rate of C/S in these regions and evidenced that institutional delivery rates varied widely between settings, from 21% in rural India to 90% in urban India. The proportion of private and charitable facility births delivered by Caesarean section was 73% in Bangladesh, 30% in rural Nepal, 18% in urban India, and 5% in rural India, and repeated cesarean section solely contributed to 30% of all C/S [13]. Although maternal death as a result of C/S is now rare, reports of the short and long-term consequences of the rising C/S rate on the childbearing population are conflicting [14,15]. At the same time, it is as yet not clear if the increase in the C/S rate has resulted in more favorable fetal outcomes [8]. Although C/S is a common life-saving procedure for mothers and babies in danger, it is not a risk-free procedure. Evidence on risks, complications, and benefits of repeat cesarean section fuels vigorous debate. The risk of maternal complications is associated with an increase number of repeat cesarean sections mostly due to intra-abdominal dense adhesions, and abnormal placentation [16-18]. Even unplanned peripartum hysterectomy is carried out typically during a pregnancy. The last resort is to control life-threatening hemorrhage which is often caused by placenta previa, placenta accreta, uterine atony, and uterine rupture [1,19-20]. Besides this intraoperative excessive bleeding, and bowel and bladder injuries are also not uncommon. Post-operative complications like wound infections, post-partum hemorrhage, urinary tract infections, and death are seen in a few cases [1,20]. This study aimed to assess peri-operative complications and surgical outcomes in repeat cesarean section.

II. Methods

This observational cross-sectional study was conducted Department of Obstetrics & Gynaecology, Chittagong Medical College & Hospital, from December 16-June'17. All the pregnant women who underwent repeat Caesarean section in Chittagong Medical College Hospital, Chittagong during the study period were considered as the study population. A total of 100 study subjects were selected by consecutive convenient sampling techniques. Written informed consent was taken from every patient. Following admission, a physical examination and all routine investigations were performed. As mothers are subject to prone to developing complications they were quickly assessed and made ready for Caesarean section. All the data were checked and edited after collection. Then data were entered in SPSS (Statistical Package for Social Sciences) 16 for the Windows 10 program version. Frequency distribution and normal distribution of all continuous variables were calculated and expressed as Mean \pm SD. Further associations were done by the chi-square test. In all cases, p-value <05 was considered significant. Ethical clearance was taken from the ethical review committee of the Chittagong Medical College for conducting the study.

Inclusion criteria:

- Pregnant women with gestational age >28 weeks to 40+ weeks with a history of one or more previous Caesarean sections.
- Emergency cases of repeat C/S are included during the study period.
- Patients with co-morbid disease (HTN, Heart disease) are also included.

Exclusion criteria:

- Pregnant women who were unwilling to participate.
- Patients undergoing hysterotomy (Caesarean delivery before 28 weeks of gestation).

III. Results

Table 1: Socio-demographic profile of study subjects (N=100)

Variables	n	%
Age group		
<26	42	42.0
26-30	38	38.0
>30	20	20.0
Residence		
Rural	80	80.0
Urban	20	20.0
Level of Education		

Illiterate	10	10.0
Primary	13	13.0
Upto SSC	21	21.0
SSC	22	22.0
HSC	18	18.0
Graduate and above	16	16.0
Occupation		
Housewife	90	90.0
Service Holder	06	6.0
Business	04	4.0
Income (BDT)		
<10000	19	19.0
10000 to 20000	40	40.0
>20000	41	41.0

The mean age of the population was 26.18±5.01. The maximum age was 37 years and the minimum age was 19 years. 42% of mother had their age less than 25 years. 38% of mothers were aged between 26 to 30 years and 20% of patients had aged more than 30 years. Among 100 cases majority came from rural areas (80%). The rest of mothers were staying in urban area (20%). The majority of the mothers had education up to SSC (22%). 41% of the patients in this study had a family income of more than 20000 taka. 90% were housewives. [Table 1]

Table 2: Obstetric profile of the study subjects (N=100)

Variables	n	%
Parity		
One	60	60.0
Two or more	40	40.0
Gravida		
2 nd	43	43.0
>2	57	57.0
Gestational age at the time of surgery		
<34 weeks	05	5.0
34 to 36 weeks	20	20.0
37 to 40 weeks	71	71.0
>40 weeks	04	4.0

Out of 100 mothers, 60 had one previous pregnancy, and 57 were gravid for more than 2 times. 43 mothers were gravid for the 2nd time. 71 of the pregnant women in this study had gestational age between 37 to 40 weeks at presentation. 20 mothers had gestational age between 34 to 36 weeks. 5 pregnant women had <34 weeks and 4 had more than 40 weeks of gestational age. See Table 2 for details. [Table 2]

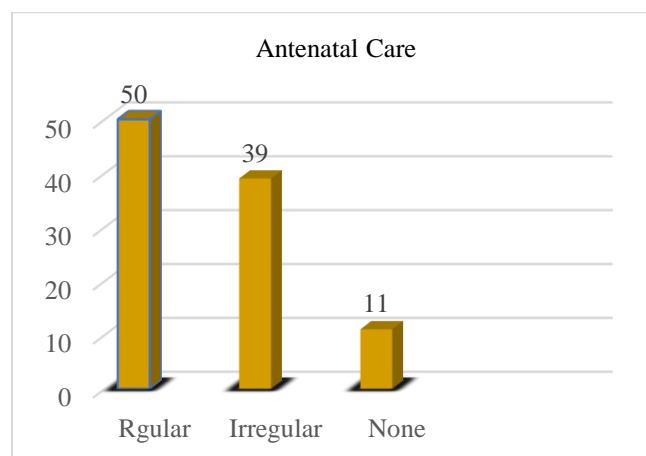


Figure 1: Distribution of study subjects according to attendance at antenatal checkup (N=100)

50 out of 100 study cases took regular antenatal care. 39 women were irregular in the check-up. 11 patients did not take any antenatal checkups.

Table 3: Distribution of study population according to the number of the previous history of caesarian sections (N=100)

Number of cesarean sections	n	%
One	69	69.0
Two	24	24.0
Three	07	7.0

69% of mothers had a previous history of one caesarian section. 24% of mothers had two and 7% had three previous caesarian sections. [Table 3]

Table 4: Past obstetric history of study subjects (n=26)

Past Obstetric History	n	%
Pregnancy-induced hypertension	7	7.0
Miscarriage	5	5.0
Antepartum haemorrhage	5	5.0
Preterm delivery	5	5.0
Intrauterine death	4	4.0
Total	26	4.0

26 patients had significant past obstetric history, 7% had a history of pregnancy-induced hypertension, 5% had a history of miscarriage, another 5% had a history of antepartum hemorrhage, 5% had a history of preterm delivery and 4% patients had a history of inter-uterine death. [Table 4]

Table 5: Presenting features of study subjects (n=60)

Presenting Features	n	%
Scar Tenderness	21	21.0
Gestational diabetes mellitus	12	12.0
Pregnancy-induced hypertension	9	9.0
Premature Rupture of Membrane	7	7.0
Severe PE	5	5.0
Eclampsia	2	2.0
Severe Oligohydramnios	2	2.0
Polyhydramnios	2	2.0
Total	60	60.0

During the initial presentation, 60% of women had an illness alongside and/or associated with pregnancy. Among them 21% had tenderness over previous C/S scar, 12% had gestational diabetes mellitus, 9% patients had pregnancy-induced hypertension, 7% patients had premature rupture of membrane, 5% had severe pre-eclampsia, 2% had eclampsia, 2% had severe oligohydramnios and another 2% had polyhydramnios. [Table 5]

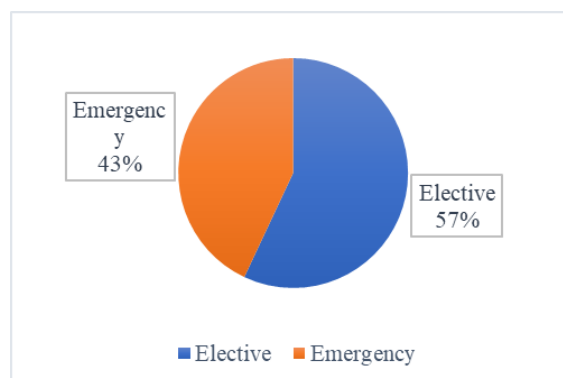


Figure 2: Distribution of subjects according to the type of Caesarian section (N=100)

57% had undergone elective C/S and 43% had undergone emergency C/S. Figure 2 shows a pie chart of the distribution.

Table 6: Distribution of patients according to indication of repeated Caesarian Section (N=100)

Indication of repeated caesarian section	n	%
H/O At Least 2 Previous C/S or More	31	31
Fetal Distress	30	30
PROM	11	11
Placenta Previa	3	3
Breech Presentation	6	6
Severe PE	5	5
Ante Partum Haemorrhage	4	4
Intra-Uterine Growth Retardation	2	2
Eclampsia	2	2
Heart Disease	2	2
Cephalo-Pelvic Disproportion	2	2
Shoulder Presentation	1	1

The most common indication for the repeated caesarian section was a history of 2 or more C/S (31% of patients). The second common indication was fetal distress (30% of patients). [Table 6]

Table 7: Per-operative complications and course

Variables	n	%
Duration		
½ hour	10	10.0
1 hour	70	70.0
> 1 hour	20	20.0
Mode of incision		
Pfannestiel	99	99.0
Midline	01	1.0
Adhesion with		
Bladder	08	8.0
Peritoneum	05	5.0
Omentum	05	5.0
Intestine	02	2.0
The posterior surface of the anterior abdominal wall	03	3.0
Uterine incision		
Lower transverse	99	99.0
Classical	01	1.0
Scar dehiscence	05	5.0
Difficult to enter into the peritoneal cavity	03	3.0
Difficult to approach lower uterine segment	01	1.0
Difficulty during delivery of fetus	05	5.0
Position of placenta		
Normally situated	94	94.0
Placenta previa	06	6.0
Placental adherence		
Accreta	01	1.0
Increta	00	0.0
Percreta	02	2.0
Difficulty during suture of wound	05	5.0
Injury to the urinary bladder	02	2.
Extension of uterine incision		
Lateral	03	3.0
Upward	01	1.0
Downward	02	2.0

Into the uterine vessels	02	2.0
Blood loss		
<1 liter	95	95.0
> 1 liter	03	3.0
> 2 liters	02	2.0
Amount of blood transfusion needed		
1	05	5.0
2	03	3.0
3	00	0.0
More than 3	02	2.0
None	90	90.0
Elective Procedure coincidental to C/S		
Tubal Ligation	15	15.0
Repair of incisional hernia	01	1.0
Associated surgery		
Lynch	03	3.0
Uterine Artery ligation	03	3.0
Utero-ovarian artery ligation	01	1.0
Internal iliac artery ligation	01	1.0
Ovarian cystectomy	01	1.0
Myomectomy	01	1.0

The majority of surgeries (70%) lasted 1 hour, with 20% exceeding that duration. Almost all (99%) utilized the Pfannenstiel incision, and adhesions were most commonly observed with the bladder (8%), peritoneum (5%), and omentum (5%). A lower transverse uterine incision was used in 99% of cases. Complications included 5% experiencing scar dehiscence, 3% facing difficulty entering the peritoneal cavity, and 5% encountering challenges during fetal delivery. Placental abnormalities were observed in 6% (placenta previa) and 3% had placental adherence issues (1% accreta, 2% percreta). Urinary bladder injuries occurred in 2% of cases. Most surgeries (95%) had blood loss below 1 liter, though 3% required significant transfusions. Elective tubal ligation coincided with 15% of cesarean sections, and some patients underwent associated surgeries like Lynch procedures or uterine artery ligations (3%). [Table 7]

IV. Discussion

The mean age of the women was 26.18 +5.01. The maximum age was 37 years and the minimum age was 19 years. 42% of mother had their age less than 25 years. 38% of patients were aged between 26 to 30 years and 20% of mothers were aged more than 30 years. The findings are similar to the findings by Nahar K et al. [21]. But different findings are noted in multiple studies like Ghazala A et al. [22] and Sobande A et al [23]. This could be probably due to geographical variation and cultural effects of marriage and childbearing. Out of 100 women, 60 mothers had one previous pregnancy. 40 mothers had two or more previous childbirth and 57 were gravid for more than 2 times., 43 women were gravid for the 2nd time. Nahar K et al. showed that all of the study population were multigravida. Among the study group, 69 patients had a previous history of one caesarian section, 24% of patients had two, and 7% of patients had three previous caesarian sections. Nahar K et al. [21] showed 88% of patients had one & 12% had two previous sections. The study entitled by Ghazala A. et al. evidenced 157 had undergone two previous C/Ss, 49 women had three previous C/Ss, 16 with four previous C/Ss, and 2 with five previous C/Ss among 224 women [22]. Juntunen K et al. also reported the highest number of repeated cesarean sections (4-10) [24]. These variations can be explained by the geographical variations of contraceptive programs and cultural practices. All of the study population had undergone repeated Caesarian section (C/S). Among 100 C/S cases, 57 had undergone elective C/S, and 43 had undergone emergency C/S. These findings are almost similar to the results of the study done by Akhtari K et al. She showed in her study that, 54% of patients had done C/S electively and the rest of them (46%) underwent C/S as an emergency procedure. This similarity poses a hypothesis that repeated cesarean section has imposed the same kind of complications among women irrespective of country [25]. The most frequent cause of CS was repeat CS which is 2 or more C/S (31% patients). The second common indication was fetal distress (30% of patients). Other common indications of repeated cesarean section were PROM (11%), placenta praevia (3%), Heart disease(2%), Breech presentation(6%), severe PE(5%), and APH(4%). In addition, IUGR, Eclampsia, and cephalo-pelvic disproportions were 2% in each case. A study conducted by Yousuf et al. showed that 20% of patients underwent repeated CS due to fetal distress. He also showed other common indications for repeat cesarean section were impending rupture 11% and PROM 7% which

is different from the study [26]. On the other hand, Ghazala A. et al. showed similarity with slight variations in the percentage of different components [22]. In this study, 37% developed complications either pre-operatively or per-operatively. And the rest of them didn't develop any form of complications. The most common postoperative complication was wound infection (14%), followed by endometritis (5%), and post-partum hemorrhage (4%). Per-operatively 10% of patients required blood transfusion, 2% had per-operative visceral injury and 2% patients required hysterectomy. According to Nahar K et al. [21] this finding is slightly different from the findings of this study. She showed that only 20% of women develop per-operative or postoperative complications and the most important complications were wound infection (4%), PPH (2%), UTI (2.6%), etc. Jaheeda A et al. found, 2% PPH, 4% puerperal pyrexia, and 2% wound infections among her study participants. Moreover, Akhtari S et al., showed 74% uneventful puerperium and PPH, puerperal pyrexia, wound infection, and UTI in 2%, 6%, 12%, and 5% respectively. However, these findings are not similar to our study but a reduced number of complications may happen, as this study was conducted in a tertiary care center where facilities are available to manage complications more efficiently [25].

Limitations of The Study

The study was conducted in a single hospital with a small sample size. Multiple centers with geographical variation were not evaluated. So, the results may not represent the whole community.

V. Conclusion

Notable complications are observed in repeat cesarean sections, including adhesions with the bladder, scar dehiscence, and challenges during fetal delivery. Additionally, placental abnormalities, such as placenta previa and abnormal adherence, highlight the complexities associated with repeat procedures. Most patients experienced minimal blood loss, with 95% losing less than 1 liter. These findings emphasize the need for thorough preoperative assessment and careful surgical management to minimize risks and enhance outcomes in repeat cesarean sections.

VI. Recommendation

To enhance outcomes in repeat cesarean sections, it is vital to conduct thorough preoperative assessments and implement effective surgical planning to address potential complications. The antenatal and postnatal checkups should be done with an emphasis on women who had a history of cesarean section. Educating patients on the risks and benefits is essential for informed decision-making.

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