



Assessment of Antepartum and Intraoperative Complications in Pregnancy with Previous Caesarean Section

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KEYWORDS

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ABSTRACT:

Background: Despite the widespread adoption of cesarean section (CS), epidemiological data on intraoperative complications remain limited, particularly in resource-constrained settings. The purpose of this study was to assess the occurrence and impact of antepartum and intraoperative complications in pregnancies following a previous cesarean section.

Aim of the study: The study aimed to evaluate the occurrence and impact of antepartum and intraoperative complications in pregnancies following a previous caesarean section.

Methods: This prospective observational study was conducted at the Department of Obstetrics and Gynecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from September 2005 to January 2006, including 150 patients with a history of one or more cesarean sections. Data on antepartum, intraoperative, and postoperative complications, as well as neonatal outcomes, were collected via antenatal records and observation. Data were analyzed using SPSS, and ethical clearance and informed consent were obtained.

Results: Among 150 patients, the majority were aged 26–30 years (48%) and had one previous C/S (88%). Most received regular antenatal care (80%). Common antepartum complications included pregnancy-induced hypertension (22%) and chronic abdominal pain (10%). Intraoperative challenges were mostly adhesion-related (86.7%), with additional issues such as uterine scar thinning (20%) and bladder adhesions (16%).

Conclusion: Pregnancies with a history of cesarean section are increasingly common and often complicated by significant antepartum and intraoperative challenges, highlighting the need for careful prenatal surveillance and surgical preparedness.



INTRODUCTION

Cesarean section (CS) is a frequently performed surgical procedure in obstetrics, designed to deliver the baby via an incision in the abdominal and uterine walls. It is commonly used to protect the health of both mother and fetus in situations such as dystocia, fetal distress, large-for-gestational-age fetuses, and eclampsia [1–3]. In recent decades, the global rate of CS has seen a substantial increase, rising from approximately 5% to over 50% in some regions [4]. This shift is largely attributed to advancements in obstetric, anesthetic, and neonatal care, along with evolving clinical indications. However, the growing prevalence of CS has raised concerns—particularly the increase in non-medical indications such as "cesarean on demand" and the disproportionately higher rates observed among elderly primigravidae and women from higher socio-economic backgrounds [5].

While CS has significantly reduced maternal and neonatal morbidity and mortality when appropriately indicated, it carries important long-term implications for future pregnancies [6]. A history of prior CS is one of the most common reasons for repeat procedures, largely due to apprehensions surrounding vaginal birth after cesarean (VBAC) among both patients and healthcare providers. The number of repeat cesareans correlates with increased surgical complexity and risk of complications, including abnormal placentation (e.g., placenta previa, placenta accreta), uterine rupture, pelvic adhesions, and injuries to adjacent organs such as the bladder and bowel [7]. These risks escalate with each successive CS, particularly after the fourth procedure. Despite advances in surgical techniques and anesthesia [8], CS remains a major operation with inherent risks and should be undertaken only when medically justified.

Although generally considered safe, CS is not without maternal complications—especially during and after surgery. Women undergoing CS face the combined challenges of childbirth and major abdominal surgery [9]. Intraoperative complications may include hemorrhage, uterine rupture, bladder

injury, dense adhesions, and difficult fetal extraction—particularly in emergency cases or in patients with previous uterine scars [10]. The occurrence of these complications differs significantly across regions. For example, research from African countries has documented maternal complication rates ranging from 10.3% in Morocco to as high as 40.55% in Guinea [11–14]. This wide range highlights the critical role of surgical expertise, healthcare facility capabilities, and meticulous patient selection in reducing the risk of adverse outcomes.

Despite the widespread adoption of CS, epidemiological data on intraoperative complications remain limited, particularly in resource-constrained settings. Continuous monitoring, audits, and well-structured research are essential to evaluate current surgical practices and improve patient safety [15]. In regions such as Kananga, the lack of comprehensive data on CS-related complications has highlighted the urgent need for localized studies [16]. A better understanding of the epidemiological, clinical, and therapeutic dimensions of CS complications is vital not only for reducing maternal morbidity and mortality but also for guiding obstetric decision-making and health policy. Therefore, the purpose of this study was to assess the occurrence and impact of antepartum and intraoperative complications in pregnancies following a previous cesarean section.

Objective

- The aim of the study was to evaluate the occurrence and impact of antepartum and intraoperative complications in pregnancies following a previous caesarean section.

METHODOLOGY & MATERIALS

This prospective observational study was conducted at the Department of Obstetrics and Gynecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from September 2005 to January 2006. A total of 150 patients with pregnancies and a history of one or more previous



cesarean sections were included based on specific inclusion and exclusion criteria.

Inclusion Criteria:

- Pregnancies with a history of one or more previous cesarean sections.

Exclusion Criteria:

- Pregnancies without a history of previous cesarean section.
- Vaginal birth after cesarean section (VBAC).

Patients who met the inclusion and exclusion criteria were recruited on a first-come, first-served basis. Data were collected through antenatal check-up records and direct observation, with a focus on antepartum, intraoperative, and postoperative complications, as well as neonatal outcomes. Antepartum complications such as placenta previa were diagnosed based on a history of vaginal bleeding after 28 weeks and ultrasonographic localization of the placenta in the lower uterine segment. Impending uterine rupture was identified

when patients presented with dull aching pain in the suprapubic region, while spontaneous scar rupture was diagnosed during labor if patients experienced a sensation of “something giving way,” accompanied by dull aching pain, exhaustion, and shock-like symptoms. Intraoperative complications, including difficulty in opening the abdomen and accessing the lower uterine segment due to adhesions, were recorded. Postoperative complications, such as postpartum hemorrhage, were identified by significant vaginal bleeding affecting the patient’s general condition. Neonatal outcomes were assessed using Apgar scores at one and five minutes. Perinatal morbidities, including birth asphyxia (Apgar score <7 at 5 minutes), prematurity, respiratory distress syndrome, umbilical sepsis, hyperbilirubinemia, and NICU admissions, were documented. The collected data were analyzed using the Statistical Package for Social Sciences (SPSS), and descriptive statistics were employed to summarize patient demographics, antenatal complications, intraoperative issues, and neonatal outcomes. Ethical clearance was obtained from the appropriate institutional authority, and all participants provided informed consent.

RESULTS

Table 1: Baseline Characteristics of the Study Population (n=150)

	Variable	Frequency (n)	Percentage (%)
Age (In years)	<20	6	4.0
	21-25	45	30.0
	26-30	72	48.0
	31-35	24	16.0
	36-40	3	2.0
	≥41	0	0.0
Past Obstetrical History	2 Previous C/S	18	12.0
	1 Previous C/S	132	88.0
	Abortion	18	12.0
	Menstrual Regulation (MR)	22	14.7
	Stillbirth + IUD	17	11.3
	Neonatal Death	14	9.3
	Other (e.g., ectopic pregnancy, molar pregnancy)	5	3.3

Among the 150 patients, the majority (72 patients, 48.0%) were aged between 26–30 years, followed by 45 patients (30.0%) aged 21–25 years. Patients

aged 31–35 years accounted for 16.0% (24 patients), while 6 patients (4.0%) were aged below 20 years, and 3 patients (2.0%) were aged 36–40 years. There



were no patients aged 41 years or above. Regarding past obstetrical history, the majority (132 patients, 88.0%) had one previous cesarean section (C/S), while 18 patients (12.0%) had two previous C/S. Other obstetric histories included 18 patients (12.0%) with abortion, 22 patients (14.7%) with

menstrual regulation (MR), 17 patients (11.3%) with stillbirth or intrauterine death (IUD), 14 patients (9.3%) with neonatal death, and 5 patients (3.3%) with other conditions such as ectopic or molar pregnancy.

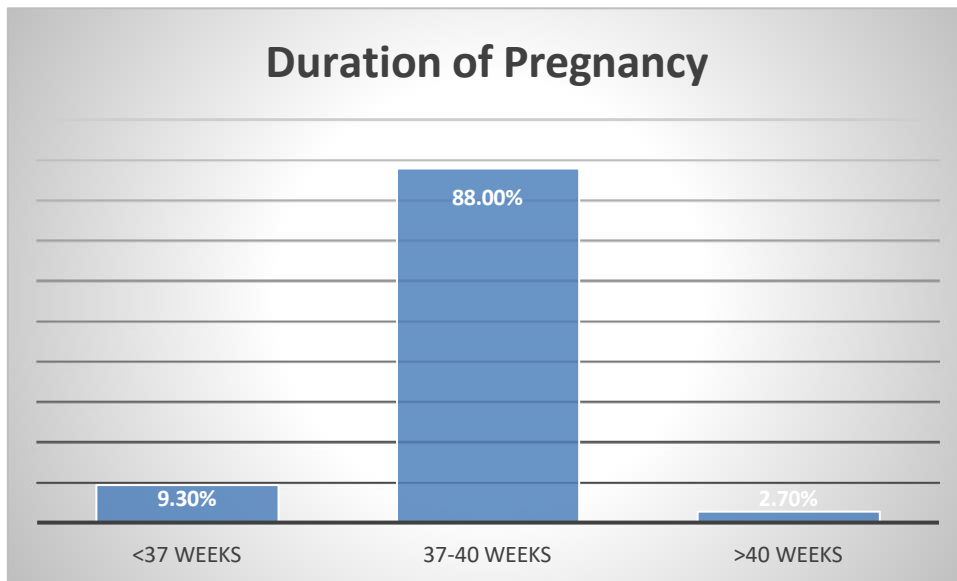


Figure 1: Distribution of Pregnancy Duration Among Study Participants (n=150)

In terms of pregnancy duration, 132 patients (88.0%) delivered between 37–40 weeks, 14

patients (9.3%) delivered before 37 weeks, and 4 patients (2.7%) delivered after 40 weeks.

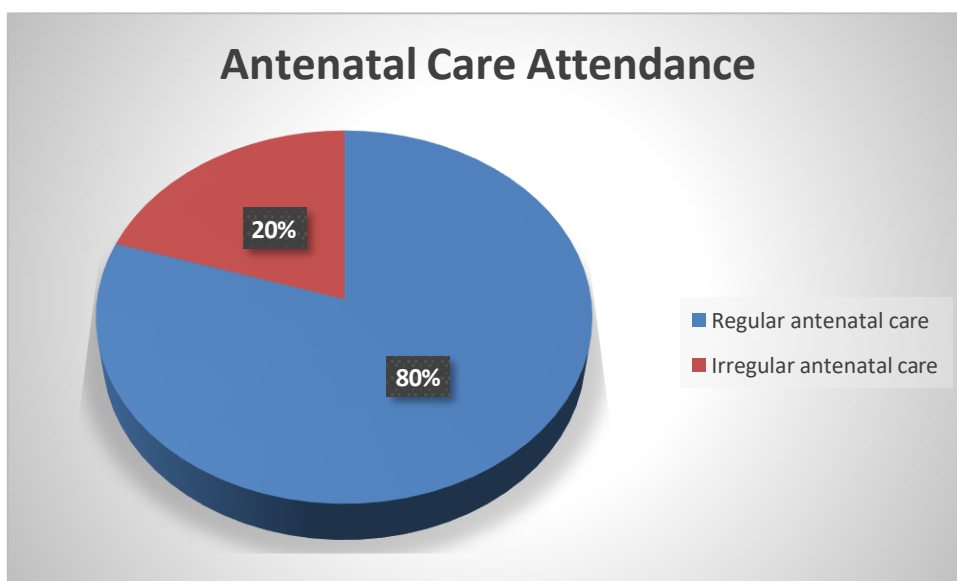


Figure 2: Antenatal Care Attendance Among Study Participants (n=150)



In terms of antenatal care attendance, 120 women (80.0%) received regular care with more than 3

visits, while 30 women (20.0%) had irregular care with less than 3 visits.

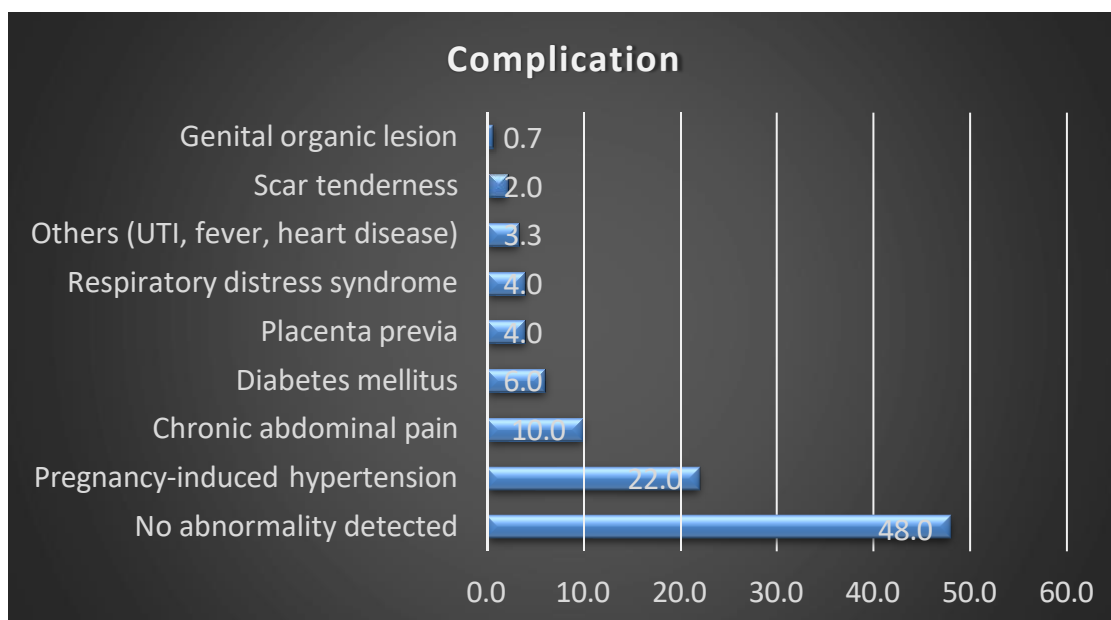


Figure 3: Distribution of Antepartum Complications in the Study Population (n=150)

Figure 3 illustrates the distribution of antepartum complications among the study population. The most common complication was pregnancy-induced hypertension, affecting 22.0% of patients, followed by chronic abdominal pain at 10.0%. No abnormality was detected in 48.0% of cases.

Diabetes mellitus and placenta previa were observed in 6.0% and 4.0% of cases, respectively. Other complications included respiratory distress syndrome (4.0%), scar tenderness (2.0%), genital organic lesion (0.7%), and various other conditions such as UTI, fever, and heart disease (3.3%).

Table 2: Intraoperative Problems Encountered During Cesarean Section in the Study Population (n=150)

Intraoperative Problem	Frequency (n)	Percentage (%)
Difficulty in opening abdomen due to adhesions		
• Minimal adhesion	130	86.7
• Maximum adhesion	20	13.3
Difficulty in reaching lower uterine segment (LUS) due to bladder adhesion	24	16.0
Difficulty in stitching uterine incision due to thinning of uterine scar	30	20.0
Impending uterine rupture	3	2.0
Bladder injury	1	0.7

Table 2 highlights the intraoperative problems encountered during cesarean section in the study. Difficulty in opening the abdomen due to adhesions was the most common problem, with minimal adhesions occurring in 86.7% of cases (130 patients) and maximum adhesions in 13.3% (20 patients). Other issues included difficulty in reaching the lower uterine segment (LUS) due to bladder

adhesion, reported in 16.0% (24 patients), and difficulty in stitching the uterine incision due to thinning of the uterine scar, observed in 20.0% (30 patients) of cases. Impending uterine rupture occurred in 2.0% (3 patients), and bladder injury was noted in 0.7% (1 patient).



DISCUSSION

Pregnancies following a previous cesarean section carry a higher risk of complications both during the antepartum and intraoperative periods. These complications may include placental abnormalities, hypertensive disorders, uterine scar dehiscence, and surgical challenges. This study aimed to assess the occurrence and impact of antepartum and intraoperative complications in pregnancies with a history of one or more cesarean sections. A total of 150 patients were included in this prospective observational study, conducted at the Department of Obstetrics and Gynecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka.

In the present study, the majority of participants were within the 26–30 years age group (48.0%), followed by the 21–25 years group (30.0%), a distribution pattern that closely resembles findings from Ahamed et al.[17], who reported 43.2% of cases in the 26–30 years group, and Singh et al.[18], where 48% of primary cesarean cases fell within this age bracket. This age predominance also aligns with Hossain et al.[19], who found a high preference for cesarean delivery among women aged 21–25 years. In terms of obstetric history, 88.0% of patients had one prior cesarean section, while 12.0% had undergone two. These findings are consistent with the WHO Multicountry Survey referenced by Kietpeerakool et al.[20], which highlighted the increased risks linked to previous cesarean sections, including uterine rupture and abnormal placentation. Additionally, histories of menstrual regulation (14.7%), abortion (12.0%), and adverse perinatal outcomes such as stillbirth or intrauterine death (11.3%) and neonatal death (9.3%) reflect a background of reproductive challenges common in similar patient populations.

Most pregnancies in this study reached term (37–40 weeks, 88.0%), which corresponds with the timing emphasized by Ma et al.[21], who emphasized that deliveries timed closer to 39 weeks help reduce neonatal complications—an important consideration given the intraoperative risks associated with earlier or postdated cesarean deliveries.

The majority of patients (80%) received regular antenatal care with more than three visits, indicating good healthcare engagement. However, 20% had inadequate follow-up, which may contribute to missed or late detection of complications, underscoring the need to promote consistent antenatal attendance.

In the present study, pregnancy-induced hypertension (PIH) emerged as the most frequent antepartum complication, affecting 22.0% of the participants. This finding is consistent with the results reported by Kennady et al.[22] at Thrissur Medical College, Kerala, where 46.5% of patients with PIH underwent cesarean sections, highlighting the significant role of PIH in determining the mode of delivery. Chronic abdominal pain was noted in 10.0% of our study population, comparable to the findings of Jin et al.[23], who reported that 18.3% of women experienced persistent pain three months after cesarean section, emphasizing the importance of long-term pain management. Additionally, diabetes mellitus and placenta previa were identified in 6.0% and 4.0% of cases, respectively, both known to increase maternal and fetal risk during pregnancy. While nearly half (48.0%) of the patients showed no antepartum abnormalities, a range of other complications, including respiratory distress syndrome (4.0%), scar tenderness (2.0%), genital organic lesions (0.7%), and miscellaneous conditions such as urinary tract infection, fever, and heart disease (3.3%) were also documented, reflecting the complex clinical spectrum associated with pregnancies following previous cesarean sections.

In our study, intraoperative complications were frequently encountered during cesarean deliveries among women with a prior cesarean section, with the most common issue being adhesions—minimal in 86.7% and extensive in 13.3% of cases—highlighting the surgical challenges posed by repeat procedures. This finding is consistent with Sujatha et al.[24], who reported adhesions in 83.72% of repeat cesarean sections, indicating their prevalence as a significant intraoperative concern. Difficulty in



accessing the lower uterine segment due to bladder adhesions was observed in 16.0% of cases, while 20.0% of patients had challenges in suturing the uterine incision due to a thinned-out scar. Similar observations were made by Sailaja et al.[24], who reported thinned lower uterine segments in 37.2% of their cases, emphasizing the risks posed by scar tissue integrity in repeat surgeries. Additionally, rare but serious complications like impending uterine rupture (2.0%) and bladder injury (0.7%) were also noted, reinforcing the importance of careful intraoperative assessment and preparedness in patients with prior cesarean deliveries.

Limitations of the study

This study had some limitations:

- The study was conducted in a selected tertiary-level hospital.
- The sample was not randomly selected.
- The study's limited geographic scope may introduce sample bias, potentially affecting the broader applicability of the findings.

CONCLUSION

The frequency of pregnancy with a history of previous caesarean section is increasing, and such cases often present with various antepartum and intraoperative complications. In this study, conducted on 150 patients, a significant proportion had past obstetrical issues such as abortion, stillbirth, or neonatal death. Antepartum complications like pregnancy-induced hypertension, chronic abdominal pain, and diabetes mellitus were frequently observed. Nearly half of the patients had no antenatal complications, yet intraoperative findings revealed substantial technical difficulties, most notably abdominal adhesions, bladder adhesions, and thinning of the uterine scar. These findings underscore the importance of vigilant antenatal monitoring and meticulous surgical planning in managing pregnancies with prior cesarean histories.

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