

Relaparotomy After Caesarean Section in a Tertiary Care Centre: A Conundrum of Esoterica

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Research Article

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Abstract

Background

Relaparotomy following caesarean section is a rare but serious postoperative complication associated with significant maternal morbidity and mortality. Early recognition and timely intervention are crucial to improve outcomes. This study was conducted to evaluate the incidence, indications, and maternal outcomes of relaparotomy after caesarean section in a tertiary care teaching hospital.

Methods

This retrospective observational study was conducted in the Department of Obstetrics and Gynaecology at Lady Hardinge Medical College and Smt. Sucheta Kriplani Hospital from June 2021 to May 2023. All women who underwent relaparotomy within six weeks of caesarean delivery were included. Patients with relaparotomy for unrelated procedures and incomplete records were excluded. Data regarding demographic details, indications, intraoperative findings, surgical interventions, and maternal outcomes were collected and analysed using descriptive statistics.

Results

During the study period, a total of 6452 caesarean sections were performed, among which 20 patients required relaparotomy, giving an incidence of 0.30%. The majority of patients were aged 25–30 years and were multigravida. Emergency caesarean sections accounted for most index surgeries. The most common indication for relaparotomy was intraperitoneal haemorrhage, followed by rectus sheath haematoma and postpartum haemorrhage. More than half of the relaparotomies were performed within 24 hours of the primary surgery. 3 out of 20 patients had maternal mortality.

Conclusion

Relaparotomy following caesarean section remains a rare but life-threatening complication. Intraperitoneal haemorrhage is the most common indication, and most cases occur in the early postoperative period. Strict intraoperative haemostasis, vigilant postoperative monitoring, and timely intervention are essential to reduce maternal morbidity and mortality.

Introduction

Caesarean section is the most commonly performed obstetric surgical procedure worldwide and its rate has been steadily increasing over the past few decades. Global trends show a rise from approximately 12% in 2000 to nearly 25% in 2018 and further increases reported in recent years, reflecting changes in obstetric practice, improved fetal surveillance, and advancements in surgical and anaesthetic care¹.

Although caesarean section is a life-saving procedure, it is associated with higher maternal morbidity compared to vaginal delivery. Postoperative complications include haemorrhage, endometritis, wound infection, abscess formation, subfascial haematoma, bladder flap haematoma, uterine dehiscence, and uterine rupture². Most of these complications can be managed conservatively; however, a small proportion of patients require re-exploration of the abdomen.

Relaparotomy following caesarean section is a rare but severe complication, usually defined as an unplanned return to the operating room within a short period following the primary surgery. Reported incidence ranges from 0.12% to 1.04% across different studies³. It is most commonly indicated in cases of postpartum haemorrhage, intraperitoneal haemorrhage, Pseudo peritonium, burst abdomen, rectus sheath haematoma, and other life-threatening postoperative complications⁴.

Relaparotomy is often performed in critically ill patients and is associated with prolonged hospital stay, increased need for intensive care support, massive blood transfusion, and significant maternal morbidity and mortality⁵. The decision to proceed with relaparotomy is challenging and depends on timely recognition of complications, clinical stability of the patient, and surgical judgement.

Despite advances in obstetric care, relaparotomy remains an important indicator of severe maternal morbidity and a near-miss event. In high-volume tertiary care centres managing a large proportion of high-risk pregnancies, understanding its incidence, causes, and outcomes is essential for improving quality of care and preventing avoidable maternal deaths.

Therefore, the present study was undertaken to determine the incidence, indications, and maternal outcomes of relaparotomy following caesarean section in a tertiary care teaching hospital.

Materials and Methods

This retrospective observational study was conducted in the Department of Obstetrics and Gynaecology at Lady Hardinge Medical College and Smt. Sucheta Kriplani Hospital, a tertiary care teaching hospital catering to a large high-risk obstetric population.

The study period extended from June 2021 to May 2023. All obstetric patients who underwent relaparotomy within six weeks of caesarean delivery during this period were included in the study.

Patients undergoing relaparotomy for indications unrelated to caesarean section, such as primary ectopic pregnancy surgery or other unrelated obstetric/gynecological procedures, were excluded from the study. Cases with incomplete or missing medical records were also excluded.

Data were collected from operation theatre registers and case records retrieved from the Medical Record Department. Relevant clinical information including demographic profile, obstetric history, indication for caesarean section, timing and indication for relaparotomy, intraoperative findings, surgical interventions

performed, blood transfusion requirements, postoperative complications, and final maternal outcomes until discharge were recorded in a structured proforma.

The total number of caesarean deliveries during the study period was obtained from hospital records to calculate the incidence of relaparotomy. All data were anonymized prior to analysis to maintain patient confidentiality.

Data were entered into Microsoft Excel and analyzed using IBM SPSS software. Continuous variables were expressed as mean $\pm$ standard deviation, and categorical variables were presented as frequencies and percentages. The incidence of relaparotomy was calculated as a proportion of total caesarean deliveries.

Ethical clearance was obtained from the Institutional Ethics Committee prior to commencement of the study (LHMC/IEC/2023/09). The study was conducted in accordance with ethical standards and involved no direct patient contact or intervention due to its retrospective nature.

Results

During the study period, a total of 6452 caesarean deliveries were performed. Among these, 28 patients required relaparotomy, giving an incidence of 0.30%.

The majority of patients belonged to the age group of 25–30 years (40%), followed by 31–35 years (20%) [Table 1]. Most patients were multigravida (65%) and belonged to the Unbooked category (60%) [Table 2].

Table 1
Age distribution of patients undergoing relaparotomy (n = 20)

Age group (years)	Number(n = 20)	Percentage (%)
19–24	3	15
25–30	8	40
31–35	4	20
> 35	5	25

Table 2
Parity and booking status

Variable	Category	Number(n = 20)	Percentage (%)
Parity	Primigravida	7	35
	Multigravida	13	65
Booking status	Booked	8	40
	Unbooked	12	60

Emergency caesarean sections constituted the majority of index surgeries (95%), and most relaparotomy cases followed primary caesarean sections (75%) [Table 3]. A significant proportion of caesarean sections were performed for Malpresentation (30%), fetal distress (25%), followed by previous 2 caesarean sections (20%) and Cephalopelvic disproportion (15%) [Table 3].

Table 3
Caesarean section details

Variable	Category	Number(n = 20)	Percentage (%)
Type of CS	Emergency	19	95
	Elective	1	05
Type of CS	Primary	15	75
	Repeat	5	25
Common indication	Fetal distress	5	25
	Malpresentation	6	30
	CPD	3	15
	Previous 2 CS	4	20
	Placenta Praevia	2	10

More than half of relaparotomies (60%) were performed within 24 hours of the primary surgery, highlighting early postoperative deterioration [Table 4].

Table 4
Time interval between CS and relaparotomy

Time interval	Number(n = 20)	Percentage (%)
< 24 hours	12	60
24–72 hours	6	30
3–7 days	1	05
8 days–6 weeks	1	05

The most common indication for relaparotomy was intraperitoneal haemorrhage (35%), followed by rectus sheath haematoma (30%), postpartum haemorrhage (25%), Pyo peritoneum/sepsis (5%), and burst abdomen (5%) [Table 5].

Table 5
Indications of relaparotomy

Indication	Number(n = 20)	Percentage
Intraperitoneal bleeding	7	35
Rectus sheath haematoma	6	30
Postpartum haemorrhage	5	25
Pyo peritoneum / sepsis	1	05
Burst abdomen	1	05

Regarding surgical interventions, drainage of haematoma and bleeder ligation was done in 45% of cases, hysterectomy and internal iliac artery ligation was required in 35% of cases. Other procedures included uterine resuturing (10%), abdominal wall repair (5%), and Pyo peritoneum drainage (5%) [Table 6].

Table 6
Surgical procedures performed

Procedure	Number(n = 20)	Percentage (%)
Hysterectomy	7	35
Internal iliac artery ligation	7	35
Uterine resuturing	2	10
Haematoma drainage and bleeder ligation	9	45
Abdominal wall repair	1	05
Pyo peritoneum drainage	1	05

Postoperative morbidity was significant. Sepsis was observed in 90% of patients, ICU admission in 80%, febrile morbidity in 60%, coagulation abnormalities in 40%, and MODS in 40% of cases. Massive blood transfusion was required in 20% of patients, and maternal mortality was 15% [Table 7].

Table 7
Postoperative outcomes

Outcome	Number(n = 20)	Percentage (%)
ICU admission	16	80
Febrile morbidity	12	60
Sepsis	18	90
Coagulopathy	8	40
MODS	8	40
Massive transfusion	4	20
Maternal mortality	3	15

The duration of hospital stay was most commonly 15–21 days (50%), followed by 8–14 days (25%) [Table 8].

Table 8
Duration of hospital stay

Duration	Number(n = 20)	Percentage (%)
< 7 days	3	15
8–14 days	5	25
15–21 days	10	50
21–28 days	2	10

Discussion

Relaparotomy following caesarean section represents a rare but serious obstetric complication associated with significant maternal morbidity and mortality. In the present study, the incidence of relaparotomy was 0.30%, which is consistent with previously reported rates ranging from 0.12% to 1.04% in different tertiary care settings^{1–3}. This variation across studies may be attributed to differences in case mix, referral patterns, obstetric risk profiles, and surgical expertise.

In our study, a majority of relaparotomies occurred within 24 hours of the primary caesarean section (60%), indicating that most complications are related to early postoperative haemorrhage or surgical bleeding. Similar findings have been reported in earlier studies where early relaparotomy was strongly

associated with intra-abdominal bleeding and postoperative haemodynamic instability^{4,5}. This emphasizes the importance of strict monitoring during the immediate postoperative period, particularly in the first 24 hours.

Intraperitoneal haemorrhage was the most common indication for relaparotomy in the present study (35%). This finding is consistent with studies by Levin et al. and Raagab et al., who also identified haemorrhage as the leading cause of re-exploration after caesarean delivery^{3,5}. In contrast, some studies have reported postpartum haemorrhage or infection as the leading indication, highlighting regional variations and differences in obstetric practices^{2,6}.

A high proportion of patients required hysterectomy (35%) during relaparotomy, reflecting the severity of haemorrhage and failure of conservative surgical measures. Similar hysterectomy rates have been reported in other studies ranging from 35% to 55% in cases of severe obstetric haemorrhage requiring relaparotomy^{2,7}. This reinforces that relaparotomy often represents a last-resort life-saving intervention in critically unstable patients.

Postoperative morbidity in our study was significantly high, with ICU admission in 80% and sepsis in 60% of patients. These findings highlight the severity of illness in this patient population and are comparable with studies reporting prolonged ICU stay and high infection-related complications following relaparotomy^{4,7}. Coagulation abnormalities and multiple organ dysfunction syndrome (MODS) were also frequent, indicating systemic involvement due to massive haemorrhage and shock.

Maternal mortality in the present study was 15%, which is comparable to previous reports ranging from 11% to 18% in similar high-risk tertiary care settings^{5,8-12}. This further supports the concept that relaparotomy following caesarean section is a maternal near-miss event associated with extremely high risk of mortality.

The need for internal iliac artery ligation and other surgical interventions such as haemostatic sutures and haematoma drainage in a significant proportion of patients reflects the complexity of surgical management in these cases. Similar management patterns have been described in earlier studies emphasizing the importance of stepwise surgical techniques in controlling obstetric haemorrhage^{6,7}.

Conclusion

Relaparotomy following caesarean section is a rare but life-threatening obstetric complication associated with significant maternal morbidity and mortality. In the present study, the incidence was 0.30%, which is comparable with existing literature. Intraperitoneal haemorrhage was identified as the most common indication, and more than half of the cases required relaparotomy within the first 24 hours of primary surgery, highlighting the importance of early postoperative vigilance. A substantial proportion of patients required major surgical interventions, ICU admissions and had postoperative morbidities emphasizing the severity and critical nature of these cases.

Relaparotomy after caesarean section should be considered a maternal near-miss event. Its occurrence underscores the need for meticulous surgical technique, strict haemostasis, early recognition of postoperative bleeding, timely intervention, and involvement of senior obstetricians to improve maternal outcomes and reduce preventable morbidity and mortality.

Declarations

Funding

The authors declare that no funding was received for the conduct of this study.

Conflict of Interest

The authors declare that they have no conflict of interest.

Ethics Approval

Ethical approval for this study was obtained from the Institutional Ethics Committee, Lady Hardinge Medical College, New Delhi, India (Approval No. LHMC/IEC/2023/09). The study was conducted in accordance with the ethical standards of the institution and applicable ethical guidelines.

Consent to Participate

As this was a retrospective, record-based observational study involving previously collected clinical data, informed consent to participate was waived by the Institutional Ethics Committee of Lady Hardinge Medical College, New Delhi, India (Approval No. LHMC/IEC/2023/09).

Consent for Publication

Not Applicable.

Authors' Contributions

All authors contributed to the conception and design of the study. Data collection, data entry, and analysis were performed by the research team. All authors participated in manuscript drafting, critical revision, and approval of the final version for publication.

Data Availability

The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request.

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