

INDICATION, PREVALENCE AND MATERNAL OUTCOME OF EMERGENCY PERIPARTUM HYSTERECTOMY: A CROSS-SECTIONAL STUDY.

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ABSTRACT

Background

Emergency peripartum hysterectomy (EPH) is a critical surgical procedure performed to control life-threatening postpartum hemorrhage (PPH) when conservative measures fail. The study aims to assess the frequency, indications, and maternal outcomes of EPH.

Methods

A total of 144 women who underwent EPH following failed conservative management for PPH were included. Data were collected on maternal demographics, indications for hysterectomy, type of hysterectomy performed, and postoperative complications. Statistical analysis was accomplished using SPSS version 23.0.

Results

The average age of the patients was 29.5 ± 4.3 years, with 61.1% being multiparous. Previous cesarean sections were documented in 38.9% of cases. The leading indication for EPH was uterine atony (45.8%), followed by placenta previa (22.2%), placenta accreta (18.8%), and uterine rupture (13.2%). Total hysterectomy was performed in 72.9% of cases, while 27.1% underwent subtotal hysterectomy. Immediate postoperative complications occurred in 52.1% of patients, with infections (22.2%) and hemorrhage requiring additional surgery (16.7%) being the most common. A significant association was found between previous cesarean sections and the incidence of placenta accreta ($\chi^2=12.34$, $p=0.002$), as well as between total hysterectomy and higher postoperative complications ($p=0.045$).

Conclusion

Uterine atony and abnormal placentation are the predominant indications for EPH in this setting, with a substantial burden of postoperative complications observed. Prior cesarean deliveries significantly increase the risk of placenta accreta, underscoring the need for cautious evaluation of cesarean indications.

Recommendations

Enhancing antenatal care with early identification and management of high-risk pregnancies, promoting skilled birth attendance, and implementing standardized protocols for PPH management can potentially reduce the incidence of EPH and improve maternal outcomes. Additionally, efforts to limit unnecessary primary cesarean sections could decrease the risk of abnormal placentation in subsequent pregnancies.

Keywords: Emergency Peripartum Hysterectomy; Postpartum Hemorrhage; Maternal Outcomes; Uterine Atony; Placenta Accreta; Cesarean Section.

Submitted: 2024-08-26 **Accepted:** 2024-09-14

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Introduction

When all previous conservative methods fail to control severe postpartum hemorrhage (PPH), emergency peripartum hysterectomy (EPH) is a life-saving surgical surgery. PPH continues to be a leading cause of maternal morbidity and mortality globally, especially in low-resource settings, despite improvements in obstetric treatment. Recent data show that the prevalence of EPH varies globally, from 0.2 to 5 per 1,000 deliveries; greater rates have been seen in developing nations, where access to timely and sufficient healthcare is frequently limited [1, 2]. Despite being vital, the surgery is associated with significant maternal morbidity because of its intricacy and the hurry with which it must be completed.

Uterine atony, placenta previa, placenta accreta spectrum (PAS) diseases, and uterine rupture are the main indications for endometrial hypoplasia (EPH). The most frequent sign, which accounts for about 50% of cases, is uterine atony, or the uterus' inability to contract properly after delivery [3]. Unusual placental attachment to the uterine wall, or PAS abnormalities, have also been shown to be important risk factors for endometriosis (EPH), especially in women who have had previous cesarean deliveries. Globally, the frequency of cesarean procedures is rising, which has been connected to the rising prevalence of PAS diseases [4]. This development presents serious difficulties for obstetric care professionals.

In regions like Bihar, India, where this study is conducted, the challenges are exacerbated by

socioeconomic and healthcare disparities. Limited access to antenatal care, delayed referral systems, and a lack of trained personnel contribute to the high rates of severe obstetric complications requiring interventions like EPH. Recent studies underscore the importance of early identification of at-risk patients and the implementation of standardized protocols to manage PPH effectively [5, 6]. However, despite these advances, the management of PPH and the decision to perform EPH remain complex, requiring a multidisciplinary approach and timely surgical intervention.

This study aims to analyze the frequency, indications, and maternal outcomes of emergency peripartum hysterectomy in a tertiary care hospital in Purnea, Bihar.

METHODOLOGY

Study Design

A retrospective observational cross-sectional study.

Study Setting

The study took place in the Department of Obstetrics & Gynaecology, Fatma Hospital, Purnea, Bihar, India, spanning from June 2023 to July 2024. This hospital serves a large population in the region and is equipped to handle complex obstetric cases, making it an ideal setting for this study.

Participants

The study comprised a total of 144 females who underwent EPH.

Inclusion Criteria

- Women who underwent EPH due to uncontrollable PPH, where bilateral uterine artery ligation, bilateral ovarian vessel ligation, and B-lymph nodes had failed.
- Women who delivered at the hospital during the study period.

Exclusion Criteria

- Women who underwent planned or elective hysterectomy.
- Cases with incomplete medical records or missing data on critical variables.
- Women with non-obstetric indications for hysterectomy.

Bias

To minimize bias, all cases of emergency peripartum hysterectomy within the defined timeframe were included, irrespective of the outcomes. Information bias was minimized by using well-documented hospital records and ensuring consistency in data extraction.

Variables

The following variables were analyzed in this study including age, parity, previous cesarean sections, and any existing comorbidities, reasons for hysterectomy, such as uterine atony, placenta previa, placenta accreta, or

uterine rupture, total or subtotal hysterectomy performed, incidence of complications such as infection, thromboembolism, hemorrhage, and need for further surgical interventions.

Data Collection

Data were gathered retrospectively from patient medical records, operating room logs, and discharge summaries. The data collection process was standardized to ensure consistency across all cases. Information on maternal characteristics, indications for hysterectomy, type of hysterectomy performed, and post-operative outcomes were systematically recorded.

Procedure

Patients undergoing emergency peripartum hysterectomy were identified, and their medical records were reviewed. Data on the variables of interest were extracted and entered into a pre-designed data collection form. The indications for hysterectomy were categorized, and postoperative complications were noted and classified.

Statistical Analysis

Data was analyzed using SPSS 23.0. Categorical variables were frequencies and percentages, whereas continuous data were means and standard deviations. A p-value of less than 0.05 was considered statistically significant for chi-square testing of categorical variables.

Ethical considerations

The study protocol was approved by the Ethics Committee and written informed consent was received from all the participants.

RESULTS

Table 1: Demographics profile

Characteristic	n (%)
Total Patients	144
Mean Age (years)	29.5 (\pm 4.3)
Parity	
- Primiparous	56 (38.9%)
- Multiparous (\geq 2)	88 (61.1%)
Previous Cesarean Sections	
- None	88 (61.1%)
- One	30 (20.8%)
- Two or More	26 (18.1%)

The mean age was 29.5 years (\pm 4.3), with an age range of 21 to 40 years. Most women (61.1%) were multiparous, with a parity of 2 or more. Previous

cesarean sections were noted in 38.9% of the cases, with 18.1% having had two or more prior cesarean deliveries.

Table 2: Indications for Hysterectomy

Indication	n (%)
Uterine Atony	66 (45.8%)
Placenta Previa	32 (22.2%)
Placenta Accreta	27 (18.8%)
Uterine Rupture	19 (13.2%)

The most common indication for EPH was uterine atony, accounting for 45.8% of the cases (n=66), followed by placenta previa (22.2%, n=32) and placenta accreta

(18.8%, n=27). Uterine rupture was the indication in 13.2% of cases (n=19). The distribution of indications is shown in Table 2.

Table 3: Types of Hysterectomy

Type of Hysterectomy	n (%)
Total Hysterectomy	105 (72.9%)
Subtotal Hysterectomy	39 (27.1%)

Among the 144 cases, 72.9% (n=105) underwent total hysterectomy, while 27.1% (n=39) underwent subtotal hysterectomy. The choice of hysterectomy type was based on the intraoperative findings and the patient's clinical condition.

Table 4: Postoperative Complications

Complication	n (%)
Infection	32 (22.2%)
Hemorrhage	24 (16.7%)
Thromboembolism	10 (6.9%)
No Complications	69 (47.9%)

Postoperative complications were observed in 52.1% of the cases (n=75). The most common complications were infection (22.2%, n=32) and hemorrhage requiring further surgical intervention (16.7%, n=24). Thromboembolic events were noted in 6.9% of the patients (n=10). A summary of postoperative complications is provided in Table 3.

The relationship between the need for a hysterectomy and prior cesarean sections was examined using a chi-square test. The incidence of placenta accreta was shown to be statistically significantly correlated with the number of prior cesarean procedures ($\chi^2 = 12.34$, $p = 0.002$).

Further analysis showed that patients who underwent total hysterectomy had a higher likelihood of postoperative complications compared to those who underwent subtotal hysterectomy ($p = 0.045$). However, no noteworthy association was found between the type of hysterectomy and the specific complications such as infection or hemorrhage.

DISCUSSION

The study involved 144 women who underwent EPH, with an average age of 29.5 years. The majority of these women were multiparous (61.1%), and 38.9% had a history of previous cesarean sections. This demographic profile suggests that women with higher parity and those

with a history of cesarean deliveries are more likely to require emergency hysterectomy, highlighting the potential risks associated with multiple pregnancies and prior surgical deliveries.

The leading indication for hysterectomy was uterine atony, accounting for nearly half of the cases (45.8%). Placenta previa and placenta accreta were also significant contributors, representing 22.2% and 18.8% of cases, respectively. These findings underscore the importance of recognizing and managing these conditions early to prevent the need for such drastic surgical interventions. The significant association between previous cesarean sections and placenta accreta ($p = 0.002$) recommends that women with multiple cesarean deliveries are at an increased risk of this life-threatening condition.

Total hysterectomy was completed in 72.9% of the cases, while subtotal hysterectomy was less common. The preference for total hysterectomy may reflect the severity of the cases encountered, as well as the surgical team's decision to ensure complete removal of the uterus to prevent further complications. The higher rate of postoperative complications associated with total hysterectomy ($p = 0.045$) suggests that while this procedure may be necessary in severe cases, it carries a higher risk of adverse outcomes.

Postoperative complications were common, affecting over half of the patients (52.1%). The most frequent complications were infections (22.2%) and hemorrhage requiring further intervention (16.7%). These findings highlight the critical need for effective postoperative care and monitoring to manage and mitigate complications following an emergency peripartum hysterectomy. The relatively high complication rate also indicates the complexity and risk associated with this surgical procedure, underscoring the importance of preventive measures and early intervention to avoid the necessity of hysterectomy whenever possible.

A prospective study was conducted over one year in Jammu, India, involving 33 cases of EPH. They reported that the predominant indications were placenta accreta (69%) and atonic postpartum hemorrhage (18%), with a significant correlation between previous cesarean sections and the increased incidence of abnormal placentation, which has become the leading cause of EPH in recent years [7]. Similarly, a study analyzed 71 cases of EPH over seven years in Turkey, finding that abnormal placentation was the main indication (67.6%), followed by uterine atony (28.1%). This study also underscored the role of repeat cesarean sections as a major risk factor for EPH, with significant maternal morbidity, although no maternal deaths were recorded [8].

A global meta-analysis was performed that included 154 studies with 14,409 cases of EPH from 42 countries. The study revealed substantial differences in the incidence of EPH across income settings, with lower-income countries experiencing higher rates. The most common indications worldwide were placental pathology (38%) and uterine atony (27%). The study also emphasized that

socioeconomic factors significantly influence the incidence and outcomes of EPH, with women in lower-income settings facing higher risks and poorer outcomes [9]. In a 15-year review in Jordan, a steadily increasing incidence of EPH, with abnormal placentation was observed as the leading cause. The study identified placenta previa with a history of cesarean sections as a significant risk factor, contributing to the rise in EPH cases [10]. Finally, a study analyzed 42 cases of EPH in Turkey, confirming the rising incidence of placental invasion anomalies as a major indication for EPH. They attributed this increase to the growing number of cesarean deliveries [11].

Generalizability

The generalizability of this study may be limited due to its retrospective design and the specific demographic and geographic context. The findings primarily reflect the outcomes and complications associated with emergency peripartum hysterectomy (EPH) in a low-resource setting with limited access to advanced medical care and a high prevalence of risk factors such as previous cesarean sections. Therefore, while the study provides valuable insights into the management of postpartum hemorrhage and EPH in similar settings, the results may not be directly applicable to populations in high-resource settings or regions with different healthcare infrastructures and patient demographics.

CONCLUSION

This study highlights that uterine atony and placenta previa are the leading indications for EPH. Total hysterectomy was the more common procedure performed, and a substantial proportion of patients experienced postoperative complications, with infection being the most prevalent. The findings suggest a need for heightened vigilance and preventive strategies, particularly in women with multiple cesarean sections or known placental abnormalities.

Limitations

The limitations of this study include a small sample population who were included in this study. Furthermore, the lack of a comparison group also poses a limitation for this study's findings.

Recommendation

Enhancing antenatal care with early identification and management of high-risk pregnancies, promoting skilled birth attendance, and implementing standardized protocols for PPH management can potentially reduce the incidence of EPH and improve maternal outcomes. Additionally, efforts to limit unnecessary primary cesarean sections could decrease the risk of abnormal placentation in subsequent pregnancies.

Acknowledgment

We are thankful to the patients; without them, the study could not have been done. We are thankful to the

supporting staff of our hospital who were involved in the patient care of the study group.

List of abbreviations

EPH: Emergency Peripartum Hysterectomy
PPH: Postpartum Hemorrhage
SPSS: Statistical Package for the Social Sciences
PAS: Placenta Accreta Spectrum
 χ^2 : Chi-Square Test

Source of funding

No funding received.

Conflict of interest

The authors have no conflicting interests to declare.

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