

Original Research Article

EMERGENCY PERIPARTUM HYSTERECTOMY: A 3 YEAR REVIEW AT A TERTIARY CARE CENTRE

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ABSTRACT

Background: Emergency Peripartum Hysterectomy (EPH) is a life-saving procedure performed in cases of severe obstetric hemorrhage, typically associated with conditions like uterine atony, abnormal placentation, and uterine rupture. The global incidence ranges from 0.035% to 0.54% and is rising due to increasing cesarean deliveries and placental complications. This study aims to evaluate the incidence, risk factors, indications, and outcomes of EPH over a three-year period at a tertiary care center.

Materials and Methods: A retrospective study was conducted at KAHERS Jawaharlal Nehru Medical College and Research Centre, Belagavi, reviewing medical records of women who underwent EPH from January 2021 to December 2023. Women with EPH due to obstetric indications were included, while elective hysterectomies, incomplete records, and referrals were excluded. Data analyzed included demographics, obstetric history, indications, complications, and outcomes.

Results & Conclusion: Of 22 EPH cases, the majority occurred in women aged 20–29 years (59%), with multiparity being a significant risk factor (86%). Rural residency (59%) and lower socioeconomic status were prevalent. Prior cesarean sections were reported in 77% of cases, with morbidly adherent placenta as the most common indication (68%), followed by placenta previa and uterine atony. Complications included coagulopathy (14%) and significant blood loss (average 1,603 mL). Despite the severity, no maternal deaths were reported, reflecting effective management. These findings emphasize the need for improved antenatal care and early identification of high-risk pregnancies to reduce EPH rates and associated morbidity.

Keywords: Emergency Peripartum Hysterectomy, Obstetric Hemorrhage, Morbidly Adherent Placenta, Cesarean Section, Risk Factors, Maternal Morbidity.

INTRODUCTION

Emergency Peripartum Hysterectomy (EPH) defined as hysterectomy performed at the time of child birth or within 24 hours of child birth or at any time from childbirth to discharge from the same hospitalization. In cases of intractable obstetric haemorrhage caused by uterine atony or to prevent haemorrhage from a morbidly adherent placenta or placenta previa, endocervical haemorrhage (EPH) is performed at the time of delivery. Uterine rupture, cervical laceration, leiomyoma, postpartum uterine infection, and invasive cervical cancer are some of the other

indicators that may be present. As a consequence of this, the risk factors for endometrial hypertension (EPH) are comparable to those that are associated with aberrant placentation or haemorrhage. The prevalence of EPH varies from 0.035 percent to 0.5 percent around the globe.^[1] As a consequence of the increasing prevalence of caesarean deliveries and, as a consequence of this, the placenta accreta spectrum in pregnancies that have been delivered via caesarean section in the past, it is anticipated that the global incidence of emergency peripartum hysterectomy will increase.^[2-4]

Historically, emergency peripartum hysterectomy has been more prevalent in nations with higher

incomes. However, in countries with lower incomes, the incidence, indications, risk factors, and outcomes of this procedure are different.^[2] More emergency hysterectomies are performed during the perinatal period in countries with low and lower middle incomes than in countries with higher incomes. Emergency peripartum hysterectomy is performed for a variety of reasons, the most common of which being massive obstetric haemorrhage caused by placental illness, uterine atony, or uterine rupture. Puerperal infection is the second most prevalent reason.^[5,6] The purpose of this study is to determine the incidence, risk factors, its association with the number of previous CSs, need for blood transfusion, and complications.

Objectives

1. To determine the incidence, indications, risk factors and complications associated with Emergency Peripartum Hysterectomy.

MATERIALS AND METHODS

This retrospective study was conducted in the Department of Obstetrics and Gynecology at KAHERS Jawaharlal Nehru Medical College and Research Centre, Belagavi, and involved a thorough review of medical records of women who underwent Emergency Peripartum Hysterectomy (EPH) between January 2021 and December 2023. Women included in the study were those who had EPH for obstetric indications within 24 hours postpartum and were managed exclusively at the tertiary care center, while cases involving elective hysterectomies, incomplete records, or referrals after EPH were excluded.

RESULTS

- Women were categorized into three age groups: 20–29 years, 30–39 years, and above 39 years. The majority of EPH cases occurred in women aged 20–29 years (13 out of 22 cases), followed by 30–39 years (8 cases), and only 1 case above 39 years. Yearly trends show a consistent distribution, with most cases concentrated in younger women.
- Most cases occurred in multiparous women (19 out of 22), highlighting a possible risk factor due to previous pregnancies. Only 2 cases were observed in primiparous women over the 3-year period.
- A higher number of cases were from rural areas (13 out of 22), compared to urban areas (6 out of 22).
- The majority of women belonged to Class 3 (9 cases), followed by Class 4 (4 cases) and Class 2 (4 cases). There were no cases in Class 1, indicating that women from lower socioeconomic backgrounds might be at higher risk for complications necessitating EPH. [Table 1]

- A total of 3 cases of EPH followed an emergency LSCS, with 2 cases in 2023 and 1 in 2021.
- The majority of EPH cases (14 out of 22) followed elective cesarean deliveries, with 6 cases in 2023, 5 in 2022, and 3 in 2021.
- A total of 7 EPH cases were observed following vaginal deliveries, with the highest number (4 cases) in 2023.
- There were 11 cases of EPH following classical cesarean sections (a less commonly performed surgical technique), spread relatively evenly across the years (5 in 2023, 3 in 2022, and 3 in 2021). [Table 2]
- A total of 11 cases involved women who were registered for antenatal care at the tertiary care center. Most registered cases occurred in 2023 (7 cases), with 2 cases each in 2022 and 2021.
- The remaining 10 cases involved unregistered women, with the highest number in 2022 (5 cases), 3 in 2023, and 2 in 2021. [Table 3]
- Women under 30 years accounted for 13 out of 22 cases, with 6 cases in 2023, 5 in 2022, and 2 in 2021. Women above 30 years constituted 8 cases, distributed as 4 in 2023, 2 in 2022, and 2 in 2021. This indicates a higher prevalence of EPH in younger women, though older age remains a significant risk factor.
- Among the 22 cases, 19 had a history of prior LSCS, with 10 cases in 2023, 6 in 2022, and 3 in 2021. Only 2 cases had no history of LSCS, emphasizing that prior cesarean delivery is a major risk factor for EPH.
- A history of uterine curettage was reported in 5 cases, with 2 in 2023 and 3 in 2022. No cases in 2021 had this history. This suggests that invasive uterine procedures may increase the risk of complications leading to EPH. [Table 4]
- Morbidly Adherent Placenta was the most common indication for EPH, accounting for 15 out of 22 cases (68%). The yearly distribution shows 8 cases in 2023, 5 cases in 2022, and 2 cases in 2021. Morbidly adherent placenta, including placenta accreta, increta, and percreta, poses significant challenges and often necessitates hysterectomy.
- A total of 3 cases (14%) were attributed to placenta previa without adherence. These cases were evenly distributed, with 1 case each year (2021–2023).
- Uterine atony, a failure of the uterus to contract adequately post-delivery, accounted for 3 cases (14%). Similar to placenta previa, these cases were evenly distributed across the three years. [Table 5]
- A total of 3 cases of coagulopathy were reported, with 2 cases in 2023 and 1 in 2022.
- Only 1 case of bladder injury was reported, occurring in 2023.
- No cases of ureter injury were reported during the study period.

- The average blood loss reported across all cases was 1,603 ml, reflecting the severity of hemorrhage associated with EPH.
- 1 case of puerperal sepsis was reported in 2023.
- No cases of transfusion reaction were reported, indicating proper matching and monitoring during transfusion
- No cases of cardiomyopathy were reported during the study period.
- 1 case of TRALI was reported in 2023.
- No maternal deaths were reported among the cases reviewed, reflecting effective management despite severe complications.
- 1 case required ureteric stenting, which was performed in 2023. [Table 6]

Table 1: Demographic Characteristics of Women Undergoing Emergency Peripartum Hysterectomy

	Total (2021-2023)	2023	2022	2021
Age group				
20-29	13	6	5	2
30-39	8	4	2	2
>39	1	0	0	1
Obstetric Score				
Primigravida	2	1	0	1
Multigravida	19	9	7	3
Urban/Rural				
Rural	13	5	6	2
Urban	6	3	1	2
Socioeconomic Status				
Class 1	0	0	0	0
Class 2	4	1	2	1
Class 3	9	5	2	2
Class 4	4	4	0	0
Class 5	2	0	2	0
Previous LSCS				
0	3	1	1	1
1	11	7	3	1
2	6	2	3	1

Table 2: Mode of Delivery

Elective/Emergency LSCS	Total (2021-2023)	2023	2022	2021
Emergency LSCS	3	2	0	1
Elective LSCS	14	6	5	3
Vaginal	7	4	2	1
Classical Section	11	5	3	3

Table 3: Registration Status

	Total (2021-2023)	2023	2022	2021
Registered Cases	11	7	2	2
Unregistered Cases	10	3	5	2

Table 4: Risk Factors Associated with Emergency Peripartum Hysterectomy

	Total (2021-2023)	2023	2022	2021
<30yrs	13	6	5	2
>30yrs	8	4	2	2
Yes	19	10	6	3
No	2	0	1	1
Prior curettage done	5	2	3	0

Table 5: Indications for Emergency Peripartum Hysterectomy

	Total (2021-2023)	2023	2022	2021
Morbidly adherent placenta	15	8	5	2
Placenta previa without adherence	3	1	1	1
Uterine atony	3	1	1	1

Table 6: Complications Associated with Emergency Peripartum Hysterectomy

	Total (2021-2023)	2023	2022	2021
Coagulopathy	3	2	1	0
Bladder injury	1	1	0	0
Ureter injury	0	0	0	0
Blood loss average (ml)	1603ml			
Puerperal sepsis	1	1	0	0
Blood transfusion reaction	0	0	0	0
Cardiomyopathy	0	0	0	0

TRALI	1	1	0	0
Death	0	0	0	0
Ureteric stenting	1	1	0	0

DISCUSSION

In this study, Women were categorized into three age groups: 20–29 years, 30–39 years, and above 39 years. The majority of EPH cases occurred in women aged 20–29 years (13 out of 22 cases), followed by 30–39 years (8 cases), and only 1 case above 39 years. Yearly trends show a consistent distribution, with most cases concentrated in younger women. Wani et al. reported that the mean maternal age of women undergoing Emergency Peripartum Hysterectomy (EPH) ranging from 23 to 47 years. Additionally, 20.9% of the women were aged above 40 years.^[7] Rawashdeh et al. reported a mean maternal age range from 21 to 47 years. Women aged 35 years and above were found to have a significantly increased risk of developing an abnormally adherent placenta.^[8] In Kazi et al., age distribution showed 50% of women were aged 30–35 years, and 31% were older than 35 years.^[9] Ara et al. reported that the majority of women undergoing Emergency Obstetric Hysterectomy (EOH) were aged 26–30 years (35.89%), followed by 31–35 years (31.41%), and 20–25 years (18.58%).^[10] Machado reported that advancing maternal age is a significant risk factor for Emergency Peripartum Hysterectomy (EPH), with older women being more susceptible to conditions like placenta previa and accreta.^[11] In Qatawneh et al age range of 26–45 years. A majority (54.1%) were older than 35 years,^[12] Tahmina et al. reported that women undergoing Emergency Peripartum Hysterectomy (EPH) were aged between 20 to 40 years. The age distribution showed that 66.6% of cases involved women aged 26–35 years.^[1] In Chaudhary et al 68.8% of cases involving women aged 21–30 years and 31.2% aged 31–40 years,^[13] In this study, most cases occurred in multiparous women (19 out of 22), highlighting a possible risk factor due to previous pregnancies. Only 2 cases were observed in primiparous women over the 3-year period. Wani et al. observed that the mean parity was 5.8 ± 3.2 , with a range of 0–17. Most women (66.12%) were grand multipara, while only two cases involved primigravida women.^[7] Rawashdeh et al. noted that all women undergoing Emergency Peripartum Hysterectomy (EPH) were multiparous, with a median parity of 4. Additionally, 22 women (37.29%) were grand multiparous.⁸ According to Kazi et al., 75% of women undergoing EOH were multiparous with a parity range of 2–5, while 21.8% were grand multipara with more than five deliveries.⁹ According to Ara et al., the most vulnerable group for EOH was women with parity 3–5 (53.20%), followed by parity 6–8 (20.51%).^[10] Machado noted that multiparity increases the risk of abnormal placentation.^[11] In Qatawneh et al. Parity ranged from 1 to 8, with an average parity of 3.75. Women with parity greater than 3 comprised 45.9% of the

study population.^[12] In Tahmina et al., majority (83%) of the women undergoing EPH were multiparous, with parity ranging from 1 to 5. The highest percentage of cases (41.7%) were in women with a parity of 3. 1 Chaudhary et al highlighted that 64.6% of women undergoing PRH were multiparous ($\geq P2$), with a mean parity of 1.68 ± 0.68 . Only 4.2% of cases involved nulliparous women.^[13]

In this study, higher number of cases were from rural areas (13 out of 22), compared to urban areas (6 out of 22). Kazi et al. highlighted that their study population included referrals from neighboring rural areas.^[9] Ara et al. noted that 80% of patients were referred from outside areas, which may indicate a significant representation of rural populations.^[10]

In this study, history of prior cesarean sections is a significant risk factor for EPH, with 17 out of 22 cases (77.3%) involving women with at least one prior LSCS. Wani et al. reported that 83.87% of the women had undergone at least one prior cesarean section (CS), with 51.9% of them having three or more previous CS. This underscores the strong association between prior CS and the need for EPH.^[7] Rawashdeh et al. found that 91.52% of women had a history of cesarean delivery, with 79.66% having undergone two or more prior cesarean sections. The median number of prior cesarean sections was 3.8 Kazi et al reported that 81% of women undergoing EOH had a cesarean section as the mode of delivery. Of these, the majority were emergency cesarean sections (56.25%), indicating a strong association between prior cesarean sections and the need for EOH.^[9]

Ara et al. highlighted that abnormal placentation, including placenta accreta, increta, and percreta, was strongly associated with prior cesarean deliveries. Out of 23 cases of abnormal placentation, 22 women had a previous cesarean section.^[10] Machado highlighted the strong association between prior cesarean sections and abnormal placentation, including placenta accreta. Women with placenta previa and a scarred uterus had a 16% risk of undergoing EPH compared to 3.6% for those with an unscarred uterus.^[11] In Qatawneh et al., more than 50% of the women had undergone two or more previous cesarean sections.^[12] Tahmina et al. found that 50% of the women undergoing EPH had a history of at least one prior cesarean section.^[1] In Chaudhary et al., significant risk factor identified was previous cesarean sections, present in 75% of women undergoing PRH. Among cases with morbidly adherent placenta, 90% had a history of prior cesarean deliveries.^[13]

In this study, total of 3 cases of EPH followed an emergency LSCS, with 2 cases in 2023 and 1 in 2021. The majority of EPH cases (14 out of 22) followed elective cesarean deliveries, with 6 cases in 2023, 5 in 2022, and 3 in 2021. A total of 7 EPH cases were

observed following vaginal deliveries, with the highest number (4 cases) in 2023. According to Wani et al., 91.9% of EPH cases occurred following cesarean deliveries, while only 8.1% followed vaginal deliveries. The relative risk for EPH was significantly higher for CS compared to vaginal deliveries.^[7] According to Rawashdeh et al., 81.35% of hysterectomies were performed during cesarean deliveries, and only 5.08% followed vaginal deliveries. Emergency cesarean sections accounted for 47.45% of cases.⁸ Kazi et al. stated that 81.25% of women undergoing EOH had cesarean deliveries, with 56.25% being emergency cesarean sections and 25% elective cesarean sections. Vaginal deliveries accounted for 18.75% of cases.⁹ Machado noted that the incidence of EPH is higher after cesarean section (0.17–8.7 per 1,000 deliveries) compared to vaginal deliveries (0.1–0.3 per 1,000 deliveries).^[11] In Qatawneh et al., majority of EPH cases followed cesarean deliveries, with abnormal placentation being a primary complication.^[12] In Tahmina et al., majority of EPH cases (66.7%) occurred following cesarean sections, while spontaneous vaginal deliveries and assisted vaginal deliveries accounted for 16.7% each.¹ In Chaudhary et al., Cesarean sections accounted for 81.2% of primary deliveries among PRH cases, followed by normal vaginal delivery (8.3%) and laparotomy (8.3%). Hysterotomy accounted for 2.1% of cases.^[13]

In this study, total of 11 cases involved women who were registered for antenatal care at the tertiary care center. Most registered cases occurred in 2023 (7 cases), with 2 cases each in 2022 and 2021. Ara et al. noted that only 20% of women undergoing EOH were booked, with the majority being referred in critical conditions from other facilities.¹⁰ Chaudhary et al., reported that 62.5% of women undergoing PRH were unbooked, indicating no or minimal antenatal care.^[13]

In this study, Women under 30 years accounted for 13 out of 22 cases. Women above 30 years constituted 8 cases. This indicates a higher prevalence of EPH in younger women, though older age remains a significant risk factor. Among the 22 cases, 19 had a history of prior LSCS, with 10 cases in 2023, 6 in 2022, and 3 in 2021. Wani et al. identified high parity, advanced maternal age, and prior cesarean sections as significant risk factors for EPH. The relative risk for EPH was 27 times higher in CS deliveries compared to vaginal deliveries.^[7] Rawashdeh et al. identified placenta previa with a previous cesarean section as the strongest risk factor for abnormally adherent placenta ($P=0.001$, OR 16.25). Other risk factors included advanced maternal age (≥ 35 years) and a history of uterine evacuation ($P=0.04$). Grand multiparity and preterm delivery were not significant risk factors.⁸ Kazi et al. identified uterine atony (31.3%) and morbidly adherent placenta (28.1%) as the most common indications for EOH. They also noted delayed referrals and untrained birth attendants in rural areas as contributing risk factors.⁹ Ara et al. identified the

following risk factors for EOH: For uterine atony: labor induction outside the hospital, injudicious use of oxytocin, placental abruption, chorioamnionitis, twin delivery, and uterine inversion. For ruptured uterus: scarred uterus, obstructed labor, instrumental delivery, and manual placental removal. For morbidly adherent placenta: prior cesarean deliveries and placenta previa.^[10] Machado identified risk factors for EPH included previous cesarean sections, multiparity, uterine atony, placenta previa, placenta accreta, uterine rupture, and advancing maternal age.^[11] In Qatawneh et al., Identified risk factors included advanced maternal age, multiparity, previous cesarean sections, and uterine scarring from other surgical procedures.^[12] In Tahmina et al., Key risk factors identified included previous cesarean delivery, multiparity, and uterine atony. Other associated risks were traumatic postpartum hemorrhage and abnormal placentation (e.g., placenta accreta, increta, percreta) ¹ In Chaudhary et al., Key risk factors included previous cesarean delivery, placenta previa major (62.5%), and multiparity.^[13]

In this study, Morbidly Adherent Placenta was the most common indication for EPH, accounting for 15 out of 22 cases (68%). A total of 3 cases (14%) were attributed to placenta previa without adherence. Uterine atony accounted for 3 cases (14%). Wani et al. found that abnormal placentation was the leading indication for EPH, accounting for 77.4% of cases. This included morbidly adherent placenta (54.8%) and placenta previa without adherence (22.6%). Other indications included uterine atony (14.5%) and uterine rupture (8.1%).⁷ The most common indication for EPH was abnormally adherent placenta (44.06%), including placenta accreta (11.86%), increta (22.03%), and percreta (10.16%). Placenta previa was present in 33.89% of cases, often coexisting with abnormal placentation. Uterine atony (11.86%) and uterine rupture (6.77%) were other notable indications.⁸ The main indications for EOH included uterine atony (31.3%), morbidly adherent placenta (28.1%), placenta previa (18.7%), uterine rupture (15.6%), and secondary postpartum hemorrhage (6.2%).⁹ In Ara et al., the main indications for EOH were uterine atony (44.23%), ruptured uterus (28.85%), morbidly adherent placenta (14.74%), and placenta previa (11.53%).^[10] Machado stated that abnormal placentation (placenta previa/accreta) was the leading indication for EPH, accounting for 45–73.3% of cases. Uterine atony was the second most common indication (20.6–43%), followed by uterine rupture (11.4–45.5%).^[11] In Qatawneh et al., primary indications for EPH were related to placental abnormalities, including placenta accreta (43.2%), placenta percreta (27%), placenta previa centralis (10.8%), and placenta increta (8.1%). Placental-related complications accounted for 91.89% of all cases.^[12] In Tahmina et al., most common indication for EPH was uterine atony (58.3%), followed by uterine rupture (16.7%), adherent placenta (16.7%), and secondary postpartum hemorrhage (8.3%).^[13] In

Chaudhary et al., most common indications for PRH were morbidly adherent placenta (62.5%), intractable hemorrhage (22.9%), uterine rupture (14.6%), and uterine sepsis and necrosis (8.3%).^[13]

In this study, most common complications were coagulopathy and significant blood loss. Surgical complications such as bladder injury and the need for ureteric stenting were rare but notable. Wani et al. reported a maternal morbidity rate of 40.3% among EPH cases. Common complications included coagulopathy (19.4%), urinary tract injuries (17.7%), febrile morbidity (12.9%), and wound infections (9.7%). One maternal death (1.6%) occurred, and the average blood transfusion requirement was 8.2 ± 4.6 units.⁷ Rawashdeh et al. reported complications in 42.37% of women. The most frequent complication was urinary bladder injury (27.11%), followed by febrile illness (27.11%) and disseminated intravascular coagulation (16.94%). The mean blood loss was 3438 ± 2342 mL, and the maternal mortality rate was 1.69%.⁸ Kazi et al. reported that complications associated with EPH included disseminated intravascular coagulation (12.5%), urinary bladder injury (3.1%), and repeat laparotomy for hemorrhage control (9.4%). There were three maternal deaths, yielding a case fatality index of 9.3%.⁹ Ara et al. reported complications in 43.59% of cases, including bladder injury (4.49%), wound infections (9.62%), disseminated intravascular coagulation (3.21%), vesicovaginal fistula (1.28%), and prolonged hospital stays (>10 days) in 6.41% of cases. The maternal mortality rate was 6.41%, primarily due to disseminated intravascular coagulation and hypovolemic shock.¹⁰ Machado reported that maternal morbidity associated with EPH ranged from 26.5% to 31.5%. Common complications included febrile morbidity (26.5%), blood transfusion (88%), bladder injuries (8.8%), wound infections, disseminated intravascular coagulation (DIC), and ileus. The maternal mortality rate varied from 0 to 12.5%, with a mean of 4.8%.^[11] Qatawneh et al. reported significant complications associated with EPH, including Bladder injury (21.6%), Disseminated intravascular coagulation (4.05%), Postoperative fever (5.4%), Surgical wound infection (5.4%), Vaginal cuff bleeding (2.7%), Estimated blood loss averaged 2210 ml, with 17.6% of cases exceeding 3000 ml.¹² In Tahmina et al., Reported complications included Febrile morbidity (41.7%), Coagulopathy (41.7%), Bladder injury (8.3%), Acute renal failure (8.3%), Transfusion-Related Acute Lung Injury (TRALI) (16.7%), Maternal mortality (16.7%), All women required ICU admission, with a mean length of stay of 3.32 ± 1.6 days.¹ In Chaudhary et al., complications included Major hemorrhage (85%), Bladder injuries (10.4%), primarily in cases with morbidly adherent placenta, Febrile morbidity (18.7%), Maternal mortality was 4.2%, attributed to coagulopathy and uterine sepsis, Average blood loss was 3.64 ± 1.56

liters, with 97.9% of women requiring ICU admission.^[13]

CONCLUSION

Emergency Peripartum Hysterectomy (EPH) remains a critical, life-saving procedure predominantly associated with significant maternal morbidity. Key findings indicate that the majority of EPH cases occurred in younger women aged 20–29 years, although advanced maternal age (>30 years) continues to be a significant risk factor. Multiparity, a history of previous cesarean sections, and rural residency emerged as notable risk factors. Among the socioeconomic classes, women from lower-income groups (Class 3 and 4) were disproportionately affected, underscoring the need for equitable healthcare access. The most common indication for EPH was morbidly adherent placenta, accounting for 68% of cases, followed by placenta previa without adherence and uterine atony. Despite the severity of these cases, effective clinical management was reflected in the absence of maternal mortality during the study period. However, complications such as coagulopathy, significant blood loss (average 1,603 mL), and the occasional need for additional procedures like ureteric stenting underline the procedure's challenges.

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