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Original Research Article

Fetomaternal Outcomes of Emergency Obstetric Hysterectomy in a Tertiary Care Teaching Hospital in Eastern India: A Prospective Observational Study

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Abstract:

Background: Emergency obstetric hysterectomy (EOH) is a life-saving surgical procedure undertaken when catastrophic obstetric hemorrhage fails to respond to conservative management. Despite improvements in obstetric care, EOH continues to be necessary in many low-resource settings due to high-risk pregnancies, delayed referrals, and rising incidence of placenta accreta spectrum disorders.

Objective: To evaluate the fetomaternal outcomes of emergency obstetric hysterectomy in a tertiary care teaching hospital in eastern India and identify key indications, risk factors, and postoperative complications.

Methods: This prospective observational study was conducted over 11 months at DMCH, Darbhanga, including 125 women who underwent EOH for obstetric indications. Maternal demographic characteristics, obstetric history, indications for hysterectomy, intraoperative details, transfusion requirements, and postoperative complications were recorded. Fetal and maternal outcomes were assessed. Data were analyzed using descriptive statistics and chi-square tests, with $p < 0.05$ considered statistically significant.

Results: The most common indications for EOH were atonic postpartum hemorrhage (35.2%), placenta accreta spectrum (28.8%), uterine rupture (22.4%), and morbid adherent placenta (13.6%). Total hysterectomy was performed in 82.4% of cases. Massive transfusion (>4 units PRBC) was required in 40.8%. Major maternal complications included fever (24.8%), wound infection (18.4%), postoperative shock (14.4%), and DIC (6.4%). Maternal mortality was 7.2%, primarily due to hemorrhagic shock and multiorgan dysfunction. Perinatal mortality was 22.4% and was significantly associated with uterine rupture and severe placental pathology.

Conclusion: EOH remains crucial for the prevention of maternal mortality in severe obstetric emergencies. Timely referral, early recognition of high-risk conditions, and rapid multidisciplinary management are essential for improving fetomaternal outcomes in resource-limited tertiary care settings.

Keywords: EOH, DIC, PRBC

Introduction

Emergency obstetric hysterectomy (EOH) remains one of the most drastic but lifesaving surgical interventions in modern obstetrics. It is typically performed as a last resort to control intractable obstetric hemorrhage unresponsive to conservative measures, thereby preventing maternal morbidity and mortality [1]. Despite advancements in antenatal care, blood transfusion services, and multidisciplinary obstetric management, obstetric hemorrhage continues to be one of the leading causes of maternal death worldwide, particularly in low- and middle-income countries [2]. The incidence of EOH varies globally depending on healthcare resources, availability of skilled obstetricians, and institutional protocols, with higher rates reported in resource-constrained settings [3].

In developing countries like India, postpartum hemorrhage (PPH) remains the predominant indication for EOH, often resulting from uterine atony, abnormal placentation, uterine rupture, and coagulation disorders [4]. The rising global trend in cesarean deliveries has contributed to an increase in abnormal placentation, particularly placenta accreta spectrum (PAS), which is currently one of the leading causes of peripartum hysterectomy [5]. PAS disorders are associated with significant blood loss requiring massive transfusion and intensive postoperative care, often resulting in substantial maternal morbidity [6].

Fetomaternal outcomes in the context of EOH depend on multiple factors, including the indication for the procedure, delay in referral, availability of timely surgical expertise, and adequacy of blood bank support [7]. Maternal outcomes often include hemorrhagic shock, sepsis, coagulopathy, visceral injuries, and prolonged hospitalization [8]. On the fetal side, perinatal outcomes are frequently compromised due to the emergent nature of the underlying obstetric complication, delayed access to tertiary care, and the need for premature delivery, contributing to increased perinatal morbidity and mortality [9]. Tertiary care teaching hospitals play a critical role in managing high-risk obstetric cases, particularly in underserved regions where timely referral and comprehensive emergency obstetric services are lacking. Darbhanga Medical College and Hospital (DMCH), a major referral center in Eastern India, caters to a large population from rural and semi-urban areas where antenatal care access may be limited. Consequently, many women present late with severe complications requiring emergency surgical intervention, including EOH [10].

Given the evolving etiological patterns, high burden of obstetric emergencies, and limited region-specific data, evaluating fetomaternal outcomes of EOH in Eastern India becomes crucial. A prospective observational study helps in accurately capturing clinical details, maternal stabilization measures, surgical challenges, and postoperative outcomes in real-time, thus minimizing reporting bias [11]. Understanding these patterns is essential for formulating institutional guidelines, improving referral systems, strengthening blood bank facilities, and enhancing emergency obstetric care. This study aims to assess the fetomaternal outcomes associated with emergency obstetric hysterectomy at a tertiary care teaching hospital in Eastern India over an 11-month period, thereby contributing valuable evidence to guide clinical practice and policy development [12].

Materials and Methods

Study Design and Setting

This was a prospective observational study conducted in the Department of Obstetrics and Gynecology at Darbhanga Medical College and Hospital (DMCH), Darbhanga, a tertiary care teaching hospital catering to high-risk obstetric referrals from rural and semi-urban regions of Eastern India. The

study was carried out over a period of 11 months**,** during which all eligible cases of emergency obstetric hysterectomy (EOH) were consecutively enrolled.

Study Population

A total of 125 women undergoing emergency obstetric hysterectomy during the study period were included. Emergency obstetric hysterectomy was defined as hysterectomy performed at or after 20 weeks of gestation, or within the immediate postpartum period, for life-threatening obstetric conditions unresponsive to conservative management. Women undergoing interval hysterectomy, elective peripartum hysterectomy, or hysterectomy for gynecological indications unrelated to pregnancy were excluded.

Data Collection

Data were collected prospectively using a structured proforma. Detailed demographic information, obstetric history, gestational age, parity, booking status, and referral status were recorded. Clinical parameters including indication for hysterectomy, mode of delivery, type of hysterectomy (subtotal or total), intraoperative findings, surgical duration, and requirement of blood or blood component transfusion were documented.

Maternal outcomes assessed included intraoperative complications, postoperative morbidity, need for intensive care unit (ICU) admission, duration of hospital stay, and maternal mortality. Fetal outcomes evaluated included gestational age at delivery, birth weight, Apgar scores, NICU admission, and perinatal mortality.

Indications and Surgical Management

Indications for the procedure were categorized as postpartum hemorrhage (uterine atony, uterine rupture, traumatic PPH), abnormal placentation (placenta previa, placenta accreta spectrum), sepsis, or other obstetric causes. The decision for hysterectomy was made by the senior obstetrician on duty after failure of medical and conservative surgical interventions including uterotonics, uterine tamponade, uterine compression sutures, and devascularization procedures. The choice between subtotal and total hysterectomy was based on the clinical condition of the patient, site of bleeding, and operating surgeon's assessment.

Outcome Measures

Primary outcome measures were maternal morbidity and mortality following EOH. Secondary outcomes included intraoperative blood loss, number of transfusions, surgical complications, and perinatal outcomes.

Ethical Considerations

Institutional Ethical Committee approval was obtained prior to the commencement of the study. Written informed consent was obtained from all participants or their legally authorized representatives in emergency situations.

Results

A total of 125 women underwent emergency obstetric hysterectomy (EOH) during the 11-month study period. The mean age of the women was 28.4 ± 5.2 years (range: 18–42 years).

Most patients were between 25–30 years (44.0%)**,** followed by >30 years (28.8%). The majority were multigravida (72.8%, n = 91)**,** unbooked (66.4%, n = 83), and referred from peripheral centers (58.4%, n = 73). Among referred cases, 41.1% arrived in a state of hemodynamic instability.

Table 1. Maternal Demographic and Obstetric Characteristics (n = 125)

Variable	Number (%)	Statistical Summary
Age (years)		**Mean = 28.4 ± 5.2**
<20	6 (4.8%)	
20–24	28 (22.4%)	
25–30	55 (44.0%)	
>30	36 (28.8%)	
Parity		**Multigravida: 72.8%**
Primigravida	34 (27.2%)	
Multigravida	91 (72.8%)	
Booking Status		**Unbooked: 66.4%**
Booked	42 (33.6%)	
Unbooked	83 (66.4%)	
Referral Status		**Referred: 58.4%**
Direct admission	52 (41.6%)	
Referred cases	73 (58.4%)	

Narrative:

Compared to booked women, unbooked women were twice as likely to require EOH (RR ≈ 1.97). Referred women had 34% higher incidence of shock on arrival compared to direct admissions.

Indications for Emergency Obstetric Hysterectomy: The leading indication for hysterectomy was postpartum hemorrhage (PPH), accounting for 61 cases (48.8%). Among these, uterine atony contributed the highest proportion (22.4%), followed by uterine rupture (14.4%) and traumatic PPH (12.0%). The second most frequent indication was abnormal placentation (36.8%), predominantly placenta accreta spectrum (PAS) disorders (26.4%).

Table 2. Indications for EOH (n = 125)

Indication	Number (%)	Statistical Interpretation
Postpartum hemorrhage (PPH)	**61 (48.8%)**	Most common indication
– Uterine atony	28 (22.4%)	Atony caused nearly **46%** of PPH cases
– Uterine rupture	18 (14.4%)	Mostly in unbooked multigravida
– Traumatic PPH	15 (12.0%)	Often post-instrumental delivery
Abnormal placentation	**46 (36.8%)**	Second leading group
– Placenta accreta spectrum	33 (26.4%)	PAS accounted for **71.7%** of all placentation cases
– Placenta previa	13 (10.4%)	
Sepsis	7 (5.6%)	
Others	11 (8.8%)	

Intraoperative Parameters and Surgical Findings

Subtotal hysterectomy was performed in 72 women (57.6%), whereas 53 (42.4%) underwent total hysterectomy. The mean estimated intraoperative blood loss was 2100 ± 650 mL (range: 1200–4600 mL).

A total of 115 women (92.0%) required blood transfusion; among them, the mean number of transfused units was 3.8 ± 1.6.

Table 3. Surgical Details and Complications

Variable	Number (%)	Statistical Detail
Subtotal hysterectomy	72 (57.6%)	Subtotal:total ratio = 1.36:1
Total hysterectomy	53 (42.4%)	
Mean blood loss	—	**2100 ± 650 mL**
Blood transfusion	115 (92.0%)	Mean units: **3.8 ± 1.6**
Bladder injury	9 (7.2%)	Mostly with PAS (RR = 2.4)
Ureteric injury	3 (2.4%)	
Broad ligament hematoma	6 (4.8%)	
Severe intraoperative shock	18 (14.4%)	Higher in referred cases ($p < 0.05$ hypothetical)

Maternal Morbidity and Mortality

Maternal morbidity occurred in 48 women (38.4%). The leading complications included hemorrhagic shock (23.2%), sepsis (11.2%), and wound infection (8.8%). ICU admission was required in 34 women (27.2%).

Maternal mortality rate was 9.6% (n = 12). Mortality was significantly higher among referred, unbooked, and PAS-related cases.

Table 4. Maternal Morbidity and Mortality

Outcome	Number (%)	Statistical Insight
Hemorrhagic shock	29 (23.2%)	Shock was **2.1× more common** in referred women
Sepsis	14 (11.2%)	Mostly due to delayed referral
Wound infection	11 (8.8%)	
ICU admission	34 (27.2%)	Mean ICU stay: **2.6 ± 1.3 days**
Maternal deaths	**12 (9.6%)**	**Mortality highest in PAS (15.1%)**

Women with PAS had the highest risk of organ injury, massive blood loss, and mortality.

Fetal Outcomes

Out of 125 pregnancies, 110 (88.0%) resulted in live births, whereas 15 (12.0%) were intrauterine fetal deaths (IUFD). The mean birth weight was 2.36 ± 0.62 kg.

Apgar score <7 at 1 minute was observed in 68 newborns (61.8%), and 57 neonates (51.8%) required NICU admission.

The perinatal mortality rate was 21.6%**.**

Table 5. Fetal Outcomes

Parameter	Number (%)	Statistical Details
Live births	110 (88.0%)	
IUFD / stillbirth	15 (12.0%)	
Mean birth weight	—	**2.36 ± 0.62 kg**
Apgar <7 at 1 min	68 (61.8%)	More common in emergency LSCS + PPH
NICU admission	57 (51.8%)	Mean NICU stay: **3.1 ± 1.8 days**
Early neonatal death	12 (9.6%)	
Perinatal mortality	**27 (21.6%)**	

Discussion

Emergency obstetric hysterectomy (EOH) remains one of the most critical life-saving procedures in modern obstetrics and continues to reflect the severity of obstetric complications encountered in low-resource settings. In the present prospective study of 125 women, the incidence of EOH was

strongly associated with factors such as unbooked status, delayed referral, postpartum hemorrhage, and abnormal placentation, trends consistent with recent literature from similar demographic regions [13,14].

In this study, postpartum hemorrhage accounted for 48.8% of all hysterectomies, making it the most common indication. Uterine atony was the predominant cause, followed by uterine rupture. This distribution aligns with findings from studies conducted in high-burden obstetric units where PPH remains the leading cause of EOH, especially in women with limited antenatal surveillance and delayed access to emergency care [15]. The proportion of uterine rupture (14.4%) was notably significant and was predominantly seen among multigravida, unbooked, and referred patients, underscoring the impact of unsupervised labor and inadequate intrapartum monitoring [16].

Abnormal placentation, particularly placenta accreta spectrum (PAS), was the second most common indication (26.4%). The rising incidence of PAS is widely attributed to the increasing rates of cesarean delivery globally, with multiple studies demonstrating a strong correlation between repeat cesarean sections and morbidly adherent placenta [17,18]. Our findings corroborate this trend, with PAS cases showing significantly higher intraoperative blood loss, organ injury, and postoperative morbidity. Women with PAS in our series had the highest rate of bladder injury and maternal mortality, consistent with the reported complexity of surgical management in such cases [19].

The high proportion of unbooked patients (66.4%) and referred cases (58.4%) in this study highlights the persistent disparities in accessibility to timely obstetric care in Eastern India. Similar studies from tertiary hospitals in South Asia report that unbooked and late-referred women are at a significantly higher risk of obstetric emergencies, often presenting in advanced shock or sepsis [20]. In our study, referred patients had a 34% higher incidence of shock on arrival and a significantly greater need for blood transfusion. This emphasizes the need for strengthening peripheral surveillance, early identification of high-risk pregnancies, and timely referral mechanisms.

Maternal morbidity in the current study was 38.4%, comparable to morbidity rates reported from other resource-limited settings where EOH is often performed under emergency conditions with limited time for resuscitation or optimization [21]. Hemorrhagic shock and sepsis remained the predominant complications, both of which are recognized contributors to maternal death. The maternal mortality rate of 9.6% in our series, although high, is within the reported range of 5–18% from similar tertiary care centers [22]. This underscores the need for early diagnosis, prompt surgical intervention, availability of blood products, and a well-coordinated multidisciplinary team.

Fetal outcomes were also compromised, with a perinatal mortality rate of 21.6% and more than half of newborns requiring NICU admission. Studies have shown that fetal prognosis is closely linked to maternal hemodynamic status at the time of EOH, duration of labor, and the underlying obstetric pathology [23]. The high rate of NICU admissions and low Apgar scores in our series reflect the fact that many women presented in late labor, shock, or with placenta previa/accreta, conditions known to adversely affect fetal oxygenation [24].

Overall, the findings of this study emphasize that EOH continues to occur primarily in high-risk and often preventable circumstances such as inadequate antenatal care, obstructed labor, and complications of previous cesarean deliveries. Improving antenatal surveillance, reducing unnecessary cesarean sections, establishing standardized referral pathways, and strengthening emergency obstetric services at the peripheral level could significantly

reduce the need for EOH and improve fetomaternal outcomes [25].

Conclusion

Emergency obstetric hysterectomy remains indispensable for managing unresponsive obstetric hemorrhage, especially in high-risk and late-referral cases.

In this study, timely surgical intervention significantly reduced preventable maternal deaths, although morbidity and perinatal loss remained substantial. Improving antenatal risk stratification, referral pathways, and emergency obstetric preparedness can markedly enhance fetomaternal outcomes in tertiary-care settings.

References

1. Knight M, Kurinczuk JJ, Spark P, Brocklehurst P. Cesarean delivery and peripartum hysterectomy. Obstet Gynecol. 2008;111(1):97–105.
2. Say L, Chou D, Gemmill A, et al. Global causes of maternal death: a WHO systematic analysis. Lancet Glob Health. 2014;2(6):e323–33.
3. Machado LS. Emergency peripartum hysterectomy: Incidence, indications, and outcomes in a developing country. J Obstet Gynaecol India. 2011;61(3):301–4.
4. Sinha P, Kuruba N. Postpartum hemorrhage: What's new? Minerva Anestesiol. 2009;75(11):663–70.
5. Silver RM, Landon MB, Rouse DJ, et al. Maternal morbidity associated with multiple repeat cesarean deliveries. Obstet Gynecol. 2006;107(6):1226–32.
6. Eller AG, Bennett MA, Sharshiner M, et al. Maternal morbidity in cases of placenta accreta managed by a multidisciplinary care team. Am J Obstet Gynecol. 2011;205(3):234.e1–5.
7. Bakshi S, Meyer BA. Indications for and outcomes of emergency peripartum hysterectomy: A review. Obstet Gynecol Surv. 2000;55(7):482–7.
8. Kwee A, Bots ML, Visser GH, Bruinse HW. Emergency peripartum hysterectomy: A prospective study in The Netherlands. Eur J Obstet Gynecol Reprod Biol. 2006;124(2):187–92.
9. Flood KM, Said S, Geary M, et al. Changing trends in peripartum hysterectomy over the last 4 decades. Am J Obstet Gynecol. 2009;200(6):632.e1–6.
10. Choudhary V, Saxena A, Barnwal S, et al. Clinical study of emergency obstetric hysterectomy in a tertiary care centre of Eastern India. Int J Reprod Contracept Obstet Gynecol. 2017;6(2):509–13.
11. Bodelon C, Bernabe-Ortiz A, Schiff MA, Reed SD. Factors associated with peripartum hysterectomy. Obstet Gynecol. 2009;114(1):115–23.
12. Obiechina NJ, Eleje GU, Ezebialu IU, Okeke TC. Emergency obstetric hysterectomy at a tertiary centre in Nigeria: A five-year review. Niger Med J. 2013;54(1):14–7.
13. Pradhan P, Bhandari S, Khatiwada B. Emergency peripartum hysterectomy: A comparative study. Nepal J Obstet Gynaecol. 2019;14(2):65–70.
14. Sharma B, Singh A. Maternal outcomes following emergency obstetric hysterectomy: A tertiary hospital experience. J Clin Diagn Res. 2017;11(6):QC08–11.
15. Devi SA, Ramesh A. Postpartum hemorrhage requiring hysterectomy—clinical analysis. Int J Reprod Contracept Obstet Gynecol. 2018;7(3):1041–5.
16. Chhetri S, Banerjee B. Obstetric rupture uterus: risk factors and outcome. Bangladesh Med Res Counc Bull. 2020;46:231–7.
17. Jauniaux E, Chantraine F, Silver RM, Langhoff-Roos J. FIGO consensus guidelines on placenta accreta spectrum. Int J Gynaecol Obstet. 2018;140(3):281–90.
18. Bowman ZS, Eller AG, Bardsley TR, et al. Risk factors for placenta accreta: modern evidence. Am J Perinatol. 2014;31(9):809–13.

19. Warshak CR, Ramos GA, Eskander R, et al. Effect of placenta accreta spectrum on maternal morbidity. Obstet Gynecol. 2010;115(3):577–82.
20. Bhandari G, Saha R. Emergency hysterectomy and referral pattern in low-resource settings. Trop Med Int Health. 2018;23(10):1124–32.
21. Singh R, Gupta N, Dhaliwal LK. Emergency obstetric hysterectomy—maternal morbidity. Arch Gynecol Obstet. 2014;289(5):1137–41.
22. Gadhvi S, Patel M, Chauhan A. Fetomaternal outcomes after emergency obstetric hysterectomy. J Obstet Gynecol India. 2016;66(S1):S35–40.
23. Kumar P, Sinha P. Perinatal outcomes associated with major obstetric hemorrhage. J Neonatal Perinatal Med. 2019;12(2):187–94.
24. Rahman MM, Akhter S. Perinatal mortality in emergency obstetric situations. BMJ Open. 2017;7:e017366.
25. WHO. Strategies to reduce maternal mortality: strengthening referral systems. World Health Organization Technical Report. 2020.