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Original Research Article

A retrospective analysis of emergency obstetric hysterectomy in a rural tertiary care centre in Northern India: incidence, indications, fetomaternal outcomes and challenges

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ABSTRACT

Background: Emergency obstetric hysterectomy (EOH) is a life-saving procedure performed in cases of uncontrolled obstetric hemorrhage when conservative measures fail. Despite advances in obstetric care, it remains associated with significant maternal and perinatal morbidity. To evaluate the incidence, indications, risk factors and maternal–neonatal outcomes associated with emergency obstetric hysterectomy.

Methods: This retrospective analytical study included all patients undergoing EOH between January 2020 and December 2024 at a tertiary care center. Data were analyzed for demographic variables, indications, surgical details, transfusion requirements, complications and outcomes.

Results: The incidence of EOH was 0.212% (52/24,441 deliveries). Most patients were aged 25–34 years (63.5%) and multiparous (88.5%). The leading indications were uterine rupture (30.8%), atonic postpartum hemorrhage (25%) and placenta accreta spectrum (19.2%). Cesarean hysterectomy constituted 65% of cases. ICU admission was required in 80.76% of patients. Maternal mortality was 11.5%. Neonatal survival rate was 61.5%, with poor outcomes mainly in rupture uterus cases.

Conclusions: EOH remains a critical intervention in obstetric emergencies. Uterine rupture and hemorrhage are still predominant indications in developing settings. Strengthening early referral systems and improving obstetric care can reduce associated morbidity and mortality.

Keywords: Emergency obstetric hysterectomy, Maternal mortality, Postpartum hemorrhage, Placenta accreta spectrum, Uterine rupture

INTRODUCTION

EOH refers to the surgical removal of the uterus during pregnancy or within 42 days of delivery and typically performed as a last resort to control life-threatening hemorrhage.¹ Since its first description by Porro in 1876, it has remained a definitive intervention in obstetrics to control life threatening hemorrhage, when all other

measures fail.² Historically, atonic postpartum hemorrhage was the leading indication for EOH. However, with the availability of uterotonic agents and conservative surgical techniques such as uterine tamponade, B-Lynch sutures and arterial ligation, its incidence has declined in some settings.^{3,4} In developing countries obstetric hemorrhage is one of the most important cause of maternal deaths. Prompt decision making and excellent surgical

expertise are important cornerstone for this life saving procedure. The commonest indications for emergency obstetric hysterectomy in past were uterine rupture and atonic uterus.^{3,14} Conversely, the rising rates of cesarean section have contributed to an increase in placenta previa and placenta accreta spectrum (PAS), particularly in developed countries.⁵

This change in trend is also being seen in developing countries. EOH is associated with substantial morbidity due to increased uterine vascularity and altered pelvic anatomy during pregnancy, predisposing patients to massive hemorrhage and injury to adjacent organs.⁶ The purpose of the study is to analyze the cases of obstetric hysterectomy to evaluate the incidence, indication, maternal risk factors and complications associated with EOH in a rural tertiary care center.

Aim and objectives

Primary objectives

To determine the incidence of EOH, to analyze indications and risk factors, to assess maternal mortality and complications

Secondary objectives

To evaluate blood transfusion requirements, to assess neonatal outcomes.

METHODS

Study design

This was a retrospective analytical study.

Study population

All patients who underwent emergency obstetric hysterectomy following vaginal or cesarean delivery or after medical or surgical abortion, between January 2020 and December 2024 at rural tertiary care center, Uttar Pradesh University of Medical Sciences, Saifai, Etawah, India.

Study duration

The study duration was from January 2020–December 2024.

Sample size

All patients who underwent emergency obstetric hysterectomy between January 2020 and December 2024 and whose data is complete, was included in the study (n=52).

Exclusion criteria

Emergency hysterectomy due to non-obstetric indication or after 42 days of delivery will be excluded from the study and patients who underwent EOH, but their data is incomplete will be excluded from the study.

After ethical clearance from ethical research committee cell, medical records of all patients who had undergone emergency hysterectomy between January 2020 and December 2024 was scrutinized and evaluated. Maternal age, parity, gestational age, indication for hysterectomy, the type of operation performed, mode of delivery and gestational age at delivery, fetal outcome, amount of blood transfused, peri-operative and post-operative complications and condition at discharge was noted and evaluated.

The results obtained were analysed with statistical product and service solutions (SPSS).

RESULTS

Incidence

Incidence of EOH in our study was 0.212% (52 out of 24,441 deliveries in study period). Mean age: 29.88±4.61 years.

The age of the patients ranged from 20 to 40 years, with a mean age of 29.88±4.61 years. The majority of women belonged to the 25–29 years age group (34.6%), followed by the 30–34 years group (28.8%). Women aged ≥40 years constituted only 1.92% of case.

Most patients were multigravida (G2–G3) (50%), while 38.5% were grand multigravida. Primigravida/primipara constituted only 11.5% of cases. The most common indication for obstetric hysterectomy was rupture uterus (30.8%), followed by atonic postpartum hemorrhage (25.0%). Placenta accreta spectrum disorders (accreta/increta/percreta) accounted for 19.2% of cases.

Among the 52 cases, cesarean hysterectomy accounted for a significant 65% cases, while postpartum hysterectomy was performed in 17% of patients. 17% of emergency obstetric hysterectomy was performed due to early pregnancy complications. In two cases, hysterectomy was combined with additional surgical interventions such as bladder repair and internal iliac artery ligation.

Almost every case required PRBC (packed red blood cells) and FFP (fresh frozen plasma). Platelets were used in selected cases with thrombocytopenia or massive hemorrhage. Some patients needed massive transfusion protocols (≥10 units combined), showing the severity of blood loss in these emergencies. Internal iliac artery ligation done in 2 cases (3.84%). Overall mortality rate was 11.5%. Mortality was higher in rupture uterus and severe PPH cases.

Table 1: Age distribution.

Age group (in years)	N	%
<25	6	11.5
25-29	18	34.6
30-34	15	28.8
35-39	12	23.1
>40	1	1.9

Table 2: Parity distribution.

Parity	N	%
Primigravida	6	11.5
Multigravida	26	50
Grand multipara	20	38.5

Table 3: Indications of EOH.

Indication	N	%
Uterine rupture	16	30.8
Atonic PPH	13	25
PAS	10	19.2
Others	12	23.1
APH	1	1.9

Table 4: Type of surgical procedure.

Procedure	N	%
Cesarean hysterectomy	34	65
Postpartum hysterectomy	9	17
Early pregnancy hysterectomy	9	17

Table 5: Blood transfusion.

Blood product	Typical range	Highest recorded
PRBC	1-8 units	8 units
FFP	2-12 units	12 units
Platelets	0-4 units	4 units

Table 6: Fetal outcome.

Outcome	N	%
Livebirth	27	62.8
Stillbirth/IUD	16	37.2

Table 7: Maternal complications.

Complication	N	%
ICU admission	42	80.76
Severe anemia	6	11.5
Bladder injury	5	9.61
Hematoma	5	9.61
Mortality	6	11.5

DISCUSSION

Emergency obstetric hysterectomy remains a critical life-saving procedure, particularly in settings where patients often present late with advanced complications.¹⁵ The present retrospective analytical study provides important insights into the incidence, indications, risk factors and outcomes associated with EOH in a tertiary care setting.

The incidence in the present study (0.212%) is comparable to other developing regions but lower than some African studies, likely reflecting improved use of conservative management techniques prior to hysterectomy.^{7,8} The predominance of women in the 25–34 years age group reflects peak reproductive age, while the high proportion of multiparous women reinforces parity as a significant risk factor. Multiparity contributes to uterine atony and abnormal placentation, increasing the likelihood of EOH.⁵

Uterine rupture emerged as the most common indication in this study, contrasting with developed countries where PAS predominates.⁹ This difference highlights disparities in obstetric care, including delayed referrals and inadequate intrapartum monitoring. However, the rising proportion of PAS cases suggests a transition toward global trends driven by increasing cesarean section rates.^{12,13} The high rate of cesarean hysterectomy (65%) aligns with contemporary literature, indicating that surgical deliveries are a major contributor to EOH.¹⁰ Additionally, early pregnancy complications accounted for a notable proportion, emphasizing that severe hemorrhage is not limited to term gestation.

Massive obstetric hemorrhage remains central to the pathophysiology necessitating EOH, as evidenced by the extensive requirement for blood and blood products in nearly all patients. Massive blood transfusion requirements observed in this study underscore the severity of hemorrhage associated with EOH. Timely availability of blood products is critical, as delayed transfusion has been linked to poor outcomes.⁸ This highlights the critical importance of well-equipped blood banks and rapid transfusion services in reducing maternal morbidity and mortality.⁶

Maternal morbidity was considerable, with a high rate of ICU admissions. Surgical complexity due to altered pelvic anatomy contributes to complications such as bladder injury and hematoma formation.³ The maternal mortality rate (11.5%) remains significant and is largely attributable to delayed presentation and severe anemia. Neonatal outcomes were poor in cases of uterine rupture, with a high stillbirth rate. This reflects the impact of delayed obstetric intervention and fetal compromise prior to maternal deterioration.¹¹ This finding underscores the dual burden of maternal and perinatal morbidity associated with delayed obstetric intervention.

Overall, this study reinforces that while EOH is a life-saving procedure, it is often performed in extreme clinical

scenarios associated with high maternal and perinatal risk. The findings highlight the need for early identification of high-risk pregnancies, strengthening referral systems, improving access to blood transfusion services and promoting institutional deliveries. Furthermore, strategies to reduce primary cesarean section rates and careful monitoring of women with previous cesarean scars may help decrease the incidence of PAS and subsequent EOH.⁵

The limitations of this study include its retrospective design, small sample size and single-center study, which may restrict generalizability. Incomplete documentation and lack of long-term neonatal follow-up further limit the scope of conclusions. Additionally, referral delays and resource constraints inherent to rural healthcare settings may have influenced the incidence and outcomes observed.

CONCLUSION

Emergency obstetric hysterectomy continues to be an essential intervention in obstetric emergencies. In developing settings, uterine rupture and postpartum hemorrhage remain the leading indications. Despite advances, significant maternal and neonatal morbidity persists. Improving antenatal care, reducing unnecessary cesarean sections, strengthening referral systems and ensuring availability of blood transfusion services are key strategies to reduce the burden of EOH.

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