Peripartum Hysterectomy: A life-saving procedure with high maternal risk - A retrospective observational study from a tertiary institute in central India.

Abstract

Background: Peripartum hysterectomy (PH) is among the most challenging and life-saving obstetric procedures, conducted as a last resort in catastrophic obstetric emergencies, primarily involving severe postpartum hemorrhage and placenta accreta spectrum (PAS). With the increasing rates of cesarean sections, the incidence of PAS-related complications and emergency hysterectomy is concurrently rising. It is imperative to assess its burden, indications, and outcomes to enhance obstetric care and inform preventive strategies in resource-constrained settings.

Aim: To evaluate the incidence, clinical presentation, indications, risk factors, maternal and neonatal outcomes, and associated factors among women who underwent peripartum hysterectomy at a tertiary care obstetric centre of central India.

Materials and Methods: A retrospective observational study was conducted that included all women who underwent peripartum hysterectomy at our tertiary care centre between January 2025 and December 2025. Demographic characteristics, obstetric history, indications for hysterectomy, transfusion requirements, intraoperative findings, maternal, and neonatal outcomes were analysed descriptively

Results: Out of 9,857 deliveries, 31 women underwent peripartum hysterectomy, giving an incidence of 3.14 per 1,000 deliveries. Most cases followed cesarean delivery (83.9%). The leading indication was placenta accreta spectrum (64.5%), followed by postpartum haemorrhage (25.8%) and uterine rupture (9.7%). Most women were multiparous (93.5%), and 6.5% were primigravidae. Antenatal presentation was documented in 87.1% of cases, while 12.9% of women required intervention in the postpartum period. All patients required ICU care. Maternal mortality occurred in 22.6%, while 77.4% recovered and were discharged. Perinatal outcomes showed intrauterine fetal demise in 29.0%; among live-borns, 19.3% required NICU admission while the remaining were stable.

Conclusion: Peripartum hysterectomy remains a critical, life-saving intervention predominantly associated with PAS and prior cesarean section. Despite tertiary care support, maternal and neonatal morbidity and mortality remain substantial. Early antenatal risk identification, multidisciplinary planning, adequate blood bank support, and judicious cesarean practices are vital to reduce its incidence and improve outcomes.

Keywords: Peripartum hysterectomy, obstetric hysterectomy, placenta accreta spectrum.

INTRODUCTION

Peripartum Hysterectomy (PH), or Obstetric Hysterectomy (OH), is a relatively uncommon surgery that is conducted in emergencies, typically due to substantial obstetric haemorrhage. [1] Emergency Peripartum hysterectomy (EPH) is defined as the surgical removal of the uterus either at the time of vaginal or caesarean delivery or within 24 hours of delivery.[2] This operation is performed after all other attempts to preserve the mother's life have failed, rendering maternal mortality unavoidable.[3]

According to the World Health Organisation (WHO), PH is classified as a maternal near-miss criterion used to evaluate obstetric outcomes. The worldwide incidence of PH was documented as 0.9 per 1,000 deliveries. Yet, the rates may vary between nations. The incidence of hysterectomy is significantly higher in low- and middle-income regions than in high-income regions: 10.1 per 1000 deliveries in India, compared with 0.2 per 1000 deliveries in Northern European countries.[4]

Postpartum haemorrhage (PPH) is one of the most common indications for hysterectomy in obstetric practice and a leading cause of maternal mortality and severe morbidity.On the other hand, increasing rates of cesarean delivery were associated with a higher incidence of abnormal placental development (placenta accreta, increta, percreta) and subsequent hysterectomy.[4]

In the case of severe haemorrhage and hemodynamic instability, obstetricians often face an ethical quandary, whether to perform a hysterectomy as a life-saving surgery or delay trying to apply other methods. It is well known that a delay in peripartum hysterectomy leads to severe morbidity or maternal death.[4]

Our study aims to analyse the various clinicodemographic profile of patients who underwent PH, intraoperative and postoperative complications, maternal and perinatal outcomes, and any other significant outcomes. The findings will provide valuable evidence to inform health care planning, emergency obstetric care training, and quality improvement initiatives aimed at reducing preventable maternal morbidity and mortality at our institute.

MATERIAL AND METHODS

We conducted a retrospective observational study from January 2025 to December 2025. All patients who underwent PH during the aforementioned period at the Department of Obstetrics and Gynecology, at a tertiary institute in central India, were included.

Cases were identified by reviewing hospital records, including OT records, case sheets, admission registers, and labour ward registers. Every case record was subjected to detailed analysis, with special attentionto indications, demographic details, risk factors, delivery details, indications for EPH, intraoperative complications, transfusion of blood and blood products, and perinatal outcome.

Inclusion criteria

This study included all women who delivered at our institution and underwent EPH secondary to severe obstetric complications or were referred from outside to our institution with severe obstetric complications requiring EPH.

Exclusion Criteria

The hysterectomies performed for gynecological reasons and referral cases of women who underwent PH in another hospital were excluded

RESULTS

During the study period, 9,857 deliveries were conducted at the institute, including 4,953 caesarean sections (50.2%) and 4,904 vaginal deliveries (49.8%). A total of 31 peripartum hysterectomies (PH) were performed, giving an overall incidence of 0.314% (3.14 per 1,000 deliveries). Of these, 25 PH followed caesarean deliveries performed at the study centre (one elective and 24 emergency procedures), four followed vaginal deliveries, and one case was referred after a caesarean section performed elsewhere for uncontrolled postpartum haemorrhage. Excluding the referred case, the incidence of PH was significantly higher following caesarean delivery (0.50%, 5.0 per 1,000 caesarean sections) compared with vaginal delivery (0.08%, 0.8 per 1,000 vaginal births) ($\chi^2 = 14.6$, $p < 0.001$), with a six-fold increased risk associated with caesarean section.

The majority of women undergoing PH were aged 25–29 years (41.9%), were multiparous (93.5%), and were booked elsewhere or referred (93.5%). 51.6% undergoing PH had a previous caesarean section, predominantly with a history of one prior caesarean delivery. Placenta accreta spectrum was the most common indication for PH (64.5%), followed by postpartum haemorrhage (25.8%) and uterine rupture (9.7%); only two cases of PAS were diagnosed antenatally, while the remainder were identified intraoperatively. 100% of patients required a blood transfusion, and the majority also required blood products, including platelets and fresh-frozen plasma.58% patients necessitated 3-4 units of blood to achieve hemodynamic stability. Maternal survival was achieved in 77.4% of cases, while maternal mortality occurred in 22.6%. The primary cause of death was hemorrhagic shock with disseminated intravascular coagulation and multiple organ dysfunction syndrome contributing to mortality. Neonatal outcomes were poor, with 29% intrauterine fetal demise, frequent prematurity and low birth weight, and 27.3% of live-born neonates requiring NICU admission.

Discussion

The incidence of peripartum hysterectomy (PH) in the present study was 3.14 per 1,000 deliveries, which is comparable to rates reported from tertiary referral centres in India but higher than those reported from high-income countries. Tertiary care facilities in central and northern India have described PH rates ranging from approximately 2.7 to 3.5 per 1,000 deliveries.[5,6] Knight et al. highlighted that PH remains a marker of severe maternal morbidity and is

disproportionately concentrated in referral centres managing high-risk pregnancies and obstetric emergencies.[4] The higher incidence observed in the present study likely reflects the tertiary care setting, high referral load, and delayed presentation of complicated obstetric cases.

A statistically significant association was demonstrated between caesarean delivery and PH, with a six-fold increased risk compared with vaginal delivery. Similar findings have been reported by Machado et al, who identified caesarean section as one of the strongest risk factors for emergency peripartum hysterectomy.[7] The relationship between caesarean delivery and severe obstetric morbidity becomes more pronounced with increasing numbers of repeat caesarean sections, as demonstrated by Silver et al., who reported a progressive rise in abnormal placentation and hysterectomy rates with each additional caesarean delivery.[8] In the present study, more than half of the women undergoing PH had a history of previous caesarean section, reinforcing this association.

Placenta accreta spectrum (PAS) was the leading indication for PH (64.5%), representing a clear shift in the etiological profile of obstetric hysterectomy. This finding is consistent with the systematic review and meta-analysis by Jauniaux et al., which documented a global rise in PAS prevalence parallel to increasing caesarean section rates.[9] Indian studies, including those by Kaur and Kaur, similarly report PAS as the predominant indication for PH in recent years, replacing uterine atony and rupture as the most common causes. [10] Despite this, antenatal diagnosis of PAS remains suboptimal in low- and middle-income settings. In the present study, only two cases were diagnosed antenatally, highlighting gaps in risk stratification and imaging protocols. The American College of Obstetricians and Gynaecologists (ACOG) emphasises that antenatal diagnosis and planned delivery in a multidisciplinary setting are critical for improving maternal outcomes in PAS.[11]

Postpartum haemorrhage without accreta accounted for approximately one-quarter of PH cases. Uterine atony was the predominant cause in 87.5%, while traumatic PPH accounted for 12.5%.Placenta previa was present in 55% of patients with PAS. A systemic review and meta-analysis by Jauniaux E et al. also reported a significantly elevated incidence of PAS in women with placenta previa (around 11.1% in previa pregnancies), clearly demonstrating the epidemiological link between these conditions.[12] Although contemporary guidelines advocate stepwise, uterus-preserving interventions for PPH, Sentilhes et al. and Rani and Begum underscore that hysterectomy remains a life-saving procedure when conservative measures fail

or when bleeding is torrential and unresponsive. [13,14] The persistence of PPH as a significant indication for PH in the present study likely reflects late presentation, limited time for escalation, and the severity of haemorrhage at the time of intervention, as 16.1% patients presented in shock at the time of admission, emphasising the importance of timely referral.

Maternal mortality in the present series was 22.6%, which is considerably higher than rates reported from developed countries but comparable to those documented in other low-resource tertiary referral settings in a 7-year retrospective review by Desalegn H et al., which reported a maternal mortality rate of 23.5% among women undergoing peripartum hysterectomy.[15] In our study, out of seven patients who succumbed to mortality, two deaths occurred within 24 hours due to hemorrhagic shock, while five deaths occurred beyond 24 hours of surgery. Wright et al. demonstrated that PH is linked to significant morbidity and mortality, especially when addressed as an emergency in haemodynamically unstable patients.[16] Similarly, Onwudiegwu and Okonofua documented high maternal mortality subsequent to emergency PH in Nigeria, attributing adverse outcomes to delayed referral, massive blood loss, and limited critical care resources.[17] The Global Maternal Near-Miss Network further emphasises that severe maternal morbidity and mortality remain concentrated in settings where access to timely, high-quality obstetric care is uneven.[18]

Neonatal outcomes in the present study were also poor; however, this appeared to be primarily related to the underlying obstetric indications necessitating PH rather than to the procedure itself. The proportion of intrauterine fetal demise, prematurity, and low birth weight was high. These findings are consistent with those of Machado and Kaur et al., who reported adverse perinatal outcomes associated with PH, largely due to placental pathology, preterm delivery, and maternal hemodynamic instability.[7,10]

The outcomes of this study highlight the changing epidemiology of peripartum hysterectomy, with placenta accreta spectrum and caesarean delivery identified as primary factors. Enhancing antenatal identification of placenta accreta spectrum, optimising caesarean section practices, facilitating prompt referrals, and executing multidisciplinary management protocols are critical measures to mitigate maternal and neonatal morbidity and mortality linked to peripartum hysterectomy.

CONCLUSION:

EPH remains a formidable procedure with high maternal (22.6%) and neonatal (29%) mortality. To improve outcomes in 2026, efforts must focus on:

- Rationalising primary Caesarean sections.
- Improving antenatal ultrasound diagnosis of PAS.
- Ensuring rapid access to large volumes of blood and blood products in tertiary units.

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Table 1: Demographic characteristics

S.No.	Variables	Range	Number of Patients(n=31)	Percentage (%)
1	Maternal Age (years)	20-24	04	12.9
		25-29	13	41.9
		30-34	11	35.4
		35-39	02	6.45
		40-44	01	3.2
2	Parity	1	02	6.45
		2	13	41.9
		3	09	29
		4	06	19.3
		5	01	3.2
3	Booking status	Booked locally	02	6.5
		Booked elsewhere/reffered	29	93.5
4.	Previous caesarean section	1 previous LSCS	09	29
		2 previous LSCS	06	19.4

		3 previous LSCS	01	3.2
5.	Gestational age(weeks)	<28 weeks	04	12.9%
		28–31+6 weeks	04	12.9%
		32–33+6 weeks	03	9.7%
		34–36+6 weeks	09	29%
		37–41+6 weeks	05	16.1%
		>42 weeks	01	3.2%

231 Table 2: Intraoperative and postoperative Data

S. No.	Variable	Range	Frequency	Percentage (%)
1.	Mode of Delivery	Caesarean Section	27	87.1
		Vaginal Delivery	04	12.9
2.	PlacentaPrevia	Yes	11	35.4
		No	20	64.5
	Abruption	Yes	02	6.4
		No	29	93.5
	Uterinerupture	Yes	03	9.6
		No	28	90.3
3.	Blood Transfusion (units)	1-2	09	29
		3-4	18	58
		>4	04	12.9
4.	Neonatal outcome	Intrauterine demise	09	29
		Live birth	22	71
		NICU admission	06	19.3
		Mother side	16	51.6
5.	Maternal outcome	Discharge	24	77.4
		Death	07	22.6