



## Emergency Peripartum Hysterectomy: A three-year study from a tertiary care hospital in Chhindwara, Central India

Dr. Jyoti Meravi<sup>1</sup>, Dr. Preeti Baghel<sup>2</sup>, Dr. Manik Sirpurkar<sup>3</sup>, Dr. Kani Mozi<sup>4</sup>, Dr. Dileep Dandotiya<sup>5\*</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>Senior Resident, <sup>3</sup>Professor and Head, <sup>4</sup>Junior Resident, <sup>5</sup>Demonstrator

<sup>1-4</sup>Department of Obstetrics & Gynaecology, <sup>5</sup>Department of Community Medicine  
5CIMS Medical College & Hospital, Chhindwara, MP

**\*Corresponding Author:**

**Dr. Dileep Dandotiya**

Department of Community Medicine, CIMS Medical College & Hospital, Chhindwara, MP- 480001

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### Abstract

**Background:** Emergency Peripartum Hysterectomy (EPH) is associated with significant morbidity and mortality. The objective of this study was to determine the incidence, demographic profile, indications and complications of EPH and to compare the results with other reports in literature.

**Methods:** We conducted a retrospective analysis of all the patients who underwent EPH from January 2018 to December 2021 at CIMS Medical College and associated Hospital Chhindwara. Patients who underwent EPH from 36-week period of gestation to 6 weeks postpartum for obstetric reason were included in the study.

**Result:** There were 23 cases of peripartum hysterectomy (20 caesarean hysterectomy 86%, 3 postpartum hysterectomy 14%), making an incidence of 0.72 per 1000 deliveries. Most common indication for EPH was uterine atony 9/23 (39%), followed by uterine rupture 7/23 (30%) and morbid adherent placenta 3/23(13%). Previous scar (40%) was significantly associated with EPH. Subtotal hysterectomy was done in 91%. The most frequent sequelae were febrile morbidity 25%. Maternal mortality was noted in 13% whereas perinatal mortality was noted in 56%.

**Conclusion:** EPH is a known evil in Obstetrics. Although it curtails the future child bearing potential of the women, in many cases it saves the life of the mother. Its incidence can be reduced by regular antenatal checkups, early detection and timely referral of high-risk patients and updating knowledge and skills of health staff working in peripheral center.

**Keywords:** Emergency Peripartum Hysterectomy (EPH), Maternal mortality, Cesarean section.

### INTRODUCTION

Emergency peripartum hysterectomy by definition is a lifesaving procedure performed following vaginal delivery or caesarean delivery or in the immediate postpartum period in case of intractable obstetrical haemorrhage unresponsive to all other measure <sup>[1]</sup>. Such a haemorrhage may be due to uterine atony, uterine rupture, accidental haemorrhage, abnormal placentation (eg. Placenta previa, accreta, increta or percreta), laceration of uterine vessel, coagulopathy or

sepsis. With the advancement in management of 3<sup>rd</sup> stage of labor by implementation of better drugs such as misoprost and availability of newer modality like uterine artery embolization along with other conservative measures maternal deaths from PPH have reduced markedly. However, reduction in maternal mortality rate is just tip of iceberg and any pregnant woman who undergoes peripartum hysterectomy could have potentially died if timely

proper management had not undertaken. The WHO has thus emphasized this event on the concept of Maternal near miss [2]. Severe PPH continues to be the leading cause of maternal deaths accounting for 27.1% of deaths worldwide [3]. In a meta-analysis incidence of obstetric hysterectomy has been increasing at the rate of 8% annually [4] due to above mentioned causes. It is important to study such events since they provide an insight into the standard of obstetric care provided at grassroot level which can help to reduce maternal morbidity and mortality. Our department, being part of tertiary care institute receives fair numbers of complicated cases from surrounding underdeveloped health centers in emergency. There is sparse data available about this from central India region in scientific literature. This study was hence undertaken to review and critically evaluate and compare the incidence, demographic profile, indications and complications associated with EPH.

**Material and Methods:** This was a retrospective observational study conducted in the Department of obstetrics and gynaecology CIMS Medical College, Chhindwara, MP from January 2018 to December 2021. We included all women who underwent hysterectomy for obstetric indications following vaginal or caesarean delivery or subsequently within

6weeks of postpartum period. Women who delivered before 36weeks of gestation undergoing hysterectomy for indication other than obstetrics or outside stipulated time (6weeks) post-delivery were excluded from the study. After collecting relevant data from the operation theatre records, each patient's case record was scrutinized with regards to incidence, age, gravity, antenatal high-risk factors, indications, hysterectomy types and complications along with the ultimate fetomaternal outcome. The data was assimilated in pre-approval format systematically for every patient for analysis and easy reference. Institution ethical committee approval was obtained for the study.

**Results:** Over 3 years of the study, there were 31,887 numbers of deliveries at CIMS hospital Chhindwara. Out of 31,887 deliveries, 22,751(71.3%) were vaginal deliveries, while 9,136(28.6%) were caesarean deliveries. 23 of them underwent EPH, yielding an incidence of 0.72 per 1000 deliveries. 20 EPH were performed after caesarean section giving an incidence of 2.1 per 1000 deliveries, only 3 EPH were performed after vaginal deliveries, giving an incidence of 0.13 per 1000 deliveries. It suggest that caesarean delivery has an extremely significant association with EPH ( $p < 0.001$ ). The caesarean section rate during the study period was 28% (9136/31,887).

**Table 1: Incidence of EPH following vaginal delivery and caesarean section**

Mode of delivery	Number of patient	EPH	Incidence of EPH
Normal vaginal delivery	22751	3	0.13%
Caesarean section	9136	20	2.1%
Total	31887	23	0.72%

**Table 2: Year wise distribution of no.of cases and incidence of EPH**

Year	No of deliveries	No of EPH cases	Incidence of EPH (per 1000 deliveries)
2018	10539	5	0.47%
2019	11033	8	0.72%
2020	10324	10	0.96%

Table 2 showing there is rise in incidence of EPH with each succeeding years; 0.47%, 0.72% and 0.96% respectively, being highest in year 2020.

**Table 3: Age and gravida distribution of women included in the study**

Parameters		Number(N-23)	Percentage (%)
Age (in years)	<20	1	4.3%
	20-25	9	39.1%
	26-30	8	34.7%
	31-35	4	21.7%
Gravida	Primigravida	4	17.3%
	G2	8	34.7%
	G3	2	8.6%
	G4	6	26%
	G5 or more	3	13%

Age and gravida distribution of study group is showed in above table. Youngest woman who underwent the procedure was 20 years and eldest was 35 years. 73.8% cases were in 20-30years age group. Gravida distribution showed that, 8(34.7%) of patient highest were in 2nd gravida group.

**Table 4: Causes of EPH**

Causes	Number(N-23)	Percentage (%)
<b>PPH(Postpartum haemorrhage)</b>	13	56.5%
Atonic PPH	9	39.1%
Traumatic PPH	2	8.6%
Abruptio placentae	2	8.6%
<b>Rupture uterus</b>	<b>7</b>	<b>30%</b>
Transverse lie with hand prolapse	3	12.8%
Obstructed labour	3	12.8%
Previously caesarean	1	4.2%
<b>Morbid adherent placenta</b>	<b>3</b>	<b>13%</b>
Previous scar with placenta previa	2	8.6%
Previous scar with VBAC with retained placenta	1	4.3%

Table 4 shows causes of EPH. The leading cause of EPH was postpartum haemorrhage 13(56.5%). Among which 9(39.1%) were due to atonic PPH, 2(8.6%) were due to traumatic PPH, 2(8.6%) were due to abruption placenta. The second leading cause was rupture uterus 7(30%), out of which 3(12.8%) were due to rupture in patient of transverse lie with hand prolapse, 3(12.8%) were due to obstructed labour and in 1 case (4.2%) there was rupture

of previous caesarean scar . In our study series, it is noted that rupture uterus occurred mostly in cases with high parity (85%). The third leading cause was morbid adherent placenta 3 (13%), it was seen commonly with previous scar with placenta previa 2(8.6%) and in 1 case (4.3%) there was retained placenta after VBAC.

**Table 5: Maternal complications & Postoperative events**

Complications & Postoperative Events	No. of patient (N -23)	Percentage (%)
Fever	7	25%
Respiratory distress	5	17.8%
Paralytic ileus	4	14.2%
Wound sepsis	4	14.2%
DIC	3	10.7%
Re-laparotomy	2	7.1%
Renal failure	1	3.5%
Psychiatric morbidity	1	3.5%
Bladder injury	1	3.5%
HDU admission	17	73%
Blood transfusion	1-6	3 (average)
Vasopressor use	10	43%

Table 5 shows complications and post-operative events associated with EPH. The most common complication in postoperative period was fever, which was seen in 7(25%) cases and second was respiratory distress seen in 5(17.8%), followed by paralytic ileus 4(14.2%) and wound sepsis 4(14.2). Mainly anaemia, PIH, prolonged labour, multiparity, obstructed labour, multiple blood transfusion probably accounts for these complications. Some patients had other complications, which were DIC in 3(10.7%), relaparotomy in 2 (7.1%) and one (3.5%) case each of renal failure, bladder injury, psychiatric morbidity were also noted. Out of 23 EPH, 17(73%) had HDU admission, 10 (43%) needed vasopressin agent in immediate postoperative period.

Out of 23 EPH, 21 (91.3%) cases had subtotal hysterectomy and in only 2 (8.6%) had total abdominal

hysterectomy done in one each case of central placenta previa and abruptio placentae.

Almost all cases had undergone through one or more conservative measures before taking decisions of peripartum hysterectomy, these were:

- 1) Step wise devascularisation performed in 8 cases (34%),
- 2) B-lynch suture were applied in 6 cases (26%),
- 3) Uterine packing / tamponade was employed in 4 cases (17%),
- 4) Cervical tear stitch was taken in 2 cases.
- 5) Manual removal of placenta was done in one patient with retain placenta.

**Table 6: Fetomaternal outcome**

Outcome		Number (n)	Percentage (%)
Mean hospital stay	<10 days	13	65%
	>10 days	7	35%
Maternal mortality		3	13%
Perinatal mortality		13	56%
• IUFD		10	77%
• Still birth		3	23%
Total		23	100%

Out of 23 EPH, Maximum 13 (65%) patients had less than 10 days hospital stay, 3 (13%) patients died in post-op period reason being haemorrhagic shock, renal failure and DIC secondarily to massive blood loss. Out of all 23 babies' birth, we found 10 live birth following EPH and 13(56%) babies have perinatal mortality, among them 10 were IUFD and 3 were still birth.

**Discussion:** Obstetricians have been performing EPH since the last 100 years. The first successful EPH was performed in 1876 by Eduardo Porro, professor of obstetrics at paria to control haemorrhage and prevent peritonitis<sup>[5]</sup>. Peripartum hysterectomy is the ultimate step in the treatment of life-threatening obstetric haemorrhage which cannot be controlled by conventional methods. The obstetrician is faced with the dilemma of choosing conservative approach vs EPH. Choice should weigh against the women's desire for future fertility with the risk that further delay may endanger the women's life. However, there has been an upsurge in cases of PPH requiring hysterectomy in recent years, primarily due to changed setting in modern obstetric in which PPH presents itself and secondarily rise in trend of caesarean has only giving rise in the complication like abnormal placentation and uterine rupture but also showing increase in the incidence of atonic PPH<sup>[6]</sup>. This is why incidence of EPH has been increasingly in modern obstetric practice even today. Worldwide incidence of EPH is around 1 per 1000 delivery, being higher among low income country<sup>[7]</sup>. Incidence in our study was 0.72 per 1000 delivery. It was similar to study conducted by Hoblidar S et. al and Tahmina S et. al, who had the incidence of EPH to be 0.7 per thousand deliveries<sup>[8,9]</sup>. However the

incidence varies to highest upto 5.4 per 1000 deliveries in a study conducted by Sharma R et. al<sup>[10]</sup>.

In our study, majority of patient who underwent EPH were multigravida and belonged to age group 20-30year (73%), Most of them were referred case (80%) and almost all were operated in emergency conditions. Other risk factor of EPH like previous caesarean section, anaemia, antepartum haemorrhage, current caesarean delivery, abnormal placentation, invasion, prolong labour were similar to literature quoted above. Indication of EPH has changed significantly over time and from one region to another. Tahmina S et. al and Chawla J et. al reported uterine atony to be the most common indication for hysterectomy while in study conducted by Sharma B et Al and Aggarwal S et al abnormal placentation has replaced uterine atony as the most common indication of EPH<sup>[9,11,12,13]</sup>. This change has been attributed to better medical management of PPH with uterotonic agents. But this change is yet to reflect in our study series as uterine atony (39.1%) still being leading cause of EPH followed by uterine rupture and placenta accrete which is similar to study done by Chester et al who reported 41% of emergency hysterectomy were due to uterine atony<sup>[14]</sup>. In our study, EPH was commonly associated with caesarean section (2.1 / 1000) than vaginal deliveries (0.13/1000). Stones et al also showed that EPH was 2-4 time more common following caesarean section than vaginal deliveries<sup>[15]</sup>. In our study, Majority 20/23 (91%) of patients had subtotal hysterectomies and rest had total abdominal hysterectomies similar to study conducted by Najam et al who also found subtotal hysterectomies in maximum number of 79.1% cases<sup>[16]</sup>. Patient who

underwent subtotal hysterectomies were advised regular cervical cancer screening as there is risk of developing cervical stump carcinoma. The decision of performing total or subtotal hysterectomy was influenced with both patient condition and surgeon preference. The most common intraoperative complications in our study was massive haemorrhage with mean intraoperative blood loss of  $3235 \pm 1021$  ml similar to study conducted by Nohira et al, where mean estimated blood loss was  $2,908 \pm 1366$  ml<sup>[17]</sup> and in postoperative period fever was the most frequent complications seen in 25% cases, followed by respiratory distress in (17.8%) cases, wound sepsis found in (14%) and surgical re-exploration in (7.1%) This was similar to the study conducted by Chawla et al where post-op fever was seen in (25%) case, Wound sepsis in (10%) and surgical exploration in (3.6%)<sup>[11]</sup>. In our study DIC developed in 3 cases (10.7%). This complication rate was significantly higher than would be expected and may be due to the emergency nature of the procedure. Both the unplanned aspect and its inherent need of quick action may be the reason of higher levels of complications. In our study, there were 3(13%) maternal deaths and all were due to severity of underlying haemorrhage for which EPH was performed rather than the procedure itself. Many authors reported maternal mortality ranges from 0-19.4% following hysterectomy (Mukherjee et al 0% , delbjani et al 11.11% , Marwaha et al 12.2 % and Nusrat nissar et. al 19 %)<sup>[21,18,19,20]</sup> and this high mortality rate may be due to delay in arrival at the hospital, poverty and ignorance. All these patients were unbooked without antenatal care. We also found high perinatal mortality (56%) in present study. In previous studies, rate of 54% were cited by Mukherjee et. al and much higher rate of 64% were found by Chawla et. al and Abasiattai et al<sup>[21,11,22]</sup>. It may be due to higher number of rupture uterus case for which EPH was done and it has known to have a detrimental effect on perinatal outcome.

**Limitations:** Major limitation of the present study was enrollment of a small number of cases. Many aspects of peripartum hysterectomy could not be commented upon because of inappropriate documentation of information as we analyzed the data retrospectively. Looking at the number of deliveries per annum, number of EPH is insignificant but we need more study for still more time to enhance size of sample to come on conclusion about concrete recommendation.

**Conclusion:** From this study we found uterine atony and uterine rupture are still the two leading cause for EPH, indicating need for improvement in obstetric care in periphery from where maximum patients requiring EPH are being referred, Further we are heading towards rising trend of cesarean delivery in our institute, the incidence of morbidly adherent placenta and the requirement for EPH is possibly going to increase in future years. So, one should be careful in selecting patient for cesarean delivery to avoid this. Thus there is a need for institute to take strict measures to reduce cesarean section rate by encouraging vaginal birth after cesarean delivery and discouraging caesarean section at maternal request and organizing regular cesarean section audit at hospital level to prevent EPH in future. Updating knowledge and skill of health staff working in peripheral center and strengthening of center at infrastructure level also required to reduce incidence. So there is need for EPH registry at all levels to have proper follow up of these cases and know long term sequelae of the procedure itself. This will help in proper planning and improvisation of quality of health services at national level. By reducing the need of EPH in obstetric, we thereby have to go a long way in improving maternal health by improving our peripheral health system.

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