ORIGINAL ARTICLE

# Emergency Peripartum Hysterectomy in Pakistan Railway Teaching Hospital Rawalpindi: Eleven Years Review

Saadia Sultana, Muhammad Nadim Akbar Khan, Shamsunnisa Sadia, Noor Mah khan, Fareesa Waqar, Azra Saeed, Umber Jalil

ABSTRACT

**Background:** Emergency Peripartum Hysterectomy (EPH) is a major surgical procedure. There appears to be a rise in the rate of emergency peripartum hysterectomy (EPH) in the developed world. Peripartum hysterectomy is high risk but a life saving operation. It is usually associated with significant maternal and fetal morbidity and mortality. Obstetricians should identify patients at risk and anticipate the complications, as early intervention and proper management results in optimal outcome.

**Objective:** To determine the incidence, indications, risk factors, complications and management of EPH over the last eleven years.

**Study Design:** A descriptive study.

**Place and Duration of Study**: All cases of EPH performed in the period between January 2001 and December 2011 were included in the study. Study was conducted at Railway Teaching Hospital, Rawalpindi (in northern Pakistan).

**Materials and Methods:** Data of all the cases of EPH cases operated during the study period was collected from the hospital obstetric record. Data of basic demographics, mode of delivery, maternal and fetal outcome along with associated complications was collected and entered into the Statistical Package for Social Sciences version 14.0 (SPSS Inc., Chicago, IL, USA) for further analysis. Indications, pre-op planning, type of operation, emergency decision, blood loss, transfusion, complications, were compared and cross-tabulated. Statistical analysis included: Chi-square and Fisher exact tests, where appropriate, and two-sample t test.

**Results:** Total deliveries were 13560 in 11 years. Twenty Six EPH cases were performed among deliveries, giving an incidence of 1.8 per 1000 deliveries i.e. one in 566 deliveries. The indications were uterine atony (34.61%), ruptured uterus (23.07%) and cervical/vaginal tears (11.53%), placenta praevia (11.53%), invasive placental adhesion [accreta, increta, percreta (11.53%)]. A significant association between previous uterine surgery and abnormal placentation was shown (p=0.02), especially those with previous caesarean (p=0.003). One maternal and six perinatal mortalities were recorded. Four perinatal deaths were of non booked patients, handled by traditional birth attendants/private clinics. Out of two perinatal deaths of booked patients, one was pre-term and other was delivered by forceps. Maternal morbidity was prevalent, including twenty three intensive care admissions, three disseminated intravascular coagulopathies, three bladder injuries, three re-explorations, multiple blood, FFPs & platelet transfusions, two pulmonary embolism & one cardio- respiratory failure. Maternal death was of non booked patient with previous scar, home delivery, uterine rupture and brought to hospital with un-recordable BP and very weak pulse.

**Conclusions:** Incidence of peri-partum hysterectomy is increasing. It is a major operation, and almost always an emergency with significant blood loss. An early decision should be made to save life of the patient and prevent complications. The most important risk factor for peripartum hysterectomy in our patients is hemorrhage, most notably caused by uterine atony, uterine rupture, placenta previa and abnormally adherent placenta.

**Keywords:** *Peripartum hysterectomy, uterine atony, maternal morbidity, perinatal mortality*

## Introduction

Women are the pillars of social & economic development. Their health & well being is vital for future generations. An estimated 3,58000 maternal deaths occurred worldwide in 2008. (WHO, UNICEF, UNFPA and the World Bank: 2010. Trends in Maternal Mortality: 1990 to 2008). Approximately one-half of these deaths are preventable.

Peripartum hysterectomy is removal of pregnant uterus after 20 weeks gestation at or near time of delivery (performed within 24 hours of a delivery) but within the first 6 weeks postpartum. It is a technically difficult but life saving procedure especially

**Correspondence:**
Dr. Saadia Sultana
Associate Prof. Obs/ Gynae
Pakistan Railway Hospital, IIMC-T, Rawalpindi
E-mail: mushpk99@yahoo.com

when performed as an emergency. Its complications are 4 times than those of an elective procedure. Intraoperative and postoperative complications are much more than that of gynecological hysterectomy. Its Mortality is 5 times greater than an elective procedure.

Life-threatening haemorrhage resulting from uterine rupture and atony has become rare events in the developed world. But it is still a major problem in obstetric care in developing countries[1]. Peripartum hysterectomy may be performed in emergency as a last resort to save the life of a woman with persistent bleeding or as planned procedure, often in conjunction with cesarean delivery. It is performed in 0.05 to 0.1 percent of deliveries.

It is one of the life saving surgical procedures performed at the Department of Obstetrics and Gynaecology of the Railway Teaching Hospital. Moreover, it is considered one of the most serious complications in obstetrics with adverse outcomes for women.[2]

The main complications related to emergency peripartum hysterectomy include Disseminated Intravascular Coagulation (DIC), transfusions[3], need for re-laparotomy because of persistent bleeding, febrile morbidity, major surgical complications or maternal death.[4]

Many studies have estimated an incidence rate of 0.8 and 1.5 per 1,000 deliveries in United States.[5] Incidence is higher in developing countries due to decrease compliance of patients and lack of availability and utilization of antenatal care services especially in the rural areas. There also is a rise of EPH in the developing world.[6] Some risk factors for peripartum hysterectomy have been identified, including prior cesarean delivery, mode of delivery or multiple births. A prior cesarean delivery is associated with an increased rate of abnormal placentation, including placenta previa, accreta & increta in subsequent pregnancies.[7]

The purpose of this study was to determine the incidence of peripartum hysterectomy, the indications, risk factors, the perinatal and maternal outcomes and the complications associated with the procedure at the Railway Teaching Hospital, Rawalpindi, Pakistan. This would help highlight the importance of lack of availability and utilization of antenatal services. Identify avoidable factors and the need to organize health care services. It can be a contribution towards improvement of maternal and fetal outcome

## Materials and Methods

Objective of the study was to determine the incidence, indications, maternal characteristics, risk factors, maternal and perinatal outcomes and complications of Emergency Peripartum hysterectomy (EPH) at Railway Teaching Hospital, Rawalpindi. These hysterectomies were performed by consultants with negligible differences in their operating techniques.

This was a descriptive study, carried out at Gyne /Obs department of Pakistran Railway Teaching Hospital, Islamic International medical college, Rawalpindi.from January 01, 2001 to December 31, 2011. Pakistran Railway Teaching Hospital is located at the junction of Rawalpindi & Islamabad (Capital of Pakistan), which are twin cities. A large number of Afghan refugees of different castes and tribes; who migrated to Pakistan got settled in these localities. Our hospital is one of the undergraduate and post graduate teaching hospitals.

Data of all the EPH cases operated were obtained from the hospital obstetric record. Each case record was analyzed in details with special emphasis on maternal characteristics demographic data (age, parity, booked or emergency case etc.), indications for hysterectomy (hysterectomy for any indication during pregnancy, labor

and puerperium has been included), type of operation performed, problems encountered during operation, maternal & peri-natal outcome, morbidity, mortality & causes of maternal morbidity and mortality were studied.

During this period there were 13,560 deliveries, out of which 11,960 were vaginal deliveries and 682 caesarean sections were performed. During the study period, 26 women were noted to have undergone an emergency peripartum hysterectomy, giving an incidence is 1.8 per 1000 deliveries i.e. 1 in 566 deliveries. Data regarding their basic demographics, mode of delivery, maternal and fetal outcome, along with associated complications was then collected and entered into a database developed in Microsoft Access 2000. This was then imported into the Statistical Package for Social Sciences version 17.0 (SPSS Inc., Chicago, IL, USA) for statistical analysis.

## Results

As noted above, 26 women were identified who underwent an emergency peripartum hysterectomy from a total of 13,560 deliveries (Table I). Out of which 11,960 were vaginal deliveries and 682 had caesarean sections. Therefore, the incidence of peripartum hysterectomy is 1.8 per 1000 deliveries i.e. 1 in 566 deliveries. Out of 26 women who underwent emergency peripartum hysterectomy, eighteen cases were non booked (73.1%) & only eight were booked (26.8%). It means that majority of these patients had received no antenatal care prior to their presentation to the hospital. This is really alarming situation. Majority of these patients belonged to very low socio-economic group.

As shown in Table II, only five patients were primi-paras. Most of the patients were having 2-4 children (65%). Grand-multiparas were 21.9%.

As shown in Table III, the main indication for peripartum hysterectomy was severe haemorrhage caused by uterine atony 09 (34.61%). Other indications included ruptured uterus 60 (23.07%); morbidly adherent placenta 03 (11.53%); placenta praevia 03 (11.53%); cervical/vaginal tears 03 (11.53%) and two patients reported with DIC (7.69%).

In our series of patients, the commonest

**Table I: No. of deliveries, caesarean hysterectomy & booking (n=13560)**

| No of deliveries, caesarean hysterectomy & booking | |
|---|---|
| Total deliveries | 13560 |
| Total vaginal deliveries | 11,960 |
| Total Caesarean deliveries | 682 |
| Total EPH | 26 |
| Incidence of EPH | 1.8 per 1000 deliveries |
| Booked | 08/ 26 |
| Non-booked | 18 / 26 |

**Table II: Age distribution of the patients & their percentages( n=26)**

| Age (yrs) | No of patients | Percentage |
|---|---|---|
| 20-25 | 05 | 19.23% |
| 26-30 | 08 | 30.76% |
| 31-35 | 10 | 38.46% |
| 36-42 | 03 | 11.53% |
| Total | 26 | 100% |

**Table III: Outline of indications of EPH (n=26)**

| Indications | No. of patients | Percentage |
|---|---|---|
| Uterine atony | 09 | 34.61 |
| Ruptured uterus | 06 | 23.07 |
| Morbidly adherent placenta | 03 | 11.53 |
| Placenta praevia | 03 | 11.53 |
| Cervical/ vaginal tears | 03 | 11.53 |
| DIC | 02 | 7.69 |
| Total | 26 | 100 |

indication for an EPH was uterine rupture in 6 (23.07%) cases. Two of these cases were due to previous one scar in labour. One each is due to accidental haemorrhage, prolonged labour, instrumental delivery and oxytocin abuse. Some cases appeared to be related to presentation of multipara and grand mutipara to traditional birth attendants (TBAs). Cases of obstructed labor are due to malpresentation and cephalopelvic disproportion neglected by TBAs (or "Dai"). Both the patients of lower segment caesarean section were tried for vaginal birth after caesaren (VBAC) at home by TBAs.

In majority of patients of our study, EPH was performed because of postpartum hemorrhage (PPH) mainly due to uterine atony. Other indications were abruption plcentae with covualaire uterus, and placenta percreta. These findings are very much similar to a study from the province of Sindh, Pakistan, where EPH were mainly performed due to uterine rupture.[8]

There was one (3.84%) maternal death. This patient died due to Cardio-respiratory failure.

Twelve (44%) patients stayed for 12 days or less, 11 (40%) for 13-22 days and 2 stayed for 24-35 days. The hospital stay of these patients ranged from 7 to 35 days, with a mean of 14 days. This represents huge financial burden on the patients and health care system of the country with serious economic and social consequences.

Parity of patients ranged from 0–13. One patient was primigravida, required hysterectomy due to abnormally adherent placenta, Three were requiring EPH due to rupture of a previous caesarean scar; while the rest were multiparas. Sixty nine percent of patients were grand multipara (≡ 5 previous deliveries).

Total abdominal hysterectomy was performed on 17 patients out of 26; nine underwent subtotal hysterectomies. Subtotal hysterectomy is also an acceptable option in technically difficult situations.[9]

Almost all surgeries were performed in emergency (24/26); only 2 were performed as elective procedure. Majority of the complications noted were infections (wound infection, fever and urinary tract infection) followed by complications related to the surgery itself. All patients who underwent EPH received blood transfusion during or in the immediate postoperative period.

There were 8 (30.77%) perinatal deaths noted in this series of patients. Six were

**Table IV: Maternal morbidity and mortality in patients with EPH (n=46)**

| Causes | No. of cases | Percentage |
|---|---|---|
| Febrile morbidity | 13 | 50.00% |
| Wound infection | 09 | 34.61% |
| Septicemia | 03 | 11.54% |
| Paralytic ileus | 01 | 03.84% |
| Urinary tract infection | 05 | 19.23% |
| Bladder injury | 03 | 11.54% |
| Ureteric injury | 01 | 03.84% |
| Vesico-vaginal fistula | 01 | 03.84% |
| Pneumonitis | 01 | 03.84% |
| Thrombo-embolism | 02 | 07.69% |
| DIC | 03 | 11.54% |
| Repeat laparotomy for bleeding | 03 | 11.54% |
| Mortality (cardio-resp failure) | 01 | 03.84% |

**Table V: Fetal and neonatal outcomes (n=26)**

| Neonatal Outcome | No. of cases | Percentage |
|---|---|---|
| Peri-natal deaths | 08 | 30.77% |
| Neonatal sepsis | 15 | 57.69% |
| Anaemia | 11 | 42.31% |
| Neo-natal jaundice | 12 | 46.15% |
| Neonatal hypoxia | 10 | 38.46% |

stillborn, 4 of which were due to a ruptured uterus and 2 were because of abruptio placentae. There were two neonatal deaths due to neonatal sepsis and aspiration pneumonia.

## Discussion

In our study 26 women underwent EPH from a total of 13,560 deliveries. Out of these, 11960 were vaginal deliveries and 682 caesarean sections. Therefore, the incidence of EPH in our hospital is 1.8 per 1000 deliveries i.e. 1 in 566 deliveries. Whereas, in a study conducted in Turkey, 34 cases of EPH were performed over a 10-year period.[10] Similarly, in a study from New York, 48 cases of peripartum hysterectomy were performed over 8-year period; with an incidence of 1.4 per 1000 births.[11]

Compared to a study performed in Australia where only 33 EPH were documented among 33,998 births over a 10-year period, the incidence documented was 0.85 per 1000 births; our rate of EPH is approximately 2-fold higher.[12]

Our study is representing an alarmingly high number of EPH at a tertiary care hospital of a developed city of Pakistan

There is an increasing trend in EPH 1980s to 2013. We have found three studies which reported an increased trend of EPH. An increased incidence of EPH from 1998 to 2003 was also found by Whiteman et al; as reported earlier.

A Danish study reported a statistically significant risk of EPH in 1995-2004.

While Calgary Health region of Canada found no statistically significant difference in incidence rates from 1999-2006. But, the number of EPH was not very sufficient to interpret the results.[13]

Hence, all these rates are not accurate estimates and comparisons could only become significant when the populations would be similar in demographic factors such as age etc, time periods being evaluated are similar and management protocols would be evidence based.

Our results are revealing that the most important cause for EPH is hemorrhage most importantly due to uterine atony, uterine rupture & retained placenta, findings consistent with previous reports.[15]

The causes of EPH noted in our patients are very much different from the developed countries where abnormal placentation resulting in hemorrhage was the most common cause. A study publised by Netherlands, found that the main cause for EPH was placenta accreta (50%). Uterine atony was found in 27% of cases.[16] A Turkish study noted that uterine rupture was the cause in almost 21% of the cases & uterine atony was responsible in 42% of the cases.[17] A study conducted in Saudi Arabia and another of Korea, also revealed that uterine atony is the most common cause. [18]

Despite practicing evidence based medical advances, regular drills and improvement of protocols; hemorrhage continues to be an important contributor to maternal morbidity and mortality. In our study, we tried to explore factors that could be recognized antenatally and could be rectified with in time preventative measure. Abnormal placentation has also been consistently documented in other studies to be associated with previous uterine surgeries.[19]

These life-threatening abnormal placental complications require aggressive blood transfusion, subsequent bleeding complications, hysterectomy, and longer maternal hospital stays.[20]

With advanced radiological facilities, pre-hand diagnosis of abnormal placentation can guide clinicians to plan for delivery with uterotonics, transfusion services, uterine balloon compression devices, interventional radiologists and standby of surgeons.[21]

Involvement of interventional radiologist and invasive treatment must be decided within 30 minutes if other measures have

failed.

Assisted vaginal delivery has also been related to risk of EPH.[22]

A study indicated the association of damage to cervical/ vaginal tissues, resulting in hemorrhage and leading to hysterectomy.[23]

Another important hypothesis is about uterine scarring, especially with cesarean deliveries, also increases the risk of EPH, even without abnormally adherent placenta/ placenta previa.Multiple cesarean sections, as well as VBAC were also found to be associated with EPH.[24]

In our study multiple gestation could not be proved to be significantly associated with EPH, as has been described in some studies. Some reported that multiple gestations had significantly increased risk of EPH e.g. Francois et al. According to these studies, tocolysis require for preterm labour and overdistended uterus by more than one fetus is a major facto towards uterine atony and hemorrhage. However, they failed to adjust the confounding factors such gestational age & mode of delivery etc.[25]

Unfortunately our study has some limitations also. The most significant is that our inferences depend on the hospital records, their accuracy about the diagnoses and management and records or notes on birth certificates and discharge forms. We tried our best to countercheck and recheck the records about diagnosis and management, birth certificates, to reduce biased classification of different risk factors and confounders, as also suggested by some other studies.[26,27]

For example the diagnosis of "retained placenta" limited the options and make it difficult to distinguish between different abnormally adherent placenta e.g. placenta accreta, increta or percreta. Without doing a review of patients' notes, we were unable to determine the indication for EPH, the amount and the type of hemorrhage (antepartum, intrapartum, postpartum).

Lastly, the number of cases for some of the factors that were studied was relatively small.

## Conclusions

Some of the very important inferences are:

- Incidence of EPH is significantly high and the most important indication of EPH is hemorrhage mainly due to uterine atony, uterine rupture, placenta previa & abnormally adherent placenta.
- Important risk factors to be considered are multiparity, previously scarred uterus, non booked patients & deliveries carried out by TBA.
- Significant maternal and perinatal morbidity and mortality is the main outcome of EPH e.g. ICU admissions, arrangement for blood & its components, management of coagulopathies/thromboembolism & injuries of adjacent visceras results in huge psychological & financial burden on the patient, family & society.

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