

Emerging Trends in Peripartum Hysterectomy: A Retrospective Study in a Tertiary Care Center over 2 Years

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ABSTRACT

Introduction: Peripartum hysterectomy (PH) is a lifesaving procedure performed at the time of delivery or in the immediate postpartum period in case of intractable obstetrical hemorrhage unresponsive to other measures. The indication for such procedure is severe uterine hemorrhage that may be due to abnormal placentation, i.e., placenta accreta, uterine atony, uterine rupture, leiomyomas, coagulopathy, or laceration of a uterine vessel not manageable by mere conservative measures.

Materials and methods: This retrospective and analytical study was carried out at the Department of Obstetrics and Gynecology, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar (SGRDIMSR, Amritsar), for a period of 2 years from January 2017 to December 2018. All the patients who underwent PH were reviewed. All concerned factors related to emergency and critical care were analyzed.

Results: Out of under study cases, nine PH were conducted, seven being emergency and two elective for placenta accreta. The incidence being 3.53%, main indications were placenta accrete, $n = 4$ (44.4%); atonic PPH, $n = 3$ (33.3%); rupture uterus, $n = 2$ (22.2%). Out of these, $n = 8$ (88.8%) were referred cases and $n = 1$ (22.2%) were elderly gravida, almost all patients went to intensive care unit (ICU), average ICU stay being 10 days. Massive blood transfusion was done in $n = 3$ (33.3%) patients. Morbidity encountered were sepsis, anemia, bladder injuries and hypertension which were analyzed in this study. There was one mortality of G5P3L3A1 in emergency with placenta covering os in shock with severe anemia where emergency hysterectomy was performed for placenta accreta.

Conclusion: Proper antenatal intrapartum care, early referral, and judicious decision making regarding cesarean section are the potential methods which can be implemented to prevent this catastrophic event. The anticipation of such complication by classifying those patients in the risk group, notifying a multidisciplinary team, and treatment, will greatly improve the final outcome.

Keywords: Intrapartum, Peripartum hysterectomy, Placenta accreta.

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INTRODUCTION

Emergency peripartum hysterectomy (EPH) is the removal of the uterus after 20 weeks of gestation for uncontrolled uterine bleeding not responding to conservative measures at the time of delivery or within 24 hours of delivery. It is the most demanding obstetrical surgery performed in very trying circumstances of life-threatening hemorrhage.¹ It is accompanied by substantial morbidity and mortality and is associated with increased rates of intraoperative and postoperative complications. The mortality of PH is more than 25 times that of hysterectomy performed outside pregnancy.¹

The most common indication for EPH is severe uterine hemorrhage which cannot be controlled by conservative measures.² Such hemorrhage may be due to abnormal placentation (e.g., placenta previa and placenta accreta), uterine atony, uterine rupture, leiomyomas, coagulopathy, or laceration of a uterine vessel that is not treatable by conservative measures.²⁻⁴ The relative frequency of these conditions is variable and is dependent on the patient population and practice patterns.² Hemorrhage continues to be the leading individual cause of maternal death worldwide accounting for 27.1% of deaths as recently as 2014.⁵

Abnormal placentation, morbidly adherent placenta, is increasing as the incidence for PH, it is divided into placenta accreta, placenta increta, and placenta percreta based on the layer involved and each case has its own prognosis and management.

With active management of the third stage of labor, better antibiotics and use of prostaglandins and oxytocics, various surgical methods for compression of the uterus like B Lynch sutures, internal iliac artery ligation, and Cho's sutures, the incidence of obstetric hysterectomy has reduced.

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However, PH remains the last resort in saving maternal life in critical conditions. The factors responsible for a higher incidence of obstetric hysterectomy in the developing countries are poverty, poor transportation facilities, wrong cultural and religious beliefs, high incidence of unbooked pregnancies, and poorly supervised deliveries.⁶ The incidence is increasing in this era not just because of improperly managed third stage of labor or obstructed labor but most likely because of increasing incidence of cesarean sections. This ultimately increases the incidence of placenta previa and accreta. The incidence and prevalence of hysterectomy varies widely across different geographic settings due to variations in uterine pathology, providers and patient factors, and sociocultural reasons.⁷⁻⁹ In literature, EPH varies from 0.3 to 6.2 per 1,000 deliverers.^{10,11} It is associated with significant maternal morbidity and mortality.

MATERIALS AND METHODS

Study Design and Population

It is a retrospective analytic study including all women who had undergone EPH from January 2017 to December 2018, at the Department of Obstetrics and Gynecology, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar. All the women who had EPH were identified from the labor ward.

Ethical Approval

The study protocol was reviewed by the Ethical Committee of the Hospital and was granted ethical clearance.

Methodology

All surgeries were performed by senior consultants. Medical and pathological records of the patients were reviewed retrospectively. Cases were ascertained via a review of the hospital obstetric database and by also checking operation theatre and pathology records. Antenatal women above 28 weeks of gestation were enrolled in the study.

Hysterectomy was performed shortly (within hours) after delivery. Both medical and surgical modalities were used to control the hemorrhage before hysterectomy. Information obtained from the medical records included demographic details, previous obstetric history, details of the current pregnancy and delivery, postpartum hemorrhage, indications for PH, timing of surgery, intraoperative and postoperative vital monitoring, amount of blood transfusion, amount of fluids transfused, ICU stay, need for ventilation, outcomes of hysterectomy of intraoperative and postoperative complications, length of hospital stay, and neonatal outcomes. Intraoperative events like amount of bleeding, condition of previous scar, adhesions, bladder condition, etc. were assessed and compared with other studies. Maternal mortality and complications such as serious hemorrhagic, neurological, urological, infectious, respiratory, renal, and thromboembolic complications were also noted. The type of cesarean classical or lower segment and the type of surgery subtotal and total were also noted.

Statistical Analysis

The recorded data were compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to a data editor page of SPSS version 19 (SPSS Inc., Chicago, Illinois, USA).

Descriptive statistics included computation of percentages. The statistical tests applied for the analysis were Pearson's Chi-square test (χ^2) and Fisher exact test. For both the tests, the confidence interval and the *p* value were set at 95% and ≤ 0.05 , respectively.

Objective

The objectives of this study were to estimate the incidence, indications, risk factors, surgical complications and postoperative complications, and maternal outcome associated with PH in a tertiary referral teaching hospital.

RESULTS

The overall incidence of PH was 3.5 per 1,000 deliveries in this study. Table 1 depicts that 44.4% of cases belong to the age group of >35 years, while 33.3% of cases belong to the age group of 30–35 years, rest 22.2% were of the age group of 25–29 years. The mean age of cases was 28.4 ± 3.8 years. All the cases were multiparous.

Table 2 describes that the majority of cases were referred cases (89%), and maximum cases had more than 2 lower segment cesarean section (LSCS) (55.6%).

Table 3 depicts that 89% of cases were referred to cases in an emergency, while 11% were antenatally prediagnosed as placenta accreta in our ANC clinic and were taken up electively for the surgery. 67% of cases had a history of only previous LSCS (lower segment cesarean section), while 33% of cases had a history previous LSCS as well as dilatation and curettages.

Table 4 shows that main indications for PH in this study were morbidly adherent placenta (44.4%), atonic uterus (33.3%), and rupture uterus (22.2%). Almost 89% of cases required urgent intervention and underwent emergency hysterectomy, while one booked; known case of placenta accreta was taken up electively.

Table 5 depicts that the most common complication leading to morbidity was anemia (33.3%) followed by disseminated intravascular coagulation (DIC) and wound infection (22.2% each), bladder injuries, and relaprotomy (11.2% each).

Table 6 shows that morbidly adherent placenta being the main cause and its other types were studied and about 57.8% cases were placenta accreta, 28.5% were placenta increta, and 14.2% placenta percreta.

Table 1: Age group

Age	Number	Percentage
25–29 years	2	22.2
30–35 years	3	33.3
>35 years	4	44.4
Mean \pm SD		31.22 ± 3.49

Table 2: Booked and previous LSCS status

	Number	Percentage
Booked status		
Booked	1	11.1
Referred	8	88.9
Previous LSCS		
0	2	22.2
1	2	22.2
2	5	55.6
Total	9	100.0

Table 3: Risk factors

	Number	Percentage
Parity		
Multipara	9	100.0
Nullipara	0	0.0
Previous LSCS		
Previous LSCS	6	66.7
Previous abortion/LSCS	3	33.3
Total	9	100.0

Table 4: Indications for EPH

Risk leading surgery	Number	Percentage
Morbidly adherent placenta	4	44.4
Atonic uterus	3	33.3
Rupture uterus	2	22.3
Total	9	100.0

Table 5: Postoperative complications

Morbidity	Number	Percentage
DIC	2	22.2
Anemias	3	33.3
Wound infection	2	22.2
Bladder injuries	1	11.1
Relaprotomy	1	11.1
Total	9	100.0

Table 6: Abnormal placentation

Morbidly adherent placenta	Frequency	Percentage
Placenta accreta	4	57.1
Placenta increta	2	28.5
Placenta percreta	1	14.2
Total	7	100

Table 7: ICU interventions

ICU intervention	No. of cases	Percentage
Mechanical ventilator	5	55.5
Blood products	8	88.9
Inotropes	6	66.6
Dialysis	1	11.1
Massive blood transfusion	3	33.3
Intubation	4	44.4
Central line inserted	6	66.6

Table 8: ICU stay

ICU stay	Frequency	Percentage
<5 days	5	55.5
5–10 days	1	11.1
>10 days	3	33.3
Total	9	100

Table 7 highlights ICU interventions required, all cases required blood transfusion, and massive blood transfusion (BT) was required in 33.3%. Different blood components were transfused and the record was maintained. All the intervention required in ICU were recorded.

Table 8 shows that the ICU stay was required in all the cases, 55.6% stayed for 1–5 days, while 22.2% of cases being critical stayed for >10 days.

DISCUSSION

The incidence of EPH in the present study was 0.35%. This rate is higher to that reported from Columbia¹² (0.08%) and US¹³ (0.06%), while the rate is lower to that reported from Nigeria¹⁴ (0.51%) and China¹⁵ (0.42%). The higher rate of EPH in the present study attributed to the facts that our center is a tertiary referral hospital receiving an unbooked rural referral in very deteriorated and late decompensated condition.

It was observed that the majority of the patients (44.4%) belong to the age group of >35 years, while 33.3% belong to the age group of 30–35 years and rest 22.2% are of the age group of 25–29 years. The mean age was 31.22 ± 3.49 years with a range of 25–40 years. The above results were consistent with Agrawal et al.¹⁶

and Ehtisham et al.,¹⁷ where the mean age in their study was 27.61 years and 31 years, respectively. However, compared to a study in New York by Kastner et al.¹⁸ and Khanum et al.¹⁹ where the mean maternal age was 32.3 years and 35 years, respectively.

A high association of multiparity was also seen in the present study with PHs. The maximum number of patients (82.5%) was multiparous (P2). High parity is associated with an increased risk of ruptured uterus. Similar findings were also reported by Imudia et al.,²⁰ Zelop et al.,²¹ and Chawla et al.²²

The incidence of PH occurring with a history of previous cesarean section has increased significantly over the last few decades. In our study, all 9 (100%) women had a history of previous cesarean section, and, out of these, 77.8% had ≥2 LSCS. These findings were consistent with findings in recent literature, with a history of previous cesarean section ranging from 18.8% to 60.5%.²³ Similarly, Agrawal et al.¹⁶ identified 44.44% of patients in their study who had a history of either one or two previous cesarean sections. Knight et al.²³ also stated that prior cesarean delivery leads to a greater than seven times increase in the odds of having a PH to control hemorrhage. The risk associated with cesarean section extends beyond the initial cesarean delivery into the subsequent deliveries. A prior cesarean delivery results in uterine scarring resulting in an increased risk of abnormal placentation, including placenta previa and placenta accreta in subsequent pregnancies. It also increases the risk for future abdominal deliveries and uterine rupture.

In our study, 67% of cases had a history of only previous LSC, while 33% of cases had a history of previous LSCS as well as curettages. Zahn and Yeomans²⁴ also listed a history of curettage as risk factors associated with placenta accreta. Ananth et al.²⁵ found a strong association between a history of abortion and the subsequent development of placenta previa.

The most common indications of EPH in the present study were morbidly adherent placenta (44.4%) followed by atonic uterus (33.3%) and rupture uterus (22.2%). But a higher rate of EPH for ruptured uterus was reported by Archana et al.²⁶ (75%) and Ohonsi and Olayinka²⁷ (73%). On the contrary, a study from UK²⁸ reported only 8% of EPH for the same indication. Owing to ignorance, illiteracy, unbooked status, and poor socioeconomic status, parturients with high-risk pregnancies get only a formal and improper supervision antepartum specially intrapartum at the periphery and delayed referral results in poor outcome.

The atonic uterus was contributing 33.3% to EPH. Similarly, Chawla et al.²² reported atony (25%) as a leading cause for EPH. Contrary to this, Ohonsi and Olayinka,²⁷ Singh and Nagrath,²⁹ and Nazam et al.³⁰ reported the frequency of 6.7%, 15.6%, and 16.6% for the same, respectively. Better management of the third stage of labor (AMTSL) with strong effective uterotonic drugs available at periphery might be the cause for lesser incidence of the atonic uterus and referrals for the same. Recent advances in medical and conservative surgical measures like efficient uterotonic, compression of the uterus, uterine catheters and stepwise devascularization of the uterus help to save uterus after postpartum hemorrhage. Morbidly adherent placenta was seen in only 22.2%. Chawla et al.²² reported 21% their series. Ohonsi and Olayinka²⁷ observed 13.3% and 6.7% incidences of the same for EPH. This is in contrast to the study of UK²⁷ in which 38% of cases of EPH were for the indication of morbidly adherent placenta. The prominence of this indication for EPH has been reported globally attributed by increasing cesarean rates.

In this study, all the patients required blood transfusion, while massive blood transfusion was required in 33.3% of cases; all the cases went to ICU, while 33.3% of cases required to stay for more than 10 days. All the interventions done in ICU were noted and studied, complications were studied in detail, and both recurrent and residual problems were discussed.

The mortality rate following EPH in various studies conducted worldwide is variable, ranging from 4 to 4.5% to as high as 23.8%.³¹⁻³⁴ In the present study, the most common complication leading to morbidity was anemia (33.3%) followed by DIC and wound infection (22.2% each), bladder injuries, and relaprotomy (11.2% each). This might have occurred mainly because of the need for multiple blood transfusions which may induce sepsis, coagulopathy, inadvertent bladder injury, and acute renal failure.³¹ Bladder injuries occurred mainly due to scarring and adhesions in vesicouterine space that develop following previous cesarean delivery.

CONCLUSION

Our study concluded that the higher incidence of PH is because of the higher prevalence of risk factors like multiparity, previous cesarean section, placenta previa, and current cesarean delivery. Most common indications for PH were abnormal placentation, rupture uterus, and atonic uterus. To overcome these factors, adequately equipped antenatal care, early identification of risk factors, hospital delivery facilities, and timely intervention by an obstetrician to carry out medical/conservative surgical treatments of primary postpartum hemorrhage are needed to reduce the incidence of EPH and morbidity associated with it. The main cause of PH being an increase in the number of primary cesareans; therefore, attempt should be made to reduce the rate of primary C-sections, CDMR should not be encouraged at any cost and patient needs to be counseled about complications and after-effects of it. PH is the most challenging surgery; therefore, multidisciplinary approach is adopted in all the cases for better outcomes. Need for blood transfusion, intensive care, associated risk of trauma to the bladder, and ureter make this one of the markers of severe maternal morbidity and potential near-miss mortality in both developed and developing countries.

This study opens new vista for more detailed analysis and audit, more meticulous training to all faculty member for senior residents level above, more intensive laboring attitude to junior residents to identify the role failure, suspect a problem, complete the checklist for EPH, proper postoperative care, and vigilant ICU management and also to the neonatologist to give care to the survivor baby born after the uterus has been sacrificed.

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