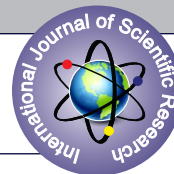


EMERGENCY PERIPARTUM HYSTERECTOMY- A RETROSPECTIVE STUDY IN A TERTIARY HEALTH CARE CENTER



Gynaecology

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ABSTRACT

Introduction: Increase in the incidence of Emergency Peripartum Hysterectomy (EPH) is attributed to the increasing rate of cesarean delivery and its associated complications in subsequent pregnancy. In spite of availability of newer uterotonic drugs and other modalities for prevention and control, atonic PPH remains an important indication for EPH.

Objectives: To determine the incidence, risk factors, indications, outcome and complications of EPH.

Methods: A retrospective study of 26 cases of EPH performed over a period of one year from October 2015 to September 2016 at Civil Hospital, Ahmedabad, Gujarat, India.

Result: There were 26 cases of EPH out of 7844 deliveries showing the incidence of 3.3 per 1000 deliveries, 1.1 per 1000 vaginal deliveries and 8.6 per 1000 CS. Uterine rupture was the most common cause of EPH (34.6%) followed by atonic PPH (30.7%) and morbidly adherent placenta (27%). 77% patients had history of previous one or more cesarean sections. There were 15.4% maternal deaths and 58% babies were still birth due to uterine rupture, placenta previa or prematurity. 27% patients developed postoperative fever.

Conclusion: Primary cesarean section should be avoided as far as possible. Regular antenatal care and timely decision for an elective cesarean section are very important factors in patients with recurrent indications of cesarean to prevent uterine rupture. Patients with placenta previa or adherent placenta should be referred timely to higher center. Decision to perform EPH should be taken timely.

KEYWORDS:

Emergency Peripartum Hysterectomy, Uterine rupture, Morbidly adherent placenta

INTRODUCTION

Emergency Peripartum Hysterectomy (EPH) is a major surgical venture invariably performed in the setting of life threatening hemorrhage during or immediately after abdominal and vaginal deliveries.¹⁻⁵ Despite advances in medical and surgical fields, post partum hemorrhage (PPH) continues to be the leading cause of maternal morbidity and mortality. EPH is the most dramatic operation in modern obstetrics and is generally performed when all conservative measures have failed to achieve haemostasis in the setting of life threatening hemorrhage. The unplanned nature of the surgery and the need for performing it expeditiously, compound matters. Moreover the acute loss of blood renders the patient in a less than ideal condition to undergo emergency surgical intervention. The predominant indications for EPH are uterine rupture, placenta previa/accreta and uterine atony. EPH in some of them is unavoidable. However recognizing and assessing patients at risk and appropriate and timely intervention would go a long way in ensuring a better outcome in this otherwise difficult situation.⁶

Objectives of this retrospective study were to examine the incidence, risk factors, indications, outcome and complications of EPH performed in a tertiary health care center over a period of one year and to compare the results with other reports in the literature. This would help to highlight the lack of availability and utilization of antenatal services, identify avoidable factors and stress the need to organize health care services so as to improve maternal and fetal outcome.

MATERIAL & METHODS

A retrospective study of 26 cases of EPH performed over a period of 1 year from 1st October 2015 to 30th September 2016 at Civil Hospital, Ahmedabad.

EPH was defined as an emergency hysterectomy performed for hemorrhage unresponsive to other therapeutic interventions at the time of laparotomy for uterine rupture, cesarean section (CS), vaginal delivery or within puerperium. Inclusion criteria included all women who delivered in the hospital between October 2015 and September 2016 and who underwent hysterectomy for obstetric indications at the time of delivery or subsequently within the defined period of puerperium (42 days). All women who delivered outside the hospital and were referred for obstetric complications meriting a hysterectomy and fulfilling all the above conditions were also included in the study. Information was collected regarding Booked or Unbooked case, Age, Parity, Mode of Delivery, Indications of Hysterectomy, Operative and post operative complications, Total number of blood components given, Maternal and Perinatal outcome.

Statistical analysis was performed using Microsoft Excel. Graphs and charts were prepared using the same software package.

RESULTS

During the study period (Oct-2015 to Sep-2016), 7844 patients were delivered. 5510 patients were delivered vaginally and 2334 patients by cesarean section. There were 26 cases of EPH showing the incidence of 3.3 per 1000 deliveries. Incidence of EPH following CS was 8.6 per 1000 deliveries (20 cases) and following vaginal delivery was 1.1 per 1000 deliveries (6 cases). This difference is statistically significant using a chi squared test ($\chi^2=27.767$, degree of freedom $df=1$, $P<0.05$).

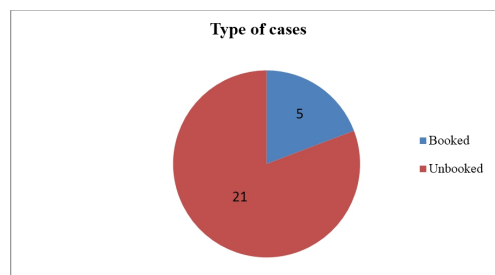


Figure 1: Type of cases

Figure 1 shows the number of booked and unbooked patients. 21 out of 26 cases (80.7%) were unbooked or emergency patients. It indicates that incidence of EPH was higher in unbooked patients. Only 5 cases (19.2%) were booked patients of our institute. Rest all were referrals and directly approached patients. Out of the 21 unbooked cases, 7 patients had not taken antenatal visits at any hospital.

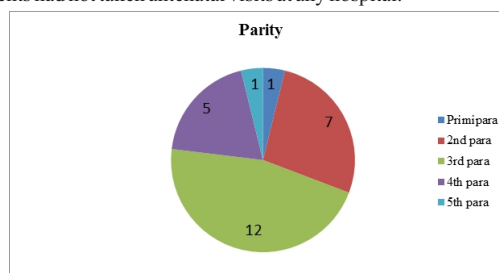


Figure 2: Parity of patients

Figure 2 shows parity of the patients. Only one patient (4%) was primipara. 25 patients (96%) were multipara. Out of them 7 patients were 2nd para, 12 patients were 3rd para, 5 patients were 4th para and 1 patient was 5th para.

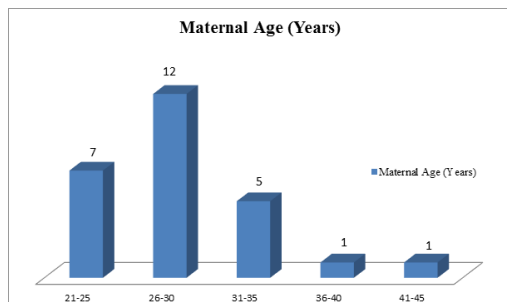


Figure 3: Maternal Age

Figure 3 shows the distribution of cases according to the age group of patients. More common in the age group of 26-30 years (12 patients) followed by 21-25 years age group (7 patients). Commonest cause of EPH in this age group was ruptured uterus. Other causes were placental causes and atonic PPH.

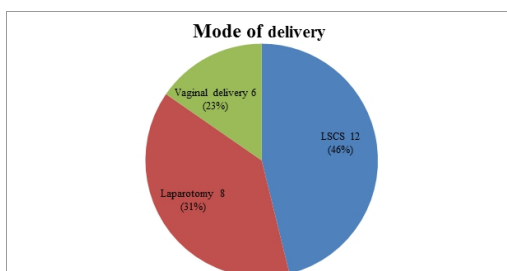


Figure 4: Mode of Delivery

Figure 4 shows the mode of delivery. More common in the patients having cesarean delivery because of associated abnormal placentation and rupture of previous LSCS scar. 20 (77%) hysterectomies were performed after cesarean sections or laparotomies following ruptured uterus and 6 (23%) after vaginal deliveries.

Table 1: Indications of EPH

Indications	Number of cases	Percentage (%)
Uterine rupture	9	34.6
Atonic PPH	8	30.7
Placental causes- Placenta previa and morbidly adherent placenta	7	27
Traumatic PPH	2	7.7

Table 1 shows the indications of EPH. Uterine rupture was the most common cause of EPH in our study, 9 cases (34.5%). Out of them six patients had previous one CS, two had previous two CS and one had previous four CS. One patient was 4th para with previous one CS, delivered vaginally outside and referred with ruptured uterus with acute renal failure. All the 9 patients had intrauterine foetal death.

Uncontrolled atonic postpartum hemorrhage was the other common indication of EPH in 8 cases (30.7%). Out of them, two patients were delivered vaginally at other center, two were delivered at our institute by vaginal delivery and four patients were delivered by LSCS in our institute. Uterotonic drugs and other conservative methods to control atonic PPH were tried including packing, B lynch sutures and bakri balloon. Two patients were expired after EPH which were referred from outside after vaginal deliveries. One patient was 2nd para, PIH, PPH, DIC, HELLP syndrome, HEV (Hepatitis E Virus) positive with severe Anaemia. The cause of maternal death was hepatic encephalopathy, DIC, HELLP, PPH. Second patient was 3rd para with jaundice. The cause of maternal death was DIC, PPH, jaundice. One patient of atonic PPH was primipara with PIH, thrombocytopenia. After LSCS relaparotomy and internal iliac ligation followed by hysterectomy was

done for uncontrolled atonic PPH. The causes of atonic PPH in other patients were multiparity, anemia, PIH, Abruptio placenta etc.

Morbidly adherent placenta was another common cause of EPH, 7 cases (27%) in our study. Out of them, one patient had previous one CS, five had previous two CS and one had previous three CS. All of these 7 patients had low lying placenta. Out of them one patient was referred as a case of previous 2 CS, preterm, hematuria. EPH was done for placenta percreta, internal iliac artery ligation was done and bladder injury was repaired by urologist.

Two patients (7.7%) had traumatic PPH– one patient was 5th para, preterm, IUD, breech, PROM, vaginally delivered outside and in another patient, broad ligament hematoma following LSCS was extended retroperitoneally which required hysterectomy.

Total 20 (77%) patients had history of previous one or more CS.

Table 2: Maternal complications

Maternal complications	No. of cases, n=26	%
Shock	15	58
Febrile morbidity	07	27
Wound infection	04	15
Acute renal injury	02	8
Bladder injury	03	12
DIC	02	8
Maternal deaths	04	15

Table 2 shows maternal complications following EPH. Most of the patients had haemorrhagic shock due to excessive amount of blood loss, 15 cases (58%). Lots of blood components were transfused to all patients. Minimum 3 PCV were required by each patient. Seven patients (27%) developed postoperative fever. There were 4 cases (15.4%) of wound gap. Two patients had intra operative bladder injury and one was referred with bladder injury (11.5%). ICU admission was deemed necessary in 7 cases (27%). 2 patients (8%) developed acute kidney injury.

There were 4 maternal deaths (15.4%). Out of them, two patients were delivered vaginally outside and had been referred for atonic PPH with jaundice. Third patient died of irreversible hypovolemic shock due to atonic PPH and fourth patient of placenta percreta could not be saved due to excessive blood loss.

Table 3: Perinatal outcome

Perinatal outcome	Number of cases	Percentage (%)
Stillbirth	15	58
Live	11	42

Most common cause for stillbirth (SB) was uterine rupture. Other common causes were prematurity and placenta previa. (Table 3)

Out of 26 cases, total hysterectomy was performed in 19 cases (73%) and 7 patients (27%) had subtotal hysterectomy. The duration of surgery and blood loss was less in subtotal hysterectomies. Broad spectrum antibiotics were given to all patients. Four patients were referred from outside after delivery. Two were referred for atonic PPH, one for uterine rupture and one for traumatic PPH. In two patients internal iliac artery ligation was performed before attempting EPH.

DISCUSSION

Hysterectomy following cesarean section was first described by porro and was used to prevent maternal mortality due to post partum hemorrhage.⁷ Reported incidence of EPH varies from 0.24 to 8.9 per 1000 deliveries in different parts of the world and has risen significantly during the past few decades.^{1,3,4,5} Most of this increase is attributed to the increasing rate of cesarean delivery and its associated complications in subsequent pregnancy.

Profuse uncontrolled hemorrhage from ruptured uterus, unresponsive uterine atony, placenta previa or morbidly adherent placenta are currently the most common bleeding problems requiring EPH.² The main causes of uncontrollable hemorrhage necessitating an EPH have been changed since the 1980s.⁸ Uterine atony and rupture have been overtaken by abnormal placentation in many studies.⁹

Table 4: Incidence and Indications of EPH

Studies	Incidence per 1000 deliveries	Uterine rupture %	Atonic PPH %	Abnormal placentation %
Gupta et al (2003)	2.6	69.7	9.7	6.3
Sinha (2001)	3.8	69.92	9.83	12.57
Praneshwari devi (2004)	0.7	23	19.20	26.90
Allam IS (2010)	2.2	23.5	24.8	51.7
D'Arpe S (2015) D'Arpe S (2015)	2.2	9.8	41.2	49
Present series (2017)	3.3	34.6	30.7	27

In the present study, the incidence, indications of EPH, maternal morbidity and mortality were studied and the results were compared with other studies (Table 4). Incidence per 1000 deliveries was 0.7 by Praneshwari devi et al.¹⁰ 3.8 by Sinha.¹¹ 2.6 by Gupta,¹² 2.2 by Allam IS,¹³ 2.2 by D'Arpe S.¹⁴

Incidence of EPH in our study was 3.3 per 1000 deliveries with CS rate of 30%. The incidence was comparatively high in the present series as ours is a tertiary care center where many patients are referred from outside with complicated cases. In our study, the incidence of EPH was 8.6 per 1000 CS and 1.1 per 1000 vaginal deliveries. The incidence was 1.3 per 1000 deliveries in our hospital during 2006-2008 with CS rate of 26%. It was 0.7 per 1000 vaginal deliveries and 2.7 per 1000 CS during 2006-2008. So there is significant increase in the incidence of EPH at our institute in the last 10 years (3.3 versus 1.3) esp. following CS (8.6 versus 2.7). The common indications for EPH in our hospital during 2006-2008 were uterine rupture (36%), Atonic PPH (20%), Placenta previa (16%), Morbidly adherent placenta (12%), Traumatic PPH (12%) and Septicaemia (4%).

Uterine rupture was a leading cause for hysterectomy in present study (34.6%). In spite of drastic improvement in obstetric services at all levels, rupture uterus still prevails and remains an important cause for EPH and maternal and perinatal mortality. This may be attributed to the increasing rate of CS in recent years and more preference towards single layer closure of uterus.

If we look at the other major indications of obstetrical hysterectomy in our study, PPH (Atonic and Traumatic) was the important indication (38.5%) even though there are other modalities like newly developed pharmacologic treatment strategies including prostaglandins, ligation of vessels, Bakri balloon, techniques like B Lynch etc. to treat PPH. This may be because hysterectomy still is a sure shot method to stop bleeding. Multiparity, PIH, anemia, jaundice, prolonged labour etc. are found to be the common risk factors for atonicity.^{15,16} It is also well-known that if decision of obstetrical hysterectomy is not taken well in time it is not likely to prevent morbidity and mortality due to hemorrhage. There are no specific guidelines for choosing a method to arrest bleeding so far.

The third important indication for obstetrical hysterectomy in our study was abnormal placentation (27%). All of these patients had previous one or more CS and placenta previa. In recent years, abnormal placentation has become a more common indication due to the greater number of pregnant women with previous cesarean section deliveries¹⁻⁵. Therefore, it appears prudent for the obstetrician to be prepared for the possibility of EPH due to massive hemorrhage in patients undergoing cesarean section with risk factors like previous one or more CS and placenta previa. Here a present there is no choice but to remove the uterus if placenta does not separate; there is severe hemorrhage in an attempt to separate the placenta. Of concern however, is the limited experience of performing emergency hysterectomy among the younger obstetricians. This implies that more effort should be undertaken to recognize the potential risk of patients requiring Emergency Peripartum Hysterectomy and the need for involvement of an experienced obstetrician in the management at an early stage. EPH being performed by an experienced surgeon is reported to significantly reduce the operating time, number of units of blood transfusion and hospital stay¹⁶. The predisposing risk factors can be determined to a certain extent by performing antenatal ultrasound with color doppler and Magnetic Resonance Imaging (MRI)^{17,18,19}. Persistent blood flow after the latent phase is suspicious of placenta accreta.¹⁹ However, the limiting factor is the high cost of MRI and extensive experience needed. The incidence of EPH is higher in patients with placenta previa and accreta than in patients with placenta previa alone. In our study, all patient who had history of previous cesarean section had history of LSCS with single layer suturing. In last

two decades, single layer suturing has become a common practice. Is this the reason for abnormal placentation?

80.7% cases were referred from outside as a case of previous one or more CS, uterine rupture, PPH, placenta previa, adherent placenta or PPH. 96% patients were multipara and 77 % cases had history of at least one previous CS. This indicates that multiparous patients with previous CS are at high risk for EPH due to complications like placenta previa, adherent placenta and uterine rupture in next pregnancy. In our study, the rate EPH due to atonic uterus was equal after vaginal delivery and CS.

Emergency Peripartum Hysterectomy is associated with high complication rates, mainly due to the need for massive blood transfusions, coagulopathy and injury of the urinary tract and it is also associated with the need for reexploration because of persistent bleeding and febrile morbidity.²⁰ In our study, maternal mortality was 15.4%. Lower rates of 4 and 4.5% were cited by Kwee et al. and Zorlu et al. and much higher rates of 20 and 23.8% were found by Hamsho and Alsakkaand Umezurike et al.^{2,21-23} Improvements in the surgical skills, hospital facilities, prenatal care and intrapartum monitoring have considerably reduced morbidity and drastically reduced mortality from the EPH operation. The common cause for maternal mortality was atonic PPH in our study. As all patients required minimum 3 units of blood, at least 3 units should be kept ready before proceeding to caesarean section for adherent placenta.

EPH is usually associated with high morbidity too. Postoperative fever (27%), wound gap (15.4%), bladder injury (11.5%), ICU admission (27%) and acute kidney injury (8%) were reported complications in our study. Reexploration was performed in 1 case (3.8%) for persistent postoperative bleeding.

58% babies were stillbirth. High rate of perinatal mortality was attributed to rupture uterus, prematurity or placenta previa.

Conclusion

- Prior cesarean delivery is associated with increased risk of uterine rupture, placenta previa and morbidly adherent placenta. Primary CS should be avoided as far as possible. Regular ANC and timely decision for an elective CS are very important in patients with recurrent indications to prevent uterine rupture. The presence of preoperative risk factors should facilitate consultation, referral or transfer of patients before surgery to a tertiary care facility.
- The incidence, morbidity and mortality of EPH can be reduced by improving the rural health services, health education and regular antenatal check up. All high risk cases should be referred timely to higher center and decision to perform EPH should be taken timely.
- Due to the complexity of the surgery and decision making, the involvement of an experienced obstetrician at an early stage is desirable. Proper surgical measures such as haemostatic sutures or uterine or hypogastric artery ligation or embolization are options in attempting uterine conservation particularly in patients who are young and in whom future fertility is important and who are relatively haemodynamically stable. When conservative treatment is not feasible or has failed, prompt EPH is performed failing which the delay would contribute to the maternal morbidity and in unfortunate cases mortality.

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