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RESEARCH ARTICLE

Analysis of peripartum hysterectomy at tertiary care hospital in rural Bangalore

Umashankar Km, Sandhya Alletty, Madhushri N, Dharmavijaya Mn

Correspondence: Dr Umashankar Km, MVJ Medical College, Department of Obstetrics and Gynaecology, Bangalore. Karnataka; Email - ukumashankar@gmail.com

ABSTRACT

Objective: This study was conducted to evaluate the indications and outcomes of emergency peripartum hysterectomy (EPH) as a life-saving procedure. **Methods:** A series of 60 cases of EPH were analyzed, between June 2006 and June 2016. The data were collected from the patients' files. **Results:** The incidence of EPH was 3 per 1,000 deliveries. The mean age was 34.10 ± 6 years, gravidity was 6.84 ± 3.38 and parity was 5.58 ± 3.0. Of the 60 cases, 40 were delivered by cesarean section and 20 were vaginally delivered. Forty-five cases had subtotal hysterectomy and 15 had total abdominal hysterectomy. The most common indications for EPH were uterine atony followed by uterine rupture and abnormal placentation. Mean operation time was 142.23 ± 43.70 minutes. The average blood transfusion was 4.79 ± 3.36 units. Relaparotomy was performed in 22 cases. Maternal mortality was seen in 10 cases. **Conclusion:** This study suggests that the most common indications for EPH are uterine atony, uterine rupture and abnormal placentation. This is probably due to the advanced age of pregnancies and multiparity in our region.

Keywords: Peripartum hysterectomy, uterine atony, caesarian section.

Emergency peripartum hysterectomy is a life-saving surgical procedure, which is performed to control massive hemorrhage. The incidence rate has estimated about 1.5 per 1,000 deliveries in developed countries [1-3]. Cesarean delivery is the major risk factor for peripartum hysterectomy and due to recently raising cesarean delivery rate and the increasing population with a scarred uterus, the incidence of emergency peripartum hysterectomy may indirectly increase. Historically, the most common indication cited for peripartum hysterectomy was uterine atony [4-9]. Emergency peripartum hysterectomy (EPH) is often performed for life-threatening obstetric conditions. It is defined as hysterectomy, performed after cesarean delivery or in the immediate postpartum period. However, EPH may also be performed when a conservative treatment approach fails to arrest post-delivery bleeding. In modern obstetrics, the overall incidences 0.05%, but there are considerable differences in incidence in different parts of the world depending on modern obstetric services, standards and awareness of antenatal care and the effectiveness of family planning activities of a given community [10]. Whiteman ET al [11] reported the incidence in their

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study as 0.77 per 1,000 births, and Francois et al found the incidence to be 2.28 per 1,000 births [12]. Umezurike et al found that the incidence of EPH was 5.4 per 1,000 deliveries in Aba, southeastern Nigeria [13]. Obstetric hemorrhage continues to be the primary cause of maternal mortality and morbidity in developing countries and the most challenging complication that a clinician will face. In addition, obstetric hemorrhage is a major health problem and contributes to 25% of direct maternal deaths [14-15]. Indications for peripartum hysterectomy have changed throughout the years. In earlier reports [16-17], the major indications for EPH were uterine rupture and atony, but Sheiner et al [18] listed placenta accrete as the leading cause of peripartum hysterectomy because of a higher rate of cesarean sections. Peripartum hysterectomy is associated with significant morbidity and mortality. The main complications related to emergency peripartum hysterectomy include transfusions [19-21], disseminated intravascular coagulation, infection and potential injury to the adjacent lower urinary tract [22, 23] and even maternal death [6,24]. Maternal mortality rates reported from 1% to 6% [6, 9], but some studies in regions with limited medical and hospital resources indicated that this rate is as high as 30% [24]. In this study, we evaluated the incidence, risk factors, indications, outcomes, mortalities and complications of EPH cases in our university hospital.

Methods

This retrospective study was included a series of 60 cases of EPH between June 2006 to June 2016 in the university hospital. The data were collected from the patients' files. Maternal age, gravidity, parity, gestational age, types of delivery, risk factors, indications and outcomes of EPH were collected in structured proforma. Peripartum maternal and fetal complications such as fetal mortality and causes of maternal mortality were evaluated. The surgical procedures, type of anesthesia, the operative complications, operation time, preoperative and postoperative hemoglobin and hematocrit levels, amount of blood transfused and the length of stay (days) at the hospital were evaluated. The main complications included massive hemorrhage, infection, uterine tony, uterine rupture, abnormal placentation, placental abruption, disseminated intravascular coagulopathy, pelviperitonitis and bacterial sepsis. In addition, multiple reoperations, readmissions, maternal and fetal mortality and morbidity were determined. The mean and standard deviation were calculated for continuous variables. Independent-sample *t* tests evaluated associations between the categorical and continuous variables. Two-sided *p* values were considered statistically significant at $p < 0.05$. Statistical analyses were carried out using the statistical package SPSS version15.0 (SPSS Inc., Chicago, IL, USA) for Windows.

Results

During a 10-year period, a total of 20,002 of women were delivered ; 10,600 (53 %) of them delivered vaginally and 9400 (47%) by cesarean section. EPH was performed in a series of 60 cases. The incidence was 3 per 1,000 deliveries. The mean age of cases that underwent EPH was 34.10 ± 6 years (range, 21–49 years), gravidity was 6.84 ± 3.38 and parity was 5.58±3.04. Hysterectomies were performed in 20 (33.33%) cases after vaginal birth and 40 (66.66%) cases during cesarean section and relaparotomy due to massive obstetrics hemorrhage. Primary cesarean

Table 1. Indications for emergency peripartum hysterectomy in 60 cases

Indications	N=60 (%)
Uterine atony	22 (36.6%)
Uterine rupture	16 (9.6%)
Abnormal placentation	9 (5.4%)
Uterine bleeding secondary to pelviperitonitis	4 (1.35%)
Abruptio placenta	4 (1.35%)
Uterine myoma and bleeding	1 (0.6%)
Vesicouterine rupture	2 (1.2%)
Uterine inversion	1 (0.6%)
Choriocarcinoma and bleeding	1 (0.6%)

Table 2. Comparison of the characteristics of cases with and without mortality

Categories	Mortality (N=10)	No mortality (N=50)	P Value
Age (yr)	34.53 ± 7.74	34.31 ± 5.31	0.235
Gravidity	6.76 ± 2.89	6.79 ± 3.30	0.978
Indication			
Uterine atony	6	16	0.193
Pelviperitonitis	1	3	
Abruptio placenta	3	1	
Abnormal placentation	1	8	
Type of operation			
Total hysterectomy	6	22	0.978
Subtotal hysterectomy	4	28	
Blood product transfusion (units)	3.69 ± 3.56	3.85 ± 3.12	0.882

**Data presented as mean ± standard deviation*

section was found in 10 (25%) cases and previous cesarean section (second or more) in 30(75%) cases. Subtotal hysterectomy was performed in 45 (75%)

Table 3. Postoperative morbidities of 60 cases

Morbidites	N=60(%)
Relaparotomy (hemorrhage and others)	22(36.6%)
Postoperative febrile reaction	12(20%)
Dehiscence and wound infection	10(16.6%)
Acute renal failure	5(8.3%)
Bladder injury	2(3.3%)
Ureter injury	3(5%)
ARDS and DIC	3(5%)
Others	3(5%)

Table 4. Comparison of the characteristics of cases with and without postoperative morbidity

Categories	With morbidity N=25	Without morbidity N=35	P value
Age (yr)	33.25 ± 5.75	35.09 ± 6.12	
Gravidity	6.72 ± 3.37	6.84 ± 3.18	
Parity	5.75 ± 3.16	5.47 ± 2.71	
Type of hysterectomy			
Subtotal hysterectomy	21	39	0.245
Total hysterectomy	29	31	
Blood product transfusion (units)	4.25 ± 4.11	3.53 ± 3.61	0.273

cases and total abdominal hysterectomy in15 (25%) cases. The main causes of EPH were uterine atony (34.28%), uterine rupture (30.71%), abnormal placentation (16.42%), pelvic infection and uterine bleeding secondary to infection (7.85%) (table 1). In the cases who survived, the average preoperative hematocrit and hemoglobin levels were 24.40 ± 7.42% (8–41%) and 8.15 ± 2.61 g/dL (3–14 g/dL), and the postoperative hematocrit and hemoglobin levels were 28.02 ± 4.69% (12–40%) and 9.44 ± 1.79 g/dL (4–27 g/dL) respectively. An average of 4.79±3.36 units of blood was transfused. Due to intractable hemorrhage, relaparotomy was performed in 22 (16.42%) cases. Despite all efforts, 9 (15 %) cases died due to massive hemorrhage, except for 1 case of sepsis. Nine of 10 mothers died on the 1st day of birth and their mean age was 32.92 ± 6.63 years (25–47 years). The clinical characteristics and comparison of these cases with living mothers are shown in table 2. Forty-eight of the cases delivered at outside centers or at home and were referred to our hospital in the intensive care unit after massive obstetrics hemorrhage. Twelve cases delivered at our hospital and 31 fetuses were stillborn. Thirty newborns had low Apgar scores; the mean 1-minute

score was 5.63 ± 2.21 and the mean5-minute score was 7.18 ± 1.75. The average length of hospitalization was 9.95 ± 7.26 days in surviving cases and 31.50 ± 62.67 days in cases who died. The most common causes of maternal morbidity included relaparotomy, postoperative febrile reaction and wound problems (table 3). Table 4 summarizes the clinical characteristics of these cases and compares them with the cases without morbidity.

Discussion

EPH is a life-saving procedure when other measures do not succeed in halting peripartum bleeding [15]. The incidence of EPH has declined recently and the indications have been restricted to emergent situations. The incidence of peripartum hysterectomy in the USA is 1–3 per 1,000 deliveries [16], but some studies from other countries have reported remarkably lower rates than the USA [19-21]. In this study, the overall incidence of EPH was 3 per 1,000 deliveries, and this incidence is similar to that of USA incidence.

Tahir et al [22] reported 30 EPH cases, including 2 mothers who died and 2 cases that underwent a repeat laparotomy. In this study, 22 (36.6%) cases underwent relaparotomy due to intractable bleeding and insufficient previous operations performed at outside centers. These situations indicate that we have an unfavorable health system in our region.

Although uncontrollable hemorrhage and infection were once considered the principal risk factors, abnormal placentation is currently thought to be the major risk factor for peripartum hysterectomy [23-27]. In this study, the most common indications of EPH were uterine atony, uterine rupture, abnormal placentation and pelviperitonitis. Numerous causes might have contributed to our high incidence of hysterectomies, such as lower socioeconomic status, lower income, poverty, lower standards of health care, high parity, religious and traditional habits, delay in arriving at hospital. In addition, our hospital is a tertiary and reference center, and therefore, many cases with complications are referred to our hospital. Unless these tragic problems are resolved with the aid of the government, we believe that the incidence will not decrease.

Conclusion

In this study, the most common indications of EPH were uterine atony, uterine rupture, abnormal placentation and pelviperitonitis. Relaparotomy, postoperative febrile reaction, dehiscence and wound infection are the common morbidities.

Conflict of interest: None. **Disclaimer:** Nil.

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Umashankar Km[1], Sandhya Alletty[2], Madhushri N[3], Dharmavijaya Mn[4]

[1]Associate Professor, Department of Obstetrics and Gynaecology, MVJ Medical College, Bangalore, Karnataka, India; [2]Assistant Professor, Department of Obstetrics and Gynaecology, Maleka Medical College, Udapi, Mangalore, Karnataka; [3]Resident Doctor, Department of Obstetrics and Gynaecology, MVJ Medical College, Bangalore, Karnataka, India; [4]Professor and HOD, Department of Obstetrics and Gynaecology, Akash Institute of Medical College, Bangalore, Karnataka, India.