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### Emergency peripartum hysterectomy: The experience of a medical centre in southeast Nigeria

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#### ABSTRACT

The objective of this study was to determine the incidence, indications, associated socio-demographic variables, type of surgery and maternofetal outcomes of emergency peripartum hysterectomy (EPH). A retrospective analysis of all patients who had emergency peripartum hysterectomy between 1<sup>st</sup> December 2008 and 31<sup>st</sup> December 2013 at the Federal Medical Centre (FMC) Umuahia was undertaken. Information on socio-demographic variables, indications for EPH, type of hysterectomy performed, cadre of surgeons, maternal and fetal outcomes were extracted and evaluated from case files. There were 9,478 deliveries and 36 emergency peripartum hysterectomies, within the study period, giving a rate of 3.8% or 4 in 1000 deliveries. The mean age of patients who had EPH were  $31 \pm 3.1$  years. Majority (52.7%) were of low parity. Most (63.9%) were unbooked. Uterine rupture was the leading indication (69.4%) for EPH. Majority (80.6%) of the patients had subtotal abdominal hysterectomy. All the patients had blood transfusion. The commonest postoperative morbidities were anaemia (69.4%), pyrexia (50%) and wound sepsis (25%). Case fatality rate was 8.3%. In all cases, the cause of death was related to acute renal injury and disseminated intravascular coagulation (DIC). The perinatal mortality was high (61.1%). Uterine rupture was the leading indication for EPH in this study. Antenatal care booking, identification of high risk cases, early referral, prompt resuscitation, quick surgical intervention by an experienced surgeon as well as involvement of the haematologist and nephrologist at an early stage are critical to reducing the incidence, morbidity and mortality of EPH in our centre.

**Key words:** Peripartum Hysterectomy, Uterine Rupture, Umuahia, South East Nigeria.

#### INTRODUCTION

Emergency Peripartum Hysterectomy (EPH) is a surgical procedure which is often performed, as a last resort, usually in life-threatening situations at the time of vaginal or caesarean delivery or in the immediate postpartum period to avert maternal death.<sup>1-3</sup> In no other obstetric surgery is the surgeon in as much a dilemma as when deciding to embark on emergency peripartum hysterectomy<sup>4</sup>. On one hand, it is the last resort to save a woman's life and on the other hand, her reproductive capability is sacrificed.<sup>4,5</sup> This is particularly more challenging when the decision to perform emergency peripartum hysterectomy is in a young woman with low parity especially in our society where large family size is the norm.<sup>6,7</sup>

Furthermore, the unplanned nature of the surgery, the need to perform it expeditiously and the less than ideal condition of the patient, especially after acute blood loss, increase the risk of intra-operative and postoperative complications including maternal death<sup>8,9</sup>. Little wonder then, this procedure has been described as the riskiest and most dramatic operation in contemporary obstetrics.<sup>6,8,10</sup>

The procedure of EPH was originally proposed by Joseph Cavallini. However, the first documented caesarean hysterectomy was performed in North America by Horatio Storer in 1869, then by Edvardo Parro in Italy in 1876 and by Lawson Tait in UK<sup>4,5,11,12</sup>. Since then, emergency peripartum hysterectomy has become an indispensable part of the obstetrician's armamentarium<sup>4,13</sup>.

The incidence of emergency peripartum hysterectomy varies worldwide with highest rates reported in developing countries.<sup>1-12</sup> Indications for emergency peripartum hysterectomy have continued to change with the passage of time.<sup>4,11,14,15</sup> In earlier reports, the major indications were uterine rupture and uterine atony.<sup>4,11,15</sup> Contemporary data suggest that the vast majority of emergency peripartum hysterectomy occurs in the setting of abnormal placentation (placenta praevia and accreta) associated with massive obstetric haemorrhage.<sup>4,11,16,17,18</sup> This is thought to be mainly due to the rising rate of caesarean sections.<sup>4,6,17,18</sup>

The maternity unit of the Federal Medical Centre Umuahia serves as a referral centre for the entire state and neighbouring Imo, Ebonyi, Rivers and Akwa Ibom States. The place of this important procedure in obstetric practice in the Federal Medical Centre Umuahia has not been studied. Hence, this review aims to determine the incidence, indications and outcomes of emergency peripartum hysterectomy at the Federal Medical Centre Umuahia. It is hoped that the recommendations that will emanate from this study will help reduce the incidence and improve the outcome of the procedure in our centre.

#### **MATERIALS AND METHODS**

This was a retrospective study conducted at the Department of Obstetrics and Gynaecology, Federal Medical Centre, Umuahia in the Southeast geopolitical zone of Nigeria. The folder numbers of all women who underwent EPH between 1<sup>st</sup> December 2008 and 31<sup>st</sup> December, 2013 were collected from the wards and maternity theatre. The folders were subsequently retrieved from the medical records department. Information on socio-demographic variables, indications for EPH, type of hysterectomy performed, cadre of surgeon and maternal outcome were extracted using a specially designed data form. The data were analyzed using simple proportion, rate and tables.

Permission to conduct this study was obtained from the Health Research and Ethical Committee (HREC) of the Federal Medical Centre, Umuahia.

#### **RESULTS**

During the period under study, there were a total of 9,478 deliveries and 36 emergency peripartum hysterectomies giving a rate of 3.8% or 4 in 1000 deliveries.

The patients' ages ranged from 22-42 years with a mean of  $31 \pm 3.1$  years. Majority (75.0%) were between 26 and 35 years of age. The mean parity was  $2.2 \pm 0.9$ . Most patients (52.7%) were of low parity ( $\leq 2$ ) while 13.9% were grandmultiparae. About 63.9% (23) were unbooked while only 30.6% had tertiary education. Majority (69.5%) were housewives and unskilled workers.

Table 1: Socio-demographic characteristics

Age range	Frequency	Percentage (%) N=36
21-25	3	8.3
26-30	13	36.1
31-35	14	38.9
36-40	5	13.9
>40	1	2.8
Range 22-42 years; mean = 31 ± 3.1 years		
Parity	Frequency	Percentage
1	12	33.3
2	7	19.4
3	6	16.7
4	2	5.6
≥5	5	13.9
Not recorded	4	11.1
Range =1-7; mean = 2.2 ± 0.9		
Booking status	Frequency	Percentage
Booked	13	36.1
Unbooked	23	63.9
Educational status	Frequency	Percentage
No formal	5	13.8
Primary	7	19.4
Secondary	9	25
Tertiary	11	30.6
Not recorded	4	11.1
Occupation	Frequency	Percentage
Housewife	14	38.9
Unskilled	11	30.6
Skilled	8	22.2
Professional	3	8.3

Table 2: Indications for EPH

Indications	Frequency	Percentage
Extensive uterine rupture	25	69.4
Uterine atony with intractable PPH*	8	33.3
Placenta praevia and morbidly adherent placenta	3	8.3

\*= postpartum haemorrhage

The commonest indication (69.4%) for EPH was extensive uterine rupture. Abnormal placentation constituted the least indication (8.3%) for EPH.

Table 3: Mode of delivery

Mode of delivery	Frequency	Percentage
Vaginal delivery	3	8.3
Caesarean section	8	22.2
Laparotomy for ruptured uterus	25	69.4

Table 3 shows that only 8.3% of the women had vaginal delivery. About 22.2% (8) had elective (2) and emergency (6) caesarean sections for a variety of indications. Majority 69.4% (25) had ruptured uterus from prolonged obstructed labour (8), labour after previous c/s (7), injudicious use of oxytocics(5), fundal pressure and other manipulations (4) and domestic trauma (1).

Table 4: Intraoperative findings

Types of surgery	Frequency	Percentage (%). N=36
TAH*	7	19.4%
STH**	29	80.6%
EBL	Frequency	Percentage
500-1000	3	8.3
1000-1500	10	27.8
1500-2000	12	33.3
≥2000	11	30.6
Blood transfusion	Frequency	Percentage
≥ units	9	25
3-5 units	16	44.4
6-9 units	6	16.7
≥ 10 units	5	13.9
Cadre of Surgeon	Frequency	Percentage
Consultant	34	94.4
Others	2	5.6
Perinatal outcome	Frequency	Percentage
No asphyxia	3	8.3
Mild asphyxia	4	11.1
Severe asphyxia	7	19.4
Stillbirth	22	61.1

\* = total abdominal hysterectomy

\*\* = subtotal hysterectomy

Sub-total hysterectomy was performed in majority (80.6%) of cases. There was more than 2 litres of estimated blood loss in 30.6% of cases. All cases had blood transfusing while majority (44.4%) received 3-5 units of blood. Notably, 13.9% had more than 10 units of blood. Only 5.6% of the surgeries were performed by senior registrars/principal medical officers. The perinatal outcomes were poor. Majority (61.1%) had stillbirths from complications of the primary indication for surgery.

Table 5: Postoperative complications

Complication	Frequency	Percentage (%)
Anaemia	25	69.4
Pyrexia	18	50
Septicaemia	4	11.1
Wound sepsis	9	25
Burst abdomen	2	5.6
Heart failure	2	5.6
Pulmonary oedema	2	5.6
Chest infection	7	19.4
Disseminated intravascular coagulopathy	4	11.1
Ureteric/Bladder injury	3	8.3
Acute kidney injury	4	11.1
Illius	6	16.7
Mortality	4	11.1

The complications related to the procedure were shown in 5. There was multiple postoperative morbidities and these included anaemia (69.4%), pyrexia (50%), wound sepsis (25%) and chest infection (19.4%). There were 4 maternal deaths from EPH and a total of 104 maternal deaths during the period under review. EPH contributed 3.8% (4) of the 104 maternal deaths during the period under review. The case fatality rate was 8.3%. The causes of death were irreversible shock with disseminated intravascular coagulopathy (4) and acute kidney injury (4).

Table 6: Duration of hospitalization

Duration (days)	Frequency	Percentage (%)
≤ 7	5	13.9
7-10	9	25
10-14	17	47.2
≥ 15	5	13.9
Range = 5-23 days; mean = 10.2 ± 3.1 days		

The modal range of hospitalization was 10-14 days. About 13.9% were hospitalized beyond 2 weeks due to postoperative complications.

## DISCUSSION

The incidence of emergency peripartum hysterectomy in this study was 4 per 1000 deliveries. This figure is higher than the rates of 0.2 to 2.7 per 1000 deliveries reported from developed countries<sup>13,14,20</sup>. It is however comparable to rates reported in other studies from developing countries which range from 2 to 9 per 1000 births.<sup>1-7, 9-10, 15-16</sup>

The difference in incidence between developed and developing countries can be explained by the differences in the level and the acceptance of obstetric care by patients in the two regions<sup>1,2,5</sup>. Unlike the scenario in developing countries, high uptake of family planning and obstetric services in developed countries have resulted in low incidence of obstructed labour as well as ruptured uterus and therefore low incidence of emergency peripartum hysterectomy in that population. In developing countries, including Nigeria, many deliveries are conducted outside orthodox health facilities by unskilled birth attendants and in communities with a high prevalence of risk factors for primary postpartum haemorrhage such as multiple pregnancies, grandmultiparity and obstructed labour from cephalopelvic disproportion.<sup>2,5,6,11,16</sup>

The mean age of women that had EPH varied in different studies. The mean age of  $31 \pm 3.1$  years in this review is similar to that in some reports but higher than the mean age in others<sup>2,5,7</sup>, perhaps reflecting the average age of the obstetric population in our study centre. It would seem that most women delay marriage and subsequently childbearing for educational attainment and career pursuit<sup>6,12,19</sup>. This is in contrast to the predominant Muslim Northern Nigeria where women tend to marry early.<sup>2,5,17</sup>

Majority (52.7%) of the patients in this study were of low parity (para 1 and 2) which is at variance with most studies<sup>2,5,7,16</sup> but is in agreement with findings from Uyo, South South Nigeria<sup>6</sup> and Iran<sup>18</sup>. Sadly, this goes to highlight the adverse reproductive health effects removal of the uterus has on these patients, particularly in an environment such as ours where a high premium is placed on childbearing. The loss of reproductive potential in such women with low parity could result in marital disharmony, divorce, psychological disorders and medicolegal issues.

The relatively high rate of unbooked women (65.9%) in this study is similar to observations from Sokoto<sup>2</sup>, Kano<sup>5</sup>, Uyo<sup>6</sup>, Ilorin<sup>7</sup>, Nnewi<sup>16</sup> and Pakistan<sup>17</sup>. Several studies from developing countries, including Nigeria, have shown poor maternal and perinatal outcome in women who fail to obtain antenatal care and are only brought to the hospital when obstetric complications arise<sup>21-24</sup>. Given that the likelihood that a woman would consult a health professional for antenatal care increases as the woman's educational level rises<sup>5,21</sup>, the high prevalence of unbooked patients in this review was paradoxically surprising as more than half (55.6%) of the women in this study were educated up to secondary or tertiary level. However, certain studies from southern Nigeria have revealed the reasons why even educated women tend to seek antenatal care in unorthodox places.<sup>22,23,24</sup>

The high rate of unbooked women in this review may explain why extensive uterine rupture, a marker of poor obstetric care, was the commonest indication (69.4%) for EPH in this study. This was followed by uterine atony and then abnormal placentation (placenta praevia and accreta). Worldwide, abnormal placentation has emerged the leading indication for EPH. This has been corroborated by reports from some Nigerian centres including Nnewi,<sup>16</sup> Aba<sup>19</sup>, and Lagos<sup>25</sup>. The prominence of abnormal placentation as an indication for EPH globally is due to the rising caesarean section rates.<sup>1,3,8,12,13,19,20</sup>

Majority (80.6%) of the patients in this study had subtotal abdominal hysterectomy (STH). This was probably because most of the patients in this review were not fit for prolonged anaesthesia. The cervix and paracolpos are not usually involved as the source of haemorrhage and STH is often adequate to achieve haemostasis<sup>5,26</sup>. Subtotal hysterectomy has been shown to be safer, faster and easier to perform with reduced risk of intra-operative blood loss and other complications<sup>1-7,11-21</sup>. In addition, in patients with uterine rupture, which constituted the most common indication for EPH in this review, subtotal hysterectomy is associated with less postoperative morbidity since the infected and torn organ is removed<sup>7</sup>. This predominance of STH as the procedure of choice in this review is in consonance with findings from both local and international series.<sup>1-7,11-21</sup> The future risk of cervical stump

carcinoma is low (0-1.15%) and in our centre where routine screening of cervical cancer has become part of the reproductive health services provided, its fear is reduced.

Total abdominal hysterectomy (TAH) should however, be considered for intractable bleeding from placenta accreta in the lower uterus or when active bleeding occurs from the lower uterine segment as the cervical branch of uterine artery may remain intact<sup>8,16</sup>. This probably was the case for the remaining 19.4% of the patients that had total abdominal hysterectomy.

In this study, all the patients had blood transfusion. The high rate of blood transfusion is in agreement with other studies<sup>1-20</sup>. The importance of efficient blood transfusion services cannot be overemphasized<sup>27</sup>. Most unbooked patients in our region are anaemic at term, present late after uterine rupture or antepartum haemorrhage and there may occasionally be level 3 delays for a multiplicity of factors<sup>12,22,24,28,29</sup>.

Reported maternal morbidity rate for EPH is in the order of 26.5%-31.5%<sup>1-20</sup>. Anaemia, pyrexia and wound sepsis were the commonest morbidities in this study as noted in other Nigerian studies.<sup>2,5,6,9,16,19,30</sup> This is because the leading indication for EPH in this review was uterine rupture. Complications of severe haemorrhage and hazards of subsequent multiple blood transfusions including disseminated intravascular coagulation (DIC) and acute renal shutdown were observed in this study. A very striking finding was the observation that all the patients that died had acute renal injury and disseminated intravascular coagulation (DIC). Again, most patients who survived spent 10-14 days in the hospital while those who did not survive died within 24hrs.

The case fatality rate in this study was 8.3%. This is far from figures of less than 0.1% reported in developed countries. It is noteworthy that this high case fatality rate was greatly influenced by the leading indication for emergency peripartum hysterectomy in this review which was ruptured uterus. However, the case fatality of 8.3% in this study is lower than 10.8% in Sokoto<sup>2</sup>, 13.3% in Kano<sup>4</sup>, 31% in Nnewi, 23.6% in Aba, 14.3% in Uyo, 20.0% in Calabar and 19% in South Africa. The reason for this lower case fatality rate following EPH in our centre has not been elucidated in this study. Nevertheless it was probable that the policy of aggressive resuscitation that is practised in our centre, early involvement of a senior obstetrician in EPH, and early recourse to a functional intensive care unit could have resulted in the disparity.

The high perinatal mortality recorded in this study was also found in other series from developing countries. This was because most of the uterine ruptures occurred outside the hospital, were often extensive with complete extrusion of fetus and placenta into the peritoneal cavity.

## CONCLUSION

In contrast to the emerging global trend, the leading indication for emergency peripartum hysterectomy in our centre is uterine rupture. Paradoxically, EPH was carried out mostly on mothers of low parity who were thought to be immune to uterine rupture with bleak reproductive outlook for these women. These findings go to highlight the dangers unbooked pregnant women face in the hands of unskilled healthcare providers practicing in unorthodox settings. This undoubtedly underscores the need for public enlightenment campaigns aimed at increasing the number of women receiving antenatal care and giving birth in delivery facilities supervised by skilled care providers. Timely identification of high-risk cases, interlinked relationship between different levels of healthcare institutions, prompt referral with backup system and government legislation to discourage operation of unlicensed maternity homes in our locality are other measures that will reduce the incidence of preventable causes of peripartum hysterectomy such as uterine rupture and poorly managed uterine atony.

Given that all the patients who did not survive after emergency peripartum hysterectomy in this centre, died within 24 hours from complication of DIC and acute renal injury, early involvement of haematologists and nephrologists may aid in lowering the case fatality rate of EPH.

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