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Research Article

Emergency Peripartum Hysterectomy: Frequency, Indications and Maternal Outcome at the Rivers State University Teaching Hospital, Port-Harcourt, Nigeria: A 5-Year Review

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Abstract

Background: Emergency peripartum hysterectomy has remained a challenging surgical procedure in obstetrics. It remains a significant practice in modern obstetrics as it can save lives.

Objective: This study sought to determine the incidence and indications for peripartum hysterectomy, evaluate the maternal outcome and assess the associated factors in women.

Methodology: This was a retrospective review of emergency peripartum hysterectomies performed between January 2016 and December 2020. Data were obtained from operating theater and labour ward records. Information on maternal age, parity, gestational age, booking status, education, indication for surgery, cadre of surgeon, length of surgery, estimated blood loss and any blood transfusion, post-operative complication, and mortality, were extracted. Data were analyzed using SPSS version 20. Categorical measurements were given as numbers and percentages, and numerical measurements as mean and standard deviation. The Chi-square test or Fisher exact test and analysis of variance test were used for statistical analysis of non-continuous and continuous variables as appropriate and statistical significance was set at $p < 0.05$.

Results: During the five-year study period, there were 11,981 deliveries, of which 30 women had emergency peripartum hysterectomy, giving an Incidence of 2.5 per 1000 deliveries and a ratio of 1: 400 deliveries. Their mean age ± SD was 33.93 ± 4.16years, majority 23 (76.6%) had parity of 2 - 4, 22 (73.3%) had gestational at time of delivery of ≥ 37 weeks, and 17 (56.7%) were unbooked. Commonest indication for emergency peripartum hysterectomy was uterine rupture 15(50.0%), followed by placenta praevia 10 (33.3%). The indications were significantly associated with booking status (P = 0.017). Subtotal abdominal hysterectomy was the most performed procedure in 22 (73.3%) of the women. There was a significant association between parity and the need for blood transfusion (P = 0.047). There were 6 (20.0%) maternal deaths, giving a mortality ratio of 1:5 women. The perinatal mortality was 13 (43.3%) or rate of 433 per 1000 live births. The commonest postoperative complication was anaemia occurring in 16 (53.3%) of the women.

Conclusion: The incidence of emergency peripartum hysterectomy in our center was high and majority occurred in unbooked patients. The commonest indications were uterine rupture and placenta praevia. Formal antenatal care, anticipation and prompt resuscitation and surgery will reduce the incidence.

Keywords: *Peripartum Hysterectomy; Obstetric Hysterectomy; Uterine Rupture; Placenta Praevia; Postpartum Haemorrhage*

Introduction

Post-partum haemorrhage (PPH) is a leading and major cause of maternal mortality globally [1,2] and its incidence has been increasing worldwide [3,4]. Haemorrhage has been shown to be the cause of 12% to 18% of deaths during pregnancy [5-7] and in our center a recent study puts PPH as the second leading cause of maternal mortality, accounting for 22.7% of deaths [8]. Emergency peripartum hysterectomy (EPH) is a procedure which is usually performed as a life-saving measure in cases of uncontrollable PPH [9]. It is defined as a hysterectomy performed at the time of delivery (vaginal or caesarean) or in the immediate postpartum period.

EPH remains a significant practice in modern obstetrics as it can save lives, though it is usually unplanned and performed expeditiously. Globally, an estimated 0.20 to 5.09 per 1000 who delivered had undergone EPH [10]. Recent studies from Fuji [11] and Saudi Arabia [12] have reported incidences of 0.63/1000 deliveries and 1.97/1000 deliveries, respectively. Reports of incidence of EPH from Nigerian studies are varied and high, from 1:439 deliveries (2.3/1000) reported in Uyo, South-south Nigeria [13] to 5.4/1000 deliveries reported in Aba, Southeastern Nigeria [14] and 6.2/1000 deliveries reported from Nnewi, Southeastern Nigeria [15]. These variations may reflect differences in availability of antepartum and intrapartum care, obstetric and surgical skills, and an efficient transport system.

Previously uterine atony and rupture were regarded as the commonest indication for EPH, but recent reports are listing adherent placenta and placenta praevia as the most common [10,16]. Increase in the number of caesarean deliveries over the past three decades may account for the growing number of placenta related causes [17]. A systematic review of cases of EPH revealed that multiparous women and those who have had a caesarean delivery in either a previous or present pregnancy, or had abnormal placentation were at highest risk of EPH [9].

The decision to perform an EPH is sometimes a challenging and difficult one, as it puts an end to the obstetric career of the woman, especially in our society where the premium placed on childbearing is extremely high [18]. The surgery is often associated with significant morbidity and mortality, and often requires an experienced surgeon to be in attendance. No consensus has been reached on whether a subtotal hysterectomy (STH) controls haemorrhage as effectively as total hysterectomy (TH). Some studies have shown that STH is commonly performed because it is technically easier and requires less operative time, while others have found no significant difference in terms of operative time [11].

There is paucity of published work in South-south Nigeria and to date, there has been no study carried out to evaluate EPH at the Rivers State University Teaching Hospital (RSUTH) Port-Harcourt, Nigeria. It is important to determine the incidence, indications, maternal outcomes, and associated factors to serve as baseline for further research. This study therefore sought to determine the incidence and indications for EPH, evaluate the maternal outcome and assess the associated factors in women delivering at the RSUTH. The findings from this study may help in planning health care services and formulation of strategies to reduce the incidence, as well as the morbidity and mortality associated with EPH.

Materials and Methods

This was a descriptive, retrospective review of emergency peripartum hysterectomies carried out at the Rivers State University Teaching Hospital (RSUTH) from 1ST January 2016 to 31ST December 2020. The RSUTH is a tertiary hospital owned and funded by the Government of Rivers State of Nigeria. The hospital provides emergency obstetric services to women referred from other centres, as well as providing antenatal care and delivery services for low and high-risk pregnant women booked with the hospital. The hospital is well equipped and has availability of qualified team comprising of Obstetricians, Paediatricians and Anaesthetists. There is availability of laboratory and blood bank services in the hospital. The Labour Ward is open 24/7 and there is an average annual delivery of over 1500.

The study population was all pregnant women who had peripartum hysterectomy at the RSUTH. All cases of peripartum hysterectomy over a five-year period with complete records were included. Those with incomplete data were excluded. Data were retrieved from the Labour ward records, theatre registers and case folders of all the patients who had EPH within the study period, using a structured pro-forma. Information on maternal age, parity, gestational age, booking status, education, indication for surgery, cadre of surgeon, length of surgery, estimated blood loss and any blood transfusion, post-operative complication, and mortality, were extracted.

Coded data were entered into Excel spreadsheet and exported to SPSS version 20 for statistical analysis. Categorical measurements were given as numbers and percentages, and numerical measurements as mean and standard deviation. The Chi-square test or Fisher exact test and ANOVA test were used for statistical analysis of non-continuous and continuous variables as appropriate and statistical significance was set at $p < 0.05$.

Ethical clearance was sought for and approval obtained from the RSUTH Research and Ethics Committee (RSUTH/REC/2021079).

Results

During the five-year study period, a total of 11,981 deliveries occurred in the hospital, of which 30 women had EPH, giving an Incidence of 2.5 per 1000 deliveries or a ratio of 1: 400 deliveries. The mean age of the study population ± SD was 33.93 ± 4.16 years, the median age was 35 years and the age range was 24 - 41years. Majority of the women, 23 (76.7%) were in the age group of 30 - 40 years (Figure 1) and majority, 27 (90%) had secondary education and above (Figure 2).

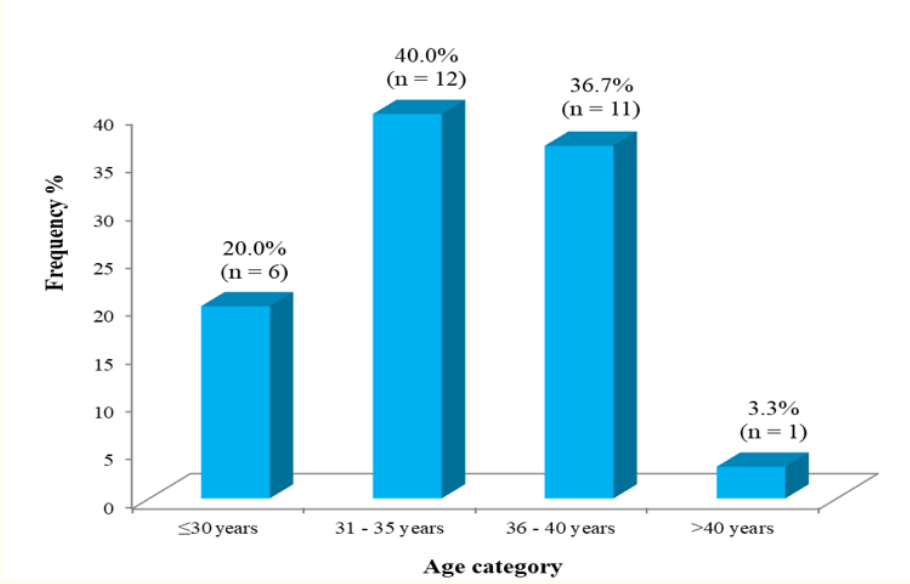

Figure 1: *Age distribution of women who had EPH at RSUTH.*

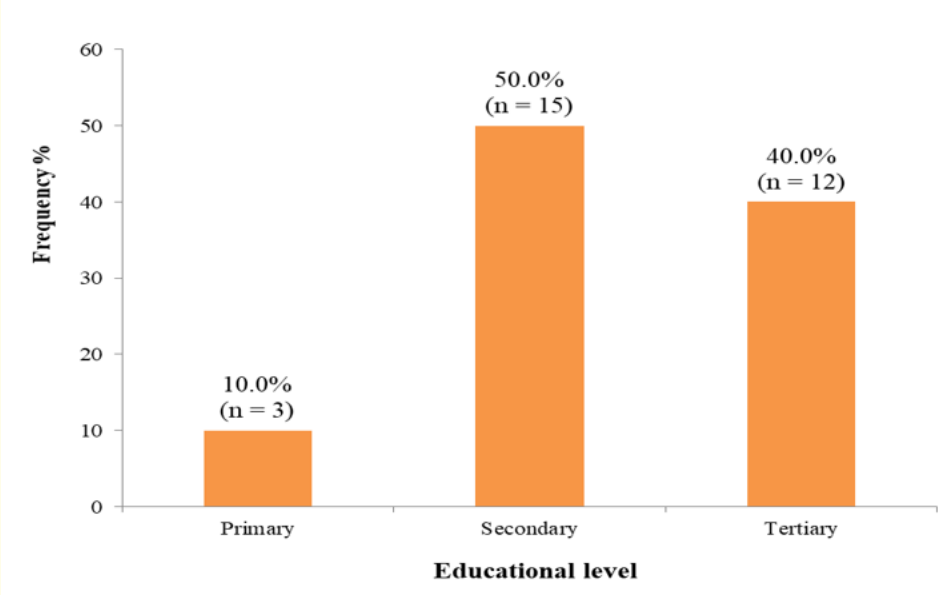

Figure 2: *Educational level of women who had EPH at RSUTH.*

The obstetric characteristics of the women are as shown in table 1. Majority of the women, 23 (76.6%) had parity of 2 - 4, 22 (73.3%) had gestational age at time of delivery of ≥37 weeks, and 17 (56.7%) were not registered (unbooked) for antenatal care. The median parity was Para 3, with a range of 0 - 5, while the mean GA ± SD was 37.10 weeks, with median of 38weeks and range of 25 - 40 weeks.

Variables (N = 30)	Frequency	Percentage
Parity		
Para 0	2	6.7
Para 1	3	10.0
Para 2	7	23.3
Para 3	9	30.0
Para 4	7	23.3
Para 5	2	6.7
Median = Para 3; Range = Para 0 - 5		
Gestational age		
< 37 weeks	8	26.7
≥ 37 weeks	22	73.3
Mean ± SD = 37.10 weeks Median = 38 weeks; Range = 25 - 40 weeks		
Booking status		
Booked	13	43.3
Unbooked	17	56.7

Table 1: *Obstetric characteristics of women who had EPH at RSUTH.*

The commonest indication for EPH in the study population was uterine rupture, occurring in half, 15 (50.0%), of the cases. This was followed by placenta praevia occurring in 10 (33.3%) of the women. Primary postpartum haemorrhage (PPH) from atony unresponsive to other treatment modalities accounted for 3 (10.0%), while Abruptio placenta was responsible in 2 (6.7%) of the women (Figure 3). Table 2 shows the relationship of the indications for EPH and the obstetric characteristics of the women, with significant association (P = 0.017) found only with booking status. More unbooked mothers had uterine rupture and abruptio placenta, while booked mothers had more of placenta praevia and primary postpartum haemorrhage.

	Indication for EPH surgery					
Variables	**Abruptio placenta n (%)**	**Placenta previa n (%)**	**PPH n (%)**	**Uterine rupture n (%)**	**Total n (%)**	
Age category						
≤ 30 years	0 (0.0)	1 (16.7)	0 (0.0)	5 (83.3)	6 (100.0)	
31 - 35 years	1 (8.3)	4 (33.3)	1 (8.3)	6 (50.0)	12 (100.0)	
36 - 40 years	1 (9.1)	4 (36.4)	2 (18.2)	4 (36.4)	11 (100.0)	
>40 years	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)	
	Fisher's exact test = 7.436; p-value = 0.765					
Educational level						
Primary	0 (0.0)	0 (0.0)	0 (0.0)	3 (100.0)	3 (100.0)	
Secondary	2 (13.3)	5 (33.3)	0 (0.0)	8 (53.3)	15 (100.0)	
Tertiary	0 (0.0)	65 (41.7)	3 (25.0)	4 (33.3)	12 (100.0)	
	Fisher's exact test = 12.450; p-value = 0.053					
Parity						
Para 0	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)	2 (100.0)	
Para 1	0 (0.0)	1 (33.3)	0 (0.0)	2 (66.7)	3 (100.0)	
Para 2 - 4	1 (4.3)	8 (34.8)	2 (8.7)	12 (52.2)	23 (100.0)	
Para ≥5	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	2 (100.0)	
	Fisher's exact test = 9.935 p-value = 0.305					
Gestational age						
<37 weeks	0 (0.0)	3 (37.5)	2 (25.0)	3 (37.5)	8 (100.0)	
≥37 weeks	2 (9.1)	7 (31.8)	1 (4.5)	12 (54.5)	22 (100.0)	
	Fisher's exact test = 3.133; p-value = 0.333					
Booking status						
Booked	0 (0.0)	6 (46.2)	3 (23.1)	4 (30.8)	13 (100.0)	
Unbooked	2 (11.8)	4 (23.5)	0 (0.0)	11 (64.7)	17 (100.0)	
	Fisher's exact test = 7.368; p-value = 0.017*					

Table 2: *Relationship between socio-demographic and obstetric characteristics with indication for surgery among women who had EPH at RSUTH.*
**Statistically significant (p<0.05).*

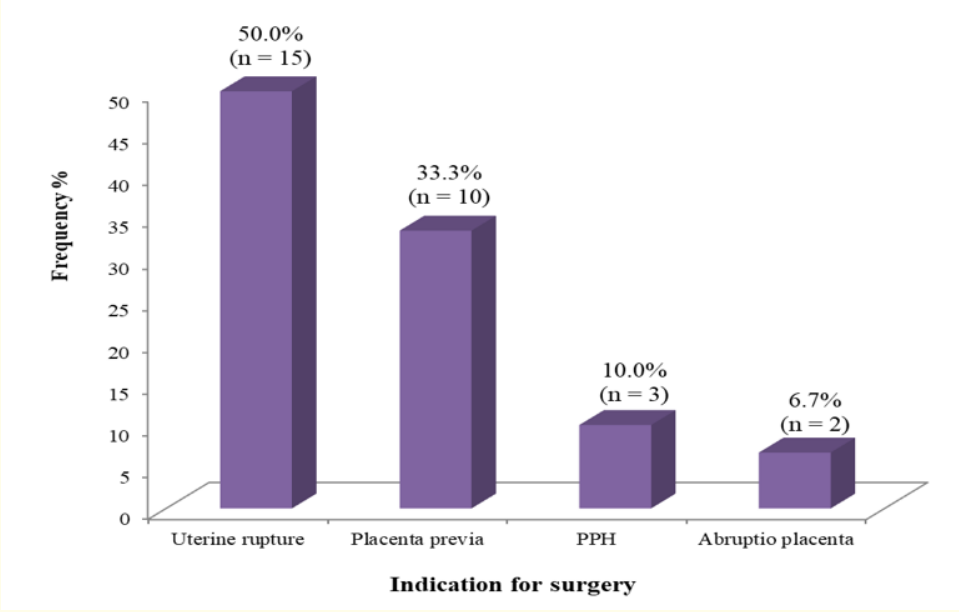

Figure 3: *Indication for surgery among women who had EPH at RSUTH.*

The intraoperative events in these women are as summarized in table 3. The mean duration of surgery ± SD was 106.93 ± 36.03 minutes, with median of 104 minutes and range of 54 - 185 minutes. The mean estimated blood loss ± SD was 1483.33 ± 557.76 ml with median of 1500 ml and range of 500 - 2500 ml. Subtotal abdominal hysterectomy was the most performed procedure in 22 (73.3%) as against total abdominal hysterectomy in 8 (26.7%). Regarding the cadre of surgeon, consultants performed most of the surgeries with 23 (76.6%) as against 7 (23.3%) performed by senior registrars. In majority of the cases, the duration of the surgery was < 120 minutes (18 or 60.0%) and estimated blood loss recorded was ≥ 1500 mls (16 or 53.3%). Twenty-five (83.3%) of the women were transfused blood, of which 14 (56.0%) had ≥ 2 pints of blood. A comparison of the mean duration of surgery and mean estimated blood loss with the cadre of surgeon, socio-demographic and obstetric characteristics (Table 4) revealed no significant association.

Variables (N = 30)	Frequency	Percentage
Cadre of surgeon		
Consultant	23	76.7
Registrar	7	23.3
Treatment type		
SAH	22	73.3
TAH	8	26.7
Duration of surgery		
<120 minutes	18	60.0
≥120 minutes	12	40.0
Estimated blood loss		
<1500ml	14	46.7
≥1500ml	16	53.3

Blood transfusion		
Yes	25	83.3
No	5	16.7
Number of blood pints (N = 25)		
1 pint	11	44.0
2 pints	7	28.0
3 pints	4	16.0
4 pints	2	8.0
5 pints	1	4.0

Table 3: *Intraoperative events among women who had EPH at RSUTH.*
SAH = Subtotal abdominal hysterectomy. TAH = Total abdominal hysterectomy.

Variables	Estimated blood loss (mls) Mean ± SD	Duration of surgery (minutes) Mean ± SD
Age category		
≤ 30 years	1533.33 ± 408.25	99.33 ± 42.14
31 - 35 years	1616.67 ± 478.32	110.17 ± 33.90
36 - 40 years	1336.36 ± 715.92	109.64 ± 38.81
>40 years	1200.000 ± 0.00	84.00 ± 0.00
	ANOVA = 0.559. p-value = 0.647	ANOVA = 0.256. p-value = 0.857
Educational level		
Primary	1166.6 ± 763.76	83.00 ± 25.36
Secondary	1620.00 ± 575.95	102.53 ± 38.55
Tertiary	1391.67 ± 479.50	118.42 ± 32.98
	ANOVA = 1.104. p-value = 0.346	ANOVA = 1.423. p-value = 0.258
Parity		
Para 0	1250.00 ± 353.55	106.00 ± 50.91
Para 1	1333.33 ± 577.35	104.00 ± 11.79
Para 2 - 4	1456.52 ± 553.36	110.17 ± 38.15
Para ≥ 5	2250.00 ± 353.55	75.00 ± 21.21
	ANOVA = 1.550. p-value = 0.225	ANOVA = 0.566. p-value = 0.642
Gestational age		

< 37 weeks	1587.50 ± 610.47	111.13 ± 38.52
≥ 37 weeks	1445.45 ± 547.49	105.41 ± 35.90
	t = 0.610. p-value = 0.547	t = 0.379. p-value = 0.708
Booking status		
Booked	1400.00 ± 543.14	116.62 ± 30.92
Unbooked	1547.06 ± 576.76	99.53 ± 38.75
	t = -0.709. p-value = 0.484	t = 1.302. p-value = 0.203
Cadre of surgeon		
Consultant	1426.09 ± 605.44	106.78 ± 34.09
Registrar	1671.43 ± 325.14	107.43 ± 44.86
	t = -1.020. p-value = 0.317	t = -0.041. p-value = 0.968

Table 4: *Comparison of mean estimated blood loss and duration of surgery with cadre of surgeon, socio-demographic and obstetric characteristic among women who had EPH at RSUTH.*

A comparison of the need for blood transfusion with cadre of surgeon, socio-demographic and obstetric characteristics revealed a significant association between parity and the need for blood transfusion (P = 0.047). Multiparous women were more likely to receive blood transfusions. There were no significant association with the cadre of surgeon, booking status, maternal age, gestational age at delivery and educational level (Table 5).

	Blood transfusion		
Variables	**Yes** **n (%)**	**No** **n (%)**	**Total** **n (%)**
Age category			
≤30years	4 (66.7)	2 (33.3)	6 (100.0)
31 - 35 years	11 (91.7)	1 (8.3)	12 (100.0)
36 - 40 years	9 (81.8)	2 (18.2)	11 (100.0)
>40 years	1 (100.0)	0 (0.0)	1 (100.0)
	Fisher's exact test = 2.469; p-value = 0.424		
Educational level			
Primary	1 (3.3)	2 (66.7)	3 (100.0)
Secondary	13 (86.7)	2 (13.3)	15 (100.0)
Tertiary	11 (91.7)	1 (8.3)	12 (100.0)
	Fisher's exact test = 4.641; p-value = 0.101		
Parity			
Para 0	1 (50.0)	1)(50.0)	2 (100.0)
Para 1	1 (33.3)	2 (66.7)	3 (100.0)

Para 2 - 4	21 (91.3)	2 (8.7)	23 (100.0)
Para ≥5	2 (100.0)	0 (0.0)	2 (100.0)
	Fisher's exact test = 7.273; p-value = 0.047*		
Gestational age			
<37 weeks	8 (100.0)	0 (0.0)	8 (100.0)
≥37 weeks	17 (77.3)	5 (22.7)	22 (100.0)
	Fisher's exact p-value = 0.287		
Booking status			
Booked	12 (92.3)	1 (7.7)	13 (100.0)
Unbooked	13 (76.5)	4 (23.5)	17 (100.0)
	Fisher's exact p-value = 0.355		
Cadre of surgeon			
Consultant	19 (82.6)	4 (17.4)	23 (100.0)
Registrar	6 (85.7)	1 (14.3)	7 (100.0)
	Fisher's exact p-value = 1.000		

Table 5: *Relationship between cadre of surgeon, socio-demographic and obstetric characteristics, with need for blood transfusion among women who had EPH at RSUTH.*
**Statistically significant (p<0.05).*

In terms of maternal outcome, there were 6 (20.0%) maternal deaths recorded in the study population, giving a mortality ratio of 1:5 women. The perinatal mortality was higher with 13 (43.3%) deaths and 17 (56.7%) live babies, giving a ratio of 1:2.3 babies and perinatal mortality rate of 433 per 1000 live births. Majority of the women, 17 (56.7%), developed postoperative complication with anaemia occurring in 16 (53.3%) women and sepsis in 1(3.3%) woman. There was no recorded complication in 13 (43.3%) of the women. A comparison of the occurrence of maternal complication with the cadre of surgeon, socio-demographic and obstetric characteristics (Table 6), revealed no significant association.

	Maternal complication		
Variables	**Yes n (%)**	**No n (%)**	**Total n (%)**
Age category			
≤ 30 years	5 (83.3)	1 (16.7)	6 (100.0)
31 - 35 years	7 (58.3)	5 (41.7)	12 (100.0)
36 - 40 years	4 (36.4)	7 (63.6)	11 (100.0)
>40 years	1 (100.0)	0 (0.0)	1 (100.0)
	Fisher's exact test = 4.097; p-value = 0.225		
Educational level			
Primary	2 (66.7)	1 (33.3)	3 (100.0)
Secondary	7 (46.7)	8 (53.3)	15 (100.0)
Tertiary	8 (66.7)	4 (33.3)	12 (100.0)
	Fisher's exact test = 1.299; p-value = 0.657		

Parity			
Para 0	2 (100.0)	0 (0.0)	2 (100.0)
Para 1	2 (66.4)	1 (33.3)	3 (100.0)
Para 2 - 4	11 (47.8)	12 (52.2)	23 (100.0)
Para ≥5	2 (100.0)	0 (0.0)	2 (100.0)
	Fisher's exact test = 3.250; p-value = 0.426		
Gestational age			
<37 weeks	4 (50.0)	4 (50.0)	8 (100.0)
≥37 weeks	13 (59.1)	9 (40.9)	22 (100.0)
	Fisher's exact p-value = 0.698		
Booking status			
Booked	8 (61.5)	5 (38.5)	13 (100.0)
Unbooked	9 (52.9)	8 (47.1)	17 (100.0)
	Chi Square = 0.222; p-value = 0.638		
Cadre of surgeon			
Consultant	11 (47.8)	12 (52.2)	23 (100.0)
Registrar	6 (85.7)	1 (14.3)	7 (100.0)
	Fisher's exact p-value = 0.104		

Table 6: *Relationship between cadre of surgeon, socio-demographic and obstetric characteristics with maternal complication among women who had EPH at RSUTH.*

Discussion

The Incidence of EPH in this study population was 2.5 per 1000 deliveries giving a ratio of 1:400 deliveries, which compares favourably with a study reported in same region of Nigeria. Abasiattai., *et al.* in 2013 reported an incidence of 2.3 per 1000 in a neighbouring State. Higher figures have been reported in other regions of Nigeria, with 6.2 per 1000 in Nnewi [15] and 5.4 per 1000 in Aba [14], both in south-east Nigeria and 3.78 per 1000 in Lagos, Western Nigeria [19]. Studies from Fuji [11] and Saudi Arabia [12] have reported incidences of 0.63/1000 deliveries and 1.97/1000 deliveries, respectively and other lower incidence rates of 0.63 per 1000 deliveries [20] and 0.78 per 1000 deliveries [21], have been reported from other developed countries. The comparatively higher rates in Nigeria and other developing countries may be explained by the inadequate obstetric services, large numbers of unbooked mothers/defaulters and delays in seeking or getting treatment, factors which are prevalent in these areas.

The most common indication for EPH in this study was extensive uterine rupture (50%) and this was the commonest indication reported from similar studies from centers in Nigeria [13,18,19]. This is evidence of the significant contribution that ruptured uterus from prolonged / obstructed labour continue to make to the poor reproductive health indices of women in our environment. However, in contrast to this finding, some studies in Nigeria are beginning to report placenta praevia as the most common indication [14,15]. This recent trend could be attributed to the increasing rates of primary and repeat caesarean sections in the last three decades [22]. The risk of placenta praevia and morbidly adherent placenta have been shown to increase with the number of previous CS in a woman [23].

Majority of the women who had EPH were in the age group of 30 - 40 years and were multiparous (para 2 - 4). This is like the findings by Zia., *et al.* [12] and Rabiu., *et al* [19]. A third of the women had EPH for placenta praevia which has been associated with increasing

number of previous caesarean section and increased parity, and uterine rupture, a cause in half of the women, is uncommon in women of low parity. In contrast, the study by Abasiattai., *et al.* found EPH occurred more in women of younger age and low parity, which is more pathetic. Whatever the case, the removal of the uterus and hence loss of reproductive capacity in our environment, where premium on childbearing is huge, can result in very devastating consequences including marital disharmony, divorce, and psychological problems [24].

Sub-total abdominal hysterectomy was the most performed surgical procedure in this study, above total abdominal hysterectomy, though consultants with requisite expertise performed more than three-quarters of the surgeries. This is like the findings of studies from Nigeria and beyond [12,13,15,18,19,22]. This appears to be the procedure of choice as it is relatively easier and quicker to perform in these haemodynamically unstable patients following uncontrollable haemorrhage. It is also technically safer in those who have massive adhesions over the lower uterine segment which may involve the urinary bladder. Reviews of studies have shown that sub-total hysterectomy is a preferable operation to total hysterectomy because of reduced blood loss and speed of surgery [25].

Although peripartum hysterectomy is lifesaving, mortality and complications can result. The maternal and perinatal mortalities are often not the result of the hysterectomy, but usually related to the underlying morbidity and delays in seeking and getting the interventions. The case fatality in this study of 20% is higher than the 14.3% reported by Abasiattai., *et al.* [13], similar to the 19.3% reported by Rabiu., *et al.* [19] but lower than the 31.0% reported by Obiechina., *et al* [15]. However, when compared to the 2.1% reported by Zhang., *et al*. [11], 3.5% reported by Zia., *et al.* [12] and reports without any maternal deaths [26], our figures are exceedingly high. The perinatal mortality is even higher, this study revealed a rate of 43.4%, Obiechina., *et al.* [15] reported 44.8%, while Abasiattai., *et al.* [13] reported 64.3%. This may be a result of uterine rupture with its devastating consequence on the baby. It has been postulated that clinically significant fetal morbidity can occur after 10 - 37 minutes of occurrence of uterine rupture, if urgent delivery is not undertaken [27]. The most common postoperative complication reported in most studies, including our study, has been anaemia and sepsis, this reflects the preoperative state of the women, haven lost much blood following inadequate intrapartum supervision with presence of sepsis.

This was a retrospective review of cases of emergency peripartum hysterectomy. Patient follow-up was limited to what is available in the records, making it difficult to determine long-term psychological and medical complications. However, the duration of surgery and blood loss at surgery was not significantly impacted, as theatre records are well kept and maintained. Also, the data collected were from a single institution, and as such the findings cannot be generalized. However, it might be necessary to consider multicenter prospective designs to improve on the findings in this study.

Conclusion

The incidence of emergency peripartum hysterectomy in our center was high and most cases occurred in unbooked patients. The commonest indications were uterine rupture and placenta praevia and were associated with significant maternal and perinatal mortality. With formal antenatal care, hospital delivery with skilled attendants, anticipation and prompt resuscitation and surgery the incidence can be reduced.

Conflict of Interest

All the authors declare no conflict of interest.

Bibliography

1. Callaghan WM., *et al*. "Trends in postpartum haemorrhage: United States, 1994-2006". *American Journal of Obstetrics and Gynecology* 202 (2010): 353.

2. Say L., *et al*. "Global causes of maternal death: a WHO systematic analysis". *The Lancet Global Health* 2.6 (2014): e323-e333.

3. Mehrabadi A., *et al*. "Epidemiological investigation of a temporal increase in atonic postpartum haemorrhage: a population-based retrospective cohort study". *JOG: An International Journal of Obstetrics and Gynaecology* 120 (2013): 853-862.

4. Kramer MS., *et al*. "Incidence, risk factors, and temporal trends in severe postpartum haemorrhage". *American Journal of Obstetrics and Gynecology* 209.5 (2013): 449e1-449e7.

5. Clark SL., *et al*. "Maternal death in the 21ST century: causes, prevention, and relationship to caesarean delivery". *American Journal of Obstetrics and Gynecology* 199 (2008): 36.e1-36.e5.

6. Creanga AA., *et al*. "Pregnancy-related mortality in the United States, 2006-2010". *Obstetrics and Gynecology* 125.1 (2015): 5-12.

7. Saucedo M., *et al*. "Ten years of confidential inquiries into maternal deaths in France, 1998-2007". *Obstetrics and Gynecology* 122 (2013): 752-760.

8. Awoyesuku PA., *et al*. "Magnitude, Trends and Causes of Maternal Mortality: A 7-year Review at a Tertiary Hospital in Rivers State, Nigeria". *Journal of Advances in Medicine and Medical Research* 32.1 (2020): 103-109.

9. Rossi AC and Lee RH. "Emergency postpartum hysterectomy for uncontrolled postpartum bleeding: a systematic review". *Obstetrics and Gynecology* 115 (2010): 637-644.

10. De la Cruz CZ., *et al*. "Caesarean section and the risk of emergency peripartum hysterectomy in high-income countries: a systematic review". *Archives of Gynecology and Obstetrics* 292 (2015): 1201-1215.

11. Zhang Y., *et al*. "Emergency obstetric hysterectomy for life-threatening postpartum hemorrhage: a 12-year review". *Medicine* 96.45 (2017): e8843.

12. Zia S., *et al*. "Maternal Outcome in Emergency Peripartum Hysterectomy: Minimizing the Risks". *Journal of South Asian Federation of Obstetrics and Gynaecology* 5.3 (2013): 91-95.

13. Abasiattai AM., *et al*. "Emergency peripartum hysterectomy in a tertiary hospital in Southern Nigeria". *Pan African Medical Journal* 15 (2013): 60.

14. Umezurike CC., *et al*. "Peripartum hysterectomy in Aba Southeastern Nigeria". *The Australian and New Zealand Journal of Obstetrics and Gynaecology* 48 (2008): 580-582.

15. Obiechina NJA., *et al*. "Emergency peripartum hysterectomy in Nnewi, Nigeria: A 10-year review". *Nigerian Journal of Clinical Practice* 15.2 (2012): 168-171.

16. Demirci O., *et al*. "Emergency peripartum hysterectomy in a tertiary obstetric center: nine years evaluation". *Journal of Obstetrics and Gynaecology Research* 37.8 (2011): 1054-1060.

17. Kastner ES., *et al*. "Emergency peripartum hysterectomy: experience at a community teaching hospital". *Obstetrics and Gynecology* 99.6 (2002): 971-975.

18. Gbadebo AA., *et al*. "Inevitable peripartum hysterectomy in a tropical Hospital: indications and maternofetal outcome". *Pakistan Journal of Medical Sciences* 24 (2008): 122-126.

19. Rabiu KA., *et al*. "Emergency peripartum hysterectomy in a tertiary hospital in Lagos, Nigeria: a five-year review". *Tropical Doctor* 40.1 (2010): 1-4.

20. Karayalcin R., *et al*. "Emergency Peripartum Hysterectomy". *Archives of Gynecology and Obstetrics* 283 (2011): 723-727.

21. Habek D and Becarevic R. "Emergency peripartum hysterectomy in a tertiary obstetric center: 8-year evaluation". *Fetal Diagnosis and Therapy* 22.2 (2007): 139-142.

22. Kastner ES., *et al*. "Emergency peripartum hysterectomy: experience at a community teaching hospital". *Obstetrics and Gynecology* 99 (2002): 971-975.

23. American College of Obstetricians and Gynecologists (ACOG). Practice Bulletin No. 205: Vaginal Birth After Cesarean Delivery". *Obstetrics and Gynecology* 133.2 (2019): e110-e127.

24. Udoma EJ., *et al*. "Hysterectomy among nulliparous women in Calabar: indications, complications, social implications and management outcome". *The Global Journal of Medical Sciences* 2 (2003): 135-139.

25. Roopnarinesingh R., *et al*. "A 27-year review of obstetric hysterectomy". *Journal of Obstetrics and Gynaecology* 23 (2003): 252-254.

26. Daslalakis G., *et al*. "Emergency obstetric hysterectomy". *Acta Obstetricia et Gynecologica Scandinavica* 86 (2007): 223-226.

27. Bujold E and Gauthier RJ. "Neonatal morbidity associated with uterine rupture: What are the risk factors?" *American Journal of Obstetrics and Gynecology* 186 (2002): 311-314.

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