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A Ten-year Review of Emergency Peripartum Hysterectomy in Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi

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Abstract

Background: *Emergency peripartum hysterectomy is a live saving procedure often used as a last resort when conservative measures fail in management of some obstetric complications.*

Objective: *To determine the prevalence, indications, complications and feto-maternal outcome of this procedure in Nnamdi Azikiwe University Teaching Hospital Nnewi (NAUTH).*

Methods: *This is a 10-year retrospective cross-sectional study of all cases of Emergency Peripartum Hysterectomy (EPH) managed at NAUTH, Nnewi, Nigeria between 1st May 2009 and 1st April 2019. All the cases within the study period were obtained from the labour ward theatre register. The case notes of the patients were retrieved from the Medical records department. Information relating to age, parity, gestational age, booking status, indication and type of hysterectomy, complications, and outcome were noted and evaluated. The data were processed using Microsoft excel and exported to Statistical Package for Social Sciences (SPSS) version 26 (IBM Corp.) for analysis*

Results: *During the 10-year study period, 34 (0.47%) EPH were performed out of 7,185 deliveries, however, the case files of only 31 patients (91.2%) were available for the study. Of these 31 cases; 6 (19.4%) were following vaginal delivery; 9 (29%) following a caesarean section and 16 (51.6%) were following an exploratory laparotomy for uterine rupture. Overall prevalence was 4.7 per 1,000 deliveries (1 in 211 deliveries). Twenty-two (71%) of the patients were unbooked. Uterine rupture (35.4%) was the commonest indication followed by uterine atony (25.8%) and placenta previa (22.5%). The commonest complications were anaemia (90.3%), febrile episodes (48.3%) and disseminated intravascular coagulopathy (22.5%). Subtotal abdominal hysterectomy was performed in 67.7% of the cases. There were 4 maternal mortalities (12.9%), whereas perinatal mortality was 11 (35.4%).*

Conclusion: *Emergency peripartum hysterectomy is a lifesaving alternative when conservative modalities fail and is associated with perinatal and maternal morbidity and mortality. Women should be encouraged and enlightened on the benefits of accessing antenatal care and delivery in centers with skilled healthcare personnel.*

Keywords: Peripartum, Hysterectomy, Emergency, Uterine, Atony, Caesarean

Introduction

In 1768, the first caesarean hysterectomy was proposed by Joseph Cavallini in Florence, however EPH was first successfully performed by Porro in 1871 and was used to manage life-threatening obstetric haemorrhage and uterine sepsis [1, 2]. EPH is a lifesaving procedure, done when conservative measures to achieve haemostasis have failed during life threatening obstetric haemorrhage. It is carried out to stop the continuum of major postpartum obstetric haemorrhage to maternal death [3-5].

The incidence of emergency peripartum hysterectomy varies in different countries. It has an incidence of 0.35–1.22 per 1000

births in high-income countries, while the reported incidence in low and middle-income countries is between 0.83–9.5 per 1000 deliveries [6, 7]. In Nigeria, the incidence is 2.56–5.4 per 1000 deliveries [8]. Over time, availability of blood transfusions and other interventions such as use of uterotonic agents, uterine artery ligation and haemostatic uterine suturing have reduced the need for hysterectomies, however with the rising rates of caesarean deliveries and the ensuing rise in incidence of placenta previa and placenta accreta spectrum disorders, have increased the incidence of obstetric hysterectomies, especially in the high-income countries [2, 6, 7, 9-11]. In low and middle-income countries, poor transportation to adequate health facilities, erroneous religious and cultural beliefs, poverty, high incidence of unbooked cases and poorly supervised deliveries have effects on the higher incidence of obstetric hysterectomy [12].

Uterine atony and uterine rupture were formerly regarded as the commonest indications for emergency hysterectomy, however recent studies have shown placenta accreta spectrum disorders and placenta previa as the most common indication [4, 13]. Complications associated with EPH include extensive blood loss, blood transfusion, disseminated intravascular coagulopathy, injury to contiguous structures and maternal and perinatal death.

The study is aimed at determining the prevalence, indications and outcomes associated with emergency peripartum hysterectomies done in Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, South-eastern Nigeria.

Methods

Study Design: This is a retrospective cross-sectional study of women who had an emergency obstetric hysterectomy at Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, South-eastern Nigeria between May 2009 and April 2019.

Study Population: This included women who had hysterectomy during the peripartum period.

Study Procedure: The cases were identified from the labour ward delivery, theatre and intensive care unit registers. The case notes were retrieved from the medical records department. Emergency peripartum hysterectomy was defined as hysterectomy performed for uncontrolled uterine bleeding unresponsive to medical measures during the first 24 hours after delivery beyond 28 weeks of gestation.

Information retrieved from the patients' records include age, parity, booking status, gestational age at delivery, mode of delivery, previous caesarean delivery, indication for surgery and type of hysterectomy, cadre of surgeon, associated complications and fetal outcomes. The total number of deliveries was retrieved from the labour ward register.

Statistical analysis

The data was processed using Microsoft excel and the cleaned data were exported to Statistical Package for Social Sciences (SPSS) version 26 (IBM Corp.) for analysis. The patients were analysed for variables such as age, parity, educational levels, booking status, mode of delivery, indications, and complications of peripartum hysterectomy. The information was obtained and recorded in proforma. We used descriptive statistics to compare the socio-economic and obstetric characteristics of women with peripartum hysterectomy.

Ethical approval

The study was approved by the Ethics Review Board of the hospital (reference number: 0160/10/2022; date of approval: 26th October, 2022). The study was conducted according to the Helsinki declarations on ethical principles for medical research involving human subjects.

Results

During the 10-year period, 34 EPH were performed out of 7,185 deliveries, resulting in a rate of 0.47% or 1:211 deliveries. The case records of only 31 women (91.2%) that had peripartum hysterectomy were available and they formed the subsequent result of the study. The prevalence of peripartum hysterectomy with respect to mode of delivery in the study was 19.4% following vaginal delivery, 29.0% following caesarean section and 51.6 % following exploratory laparotomy in cases of uterine rupture respectively.

Table 1 shows the sociodemographic of the study. The age of the patients ranged from 21 to 43 years. The age group with the highest proportion of women who had EPH was 30–39 years (54.8 %). Majority of the women had primary (35.5%) or secondary (41.9%) education. Parity was between 1 and 8. There were 3 primigravidae (9.7%), while 29 (90.3%) were multiparous. Twenty-two (71.0%) patients were unbooked, with only nine (29.0%) booked.

Table 1: Sociodemographic characteristic of the patients

VARIABLE	FREQUENCY	
AGE GROUP (year)		**(%)**
20-29	11	35.5%
30-39	17	54.8%
≥ 40	3	9.7%
PARITY		
1	3	9.7%
2-4	16	51.6%
≥ 5	12	38.7%
EDUCATIONAL LEVEL		
None	3	9.7%
Primary	11	35.5%

Secondary	13	41.9%
Tertiary	4	12.9%
BOOKING STATUS		
Booked	9	29.0%
Unbooked	22	71.0%
MODE OF DELIVERY		
Spontaneous vaginal delivery	6	19.4%
Caesarean section	9	29.0%
Exploratory Laparotomy	16	51.6%

The indications for peripartum hysterectomy included uterine rupture (35.5%; 11/31), uterine atony (25.8%; 8/31), placenta previa (22.6%; 7/31), placenta accreta spectrum disorder (9.7%; 3/31) and placenta abruption (6.4%; 2/31). These are depicted in table 2.

Table 2: Indications for emergency peripartum hysterectomy

INDICATION	Frequency (%)	
Uterine Rupture	11	35.5%
Uterine Atony	8	25.8%
Placenta praevia	7	22.6%
Placenta accreta spectrum dissorder	3	9.7%
Placenta abruption	2	6.4%

EPH had a prevalence of 67.7% (21/31) in women with one or more prior caesarean delivery, which was almost two times higher than in women with no history of caesarean delivery (32.3%; 10/31). All 11 patients with uterine rupture had had a previous caesarean delivery. The prevalence of EPH in patients with placenta accreta spectrum dissorder and placenta previa was 4-fold more common in patients with a previous caesarean delivery (25.8%; 8/31), than in women with no previous caesarean delivery (6.4%; 2/31) as seen in table 3. Twenty-one (67.7%) cases had subtotal hysterectomy, while ten (32.3%) cases had total abdominal hysterectomy. Total hysterectomy was done mainly for cases of placenta previa, placenta accreta spectrum disorder or in cases where the cervix was removed in order to complete haemostasis.

Table 3: Association between previous caesarean section (C/S) and the indications for EPH

	Previous C/S (21)	No previous C/S (10)
Uterine Rupture	11 (52.4%)	0 (0.0%)
Uterine Atony	2 (9.5%)	6 (60.0%)
Placenta praevia	6 (28.6%)	1 (10.0%)
Placenta accreta spectrum disorder	2 (9.5%)	1 (10.0%)
Placenta abruption	0 (0.0%)	2 (20.0%)

The complications recorded in these patients included postoperative fever (48.4%), anaemia (90.3%), wound infection (19.4%), disseminated intravascular coagulopathy (22.6%) and urinary tract injury (12.9%). This is depicted in table 5. Blood was transfused in 28 (90.3%) patients. Intensive care unit admission was 32.2%. Fifteen (48.3%) neonates needed admission to the special care baby unit (SCBU). There were four maternal deaths resulting in a case fatality rate of 12.9%. There were 11 perinatal deaths (35.5%) (3 fresh still births and 8 macerated still births). The maternal deaths were caused by irreversible hypovolemic shock with disseminated intravascular coagulopathy and acute renal failure.

Table 4: Hysterectomy type

	Frequency (%)	
Subtotal hysterectomy	21	67.7%
Total hysterectomy	10	32.3 %

Table 5: Complications associated with EPH

Complications	Frequency (%)	
MATERNAL		
Febrile episodes	15	48.4%
Anaemia	28	90.3%
Wound infection	6	19.4%
Disseminated intravascular coagulopathy	7	22.6%
Urinary tract injury	4	12.9%
Intensive care unit admission	10	32.2%
Maternal death	4	12.9%
FETAL		
SCBU admission	15	48.3%
Perinatal death	11	35.5%

Discussion

Emergency peripartum hysterectomy is a procedure performed in order to save a woman's life, when conservative measures to achieve haemostasis during life threatening obstetric haemorrhage have all failed. The prevalence was 4.7 per 1,000 deliveries from the study. Incidence from previous studies ranged from 0.99 per 1,000 births to as high as 6.1 per 1000 deliveries [7-10]. Majority of the women (90.3%) were multiparous, three patients (9.7%) were primigravidae. This is in line with the study by Huque et al, that high parity is a risk factor for peripartum hysterectomy, however primigravidas should not be overlooked [14]. Majority of the patients were unbooked (71.0%), most had visited maternity homes lacking skilled birth attendants and had prolonged obstructed labour or injudicious use of oxytocin. At, times in a background of a previous caesarean section prior to presentation. This trend was noted in other studies [5, 12, 15].

A notable association to the indications for EPH was a history of a previous caesarean section, as was seen in 67.7% of the patients. Studies done by Shamsa et al and Özcan et al reported cases of EPH in women with a previous scar to be as high as 83% [6, 9]. Previous studies have also indicated that women with a previous caesarean section are at higher risk of hysterectomy for post-partum haemorrhage than women who have had only vaginal deliveries, thus increasing the incidence of EPH [16, 17]. A history of a previous caesarean section was associated with uterine rupture in 52.4% of cases, placenta previa in 28.6% and placenta accreta spectrum disorder in 9.5% of cases.

Uterine rupture (35.5%) was found to be the commonest indication for EPH in the study, which was followed by uterine atony (25.8%) then placenta previa (22.6%). This finding is contrary to studies from high-income countries, which found abnormal placentation and uterine atony to be commonest indications for EPH [2, 4, 6, 9, 16, 17]. Studies from low and middle-income countries however are in line with the findings from the study, showing uterine rupture as the commonest indication for EPH [8, 10, 12, 13, 18]. The prevalence of abnormal placentation in high-income countries is most likely due to the increased rate of caesarean section in these countries, while the prevalence of uterine rupture in low and middle-income countries is as a result of the higher incidence of unbooked pregnancies and unsupervised labour. The leading risk factor for uterine rupture is the injudicious use of oxytocin particularly in patients with a prior uterine scar, thus efforts should be made to prevent unnecessary caesarean section and to improve on the number of child births supervised by skilled birth attendants in order to decrease the risk of EPH. Uterine atony was noted to occur in 25.8% of the cases for which grandmultiparity is considered a risk factor.

Subtotal hysterectomy was the commonly performed surgical procedure (67.7%) than total hysterectomy (32.3%). Previous studies have also shown a similar pattern [7, 12, 13]. This is probably because subtotal hysterectomy is quicker and may be safer for critically ill patients. Total hysterectomy was the preferred option in cases with abnormal placentation causing massive bleeding. Studies from other centers where abnormal placentation and placenta previa were the commonest indications for EPH have also shown total hysterectomy to be commonly performed over subtotal hysterectomy [9].

The most common complications from the review were anaemia (90.3%) and febrile episodes (48.4%). This is similar with some other studies by Danisman et al, Nwobodo et al and Utuk et al [10, 11, 18]. All patients with anaemia required blood transfusion. Other complications noted include wound infection, disseminated intravascular coagulopathy (DIC) and urinary tract injuries. This complication has also been reported from similar studies [2, 3, 6, 9, 11, 16]. A multidisciplinary team approach in the management of these patients is essential, with specialists from disciplines, such as anaesthesiology, general surgery, urology, hematology and neonatology should. Ureteric injuries are usually due to dense peritoneal adhesions to the uterus following the previous caesarean sections, and the emergency nature of the procedure. DIC was usually following extensive blood loss.

The incidence of maternal death was 12.9% while perinatal mortality was 35.5%. This was lower from the previous study by Obiechina et al, from Nnewi which found maternal and perinatal mortality to be 31.0% and 44.8% respectively [13]. The reduction could be due to better management of deliveries from the referral centers, improvements in obstetric care, haematological practices, anaesthetic care, and better neonatal services. Other studies in Nigeria show a similar incidence of maternal mortality, with 14.3%, 12.1%, 8.0% and 13.8% from Akwa-ibom, Sokoto, Ogun and Lagos respectively [12, 18, 5, 8]. Previous Nigerian studies have shown poor maternal health seeking behaviour and health care delays as factors associated with mortality [15, 19].

Table 6: Comparison of incidence, indications and associated maternal/ fetal mortality of EPH in Nigerian Studies

Author/year	Location	Incidence (%)	Major Indications (%)			Maternal Mortality (%)	Perinatal Mortality (%)
			Ruptured Uterus	Uterine atony	Abnormal placentation		
Obiechina et al 2012	Nnewi	0.62	34.50	6.90	58.60	31.00	44.80
Nwobodo et al 2012	Sokoto	0.51	93.20	2.70	1.40	12.10	-
Abasiattai et al 2013	Akwa-Ibom	0.20	67.80	17.90	14.20	14.30	64.30
Akintayo et al 2016	Ekiti	0.26	44.10	37.30	17.60	11.80	55.90
Babsola et al 2016	Lagos	0.48	53.5	23.3	18.9	13.8	-
Jagun et al 2019	Ogun	0.55	40.00	32.00	20.00	8.00	56.30
This Study	Nnewi	0.47	35.5	25.8	32.3	12.9	35.5

Conclusion

In conclusion, although EPH ends the potential of future child bearing of the woman, it however is a necessary procedure done so as to save the woman's life. In order to reduce its incidence and associated complications, it is recommended that efforts should be made to increase the proportion of deliveries attended to by skilled birth attendants. Women should be encouraged to book and deliver at centers equipped with handling high risk pregnancies. Lethal complications could be prevented by timely intervention of EPH for cases unresponsive to initial conservative managements by the most experienced obstetrician in a multidisciplinary management approach.

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