Primary Postpartum Haemorrhage at the University of Port Harcourt Teaching Hospital: Prevalence and Risk Factors

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ABSTRACT

BACKGROUND

Postpartum haemorrhage (PPH) is a leading global cause of severe maternal morbidity and mortality. Approximately 14 million women suffer postpartum haemorrhage annually and at least 128,000 of these women bleed to death. Most of these deaths, which occur within four hours of delivery and are as a result of problems during the third stage of labour. Majority of PPH related deaths occur in developing countries of the world where facilities are poorly developed in addition to a paucity of trained attendants at delivery. The objective of this study was to determine the prevalence, risk factors, causes and outcome of primary postpartum haemorrhage at the University of Port Harcourt Teaching Hospital (UPTH), south-South, Nigeria.

METHOD

This was a retrospective study of all consecutive births between January 1st and December 31st, 2014 at UPTH. The socio-demographic characteristics, mode of delivery, cause of primary postpartum haemorrhage, antenatal/ intrapartum risk factors, treatment received and outcome were extracted from the patients' case notes, entered into SPSS version 20.0 and analysed.

RESULTS.

Of the 3,694 women who were delivered at the maternity unit of UPTH, 178 had primary postpartumhaemorrhage giving a prevalencerateof 4.28%. Uterine atony was the leading cause and delivery by Caesarean section was the leading risk factor. There were 5 mortalities from primary postpartum haemorrhage.

CONCLUSION

The prevalence of primary postpartum haemorrhage in UPTH is 4.28%. Uterine atony was the leading cause while Caesarean section was the commonest risk factor. Efforts should therefore, be made to reduce the caesarean section rate and improve surgical skills aimed at reducing blood loss at surgery.

KEYWORDS

Post-PartumHaemorrhage; Maternal Morbidity Mortality; Uterine Atony; Caesarean Section.

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INTRODUCTION

Postpartum haemorrhage (PPH) which can either be primary or secondary; is the excessive loss of blood through the genital tract after delivery of a baby and up to 42 days postpartum[1]. The World health Organization (WHO) defines primary postpartum haemorrhage as the loss of blood per vaginam in excess of 500ml (or more than 1000ml following caesarean section) within the first 24 hours of delivery. [1,2]

This definition is increasingly becoming irrelevant as most women in developed countries can lose up to this amount without any compromise in their cardiovascular status. However, corresponding females in developing countries may develop profound cardiovascular instability with blood loss of less than 500mls.

In view of the above scenario, the definition of PPH was thus expounded to include any amount of blood loss that can cause cardiovascular instability or loss of more than 10% of the woman's blood volume [3].

In both developed and developing countries, postpartum haemorrhage is a leading cause of severe maternal morbidity and mortality. Approximately 14 million women suffer primary postpartum haemorrhage annually and at least 128,000 of these women bleed to death [2]. Most of these deaths occur within four hours of delivery and are as a result of problems during the third stage of labour [2].

The burden of mortality from PPH overwhelmingly occurs in developing countries of the world where facilities are poorly developed and trained attendants are largely unavailable at delivery.

In sub Saharan Africa, where 1 in 16 women die of pregnancy and childbirth-related conditions, PPH is estimated to account for between 25%-30% of these deaths [2, 4], thus making severe bleeding the single most important cause of maternal mortality worldwide.[5]

Primary postpartum haemorrhage is traditionally considered as a disorder of one or more of four processes: uterine atony, retained clots or placental debris, genital lesions or trauma, and disorders of blood coagulation. Uterine atony which can occur after normal vaginal delivery or abdominal delivery is said to account for up to 75-90% of cases of Post PartumHaemorrhage[6].

The determinants and risk factors for PPH have been studied to identify pregnant women with increased risk.

According to these studies, risk factors for primary PPH in vaginal deliveries include women with previous history of primary Primary postpartum haemorrhage, prolonged first and second stages of labour, [6], nulliparae, multiparae, prolonged and augmented labour, pre-eclampsia, post episiotomy, forceps and vacuum delivery, multiple pregnancy, retained placenta, Asian and Hispanic ethnicity[7].

In spite of the knowledge of the risk factors for PPH which have been stated above, It is known that the occurrence of PPH may be unpredictable.[8]In addition there may be population and area specific risk factors which should be identified to guide risk assessment of women in those areas. It is on this contextual that this study aims to identify the incidence, causes and outcome of primary postpartum haemorrhage in a tertiary health centre in Port Harcourt, south-South Nigeria as no prior study had been done.

SUBJECTS AND METHODS

Study site:

The study was conducted at the University of Port Harcourt Teaching Hospital, the leading tertiary health facility in Rivers State, south-South Nigeria. The hospital serves as a referral centre for Rivers, Bayelsa, and other adjoining States in south-South, Nigeria. The maternity unit has an annual delivery rate of 3500-4000 deliveries per year.

Study Design:

This a retrospective cross sectional study utilizing the case notes of patients who lost at least 500mls of blood after vaginal delivery or 1000mls or more after caesarean delivery between January 1st and December 31, 2014.

Inclusion criteria

1. Those who had primary post-partumhaemorrhage within the study period

Exclusion criteria

1. Those who delivered outside the hospital without any referral letter
2. Those who were brought in dead following bleeding after delivery.

Study instruments

The maternity register, theatre records, postnatal ward registers were retrieved and data on patient's age, parity, booking status, antenatal complications, gestational age at delivery, type of delivery, outcome of delivery, morbidities as well as the mortalities that resulted from primary postpartum haemorrhage

Data Management

Data entry and analysis were done using SPSS 20.0 for windows® statistical software package. Statistical analysis of generated data was calculated, means, standard deviations and percentages are presented.

Ethical Considerations

Ethical approval for this study was obtained from the ethical review board of the UPTH. The following ethical issues of confidentiality, beneficence, non-malfeasance were given due consideration during the period of the study.

RESULTS

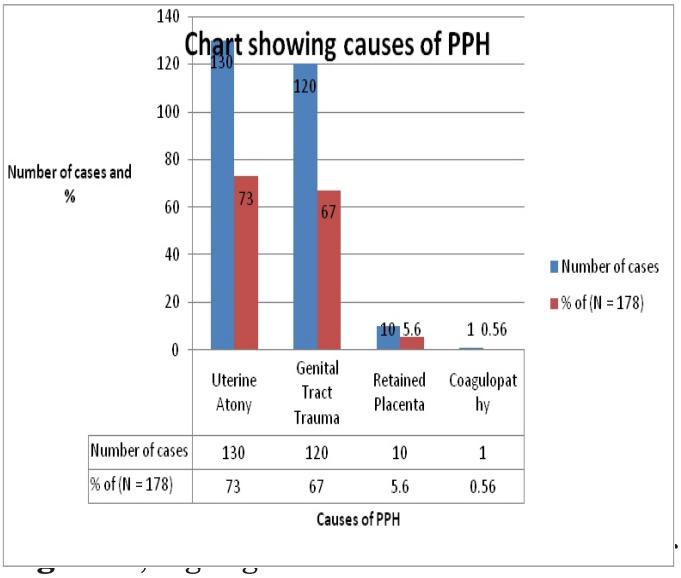
We reviewed the medical records of 178 women who had primary PPH, out of a total of 3,694 deliveries within the study period of 1st January to 31st December 2014. This gave a prevalence of 4.28%.

Table 1: shows the socio-demographic characteristics of the study population. Majority (80%) of cases of primary PPH occurred amongst patients of age thirty and above. Also 80% of patients with primary PPH were multiparous and grand multiparous.

Age (years)	Number (N)	Percentage (%)
⩽19	31	17.4
20-24	3	1.69
25-29	25	14.04
30-34	52	29.21
⩾35	67	37.64
Total	178	100
PARITY		
NULLIPARA	38	21.35
PRIMIPARA	10	5.60
MULTIPARA	81	45.50
GRANDMULTIPARA	49	27.53
TOTAL	178	100

Table 2 shows the mode of delivery of patients that had primary PPH. Majority (53.4%) had Caesarean section whereas 46.4% had vaginal delivery. There was no significant difference between the proportions, p>0.05

Mode of delivery	Number	Percentage
Vaginal delivery	83	46.6
Caesarean section	95	53.4



primary PPH. Majority 130(73%) of these patients had uterine atony, with the use of oxytocin for augmentation and induction of labour accounting for 52% of those that had uterine atony. Genital tract trauma was identified as the second most common risk factor accounting for 67% of cases of primary PPH. Caesarean section was the most common cause in this group accounting for 53.4% of these patients.

The risk factors for the major causes of uterine atony are shown in Table 3 and Figure 2 and 3. Out of the 130 patients with uterine atony, augmentation of labor 35 (26.9%), prolonged labor 30 (23.1%) and induction of labor 22 (16.9%) were the most common risk factors for uterine atony, while caesarean section delivery 95 (79.2%) was the most common cause of iatrogenic and overall genital tract trauma.

Table 3: Showing risk factors for causes of PPH

Risk factors for causes of PPH		
UTERINE ATONY	(N = 130)	%
Induction of labour	22	16.9
Augmentation of labour	35	26.9
Prolonged labour	30	23.1
Precipitate labour	5	3.8
Chorioamnionitis	10	7.7
Multiple pregnancy	10	7.7
Polyhydramnious	7	5.4
General anaesthesia	5	3.8
GENITAL TRACT TRAUMA	(N= 120)	
Iatrogenic	105	
Caesarean section	95	79.2
Vacuum delivery	3	2.5
Episiotomy	5	4.2
Spontaneous	17	
Genital tract laceration	12	10
Uterine rupture	5	4.2
RETAINED PLACENTA	10	5.6
COAGULOPATHY	1	0.6

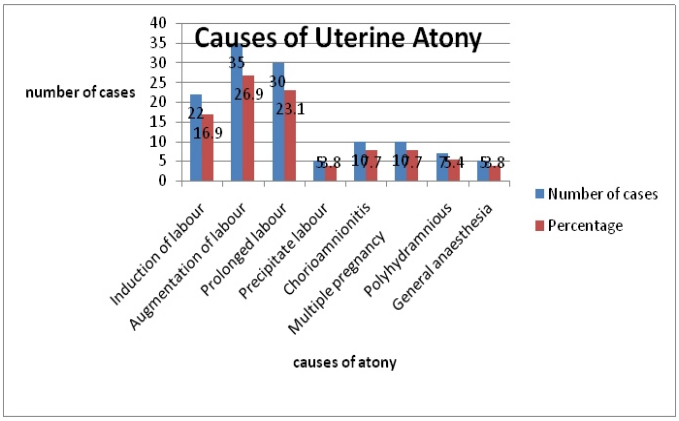


Figure 2: Causes of Uterine Atony

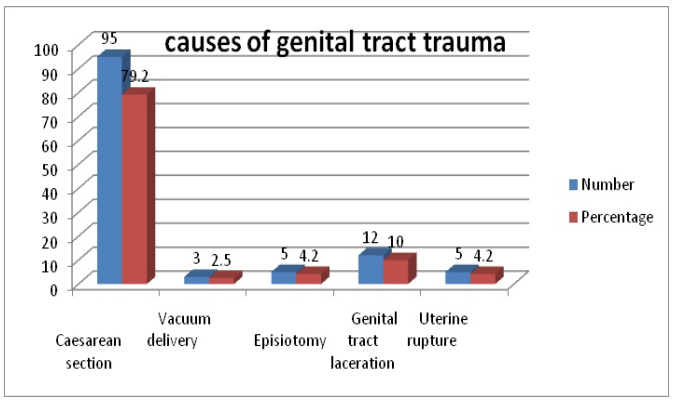


Figure 3: Causes of Genital Tract Trauma

Table 4 shows the indications for Caesarean sections. Majority (63%) of cases of PPH occurred in patients who had history of previous Caesarean sections, with increasing incidents occurring with increasing number of surgeries. Obstructed labour and cephalo pelvic disproportion also accounted for 20% of cases of PPH

Indications for CS	No	%
CPD in labour	8	8.42
APH	5	5.26
Obstructed labour	12	12.63
1 previous CS	10	10.53
2 previous CS	17	17.89
3 previous CS	24	25.26
Abnormal lie/presentation	4	4.21
Retained second twin	2	2.11
Severe PET	8	8.42
PMTCT	5	5.26
	95	100

DISCUSSION

The global prevalence of Primary postpartum haemorrhage is estimated at 6% of all deliveries [12], with prevalence figures varying between regions[12]. The prevalence of primary postpartum haemorrhage in this study was 4.82% of all deliveries, both vaginal and caesarean sections. This finding is in keeping with results of other studies in Africa [8, 13] and South America [10, 12] which reported prevalence rates of; 3.8%, 4.1%, 3.9% and 4.4% respectively.

Higher prevalence values of 7% and 6% have been reported by some studies in Europe[14, 15,] while a lower prevalence of 2%was reported from the study at Ife [8]. The similarities and differences in these studies may be due to the criteria used to define Primary post-partum haemorrhage.

Uterine atony is still the leading cause of PPH worldwide, weather it is assessed in spontaneous vaginal delivery or Caesarean section[9, 18,19,20]. It was also the leading causeof PPH in this study accounting for 73% of cases. Uterine atony can be anticipated if one is

aware of the risk factors of uterine over distension such as polyhydramnious, multifetal gestation or fetal macrosomia which all lead to primary PPH. Labour that is either very rapid or prolonged(cephalopelvic disproportion, obstructed labour) may lead to uterine atony. It is thought that rapid labour is associated with vigorous contractions, which tire out the uterus, whereas prolonged labour may lead to uterine exhaustion or inadequate uterine contraction which may increase the risk of PPH.

Spontaneous and iatrogenic trauma are implicated in the etiology of PPH. Caesarean section increases blood loss at delivery and is a major risk factor to the etiology of PPH as highlighted in this study. Efforts should therefore be made to reduce the Caesarean section rate by proper supervision of labouras this study also shows a progression in the risk of PPH with increasing number of previous Caesarean sections.

Risk factors that have been identified in various studies include: prolonged labour, oxytocin induction/augmentation of labour, instrumental vaginal deliveries[4,12,15,22], Caesarean section, genital tract lacerations, poorly managed third stage of labour[9,13,18,23] retained placenta, chorioamnionitis and hyperthermia[24,25] fetal macrosomia, grandmultiparity, nulliparity[27] over distended uterus, hypertensive disorders[16] and advanced maternal age [14].

It is worthy of note that post-partum haemorrhage can occur in the absence of any identifiable risk factors[8,28]. Therefore, anticipation of its occurrence, prompt and adequate intervention will go a long way to reducing the adverse outcome.

From the 2011 annual report[29], the maternal mortality rate at UPTH was 792.1/100,000 deliveries with primary PPH accounting for 17.24% of the maternal deaths second only to severe preeclampsia/eclampsia which accounted for 31.03% of maternal mortality. A study in Ilorin, North-central Nigeria reported that PPH accounted for 34%of maternal mortality[30,31] while other studies and in Ibadan and Enugu reported PPH as responsible for 18 % of maternal mortality[22] and the second most common cause after obstructed labour in Enugu respectively.[32] The maternal mortality rate attributed to PPH in this study value when compared to other local studies might be due to the prompt intervention given to the patients who attended this tertiary health centre.

The exact prevalence of primary postpartum haemorrhage is difficult to determine due to the difficulty in accurately measuring blood losses. Even the visual mode of estimation is grossly subjective and in most cases underestimated [3,4, 14] as what is reported is about 30-50% of the actual blood loss.[21] This inaccuracy thus increases with increased blood loss[4]. Other methods of estimating blood loss are; the gravimetric method, direct collection into bedpans or plastic bags, determination of changes in blood indices before and after delivery, the acid haematin method, plasma volume determination before and after delivery using radioactive tracer elements such as chromium-51 or measuring blood loss by using chromium-51-labelled erythrocytes. [21] Most of these methods are not adopted routinely in clinical practice because of their complicated nature, and the expenses and time required obtaining results before beginning interventions. Thus visual estimation, inaccurate as it may be continues to be used clinically.

It is therefore very likely that misclassification of the outcome may have occurred since visual estimation of blood loss may be biased by the attendants previous knowledge of potential risks. In this study, blood loss was taken as recorded by the attendant at delivery using number of soaked vulva pads, abdominal packs and sterile gauze. This is thus a limitation of the study as the bias of the attendant at delivery could not be eliminated. Further study (preferably prospective) should be done to assess the impact of the risk factors and the interventions given on the overall outcome.

CONCLUSION

The incidence of primary postpartum haemorrhage in UPTH is 4.28%. Caesarean section was the greatest risk factor while uterine atony was the leading cause. Efforts should be made to reduce the caesarean section rate and improve surgical skills aimed at reducing blood loss at surgery. Unnecessary caesareans and episiotomies should be avoided. The training and re-training of skilled birth attendants on the active management of third stage of labour should be made a routine. Provision of skilled care at every delivery will go a long way to reduce the incidence and the morbidity and mortality associated with primary postpartum haemorrhage.

Advocacy and public enlightenment campaigns on the benefits of antenatal care and institutional delivery will assist in the reduction of maternal mortality associated with primary postpartum haemorrhage.

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