Primary Postpartum Haemorrhage in Lagos, Nigeria

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Abstract

Context: Postpartum haemorrhage (PPH) remains a significant cause of maternal mortality worldwide, necessitating this study to determine the magnitude in a developing country.
Objective: To determine the frequency, risk factors, mode of management and outcome of primary postpartum haemorrhage (PPH) in a Nigerian obstetric population.
Study Design, Setting and Subjects: A case-control study done in a University Teaching Hospital in Nigeria. Data was extracted from the delivery register and individual case records over a five-year period in two groups of women. One group consisted of those with primary PPH following vaginal delivery (Study Group) and the other consisted of consecutive women who delivered the same day but without PPH (Control Group).
Main Outcome Measures: Frequency of occurrence and sources of PPH, delivery outcome and complications.
Results: There were 298 patients with primary PPH, a frequency of 6.6%. Atonic uterus 84 (33.8%), genital tract lacerations 70 (28.2%), episiotomies 61 (24.6%) and retained placenta 32 (13%) were the four leading identifiable causes. Other apparent risk factors for primary PPH were instrumental deliveries, augmented labours, absence of antenatal care and deliveries conducted by senior registrars and midwives. Complications noted included anaemia (i.e. Hb < 11gm/dl/) in 108 patients (36.2%), episiotomy dehiscence in 4 (1.3%) and one maternal death (0.3%).
Conclusion: Timely, less liberal episiotomies are advocated. Active management of the third stage of labour should be promoted and there is need to re-appraise the storage and potency of oxytocics available for usage.

Key Words: Postpartum Haemorrhage, Complications, Maternal Mortality.

Introduction

Primary postpartum haemorrhage (PPH), defined as blood loss of 500mls in the 24 hours following delivery [1], is a major cause of maternal mortality in both developed and developing countries. Severe postpartum haemorrhage (blood loss in excess of 1000mls) is estimated to occur in about 11% of women who have a live birth globally. Out of the estimated 14 million women that suffer severe blood loss postpartum every year worldwide, 1% die and a further 12% survive with severe anaemia.[2]

In Nigeria, hospital studies constitute the main sources of information because of paucity of reliable national vital statistics. PPH is a significant cause of maternal mortality and morbidity. It accounted for between 8.6% and 35.6% of maternal deaths in Nigeria[3, 4] which has been put as 1930 per 100,000 live births in one of such studies[5]. This is in sharp contrast to a maternal mortality rate of less than 0.5 per 100,000 from PPH in the United Kingdom (one death out of a total of 271 maternal deaths from 1997-1999)[6].

In developing countries, a large percentage of births occur at home without skilled attendants being present [7]. In rural West Africa, about 80% of women deliver at home without skilled attendants [8]. The absence of skilled providers to recognize and treat conditions like uterine atony, genital laceration and ruptured uterus allows postpartum haemorrhage to rapidly progress to shock and death due to lack of prompt management [8].

The incidence of PPH varies from country to country and, within the same country, it varies from region to region and from one maternity unit to another. In Britain, 5% of deliveries end in primary PPH while major or severe PPH occurred after 1.3 % of deliveries [9]. In Australia, primary PPH occurred in 12% of parturients, with atonic uterus (29%), genital tract trauma (25%) and multiple causes (20%) being the main culprits. In 19%, the cause was unknown [10], which contrasts sharply with a previous Australian study [11] that found an incidence of 4.2%, with uterine atony (80.6%), retained placenta (12.3%) and third degree perineal lacerations (2.4%) being the three leading causes of primary PPH. An incidence of 1.8% was earlier reported in Nigeria with uterine atony (47.1%), episiotomies and lacerations (29.4%) and retained placenta (18.1%) being the three leading causes.[12] This apparent low incidence may be due to under-reporting as this was a hospital based survey.

It is note worthy that episiotomy is one of the most widely performed operative procedure during delivery despite scanty scientific evidence of its major role in modern obstetrics. An episiotomy incidence of 54.9% of vaginal deliveries was found in Nigeria[13] while it was

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38.6% in the United States[14] and is more frequently performed at first birth. However in the Nigerian study, about 58% of the women not subjected to episiotomy had intact perineum while 42% had perineal tears, majority being first degree.[13]

Lacerations of the vagina and cervix are common causes of postpartum haemorrhage and may occur with operative vaginal deliveries and when parturients push before the cervix is fully dilated [7]. Active management of labour, especially the third stage, should be offered to all women in labour. This is known to reduce the incidence of postpartum haemorrhage, the quantity of blood loss and the use of blood transfusions [1].

The purpose of this study was to audit the aetiology, sources, treatment and outcome of women with primary PPH so as to prevent recurrence as well as facilitate prompt and adequate care for parturients in the future.

Subjects and Methods

This was a case-control study of women who delivered vaginally from 1st January 1995 to 31st December 1999, at the Lagos University Teaching Hospital (LUTH), Nigeria. It is the usual practice in the hospital for the demographic data, pregnancy, intrapartum and neonatal information, as well as the estimated blood loss of all deliveries to be registered in the delivery record book by the midwife or doctor conducting the delivery.

The medical records of women who developed primary postpartum haemorrhage following vaginal delivery (study group) and the next consecutive women who delivered vaginally the same day, but without postpartum haemorrhage served as the control group. The data collected from the delivery record books as well as postpartum ward books and case notes included; age, parity, type of delivery, booking status, estimated blood loss, identified causes of postpartum haemorrhage, mode of management, complications and other relevant data. There was visual estimation of the blood loss by the attending midwife or obstetrician, as in other studies on postpartum haemorrhage [10, 15, 16]. The institution's Ethics Committee approved the study. The EPI INFO programme, 2002 version, was used for data analysis.

Results

During the period of the study, there were a total of 4,494 vaginal deliveries and 298 cases of primary PPH giving on incidence of 6.6%. However, only 248 case notes (83.2%) were recovered and these were the ones analyzed with the consecutive number of women without primary PPH who delivered the same day. Table 1 shows the characteristics of the women. The mean age and parity in the study and control groups showed no statistically significant difference ($p = 0.8673$ and 0.8716 respectively). Majority of the women in both groups had spontaneous vaginal deliveries (75.8% in the study group and 91.9% in the control group). However, the incidence of instrumental deliveries and augmented labours were found to be higher in the study group than the control group and these were statistically significant ($p = 0.0001$ and 0.0003 respectively). There was also almost three times the number of unbooked women in the study group as compared with the control group which was highly significant ($p < 0.00001$).The odds ratio for the development of PPH in booked women versus the unbooked was 0.2936 (95% confidence interval: 0.1787 - 0.4732). In 174 (70.2%) women who had PPH, midwives conducted the deliveries while in 64 (25.8%), the senior registrars conducted the deliveries. When compared with the control subjects, there were statistically significant differences ($p < 0.0001$).

Table 2 shows the aetiology, sources, management and outcome of women with postpartum haemorrhage. The contributions of midwives and senior registrars to the development of primary PPH as regards episiotomies and genital tract lacerations are also highlighted in Table 2. It is to be noted that 143 (57.7%) of the women in the study group had episiotomy while 123 (49.6%) of the control group had episiotomy.

Interventions included repair of genital tract lacerations and episiotomies, oxytocics (with or without massage of uterus) and blood transfusion. Amongst the women that had blood transfusion, 47 (45.6%) had two units of blood while only 10 (9.7%) had five or more units of blood. A total of 113 (45.6%) of the women with PPH had complications, ranging from residual anaemia i.e. haemoglobin less than 11gm/dl to dehiscence of episiotomy. There was one maternal death. The patient had an estimated blood loss of 2050 mls after having had vaginal lacerations complicated by infralevator ani haematoma. She died six days after delivery from severe anaemia, despite transfusion of six units of blood (four before and two after evacuation of the haematoma).

Discussion

The incidence of primary PPH of 6.6 % obtained in this study was higher than the 1.8%, 4.2% and 5% reported previously in Nigeria,[12] Australia[11] and Britain[9] respectively, but definitely not as high as the 12% in another recent Australian study[10]. However, the incidence of severe PPH of 1.5% in this study was similar to the 1.3% reported in Britain and about a third of the 4.7% in the recent Australian study [9, 10]. The main causes of primary PPH were uterine atonu and genital tract lacerations.

The relatively high frequency of genital tract laceration is difficult to explain. It could however be due to

Table 1: Relationship Between Primary Postpartum Haemorrhage and Patients Characteristics

Variable	PPH (n=248)	No PPH (n=248)
Mean Age (years)	28.9 4.5	29.2 4.6
Age Distribution (years)		
15-19	5(2%)	7 (2.8%)
20-24	30 (12.1%)	28 (11.3%)
25-29	103 (41.5%)	99 (39.9%)
30-34	80 (32.3%)	86 (34.7%)
≥35	30 (12.1%)	28 (11.3%)
Mean Parity	ÿ 1.7	1.2 ÿ 1.5
Previous Parity		
0	101 (40.7%)	96 (38.7%)
1	65 (26.2%)	64 (25.8%)
2	39 (15.7%)	49 (19.8%)
3	27 (10.9%)	26 (10.5%)
4	12 (4.9%)	10 (4.0%)
≥5	4 (1.6%)	3 (1.2%)
Type of Delivery		
Spontaneous Vaginal Delivery	188 (75.8%)	226 (91.1%)
Assisted Breech Delivery	11 (4.4%)	9 (3.7%)
Forceps Delivery	29 (11.7%)	6 (2.4%)
Vacuum Delivery	17 (6.9%)	6 (2.4%)
Destructive Operation	3 (1.2%)	1 (0.4%)
Significance *(p < 0.0001)		
Type of Labour		
†Induced	19 (7.7%)	18 (7.2%)
†Augmented	95 (38.3%)	55 (22.2%)
Spontaneous	134 (54.0%)	175 (70.6%)
Significance: (p = 0.0003)		
† Induction and augmentation of labour in LUTH was by Oxytocin		
Booking Status		
Booked	175 (70.6%)	221 (89.1%)
Unbooked	73 (29.4%)	27 (10.9%)
Odds Ratio : 0.2936 ; (95% Confidence Interval: 0.1787-0.4732)		
Accoucheur Status		
Midwives	174 (70.2%)	220 (88.7%)
Registrars	9 (3.6%)	6 (2.4%)
Senior Registrars	64 (25.8%)	22 (8.9%)
Consultant	1 (0.4%)	0 (0.0%)
Significance: (p < 0.0001)		
Mean Blood Loss ÿ SD (mls)	834 ÿ 472; range(500-4000)	165ÿ84 (50-400) (p < 0.0001)
Mean Postpartum Days in Hospital	4.7 ÿ 3.4 Range (2 - 21)	2.6 ÿ 1.1 (1 - 8) (p < 0.0001)

Table 2: Aetiology, Treatment and Outcome in Women with PPH

	Variables	n	Percentage
I.	**Aetiology (n=248)**		
	a. Uterine atony	84	33.8%
	‡ b. Episiotomy	61	24.6%
	‡‡ c. Lacerations - Perineal and Vaginal (33)		
	- Cervical (30)		
	- Vaginal and Cervical (7)	70	28.2%
	d. Retained placenta or placenta tissue Fragments	32	13.0%
	e. Ruptured uterus	1	0.4%
II.	**Sources of PPH (n=131)**		
	‡ a. Episiotomy		
	Midwives	45	73.8%
	Senior Registrars		
	- Extension from Forceps (11)		
	- Attributed to Ventouse (5)	16	26.2%
	‡‡ b. Perineal & vaginal lacerations		
	Midwives	21	63.6%
	Senior Registrars - From Ventouse (2)		
	- From Forceps (5)	12	36.4%
	- From Normal Deliveries (5)		
	‡‡ c. Cervical lacerations		
	Midwives	27	73%
	Senior registrars - From Ventouse (7)		
	- From Forceps (3)	10	27%
III.	**Method of Treatment (248)**		
	a) Oxytocics message of uterus	84	33.8%
	‡‡‡ b) Repair of episiotomies & lacerations	131	52.8%
	c) Uterine exploration (Manual Removal of Placenta) + Oxytocics	32	13.0%
	d) Repair of Ruptured Uterus	1	0.4%
	‡‡‡ *(oxytocics given in LUTH include oxytocin, ergometrine or syntometrine)*		
IV	**Estimated Blood Loss (mls) (n=248)**		
	500 - 999	180	72.6%
	1000-1499	44	17.7%
	1500-1999	15	6.1%
	2000-2499	6	2.4%
	≥2500	3	1.2%
V	**Number of Transfused Units of Blood (n=103)**		
	1	24	23.3%
	2	47	45.6%
	3	16	15.5%
	4	6	5.9%
	5	4	3.9%
	6	4	3.9%
	7	2	1.9%
VI	**Complications (n=113)**		
	Residual anaemia: Hb ≤ 11gm/dl (at discharge)	108	95.6%
	Dehiscence of episiotomy	4	3.5%
	‡‡‡ Maternal death	1	0.9%

‡‡‡ Maternal death followed vaginal lacerations complicated by infra levator ani haematoma. She lost about 2050 mls of blood.

multiple factors like multiparity, fetal macrosomia. This is in light of the findings that 93.6% of perineal tears in Nigeria occurred in multiparous women and 16.3% were in parturients with babies weighing 4 kg or more [13]. It can also be associated with instrumental deliveries. The reason for episiotomies being the cause of a quarter of primary PPH in this study is uncertain but could relate to events associated with instrumental deliveries, notably extension of episiotomies during forceps delivery and occurrence of cervical lacerations during vacuum delivery.

Primiparous women accounted for the highest proportion of women with primary PPH, but there was an inverse relationship between parity and incidence of PPH. Augmentation of labour with oxytocin, an intervention that is common in first-time parturients, was found to be associated with the development of primary PPH but tis was not the case with induced labour. This could be due to the fact that caesarean delivery, the mode of delivery if induction of labour fails, was excluded from this study.

The mean blood loss in the women with PPH was over five times the loss in those without PPH which put this category of women at a higher risk of death from decompensation, especially in the developing countries where the prevalence of anaemia in pregnancy is very high and availability of safe blood for prompt transfusion is not always guaranteed[17]. Hence, it is essential that anaemia in pregnancy be eradicated. All the women with residual anaemia at discharge were no longer anaemic at the sixth week puerperal visit.

The mean post delivery days spent in the hospital by the study group was almost twice that of the control group which meant more payment for hospital bills. The reason for the longer hospital stay in the study group was due mainly to the time required to transfuse blood and then await the haematocrit level 48 hours after.

The limitation of this study is that blood losses were visual estimates made by midwives and doctors at delivery and may not be the actual blood loss. However, underestimation is much more common than overestimation, [18] so it is unlikely that the PPH rate is overstated.

In conclusion, this study showed the frequency of primary PPH in our centre is high and the leading causes were uterine atony, episiotomies and genital lacerations, and retained placentae. Attending accoucheurs should be less liberal with episiotomies and this intervention should be appropriately timed. Active management of the third stage of labour should be promoted and there is need to re-appraise the storage and potency of oxytocics available for usage.

References

1 Prendiville WJ, Elbourne D, McDonald S. Active versus expectant management in the third stage of labour (Cochrane Review). In: *The Cochrane Library*, Chichester (UK): John Wiley and Sons, Ltd. 2003. Issue 4.

2. Abou-Zahr C. The global burden of maternal death and disability. *Br Med Bull,* 2003; 67:1- 11.

3. Olatunji AD, Abudu OO. A review of maternal mortality in Lagos University Teaching Hospital (1976-1985). *Nig Med Pract,* 1996; 31: 2-6.

4. Fasuba OB, Ogunniyi SO, Ezechi OC. Maternal mortality in Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife: A comparison of maternal deaths in young and older women. *Niger J Med*. 1999; 8:147- 151.

5. Agboghoroma OC, Emuveyan EE, Agboghoroma OC, Emuveyan EE. Maternal mortality in Lagos, Nigeria: a ten-year review (1986-1995). *Niger Quart J Hosp Med.* 1997; 7:230-233.

6. RCOG. Why mothers die 1997-1999. *The Report on Confidential Enquiries Into Maternal Deaths in the United Kingdom*, London, RCOG Press 2001: 94-103.

7. Miller S, Lester F, Hensleigh P. Prevention and treatment of postpartum haemorrhage: new advances for low-resource settings. *J Midwifery Womens Health*, 2004; 49: 283-292.

8. Ronsmans C, Etard JF, Walraven G, Hoj L, Dumont A, de Bernis L *et al*. Maternal mortality and access to obstetric services in West Africa. *Trop Med Int Health,* 2003; 8: 940-948.

9. Drife J. Management of primary postpartum haemorrhage. *Br J Obstet Gynaecol*. 1997; 104: 275-277.

10. Henry A, Birch M-R, Sullivan EA., Katz S, Wang YA. Primary postpartum haemorrhage in an Australian tertiary hospital: a case-control study. *Aust NZ J Obstet Gynaecol,* 2005; 45: 233-236.

11. St George L, Crandon AJ. Immediate postpartum complications. *Aust NZ J Obstet Gynaecol*. 1990; 30: 52-56.

12. Adetoro OO. Postpartum haemorrhage at a University Hospital in Nigeria. *West Afr J Med,* 1992; 11: 172-178.

13. Ola ER, Bello O, Abudu OO, Anorlu RI. Episiotomies in Nigeria: should their use be restricted? *Niger Postgrad Med J.* 2002; 9: 13- 16.

14. Weber AM, Meyn L. Episiotomy use in the United States, 1979-1999. *Obstet Gynecol* 2000; 100: 1177- 1182.

15. EL-Refaey H, Nooh R, O'Brien P, Abdalla M, Geary M, Walder J *et al*. The misoprostol third stage of labour study: a randomized controlled comparison between orally administered misoprostol and standard management. *Br J Obstet Gynaecol,* 2000; 107: 1104-1110.

16. Khan GQ, John IS. Chan T, Wani S, Hughes AO, Stirrat GM. Dhabi third stage trial: Oxytocin versus syntometrine in the active Management of the third stage of labour. *Eur J Obstet Gynecol Reprod. Biol.* 1995; 58: 147- 151.

17. Van den Broek N. Anaemia in pregnancy in Developing Countries. *Br J Obstet Gynaecol*, 1998; 105: 385-390.

18. Prasertcharoensuk W, Swadpanich U, Lumbiganon P. Accuracy of blood loss estimation in the third stage of labour. I*nt J Gynecol Obstet*. 2000; 71: 69-70.