



UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE

**PATIENT CHARACTERISTICS AND OUTCOMES IN
ANTEPARTUM HAEMORRHAGE DUE TO PLACENTA
PRAEVIA AND ABRUPTIO PLACENTA AT THE
UNIVERSITY TEACHING HOSPITAL, LUSAKA, ZAMBIA.**

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**DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE DEGREE OF MASTER OF MEDICINE IN
OBSTETRICS AND GYNAECOLOGY**

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DEDICATION

I dedicate this work of my dissertation to my wife Bridget and my two lovely daughters, Chabota and Taonga.

DECLARATION

I declare that this dissertation herein presented for the Degree of Master of Medicine in Obstetrics and Gynaecology has not been previously submitted either wholly or in part for any other Degree at this or any other University nor is it being currently submitted for any other Degree.

Signed:

Dr. Quagy Siamalambwa.

Approved by:

.....

Dr. Maureen Chisembele (supervisor)

STATEMENT

I hereby state that this dissertation is entirely the result of my own personal effort. The various sources to which I am indebted have been clearly indicated in the bibliography and acknowledgements

Signed:

Dr. Quagy Siamalambwa

APPROVAL

This dissertation of Dr. Quagy Siamalambwa is approved as fulfilling part of the requirements for the Award of the Degree of Master of Medicine in Obstetrics and Gynaecology by the University of Zambia.

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ABSTRACT

Background: Placenta praevia and Abruptio placenta are the two major causes of antepartum haemorrhage worldwide including Zambia. They contribute significantly to obstetric haemorrhage, which is a leading cause of maternal mortality in Zambia.

Objective: To explore patient characteristics and outcomes in Antepartum haemorrhage due to placenta praevia and abruptio placenta at UTH, Lusaka, Zambia.

Study Design: Cross sectional study

Methodology: All women who presented with APH due to placenta praevia and abruptio placenta at UTH in Lusaka, Zambia from October 2013 to January 2014 and met the inclusion criteria were recruited into the study. Participants were interviewed post-delivery after they were clinically stable. Information on patient management was obtained from the patient's medical records. The maternal outcomes looked at either well or near miss (hypovolaemic shock, DIC and PPH) and fetal outcomes included stillbirths and birth weight.

Results: A total of 72 patients with APH were recruited. Of these, 40 (55.6%) cases had placenta praevia and 32 (44.4%) had abruptio placenta. The significant difference in patient characteristic was pregnancy-induced hypertension (OR 36.3, $P < 0.001$) in those with abruptio placenta compared to placenta praevia. Abruptio placenta was significantly associated with stillbirths (OR 31.7, 95% CI 6.86 to 212.64, $P < 0.001$). It was also associated with maternal near miss (OR 2.33, 95% CI 0.86 to 6.34, 0.052) although did not reach statistical significance. Delivery by caesarean sections in all those that presented with a fetal heartbeat in abruptio placenta was protective against stillbirth (OR 0.16, 95% CI 0.02 to 1.34 $P = 0.09$).

Conclusion: Despite similarities, some patient characteristics and outcomes in APH due to placenta praevia compared to abruptio placenta differ. Placenta praevia was characterised by previous deliveries by caesarean section whereas placenta abruptio was associated with pregnancy-induced hypertension. Stillbirths were significantly associated with abruptio placenta and severe maternal complications (near miss).

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ABBREVIATIONS AND ACRONYMS

APH	Antepartum haemorrhage
BP	Blood pressure
BT	Blood Transfusion
BWT	Birth weight
CS	Caesarean section
HIV	Human Immunodeficiency Virus
IVF	Intravenous fluids
LMP	Last menstrual period
PPH	Postpartum Haemorrhage
UNZABREC	University of Zambia Biomedical Research Ethics Committee
UTH	University Teaching Hospital

1.0 INTRODUCTION

Placenta praevia and Abruption placenta are the two major causes of antepartum haemorrhage worldwide and in Zambia as well. They contribute significantly to obstetric haemorrhage, which is a leading cause of maternal mortality in Zambia.

Placenta praevia which is an implantation of the placenta in the lower uterine segment below the presenting part covering or lying very close to internal os has an incidence of 1 in 200 pregnancies. Risk factors associated with it are grandmultiparity, advancing maternal age, multiparity, multiple pregnancies, history of previous placenta praevia, previous uterine curettage, prior uterine scar, smoking (Ananth, 2003) and use of cocaine (Macones, 1997).

Abruption placenta which is the premature separation of a normally implanted placenta from the uterine wall prior to delivery has an incidence of 1 in 120 pregnancies. Associated risk factors are hypertension in pregnancy, rapid decompression of an over distended uterus, trauma, increasing parity and maternal age, history of abruption placenta, smoking (Ananth and colleagues 1999) and cocaine use (Bingol and colleagues, 1987).

Placenta praevia and abruption placenta account for one fourth of all perinatal mortalities and have been associated with prematurity as well as fetal growth restriction. They have also been associated with maternal mortalities and morbidities like hypovolaemic shock, disseminated intravascular coagulation, ischaemic damage of distant organs like the pituitary and kidneys and couvalaire uterus.

Two studies have been done in Africa, Uganda, Kampala at Mulago hospital looking at risk factors for placenta praevia presenting with severe vaginal bleeding and risk factors for severe abruption placenta. On maternal and neonatal outcomes of APH due placenta praevia and abruption placenta there are no documented studies that have been done in Africa, Zambia inclusive.

Placenta praevia and abruption placenta have different epidemiological, clinical, management and outcome characteristics. Knowledge of these characteristics in our local setting has the potential to better manage these conditions and their associated complications.

This study aimed to explore these characteristics at the University Teaching Hospital, Lusaka, Zambia.

2.0 LITERATURE REVIEW

The incidence of antepartum haemorrhage is 5.4% (Sheikh et al, 2010). According to World Health Organization (1999), the incidence of abruptio placenta is 6.5 per 1000 births and that of placenta praevia ranges from 0.3 – 2%.

Heija et al. (1998) in a study done at Princess Badeea Teaching hospital, Irbid, Jordan found that the significant risk factors for abruptio placenta were high parity, preeclampsia and hypertension.

Wandabwa et.al (2001) in a study done at Mulago Hospital, Kampala, Uganda established that the risk factors of abruptio placenta were co-existing hypertension, low socio-economic status, previous history of still births and caesarean section, recurrent vaginal bleeding and delivery of male babies. They established that co-existing hypertension alone increases chances of developing abruptio placenta by about 56.8 fold whereas male babies about 2.2 fold.

Arnold et al, (2009) in his study at Swedish Medical Center, Seattle, Washington, USA showed that maternal iron deficiency anaemia and smoking causes a 3.6 fold and 2.4 fold increased risk of abruptio placenta. Ananth et al (1996) also showed that smoking increases the risk of abruptio placenta by about 2 fold.

Tikkanen et al. (2006) did a study at a tertiary hospital in Finland and showed that overall incidence of placental abruption was 0.42%. The independent risk factors were maternal and paternal smoking, use of alcohol, placenta praevia, pre-eclampsia, and chorioamnionitis.

Hendricks et al (1999) at National University Hospital, Singapore, demonstrated that women with 1, 2, and 3 previous caesarean sections had 2.2, 4.1 and 22.4 times increased risk of developing placenta previa respectively. He also established that women with 2 or more previous abortions had a 2.1 times increased risk of subsequently developing placenta previa.

Kiondo et al, (2002) in the study done at Mulago hospital, Kampala, Uganda established risk factors of placenta praevia to be previous history of evacuation of the uterus or dilation and curettage, delivery by caesarean section in previous pregnancy and recurrent vaginal bleeding during the current pregnancy. Previous history of delivery by caesarean section and uterine evacuation or dilatation and curettage causes 19.9 fold and 3.6 fold increase in risk for placenta praevia respectively.

Matsuda et al. (2011) at Oita Prefectural Hospital, Bunyo, Oita, Japan compared risk factors for placenta praevia and abruptio placenta and explained that maternal age above 35 years was a similar risk factor for both. He also explained that hypertension, pregnancy induced hypertension and smoking were risk factors only for abruptio placenta and specific to placenta praevia was multiparity.

Getahun et al. (2006) in Missouri, USA demonstrated that caesarean section in first birth is associated with twofold increased risks of placenta praevia and abruptio placenta in the second pregnancy. There is a dose–response pattern in the risk of previa, with increasing number of prior caesarean deliveries. He explained that a short inter-pregnancy interval is associated with increased risks of placenta praevia and abruptio placenta.

Chattopadhyay et al. (1993) in Saudi Arabia showed that after one caesarean section, placenta praevia was complicated by placenta accreta in 10% of cases and after two or more this was 59.2%. The risk of hysterectomy with placenta praevia and uterine scar was 10% but with placenta praevia accreta, it was 66%.

In a study done in Nova Scotia, Canada by Crane et al (1999), it was established that the significant neonatal outcomes of placenta praevia were major congenital anomalies, respiratory distress syndrome and anaemia. The perinatal mortality rate associated with placenta previa was found to be 2.30% and was explained by gestational age at delivery, occurrence of congenital anomalies, and maternal age.

Mcshane et al. (1985) looked at maternal and perinatal morbidity resulting from placenta praevia in Boston, USA. He pointed out that a history of prior caesarean section was associated with a significant increase in maternal morbidity, including massive haemorrhage, placenta accrete, and hysterectomy. He explained that onset of bleeding

before 20 weeks gestation was associated with a very poor fetal prognosis. Perinatal mortality rate was 81 out of 1000. Other neonatal he pointed at were respiratory distress syndrome (22%) and neonatal anaemia.

Singhal et al (2008) found the main neonatal outcomes owing to antepartum haemorrhage to have been low birth weight (83.2%) and birth asphyxia (12.5%) in women with antepartum haemorrhage whereas Sheikh et al (2010) found them to be preterm deliveries (79.2%) and perinatal mortality (49.7%).

Heija et al. (1998) found the perinatal outcomes of abruptio placenta to be preterm deliveries with low birth weight, intrauterine fetal death, intrauterine growth retardation and caesarean deliveries at Princess Badeea Teaching Hospital, Irbid, Jordan.

Lam et al (1997) (abstract) explained that women with placenta praevia and have antepartum haemorrhage had a worse outcome than those that do not bleed before delivery at Princess Margaret Hospital, Hong Kong, China. The outcomes he explained were preterm deliveries, low Apgar scores at one minute and respiratory distress syndrome. He however did not look at the maternal outcomes.

A study done in Aga Khan University Hospital, Karachi, Pakistan, Munim et al (1997) explained that there was no difference in the perinatal and maternal outcomes between hypertensive and normotensive women experiencing abruptio placenta.

Singhal et al (2008) showed that the main maternal outcomes of antepartum haemorrhage were anaemia (100%), caesarean section (43.8%), postpartum haemorrhage (27.8%), need for blood transfusion (78.8%), puerperal pyrexia (10.6%) and coagulation failure (10.6%) in a study done in India.

Sheikh et al (2010) established maternal outcomes of antepartum haemorrhage to have been caesarean section (57.1%), postpartum haemorrhage (19%), need of blood transfusion (77.4%), shock (6.66%) and peripartum hysterectomy (1%).

Limited reports have been have been documented to look at maternal outcomes of antepartum haemorrhage. In Africa and Zambia inclusive, there are limited documentations of factors associated with antepartum haemorrhage. There are no studies

at all that have been documented to look at the maternal and neonatal outcomes in Africa, Zambia inclusive.

3.0 STATEMENT OF THE PROBLEM

Obstetric haemorrhage is the leading cause of maternal mortality in Zambia. APH due to placenta praevia and abruptio placenta contributes significantly to this obstetric haemorrhage. Audits at UTH suggest both placenta praevia and abruptio placenta cause serious adverse maternal and fetal outcomes. However, both appear to have different etiologies, clinical features and management.

4.0 STUDY JUSTIFICATION

There were no reports that were documented or described on factors and outcomes associated with APH due to placenta praevia and abruptio placenta at UTH, Lusaka Zambia.

This study aimed to better understand the patient characteristics and outcomes in order to better the management of this problem to alleviate the associated morbidities and mortalities.

5.0 RESEACH QUESTION

What are the patient characteristics and outcomes in APH due to placenta praevia and abruptio placenta at the University Teaching Hospital (UTH), Lusaka, Zambia?

6.0 OBJECTIVES

6.1 Main Objective

To describe and compare patient characteristics and outcomes in APH due to placenta praevia and abruptio placenta at UTH, Lusaka, Zambia.

6.2 Specific Objectives

1. To describe and compare patient characteristics in APH due to placenta praevia and abruptio placenta.
2. To compare patient characteristics and maternal and immediate neonatal outcomes of APH due placenta praevia compared to abruptio placenta.

7.0 RESEARCH METHODOLOGY

7.1 Study Design

The study design was a cross sectional study.

7.2 Study Site and Duration

The study was conducted at a tertiary hospital, the University Teaching Hospital, Department of Obstetrics and Gynaecology in Lusaka, Zambia between October 2013 and January 2014.

7.3 Target Population

All women who presented with APH due to placenta praevia and abruptio placentae at 28 weeks and above of gestation. Pregnancies were dated using a reliable reported date of last menstrual period (LMP) or first trimester obstetric scan.

7.4 Study Participants

Study participants were all those that met the inclusion criteria.

7.5 Case definitions

- Placenta praevia: a low-lying placenta confirmed by scan or during caesarean section.
- Abruptio placenta: concealed or revealed antepartum haemorrhage presenting with a woody hard uterus before delivery or a retroplacental clot post-delivery vaginally or caesarean section.

7.6 Participant Recruitment

Women that were recruited were those that presented with APH at 28 weeks and above of gestation with a clinical diagnosis of either placenta praevia or abruptio placenta or a confirmed case of placenta praevia and abruptio placenta on ultra sound scan or caesarean section. The diagnoses were made by the attending doctors. Written consent was obtained from the patients in order for them to participate in the study. Information from patients was obtained by using an interviewer administered questionnaire. Clinical information was extracted from the patient files after seeking for permission from the patients.

7.7 Sampling Method

Convenience sampling method was used. All women that presented with APH due to placenta praevia and abruptio placenta during the study period and met the inclusion criteria were invited to participate in the study. Women who presented with APH due to placenta praevia and abruptio placenta were identified and recruited consecutively for a period of four months.

7.8 Inclusion Criteria

- Met the case definitions of placenta praevia and abruptio placenta.
- Gestation age of 28 weeks and above.
- APH due to either placenta praevia or abruptio placenta.
- Age group of 18 years and above.
- All parities were included.
- Participants presented during the study period.
- Participants were eligible to give informed consent

7.9 Exclusion Criteria

- Placenta praevia diagnosis on ultra-sound without history of per vaginal bleeding (incidental finding).
- Antepartum haemorrhage due to other causes
- Gestational age less than 28 weeks.
- Unable to provide informed consent

7.10 Sample Size

The sample size calculation using the prevalence formula:

$$n = \frac{Z^2 P(1 - P)}{d^2}$$

Where n = sample size,

Z = Z statistic 1.96 for a level of confidence of 95%,

P = expected prevalence 5% therefore proportion = 0.05

d = precision 5%. Therefore proportion = 0.05.

Based on this, the sample size was **73**.

7.11 Outcomes

7.11.1 Maternal

- Hypovolaemic shock (BP<90/60mmhg with a pulse of >100/minute)
- Disseminated intravascular coagulation (bedside clotting time > 7min)
- Postpartum haemorrhage (blood loss of > 500mls post vaginal delivery and 1000mls post caesarean section).

7.11.2 Fetal

- Status at birth (Stillbirth or alive)

7.12 Data Collection

Information was obtained from the patients using an interviewer-administered questionnaire (see appendix A) and a data abstraction checklist was used to obtain clinical information from the patient files.

7.13 Data Analysis and Management

Data was collected and entered in Excel then exported to SPSS (v20) for analysis. Data entry was checked for consistency by using double entry checks by two people entering the data.

All factors were stratified by type of APH: placenta praevia or abruptio placenta. Analysis was by Chi square (or Fischer exact test) to compare factors associated with abruptio placenta compared to placenta praevia. A p value of less than 0.05 was considered statistically significant with a confidence interval of 95%.

A logistic regression model was developed to determine factors associated with stillbirth in those with APH (with placenta praevia or abruptio being the main independent variable) controlling for potential confounders

8.0 ETHICAL CONSIDERATIONS

Ethical approval was obtained from the University of Zambia Biomedical Research Ethics Committee (UNZABREC). There was no interference to the participants' general standard management of placenta praevia and abruptio placenta offered by UTH, Department of Obstetrics and Gynaecology. Patients' confidentiality was maintained by only using study numbers.

9.0 RESULTS

A total of 73 consecutive patients were recruited into the study from October 2013 to January 2014. One was excluded because she was recruited twice. Of the 72 participants who had APH, 40 (55.6%) were due to placenta praevia whereas 32 (44.4%) due abruptio placenta.

The socio-demographics of the 72 respondents are shown in Table 1 stratified by APH cause. There were no significant differences between placenta praevia and abruptio placenta in the socio-demographic characteristics studied.

TABLE 1: Characteristics of women with APH classified by the cause of APH

		Placenta Praevia n (%)	Placenta Abruptio n (%)	All N (%)	2-sided p value*
All		40 (55.6)	32 (44.4)	72 (100)	
Age (years)	18-19	4 (10.0)	7 (21.8)	11 (15.3)	0.525
	20-24	4 (10.0)	2 (6.3)	6 (8.3)	
	25-29	7 (17.5))	8 (25.0)	15 (20.8)	
	30-34	15 (37.5)	9 (28.1)	24 (33.3)	
	Above 34 years	10 (25.0)	6 (13.8)	16 (22.2)	
Marital status	Unmarried	1 (2.5)	4 (12.5)	5 (6.9)	0.117
	Married	39 (97.5)	28 (87.5)	67 (93.1)	
Density of Residential Area	High	26 (65)	25 (78.1)	51 (70.8)	0.596
	Medium	6 (15)	2 (6.5)	8 (11.1)	
	Low	6 (15)	4 (12.5)	10 (13.9)	
	Rural	2 (5)	1 (3.1)	3 (4.2)	
Education Level	None	1 (2.5)	1 (3.1)	2 (2.8)	0.934
	Primary	14 (35)	13 (40.6)	27 (37.5)	
	Secondary	18 (45)	12 (37.5)	30 (41.7)	
	Tertiary	7 (17.5)	6 (13.8)	13 (18.1)	
Employment Type	Unemployed	28 (70)	23 (71.9)	51 (70.8)	0.098
	Formal	5 (12.5)	2 (6.2)	7 (9.7)	
	Informal	7 (17.5)	7 (21.9)	14 (19.5)	
Smoking	No	40 (100)	32 (100)	72 (100)	1.000
	Yes	0 (0)	0 (0)	0 (0)	

*Chi square (or Fischer exact test when values <5)

Health information history stratified by type of APH

The health information history of the 72 respondents stratified by placenta praevia and abruptio placenta is shown in Table 2. Apart from history of the previous deliveries and self-history of hypertension, there were no significant differences between placenta praevia and abruptio placenta in patients with APH. Mode of previous deliveries and self-history of hypertension were significantly different between the two groups with p values of 0.029 and 0.004 respectively. Nine (22.5%) of the 40 women with placenta praevia had previous caesarean section while only one (3.1%) of the 32 women with abruptio placenta had a previous caesarean section. No one of the 40 women with placenta praevia had a self-history of hypertension whereas six (18.8%) of the 32 with abruptio placenta had.

TABLE 2: Health information history classified by cause of APH

		Placenta Praevia n (%)	Placenta Abruptio n (%)	All N (%)	2-sided p value*
All		40 (55.6)	32 (44.4)	72 (100)	
Parity	0	5 (12.5)	9 (28.1)	14 (19.4)	0.098
	1-4	25 (62.5)	20 (62.5)	45 (62.5)	
	More than 4	10 (25)	3 (9.4)	13 (18.1)	
Previous Deliveries	N/A	5 (12.5)	9 (28.1)	14 (19.4)	0.028
	Vaginal	26 (65)	22 (68.8)	48 (66.7)	
	Caesarean Section	9 (22.5)	1 (3.1)	10 (13.9)	
Previous Gynecological Surgery	None	31 (77.5)	26 (81.3)	57 (79.2)	0.697
	Uterine Evacuation	9 (22.5)	6 (18.8)	15 (20.8)	
HIV Status	Non-Reactive	28 (70.0)	26 (81.3)	54 (75.0)	0.392
	Reactive	10 (25)	5 (15.6)	15 (20.8)	
	Unknown	2 (5.0)	1 (0)	3 (4.2)	

Family history of hypertension	No	25 (62.5)	17 (53.1)	42 (58.3)	0.476
	Yes	15 (37.5)	15 (46.9)	30 (41.7)	
Self-history of hypertension	No	40 (100)	26 (81.3)	66 (91.7)	0.004
	Yes	0 (0)	6 (18.8)	6 (8.3)	
Hypertension in previous pregnancies	N/A	5 (12.5)	9 (28.1)	14 (19.4)	0.086
	No	30 (75)	16 (50)	46 (63.9)	
	Yes	5 (12.5)	7 (21.9)	12 (16.7)	
PPH in previous pregnancies	N/A	5 (12.5)	9 (28.1)	14 (19.4)	0.093
	No	33 (82.5)	19(59.4)	52 (72.2)	
	Yes	2 (5)	4 (12.5)	6 (8.3)	
APH in Previous pregnancies	N/A	5 (12.5)	9 (28.1)	14 (19.4)	0.324
	No	33 (82.5)	21 (65.6)	44 (61.1)	
	Yes	2 (5)	2 (6.3)	4 (5.6)	
History of abortion	N/A	3 (7.5)	0 (0)	3 (4.2)	0.205
	No	27 (67.5)	26 (81.3)	53 (73.6)	
	Yes	10 (25)	6 (18.8)	16 (22.2)	

*Chi square (or Fischer exact test when values <5)

History of current pregnancy classified by cause of APH

History of current pregnancy classified by APH cause is shown in table 3. There were no significant differences in histories of PROM, trauma and attending antenatal clinic in the two groups. The difference between the two groups in terms of hypertension in current pregnancy was significant ($p = 0.000$). 21 (65.6%) of the 32 women with abruptio placenta had hypertension in the index pregnancy whereas only two (5%) of the 40 with placenta praevia had.

TABLE 3: History of current pregnancy classified by cause of APH

		Placenta Praevia n (%)	Placenta Abruptio n (%)	All N (%)	2-sided p value*
All		40 (55.6)	32 (44.4)	72 (100)	
Hypertension in current pregnancy	No	38 (95)	11 (34.4)	49 (68.1)	
	Yes	2 (5)	21 (65.6)	23 (31.9)	
History of PROM in current pregnancy	No	38 (95)	31 (96.9)	69 (95.8)	0.692
	Yes	2 (5)	1 (3.1)	3 (4.1)	
History of trauma	No	40 (100)	32(100)	72 (100)	1.000
	Yes	0 (0)	0 (0)	0 (0)	
Attended Antenatal clinic	No	1 (2.5)	0 (0)	1 (1.4)	0.368
	Yes	39 (97.5)	32 (100)	71 (98.6)	

*Chi square (or Fischer exact test when values <5)

Patient management classified by cause of APH

Table 4 shows patient management stratified by APH cause. The level of the main attending doctor did not differ significantly. All cases of placenta praevia (100%) were delivered by caesarean section. 31.3% (n=10) of those with abruptio placenta were delivered by caesarean section.

TABLE 4: Patient management classified by cause of APH

		Placenta Praevia n (%)	Placenta Abruptio n (%)	All N (%)	2-sided p value*
All		40 (55.6)	32 (44.4)	72 (100)	
Level of main attending Doctor	JRMO	0 (0)	0 (0)	0 (0)	0.646
	Registrar	31 (77.5)	21 (65.6)	52 (72.2)	
	Senior Registrar	6 (15)	7 (21.9)	13 (18.1)	
	Consultant	3 (7.5)	3 (9.4)	6 (8.3)	
Mode of Delivery	Vaginal	0 (0)	22 (68.8)	22 (30.5)	N/A all cases of placenta praevia delivered by CS.
	Caesarean section	40 (100)	10 (31.3)	50 (69.5)	

*Chi square (or Fischer exact test when values <5)

Fetal/neonatal outcomes stratified by APH cause

Table 5 shows fetal outcomes stratified by cause of APH. There was no statistical significant difference in sex and birth weights of the babies in between abruptio placenta and placenta praevia. However, there was a statistically significant difference in the birth status (stillborn or alive) of the babies. 59.4% (n=20) were stillborn in the mothers who had abruptio placenta whereas only 2.5% (n=1) of 40 mothers with placenta praevia had a stillborn.

TABLE 5: Fetal/neonatal outcomes and status stratified by APH cause

	Placenta Praevia n (%)	Abruptio Placenta n (%)	All N (%)	Chi-square (unOR, P value)
All	40(55.6)	32 (44.4)	72 (100)	
Fetal outcome				OR 31.7
Stillborn	2 (2.5)	20 (59.4)	22 (27.8)	95% CI 6.86 to 212.64
Alive	38 (97.5)	12 (40.6)	50 (72.2)	P < 0.001
Sex of Baby				OR 1.08
Male	23 (57.5)	19 (59.4)	42 (58.3)	95% CI 0.42 to 2.78
Female	17 (42.5)	13 (40.6)	30 (41.7)	P > 0.999
Birth weight				OR 2.08
<2500g	13 (32.5)	16 (50)	29 (40.3)	95% CI 0.8 to 5.41
>2500g	27 (67.5)	16 (50)	43 (59.7)	P = 0.072

Maternal outcomes stratified by APH cause

Table 6 shows maternal outcomes stratified by type of abruptio placenta and placenta praevia. There was no statistical difference in the maternal outcomes (p=0.052).

Table 6: Maternal outcomes stratified by APH cause

	Abruptio Placenta n (%)	Placenta Praevia n (%)	All N (%)	Chi-square (unOR, P value)
All	40 (55.6)	32(44.4)	72 (100)	
Maternal Outcome				OR 2.33
Near miss*	10 (25)	14 (43.8)	24 (33.3)	95% CI 0.86 to 6.34
Well	30 (75)	18 (56.2)	48 (66.7)	P = 0.052

*Near miss= hypovolaemic shock, DIC, postpartum haemorrhage

Maternal mortality was not included because consent was only obtained from the patients after clinical stabilization, which was not possible on deceased patients.

9.1 Logistic Regression Model [with adjusted Odds Ratios (OR)]

Stillborns were analyzed with the logistic regression model because it was an important neonatal outcome that is associated with APH.

Logistic regression showed maternal near miss was significantly associated with stillbirth in women with abruptio placenta (adjusted OR 12.6, CI 95% 1.98 to 80.25, P = 0.007). Abruptio placenta was significantly associated with stillbirths (adjusted OR 14.49, CI 95% 1.18 to 178.6 P = 0.037). Stillborns were associated with a tendency to be of low birth but not statistically significant (adjusted OR 4.19, CI 95% 0.78 to 22.49, P = 0.095). Caesarean deliveries in those with an audible fetal heart in abruption placentae were protective against stillbirths (adjusted OR 0.16, CI 95% 0.02 to 1.34, P = 0.09.)

Factors associated with stillbirth with type of APH (abruptio or not) being the main independent variable

Logistic regression - odds ratios

<u>Parameter</u>	<u>Odds Ratio</u>	<u>95% CI</u>	P value
Constant			
Bwt <2500g	4.19	0.78 to 22.49	P = 0.095
Maternal near miss	12.6	1.98 to 80.25	P = 0.007
Caesarean	0.16	0.02 to 1.34	P = 0.09
Abruptio placenta	14.49	1.18 to 178.6	P = 0.037

10.0 DISCUSSION

The main objective in this study was to describe and compare the patient characteristics and outcomes in antepartum haemorrhage due to placenta praevia and abruptio placenta at the University teaching hospital, Lusaka, Zambia.

The results indicate that there is no statistical difference in socio-demographic characteristics i.e. age, marital status, density of residential area, education level and type of employment between abruptio placenta and placenta praevia. Smoking habit was not analyzed as all the respondents were coincidentally non-smokers. Ananth et al (1996) and Ananth et al (2009) showed that smoking increases the risk of abruptio placenta by two fold and 2.4 fold respectively.

Hendricks et al (1999) found the number of previous caesarean sections was proportional to the increased risk of placenta praevia. Previous abortions were also a risk to placenta praevia. Kiondo et al established that previous history of evacuation of the uterus and previous caesarean deliveries were risk factors of placenta praevia by 3.6 fold and 19.9 fold respectively. The study found previous uterine evacuation and abortions to be similar between abruptio placenta and placenta praevia. However, there is a significant difference in previous deliveries by caesarean section. Getahun et al (2006) found that caesarean section in first birth is associated with twofold increased risks of placenta praevia and abruptio placenta in the second pregnancy on the contrary to our findings.

Matsuda et al (2011) compared risk factors for placenta praevia and abruptio placenta and explained that maternal age above 35 years was a similar risk factor for both. He also explained that hypertension, pregnancy induced hypertension and smoking were risk factors only for abruptio placenta and specific to placenta praevia was multiparity. Our study showed that most women with abruptio placenta had a history of chronic hypertension and pregnancy induced hypertension. On the parity characteristic, we found no significant difference between abruptio placenta and placenta praevia.

The study showed that there was 14 times likelihood of having a stillbirth if patient had abruptio placenta. This conforms to findings of Heija et al (1998) who found the outcomes of intrauterine fetal death to be significant. The study also agree with his findings that there is a tendency towards delivering low birth weight babies although it was not

statistically significant (adjusted OR 4.19 95% CI 0.78-22.49, $p=0.095$). Lam et al (1997) explained that placenta praevia was associated with preterm deliveries.

The study showed a slight tendency towards delivery of male babies (unadjusted OR 1.08, 95% CI 0.42 to 2.78, $P > 0.999$) but was not statistically significant in women with abruptio placenta, which agrees with Wandabwa et al (2001) who showed a 2.2 fold increase.

The study showed that the major maternal morbidities that were associated with APH were hypovolaemic shock, disseminated intravascular coagulation and postpartum haemorrhage, which is similar to the findings by Singhal et al (2008) and Sheikh et al (2010).

Maternal finding of near miss which encompassed hypovolaemic shock, disseminated intravascular coagulation and postpartum haemorrhage was significant in patients with abruptio placenta associated with stillbirths (adjusted OR 12.6, 95% 1.98-80.25, $p=0.007$). However, there was no significant difference in maternal outcomes between abruptio placenta and placenta praevia in these outcomes.

There was a tendency towards delivery by caesarean section in those that presented with APH in general (69.5%) which is similar to the findings of Singhal et al (2008) and Sheikh et al (2010) at 43.8% and 57.1% respectively. Delivery by caesarean sections in all those that presented with a fetal heartbeat in those with abruptio placenta was protective against stillbirth (OR 0.16, 95% CI 0.02 to 1.34 $P = 0.09$).

11.0 STUDY LIMITATIONS

- Some documentations of deliveries in the Labour ward delivery book were incomplete and this resulted in some cases being missed - especially those of abruptio placenta.
- With this study, it is difficult to estimate the prevalence of placenta praevia and abruptio placenta because of the above problem.
- Maternal deaths due placenta praevia and abruptio placenta were not captured because consent could not be obtained.

12.0 CONCLUSION

Despite similarities, some patient characteristics and outcomes in APH due to placenta praevia compared to abruptio placenta differ. Placenta praevia was characterised by previous deliveries by caesarean section whereas placenta abruptio was associated with pregnancy-induced hypertension. Stillbirths were significantly associated with abruptio placenta and severe maternal complications (near miss).

13.0 RECOMMENDATIONS

- To continue treating placenta praevia and abruptio as major emergencies to prevent maternal morbidity and stillbirths.
- To prevent pre-eclampsia by judicious administration of low dose aspirin and to treat hypertension in pregnancy promptly to prevent abruptio placenta with its adverse outcomes.
- Staff to improve on documentation of findings in the Labour ward delivery book for better record keeping and audit

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APPENDICES

APPENDIX A

Questionnaire

Patient characteristics and outcomes in antepartum haemorrhage due to placenta praevia and abruptio placenta at the University Teaching Hospital, Lusaka, Zambia.

Participant ID (initials) _____

Please tick or enter in the appropriate space.

PART I: Socio-Demographic Details

1. Age (years)

2. Marital Status

a) Single ()

b) Married ()

c) Widowed ()

d) Divorced ()

e) Other (Specify) -----

3. Residential Address -----write name of compound

a) High Density ()

b) Medium Density ()

c) Low Density ()

d) Rural ()

4. Education Level

a) *None* ()

b) *Primary* ()

c) *Secondary* ()

d) *Tertiary* ()

5. Occupation Type

a) *Unemployed* ()

b) *Formal Employment* ()

c) *Informal Sector* ()

d) *Other (Specify)* -----

6. Religion

a) *Christian* ()

b) *Muslim* ()

c) *Hindu* ()

d) *Other (Specify)* -----

5. Smoking-

Yes ()

No ()

PART II: Health Information History

1. Parity (indicate actual number of pregnancies of 28 weeks and beyond)

2. History of previous deliveries

a) *N/A* ()

b) *Vaginal Delivery* ()

c) *Caesarean section* () (*how many.....*)

3. History of Previous Gynecological surgeries

a) *None* ()

b) *Myomectomy* ()

c) *Dilatation and curettage* ()

d) *Evacuation of uterus* ()

4. Any history of any serious medical condition requiring admission to hospital

a) *Yes* ()

b) *No* ()

If no specify.....

5. HIV status

a) *Negative* ()

b) *Positive* ()

6. Family history of hypertension

a) *Yes* ()

b) *No* ()

7. Self-history of hypertension

a) *Yes* ()

b) *No* ()

8. Hypertension in previous pregnancies

a) *Yes* ()

b) *No* ()

9. Previous postpartum haemorrhage

a) *Yes* ()

b) *No* ()

10. Bleeding in previous pregnancies

a) *Yes* ()

b) *No* ()

11. Birth spacing

a) *< 3years* ()

b) *>3years* ()

12. Any history of abortion

a) *Yes* ()

b) *No* ()

PART III. Current pregnancy

1. Conception method

a) *Spontaneous* ()

b) *Assisted fertilisation* ()

2. History of hypertension in current pregnancy

a) *Yes* ()

b) *No* ()

3. History of premature rupture of membranes

a) *Yes* ()

b) *No* ()

4. Sex of Baby

a) *Male* ()

b) *Female* ()

5. History of trauma

a) *Yes* ()

b) *No* ()

6. History of anaemia (Hb < 10.5 g/dL)

7. Attended antenatal clinic

a) *Yes* ()

b) *No* ()

PART IV: Patient management and outcomes

1. Level of main attending doctor

- a) *Consultant* ()
- b) *Senior registrar* ()
- c) *Registrar* ()
- d) *Senior resident medical officer* ()
- e) *Junior resident medical officer* ()

2. Diagnosis

- a) *Placenta praevia* ()
- b) *Abruptio placenta* ()

3. Delivery

- a) *Vaginally* ()
- b) *Caesarean section* ()

4. Treatment received

- a) *IV fluids* ()
- b) *Blood transfusion* ()
- c) *Dexamethasone* ()
- d) *Nothing* ()

5. Maternal outcomes

- a) *No complications* ()
- b) *Hypovolaemic shock* ()
- c) *Disseminated intravascular coagulation (DIC)* ()
- d) *Postpartum haemorrhage* ()
- e) *Death* ()

6. Fetal outcomes

- a) *No complications* ()
- b) *Prematurity* ()
- c) *Respiratory distress syndrome* ()
- d) *Stillbirth* ()
- e) *Sex (M) (F)*
- f) *Birth weight.....*

7. Number of days stayed in hospital

APPENDIX B

Informed Consent Form 1

Participant Information sheet

Informed Consent Form for Patients with antepartum haemorrhage participating in the study.

This Research on antepartum haemorrhage, which is bleeding vaginally before delivery, is being carried out by Dr Quagy Siamalambwa, a master's degree student in the department of Obstetrics and Gynaecology as part of the requirement for his studies. Bleeding before delivery is a big and important problem in Zambia and your participation in this study will help the student and also help improve the care of patients with problems like the one you have. I am going to give you information and invite you to be part of this research. You do not have to decide today whether you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research.

This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask them to me.

You will not be required to give any specimen to the researcher apart from the ones required for your routine care as they are not needed for this study. Do not be surprised that we chose you. We are asking for this kind of help from all patients admitted with problem similar to yours. Your help is highly valued, especially because this is an important problem. The questioning time will only take less than 15minutes and some information will be obtained using your medical records.

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. Feel free not to answer questions that you deem personal or to withdraw from the study at any time. If you choose not to participate all the services you receive at this hospital will continue and nothing will change.

We will not be sharing information about you to anyone outside of the research team. The information that we collect from this research project will be kept private. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up in a cabinet. It will not be shared with or given to anyone.

If you are agreeable to taking part in the study, you can sign the consent.

Principle Investigator: Dr. Quagy Siamalambwa,

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University of Zambia Research Ethics Committee,

Ridgeway Campus,

P. O. Box 50110,

Lusaka.

APPENDIX C

CONSENT FORM Part 2: Certificate of Consent

I have been invited to participate in a research about patient characteristics and outcomes in pregnant women bleeding vaginally before delivery at UTH, Lusaka, Zambia.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study

Print Name of Participant _____

Signature of Participant _____

Date _____

Day/month/year

IF ILLITERATE

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness _____

Thumb print of participant

Signature of witness _____

Date _____

Day/month/year

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that the following will be done:

1. They will have to answer questions administered to them by health care worker from a questionnaire.
2. The questionnaire will be administered once the mother has been delivered and stabilised.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent_____