

# Perinatal Outcomes in Women Presenting with Antepartum Hemorrhage

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## Abstract

**Objectives:** To evaluate the frequency of different causes and perinatal outcomes in women presented with antepartum hemorrhage regarding perinatal mortality, low birth weight and requirement of NICU admission.

**Methodology:** This descriptive cross-sectional study was done in the Gynecology and Obstetrics Department at POF Hospital, Wah Cantt, Pakistan, from December 2023 to June 2024. A total of 95 women presenting with antepartum hemorrhage (APH) with age between 15 to 45 years having singleton pregnancy and gestational age between 24-42 weeks were enrolled in the study. All cases of APH were assessed to identify the causes (placental abruption, placenta previa, toxemia, or others), and perinatal outcomes were documented, including stillbirth, low birth weight, neonatal death, and admission to NICU.

**Results:** The mean maternal age was 30.6±5.5 years, and gestational age was 30.9±6.1 weeks. 36.8% of female delivered through spontaneous vaginal delivery while 63.2% underwent cesarean section. Among possible causes of APH, placenta previa accounts for 36.8%, placental abruption 56.8% and toxemia was responsible for 6.3% of APH. Low birth weight was most prevalent complications with 40% proportion, followed by NICU admission 13.7%, still birth 5.3% and neonatal death 5.3%. 35.8% of babies were birth alive. Perinatal outcomes were stratified between mode of delivery and various groups of maternal age, gestational age, BMI and parity status. However, the significant difference ( $p < 0.05$ ) was noted only for parity status.

**Conclusions:** Placental abruption and placenta previa are among the primary causes of APH. Low birth weight and high admission to NICU rate are among the major perinatal adverse outcomes.

**Keywords:** Abruptio placentae, Antepartum, Hemorrhage, Placenta previa.

Cite this article as: Anis A, Hassan S, Tariq M, Naz M, Mahsud S, Nadeem I. Perinatal Outcomes in Women Presenting with Antepartum Hemorrhage. J Soc Obstet Gynaecol Pak. 2024; 14(4):431-434. DOI 10.71104/jsogp.v14i4.886

## Introduction

Antepartum hemorrhage (APH) refers to bleeding from or into genital tract that occurs from the point of fetal viability until the conclusion of 2nd stage of labour. In North America, the point of viability is considered to be 20 weeks, while in UK, it is set at 24 weeks and 28 weeks in India.<sup>1</sup> Peripartum hemorrhage is a significant contributor to maternal morbidity and mortality. It is reported as the main cause of death in approximately 30% of women.<sup>2</sup>

APH is among the most dreaded presentations in obstetrics. It affects approximately 2-5% of pregnancies globally. APH has been reported to complicate 7.3%

deliveries in the Pakistani population.<sup>3</sup> A study has reported that placental abruption and placenta previa are linked to adverse pregnancy outcomes. The most common cause of APH is antepartum hemorrhage of unknown origin. It contributes to APH in 50% of cases.<sup>4</sup>

With the advent of modern improved medical facilities, perinatal mortality associated with APH has significantly decreased among the developed nations.<sup>5</sup> A study reported that the overall perinatal mortality was found to be 47%.<sup>6</sup> A perinatal mortality rate of 29.6% and 64.7% in placenta previa and placental abruption respectively. In women with presenting with toxemia, the perinatal mortality was 80%.<sup>6</sup> Another study

Authorship Contribution: <sup>1,4</sup>Substantial contributions to the conception or design of the work or the acquisition, <sup>2</sup>Data Analysis <sup>3</sup>Final approval of the version to be published, <sup>5,6</sup>Drafting the work or revising it critically for important intellectual content

Funding Source: none  
Conflict of Interest: none

Received: Sept 11, 2024  
Accepted: Dec 09, 2024

reported a perinatal mortality rate of 42% in cases of APH, with rates of 40% for placenta previa and 47.3% for placental abruption.<sup>7</sup> Additionally, another study found that the frequency of placental abruption was 51.9%, placenta previa 45.8%, and undefined hemorrhage 2.3% in APH.<sup>8</sup> In placental abruption, 66.7% of babies were classified as low birth weight, while in placenta previa, this figure was 33.3%. In placental abruption, perinatal mortality was 20.6% and in placenta previa, it was only 5%. Among APH patients, 65.6% delivered via C-section, while 34.4% had vaginal deliveries.<sup>8</sup>

The rationale of this study is to assess the perinatal outcomes in APH in our local population. This study is guided the local clinicians in identifying patients at risk of developing poor perinatal outcomes. Early identification and proper management are decreased the perinatal morbidity and mortality, thereby improving the perinatal outcomes in APH patients.

The study objectives were to evaluate the frequency of different causes and perinatal outcomes in women presented with APH regarding perinatal mortality, low birth weight and requirement of NICU admission.

## Methodology

This descriptive cross-sectional study was done in the Gynecology and Obstetrics Department at POF Hospital, Wah Cantt, Pakistan, from December 2023 to June 2024. Following hospital ethics committee approval and taken written informed consent from all women, 95 women presenting with antepartum hemorrhage, aged 15-45 years, singleton pregnancy, gestational age 24-42 weeks, and BMI 20-30 kg/m<sup>2</sup>, were enrolled in the study. The non-probability consecutive sampling was employed, and sample was determined using the WHO calculator, with confidence interval 95%, alpha error 5%, and 41.4% frequency of placenta previa.<sup>3</sup> The study excluded participants with history of previous c-section, twin or multiple pregnancies, congenital anomalies detected on ultrasonography, cephalopelvic disproportion, abnormal fetal lie or presentations, and coagulopathies.

A comprehensive history was obtained, including the ages of patients, gestational age, parity, and exhibiting symptoms. A comprehensive examination was conducted, starting with the assessment of vital signs by systemic evaluation. All outcomes of fetal and maternal health were documented. All cases of APH were assessed to identify the causes (placental

abruption, placenta previa, toxemia, or others), and perinatal outcomes were documented, including stillbirth, low birth weight (< 2499 g), neonatal death and admission to NICU. Still birth was referred to as intrauterine fetal death (IUFD), baby born showing no signs of life, fetal death at or after 20 to 28 weeks of pregnancy. Neonatal death was referred to as death of baby after birth till first 28 days of life.

All patients received prophylactically antibiotics with an injection of ceftriaxone, 1 gram every 12 hours. Temperature, blood pressure, pulse, and fetal heart sounds were monitored every four hours until the baby delivery. Mode of delivery of the patients was documented. Babies were weighed within 10 minutes of birth to record weight. All data were documented on a pre-designed proforma. The exclusion criteria were rigorously implemented to minimize confounding factors and bias in study.

The analysis of data was conducted using SPSS v 25. Mean and SD were computed for continuous variables such as maternal age, maternal BMI, parity and gestational age. Frequency and percentage were calculated for categorical variables such as mode of delivery, perinatal outcomes (stillbirth, low birth weight, neonatal death, and admission to NICU), and APH causes (placental abruption, placenta previa, toxemia, and others). Effect modifiers such as age, maternal BMI, parity, mode of delivery, and gestational age were managed through stratification. The chi square was employed after stratification to compare APH causes and perinatal outcomes between stratified groups. P value  $\leq 0.05$  was deemed to be significance.

## Results

In total, 95 patients with APH were enrolled in this study. The mean maternal age was  $30.6 \pm 5.5$  years, gestational age  $30.9 \pm 6.1$  weeks, parity  $1.7 \pm 1.1$  and BMI  $26.3 \pm 2.8$  kg/m<sup>2</sup> were calculated. Patients were further categorized in different groups on the basis of maternal age, gestational age and BMI (Table I). There were more than half of the patients have age  $\leq 30$  years. Furthermore, BMI  $\leq 25$  kg/m<sup>2</sup> and gestational age  $\leq 34$  weeks was more prevalent in this study. Additionally, most of these patients were delivered through cesarean section. The causes of APH were evaluated in the patients and placental abruption found to be the most prevalent cause followed by placental previa and toxemia (Table II). Perinatal outcomes were determined in all patients and mean birth weight for all the neonates was determined as  $2562.1 \pm 523.7$  grams.

**Table I: Distribution of patients in different maternal age, gestational age and BMI groups.**

Variables		N	%
Maternal age (years)	≤ 30	54	56.8
	> 30	41	43.2
Gestational age (weeks)	≤ 34	61	64.2
	> 34	34	35.8
BMI (kg/m <sup>2</sup> )	≤ 25	31	32.6
	> 25	64	67.4
Mode of delivery	Spontaneous vaginal delivery (SVD)	35	36.8
	C-section	60	63.2

Low birth weight was most frequently observed complication in all patients followed by NICU admission, still birth and neonatal death (Table II). Perinatal outcomes were further stratified for various causes of APH.

**Table II: Frequency of various causes of APH.**

Variables		N	%
Causes of APH	Placental previa	35	36.8
	Placental abruption	54	56.8
	Toxemia	6	6.4
Perinatal outcomes	Still birth	5	5.3
	Neonatal death	5	5.3
	Low birth weight	38	40.0
	NICU admission	13	13.6
	Live birth	34	35.8

Stratification of perinatal outcomes was done for mode of delivery and various groups of maternal age, gestational age, BMI and parity status. However, the significant difference ( $p < 0.05$ ) was noted only for parity status (Table III).

**Table III: Stratification of perinatal outcomes.**

Perinatal outcomes	Maternal age		Total	p-value
	≤ 30 years	> 30 years		
Still birth	3 (3.2%)	2 (2.1%)	5 (5.3%)	.309
Neonatal death	4 (4.2%)	1 (1.1%)	5 (5.3%)	
Low birth weight	25 (26.3%)	13 (13.7%)	38 (40%)	
NICU admission	5 (5.3%)	8 (8.4%)	13 (13.7%)	
Live birth	17 (17.9%)	17 (17.9%)	34 (35.8%)	
Total	54 (56.8%)	41 (43.2%)	95 (100%)	
Perinatal outcomes	Gestational age		Total	p-value
	≤ 34 weeks	> 34 weeks		
Still birth	3 (3.2%)	2 (2.1%)	5 (5.3%)	.542
Neonatal death	3 (3.2%)	2 (2.1%)	5 (5.3%)	
Low birth weight	22 (23.2%)	16 (16.8%)	38 (40%)	
NICU admission	11 (11.6%)	2 (2.1%)	13 (13.7%)	
Live birth	22 (23.2%)	12 (12.6%)	34 (35.8%)	
Total	61 (64.2%)	34 (35.8%)	95 (100%)	
Perinatal outcomes	BMI		Total	p-value
	≤ 25 kg/m <sup>2</sup>	> 25 kg/m <sup>2</sup>		
Still birth	2 (2.1%)	3 (3.2%)	5 (5.3%)	.782
Neonatal death	1 (1.1%)	4 (4.2%)	5 (5.3%)	
Low birth weight	12 (12.6%)	26 (27.4%)	38 (40%)	
NICU admission	6 (6.3%)	7 (7.4%)	13 (13.7%)	
Live birth	10 (10.5%)	24 (25.3%)	34 (35.8%)	
Total	31 (32.6%)	64 (67.4%)	95 (100%)	
Perinatal outcomes	Mode of delivery		Total	p-value
	SVD	C section		
Still birth	2 (2.1%)	3 (3.2%)	5 (5.3%)	.775
Neonatal death	3 (3.2%)	2 (2.1%)	5 (5.3%)	
Low birth weight	15 (15.8%)	23 (24.2%)	38 (40%)	
NICU admission	4 (4.2%)	9 (9.5%)	13 (13.7%)	
Live birth	11 (11.6%)	23 (24.2%)	34 (35.8%)	
Total	35 (36.8%)	60 (63.2%)	95 (100%)	
Perinatal outcomes	Parity status		Total	p-value
	≤ 2	> 2		
Still birth	1 (1.1%)	4 (4.2%)	5 (5.3%)	.007
Neonatal death	4 (4.2%)	1 (1.1%)	5 (5.3%)	
Low birth weight	33 (34.7%)	5 (5.3%)	38 (40%)	
NICU admission	12 (12.6%)	1 (1.1%)	13 (13.7%)	
Live birth	27 (28.4%)	7 (7.4%)	34 (35.8%)	
Total	77 (81.1%)	18 (18.9%)	95 (100%)	

## Discussion

This study was to evaluate the causes and perinatal outcomes of APH in Pakistani population. Among possible causes of APH, placenta previa accounts for 36.8%, placental abruption 56.8% and toxemia was responsible for 6.3% of APH. In this study, low birth weight was most prevalent complications with 40% proportion, followed by NICU admission 13.6%, still birth 5.3% and neonatal death 5.3%. 35.8% of babies were birth alive. This study reaffirmed the established findings that individuals of APH are more prone to experiencing adverse neonatal outcomes, including stillbirths, low birth weight, high admission to NICU and neonatal death. In the majority of cases, delivery was performed for maternal benefit. In this study, the stillbirth rate was 5.3%, whereas other studies have reported stillbirth rates of 50.2% and 22.2% in APH cases.<sup>9,10</sup> This is likely associated with the timeliness of the interventions implemented, as hemorrhage can expose fetuses to hypoxia and ultimately lead to death. These further underscores the importance of early and aggressive management of APH.

This study results are consistent with study results of Mushtaq et al, who marked the causes of APH and the adverse outcomes. They found that the causes of APH included placental abruption in 37.5% of cases, placenta previa in 43.8%, toxemia in 10.4%, and undefined causes in 8.3% of patients.<sup>11</sup> In this study, the perinatal mortality rate was 43.8%. In Mushtaq et al study, the overall frequency of stillbirth was reported to be 27.08% and low birthweight babies 62.5%. They concluded that APH is a significant contributor to perinatal mortality. A timely diagnosis of underlying causes, coupled with early c-section, may decrease mortality.<sup>11</sup>

Similarly, Hamadameen reported the occurrence of APH as 2.34%. Placenta previa was 58%, followed by abruption 36.7%. The majority placenta previa (94.4%) cases were delivered via c-section, whereas 57.1% of cases with placental abruption underwent the same procedure. The perinatal mortality rate was 23.6%. The majority of perinatal deaths took place in infants with low gestational weights (< 2.5 kg) and in those who were delivered vaginally.<sup>12</sup> Wasnik et al found the incidence of APH was 1.31%. Perinatal morbidity was significant high, characterized by a 90% c-section rate, a 75% requirement for blood transfusions, a 40% occurrence of low birth weight, and a 44% admission rate to the NICU.<sup>13</sup>

Jharaik et al reported the occurrence of APH as 1.98%. The perinatal mortality was 20.1%.<sup>14</sup> Abruptio placentae was the primary causes of APH that is 56.8%. Placenta previa and toxemia cases were 36.8% and 6.3% respectively. This study findings were same with studies done by Jejani et al and Tyagi et al.<sup>15,16</sup>

A significant limitation of our study is that it was done at single center, and majority of population belonged to same ethnicity. Multi-center controlled prospective studies are required to achieve further comprehensive objectives and found reliable future references.

## Conclusion

Placental abruption and placenta previa are among the primary causes of APH. Low birth weight and high admission to NICU are among the major perinatal adverse outcomes in our population. We suggest that obstetricians of our local setting remain vigilant about the heightened risk of adverse pregnancy outcomes associated with APH in women with placenta previa and abruptio placentae.

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