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# Foeto-Maternal Outcomes of Antepartum Haemorrhage in A Tertiary Care Centre: A Cross-Sectional Study

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## ABSTRACT

**Background:** Antepartum hemorrhage (APH), defined as bleeding from the genital tract after 28 weeks of gestation and before delivery, remains a significant cause of maternal and perinatal morbidity and mortality, especially in low-resource settings like India. Despite improvements in prenatal care, APH continues to pose major challenges due to late diagnosis and limited access to emergency obstetric services.

**Objectives:** To evaluate maternal and fetal outcomes associated with APH beyond 28 weeks of gestation and identify key risk factors contributing to adverse events.

**Methods:** This retrospective cross-sectional study was conducted at a tertiary care hospital from March 2023 to March 2025. A total of 45 patient records with APH were analyzed. Data on maternal demographics, antenatal history, comorbidities, delivery outcomes, and neonatal status were extracted. Descriptive statistics were used to summarize findings using STATA 14.0.

**Results:** The mean maternal age was 26 ± 5 years. Most women were primiparous (86.7%) and unbooked for antenatal care (91.1%). Common comorbidities included gestational hypertension (55.6%), pre-eclampsia (53.3%), and anemia (42.2%). Emergency cesarean section was performed in 71.1% of cases, with 57.8% delivering preterm. Major maternal complications included shock and sepsis (57.8%), postpartum hemorrhage (48.9%), and disseminated intravascular coagulation (48.9%). The maternal mortality rate was 51.1%. Placental causes such as vasa previa (60%), abruptio placentae (51.1%), placenta accreta spectrum (48.9%), and placenta previa (44.4%) were the predominant risk factors. Neonatal complications included low birth weight (64.4%), NICU admissions (44.4%), and intrauterine deaths (28.9%). APGAR scores were <3 in 90% of newborns at 1 minute but improved at 5 minutes in 68.9%.

**Conclusion:** APH remains a life-threatening obstetric emergency with high maternal and perinatal complication rates. Improving antenatal registration, early detection of placental abnormalities, and management of hypertensive disorders are vital. Strengthening emergency obstetric and neonatal care services is essential to reducing the burden of APH-related mortality and morbidity.

**Keywords**: *Fetal outcomes, Maternal outcomes, Obstretic complications, Placental pathologies,.*

## 1. INTRODUCTION

Antepartum hemorrhage (APH) remains one of the most serious and potentially fatal complications in obstetrics, affecting approximately 2–5% of pregnancies worldwide. [1] It significantly contributes to both maternal and perinatal morbidity and mortality, particularly in low- and middle-income countries. APH is described as any bleeding from the genital tract during pregnancy, after the period of viability until the delivery of fetus. (end of second stage) [2] In India, viable period is 28 weeks

(ACOG). [2] Hemorrhage, including both APH and postpartum hemorrhage (PPH), ranks among the leading causes of maternal death, along with hypertensive disorders, infections, unsafe abortions, and obstructed labor. [3] Although some causes of maternal mortality such as sepsis and obstructed labor have declined, APH continues to pose a substantial threat to maternal health. In India, the reported perinatal mortality rate stands at 26 per 1,000 births. [3]

The primary causes of APH include placenta previa, which occurs in about 4–5 per 1,000 pregnancies, and placental abruption, seen in approximately 1% of pregnancies. Other less common causes include APH of unknown origin, vasa previa, and cervical pathologies such as erosion, polyps, tumors, and other sources of lower genital tract bleeding. [4] Depending on the severity and scale of placental separation, APH can lead to significant complications for both mother and fetus. Maternal outcomes may include hemorrhagic shock, preterm labor, disseminated intravascular coagulation (DIC), acute renal failure, morbidly adherent placenta, postpartum hemorrhage, puerperal sepsis, lactation failure, and even pulmonary embolism. Fetal complications can include prematurity, asphyxia, intrauterine fetal death, and birth trauma. [5]

Despite advancements in prenatal care and obstetric interventions, APH remains a significant challenge in improving pregnancy outcomes. This study retrospectively examines the fetomaternal outcomes associated with APH, with a focus on the incidence of complications.

The objectives of the study are to evaluate the maternal and fetal outcome of antepartum hemorrhage of > 28weeks of gestation & to find the risk factors of antepartum hemorrhage

## 2. METHODS

A retrospective cross-sectional study was conducted at a tertiary care hospital after obtaining ethical approval (SDUAHER/R&D/CEC/SDUMC-PG/03/NF/-2025-26). Patient records with antepartum hemorrhage of Obstretics & Gynaecology department were reviewed from March 2023 to March 2025. The sample size was 45; calculated using n== $\frac{4pq}{l^2}$ where p = prevalence of AH 53.3%, q = (100-p) = 46.7% and l = Allowable error of 15%

The study followed purposive sampling, including data of patients admitted to labour room with antepartum haemorrhage of > 28weeks & excluded patients suffering from any bleeding disorders. Information regarding maternal history, antepartum diagnosis, antenatal complications, and delivery outcomes were compiled for subsequent analysis.

Data was entered into Microsoft Excel sheet and analysed using STATA software version 14.0 All the study variables were described as frequency and percentages.

## 3. RESULTS

The study population had a mean maternal age of 26 years with a standard deviation of 5 years. Majority of patients were primiparous (86.7%), with only 13.3% being multiparous. Most participants (91.1%) had not booked antenatal checkups. Among the comorbidities observed, gestational hypertension was the most common (55.6%), followed by pre-eclampsia (53.3%) and anaemia (42.2%). [Table 1] The majority of deliveries occurred before term, with 40% between 32 to <37 weeks and 17.8% between 29 to <32 weeks. Only 20% delivered between 39 and 41 weeks. Emergency delivery was the predominant mode (71.11%), whereas vaginal deliveries and vaginal birth after cesarean (VBAC) were less common, at 24.44% and 4.44%, respectively. [Table 1]

In patients reporting AH, complications like shock and sepsis each affecting 57.8% of patients were reported. Postpartum hemorrhage (PPH), disseminated intravascular coagulation (DIC), and hysterectomy were each reported in nearly half of the cases (48.9%). HELLP syndrome occurred in 44.4% of patients, while ICU admissions and blood transfusion requirements were reported in 42.2% and 51.1% of cases, respectively. [Figure 1]

Among the risk factors, vasa previa (60%), abruptio placentae (51.1%), and PAS (48.9%) were the most commonly observed, followed by placenta previa (44.4%). These conditions significantly contribute to maternal and fetal complications. A striking maternal mortality rate of 51.1% underscores the severe impact of APH, while 44.4% of the cases required NICU admission, reflecting the critical condition of many neonates at birth.

Neonatal outcomes further emphasize the gravity of APH. Low birth weight was prevalent, with 64.4% of new-borns falling into the LBW, VLBW, or ELBW categories. At 1 minute, 90% of babies had Apgar scores below 3, indicating severe birth distress, although scores improved by 5 minutes, with 68.9% scoring above 7. Despite this, intrauterine deaths were reported in 28.9% of cases, suggesting significant fetal compromise. [Table 2]

## 4. DISCUSSION

APH remains a major obstretic emergency, especially in low-resource settings like India. It complicates approximately 2–5% of pregnancies worldwide and poses a particularly severe burden in resource-limited settings due to delayed care and poor antenatal surveillance [1,2,3]. In India, APH continues to be one of the top contributors to maternal deaths, alongside hypertensive disorders, infections, and obstructed labor. [3,4] In our study population, 91.1% women, consistent with existing evidence that lack of adequate antenatal surveillance and delayed interventions significantly heightens the risk of adverse outcomes in APH cases [1,2, 5]. This high percentage of unbooked cases underlines the persistent gaps in antenatal outreach and education in certain regions of the country, despite efforts to expand maternal healthcare services through government programs like Janani Suraksha Yojana (JSY) and Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) [3]. Additionally, 86.7% of women were primiparous, which differs from some studies showing higher risk in multiparous women but may

reflect local demographics and referral patterns. [1,6, 10]

Hypertensive disorders of pregnancy, including gestational hypertension (55.6%) and pre-eclampsia (53.3%), were the most frequently encountered comorbidities in this cohort. These conditions are recognized risk factors for placental abruption, a leading cause of APH [3, 4, 11]. Anaemia, seen in 42.2% of patients, further exacerbates the impact of hemorrhage and remains a critical public health concern in India, affecting nearly half of all pregnant women [2, 5]. Studies reported that abruptio placentae was frequently associated with hypertensive pregnancies and led to critical maternal complications and poor fetal prognosis. [12] In our cohort, placental causes, specifically vasa previa (60%), abruptio placentae (51.1%), placenta accreta spectrum (48.9%), and placenta previa (44.4%) were the dominant etiologies of APH. These findings echo findings that reported similar prevalence of placental pathologies as key risk factors for late pregnancy bleeding and adverse outcomes. [7,8]

In terms of delivery characteristics, a notable 57.8% of cases involved preterm deliveries (<37 weeks), with the majority requiring emergency cesarean sections (71.11%). These findings align with previous studies that indicate high emergency operative rates and preterm births in pregnancies complicated by APH [10, 11]. Preterm birth increases the risk of neonatal complications, including respiratory distress and sepsis, often necessitating NICU admission, as observed in 44.4% of cases in our study. Emergency cesarean section was the mode of delivery in 71.1% of our cases, emphasizing the critical and time-sensitive nature of APH management, similar to other studies [9, 12]

The maternal complication profile in our cohort reflects the life-threatening nature of APH. Shock and sepsis each occurred in over half of the cases (57.8%), while PPH, DIC, and hysterectomy were reported in 48.9% of women. These outcomes are consistent with known sequelae of APH and underline the importance of rapid intervention and availability of emergency obstetric care [5, 6]. ICU admissions and blood transfusions were also common, highlighting the need for comprehensive maternal critical care protocols in tertiary settings.

Fetal outcomes were similarly severe, with 35.6% of LBW neonates and 90% recording APGAR scores <3, indicating severe birth asphyxia. The stillbirth rate (28.9%) and maternal mortality rate (51.1%) reported in our study are alarmingly high and reflect the severity of cases reaching tertiary care, often late and with limited prenatal care. These outcomes are consistent with multiple Indian studies, which found strong associations between APH and intrauterine hypoxia, low APGAR scores, and neonatal death [8,11]. NICU admission was required in 44.4% of cases, underlining the burden on neonatal services.

Vasa previa (60%) and abruptio placentae (51.1%) were the most frequently identified risk factors, consistent with international literature and national data indicating their role in APH-associated perinatal losses [8].

These findings underscore the critical importance of early antenatal registration, routine screening for placental positioning, and management of hypertensive disorders in pregnancy. Public health interventions must prioritize awareness, access, and availability of emergency obstetric services to reduce the burden of APH-related complications.

Tables and Figures

**Table 1: Maternal Demographics, Comorbidities, and Delivery Characteristics**

| Parameter | Frequency | Percentage |
|---|---|---|
| **Demographic details** | | |
| Maternal Age (mean, SD) | (26, 5)[1] | |
| Parity | | |
| Primiparous | 39 | 86.7 |
| Multiparous | 6 | 13.3 |
| Antenatal booking status | | |
| Booked | 4 | 8.9 |
| Unbooked | 41 | 91.1 |
| Comorbidities | | |
| Anaemia | 19 | 42.2 |
| Gestational hypertension | 25 | 55.6 |

| | | |
|---|---|---|
| Pre-eclampsia | 24 | 53.3 |
| **Pregnancy & Delivery details** | | |
| *Gestational age at delivery* | | |
| 29 to <32 weeks | 8 | 17.8 |
| 32 to <37 weeks | 18 | 40 |
| 37 to <39 weeks | 10 | 22.2 |
| 39 to 41 weeks | 9 | 20 |
| *Mode of delivery* | | |
| Emergency | 32 | 71.11 |
| Vaginal | 11 | 24.44 |
| VBAC | 2 | 4.44 |

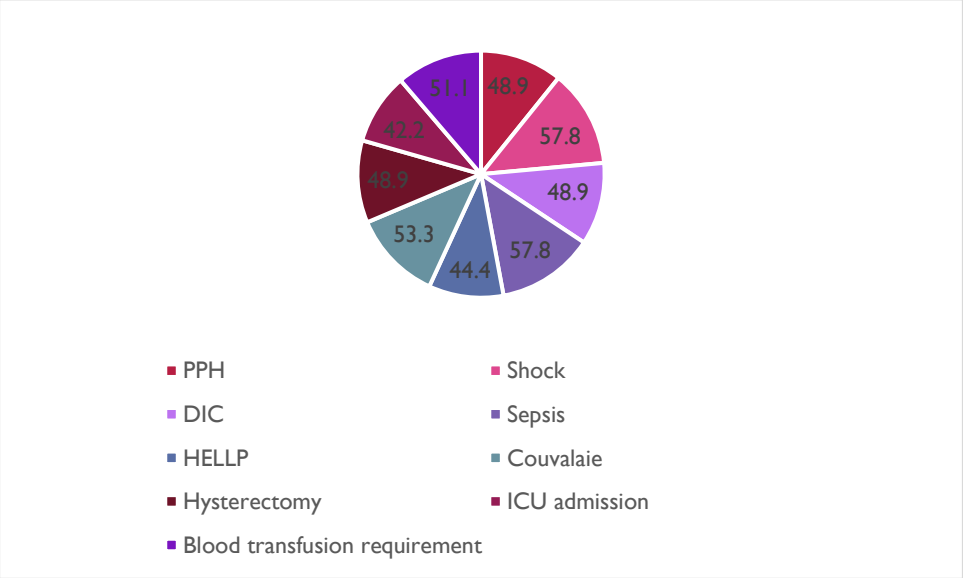
[1]*Age is summarized as mean and Standard deviation.*

**Table 2: Risk Factors and Foeto-maternal outcomes of Antepartum Hemorrhage**

| **Parameter** | **Frequency** | **Percentage** |
|---|---|---|
| **Risk Factors** | | |
| Abruptio | 23 | 51.1 |
| Placenta previa | 20 | 44.4 |
| PAS | 22 | 48.9 |
| Vasa previa | 27 | 60 |
| **Outcomes** | | |
| Extremely LBW | 5 | 11.1 |
| Very Low LBW | 8 | 17.8 |
| Low LBW | 16 | 35.6 |
| Normal BW | 16 | 35.6 |
| *Apgar score at 1 min* | | |
| <3 | 40 | 90 |
| 3 to 7 | 0 | 0 |
| >7 | 5 | 10 |
| *Apgar score at 5 min* | | |
| <3 | 0 | 0 |
| 3 to 7 | 14 | 31.1 |
| >7 | 31 | 68.9 |
| NICU admission rates | 20 | 44.4 |

| | | |
|---|---|---|
| Maternal deaths | 23 | 51.1 |
| **Neonatal Complication** | | |
| Intra-uterine deaths | 13 | 28.9 |
| Alive | 32 | 71.1 |

**Figure 1: Complications seen in AH cases**




## 5. CONCLUSION

Despite improvements in obstetric care, APH continues to pose substantial risks to maternal and fetal health. Early identification of high-risk pregnancies, timely referral, adequate antenatal monitoring, and the availability of emergency services are crucial to reducing adverse outcomes. Strengthening health systems to improve antenatal booking rates and managing comorbidities such as hypertension can significantly reduce the incidence and severity of APH-related complications.

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