Original Research Article

Antepartum Hemorrhage in Obstetrics Is Still a Maternal/Fetal Killer

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Abstract: *Antepartum hemorrhage (APH), defined as bleeding from the genital tract after 20 weeks of gestation but before the birth of the baby, remains a significant cause of maternal and perinatal morbidity and mortality, especially in low-resource settings. Early identification and prevention strategies are crucial for improving outcomes.* **Objective:** *To determine the frequency and associated risk factors of antepartum hemorrhage among women who delivered between January 2020 and December 2024 at a tertiary care hospital in Larkana, Pakistan.* **Methods:** *This retrospective descriptive study was conducted at the Gynecological Unit of Shaikh Zayad Women's Hospital, affiliated with Shah Abdul Latif University, Khairpur. Data from 672 pregnant women aged 21 to 49 years who presented with antepartum hemorrhage were included. The study population included both primigravida and multigravida women at preterm (20–36+6 weeks) and term (37–42 weeks) gestation. Continuous variables were expressed as mean ± standard deviation (SD), and categorical variables were presented as frequencies and percentages. The chi-square test was employed to evaluate categorical associations, while independent t-tests compared continuous variables between anemic and non-anemic women with APH. A p-value < 0.05 was considered statistically significant. Data analysis was conducted using SPSS version 20.* **Results:** *Results showed that women aged 33–47 years had significantly higher odds of experiencing APH compared to those aged 16–32 years (p < 0.05). A previous history of abortion was associated with a twofold increase in APH risk, while women with a history of cesarean section had a 5.7 times higher likelihood of developing APH compared to those without such a history. Additional associated factors included anemia, multiparity, malnutrition, and previous episodes of APH.* **Conclusion:** *This study highlights key risk factors for antepartum hemorrhage, including advanced maternal age, multiparity, anemia, malnutrition, prior abortion, previous cesarean delivery, and history of APH. Public health efforts should focus on reducing preventable risk factors such as unnecessary cesarean sections and unsafe abortions while improving antenatal care to mitigate APH-related complications.*

Keywords: Antepartum hemorrhage, pregnancy, maternal/fetal complications

Introduction

Antepartum hemorrhage (APH) remains one of the leading causes of maternal and neonatal morbidity and mortality worldwide, particularly in low- and middle-income countries such as Pakistan. APH accounts for approximately 25% to 60% of maternal deaths globally, representing a significant obstetrical emergency requiring timely diagnosis and intervention (1). It complicates around 3% to 5% of all pregnancies and is defined as bleeding from or into the genital tract after the 24th week of gestation and before the birth of the baby (2).

The most common etiologies of APH include placenta previa, abruptio placentae, and, less commonly, vasa previa and local causes such as cervicitis or cervical trauma. Placenta prevails from abnormal implantation of the placenta in the lower uterine segment, while abruptio placentae involves premature separation of a normally implanted placenta (3). These conditions are associated with severe maternal and fetal complications, including preterm delivery, fetal growth restriction, intrauterine fetal death, and the need for blood transfusion and surgical intervention (4).

Risk factors significantly contributing to the occurrence of APH include a previous history of antepartum hemorrhage, advanced maternal age (particularly over 35 years), multiparity, multiple gestations (twins or triplets), polyhydramnios, pregnancy-induced hypertension (PIH), diabetes mellitus, and uterine scarring from previous cesarean deliveries or surgical termination of pregnancy (5,6). Women residing in rural areas with limited access to quality obstetric care are disproportionately affected, particularly in settings like rural Pakistan, where health infrastructure is under-resourced (7).

Given these risks, the Royal College of Obstetricians and Gynaecologists (RCOG) recommends early identification and surveillance of high-risk pregnancies. This includes serial ultrasounds, fetal growth monitoring, and close clinical supervision to detect complications such as small for gestational age (SGA) fetuses, intrauterine growth restriction (IUGR), and risk of preterm labor (8). The RCOG also classifies APH severity into clinical categories: spotting, minor bleeding (<50 mL), major hemorrhage (50–1000 mL without signs of shock), and massive hemorrhage (>1000 mL with clinical instability) (9).

To reduce the burden of APH-related morbidity and mortality, there is an urgent need to strengthen antenatal care services. This includes early prenatal registration, identification of high-risk pregnancies, timely diagnosis, and referral to tertiary care facilities equipped with blood banks, surgical capacity for emergency cesarean sections, and trained obstetric personnel (10). Furthermore, increased contraceptive use and spacing between pregnancies can reduce the prevalence of associated risk factors such as multiparity and repeat cesarean sections.

In light of the clinical and public health significance of APH, this study aimed to assess the prevalence, risk factors, and associated maternal and fetal outcomes of antepartum hemorrhage among women who delivered at a tertiary care hospital over five years.

Methodology

This retrospective descriptive study was carried out over five years, from January 2020 to December 2024, in the Gynecology Department of Shaikh Zayad Women's Hospital, Larkana, affiliated with Shah Abdul Latif University, Khairpur. Ethical approval was obtained from the

institutional review committee of Shah Abdul Latif University, and written informed consent was secured from each participant before enrollment.

The study included a total of 672 pregnant women, aged between 22 and 49 years, who either presented in labor or were admitted during pregnancy with symptoms of antepartum hemorrhage. The inclusion criteria consisted of both primigravida and multigravida women who were either preterm (gestational age between 20 weeks to 36 weeks + 6 days) or at term (37–42 weeks). Women with comorbid conditions such as diabetes mellitus, cardiovascular diseases, cervical malignancy, cervical polyps, vasa previa, or pregnancy-induced hypertensive disorders were excluded from the study.

Eligible participants were identified through the outpatient department or emergency admissions and underwent detailed clinical interviews. A comprehensive obstetric history, personal and medical history, and physical examination were recorded. Each participant underwent a thorough abdominal examination and obstetric sonography to confirm the diagnosis of APH. Placenta previa was diagnosed when the placenta was partially (type I and II) or completely (type III and IV) covering the cervical os, while abruptio placentae was defined as the premature detachment of a normally situated placenta, manifesting as vaginal bleeding with or without abdominal pain.

Laboratory investigations included a complete blood count, hemoglobin levels, platelet count, blood group, random blood sugar, prothrombin time (PT), activated partial thromboplastin time (APTT), and viral markers. These investigations supported the clinical and sonographic diagnosis and helped assess the maternal condition.

The study analyzed variations in maternal and fetal outcomes including antepartum hemorrhage types (placenta previa, abruptio placentae, vasa previa), postpartum hemorrhage, prolonged labor, delivery mode (vaginal, cesarean section, or instrumental delivery), intrauterine growth restriction (IUGR), low birth weight (LBW), preterm birth, premature rupture of membranes (PROM), and fetal outcomes such as fresh stillbirth (FSB), macerated stillbirth (MSB), and neonatal death (NND).

All collected data were entered and analyzed using SPSS version 20. Continuous variables were presented as mean ± standard deviation (SD), and categorical variables were expressed as frequencies and percentages. The chi-square test was applied to analyze associations between categorical variables, while independent sample t-tests were used to compare continuous variables between anemic and non-anemic APH patients. A p-value of less than 0.05 was considered statistically significant throughout the analysis. To ensure confidentiality, interviews and data handling were conducted privately and with strict anonymity.

Results

Out of the 17371 5-year obstetrical admissions from January 1, 2020, to December 31, 2024, 672 (3.86%) had antepartum hemorrhage, 238 (1.37%) had placenta previa, and 434 (2.49%) had abruption placenta. Of all the women with APH who received medical treatment (such as bed rest and taxemic acid), 34 (0.19%) had success. 638 (3.67%) of the APH women, however, did not respond to medical therapy (surgical intervention). according to table 1.

Table 1. Statistics

s.no.	Statistics	N (%)
1.	Total obstetrics admission (JAN 2020 to December 2024)	17371
2.	Total antepartum hemorrhage	672 (3.86%)
3.	Abruption placenta	434 (2.49 %)
4	Concealed abruption placenta	220(1.26%)
5	Revealed abruption placenta	214 (1.23%)
6.	Placenta Previa	238 (1.37%)
7.	Placenta previa type (1+2)	176(1.01%)
8.	Placenta previa type (3+4)	62(0.356%)
9.	APH medical respond	34 (0.19%)
10.	APH (no medical response but surgical response)	638 (3.67%)

While the mean (SD) age of the patients was 29.76 (±7.19) years (range=17–44), the average age of the controls was 27.55 (±6.28) years (range=17–44). According to Table 1, 114 (40.7%) of the control group lived outside of Shire, while 166 (59.3%) lived in Shire town. The remaining women were Shire residents, while the majority of the women who presented with town-related antepartum hemorrhage (cases) (78, 55.7%) came from outside Shire town.

Women with APH either placenta The middle age group is the most common age group for previa or abruption placenta, and table 2 indicates that fetal weight rose with increased parity and that APH is high with high parity, with related gestational age greater in the fourth to sixth gravida.

Table 2. Clinical profile and demographic areas of APH women

Characteristics of women (672)	N (%)
Age (years)	
16-20 y	121 (0.69%)
21-30 y	289 (1.66%)
31-40 y	240(1.38%)
41-50 y	22 (0.12%)
Parity	
Primigravida	23 (0.13%)
2nd and 3rd gravida	112 (0.64%)
4th and 5th gravida	241 (1.38%)
6th and 7th gravida	271 (1.56%)
8th to 14th gravida	25(0.14%)
Gestational age (weeks)	

< 32 wks.	24 (0.13%)
32-37 wks.	263 (1.51%)
37-40 wks.	375 (2.15%)
40-42 wks.	12 (0.06%)
Birth weight (kg)	
<2	120 (0.69%)
2-2.9	294 (1.69%)
3-3.9	233 (1.34%)
≥4	25 (0.14%)

Since APH is an obstetric emergency, it requires knowledge of entire blood arrangements and a multi-dispenser strategy. Therefore, if the first medicinal or conservative treatment fails, the surgical treatment—such as control by intrauterine packing or the B-lynch surgery after delivery SVD or after the C/S cesarean section—should be used. A significant or severe blood loss increases the likelihood of receiving a blood, platelet, or FFP transfusion. as mentioned in Table 3. Along with a number of APH women who had higher rates of placenta previa or abruption placenta, this statistic displays the total number of obstetrical admissions. As seen in figure 1, the majority of women with APH proceeded on to PPH (POSTPARTUM HEMORRHAGE), which was followed by medicinal or surgical therapy through intrauterine packing or b-lynch surgery.

Table 3. The APH pts with MEDICAL AND SURGICAL TREATMENTS and blood loss

| Treatments	N=672
APH conservative treatments	34 (0.19%)
Operation time (min)	72.4 ± 16.7
Intrauterine packing (3-7 min)	232 (1.33%)
B-lynch (4-6 min)	58 (0.33%)
Ceasearon section followed B-lynch if failed then Hysterectomy	7
Intrauterine packing failed following hysterectomy	78
Intraoperative blood loss (ml)	936± 245
Mild to moderate 500-1000 ml (88 out of 132)	88
Moderate to massive 1000 to 15000 ml (32 out of 132)	32
Massive to v massive 15000 to 25000 ml (12 out of 132)	12
24- h postoperative blood loss (ml)	187±40
Blood transfusion n (%)	552
Whole blood	4 units of 390 women 3 units of 131 women 2 units of 120
FFP (fresh frozen plasma)	4 in 300 women
Platelets (transfused in thrombocytopenic APH women)	4 in 230 women
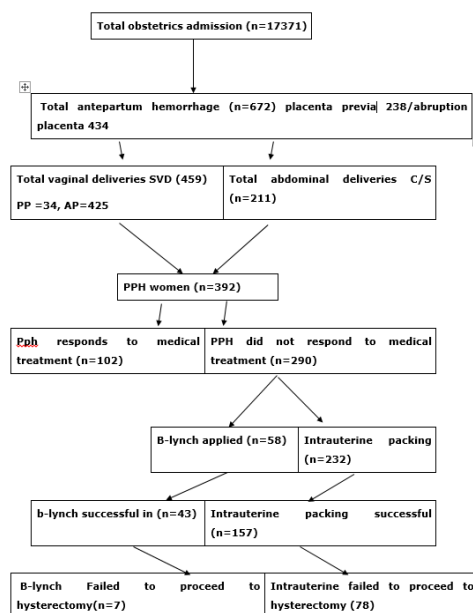
Figure. 1. Statistics.

The removal of uteruses to save a mother's life is known as a cesarean hysterectomy. After applying a b-lynch compression suture, if it didn't work, seven women had a hysterectomy, and 78 women had an intrauterine packing failure. as described in Table 4.

Table .4. Postoperative findings in patients with APH (672)

Postoperative findings	N (%)
Uterus salvage: bleeding controlled/reduced after application (59)	59 (0.33%)
Ceasearon hysterectomy done after B -lynch failed	7 (0.04%)
Intrauterine packing (232 done)	232(1.33%)
Ceasearon hysterectomy done after intra uterine packing failure/Re-open-s laparotomy in 12 pts	78 (0.44%)

Among PPH patients who did not respond to medicinal treatment, B-lynch uterine compressor sutures were used for surgical treatment.

This treatment uses vicarly no. 1 or 2, which causes a three-month delay in absorbable suture material.

Table 5. The outcome and postoperative recovery

Maternal morbidity	N (132)
POST OPERATIVE HOSPITAL STAY	7 ± 0.8
PURPURAL MORBIDITY	8
PYOMETRA	2
Duration of lochia (d)	35.5 ± 4.2
Intrauterine adhesion	0
Change in menstrual flow n (%)	
No change	189
Reduced	6
Increased	16
No bleeding (because a hysterectomy was done)	21

As indicated in table no. 6, obstetrical complications such as (FETOMATERNAL) PPH, placenta accrete, IUD, FSB, MSB, NND, DIC, thrombocytopenia, anemia, hypovolemic shock, blood transfusion reactions, anuria, cardiac arrest, cardio-pulmonary compromise, pulmonary embolism, and ultimately maternal death always follow APH.
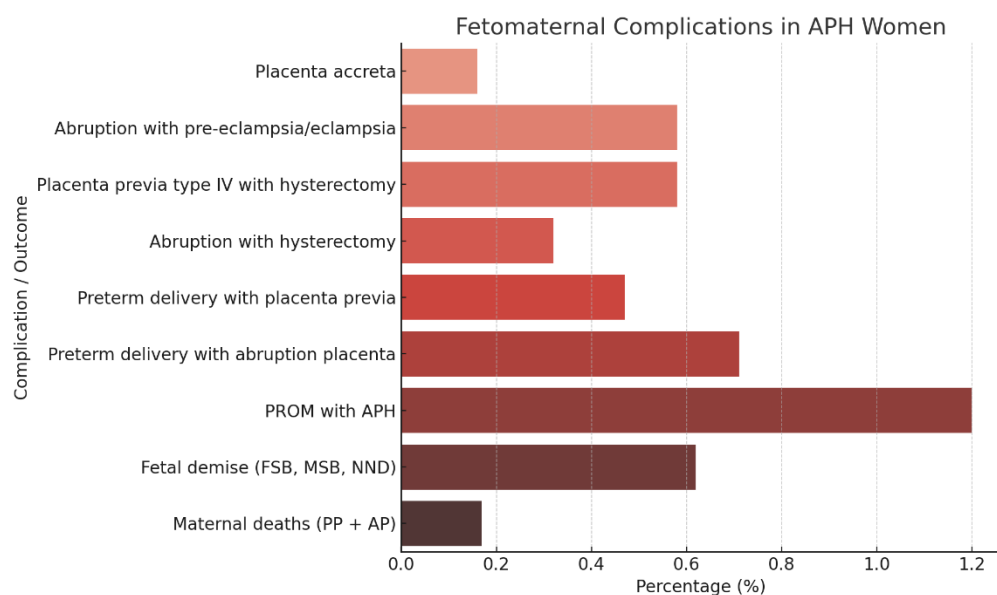

Figure 2: Fetomaternal complications in APH Women

Table 6. The fetomaternal outcome in APH women (672)

SERIAL	FETO-MATERNAL OUTCOME AND COMPLICATIONS	N (%)
1	Placenta accrete	28 (0.16%)
2.	Abruption placenta due to pre-eclampsia/eclampsia	102 (0.58%)
3.	Placenta praevia (type IV) followed by obstetrical hysterectomy	28 (0.58%)
4.	Abruption placenta followed by obstetrical hysterectomy	57 (0.32%)

5.	Preterm delivery with Placenta Previa	83 (0.47%)
6.	Preterm delivery with abruption placenta	124 (0.71%)
7.	Preterm mature rupture of the membrane PROM with APH	209 (1.20%)
8.	Fetal demise (FSB, MSB, NND) with APH	109 (0.62%)
9.	Maternal death PP (12 deaths) Ap (19)	31 (0.17%)

Discussion

This study assessed the prevalence, clinical profiles, treatment responses, and fetomaternal outcomes of antepartum hemorrhage (APH) in a tertiary care setting over five years. The overall incidence of APH was 3.86%, which aligns with findings from several regional and global studies that report APH prevalence ranging from 2% to 5% among obstetric admissions (11,12).

Abruption placenta was more common than placenta previa in our cohort (2.49% vs. 1.37%). Similar trends have been documented in studies from India and Nepal, where abruptio placentae remains the predominant cause of APH [13]. Concealed abruption accounted for more than half of abruption cases, consistent with earlier reports emphasizing its underdiagnosed but critical nature (14). The higher incidence of placenta previa types I & II compared to types III & IV also mirrors previous observations (15).

Multiparity emerged as a significant risk factor, particularly among women in their fourth to seventh pregnancies, supporting the hypothesis that repeated uterine stretching contributes to abnormal placental attachment and bleeding complications [(6). Additionally, APH was most frequently observed in the third trimester, especially between 32–40 weeks, consistent with physiological changes in placental vascular resistance and uterine irritability near term (17).

The surgical management patterns observed in this study, including the use of intrauterine packing (34.5%) and B-Lynch sutures (8.6%), reflect global trends in postpartum hemorrhage (PPH) management. Similar success rates for uterine preservation after conservative surgery have been documented (18). The mean intraoperative blood loss (936 ± 245 mL) and the need for transfusion in over 80% of cases underline the hemodynamic instability often accompanying APH, as shown in comparable research from sub-Saharan Africa and South Asia (19).

Notably, 85 cases required hysterectomy—7 following failed B-Lynch and 78 after failed intrauterine packing—indicating that timely decision-making is critical for maternal survival. These findings align with previous recommendations advocating early surgical intervention in the absence of response to conservative measures (20).

Postoperative morbidity was low, with no recorded cases of intrauterine adhesions and minimal menstrual irregularities in survivors. These outcomes affirm the safety of uterine-conserving techniques when applied promptly and skillfully (21).

Fetomaternal outcomes remain a concern. Our study recorded fetal demise in 109 cases and 31 maternal deaths, highlighting APH as a major contributor to perinatal and maternal mortality. Previous reports from similar low-resource settings report comparable figures, particularly in cases with delayed referrals, unbooked pregnancies, or inadequate blood bank services (22). Preterm delivery, PROM, and placental complications like accreta were significantly higher among APH cases, reinforcing the need for early identification and referral (23).

Overall, this study emphasizes the importance of comprehensive antenatal care, particularly for women with high parity or a history of uterine surgery. Early diagnosis, availability of blood products, and rapid access to surgical expertise are essential components for reducing APH-associated morbidity and mortality.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

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Conflict of interest

The authors declared the absence of a conflict of interest.

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