Original Article

Antepartum hemorrhage and its maternal and perinatal outcome: An experience at a hospital in North India

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Abstract

Introduction and Aim: Antepartum hemorrhage (APH) is one of the deadliest complications in obstetrics. It can complicate about 2–5% of pregnancies. It contributes significantly to maternal and perinatal mortality and morbidity during pregnancy and childbearing worldwide. The aim of this study was to determine maternal and fetal outcomes in patients presenting with APH. **Materials and Methods:** This was a retrospective study. Pregnant women with >28 weeks gestation reporting to the Department of Obstetrics and Gynecology from May 2021 to April 2022 were included in the study. Ethical approval from the institutional ethical committee was taken. **Result:** This study included 76 patients of APH. Most patients in the analysis were found to be second gravida (30%). Anemia was the most common associated morbidity (51.31%). 58% of these patients were of placenta previa, 14% were of abruption, and 10% were of accreta. Among all patients, 94.74% recovered well. 2.63% of cases could not be saved and resulted in maternal mortality. The proportions of babies alive, intra-uterine death (IUD), and intubated were 86.84%, 11.84%, and 1.32%, respectively. 17.1% of patients required a lifesaving cesarean hysterectomy. **Conclusion:** APH is an obstetrical emergency that requires timely diagnosis and early intervention. Swift management is required to improve maternal and fetal outcomes.

Keywords: Abruption, accreta, antepartum, hemorrhage, obstetrics

Introduction

Antepartum hemorrhage (APH) has been a leading cause of maternal mortality worldwide, especially in developing countries like India. Its early diagnosis and timely management can reduce the associated maternal and fetal mortality and morbidity. APH is defined as bleeding from the genital tract after 28 weeks of gestation to delivery of the baby.[1,2] The major etiologies of APH are placenta previa and abruptio placenta. Nowadays, with increasing incidence of cesarean delivery, placenta accreta spectrum (PAS) disorders contribute a fair chunk of causes. The other causes are cervical polyps, varicosities (vaginal, vulvar, and cervical), cancer of the cervix, cervical/endocervical erosions, cervicitis, vasa previa, vaginal infections, bloody show, genital lacerations, degenerating uterine myomata, foreign bodies, marginal placental separation, and so on. However, in some cases, the exact cause cannot be ascertained and remained of undetermined origin. It can complicate about 2–5% of pregnancies with an incidence of placenta previa and abruptio placentae about 0.33% to 0.55% and 0.5 to 1%, respectively.[3,4]

APH can lead to a range of complications like pre-term labor, malpresentation, postpartum hemorrhage, higher rates of cesarean section, massive transfusions, coagulation and renal failure, pulmonary edema, and infective complications like sepsis, shock, and death.[5] Neonatal complications vary in the form of pre-term, low birth weight, stillbirth, increased neonatal intensive care unit (NICU) admission, birth asphyxia, neonatal death, and so on.[6] In developed countries, APH has significantly low mortality due to its low incidence of about 6/100000 live births,

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better health facilities, timely diagnosis and intervention, and better availability of critical health care. In developing countries like in India, maternal mortality due to APH still remained very high, approximately 4.08/1000 live births.[7] It can be contributed to poor education and health awareness, difficulty and delay in assessing health care, pre-existing anemia, maternal malnutrition, restricted medical care, availability of specialized critical care, and so on, especially at the primary health care (PHC) level.

Although it is difficult to prevent APH and maternal and neonatal mortality, morbidity can be improved by timely diagnosis and treatment, correcting underlying and associated co-morbidities like hypertension and anemia, with timely reference of the patients if there are complicated pregnancies like PAS disorders and delivering those patients at a tertiary care center with better available facilities and multi-department coordination. The aims of this study were to determine maternal and fetal outcomes in patients with antepartum hemorrhage.

Materials and Methods

The study was conducted in the Department of Obstetrics and Gynecology, Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, after receiving ethical approval from the ethical committee with registration number EC/3651.

Aims and Objectives

To determine maternal and fetal outcomes in patients with APH.

Study design

The study was conducted in a retrospective manner. Data were collected from patient discharge papers and hospital record sheets.

Study population

Pregnant women with >28 weeks gestation reporting to the Department of Obstetrics and Gynecology from May 2021 to April 2022 were included in the study.

Inclusion criteria

All cases of APH with gestational age >28 weeks.

Exclusion criteria

APH with gestational age ≤28 weeks.

The patients suffering from any other bleeding disorders.

Bleeding from a source other than the uterus.

All cases of twin pregnancy.

Data analysis

The data were recorded in an Excel sheet from hospital records. We applied descriptive analysis to calculate numbers, range, mean values, and percentages.

Results

The 76 patients with antepartum hemorrhage were included after applying exclusion criteria. When patients were divided according to their age groups, the majority of patients, that is, 46.05%, were in the 26–30 years of age group, with another 23.68% being in the 20–25 years age group, symbolizing that the young reproductive population involved in the study [Table 1].

When these patients were divided according to their parity, it was found that 30.26% of patients were having this pregnancy as their second pregnancy, and the next highest number, that is, 25%, were having this as their fourth pregnancy. The parity and the previous obstetrics history of patients are given in Table 2.

Underlying co-morbidities play an important role in predicting the outcome of management in APH, and so, anemia was the most common co-morbidity found in 51.31% of patients, followed by hypothyroidism in 19.73%, cholestasis in 13.15%, pregnancy-induced hypertension (PIH) in 11.84%, and thrombocytopenia in 3.94% [Table 3].

When the causes of APH of these patients were evaluated, it was found that 57.89% of patients were of placenta previa, while

Table 1: Age groups of patients

Age group (years)	Number of patients	Percentage
20-25	18	23.68
26-30	35	46.05
31-35	22	28.94
>35	1	1.31

Table 2: Parity and obstetrics history of study participants

Parity (P)	Number of patients	Percentage
P0	5	6.57
P1	9	11.84
P2	23	30.26
P3	16	21.05
P4	19	25
≥P5	4	5.26
Obstetrics history		
Normal vaginal delivery	22	28.9
Previous 1 LSCS	34	44.7
Previous 2 LSCS	2	2.7
History of D&C	18	23.7

Table 3: Associated co-morbidities in patients of APH

Comorbidity	Number of patients	Percentage
Anemia	39	51.31
Hypothyroidism	15	19.73
Cholestasis	10	13.15
PIH	9	11.84
Thrombocytopenia	3	3.94

14.48% were of abruption, and placenta accreta syndrome was associated with 25% of cases. Notable among these cases was that only 9% of cases of previa required emergency management, but 100% of cases of percreta and increta required emergency management [Table 4].

After management, when we look at the outcome of patients, most (94.74%) patients recovered, 2.63% required ICU stay, and 2.63% died in spite of our best efforts [Table 5].

When we looked at maternal and fetal outcomes in terms of gestational age groups, we found that at gestational age, 28–30 weeks, 77.77% of patients recovered with mortality in 1 (11.11%) mother. 2 out of 9 patients in this age group had intra-uterine death (IUD). Those in the 31–35 gestational age group had no mortality but again had 2 IUDs out of 22 patients. Another 1 maternal mortality was noted in the gestational age group of 36–40 weeks [Table 6].

The results of maternal and perinatal complications and the type of additional surgical intervention are summarized in Tables 7 and 8, respectively.

Discussion

APH has common causes like placenta previa and abruptio placenta. Placenta previa is due to the abnormal location of the placenta in the lower segment abruption; placenta is more associated with PIH and has more dire consequences and associated morbidity. Placenta accreta syndrome is usually a complication associated with placenta previa with a previous history of surgical intervention, most commonly previous cesarean section.

Like in other studies described in the literature, the incidence of APH was more common in multigravida (93.43%) than in primigravida (6.57%).[8-10] Gillium *et al.* and Clark *et al.* have also reported about 5–8 times the incidence of APH in multigravida as compared to primigravida women, thus confirming the role of endometrial damage caused by repeated childbirth and dilatation and curettage, and so on. It has been seen that one of the most important etiological factors for APH, especially placenta accreta spectrum, is scarring of the uterus due to previous uterine surgery; as a result, there is the propensity of the placenta to attach or invade myometrium.[9,10]

Table 4: Causes of APH

Placentation	Number of patients (%)	Number of patients requiring additional intervention (%)
Abruption	11 (14.48)	0 (0%)
Previa	44 (57.89)	4 (9.09)
APH due to other causes	2 (2.63)	0 (0%)
Accreta	10 (13.16)	3 (30%)
Percreta	8 (10.52)	8 (100%)
Increta	1 (1.32)	1 (100%)

Table 5: Maternal outcome of patients

Maternal outcome	Number of patients	Percentage
Recovered	72	94.74
ICU	2	2.63
Mortality	2	2.63

In the present study, 51.3% of patients with APH had associated risk factors such as anemia. Gestational hypertension is seen in 11.84% of patients. Hibbard *et al.*[11] found hypertensive disorders of pregnancy complicating 7.4% of patients with APH. Rai *et al.*[12] found a 4.4% incidence of hypertensive disorders of pregnancy in APH patients. Three cases of APH presented with gestational thrombocytopenia in our study.

As ours is a tertiary care center with a maximum number of referral patients, most patients required blood and blood product transfusion to correct anemia, ongoing blood loss, and correct DIC. In our study, 70% of patients needed blood and blood product transfusion, and a cesarean section was done in 93.43% of cases. Postpartum hemorrhage occurred in 42% of the patients, for which balloon tamponade was done in 1 (1.3%) patient and stepwise devascularisation was done in 4 (5.2%) cases, while 17% of cases ended up with a hysterectomy. Among 76 cases of APH, 13.15% cases presented with placenta accreta, 10.52% cases with placenta percreta, and 1.31% cases with placenta increta, whereas Pedowitz *et al.*,[13] Cotton *et al.*,[14] and McShane *et al.*[15] reported the incidence of placenta accreta as 4.4%, 4%, and 6.32%, respectively, in their study.

Two maternal deaths occurred in the present study. One patient had a history of previous two cesareans with placenta percreta with anemia and mortality occurring due to postpartum hemorrhage, and the other had grade III Abruptio placenta with severe pre-eclampsia and died due to acute renal failure and DIC, thus leading to 2.63% mortality in our study, whereas Gorodeski *et al.*,[16] Kedar *et al.*,[3] and Pedowitz *et al.*[13] had maternal mortality of 0.46%, 0.76%, and 0.9%, respectively. In contradiction, Cotton *et al.*[14] reported no maternal mortality in their study. They found cesarean section (41.67%) and previous history of D and C (11.67%) causing trophotropism of developing placenta to scar as the common causes of placenta previa leading to APH.

We had 34% of cases of pre-term birth in patients of APH. The other studies in the literature have reported pre-term birth rates ranging between 60 and 77.5%.[9,14-17] The lower pre-term birth rate in our study can be attributed to better diagnostic and monitoring facilities as ours is a tertiary care referral center. We found stillbirth and neonatal death in 12% and 9% of deliveries, respectively, amounting to a perinatal mortality rate of 21%. The similar results were reported by Khandasu S *et al.* (21%) and Robbins *et al.* (18.44%).[18,19] In contrast, Arora *et al.*[20] and Khosla *et al.*[21] reported higher perinatal mortality rates of 61.5% and 53.5%, respectively. The lower perinatal mortality rate in our study can be due to advanced obstetrical and neonatal care in our institute.

Table 6: Maternal and fetal outcomes according to gestational age

Gestational age (weeks)	Number of patients	Percentage	Maternal outcome		Fetal outcome	
28-30	9	11.84	Recovered	7 (77.78%)	IUD	2 (22.22%)
			ICU	1 (11.11%)	Alive	7 (77.78%)
			Mortality	1 (11.11%)	Intubated	0
31-35	22	28.95	Recovered	21 (95.46%)	IUD	2 (9.09%)
			ICU	1 (4.54%)	Alive	19 (86.37%)
			Mortality	0	Intubated	1 (4.54%)
36-40	43	56.58	Recovered	42 (97.68%)	IUD	5 (11.62%)
			ICU	0	Alive	38 (88.37%)
			Mortality	1 (2.32%)	Intubated	0
>40	2	2.63	Recovered	2 (100%)	IUD	0
			ICU	0	Alive	2 (100%)
			Mortality	0	Intubated	0

Table 7: Maternal and perinatal complications

Maternal complications	*n* (%)	Perinatal complications	*n* (%)
Postpartum hemorrhage	32 (42%)	Preterm/low birth weight	26 (34%)
Blood transfusion	53 (70%)	Stillbirth	9 (12%)
Peripartum hysterectomy	13 (17.1%)	Neonatal death	7 (9%)
ICU admission	2 (2.63%)	NICU admission	34 (45%)
Death	2 (2.63%)		

Table 8: Type of additional surgical intervention

Surgical intervention	Number of patients	Percentage
Balloon tamponade	1	1.3
Bilateral uterine artery/internal iliac artery ligation	2	2.6
Hysterectomy	7	9.2
Hysterectomy + B/L internal iliac artery ligation	2	2.6
Hysterectomy + bladder repair	4	5.2

So as to reduce the maternal and perinatal mortality rates from APH at the primary level, the PHC physician should be aware of common risk factors for PAS-like previous cesarean section, dilatation, curettage, and so on. The history of symptoms and signs of APH like bleeding and pain along with per speculum examination should be analyzed meticulously. The physician at the primary health care center should incorporate fetal anomaly scan with placental localization to identify women at risk for APH. The women in the third trimester getting antenatal care at home should be made aware of warning signs like bleeding, including spotting, contractions, or pain in abdomen.

The PHC physicians can do timely and judicious initial management of patients like diagnosis of APH and patients with PAS, routine investigations, resuscitation, blood transfusion, better monitoring, and apt obstetrical, neonatal and surgery SOS at PHC. They should timely refer the patient to a tertiary care center if a multi-speciality team and ICU support are required. These measures will help in preventing and managing complication well in time and in reducing maternal and perinatal morbidity and mortality. A few limitations of our study were its retrospective nature and smaller sample size. Further large multi-center prospective studies are needed to formulate better management protocols.

Conclusion

APH is an obstetrical emergency that requires timely diagnosis and early intervention. Though there are no reliable sensitive tests for detection, with the advancement in imaging modality, the diagnosis of placenta accreta spectrum increases. Antenatal care should focus on educating the couple and avoiding penetrative sexual intercourse if placenta previa is diagnosed. Good antenatal care and initiation of massive transfusion protocol series as and when required remain the backbone of good maternal and perinatal outcomes in APH. Swift management involving a multi-disciplinary team is required to improve maternal and fetal outcomes.

Abbreviations

APH = Antepartum hemorrhage
IUD = Intra-uterine death
PIH = Pregnancy-induced hypertension
PHC= Primary health care.

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Conflicts of interest

There are no conflicts of interest.

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