DOI - 10.21276/obgyn.2023.9.2.27 *ISSN Print – 2454-2334; ISSN Online – 2454-2342*

RESEARCH ARTICLE

Antepartum haemorrhage: incidence, risk factors and pregnancy outcomes in tertiary health centre of Uttarakhand, India

Sheenu Maheshwari, Purnima Upreti, Manika Sachdeva

Corresponding author: Dr. Sheenu Maheshwari, Senior Resident, Department of Obstetrics and Gynaecology, Himalayan Institute of Medical Sciences, SRHU, Jollygrant, Dehradun, Uttarakhand, India; Email : sheenumaheshwari@gmail.com

ABSTRACT

Background: Antepartum haemorrhage (APH) is an obstetric emergency contributing to significant amount of maternal and perinatal morbidity and mortality. It is mainly caused by placenta previa, abruptio placenta, local causes and indeterminate causes. **Objective:** The objective of this study is to identify the risk factors associated with APH and to study the maternal and perinatal outcomes in patients with APH at tertiary health care hospital. **Methodology:** This was a retrospective observational study conducted at Himalayan Institute of Medical Sciences, Dehradun from October 2018 to June 2020. A total of 57 cases of APH were studied. Diagnosis was made on the basis of history taking, clinical examination and findings of ultrasonography and was categorized as placenta previa, abruptio placenta, indeterminate and local causes. **Results:** Out of 3252 deliveries, 57 had APH, incidence being 1.75%. Maximum number of cases about 32 (56.1 %) were of placenta previa followed by abruptio placenta in 24 cases (42.1%) and least was indeterminate cause (1.75%). Incidence of APH was highest (56.1%) in the age group of 26-30 years. Anemia was the most common (35.1%) antenatal complication seen. Previous caesarean section (43.86%) and preeclamsia (33.3%) was the most common risk factor found to be associated with placenta previa and abruption respectively. Malpresentation were most commonly seen in placenta previa (31.25%). In most cases of APH (75.4%), mode of delivery was caesarean section. 12.5% of placenta previa cases had peripartum hysterectomy and there was one maternal death in placenta previa group. Perinatal outcome was poor in cases of abruption with 13.33% of stillbirths as compared to 3.3% stillbirths in women with placenta previa. Prevalence of low birth weight (71.7%) and preterm babies (73.3%) was high. **Conclusion:** Higher incidence of APH was associated with poor nutritional status, anemia and lack of awareness in India. Maternal and perinatal morbidity and mortality can be prevented by early antenatal registration, regular antenatal check-up, improved nutritional status, increased awareness and timely caesarean section.

Keywords: Antepartum haemorrhage, placenta previa, abruptio placenta, APH.

Antepartum haemorrhage (APH) is defined as any bleeding from or into the genital tract after 20 weeks of gestation and before the delivery of the fetus[1]. Prevalence of APH in India is 18.8%[2]. APH is an obstetric emergency leading to significant amount of maternal and perinatal morbidity and mortality. APH accounts for 2-5% of all pregnancies[3] and causes 30% of overall maternal deaths [4]. The most important causes of APH are placenta previa and abruptio placenta which accounts for 50% of all cases of APH [5]. Other less common causes are indeterminate and local causes of cervix and lower genital tract.

Placenta previa is defined as placenta located partially or completely in lower uterine segment. Its incidence is 4-5 per 100 pregnancies [6] and is classified as: 1) Type one or low

Received: 26th June 2021, Peer review completed: 6th October 2021, Accepted: 10th October 2021.

Maheshwari S, Upreti P, Sachdeva M. Antepartum haemorrhage: incidence, risk factors and pregnancy outcomes in tertiary health centre of Uttarakhand, India. The New Indian Journal of OBGYN. 2023; 9(2): 328 - 33.

lying - encroaches lower uterine segment however doesn't reach internal os, 2) Type two or marginal - reaches margin of the internal os though doesn't cover it, 3) Type three or partial - partly covers the internal os, 4) Type four or total or central - completely covers the internal os. It is usually associated with advanced maternal age i.e. >40 years, multiparity, previous placenta previa, previous history of uterine scar or curettage, myomectomy and multiple pregnancy [1, 7].

Abruptio placenta is premature separation of normally implanted placenta. It can be partial or complete. Its etiology is unknown but mostly associated with pre-eclampsia, premature rupture of membranes, polyhydramnios, abdominal trauma and cigarette smoking [1].

In developed countries, APH associated mortality has been significantly reduced because of improved obstetrics facilities, however in developing countries like India, morbidity and mortality rate is high because of associated conditions like anemia and poor transport facilities [8]. Therefore this study is conducted with an objective to find out incidences of different varieties of APH, factors associated with APH and maternal and perinatal outcomes of pregnancy.

Materials and methods

The study was a retrospective observational study conducted in the Department of Obstetrics and Gynaecology of a tertiary health centre of Jollygrant in the Dehradun district of Uttarakhand state, India, from October 2018 to June 2020. Institutional ethical committee clearance had been taken for the study. The hospital medical records of the stipulated study period were analysed to collect data of the study subjects. A predesigned format was used to record data pertaining to maternal characteristics, such as maternal age, gravidity, registration status, gestational age at the time of delivery (weeks), risk factors for antepartum haemorrhage, fetal presentation, mode of delivery, antepartum, intrapartum and postpartum complications, maternal morbidity and mortality. Data related to perinatal outcomes such as live birth/ still birth, gestational age at birth, APGAR score at birth, sex and birth weight of neonates, NICU admission was also collected.

All patients with bleeding per vaginum after 20 weeks of gestation but before the birth of fetus were included in the study. Cases with bleeding before 20 weeks and after delivery of the baby were excluded.

Diagnosis was made on the basis of history, clinical examination and findings of ultrasonography and was categorized as placenta previa, abruptio placenta, indeterminate and local causes.

The collected data was entered in MS excel sheet and analyzed using SPSS version 21. Results were obtained and p value were calculated and was said to be statistically significant when p is <0.05.

Results

There were 3252 deliveries during the study period. Total numbers of women presented with APH were 57. Hence, the incidence of APH was 1.75 %. Maximum numbers of cases were of placenta previa contributing about 56.1 % followed by abruptio placenta (42.1%) and indeterminate haemorrhage (1.75%) (table1).

Table 1: Demographic distribution of cases (N=57)

Age (years)	Placenta previa(n=32)	Abruptio placenta(n=24)	Indeterminate (n=1)	Local causes	Total number (%)	P value
20-25	7 (21.9%)	3 (12.5%)	0	0	10 (17.5%)	0.107
26-30	17 (53.1%)	15(62.5)	0	0	32 (56.1%)	
31-35	6 (18.8%)	2 (8.3%)	0	0	8 (14%)	
>35	2 (6.2%)	4 (16.7%)	1 (100%)	0	7 (12.3%)	
Gravida						
1	13 (40.6%)	5 (20.7%)	0	0	18 (31.6%)	0.407
2	4 (12.5)	7 (29.1%)	1	0	12 (21.1%)	
3	11 (34.4%)	7 (29.1%)	0	0	18 (31.6%)	
4	3 (9.3%)	3 (12.5%)	0	0	6 (10.5%)	
≥ 5	1 (3.1%)	2 (8.3%)	0	0	3 (5.2%)	
Gestational age at time of delivery (weeks)						
$20\text{-}27^{+6}$	1 (3.1%)	3 (12.5%)	0	0	4 (7%)	0.392
$28\text{-}33^{+6}$	10 (31.3%)	11 (45.8%)	0	0	21 (36.8%)	
$34\text{-}36^{+6}$	11 (34.4%)	6 (25%)	1	0	18 (31.6%)	
≥ 37	10 (31.3%)	4 (16.7%)	0	0	14 (24.6%)	
Booking status						
Booked	11 (34.4%)	4 (16.7%)	1 (100%)	0	16 (28.1%)	0.094
Unbooked	21 (65.6%)	20 (83.3%)	0	0	41 (71.9%)	

Majority of women with APH (56.1%) were within the age group of 26-30 years followed by 17.5% in the age group of 20-25 years. Incidence of APH is more in multigravidas (68.4%) than in primigravidas (31.6%). Also, placenta previa and abruption both were mainly seen in multigravidas (59.3% and 79.1% respectively). Most of the patients with APH were unbooked (71.9%). 75.4% of APH cases were terminated before 37 weeks of gestation. Pregnancy in most of the cases was terminated during $28\text{-}33^{+6}$ weeks of gestation (36.8%). Out of which, 47.6% were of placenta previa and abruption placenta were 52.4% (table1).

Table 2: Risk factors associated with APH (N=57)

Parameters	Placenta previa (n=32)	Abruptio placenta (n=24)	Indeterminate (n=1)	Total Number (%)	P value
Preeclampsia	1 (3.1%)	8 (33.3%)	0	9 (15.8%)	0.008*
Chronic hypertension	0	0	0	0	-
Multiple pregnancy	1 (3.1%)	2 (8.3%)	0	3 (5.2%)	0.669
Polyhydramios	2 (6.2%)	0	0	2 (3.5%)	0.445
Previous caesarean section	14 (43.8%)	8 (33.3%)	0	22 (38.6%)	0.531
Previous history of abortion	10 (31.3%)	8 (33.3%)	0	18 (31.6%)	0.780
Previous D & C	4 (12.5%)	4 (16.7%)	0	8 (14%)	0.834
History of placenta previa in previous pregnancy	5 (15.6%)	0	0	5 (8.8%)	0.118
History of abruption in previous pregnancy	0	4 (16.7%)	0	4 (7%)	0.052

*indicates statistical significance at p<0.05

Most common risk factors found to be associated with APH was previous caesarean section (38.6%) followed by previous history of abortion (31.6%). Previous caesarean section was the most common risk factor associated with placenta previa (43.8%). However, preeclampsia was most commonly associated with abruption (33.3%) and showed statistically significant result (table 2).

associated in 8 patients of abruption (33.3%) and shows a statistically significant result. However, malpresentation is most commonly associated with placenta previa (31.25%). Preterm labour and intrauterine fetal death is mostly seen in cases of abruptio placenta and shows a statistically significant result (table 3).

Among cases with placenta previa, there were three cases

Table 3: Antepartum and intrapartum complications (N=57)

Parameters	Placenta previa (n=32)	Abruptio placenta (n=24)	Indeterminate (n=1)	Total number (%)	P value
Antepartum complications					
Preeclampsia	1 (3.1%)	8 (33.3%)	0	9 (15.8%)	0.008*
GDM	1 (3.1%)	4 (16.7%)	0	5 (8.8%)	0.198
Anemia	12(37.5%)	8 (33.3%)	0	20 (35.1%)	0.721
Malpresentations	10 (31.3%)	5 (20.8%)	0	15 (26.3%)	0.568
Polyhydramnios	2 (6.2%)	0	0	2 (3.5%)	0.445
Oligohydramnios	7 (21.9%)	4 (16.7%)	0	11 (19.3%)	0.786
Preterm labour	0	8 (33.3%)	0	8 (14%)	0.002*
Fetal distress	0	6 (25%)	0	6 (10.5%)	0.010*
Intrauterine fetal death	2 (6.2%)	6 (25%)	0	8 (14%)	0.125
Intrapartum complications					
Retained placenta	3 (9.4%)	0	0	3 (5.2%)	0.290
Placenta accreta	3 (9.4%)	1 (4.2%)	0	4 (7%)	0.724
Placenta increta	1 (3.1%)	0	0	1 (1.75%)	0.672

*indicates statistical significance at p<0.05

The most common antepartum complication in cases with APH found was anemia (35.1%). Preeclampsia was

of placenta accreta and one case of placenta increta. However, only one case of placenta accreta was seen in women with abruptio placenta. Retained placenta was seen

Table 4: Maternal outcomes

Parameters		Placenta previa (n=32)	Abruptio placenta (n=24)	Indeterminate (n=1)	Total number (%)	P value
Mode of delivery						
Vaginal	Spontaneous	0	9 (37.5%)	0	9 (15.8%)	0.001*
delivery	Induced	1 (3.1%)	3 (12.5)	1 (100%)	5 (8.8%)	0.002*
Caesarean section		31 (96.9%)	12 (50%)	0	43 (75.4%)	<0.001*
Maternal morbidity and mortality						
PPH		12 (37.5%)	2 (8.3%)	0	14 (24.6%)	0.036*
Peripartum hysterectomy		4 (12.5%)	0	0	4 (7%)	0.186
Blood transfusions		17 (53.1%)	7 (29.2%)	0	24 (42.1%)	0.137
ICU admission		4 (12.5%)	3 (12.5%)	0	7 (12.3%)	0.931
DIC		2 (6.2%)	0	0	2 (3.5%)	0.445
ARF		0	2 (6.2%)	0	2 (3.5%)	0.112
Death		1 (3.1%)	0	0	1 (1.75%)	0.672

*indicates statistical significance at p<0.05

in three cases of placenta previa (table 3).

75.4% of APH cases had caesarean section and 24.6% had vaginal delivery. This was statistically significant. In women with placenta previa, 31 out of 32 (96.9%) had caesarean section while 12 out of 24 women with abruption (50%) had caesarean section (table 4). 12 cases of placenta previa (37.5%) and 2 cases of abruption (8.3%) had PPH . The difference was statistically significant. Four cases of placenta previa underwent peripartum hysterectomy. Twenty four cases of APH (42.1%) had blood transfusions. DIC was seen in two patients with placenta previa and two patients of abruption developed ARF. There was one maternal death in placenta previa group (table 4).

Table 5: Perinatal outcomes (N=60)

Parameters		Placenta previa (n=33)	Abruptio placenta (n=26)	Indeterminate (n=1)	Total number (%)	P value
Births	Live	31 (93.9%)	18 (69.2%)	1 (100%)	50 (83.3%)	
	Stillbirth	2 (6.1%)	8 (30.8%)	0	10 (16.7%)	0.028*
Birth weight	<2500 gms	19 (57.6%)	24 (92.3%)	0	43 (71.7%)	
	≥2500 gms	14 (42.4%)	2 (7.7%)	1 (100%)	17 (28.3%)	0.004*
Preterm births	<37 weeks	21 (63.6%)	22 (84.6%)	1 (100%)	44 (73.3%)	
Term births	≥37 weeks	12 (36.4%)	4 (15.4%)	0	16 (26.7%)	0.162
Sex	Male	17 (51.5%)	13 (50%)	0	30 (50%)	
	Female	16 (48.5%)	13 (50%)	1 (100%)	30 (50%)	0.597
Apgar score	<7	3 (9.7%)[a]	4 (22.2%)[b]	0	7 (14%)	
	≥7	28 (90.3%)[a]	14 (77.8%)[b]	1 (100%)	43 (86%)	0.437
NICU admission[a]		4 (12.9%)[a]	7 (38.9%)[b]	0	11 (22%)	0.308

*indicates statistical significance at p<0.05, [a]n is total live births in placenta previa , [b]n is total live births in abruptio placenta

There were 3 cases of twin pregnancy among all cases of APH. Amongst which, 2 were of abruption and 1 was of placenta previa. Overall perinatal outcome was poor in cases of abruption. 13.33% of women with abruptio placenta had stillbirth as compared to 3.3% of women with placenta previa showing a statistically significant result. Out of all cases of APH, 71.7% babies were of low birth weight. Amongst them, 31.6% were placenta previa and 40% were of abruptio placenta showing a statistically significant result. Most of the pregnancies were terminated before 37 weeks of gestation. 14 % of babies had poor APGAR score while 22% of newborns required NICU admissions (table 5).

Discussion

Incidence of APH in our study is 1.75% which is similar with the study conducted by Madan CY et al (1.29%) [9] while there are studies who reported higher incidence of APH like Sunil K et al (2.9%) [10] and Sheikh et al (5.4%)[11]. In the present study, majority of APH cases were due to placenta previa (56.1%) followed by abruptio placenta (42.1%) which is similar to studies done by Maurya et al[12] and Adekanle et al[13]. In this study, highest incidence of APH (56.1%) were seen mainly in the age group of 26-30 years which is seen similar with the study by Tyagi et al (61%)[14].

In the present study, 71.9 % of APH cases were reported in emergency and were unbooked. This was similar to other studies done by Tyagi et al which reported 66% of unbooked cases[14] and similar results were seen with study by Maurya et al[12], Adekanle et al[13] and Pandey et al[15].

It was mainly seen that multigravidas were mostly presented with APH (68.4%) as compared to primigravidas (31.6%). Also, placenta previa and abruption both were mainly seen in multigravidas (59.3% and 79.1% respectively). Similar results were seen in study by Yadav et al [9]. Higher incidence of APH in muitigravidas as compared to primigravidas was also seen in studies done by Gillium et al[16] and Clark et al[17]. This shows that repeated childbirth is a risk factor for APH because of endometrial damage.

In the present study, it is seen that most common risk factors associated with APH was previous caesarean section (38.6%) comprising of 43.8% of placenta previa and 33.3% in abruptio placenta which is slightly higher from the study conducted by Tyagi et al[14]. Incidence of placenta accreta syndrome in patients with previous scarred uterus in the present study was 8.9% which is comparable with the result seen in study of Tyagi et al (6.25%) [14]. However, in the study conducted by Nasreen et al[18], incidence of placenta accreta syndrome was 14.2% in the previous scarred uterus[17]. Peripartum hysterectomy was performed in 7% of patients with APH. 12.5% of peripartum hysterectomy were done in patients with placenta previa along with previous scarred uterus which is similar to risk reported in the study by Nielson et al[19].

In our study, it was seen that anemia was the most common antepartum complications in patients with APH (35.1%). Thirty three percent of abruptio placenta cases were associated with pre-eclampsia which is lower than the incidence seen in the study by Maurya et al (67%)[12] and

Pandey et al (52%) [15]. About 31.25% of women with placenta previa were associated with malpresentations which is similarly reported in the study conducted by Nasreen et al (39%) [18]. Malpresentations further increases the caesarean rate in minor degrees of placenta previa.

In this study, 75.4% of APH cases had caesarean section and 24.6% cases were delivered vaginally. Among women with placenta previa, 96.9% had caesarean section which is almost similar to study done by Yadav et al where incidence of caesarean section in placenta previa cases was 90.7% [9]. 50% cases of abruptio placenta were delivered by caesarean section and 50% by vaginal delivery similar to the study done by Hurd et al (50%) from the UK [20].

In the present study, it is seen that blood transfusions is required in 42.1% cases of APH. Incidence of PPH was 25.6% in all APH cases. Among them, 37.6% of cases with placenta previa had PPH and 8.3% in abruptio cases. While in the study done by Yadav et al, incidence of PPH was seen as 21.4% similar to our study. However, lesser incidence of PPH was seen in placenta previa cases (22.1%) and higher incidence in cases of abruption placenta (17.4%) as compared to our study [9].

Maternal mortality in our study was 1.75% and seen in case of placenta previa which is lesser than the mortality rate reported by study conducted by Tyagi et al [14]. This patient was an unbooked case, presented in emergency with heavy bleeding per vaginum due to central placenta previa with placenta accreta syndrome with previous history of previous caesarian section.

In the present study, gestational age at the time of termination of pregnancies with APH was less than 37 weeks in 75.4% cases. Amongst these, majority (36.8%) were terminated between 28-33^{+6} weeks for the maternal interest. This high incidence of preterm birth is one of the factors accounting for 71.7% babies with low birth weight in our studies. Perinatal mortality reported in our study was 16.7% which is much lesser than seen in study by Tyagi et al (42%) [14]. This is because of better neonatal facilities and care in our tertiary health centre.

Conclusion

Antepartum haemorrhage is one of the major cause of maternal and perinatal morbidity and mortality in developing countries like India. It can be prevented by early registration of pregnancy, regular antenatal check-up, improved nutritional status, increased awareness and early identification of high risk cases. Round the clock facilities for caesarean section, availabilities of blood bank, good NICU set up, multidisciplinary approach and good referral facilities can improve maternal and perinatal outcomes of APH.

Conflict of interest: None. **Disclaimer:** Nil.

References

1. Antepartum Haemorrhage (Green-top Guideline No. 63). Royal College of Obstetricians and Gynaecologists. Available from: https://www.rcog.org.uk/en/guidelines-research-services/ guidelines/gtg63/.
2. Sharma S, Sidhu H, Kaur S. Analytical study of intrauterine fetal death cases and associated maternal conditions. Int J Appl Basic Med Res. 2016; 6:11-3.
3. Mishra R. Ian Donald's Practical Obstetric Problems. Seventh edition. New Delhi: Wolters Kluwer India Pvt Ltd. 2014. pp. 315-28.
4. Miller DA. Treatment of Antepartum Hemorrhage. Women's and children's Hospital, Department of obstetrics and Gynaecology. Los Angeles, USA.
5. Ngeh N, Bhide A. Antepartum haemorrhage. Current obstetrics & Gynaecology. 2006; 16(2):79-83.
6. Bhide A, Thilaganathan B. Recent advances in the management of placenta previa. Curr Opin Obstet Gynecol. 2004; 16(6): 447-51.
7. Sheiner E, Shoham-Vardi I, Hallak M, Hershkowitz R, Katz M, Mazor M. Placenta previa: obstetric risk factors and pregnancy outcome. Journal of Maternal-Fetal Medicine. 2001 Jan 1;10(6):414-9.
8. Singhal S, Nymphaea, Nanda S. Maternal and perinatal outcome in antepartum haemorrhage: A study at a tertiary care referral institute. The Internet J Gynaecol Obstet. 2008; 9(2): 5580.
9. Yadav MC, Mehta K, Choudhary V. A Study of Antepartum Hemorrhage and Its Maternal and Perinatal Outcome at Tertiary Care Hospital in Western Rajasthan. Journal of medical science and research. 2019; 7(9): 80 - 5.
10. Samal SK, Rathod S, Rani R, Ghose S. Maternal and perinatal outcomes in cases of antepartum hemorrhage: a 3-year observational study in a tertiary care hospital. Int J Reprod Contracept Obstet Gynecol. 2017; 6:1025-9.
11. Sheikh F, Khokhar S, Sirichand P, Shaikh R. A study of antepartum hemorrhage: Maternal and perinatal outcome. Medical Channel. 2010;16(2): 268-71.
12. Maurya A, Arya S. Study of Antepartum Haemorrhage and Its Maternal and Perinatal Outcome. Int J Sci Res Publ. 2014; 4(2): 1-8.

13. Adekanle DA, Adeyemi AS, Fadero FF. Antepartum haemorrhage and pregnancy outcome in Lautech teaching Hospital, southwestern Nigeria. J Med Sci. 2011; 2(12):1243-7.
14. Tyagi P, Yadav N, Sinha P, Gupta U. Study of antepartum haemorrhage and its maternal and perinatal outcome. Int J Reprod Contracept Obstet Gynecol. 2016;5:3972-7.
15. Pandey VP, Pandey M. Study of Antepartum Haemorrhage and its Maternal and Perinatal Outcome. 2016.
16. Gilliam M, Rosenberg D, Davis F The likelihood of placenta previa with greater number of cesarean deliveries and higher parity. Obstet Gynecol. 2002; 99(6): 976-80.
17. Clark SL, Koonings PP, Phelan JP. Placenta previa/ Accreta and prior Caesarean section. Obstet Gynecol. 1985; 66(1): 89-92.
18. Nasreen F. Incidence, Causes and outcome of placenta previa. J Postgrad Med Inst Peshawar - Pak. 2011.
19. Nielsen TF, Hagberg H, Ljungblad U. Placenta previa and antepartum hemorrhage after previous cesarean section. Gynecol Obstet Invest.1989; 27(2): 88-90.
20. Hurd WW, Miodovnik M, Hertzberg V, Lavin JP. Selective management of Abruptio placenta: A prospective study. Obstet Gynecol. 1983; 61(4): 467-533.

Sheenu Maheshwari [1], Purnima Upreti [2], Manika Sachdeva [3]

[1] Senior Resident, Department of Obstetrics and Gynaecology, Himalayan Institute of Medical Sciences, SRHU, Jollygrant, Dehradun, Uttarakhand, India; [2] Department of Obstetrics and Gynaecology, Himalayan Institute of Medical Sciences, SRHU, Jollygrant, Dehradun, Uttarakhand, India; [3] Junior Resident, Department of Obstetrics and Gynaecology, Himalayan Institute of Medical Sciences, SRHU, Jollygrant, Dehradun, Uttarakhand, India.