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Original Research Article

A study of risk factors and fetomaternal outcome in patients with antepartum haemorrhage in a tertiary care centre

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ABSTRACT

Background: Antepartum haemorrhage (APH) is one of the most feared complications in obstetrics, contributing to a significant amount of maternal and perinatal morbidity and mortality in our country. An antepartum haemorrhage is defined as bleeding into or from the genital tract from 24 weeks' gestation and onwards, before the delivery of the baby. APH complicates about 2-5% of all the pregnancies with incidence of placenta previa (PP) about 0.33% to 0.55% and incidence of abruptio placenta (AP) about 0.5-1%. The maternal complications seen in patients with APH are malpresentations, premature labour, postpartum haemorrhage (PPH), sepsis, shock and retained placenta and the various foetal complications are preterm baby, low birth weight, intrauterine death, congenital malformation and birth asphyxia.

Methods: A 45 patients were included in this descriptive study and detailed history taking and clinical examination was done and the resultant maternal and neonatal outcome was noted.

Results: Incidence of APH in current study was calculated to be 0.53%. Out of the 45 patients, 28 (62.3%) were diagnosed with placenta previa and 17 (37.8%) were diagnosed with abruptio placenta. All 45 patients underwent caesarean section. 3 patients (6.6%) underwent obstetric hysterectomy due to diagnosis of placenta accreta spectrum. 35 alive and 8 dead born foetuses were delivered. 40% of new borns were admitted in NICU.

Conclusions: Antepartum haemorrhage is a major cause of maternal and perinatal morbidity and mortality which can be prevented by early antenatal registration, regular and frequent antenatal visits, early detection and labelling of high-risk cases, and early referral to higher centre when indicated.

Keywords: Abruptio placenta, Antepartum haemorrhage, Fetomaternal outcome, Placenta previa

INTRODUCTION

An antepartum haemorrhage is defined as bleeding into or from the genital tract from 24 weeks' gestation and onwards, before the delivery of the baby.¹ Antepartum haemorrhage of unknown origin (APHUO) is a specific obstetric entity that poses significant management dilemmas with regards to the timing of delivery, whether it presents as a single episode, recurrent episodes, or as a large volume of blood in the absence of an abnormal foetal heart rate. APHUO is defined as bleeding through the internal cervical OS where a placenta previa, placental

abruption, show and bleeding from local causes have been excluded.³

Antepartum haemorrhage (APH) has always been one of the most feared complications in obstetrics. Antepartum haemorrhage is still a grave obstetric emergency contributing to a significant amount of maternal and perinatal morbidity and mortality in our country. Haemorrhage was a direct cause of maternal death in about 30% of cases.⁴ APH complicates about 2-5% of all the pregnancies with incidence of placenta previa (PP) about 0.33% to 0.55% and incidence of abruptio placenta (AP) about 0.5-1%.² The maternal complications in patients

with APH are malpresentations, premature labour, postpartum haemorrhage (PPH), sepsis, shock and retained placenta. Various foetal complications are preterm baby, low birth weight, intrauterine death, congenital malformation and birth asphyxia.

In developing countries, widespread pre-existing anaemia, difficulties with transport, restricted medical facilities, and decreased awareness on part of patients are responsible for high MMR. Although APH cannot be prevented but maternal and perinatal morbidity and mortality associated with APH can be reduced significantly by aggressive expectant management.⁴ Today with increased use of ultrasonography for placental localisation and diagnosis of abruptio placenta, and increased use of blood and blood products, improved obstetric and anaesthetic facilities and availability of advanced neonatal care facilities, there has been a decrease in perinatal as well as maternal morbidity and mortality.⁵

Antepartum haemorrhage can be quantified as minor haemorrhage - 50 ml blood loss, major haemorrhage-50 to 1000 ml blood loss and massive haemorrhage - > 1000 ml blood loss. Causes of antepartum haemorrhage include placenta previa, placental abruption, vasa previa, rupture of marginal sinus, local lesions in the vulva, vagina or cervix and unclassified.

Obstetrical haemorrhage along with hypertension and infection is one of the infamous triad of causes of maternal deaths in both developed and developing countries.³ Maternal mortality due to APH has significantly decreased in developed countries to about 6/100000 live births due to

better obstetrical outcome. In India, maternal mortality is still very high and is 4.08/1000 live births.^{6,7} In day-to-day practice, an obstetrician has to tackle life threatening condition of APH and take a timely decision of terminating pregnancy, keeping in mind the welfare of both the mother and the foetus without exposing either of them to undue risk.

METHODS

A descriptive study was carried out at Surat Municipal Institute of Medical Education And Research, South Gujarat, from January-2021 to June-2022, in which 45 patients were included in this study. The study was done after obtaining ethical approval from the Institutional Ethical Committee.

Patients who presented with ante partum hemorrhage with gestational age >28 weeks and willing to participate in the study were included as study participants. Those who had bleeding per vaginum before 28 weeks, had a bleeding disorder or did not give consent were excluded from the study.

Once patient gets admitted, detailed history and clinical examination was carried out. Data were noted down in terms of age, address, parity, gestational age, menstrual history, obstetrics history, general examination, systemic examination. Routine antenatal investigations were carried out: CBC with blood grouping, urine routine and microscopic examination, HIV, HBsAg, VDRL and ultrasonography. Detailed Maternal and Neonatal outcome was noted and details were collected as per the proforma.

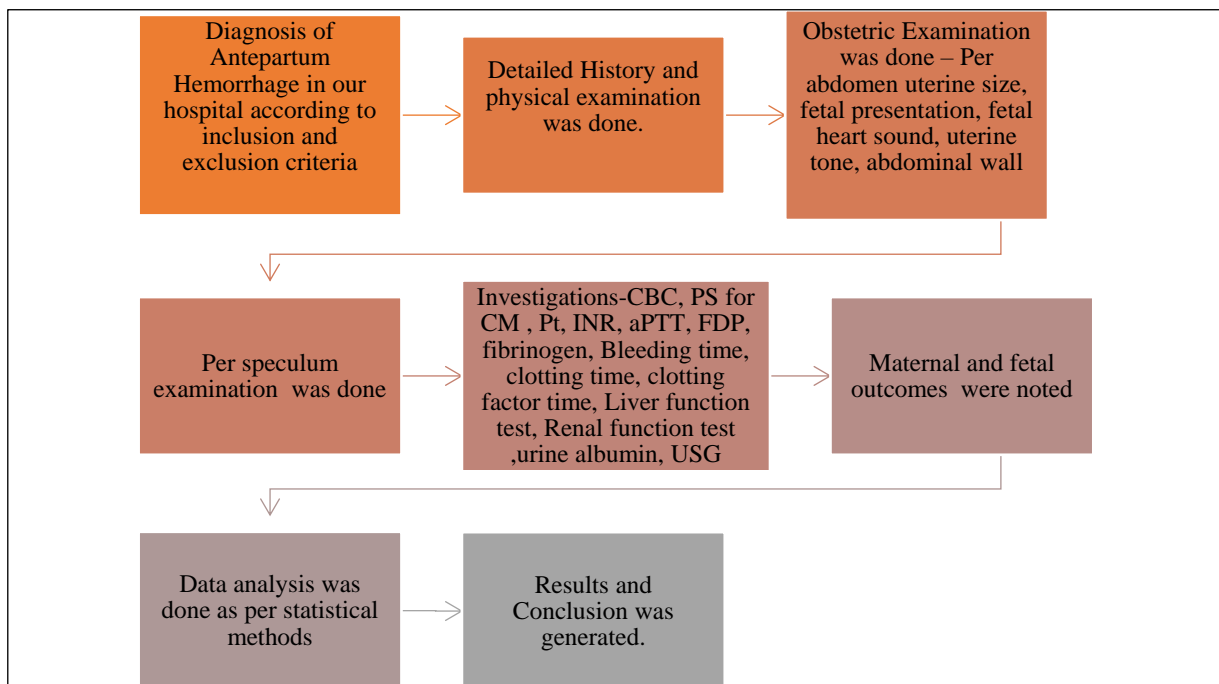


Figure 1: Sequence of events illustrating data collection.

RESULTS

A total of 8436 deliveries occurred during the study period, of which 45 (0.53%) patients presented with antepartum haemorrhage.

A 28 (62.3%) patients were diagnosed with placenta previa and 17 (37.8%) were diagnosed with abruptio placenta (Figure 2). All of the 45 patients underwent caesarean section for termination of pregnancy. 3 patients were given a trial of vaginal delivery but due to non-progression of labour, they were terminated by caesarean section.

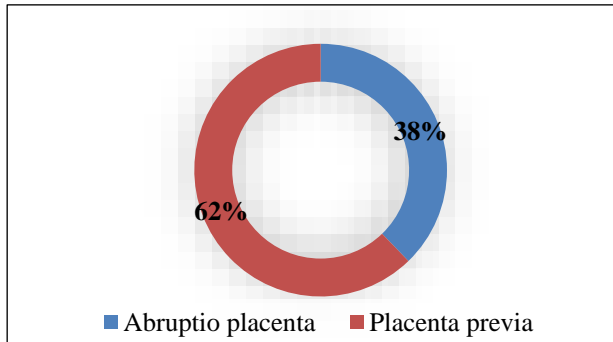


Figure 2: Distribution based on cause.

A 35 women had parity of 2 and above, while only 10 patients were primipara (Figure 3).

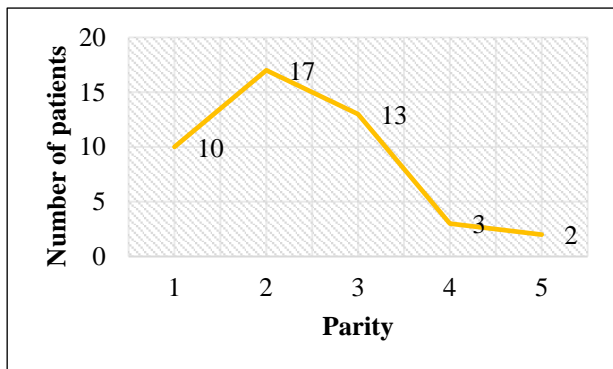


Figure 3: Distribution based on parity.

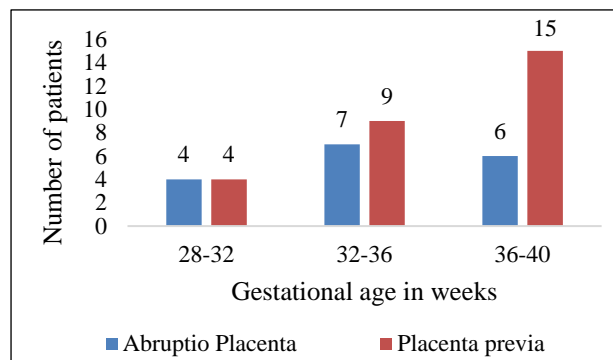


Figure 4: Correlation of gestational age of patients with condition.

On looking at the gestational age, 54% of patients with placenta previa and 35% of patients with abruptio placenta delivered between the gestational age of 36-40 weeks, while 41% of patients with placenta previa and 32% of patients with abruptio placenta delivered at a gestational age of 32-36 weeks (Figure 4).

Out of the 45 patients included in the study, 17 patients had abruptio placenta, of which 4 patients had hypertensive disorders-2 each of gestational hypertension and severe pre-eclampsia. 1 patient also had history of fall down (Figure 5).

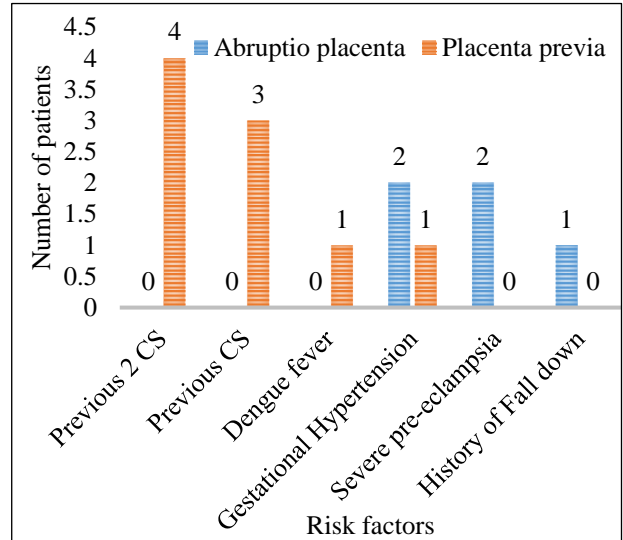


Figure 5: Correlation of risk factors with condition.

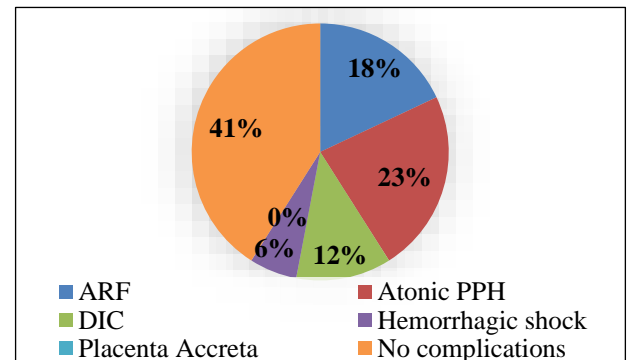


Figure 6a: Correlation of maternal complications with condition in abruptio placenta.

In our study, 28 patients were diagnosed with placenta previa, and 4 patients had obstetric history of previous 2 CS, of which, 3 were diagnosed with placenta accreta spectrum. 3 patients also had history of previous CS with placenta previa.

A 41% and 54% of the patients with abruptio placenta and placenta previa respectively, did not have any maternal complications. Acute renal failure (17.65%) and DIC (11.67%) were observed only in mothers having abruptio placenta, whereas placenta accreta spectrum (10.71%) was

observed only in mothers with placenta previa. Haemorrhagic shock was observed in 6% and 14% mothers with abruptio placenta and placenta previa, respectively. Atonic PPH was observed in 24% and 21% mothers' abruptio placenta and placenta previa, respectively. A statistically significant association was found between the maternal complication and the condition it was seen in (Figure 6a and Figure 6b).

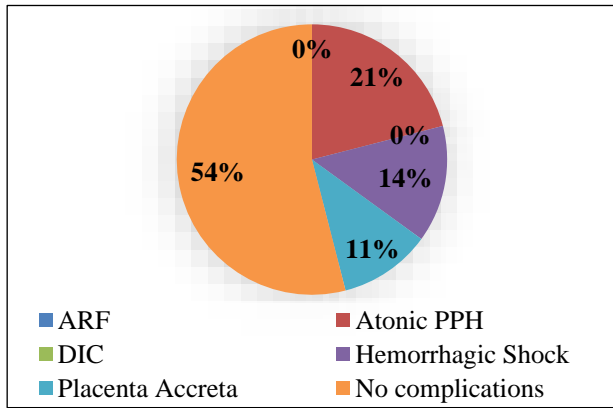


Figure 6b: Correlation of maternal complications with condition in placenta previa.

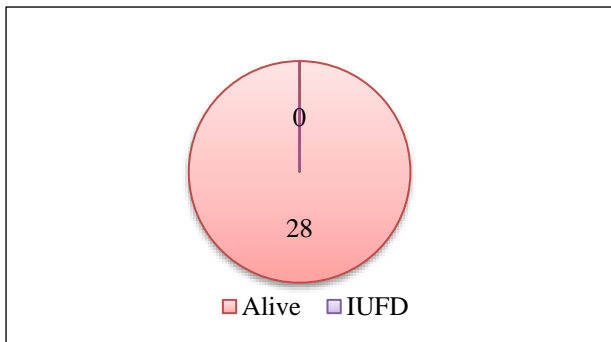


Figure 7a: Correlation between perinatal outcome and condition in placenta previa.

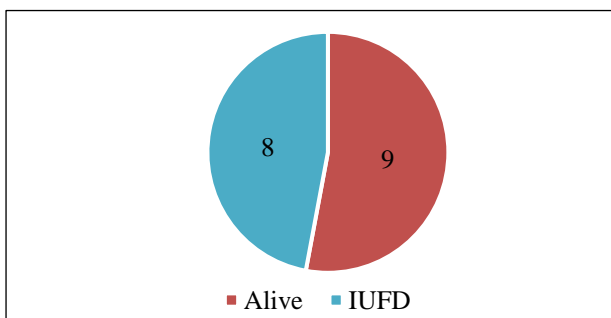


Figure 7a: Correlation between perinatal outcome and condition in abruptio placenta.

All the patients with placenta previa delivered alive babies, as compared to, those with abruptio placenta, in which, 47% of the patients had an intra uterine foetal death. A statistically significant association was found between

perinatal outcomes and conditions ($p < 0.001$) (Figure 7a and Figure 7b).

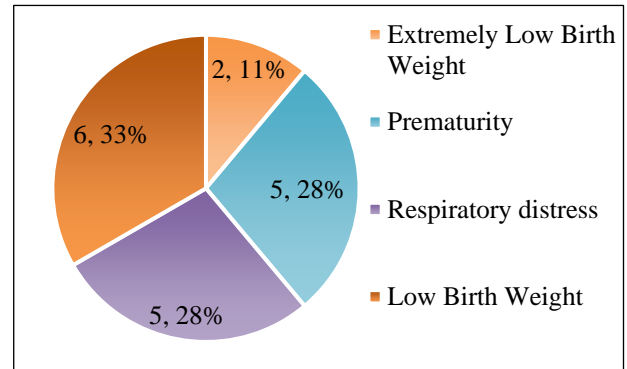


Figure 8: Distribution based on reason for NICU admission.

Around 48% new-borns in our sample required NICU admission. The primary reasons for NICU admission were low birth weight (33%), prematurity (28%) and respiratory distress (28%). About 10% new-borns were admitted to NICU because of extremely low birth weight (Figure 8).

DISCUSSION

Incidence of APH of the current study came to be 0.53%. Study done by Ratnam et al had a similar incidence of 0.6%. Incidence of APH can get affected by the sample size and source of sample population. Literature has also found the incidence of APH to be around 0.5-1%.⁶

Out of the 45 patients included in the study, majority (62%) of the cases of APH were due to placenta previa and approximately 38% were diagnosed with abruptio placenta. This is in concordance with studies done by Maurya et al, Adekanle et al, which showed higher incidence of placenta previa followed by abruptio.^{8,9}

The incidence of placenta previa has been found to increase now-a-days due to an increase in the rate of cesarean section, which is a major high-risk factor for placenta previa. Along with that multi parity and conception at an advanced age due to In-Vitro fertilization (IVF) also play a role in the incidence of placenta previa. Abruptio placenta has also been found to occur more frequently due to the consequent increase in the incidence of hypertensive disorders in pregnancy. It is a major predisposing risk factor for Abruptio. The uteroplacental insufficiency results in endothelial damage and consequent retro placental hematoma and placental abruption.

A 3 out of the 45 patients (6.6%), had placenta accreta spectrum along with placenta previa, and thereby, underwent obstetric hysterectomy along with caesarean section. Placenta accreta spectrum or morbidly adherent placenta has also been found to be in an increasing trend. With a greater number of primary caesarean sections and recurrent caesarean sections occurring, the risk of adherent

placenta has increased three to four folds and thereby, patients are at a grave risk of undergoing obstetric hysterectomy and consequent maternal morbidity and mortality.

Obstetric hysterectomy requires the experience of senior obstetricians, prompt management, proper ICU monitoring, availability of blood products and prompt management and termination of pregnancy. Early diagnosis and efficient management of Placenta Accreta Spectrum (PAS) can result in decrease in maternal and neonatal morbidity and mortality. A study done by Allhubaishi done in Bahrain found an incidence of 5.1% of adherent placenta and each of them underwent obstetric hysterectomy.¹⁰ The findings are similar to our study.

Adekanle et al observed that APH occurred more commonly in multipara (75.2%).⁹ This was also comparable to the studies by Cotton et al who found that 83.2% of their patients with APH were multiparous.¹¹

In this study, we observed that the occurrence of APH was associated with multi parity. With higher birth orders, the chances of caesarean section also increases and consequently, risk of adherent placenta also increases.

In the present study, 41.18% of patients with abruption had a gestational age of 32-36 weeks at the time of admission. Bhandiwad et al reported that 52.2% of abruption cases had a gestational age of 28-32 weeks.¹² Maurya et al observed that 63% of the patients with abruption had gestational age ≥ 37 weeks.⁸ In our study, out of the patients who had placenta previa, 53.6% had gestational age in the range of 36-40 weeks, which was comparable to the study done by Archana et al in which, 63% of patients had gestational age ≥ 37 weeks.⁸ Bako et al also observed that 64% of the patients had gestational age ≥ 37 weeks.¹³ Whenever a patient presents with bleeding PV and is diagnosed with abruptio placenta, it needs to be promptly managed by terminating pregnancy or it can result in complications like DIC, acute renal failure, and postpartum haemorrhage. Therefore, even if abruptio placenta presents before 36 weeks, it cannot be managed conservatively. Out of the 45 patients that were included in the study, 3 patients of placenta previa at 28 weeks, 32 weeks and 30 weeks respectively, were admitted in the labour room with 'warning haemorrhage' and due to absence of active bleeding, were managed conservatively and admitted in obstetric ICU. They were taken for elective caesarean section at term. In placenta previa, patients can present with 'warning haemorrhage' and this can be managed conservatively as per the MacAfee and Johnson Regimen. Hence, placenta previa can be prolonged and stretched to term and doesn't necessarily warrant an early termination of pregnancy.

The clinical study of antepartum haemorrhage done by Bako et al, wherein it was reported that 43.8% of patients with abruption and 5.2% of the patients with placenta previa had hypertension associated respectively.¹³

Similarly, Mourya et al also observed that 65.4% of the patients with abruption had hypertension and 2.8% of the patients with placenta previa had hypertension.⁸ In the current study, 4 out of the 17 patients diagnosed with abruptio placenta had hypertensive disorders in the form of gestational hypertension and severe pre-eclampsia.

In our study, 28 patients were diagnosed with placenta previa, and 4 patients had obstetric history of previous 2 CS, of which, 3 were diagnosed with placenta accreta spectrum. 3 patients also had history of previous CS with placenta previa.

If we observe this closely, we can infer the following from the present study, in patients with history of prior caesarean section, 43% were diagnosed with PAS and in patients with history of two caesarean section, 75% were diagnosed with PAS. As the number of caesarean sections increase, the risk of adherent placenta also increases two-fold. A study done by Silver et al observed that for women with placenta previa, the risk of placenta accreta was 3%, 11%, 40%, 61%, and 67%, for the first, second, third, fourth, and fifth or more caesarean, respectively.¹⁴

A similar study done by Gadgi et al in 2020 in India found an incidence of 3.89% of placenta accreta spectrum amongst the patients of placenta previa. Out of the 77 patients included in the study, PPH was seen in 40% of the patients, haemorrhagic shock in 33% of the patients, DIC in 3.89% of the patients and ARF in 4% of the patients.¹⁵ Another study done in Nigeria observed postpartum haemorrhage in 43 patients with abruptio placenta and 9 patients with placenta previa. The findings are in concordance to our study where PPH is seen more commonly in abruptio placenta.¹⁶ In abruptio placenta, retro placental bleeding occurs and in order to control that, the body's haemostatic mechanism comes into play, eventually leading to consumption of platelets and clotting factors, causing the patient to enter into DIC. Late detection of abruptio placenta increases the probability of developing DIC. With excessive blood loss, blood supply to the major vital organs gets affected and the patient could develop ARF, which presents with anuria.

In placenta previa, due to the low-lying placenta, the intrapartum blood loss is more and could result in haemorrhagic shock. With timely transfusion of blood products, it can be prevented. Patients with either abruptio placenta or placenta previa, are at the highest risk of PPH. As discussed earlier, the chances of PAS increase with past history of caesarean section.

Bako et al observed that 61% of the births in patients with abruptio placenta were dead born. However, only 10% of the births in patients with placenta previa were dead born in the same study.¹³ The observations of this study are comparable to the present study. In present study, 8 patients of abruptio placenta came with intra uterine foetal death when they presented to the labour room, had they come earlier, they could have been managed promptly and

might have resulted in better perinatal outcome. Abruptio placenta, if not diagnosed timely can result in foetal compromise and ultimately intrauterine foetal death. When abruptio placenta presents with concealed haemorrhage, the foetus gets affected more despite no clinical signs of blood loss. It also has an effect on the intrapartum and postpartum period of the patient as the patient might develop complications like PPH, DIC, ARF and several other complications. It can also result in an increased requirement for blood transfusion. Therefore, we can see from this study and several other similar studies, that, aetiology can have a great impact on the perinatal outcome.

In the present study, the main reasons for NICU admission were LBW and prematurity, and this mainly occurred in new-borns born to mothers with abruptio placenta, who were deliberately terminated before term for the sake of mother. A similar study done by Jaju et al showed that 28% of the new-borns required NICU admission, of which the main reason was prematurity 25%. Respiratory distress was seen in 5% of the new-borns in the same study.¹⁷

CONCLUSION

Antepartum hemorrhage is a major cause of maternal and perinatal morbidity and mortality which can be prevented by early antenatal registration, regular and frequent antenatal visits, early detection and labelling of high-risk cases, and early referral to higher center when indicated. Good facilities for caesarean section, availability of blood banks with component transfusion and obstetric ICU for postpartum management, an extensive NICU set up and multidisciplinary approach can help improve maternal and perinatal outcome of APH. Risk factors for abruptio placenta appeared to be hypertensive disorders that included gestational hypertension and severe pre-eclampsia. In placenta previa, the occurrence was more when there was a history of previous caesarean section and multiparity. In today's world, caesarean sections are occurring at an exponential rate and along with it, there is an increased risk of adherent placenta and subsequent obstetric hysterectomy. It is not far, when it will become a nightmare for practicing obstetricians. Diagnosis of placental abruption is predominantly clinical, while that of placenta previa, relies more on an ultrasound scan. Therefore, prompt diagnosis at the time of admission, can help prevent further complications like PPH, DIC, severe anaemia, TRALI, acute renal failure and hypovolemic haemorrhagic shock. It can also help reduce the number of blood transfusions that the patient might receive in intrapartum and postpartum period. The possibility of placenta accreta should always be kept in mind in cases of placenta previa, and specially, be more vigilant while handling previously scarred uterus. Caesarean section for APH should involve the most senior available staff in the anaesthetic and obstetric service and blood products should readily be available. A multi-disciplinary massive obstetric haemorrhage protocol should be available in all units. It should be regularly updated and rehearsed in

conjunction with the blood bank. It was also seen that those with APH were more likely to have an adverse neonatal outcome, such as low birth weight, low Apgar score, stillbirths, and preterm deliveries, thereby, implicating APH as a major cause of perinatal death.

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