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The impact of placental abruption on maternal and fetal outcomes: A retrospective study

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Abstract
Back ground: Abruptio placenta is a significant cause of antepartum hemorrhage (APH) and contributes to 20-25% of all APH cases. It refers to the early separation of a normally situated placenta from the uterine lining before the deliverey. APH affects 0.4-11% of all pregnancies and is a serious obstetric condition that poses a risk to both the mother and the foetus, leading to increased chances of maternal and neonatal complications and even death.
Objectives: This study aims to determine the maternal and perinatal outcomes in pregnant women with abruptio placenta by evaluating the prevalence, risk factors, socio-demographic factors, and the maternal, fetal, and neonatal outcomes at Government General Hospital, Ananthapuramu.
Materials and Methods: After obtaining permission from the Medical Superintendent of GGH, Ananthapuramu, the data was collected from the MRD section. All pregnant women admitted with vaginal bleeding and diagnosed with abruptio placenta fulfilling the inclusion criteria during the study period were included. Data on maternal characteristics such as age, parity, gestational age, presence of risk factors, mode of delivery, and complications were gathered. Perinatal characteristics like birth weight, APGAR score, NICU admission, perinatal morbidity, and mortality were also noted. The data was entered into an Excel sheet for statistical analysis.
This is a one-year retrospective observational study including all pregnant women with abruptio placenta at GGH, Ananthapuramu, a tertiary care centre, from June 2024 to June 2025.
Results: A total of 34 cases of abruptio placenta were recorded out of 7430 deliveries, giving a prevalence rate of 4.6%. The socio-demographic characteristics associated with abruption placenta includes age, booking status, parity. Highest prevalence of 51% was noted in women with age group less than 25 years. Among the pregnant women with abruptio placenta, peak prevalence was observed in the gestational age between 28 weeks to 33+6 weeks. Abruptio placenta with risk factor of pre-eclampsia were noted in 42% of cases. The cesarean section rate was 49% and normal delivery rate was 51%. There were 35% of live births, and 3% of still birth. Major complications included 62% intrauterine fetal deaths, 14% neonatal deaths, 28% anemia requiring blood transfusion, 59% postpartum sepsis, 5.9% disseminated intravascular coagulation (DIC), and one maternal death, resulting in a case-specific fatality rate of 2.9% during the study period.
Conclusion: The prevalence of abruptio placenta is not very high in our setting. However, it is a life-threatening complication of pregnancy with poor maternal and fetal outcomes if not managed promptly. The major foetal complication was intrauterine foetal death, while the main maternal complications were postpartum haemorrhage and anaemia, often requiring blood transfusion. Therefore, providing adequate antenatal care, early diagnosis, and timely access to emergency obstetric services can help reduce both maternal and foetal complications, prevent mortality, and decrease morbidity. Early referral to tertiary care centres, availability of blood and blood products, and prompt interventions can significantly limit adverse maternal and perinatal outcomes.

Keywords: Abruptio placenta, antepartum hemorrhage, maternal morbidity, perinatal outcome

Introduction

Abruptio placenta refers to early separation of the normally implanted placenta before the delivery of baby. It is one of the main reasons for maternal morbidity, neonatal complications and perinatal mortality, especially because it is difficult to predict the occurrence of acute event [1].

The rate of incidence of abruptio placenta is around 0.6-1% of all births. It usually occurs approximately 1 in 80 deliveries [2]. The incidence is four times greater in multipara as compared to primi-gravida and increases significantly after the fifth pregnancy, particularly with short interval pregnancies. The incidence in twin pregnancy is twice than that of singleton pregnancies (12/1000 vs. 5.9-6.2/1000 pregnancies) [3].

The Placental abruption can occur any time after 20 weeks of gestation, but it is most common in the third trimester. The bleeding per vagina occurs in two ways, which can be either concealed intrauterine haemorrhage, where blood would be appeared at vulva, or revealed external haemorrhage [3].

Conditions like gestational hypertensive disorders, advanced maternal age, increased parity, presence of multiple gestations, prolonged rupture of membranes, trauma, possible thrombophilia, maternal use of recreational drugs like cocaine and smoking are associated with placental abruption [2].

Any bleeding at the retro-placental site leading to formation of hematoma in the first trimester might increase the risk for subsequent placental abruption later. Any Vaginal bleeding after second trimester also suggests the risk of placental abruption. However, bleeding during the second or third trimesters is not an independent strong risk factor [4].

Pathophysiology

The exact cause of placental abruption is unknown. It occurs when there is hemorrhage into decidua basalis layer of placenta, which leads to the formation of hematoma that causes raised hydrostatic pressure. That leads to the separation of the placenta in uterine wall. The formed hematoma would be either small and self-limiting or may continue to dissect through the decidual layer of uterine wall that releases thromboplastins causing bleeding into myometrial layers (Couvelaire uterus). The resultant damage interferes with the contractility of the uterine wall causing atony, that predisposes to postpartum hemorrhage[2].

The clinical symptoms of placental abruption include sudden and severe abdominal pain, bleeding per vagina, maternal tachycardia, tender and firm hyper-tonic uterus and non-reassuring status of the foetus[1]. The abruption can occur at any stage of pregnancy and clinical features depends on the severity of bleeding and degree of placental separation [5].

The placental abruption is an acute emergency that usually requiring immediate delivery on the grounds of maternal and/or fetal interest, but chronic abruption has been also been described which does not require immediate delivery of baby followed by placental separation. There is another entity called Chronic Abruption Oligohydramnios Sequence (CAOS) [6] when oligohydramnios co-exists with this condition, The management of placental abruption comprises emergency delivery versus expectant management, which depends on the clinical condition of mother and baby, gestational age and the amount of blood loss due to associated haemorrhage [7].

The maternal complications arising from placental abruption are heavy bleeding, requirement of blood transfusion, acute kidney injury, DIC pulmonary oedema, Sheehan's syndrome, requirement of emergency obstetric hysterectomy, postpartum anaemia. The foetal and perinatal complications include prematurity of baby, low birth weight, birth asphyxia, need for neonatal intensive care, intrauterine foetal death, perinatal mortality [1].

Improved maternal and foetal outcomes can be achieved through regular ante-natal care, using ultrasound to locate the position of placenta, early detection of abruptio placenta, timely access to medical facilities with better obstetric and anaesthetic care for deliveries, improved blood banking, and intensive neonatal care facilities [8].

Methodology

After obtaining the permission from the Medical Superintendent, GGH, Ananthapuramu for collecting required data from MRD section, the data of all pregnant women who admitted in LR with history of vaginal bleeding and diagnosed with abruptio placenta, during the study period was collected. And only the pregnant women who met the inclusion criteria were included in the study.

A total of 35 cases of pregnant women who met the inclusion criteria were included. Some of the specific maternal factors such as age, gestational age, parity, presence of risk factors, mode of delivery, and complications like shock, PPH, acute renal failure, DIC, pulmonary edema, heart failure and ICU admissions are taken into consideration. The investigations performed, including complete blood picture, RBS, liver, kidney function tests, coagulation profile, blood group and type, HIV, hepatitis B, and a complete urine analysis, were recorded. The need for blood transfusions or other blood products were noted. For the baby, factors such as birth weight, APGAR score, prematurity, IUGR, NICU admission, and perinatal complications were considered. The collected data was entered into an Excel sheet, and statistical analysis was performed.

Inclusion criteria

1) Women diagnosed with abruption placenta
2) Women with gestational age >24weeks
3) Singleton pregnancies

Exclusion criteria

1) Other causes of APH like placenta previa, cervical lesions
2) Gestational age less than 24 weeks
3) Multiple pregnancies
4) Women with other bleeding disorders

Results

Table 1: Age-Wise Prevalence of Abruptio placenta

S. No.	Age Distribution(in years)	Number of cases
1	< 25	18(51%)
2	26 - 30	10(29%)
3	> 30	7(20%)

In our study, the maximum number of cases (51%) of abruptio placenta were observed below 25 years of age and second highest number (29%) observed in age group 26-30yrs.

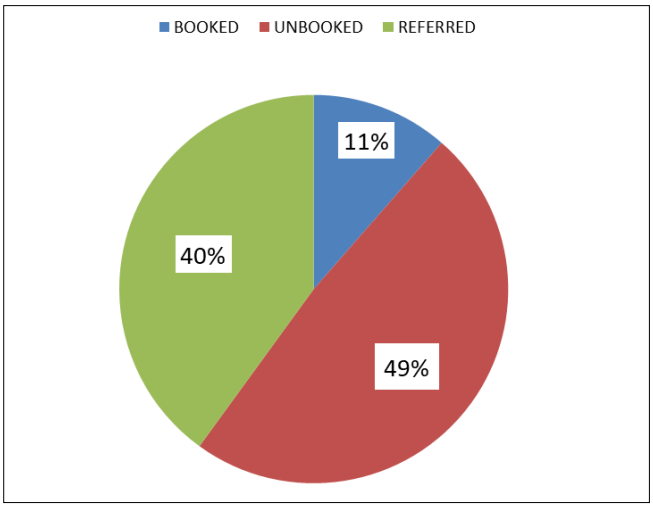

Fig 1: Booking status of the study population

In our study, 49% of cases were unbooked cases and 40% were cases referred from nearby primary and secondary health centers.

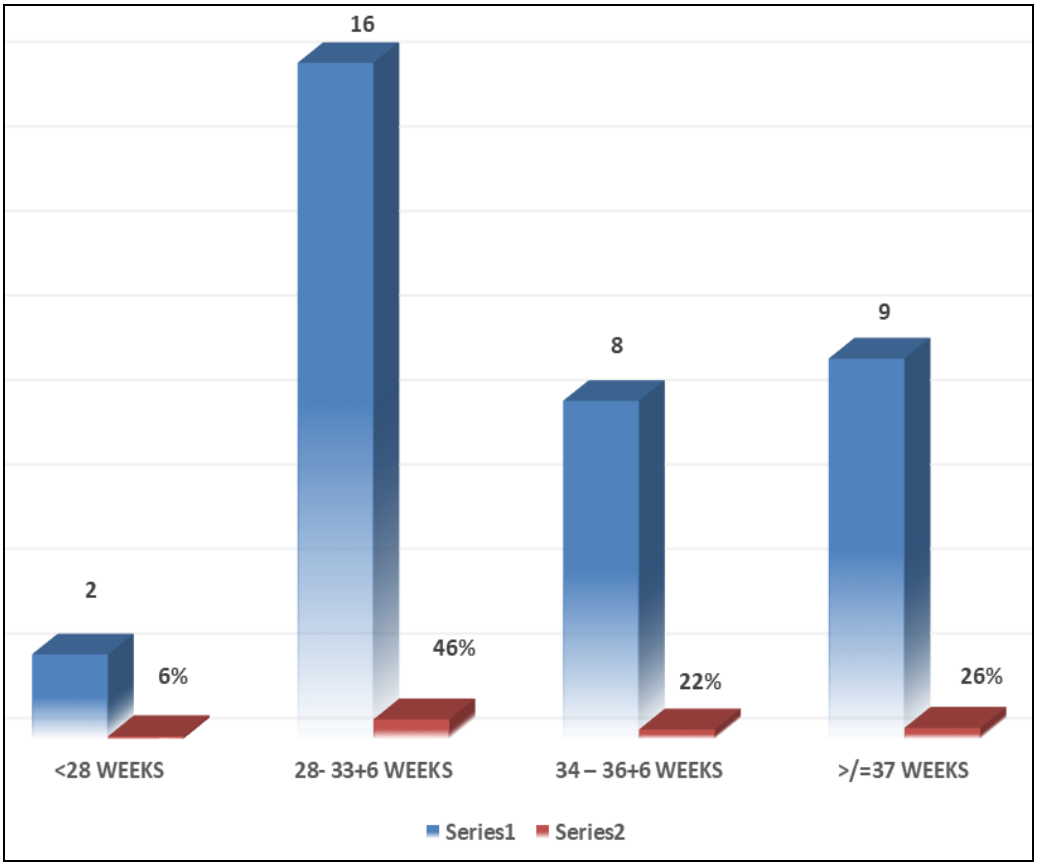

Fig 2: Gestational Age-Wise Distribution of Cases

In our study, highest no. of cases (46%) were noted between gestational age 28 to 33+6wks and second highest number of cases (26%) noted at 37 weeks and above.

Table 2: Mode of Delivery

S. No.	Mode of delivery	No. of cases	Percentage
1	Vaginal	18	51%
2	C Section	17	49%

In our study, 51% of cases were delivered by normal vaginal delivery and 49% of cases were delivered by C-Section.

Table 3: Perinatal Outcome of Study Population

S. No.	Out Come of Delivery	No. of Cases	Percentage
1	Livebirth	12	35%
2	Still Birth	1	3%
3	IUD	22	62%
4	Neonatal Death	5	14%

In our study, 35% of patients had live birth, 62% of patients had Intra Uterine Death and 3% of patients had still birth and 14% had neonatal death.

Table 4: Distribution of Cases Based on Gravidity Status

S. No.	Gravida	No. of Cases	Percentage
1	PRIMIGRAVIDA	12	33%
2	2 to 4	22	65%
3	>/= 5	1	2%

In our study, maximum number of cases were multigravida - (> Gravida 2) around 65% and the risk of abruption increases with parity and 33% of cases were Primigravida.

Table 5: Risk Factors in Placental Abruption

S. No.	Associated Risk Factor	Total cases	Percentage
1	ANEMIA	23	66%
2	SEVERE ANAEMIA	07	20%
3	PREECLAMPSIA	15	42%
4	ECLAMPSIA	3	8%
5	GDM	4	11%
6	HYPOTHYROIDISM	5	14%
7	PPH	1	2%
8	NO RISK FACTOR	12	34%

Table 6: Maternal Complication

S. No.	Maternal Complications	No. of Cases	Percentage
1	Blood Transfusions	28	80%
2	Hellp Syndrome	4	11%
3	Post OP ICU Admission	4	11%
4	Perpeurial Pyrexia	2	5%
5	DIC	2	5%
6	AKI	1	2%
7	Death	1	2%

In our study, 80% of cases required blood transfusion. Other associated maternal Complications were HELLP syndrome (11%), Pyrexia (6%), ICU admissions (11%), DIC (2%), AKI (2%), PPH [2%].

Discussion

Placental abruption is a serious obstetric emergency that can lead to adverse effect on maternal and foetal outcomes. It is a life threatening condition affecting both mother and fetus. During the study period, there were 7430 pregnant women, and 35 women were diagnosed with aruptio placenta.

The prevalence of placental abruption in the study was 4.71% and it was observed in other studies in India that have showed

incidences of abruption between 1-5% [10, 11, 12]

Most of pregnant women in our study were under the age of 25 years, showing highest prevalence of 51%. It is similar to study of Coleman *et al.* [9]. In another study done by Khan *et al.* [12] registered cases had a lower incidence of 35.03% when compared referred cases of 64.95%. In our study, the rate was 11% for registered cases and 40% for referred cases.

Placental abruption can occur at any stage of pregnancy and the clinical symptoms depend on how severe is the bleeding and degree of placental separation. In our study, most of pregnant women had presentation at 28-34weeks gestational age which accounts for 46% of cases. That is similar to studies done by Coleman *et al* & Bribi *et al.* [9, 13]. However, some studies have observed higher Incidence in term gestation [10, 12].

Pre-eclampsia was identified as risk factors in 42% of pregnant women, which is close to 48% reported by Lalit D Kapadia *et al.* [14]. Many other studies have shown a strong association between pre-eclampsia and placental abruption [11, 15]. Other associated risk factors were 66% cases had anaemia, 11% had GDM and 8% had eclampsia.

During the time of admission, 62% of pregnant women had intrauterine fetal demise. Among the cases in the study population 51% had vaginal delivery and 49% underwent Caesarean section. The indication for Caesarean section was mainly fetal distress.

The maternal Complications observed were the need for blood transfusion, HELLP, Disseminated Intravascualr Coagulation (DIC), AKI, post-partum ICU care. 80% of cases required the blood transfusion The Incidence of HELLP & ICU admissions were 11%, DIC was 21% and AKI 2%. There are other studies where same maternal complications like need for blood transfusion, DIC, shock, ICU admission were reported [11, 12, 14].

The perinatal mortality observed in this study was 62% of Intra-uterine deaths and 14% of neonatal deaths. These high rates were mainly due to intra uterine fetal demise which observed in cases presenting late to the hospital and because of the delay the disease has progressed to advanced stage. In cases of early neonatal death, extreme prematurity was identified as the cause. High perinatal mortality has also been observed in other studies with placental abruption and prematurity [11, 14, 16].

Conclusion

Placental abruption is a potentially serious condition that can be life threatening for both mother and foetus. The risk factors and clinical features in placental abruption are varied. Prompt antenatal care is essential in identifying the risk factors in advance and hence plays an important role in the effective management of these cases. These pregnant women must be managed in centers that have advanced maternal and neonatal facilities involving the team of obstetricians, anesthetists, intensivists and Neonatologists for improved outcome.

Early detection and active management is crucial to reduce maternal and foetal complications and mortality. Further research in identification of predictors of placental abruption can help improving maternal and perinatal outcome.

Conflict of Interest

Not available

Financial Support

Not available

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