

A STUDY OF EVALUATION OF RISK FACTORS, ETIOLOGY, MATERNAL AND FETAL OUTCOMES IN PATIENTS WITH ABRUPTIO PLACENTA PRESENTING TO A TERTIARY CARE HOSPITAL

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Abstract

Background: Placental abruption is an obstetric emergency, which can lead to adverse maternal and fetal outcomes. Identification of the risk factors, and etiology is of paramount importance to prevent maternal and fetal death. **Material & Method:** This prospective observational study was conducted on 100 antepartum patients who presented with abruption placentae, to the Department of Obstetrics, Kurnool medical college over 1.5 yrs. **Result:** 58% of the study population belong to abruption grade 3A, grade 2 (27%), grade 1 (10%), and Grade 3B (5%). 74% of the study population underwent vaginal delivery while the rest 26% underwent LSCS. 92 % required blood transfusion and massive blood transfusion was done for 26 cases. 53% had abruption to delivery interval of >8 hrs, followed by 6-8 hrs (36%) and <6hrs (11%). The most common risk factor observed in this study is pre-eclampsia (34%). A total of 37 live babies were delivered and 5 babies died during the neonatal period. There was a significant association between grades of abruption and perinatal outcome. **Conclusion:** The majority of risk factors identified in this study were preeclampsia and anemia complicating pregnancy and if these risk factors were detected at an early stage could decrease the incidence of abruption and morbidity and mortality associated with it. Most of the cases presented with grade 3 abruption with intrauterine fetal demise. So early diagnosis of abruption and timely referrals from peripheral health centers would help in bringing down maternal and perinatal morbidity and mortality.

INTRODUCTION

Abruptio placentae are premature complete or partial separation of the placenta, is an infrequent but serious obstetric complication.^[1] and is seen in approximately 0.5–1% of deliveries worldwide.^[2] Depending upon the etiological factors, premature placental separation is initiated by hemorrhage into the decidua basalis. This decidual hematoma at the early phase, hardly produces any morbid pathological changes in the uterine wall or on the placenta. However, depending upon the extent of pathology, there may be degeneration and necrosis of the decidua basalis as well as the placenta adjacent to it.^[3]

There are three types of placental abruption: Revealed- (blood tracks between the membranes

and decidua and escapes through the cervix into the vagina) – common type; Concealed - blood accumulates behind the placenta with no visible external bleeding; Mixed- it is partly revealed and partly concealed. Usually, one variety predominates over the other. This is 2nd most common type.^[4]

Although rare, abruption can cause many severe morbidities or even death of both mother and fetus. The maternal complications depend solely on the severity of the abruption and include hypovolemia, disseminated intravascular coagulopathy (DIC), and emergency hysterectomy because of bleeding. The fetal complications depend on both the severity of the abruption and the gestational age at the time of the abruption.^[5] In addition to prematurity-related problems, surviving newborns have an increased risk for low birth weight and asphyxia.

The risk factors predisposing to placental abruption are well known, the most important being prior abruption, maternal smoking, hypertensive disorders, excessive alcohol consumption, and lower socio-economic status.^[6]

Smoking causes endothelial cell injury and dysfunction leading to defects in the placental vascular bed.^[7] Placental infarcts are often detected in the abrupted placentas of smokers⁸. Prenatal and postnatal nicotine exposure impairs fetal lung development.^[9] and may later expose the child to sudden infant death syndrome (SIDS).^[10]

Folate deficiency may also be another risk factor for abruption since it has a major role in preventing major congenital anomalies.

Later morbidity and mortality of women with a history of placental abruption have been under scrutiny. Prior abruption has been associated with increased cardiovascular disease (CVD) mortality in some.^[12] but not all studies. However, little is known about the overall mortality of these women, and no systematic studies on causes of death among women with a history of placental abruption have been reported.

The effect of placental abruption on perinatal and neonatal mortality has been observed in many previous studies. A significant number of perinatal deaths caused by abruption involve stillbirth.^[13,14]

However, the impact of placental abruption on offspring mortality beyond the perinatal period is not well known.

As this is a tertiary-level hospital, all high-risk patients will be referred from 6 surrounding districts. In case of abruption, timely intervention can save the baby and mother from perinatal and maternal complications. This study aims to identify the etiology, risk factors, and maternal and fetal outcomes of placental abruption.

Aims and Objectives

- To identify the risk factors in all cases of placental abruption
- To analyze variables like age of the patient, parity, gestational age at onset, type of abruption, grade of abruption, and mode of delivery.
- To study maternal and perinatal complications/outcomes.

MATERIALS AND METHODS

A Prospective observational study was conducted on 100 patients from March 2021 to August 2022 in the Department of Obstetrics and Gynecology of Kurnool medical college, Kurnool. All antenatal mothers with clinical presentation of abruption placenta were included in the study. Other cases of antepartum hemorrhage like placenta previa, and non-obstetric causes were excluded from the study.

Methodology

The study group consists of antenatal mothers admitted to the department of OBG, GGH KURNOL with the clinical diagnosis of abruption

placenta. Relevant investigations like, CBC, blood grouping & typing, bleeding time and clotting time, coagulation profile, liver function tests, renal function tests, and trans-abdominal ultrasonography were sent.

Depending upon the type, grade of abruption placenta, and maternal and fetal status, delivery was planned either by immediate delivery/induction/cesarean section. Mode of delivery and fetal outcomes were noted. All patients were followed till discharge from the hospital.

Statistical Analysis

Data entry was done in an Excel spreadsheet and statistical analysis was performed using Graph pad Prism version 5 software. Data were presented as the frequency with proportion (%) for categorical data. Fisher's exact test was used to compare the frequency distribution of categorical parameters between the groups. P<0.05 were considered statistically significant.

RESULTS

The majority (54%) of study participants were in the 22-30 years of age group. The mean age was 26. 90% of the study population comprised unbooked cases, while booked cases were a mere 10%.

42% of the study population was Primigravida (42%) followed by Gravida 2(37%), gravid 3(12%), gravid 4(5%), gravid 5(3%), and Gravid 6(1%). Shers classification of abruption placentae was followed in this study & according to it, the majority of the study population belonged to grade 3A (58%), followed by grade 1 (10%), grade 2 (27%), and Grade 3B(5%).

The majority (74%) of the study population underwent vaginal delivery. The remaining 26% of cases underwent LSCS with amongst whom 9 patients had Couvelaire changes [5.5%].

58% of the study population were having gestational age 33-36 weeks of age followed by ≥ 37 weeks (22%) and 28- 32 weeks(20%). The mean gestational week at the time of diagnosis was 34.54 weeks with a standard deviation of 2.04 weeks.

92 % of the study population required blood transfusion. Massive blood transfusion was done for 26 cases.

The majority of the study population had abruption to delivery interval of >8 hrs (53%) followed by 6-8 hrs (36%) and <6hrs (11%). Only one maternal death was observed in the study which had abruption to delivery interval >8hrs, as an increase in abruption delivery interval increases the maternal mortality rate.

Amongst the risk factors observed in this study pre-eclampsia (34%) was most common. Morbidity distribution observed in the study population was that (97%) had anemia, followed by DIC (10%), PPH (5%), Shock (3%), Sepsis (2%), Renal Failure (2%), and Caesarian hysterectomy (1%).

32% of the study population had live babies and 68% had dead babies. Out of the total 334 perinatal deaths that happened in Kurnool medical college, from March 2021 - August 2022, 68 cases died due to abruption. The Incidence of death due to abruption is 20.35%.

The total perinatal deaths were 68 in our study of which 63 were IUD on admission and 5 were early neonatal death. The Perinatal mortality rate observed is 68%.

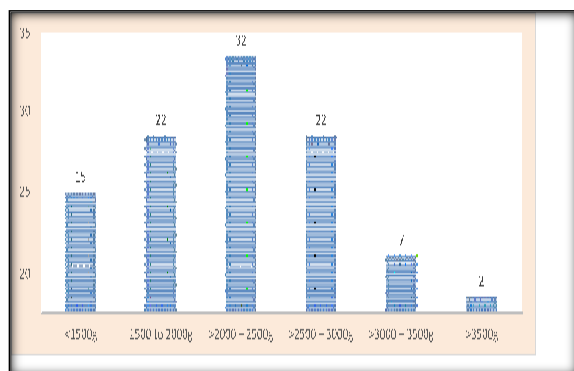


Figure 1: Frequency distribution of Category of Birth Weight observed in the Study Population

Among dead babies, 94.2% of the mothers underwent vaginal delivery and most mothers of alive babies underwent LSCS (68.3%).

The majority of the dead babies weighed between 1500 to 2000g (47%) and most of the alive babies weighed between >2000 – 2500g (37.5%).

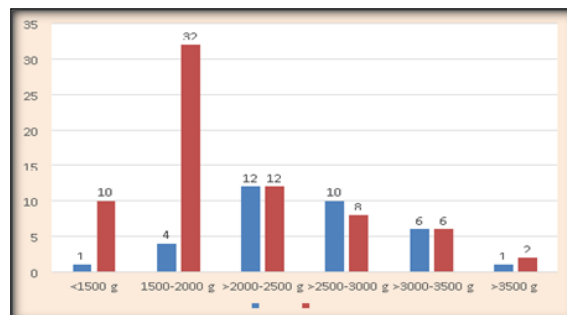


Figure 2: Comparison of Perinatal Outcome concerning the Birth Weight observed in the Study

Comparison of perinatal outcome with respect to the grade of placental abruption observed in the study.

Table :1 Comparison of perinatal outcome with respect to the grade of placental abruption

S. No	Grade of placental abruption	Perinatal Outcome				Chi-squarevalue	Df	P value
		Alive(n=32)		81.4 Dead(n=68)				
		n	%	N	%			
1	Grade 1	24	75	1	1.4	75.89	<0.00001*	
2	Grade 2	8	25	4	5.8			
3	Grade 3A	0	0	58	85.2			
4	Grade 3B	0	0	5	7.3			

The incidence of Perinatal mortality with grade 2 abruption is 5.8% and with grade 3 it is 85.2%. This shows a significant association between grades of abruption and perinatal outcome.

DISCUSSION

Abruptio placentae complicate approximately 1% of pregnancies and are the leading cause of vaginal bleeding in the latter half of pregnancy. Perinatal mortality is about 20 times higher in placental abruption in comparison to pregnancies without abruption. Abruption involving more than 50% of the placental surface is frequently associated with fetal death.^[15]

A Clinical and Prospective study was conducted in the department of OBG, GGH Kurnool on antenatal mothers with a clinical diagnosis of abruptio placenta.

The majority (54%) of them belong to 22-30 years. The current study findings were similar to studies done by Mondal G.S (1979)¹⁶ and Mohapatra 15 who also found the highest incidence in the same age group. The majority of the study population was un-booked i.e. 90% compared to booked cases (10%). Similar findings were seen in studies done by Mondal G.S (1979).^[16] and Mohapatra 15

Most of the study population was Primigravida (42%) followed by Gravida 2 (37%). Sayli et al.^[17]

observed that the majority of study participants (39.1%) were primigravida. In the present study, the majority belong to abruption grade 3A (58%), grade 1 (10%), grade 2 (27%), and Grade 3B (5%).

LSCS was done in 26 cases with 26% in which 9 patients have couvelaire changes [5.5%]. 74% of the study population underwent vaginal delivery because most of the cases presented with grade 3A abruption with intrauterine fetal demise.

Getahun et al. (2006).^[18] in Missouri, USA demonstrated that cesarean section in first birth is associated with twofold increased risks of abruptio placenta in the second pregnancy. There is a dose-response pattern in the risk of previa, with an increasing number of prior cesarean deliveries.

Sheikh et al (2010).^[19] established maternal outcomes of antepartum hemorrhage to have been cesarean section (57.1%), postpartum hemorrhage (19%), the need for blood transfusion (77.4%), shock (6.66%), and peripartum hysterectomy (1%).

58% of the study population were having gestational age 33-36 weeks of age, followed by ≥37 weeks (22%) and 28-32 weeks (20%). Similar to the present study, Sayli Wankhedkar et al.^[17] also had

52.7% of the study population belonging to 33-36 weeks of gestational age. However, Parikh et al²⁰ noted that the majority (55.26%) of their study population belonged to term gestation.

In this study, 92 % required blood transfusion. Massive blood transfusion (ie., transfusion of 10 units of packed red blood cells (PRBCs) within 24 hours) was done for 26 cases. 77.4% of participants in the study done by Sheikh et al.^[19] needed of blood transfusion.

The majority of the study population had abruption to delivery interval of >8 hrs (53%) followed by 6-8 hrs (36%) and <6hrs (11%). Prolongation of abruption to delivery interval increases the maternal mortality rate. In this study, one maternal death was observed amongst patients who had abruption to delivery interval >8hrs.

Preeclampsia (34%) was the most common risk factor observed in this study, followed by anemia (18%), PROM (10%), multiparity (8%), Polyhydramnios (8%), and Idiopathic which was 8%.

Heija et al. (1998).^[21] in a study done at Princess Badeea Teaching Hospital, Irbid, Jordan found that the significant risk factors for abruption placenta were high parity, preeclampsia, and hypertension.

Wandabwa et.al (2001)⁹⁴ in a study done at Mulago Hospital, Kampala, Uganda established that the risk factors of abruption placenta were co-existing hypertension, low socioeconomic status, previous history of stillbirths and cesarean section, recurrent vaginal bleeding and delivery of male babies. They established that co-existing hypertension alone increases chances of developing abruption placenta by about 56.8-fold whereas male babies about 2.2 fold.

Matsuda et al. (2011).^[25] explained that hypertension, pregnancy-induced hypertension, and smoking were risk factors only for abruption placenta.

97% of the study population developed anemia, DIC developed in 10%, PPH in 5%, Shock in 3%, Sepsis in 2%, Renal Failure in 2%, and Caesarian hysterectomy in 1%.

Mcshane et al. (1985).^[22] looked at maternal and perinatal morbidity resulting from placenta previa in Boston, USA. He pointed out that a history of prior cesarean section was associated with a significant increase in maternal morbidity, including massive hemorrhage, and hysterectomy. He explained that the onset of bleeding before 20 weeks gestation was associated with a very poor fetal prognosis.

However, the results of a study done in Aga Khan University Hospital, Karachi, Pakistan, Munim et al (1997).^[23] were Contradictory to the present study. They explained that there was no difference in the perinatal and maternal outcomes between hypertensive and normotensive women experiencing abruption placenta.

Perinatal death due to abruption was 68% in our study of which 63 were IUD on admission and 5 were early neonatal death.

Heija et al. (1998).^[21] found the perinatal outcomes of abruption placenta to be preterm deliveries with low birth weight, intrauterine fetal death, intrauterine growth retardation, and cesarean deliveries. Lakshmi Ashar et al.^[24] observed perinatal mortality of 87.8%.

The correlation between Perinatal outcomes both in the dead and alive category babies and the age of the mother was insignificant. Matsuda et al. (2011).^[25] at Oita Prefectural Hospital, Bunyo, Oita, Japan compared risk factors for placenta previa and abruption placenta and explained that maternal age above 35 years was a similar risk factor for both.

Among dead babies, 94.2% of the mothers underwent vaginal delivery, and in alive babies, most mothers underwent LSCS (68.3%). The difference was significant.

majority of neonates weighed between 1500 to 2000g (47%).

The incidence of Perinatal mortality with grade 2 abruption is 5.8% and with grade 3 – 85.2%. This shows a significant association between grades of abruption and perinatal outcome.

CONCLUSION

Abruptio is still one of the most serious obstetric emergencies. Etiology remains obscure in many cases and it often presents without warning. Fortunately, maternal mortality from abruption was reduced considerably due to the implementation of good obstetric care and blood transfusion services. But, it is still an important cause of maternal morbidity and mortality, and perinatal loss. The majority of risk factors identified in this study were preeclampsia and anemia complicating pregnancy and if these risk factors were detected at an early stage could decrease the incidence of abruption and morbidity and mortality associated with it. Most of the cases presented with grade 3 abruption with intrauterine fetal demise. So early diagnosis of abruption and timely referrals from peripheral health centers would help in bringing down maternal and perinatal morbidity and mortality.

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Conflict of Interest

None

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