

Original Research Article

**A Study of Maternal and Perinatal outcome in Abruptio Placenta**

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**Abstract:**

**Background:** The overall prevalence of abruptio placenta in pregnancy is estimated to be 0.4-1%. Even though it is low prevalence, in developing countries this condition is one of leading causes of all deaths that occur during the perinatal period.

**Objective:** To study risk factors, maternal and perinatal outcome in diagnosed cases of Abruptio Placenta

**Methods:** A hospital based prospective study was carried out over a period of two years among 55 cases of abruptio placenta. Detailed history, clinical examination and investigations were carried out. Apart from assessing maternal and neonatal complications, Sher-Statland classification was used to grade the severity of cases of abruptio placenta.

**Results:** In this study, majority of pregnant women (74.5%) with abruptio placenta were of the age group 20-25 years and most of them were near term i.e., around 33-36 weeks of gestation. Vaginal bleeding was the most common presenting symptom (74.5%) and anemia was most common associated risk factor (74.5%) in the women diagnosed with abruptio. Almost 91% of these women were unbooked with no regular or poor antenatal check-ups and in most of them, abruptio was so severe to cause intra-uterine fetal death (61.8%). Mortality rate among the neonates was 14.5% in the present study. Most common maternal complication observed was acute kidney injury (14.5%) and no maternal mortality was observed in this particular study.

**Conclusion:** Acute kidney injury was the most common maternal complication observed. Though neonatal mortality rate is comparatively low among the cases of this study, intra-uterine death was the most common fetal outcome, especially amongst the pregnant women with no prior ANC. Anemia and hypertension were the two most associated risk factors for placental abruptio. Early identification of risk factors on regular ANC and timely intervention of the diagnosed abruptio cases, would reduce both maternal and perinatal morbidity & mortality.

**Key words:** abruptio placenta, intra-uterine fetal death, anemia, antenatal check-ups

## **Introduction:**

Premature separation of a normally situated placenta is known as abruptio placenta. It can either be a complete or partial separation causing antepartum hemorrhage. Approximately 0.4–1% of pregnancies are complicated by placental abruption.<sup>1</sup> Even though of very low prevalence, in developing countries, this condition can lead to about 10% of all the deaths that occur during the perinatal period.<sup>2</sup>

The clinical features in abruption depend mainly on the degree of separation of placenta. Following separation of the placenta, the blood either insinuates downward between the membranes and the decidua or gets collected as decidual hematoma. Women with abruption usually present with abdominal discomfort, pain abdomen, bleeding per vagina. Few women even present in shock, with acute abdomen and abnormal fetal heart rate pattern.<sup>3</sup>

The data pertaining to the risk factors of the abruptio placenta are not consistent. Although etiology is not fully understood, it is generally considered multifactorial and the strongest risk factor being history of previous abruptio placenta. Some studies have shown that the hypertensive disorder of the pregnancy is also one of the most important risk factors for abruptio placenta. Pregnant women with placenta anomalies, polyhydramnios, anemia or thrombophilia complicating pregnancy, maternal trauma, cigarette smoking are also more prone for abruption. The risk of abruptio placenta increases if a pregnant woman is suffering from one or more chronic non-communicable diseases. Genetic factors also play an important role as risk factors. Low body mass index and advanced maternal age are also associated risk factors. Illicit drug use has also been found to be an associated risk factor. But most of the available data does not support it. More studies are required to prove the significance of these risk factors.<sup>5-9</sup>

The various maternal complications associated with the abruptio placenta are postpartum hemorrhage, which can be so severe requiring blood transfusion, shock, acute kidney injury (acute cortical necrosis/tubular necrosis), disseminated intravascular coagulation and even death.<sup>10</sup>

The various neonatal complications are RDS, prematurity, low birth weight baby, prolonged stay in neonatal resuscitation unit, need of artificial ventilation, increase in the morbidity and mortality.<sup>11</sup>

More studies are required to focus on this low prevalence condition as it is associated with a higher rate of complications in both the mother as well as the baby. The present study was carried out to study risk factors, maternal and perinatal outcome in the diagnosed cases of Abruptio Placenta.

## **Methods:**

A hospital based prospective study was carried out at Department of Obstetrics and Gynecology, Malla Reddy Medical College for Women, Hyderabad over a period of two years from May 2017 to April 2019 among 55 cases of abruptio placenta.

Institutional Ethics Committee approval was obtained before the study was initiated. Written informed consent was taken from all eligible study participants. All patients were treated as per the prevailing standard hospital treatment guidelines.

All pregnant women irrespective of age, parity and gestational age diagnosed with abruptio placenta were included in the present study. Those with antepartum hemorrhage due to causes

other than abruptio placenta and patients not willing to participate in the study were excluded from the present study. Excluded cases were also treated as per the guidelines.

Detailed antenatal history was taken and high-risk factors were identified. Clinical information including age, socio-economic class, past obstetric history, presenting complaints and fetal heart rate were recorded. A thorough general and obstetric examination was conducted. Apart from routine antenatal blood tests, specific investigations like Coagulation profile, Liver and Renal function tests were performed. All patients underwent the ultrasonographic examination by the expert radiologist.

Maternal outcome was studied in terms of mode of delivery, requirement of blood and blood components, prolonged hospital stay and fetal outcome in the form of intrauterine death, live birth, low APGAR, NICU admission and neonatal death. Maternal complications such as post-partum hemorrhage, abnormal coagulation, acute kidney injury, shock and pulmonary edema were studied. The data collected was expressed as proportions and numbers.

Sher-Statland classification <sup>12</sup> was used to grade the cases with abruptio placenta

GRADE 1- this is not recognized clinically before delivery, retrospectively diagnosed by the presence of retro-placental clot.

GRADE 2- this is an intermediate grade in which classical clinical signs of abruption (like tense and tender uterus, vaginal bleeding) are present. Abnormalities in fetal heart rate may be present, but the fetus is still alive

GRADE 3- Fetal demise

3A- without Coagulopathy, 3B- with Coagulopathy

**Results:**

**Table 1: General and clinical characteristics of study subjects**

Characteristics		Number	%
Status	Booked	5	9
	Unbooked	50	91
Age (years)	< 20	4	7.3
	20-25	41	74.5
	26-30	6	10.9
	> 30	4	7.3
Parity	Primigravida	32	58.2
	Multi-gravida	23	41.8
Gestational age (weeks)	< 28	5	9
	29-32	17	31
	33-36	26	47.3
	≥ 37	7	12.7
Presenting Symptom	Pain abdomen	14	25.5
	Vaginal bleeding	41	74.5
Mode of delivery	Lower segment cesarean section	25	45.5
	Vaginal delivery	30	54.5

More than 90% of the cases were unbooked. Majority (74.5%) belonged to the age group of 20-25 years. Primigravida were slightly more in number than multigravida. Most of them were in the gestational age of 33-36 weeks (47.3%). Almost 75% of the cases presented were with vaginal bleeding. 45.5% of the women required to undergo the Lower segment cesarean section. (Table 1)

**Table 2: Distribution as per fetal outcome**

Fetal outcome	Number	%
Live birth	21	38.2
Intra-uterine death	34	61.8
Neonatal intensive care unit admission	15	27.3
Neonatal death	8	14.5

Most common fetal outcome in this study was intra-uterine death (61.8%), which was observed among the unbooked cases only. Live births were in 38.2% of the cases, out of which 27.3% required Neonatal intensive care unit admission. The mortality rate among the neonates was 14.5% in the present study. (Table 2)

**Table 3: Distribution as per complications**

Complications	Number	%
Acute Kidney Injury	8	14.5
Abnormal coagulation profile	6	10.9
Couvellaire uterus	5	9.1
Post-partum Hemorrhage	5	9.1
Pulmonary edema	2	3.6

No maternal complications were observed in almost 53% of the cases. Most common complication was acute kidney injury in 14.5% of the cases followed by Abnormal coagulation profile in 10.9% of the cases. (Table 3)

**Table 4: Distribution as per maternal outcome**

Maternal outcome	Number	%
Requirement of blood/blood products	51	92.7
Prolonged hospital stay	41	74.5
Shock	2	3.6

No maternal deaths occurred during this study, while only two cases developed shock. More than 92% of cases required blood/ blood products transfusion. Almost three-fourths of the cases required prolonged hospital stay. (Table 4)

**Table 5: Distribution as per blood and blood products transfused**

Blood and blood products transfused	Number	%
Fresh blood (PRBC) only	41	74.5
Fresh frozen plasma	6	10.9
PRBC and Platelets	4	7.3
Non requirement of transfusion	4	7.3

41 (74.5%) cases required only fresh blood (PRBC) transfusion while, 4 cases required both PRBC and RDP transfusion. 6 patients with abnormal coagulation profile were given FFP transfusion. (Table 5)

**Table 6: Distribution as per associated risk factors**

Associated risk factors	Number	%
Anemia alone	31	56.3
Hypertensive disorder (PIH alone)	9	16.3
Anemia along with PIH	10	18.2

While anemia alone was the most common associated risk factor in 56.3% of the cases, in 18.2% cases both anemia and hypertensive disorder were present. Hypertensive disorder alone was the risk factor in 16.3% of the cases. In rest of the cases (10%), none of these two common risk factors were observed. (Table 6)

### Discussion:

In the present study more than 90% of the cases were unbooked pregnant women with no prior regular antenatal check-ups. Almost three-fourths of the women belonged to the age group of 20-25 years and primigravida (58.2%) were more than the multigravida. Majority were in the gestational age of 33-36 weeks of gestation. Vaginal bleeding was the most common presenting symptom followed by pain abdomen. Abnormal fetal heart rate pattern was noted in a few cases. On evaluation of these women, anemia followed by hypertensive disorder were noted to be the most common associated risk factors.

In most of the cases labour was induced and vaginal delivery was conducted (54.5%). The remaining (45.5%) women required to undergo the Lower segment cesarean section due to either an abnormal fetal heart rate pattern (on CTG), scar dehiscence or unfavorable cervix with live fetus, in whom induction delivery interval would be prolonged. Most common fetal outcome observed was intra-uterine death in 61.8% of the cases followed by live birth in 38.2% of the cases. 27.3% of the cases required Neonatal intensive care unit admission and the mortality rate among the neonates was 14.5% in the present study.

Prolonged hospital stay was required in nearly three-fourths of the cases. Most common maternal complication observed was acute kidney injury in 14.5% of the cases followed by abnormal coagulation profile in 10.9% of the cases. Almost 93% of these women required blood and/or blood products (FFP, RDP) transfusion. No maternal deaths occurred during this study.

Mukherjee S et al <sup>13</sup> observed that the incidence of abruptio placenta in a two-year study period was 4.4%. Most of the cases even in their study were unbooked. The mean age in their study was 34.5 years, whereas most of the cases in the present study were in the age group of 20-25 years. The most common risk factor associated was anemia in both the studies. It was observed in 96% of their cases compared to 74.5% of cases in our study.

Bączkowska M et al <sup>14</sup> carried out a retrospective study among 2210 delivery cases. The incidence of abruptio placenta was found to be 0.7%. No maternal or neonatal deaths were observed in their study. However, in the present study, neonatal death rate was found to be 14.5% and no maternal deaths occurred. In their study, it was found that uterine malformations, placenta previa spectrum and oligohydramnios were the risk factors for

abruptio placenta. Anemia and rupture of the uterus were common maternal complications. Whereas, in the present study, acute kidney injury was the most common maternal complication and no cases of rupture uterus were observed.

Dafallah SE et al <sup>15</sup> studied 1028 cases of abruptio placenta during their study period. The incidence of abruptio placenta in their study was 6.5%. The prominent risk factors for abruptio placenta were stated to be pre-eclampsia, diabetes and polyhydramnios in their study. It was not found to be associated with the age of the mother and parity.

Maharjan S et al <sup>16</sup> studied 1514 deliveries and found that the incidence rate of abruptio placenta was 0.66%.

Tikkanen M et al <sup>17</sup> found an incidence of 0.42% for abruptio placenta. Smoking by father or mother were found to be independently associated with the abruptio placenta. Also, the alcohol use, placenta previa, pre-eclampsia and chorioamnionitis were found to be independently associated with the abruptio placenta. In their study, vaginal bleeding was seen in 70% of the cases, whereas, it was seen in a slightly more number of the cases (74.5%) in the present study. 51% of the women presented with pain abdomen compared to 25.5% in the present study. The rate of lower segment cesarean section was 91% compared to 45.5% in the present study. Neonatal death rate was 9.2% compared to 14.5% in the present study.

Boisramé T et al <sup>18</sup> noted some important risk factors for abruptio placenta like preterm premature rupture of membranes, gestational hypertension, pre-eclampsia and multiparity. Whereas, in our study the two most common associated risk factors were anemia and hypertension disorder. The rate of lower segment cesarean section was 90.3% compared to 45.5% in the present study. Even in their study the maternal mortality rate was zero.

### **Conclusion:**

Vaginal bleeding was the most common presenting symptom in women with abruptio placenta. On evaluation, anemia and hypertension were found to be the most common associated risk factors among these women. Acute kidney injury was the most common maternal complication. Though neonatal mortality rate is comparatively low among the cases of this study, intra-uterine death was the most common fetal outcome, especially amongst the pregnant women with no prior ANC. Thus, it is concluded that regular antenatal check-ups are very important for early identification and treatment of risk factors. With prompt diagnosis and timely intervention, it is possible to reduce the maternal and neonatal morbidity and mortality as evident from the present study.

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