

Research Article,

## Study of Maternal and Foetal Outcome in Abruption Placentae

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### Abstract:

**Introduction:** Abruption placentae (AP) is a significant obstetrical emergency and as per WHO 2009 maternal mortality rates reported due to AP worldwide was 2.1% and fetal perinatal mortality rate was 15%. AP cannot be prevented but maternal and perinatal morbidity and mortality due to AP can be reduced significantly by aggressive management.

**Methods:** The present prospective study was conducted to evaluate the outcome of treatment on the perinatal and maternal outcome in Abruption Placentae patients in a tertiary care hospital from January 2015 to January 2016 amongst 54 pregnant women diagnosed to have abruption placentae from 28 weeks of gestation and above and all babies delivered. Face to face interviews were conducted.

**Results:** Maximum no. of abruption placentae were unbooked - 37 (69%) and 85% of patients belonged to less than 30 years of age group. An abruption placenta was more common in multipara. Anaemia was seen in 21 patients (38%). Anaemia and PIH was seen in 12 patients (23%). 7 patients had fetal distress at the time of admission (13%). Regarding mode of delivery 50% of patients delivered vaginally by artificial rupture of membrane (ARM) and oxytocin augmentation and 50% underwent caesarean section.

**Conclusion:** It was concluded that abruption placentae is still a leading cause of maternal morbidity and mortality that can be reduced with modern management of abruption placentae, but timely diagnosis and intervention is necessary.

**Keywords:** Abruption placentae, maternal mortality, fetal distress, anaemia

### Interoduction:

William Hunter (1718-1783)<sup>1</sup> said that only two emergencies ever scared him one is flooding and the other is a convulsion in antepartum. Abruption placentae (AP) is a significant obstetrical emergency and defined as partial or complete separation of a normally implanted placenta from the uterine wall over 28weeks of gestational age and prior to delivery of the fetus. It decreases the foetal blood flow, oxygen, nutrition, causing long term and short term consequences among survivors<sup>2</sup>. WHO 2009 reported maternal mortality rates due to AP worldwide was 2.1% and the fetal perinatal mortality rate was 15% while the incidence of abruption placentae was 0.65%<sup>3</sup>. Pre-existing maternal anaemia causes more maternal death in developing countries<sup>2,3</sup>. In developed countries, approximately 10% of all preterm births and 10-20% of all perinatal death are caused by

placental abruption<sup>4</sup>.

Depending on presentation and severities at the time admission, AP has several maternal and perinatal adverse outcomes includes preterm birth, perinatal death, perinatal asphyxia, prolonged hospital stay, renal failure, and maternal death, knowing predictors of these adverse outcomes will help the clinician in better management of AP and to avoid these adverse outcomes. In India, maternal mortality is still very high and is 4.08/1000 live births. Perinatal mortality in India is 60/1000 births<sup>5</sup>. AP cannot be prevented but maternal and perinatal morbidity and mortality due to AP can be reduced significantly by aggressive management. Presently increasing use of ultrasonography for diagnosing abruption placentae, improved anaesthetic and obstetrical facilities, increasing use of blood and its products to correct anaemia and advanced neonatal care facilities all

collectively have played an important role in decreasing maternal as well as perinatal morbidity and mortality<sup>6</sup>. Abruptio occurs in 6.2 in every 1000 singleton pregnancies and 12.2 in every 1000 twins throughout the world. This study is to evaluate how far we have come and the effect of treatment on the perinatal and maternal outcomes.

**Aim:** To evaluate the outcome of treatment on the perinatal and maternal outcome in Abruptio Placentae patients.

#### **Methods:**

The present prospective study was carried out January 2015 to January 2016 at a tertiary care centre after Ethical clearance by institutional ethics committee.

**Inclusion criteria:** All pregnant women diagnosed to have abruptio placentae from 28 weeks of gestation and above and all babies delivered by mothers with abruptio placentae.

**Exclusion criteria:** All pregnant women over 28 weeks of gestation who were admitted with complaint of bleeding per vagina, and diagnosed as, Placenta previa, genital tract trauma, lesion of genital tract and abdominal trauma leading to abruptio placenta.

**Sample size:** 54 cases

#### **Clinical workup;**

All patients with the clinical diagnosis of abruptio placenta over 28 weeks gestation characterized by painful vaginal bleeding accompanied by hypertonus uterine contractions, a tender uterus with or without non-reassuring fetal heart rate/fetal distress, fetal demise, pallor, and rapid breathing with hypotension (Systolic BP<90mmhg) were recruited in the study. Face to face interviews were conducted. Apart from physical, clinical and socioeconomic history, obstetric ultrasound was incorporated into a few selected cases to exclude placenta previa and posterior placenta.

**Per speculum examination:** Bleeding and placenta were seen in per speculum examination to rule out placenta previa.

**Per vaginal examination:** Cervical dilatation, cervical consistency, cervical position, cervical effacement, presenting part and its station, pelvic wall, sacral spine examination done to check possibility of vaginal delivery.

**Laboratory workup:** standard laboratory investigations were conducted.

#### **Management:**

The initial management was done as per standard protocol which included fluid resuscitation, urgent ultrasound done to know extend of placental separation, and to know size of retro-placental clot. After this initial treatment, further treatment depends on following criteria, the bleeding had stopped, the bleeding was continued but not life threatening, the bleeding was continued and life threatening, the fetus was in distress irrespective of bleeding pattern, there was in-vitro fetal demise, the gestational age and whether the patient was in labour or not.

Based on the above factor treatment divided in to:

##### 1. Immediate delivery

1a) If patient gone in to labour, labour was accelerated by doing amniotomy followed by oxytocin drip. Patient was taken to CS if patient was not delivered within 6 hours. Labour was monitored with strict watch on FHS, progress of labour, maternal vitals, fundal height charting, input output charting, and bedside coagulation profile.

1b. if the patient was not in labor and pregnancy of 37 weeks or more, induction of labor was done by rupture of membrane with or without oxytocin.

2. Caesarean section was done if: Unfavorable cervix, other associated obstetrical conditions, ARM failed to control bleeding and there was appearance of fetal distress.

The Apgar score was determined by Dr. Virginia Apgar score method introduced in 1952; while gender and weight of the baby were measured accordingly. Also presence of resuscitation of the newborn was noted. Followed up period involved in checking the number of blood transfusion, FFP, serum creatinine, care received and any complications were noted; all patients were catheterized and 24 hours urine output measured. Mothers and their babies with abruptio placenta were followed up for a period of 7 days post delivery; and for those who were discharged home early before seven day.

#### **Results:**

This prospective study was carried out on 54 patients at tertiary care hospital and patients diagnosed as abruptio placentae in the ANC OPD and in the emergency, over a period from January- 2015 to January- 2016.

**Table 1: table showing booked v/s unbooked patients**

Booked / Unbooked	Booked patient	Unbooked patient	Total
No. of Patients	17	37	54
Percentage	31%	69%	100%

Table 1 shows that maximum no. of abruptio placentae patients were unbooked - 37 (69%) and booked were only 17 (31%). This is significant, because unbooked patients were double the booked patients.

**Table 2: Associated factor in abruption placentae:**

Associated Factor	Anaemia	PIH	PRO M	Anaemia+ PIH	Other
No. of Patient	21	19	2	12	4
Percentage	38%	35%	4%	23%	8%

Other- - Polyhydramnios, Trauma, Smoking.

Table 2 shows that anaemia was seen in 21 patients (38%) and pregnancy induced hypertension was seen in 19 patients (35%). Anaemia and PIH was seen in 12 patients (23%).

**Table 3: Mode of delivery in abruptio placentae**

Mode of Delivery	LSCS	Vaginal Delivery
No. of Patient	27	27
Percentage	50%	50%

Table 3 shows that the 27(50%) patients were delivered vaginally by artificial rupture of membrane (ARM) and oxytocin augmentation and 27(50%) underwent caesarean section.

**Table 4: Maternal outcome in abruptio placentae**

Maternal Outcome	No. of Patient	Percentage
Normal	12	22.22
Anaemia	39	72.22
PPH	16	29.62
Renal Failure	03	05.55

Death	04	07.40
Anaemia + PPH	14	25.92
Peripartum Hysterectomy	7	12.96
Couvelaire Uterus	10	18.51
DIC	11	20.37
ICU	14	26

Z test = 0.8; p>0.05; Not Significant

Table 4 shows that there were four maternal deaths in this study group (7.40%). Peripartum hysterectomy done in 7 patients (12.96%), out of these 7 patients 3 died. Anaemia was commonest complication in Abruptio Placentae (72.22%) followed by Postpartum haemorrhage (29.62%).

**Table 5: Perinatal outcome in abruptio placentae**

Perinatal Outcome	No. of Patients	Percentage
Normal	13	24.07
NICU	05	09.25
FSB	03	05.55
IUD	33	61.11
Premature	40	74.00

Z test = 0.9; p>0.05; Not Significant

Table 5 shows that prematurity was commonest outcome in abruptio placentae. Babies of 33 patients were IUD at the time of admission (61.11%).

### Discussion:

The present prospective study was carried out on 54 patients who diagnosed as abruptio placentae in the ANC OPD and in an emergency over one year period. Patient without a single ANC visit was labeled as unbooked and patients who had a one or more ANC checkups in hospital labeled as booked. In this study 69% of patients were unbooked as compared to 31% of patients who were booked. The importance of antenatal visits in the prevention of abruptio placentae has been studied by **Baskette T (1977)**<sup>7</sup> who reported that in their series 75% of cases were unbooked. **Rai L et al (1987)**<sup>8</sup> also reported that abruptio placentae were common in unbooked cases. The result of these

studies was similar to our study. In the present study 36 cases were less than 30 years old (85%). According to **Ananth CV et al**<sup>9</sup>, the most common age group affected by abruptio placentae is 20-30 years accounting to 92.5%. The majority cases of abruptio placentae (56%) fell in the age bracket 20-29 years. Only 4% were teenagers and 3% were above 40 years<sup>10</sup>. In the present study, it was observed that the incidence of abruptio placentae was more common in multipara than in nullipara. **Ananth et al (1996)**<sup>10</sup> reported that the risk of abruptio placentae increased with high parity and **Vaidya et al (1984)**<sup>11</sup> observed that only 14% of patients of abruptio placentae were primipara. The results of these studies were similar to our study. In the present study 40 patients (74%) had a period of gestation more than 32 weeks of gestation at the time of admission. Maximum number of patients had a period of gestation between 32 to 36 weeks.

Anaemia was seen in 21 cases (38%) of abruptio placentae. 19 patients (35%) of abruptio placentae had pregnancy-induced hypertension. **Rai et al (1987)**<sup>8</sup> found that, the incidence of hypertensive disorders of pregnancy in abruptio placentae 4.4%. PROM was found in 2 cases of abruptio placentae (4%). **Major and Colleagues (1985)**<sup>12</sup> found an increased incidence of abruptio placentae in cases of PROM. **Hibbard et al (1966)**<sup>13</sup> found that an increased incidence of abruptio placentae in women with a history of previous abortion. Trauma, Smoking, Polyhydramnios associated with 4 cases of abruptio placentae (8%). Anaemia and PIH most commonly associated with abruptio placentae. In the present study in 14 cases (26%) FHS was normal at the time of admission while evidence of fetal distress was noted in 7 cases (13%). In 33 cases (61%) FHS were absent at the time of admission. **Chakraborty et al (1993)**<sup>14</sup>, in their study evidence of fetal distress was present in 26.08% of patients with abruptio placentae. Of all the 54 patients of abruptio placentae, 27 cases (50%) delivered vaginally and 27 cases (50%) delivered by caesarean section. In patients with abruptio placentae early and timely caesarean section improves perinatal salvage<sup>15</sup>. In the present study commonest indication for caesarean section was haemorrhage in abruptio placentae 12(44%) cases followed by fetal distress 10(37%) cases. Previous C.S. with abruptio placentae was an indication for caesarean in 5 cases (18%). Malpresentation was cause for caesarean section in few cases of abruptio

One of the major aims of proper management of abruptio placentae is to minimize the maternal and perinatal mortality and morbidity.

**I. Post partum haemorrhage:** Post partum haemorrhage was 2nd most common complication of abruptio placentae. In a study of **Hurd et al (1983)**<sup>16</sup> 13.3% cases of APH had PPH. **Chakraborty et al (1993)**<sup>14</sup> reported an incidence of 16.25% PPH in cases of antepartum haemorrhage.

In the present study PPH was seen in 16 cases (29.26%) of abruptio placentae.

**ii. Couvellaire uterus:** In the present study couvellaire uterus was seen in 10 cases of abruptio placentae (18%). **Rai et al (1981)**<sup>8</sup> reported couvellaire uterus in 10.5% of antepartum haemorrhage patients in their study.

**iii. Peripartum hysterectomy:** A study done in South Africa postulated that 8% of emergency hysterectomies performed due to uncontrolled postpartum bleeding and atonic uterus was associated with placental abruption<sup>4</sup>. In the present study peripartum hysterectomy was done in 7 cases (12.96%).

**iv. Renal failure:** Acute renal failure in abruptio placentae results from renal ischemia caused by hypovolemia, reflex spasm of the renal vessels, or occlusion of the glomerular capillaries by microthrombi from DIC. Early-stage of renal ischemia causes reversible renal tubular necrosis. Later on, irreversible cortical necrosis occurs. Some studies postulated renal insufficiencies ranging between 2% to 6.25%<sup>15</sup>. In the present study renal failure were occurred in 3 cases (5.55%).

**v. ICU Admission:** Intensive care unit admission may be needed for invasive central monitoring or if operative complications occurs. Studies have shown the presence of a high rate of ICU admission between 1%- 4.5%<sup>15</sup>. In the present study, 14 cases were admitted in ICU (26%).

**vi. Anaemia:** Anaemia was the most common complication in abruptio placentae and seen in 39 patients (72.22%). Patients may need a transfusion of whole blood or blood-clotting products, such as platelets depending on the amount of blood lost and whether there is DIC. Studies have shown blood transfusion required in many cases ranging from 50% to 62%<sup>17</sup>. In the present study, 85% of patient required blood transfusion.

**vii. Maternal shock:** Maternal shock is usually present and may be marked and not proportionate to the amount of visible blood loss due to concealed hemorrhage, overdistension of the

uterus, and damage of the myometrium. It is easily suspected by checking blood pressure and pulse rate<sup>2</sup>. **De kock and Van der Walt** found that hypovolemia or hypovolemic shock, caused by a large reduction in blood volume and a decrease in red blood cells<sup>18</sup>. Other studies postulated shock due to AP ranging between 20% - 40%. In the present study maternal shock were occurred in 16 cases (29.62%).

**Viii. Prolonged hospital stay:** Prolonged hospital stay due to complications in abruption placentae causes high hospital bills and impose an extra financial burden to the family. Patients with abruption placentae with or without caesarean section are associated with prolonged post-delivery hospitalization. On average patients with AP have an additional hospital stay 3-10 days, and with sepsis and renal failure accounting for the longest stays and highest costs.

**Ix. Maternal death:** Maternal mortalities in abruption placentae are caused by uncontrolled haemorrhagic shock, DIC, postpartum hemorrhage or renal failure. Maternal mortality in different studies has been shown ranging from 5% to 32%<sup>19</sup>. In the present study maternal death was occurred in 4 cases (7.40%).

**X. Perinatal outcome:** One of the major aspects of this study was to study the perinatal outcome in abruption placentae and perinatal outcome may vary from one area to another depending on the availability of resources. Placental abruption accounts for a disproportionately high rate of premature birth, low birth weight, stillbirth rate and perinatal death.

**Xi. Normal-** In the present study babies of 13 cases had normal outcome and these babies was with mother on breastfeeding.

**Xii. Perinatal mortality:** Perinatal mortality in a developing country can be high as up to 60% but in developed countries, perinatal mortality is in the range of 9-12%<sup>20</sup>. High perinatal mortality is highly linked to preterm delivery. In abruption with term babies with normal birth weight have 25-fold higher mortality than with term babies without abruption<sup>4</sup>. The perinatal mortality in abruption placentae quoted by **Okonofua et al (1985)**<sup>21</sup> was 78.9%. In the present study perinatal mortality were seen in 36 cases (67%).

**Xiii. Preterm and NICU admission:** Prematurity and neonatal intensive care admission is reserved for a sick or premature newborn that need to receive the best treatment possible in a neonatal intensive care unit (NICU). Stay in NICU depends on baby's level of maturity, the extent of the

baby's problem, and the amount of care needed. Studies proved that in abruption placentae preterm deliveries occurred in 40-60% cases<sup>22</sup>. In the present study, preterm delivery occurred in 40 cases (74%) of abruption placentae, of these 5 babies were admitted in NICU (9.25%).

**Xiv. Low birth weight (<2500gm):** Low birth weight in abruption placentae was mostly associated with preterm birth. Different studies proved that in abruption placentae cases; 11% to 60.3% were low birth weight in comparison to 11.2% of controls.<sup>5</sup> In abruption placentae birth asphyxia, neonatal death, stillbirth was associated with the early separation of the placenta which cuts oxygen and nutrients to unborn fetus leading to low APGAR score or fetal deaths due to prolonged hypoxia and extreme prematurity. The study proved that in abruption when the placenta is completely separated, then fetal death is 99%.<sup>20</sup> Eskes found that when the placenta is partially separated there is an increased risk of fetal brain damage by 29%. Placental abruption is linked to sudden infant death syndrome due to long term intrauterine hypoxia caused by the failure of placentation in early pregnancy.<sup>23</sup>

### Conclusion:

From the present study, it can be concluded that abruption placentae is still leading cause of maternal morbidity and mortality. Most of the patients were unbooked and multiparous which it suggests their attitude towards pregnancy and not taking antenatal care. The commonest cause of abruption placentae is pregnancy-induced hypertension, which reflects poor antenatal care. Fetal heart sound was absent in 33 (61%) patients at the time of admission that means the patient either referred late or admitted late. So early referral or early admission was necessary, to decrease fetal death. Perinatal mortality was seen in 68% of cases of abruption placentae. Routine antenatal check-up, timely referral, timely caesarean section, liberal blood transfusion, correction of anaemia and wider acceptance of expectant line of management in a tertiary centre with availability of blood transfusion and good neonatal intensive care unit will help further to lower the perinatal and maternal morbidity and mortality.

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