

# Clinical study of maternal and fetal outcome associated with abruptio placentae

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## Abstract

**Background:** Abruptio placentae is premature separation of a normally situated placenta before the delivery of the foetus. Abruptio placentae is a nightmare in obstetric practice, associated with an increased risk of foetal and maternal morbidity and mortality. The objective of this study was to study maternal and fetal outcomes associated with abruptio placentae. **Material and Methods:** This study was a prospective, observational type, conducted in patients with antepartum haemorrhage, confirmed as abruptio placentae. **Results:** 78 patients were considered for present study. Most common age group in our study was of 26- 30 years (45 %), followed by < 25 years age group (33 %). Most patients had mode of delivery as LSCS (60 %), vaginal (33 %) and instrumental (6 %). In our study we noted that abruptio placenta was associated with other antenatal factors such as anaemia (87.18 %), hypertensive disorders (48.72%), previous LSCS (30.77 %), previous history of abortion (22.45 %) were more common. Post-partum common maternal complications were anaemia (78.21%), PPH (46.15%), hypovolemic shock (41.03 %), prolonged hospital stay (> 7 days) (29.49%), DIC (10.26 %). Present study noted 30.77 % IUFD/ still birth babies, 39.74 % babies were needed neonatal resuscitation. Total 19.67% babies needed NICU admission for more than 5 days. We noted early neonatal death in 8 babies. **Conclusion:** Resuscitation and termination is gold standard treatment for abruptio placenta. Higher maternal and neonatal, mortality and morbidity can be reduced by screening for hypertensive disorders of pregnancy, early diagnosis of abruption and timely management of shock by blood and blood product transfusion.

**Key Word:** Abruptio placentae, pre-eclampsia, Feto-maternal outcomes

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## INTRODUCTION

Antepartum haemorrhage (APH) as defined as bleeding from or in to the genital tract after 24 weeks till the birth of the baby<sup>1</sup>. Major causes of antepartum hemorrhage are placenta previa and abruptio placenta.

Abruptio placentae is premature separation of a normally situated placenta before the delivery of the foetus. It occurs due to rupture of spiral arteries in uterus and causes bleeding which leads to haematoma formation in

decidua basalis and separation of placenta from the uterine wall. Separated placenta is incapable of nutrient and gaseous exchange to fetus. Abruptio placenta can be concealed, revealed or mixed. Frank fresh bleeding can be seen in revealed type while in concealed type the blood collects behind the placenta and there is no evidence of vaginal bleed. When both concealed and revealed types are present in same patient, it is labelled as mixed. The incidence varies slightly in different populations over the world, estimated worldwide incidence is 0.4-1 % of all pregnancies<sup>2</sup>. Important risk factors of abruptio placentae include hypertensive disorders of pregnancy, multiparity, previous history of abruptio placentae, scarred uterus, hyperhomocysteinemia, premature rupture of membranes, IUGR, advanced maternal age, abdominal trauma, smoking and drug abuse etc<sup>3</sup>. Although several risk factors are known, the exact cause of placental abruption often remains unexplained. Abruptio placentae is a nightmare in obstetric practice, associated with an

increased risk of foetal and maternal morbidity and mortality<sup>4</sup>. Over 50 % of all perinatal deaths attributed to abruptio placentae pregnancies are accompanied by premature delivery<sup>5</sup>. In addition, abruptio placentae accounts for 20–25 % of antepartum haemorrhages, and it is also associated with an increased risk of disseminated intravascular coagulopathy, severe maternal shock, renal failure, postpartum haemorrhage and maternal death<sup>6,7</sup>. Furthermore, abruptio placentae has been associated with adverse foetal outcomes including low birth weight, preterm birth, intrauterine growth restriction, birth asphyxia, fetal distress, low Apgar score, transfer to neonatal intensive care unit, stillbirth<sup>8,9,10</sup>. The objective of this study was to study maternal and fetal outcomes associated with abruptio placentae.

### MATERIAL AND METHODS

This study was a prospective, observational type, conducted in department of obstetrics and gynaecology, NIMS Medical college and Hospital Jaipur for a study period from January 2018 to December 2018. All cases of antepartum haemorrhage, confirmed as abruption post delivery were included and other causes like placenta previa, other extraplacental causes were excluded in this study. Written informed consent obtained prior to participation. Necessary study permission was approved from local institutional ethical committee. As antepartum hemorrhage patients were admitted as emergencies, placental abruption was suspected depending on clinical

features of vaginal bleeding, uterine tenderness, hypertonic uterus and diagnosis was confirmed by retroplacental clots. After initial resuscitation with fluids, blood and blood products, mode of delivery was decided depending upon maternal and fetal risk factors. History (regarding age, obstetric details and maternal high-risk factors like PIH, GDM, polyhydramnios), complete obstetrical examination, laboratory reports, delivery details, neonate details, etc. of patients included in study were recorded in pre-designed proforma. Collected data was analysed.

### RESULTS

After applying inclusion and exclusion criteria 78 patients were considered for this study. Most common age group in our study was of 26- 30 years (45 %), followed by < 25 years age group (33 %). Mean maternal age in abruption patients was 25.58 ± 4.32 years. 53 % patients in our study were with parity 2 or 3, 40 % were primipara and only 8 % patients were multipara. Most common group was of gestational age 34-36 weeks (late preterm group) in 45 % patients, followed by gestational age 28-33 weeks (early preterm group) in 29 % patients and 26 % patients were > 37 weeks. Haemoglobin estimation on admission was suggestive of 58 % patients with 6-8 gm % and 36 % have haemoglobin < 5 gm%. Most patients had mode of delivery as LSCS (60 %), vaginal (33 %) and instrumental (6 %).

Characteristics	No. of Cases	Percentage
<b>Maternal Age</b>		
< 25 years.	26	33%
26-30 years	35	45%
31-35 years	15	19%
> 36 years.	2	3%
<b>Parity</b>		
Primipara	31	40%
Multipara (2 - 3)	41	53%
Grand multipara (> 3)	6	8%
<b>Gestational Age</b>		
28 - 33 wks	23	29%
34 - 36 wks	35	45%
> 37 wks	20	26%
<b>Hb. Levels</b>		
9 - 11 gm%	5	6%
6 - 8 gm%	45	58%
< 5 gm%	28	36%
<b>Mode of Delivery</b>		
Vaginal Delivery	26	33%
Instrumental Delivery	5	6%
C-section	47	60%

In our study we noted that abruptio plcenta was associated with other antenatal factors such as anaemia(87.18 %), hypertensive disorders ( 48.72%), previous LSCS (30.77 %), previous history of abortion (22.45 %) were more common.

Oligohydramnios (12.82%), hypothyroidism (8.97%), previous h/o abruptio placenta (7.69%), PROM (6.41%), polyhydramnios (6.41%), tobacco chewing, abdominal trauma were also noted in abruptio patients.

**Table 2: Showing associated risk factors**

Risk Factors	No	(%)
Anaemia	68	87.18
Hypertensive disorders	38	48.72
Previous LSCS	24	30.77
Previous h/o abortion	17	22.45
Oligohydramnios	10	12.82
Hypothyroidism	7	8.97
Previous h/o abruptio placenta	6	7.69
PROM	5	6.41
Polyhydramnios	5	6.41
Tobacco chewing	3	3.85
Trauma	2	2.56

Post-partum common maternal complications were anaemia (78.21%), PPH (46.15%), hypovolemic shock (41.03%), prolonged hospital stay (>7 days) (29.49%), DIC (10.26%). Other lesser complications were ARF (7.69%), blood transfusion complications (5.13%), maternal deaths (5.13%), puerperal sepsis (3.85%). Blood Transfusion was given to 80.77%.

**Table 3: Maternal complications**

S.No.	Complication	No. of Patients	Percentage
1	Blood Transfusion	63	80.77%
2	Anaemia	61	78.21%
3	PPH	36	46.15%
4	Hypovolemic Shock	32	41.03%
5	Prolonged hospital stay (> 7 days)	23	29.49%
6	DIC	8	10.26%
7	ARF	6	7.69%
8	Blood transfusion complications	4	5.13%
9	Maternal Deaths	4	5.13%
10	Puerperal Sepsis	3	3.85%

Present study noted 30.77% IUFD/ still birth babies, 39.74 % babies were needed neonatal resuscitation. Babies requiring neonatal resuscitation were admitted in NICU for observation and for any further management.

Birthweight	IUFD/ still birth	With other	Required resuscitation	NICU admission			Total
				Upto 48 hrs	3-5 days	More than 5 days	
Less than 1500	6 (7.69 %)	0	3 (3.84 %)	0	0	3	9 (11.54 %)
1500-2000	4 (5.12 %)	3 (3.84 %)	9 (11.54 %)	0	3	6	16 (20.51 %)
2000-2500	11 (14.10 %)	13 (16.67 %)	11 (14.10 %)	2	6	3	35 (44.87 %)
More than 2500	3 (3.84 %)	7 (8.97 %)	11 (10.25 %)	4	1	3	18 (23.08 %)
Total	24 (30.77 %)	23 (29.49 %)	31 (39.74 %)	6	10	15	78

Total 19.67% babies needed NICU admission for more than 5 days. Majority of them were birthweight less than 2000 gm, premature babies, often associated with IUGR, fetal distress etc. We noted early neonatal death in 8 babies. Total fetal and early neonatal mortality was 41.03%. No maternal mortality noted. 7 mothers required postpartum blood transfusion mostly due to antenatal anaemia. Foetal adverse outcome in observed during our study were perinatal mortality (41%), low birth weight (76%) and birth asphyxia (39%).

## DISCUSSION

During study period total 78 women with confirm diagnosis of abruptio placentae were included in present study. Placental abruptio or accidental haemorrhage is a dreaded obstetric emergency owing to its adverse maternal and foetal outcomes. AP is potentially life threatening to the mother and her foetus. Increase in abruptio incidence is noted with increase in maternal age. Coleman *et al*<sup>11</sup> reported a higher incidence of AP in 20 – 29 years mothers which is similar to our study. Increase incidence in relatively young mothers (21-30 years) in our study in contrast to advanced age was

mainly due to marriage at younger age. In various studies placental abruption was observed in women with higher parity cases being birth order gravida 3 or higher<sup>12</sup>. Vartika *et al*<sup>13</sup> also reported 87% mothers with placental abruption being multiparous in contrast to 13% being primi. In our study multiparous women were 60 %. Caesarean delivery in our study was commonest, in 60 %, this is in contrast with many other studies. Vartika *et al*<sup>13</sup> showed only 18% cases needed caesarean section, while other study showed incidence of caesarean section of only 7.94%<sup>7</sup>. Immediate delivery is needed in patients presenting late, in reversible shock, previous LSCS, fetal compromise, live baby, etc. as a tertiary center many of our patients were from earlier types, hence there is significant LSCS rate was noted in our study. Anaemia is also supposed to be a predisposing factor for AP as it alters foetoplacental angiogenesis in early pregnancy<sup>14</sup>. Among medical disorders the hypertensive disorders of pregnancy was commonest associated factor in 48.72% patients. Increased blood pressure in pregnancy is the most common risk factor linked to abruptio placentae but exact role of hypertensive disorders in abruption<sup>15</sup> remains inconclusive but studies have provided evidences that strongly links this association<sup>16,17</sup>. Other most common risk factor was previous history of cesarean section noted in 30.77 % patients. Similar findings were noted in other studies<sup>18,19</sup> and mainly attributed to damage of basal layer of endometrium which would adversely affect neo-angiogenesis in next pregnancy and increases risk of abruption. Similar pathology is also considered in patients with previous mis-carriages, undergoing surgical evacuation. Placental abruption carries a significant risk of various maternal complications mainly due to pre-existing hypertensive disorders of pregnancy followed by massive antepartum haemorrhage results in PPH (atonic, traumatic, coagulation failure), shock, anaemia requiring multiple transfusions. Severe amount of haemorrhage predisposes to DIC, ARF and maternal death. We noted 46.15 % patients with PPH. Other studies reported rate of postpartum haemorrhage in Abruptio placentae cases from 12% to 36.3%<sup>19,20</sup>. Foetal adverse outcome in observed during our study were perinatal mortality (41%), low birth weight (76%) and birth asphyxia (39%). The higher perinatal mortality rate was comparable with studies like Kramer MS *et al*<sup>21</sup>. However, it was contradictory to reported incidence in other studies which is 15%, other developed countries reported 9% to 12% rate<sup>22</sup>. High rate of IUFD/ still birth, NICU admission was mainly due to pre-term babies, larger degrees of placental separation, maternal shock, etc.

## CONCLUSION

Resuscitation and termination is gold standard treatment for abruptio placenta. Higher maternal and neonatal, mortality and morbidity can be reduced by screening for hypertensive disorders of pregnancy, early diagnosis of abruption and timely management of shock by blood and blood product transfusion.

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