

# Maternal and Fetal Outcome in Cases of Placental Abruption

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## Abstract

*Aim:* To study risk factors, clinical presentation, maternal complications and neonatal outcome in placental abruption.

*Materials and method:* An observational study was conducted from 1<sup>st</sup> April 2018 to 31<sup>st</sup> March 2019. All pregnant women who presented to labor room with ante partum hemorrhage in the last one year were taken into the study. Details of these patients were recorded at the time of presentation and immediate postpartum.

*Observations:* The incidence of placental abruption was 2%. Majority of the cases were primiparous (35.29 %), while common age group was between 26–30 years. The associated risk factors were hypertensive disorder of pregnancy (38.23%), anemia (11.76%), assisted reproduction techniques (14.7%), placental insufficiency (5.88%), preterm labour (5.88%), twin pregnancy (5.88%), and intrauterine transfusion (2.94%). The maternal complications included atonic PPH (44.11%), HELLP syndrome (17.64%), severe anemia, DIC, acute renal failure and peripartum hysterectomy (5.88%). Cesarean delivery was required in 55% cases. The live births were around 47% out of which 41% needed NICU admission at birth. Majority of cases were grade III abruption explaining the higher perinatal mortality (52.93%). There was no maternal mortality among the cases.

*Conclusion:* Placental abruption or accidental hemorrhage is associated with severe maternal and neonatal morbidity and mortality. This study thus, enables to identify the risk factors associated with

placental abruption and further, help in prompt and appropriate management of cases.

**Keywords:** Ante partum hemorrhage; Couvelaire uterus; HELLP; Placental abruption; postpartum hemorrhage.

## Introduction

Placental abruption is defined as premature separation of normally implanted placenta.<sup>1</sup> Ante partum hemorrhage is a condition characterized by bleeding from or into the genital tract after 20 weeks till the delivery of the baby, and placental abruption is recognized as an important cause of APH.<sup>2</sup>

The maternal effect of placental abruption depends primarily on its severity, whereas the fetal effects are determined by both severity and gestational age at which it occurs. Maternal morbidity includes transfusion related morbidity, cesarean delivery, hysterectomy. The major maternal complications of placental abruption are hemorrhagic shock, disseminated intravascular coagulation, acute renal failure, postpartum hemorrhage and maternal death.<sup>3,4</sup> The poor perinatal outcome is due to low birth weight, prematurity and still birth.<sup>5,6</sup>

In majority of cases, the cause of placental abruption is unknown; however, there are many risk factors associated with it as mentioned below in Table 1. Thus early risk assessment is an important

tool in management of placental abruption.

Bleeding in the first trimester increases the risk of abruption later in the pregnancy.<sup>10</sup> A systematic review reported an association between first trimester bleeding and increased risk of placental abruption (OR 1.6, 95% CI 1.1–2.6). When a sub chorionic hematoma is identified on ultrasound scan in the first trimester, the risk of subsequent placental abruption is increased (RR 5.6, 95% CI 2.8–11.1).<sup>11</sup>

Placental abruption is a clinical diagnosis there being no highly sensitive or reliable diagnostic tests available. Ultrasound has limited sensitivity in the identification of retro placental hemorrhage. The sensitivity, specificity, and positive and negative predictive values of ultrasonography for placental abruption was reported to be 24%, 96%, 88% and 53% respectively in a study.<sup>12</sup>

**Table 1:** Risk Factors for placental abruption

Risk factors	
Hypertensive disorders of pregnancy	Intrauterine infections
Advanced maternal age	Previous history of abruption. <sup>2,7,8</sup>
Multiparity	Low socioeconomic strata
Premature rupture of membranes (PROM)	Gestation with male fetus
Smoking	Higher altitudes
Polyhydramnios	Multiple pregnancy
Abdominal trauma	Drug addiction
Fetal growth restriction	Maternal thrombophilia
	Diabetes. <sup>3,9</sup>

APH arising from placental abruption and placenta previa is associated with an increased risk of postpartum hemorrhage.<sup>13,14</sup> Active versus expectant management of the third stage of labor reduces the risk of PPH (blood loss greater than 1000 ml) and need for blood transfusion.<sup>15</sup>

There has been increase in the incidence of caesarean section in the recent years done for placental abruption, for a better obstetric outcome which adds to the maternal morbidity. The adverse perinatal outcome includes the occurrence of associated complications in the mother as well as fetal and neonatal outcome in patients with placental abruption.

Thus, this study would enable us to identify the risk factors, associated maternal and neonatal complications and thus plan prompt management strategies to decrease morbidity and prevent maternal and perinatal mortality due to placental abruption.

## Aims and Objectives

To study risk factors, clinical presentation, maternal complications and neonatal outcome in placental abruption.

The objectives of the study are to determine the incidence of placental abruption in a tertiary care hospital, to evaluate risk factors for placental abruption, to study about clinical presentation, mode of delivery, and to study maternal, fetal and neonatal complications associated with placental abruption.

## Materials and methods

It is an observational study conducted from 1<sup>st</sup> April 2018 to 31<sup>st</sup> March 2019 (period of one year) at the department of Obstetrics and Gynecology, at a tertiary care hospital in Pune.

All pregnant women who presented to labor room with ante partum hemorrhage in the last one year were taken into the study. Details of these patients were recorded at the time of presentation and immediate postpartum. The details of ante partum, intra partum and postpartum course were recorded as given in Table 2. The cases were classified according to the grade of abruption based on the clinical presentation into grade I – IV.

**Table 2:** Details recorded

Maternal	Neonatal
Risk factors	Prematurity
Mode of delivery	APGAR score
Intensive care admissions	NICU admissions
Blood and blood product transfusions	Perinatal mortality (stillbirth, neonatal death)
Complications like ARF, DIC	

Other causes of ante partum hemorrhage like placenta previa, local or systemic causes of bleeding through vagina and patients presenting with bleeding before 20 weeks of pregnancy were excluded from the study.

## Results and Discussion

During the study period, there were 1676 deliveries out of which placental abruption was detected in 34 cases with incidence of around 2%.

**Table 3:** Distribution of cases according to the age.

Age	Number	%
Less than 20	1	2.94%
21 - 25	11	32.35%
26 - 30	15	44.11%
31 - 35	5	14.70%
36 - 40	2	5.88%

Table 3 shows that Most cases were between age group of 26–30 years. Mean age was 27–32 years.

**Table 4:** Distribution of cases according to parity.

Parity	Number	%
Primigravida	12	35.29%
Second gravid	10	29.41%
Third gravid	8	23.52%
Multigravida	4	11.76%

Primigravida constituted majority of cases (35.29%) followed by second gravid (29.41%) as per Table 4.

**Table 5:** Distribution of cases according to the gestational age at presentation.

Gestation	Number	%
Less than 26 weeks	5	14.70%
26 - 34 weeks	23	67.64%
More than 34 weeks	6	17.64%

As per Table 5, Most cases, which is, 23 (67.64%), were between 26 to 34 weeks.

**Table 6:** Distribution of cases according to the presenting complaints

Complaints	Number	%
Pain in abdomen	10	29.41%
Per vaginal bleeding	21	61.76%
Decrease or absent fetal movements	4	11.76%
Hypotension or hypovolemic shock	3	8.82%

21 out of 34 (61.76 %) cases presented to the labour room with per vaginal bleeding as described in Table 6. Other presentations were abdominal pain, absent or decreased movements and hypotension or hypovolemic shock.

**Table 7:** Correlation between Risk factors and Presentation

Risk Factors	Number	%
Hypertensive disorders of pregnancy	13	38.23%
Preterm labour	2	5.88%
Anemia	4	11.76%
Placental insufficiency	2	5.88%
Twin gestation	2	5.88%
History of intrauterine transfusion	1	2.94%
Unknown	10	29.41%
ART	5	14.70%

Table 7 shows that Hypertensive disorders of pregnancy (13/38.23%) formed the major risk factor followed by idiopathic cause (10/29.41%).

**Table 8:** Complications associated with placental abruption

Complications	Number	%
HELLP	6	17.64%
DIC	1	2.94%
Manual removal of placenta	1	2.94%
Preterm labour	2	5.88%
Atonic PPH	15	44.11%
Pulmonary oedema	1	2.94%
HUS	1	2.94%
Severe Anemia	7	20.58%
Peripartum hysterectomy	2	5.88%
Acute renal failure	1	2.94%

Most common maternal complication seen in this group was Atonic PPH (44.11%). HELLP was also seen as a complication in 17.64%. Atonic PPH was as a result of HELLP syndrome, coagulopathy, and couvelaire uterus as per Table 8.

Blood and blood products transfusion was required in 23 cases. This was mostly secondary to anemia, PPH and HELLP.

Hemolytic uremic syndrome and acute renal failure was encountered in one case each. Two patients also underwent peripartum hysterectomy in view of intractable hemorrhage.

**Table 9:** Distribution of cases according to mode of delivery.

Mode of delivery	Number	%	
Vaginal delivery	Preterm	15	44.11%
	Term	0	0
LSCS	Preterm	18	52.94%
	Term	1	2.94%

Table 9 shows that Cesarean delivery was required in about 55 % out of which almost 53 % were preterm cesarean delivery which adds to the morbidity. The most common indication was fetal distress.

**Table 10:** Distribution of cases according to the grade of abruption.

Grade	Number	%
0	2	5.88%
I	9	26.47%
II	5	14.70%
III	18	52.94%

In this study, most women admitted had grade III placental abruption (18/52.94%) as mentioned in

Table 10. As a result, there was increased maternal and neonatal morbidity.

**Table 11:** Distribution of cases according to type of abruption.

Type of abruption	Number	%
Revealed	4	11.76%
Concealed	9	26.47%
Mixed	21	61.76%

Table 11 reveals that Majority of cases was of mixed type of placental abruption (21/61.76%) as mentioned in Table 10. Although the common presentation was per vaginal bleeding, a large portion of cases had concealed hemorrhage.

**Table 12:** Intra partum findings associated with placental abruption.

Findings	Number	%
Couvellaire uterus	6	17.64%
Placental infarction	1	2.94%
Placental calcification	1	2.94%
Hydrops fetalis	1	2.94%

Couvellaire uterus was seen among 17.64% as noted in Table 12. These cases were complicated by postpartum hemorrhage and two of these underwent peripartum hysterectomy.

**Table 13:** Neonatal outcome in patients with placental abruption.

Outcome	Number	%	
Live birth	No NICU admission	2	5.88%
	NICU admission	14	41.17%
Intrauterine fetal death	13	38.23%	
Fresh stillbirth	5	14.70%	

Table 13 depicts that Neonatal outcome was poor in cases with Grade III abruption amounting to almost ~ 18 cases with perinatal mortality (52.93%).

Amongst the ones who survived, 2 had a good neonatal course and did not require intensive care admission. The other 14 neonates were admitted to the neonatal intensive care with low APGARs, preterm gestation and respiratory distress.

Low birth weight (less than 2.5 kg) was seen in 62.5%. There was a perinatal mortality of around 52.93%. Being a tertiary referral centre, most cases were of grade III abruption.

There was no maternal mortality among the cases. But maternal morbidity included intensive care admissions, transfusion with blood and blood products and, peripartum hysterectomy.

## Conclusion

Placental abruption or accidental hemorrhage is associated with severe maternal and neonatal morbidity and mortality because it usually presents in early gestation.

Placental abruption cannot be prevented completely but the risk factors attributed to it can be identified and modifiable approach can be taken to reduce its incidence.

Early risk assessment and measures to prevent further complications as well as prompt management of complications if they arise is an important component in management of placental abruption. This can be done by developing checklists for risk factors at early ANC visits.

A good history and clinical examination along with investigations like uterine artery pulsatility index (PI) aids in the early pick up of high risk cases. Preventive strategies like low dose aspirin is useful in patients with history of abruption in previous pregnancy. Appropriate management of high risk pregnancies like Hypertensive disorders of pregnancy, multiple pregnancy and, pregnancy with ART is helpful to reduce the incidence of placental abruption.

Radiological diagnosis and grading of the placental abruption on radiological findings needs further study for better and early diagnosis and management in order to reduce maternal and fetal complications.

Management of placental abruption requires an institution with a high risk pregnancy unit, good intensive care, blood bank with component availability and excellent neonatal care.

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