

# ABRUPTIO PLACENTAE: RISK FACTORS AND PERINATAL OUTCOME

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## ABSTRACT

**Objective:** To determine the risk factors and maternal and fetal outcome of placental abruption.

**Material and Methods:** This study was conducted in the department of Gynae/Obs PGMI LRH, Peshawar over a period of one year. Patients with abruption were confirmed by the presence of retroplacental clots or the depression of underlying placental tissues. All the details of the history, physical examination of women, investigations and particularly details of delivery, baby and postpartum period were recorded.

**Results:** During the study period of one year, 3291 deliveries were conducted and 151 cases of placental abruption were found, constituting the incidence ratio of 4.5%. Out of 151 cases, 80 patients (52.9%) were multigravida and 64 cases (42.3%) were multigravida. One hundred and eleven cases (73.5%) were more than 35 years of age. History of smoking and naswar was present in 4 cases (2.6%) and 7 cases (4.63%) respectively. Five cases (3.31%) had history of trauma. Twenty patients (13.2%) had history of chronic hypertension, 30 cases (19.86%) were diagnosed as preeclampsia and 5 cases (3.31%) had eclampsia. Anemia was present in 130 cases (86.07%). Twenty six cases (17.2%) had more than 1500 ml of clots. Five cases (3.3%) had premature rupture of membranes. Seven patients (4.63%) had multiple pregnancies. Out of 158 babies delivered, 78 (49.36%) were alive and 80 (50.63%) were stillbirth. Forty six (29.1%) of the babies were low birth weight babies and 12 babies (7.59%) were having congenital anomalies. Common maternal complications were DIC in 25 cases (16.5%) and post partum hemorrhage in 22 (14.57%) cases. Two patients (1.32%) died of placental abruption.

**Conclusion:** Abruption placentae is common in women with advancing age, high parity, hypertensive disorders of pregnancy and smoking. Abruption placentae is a major risk factor for maternal and foetal morbidity and mortality.

**Key words:** Abruption placentae, Risk factors, Maternal outcome, Foetal outcome, Smoking, PET, Pregnancy.

## INTRODUCTION

Abruptio placentae (AP) is the premature separation of normally cited placenta. The term abruption in Latin means breaking away from a mass, so it is a process by which placental attachment to the uterus is disrupted by haemorrhage. AP is a common obstetrical emergency which endangers the life of the mother and the baby as well.

The incidence of AP appears to be decreasing due to improved antenatal care, still it has been reported to be present in 0.3-2.2% of pregnancies in the western countries<sup>1-3</sup>. In Pakistan the incidence ratio up to 7 % has been reported<sup>4</sup>.

Depending on whether the bleeding is external or internal, the following different types of abruption placenta can occur.

- **Concealed Haemorrhage (20%):** In this variety bleeding is confined within the uterine cavity, separation may be complete and the complications are often severe. Coagulopathies, intrauterine deaths and perinatal deaths are far more likely.
- **External Haemorrhage (80%):** This is the major form of abruption placenta, blood comes out of cervix, placental separation is usually incomplete and complications are less severe.
- **Relatively Haemorrhage:** In this form the placental separation is usually incomplete and due to intact membranes the blood remains concealed. Occasionally the placental detachment involves only the rim of placenta. Here the most important complication is the possibility of premature labor.

The exact cause of AP is not known but the main precipitating and predisposing factors of AP are age, primary parity, high parity, smoking, essential hypertension, pregnancy induced hypertension, preterm prema-

ture rupture of membranes (PROM), trauma etc.<sup>5-8</sup>

Classically AP presents with vaginal bleeding, however it may also present with abdominal pain, uterine hypertonus, shock and DIC. Depending upon the severity of signs and symptoms, abruption placenta is divided into:

**Grade-I:** This is not recognized clinically before delivery and usually diagnosed by the presence of retroplacental clots.

**Grade-II:** Intermediate - the classical signs of placental abruption are present but fetus is still alive.

**Grade-III Severe:** The fetus is dead.

**III a** – without coagulopathy

**III b** – with coagulopathy

The major complications of AP are hypovolumic shock, consumptive coagulopathies, renal failure, uterine apoplexy, PPH, acute corpulmonale, transplacental haemorrhage, transfusion hepatitis, maternal mortality and fetal mortality.

This study was conducted to find out the risk factors and maternal and fetal outcome of placental abruption in our population.

## MATERIAL AND METHODS

This study was conducted in the department of obstetrics and gynaecology Unit "A" of Post Graduate Medical Institute at Lady Reading Hospital over a period of one year (1<sup>st</sup> Sep. 1994 to 31<sup>st</sup> August 1995).

All patients with confirmed placental abruption by the presence of retroplacental clots or the depression of underlying placental tissues were recruited in the study. All the details of history, investigations, examination, delivery, baby and postpartum period were made on a proforma.

**AGE DISTRIBUTION IN THE STUDY GROUP**

S. No.	Age (in years)	Frequency n=151	Percent- age
1.	17-25	9	5.96%
2.	26-35	31	20.50%
3.	36-40	67	44.37%
4.	> 40	44	29.10%

TABLE-1

As 95% patients were admitted through emergency, placental abruption were suspected in the patients when clinical features of haemorrhage, tenderness, hypertonic uterus were found and diagnosis was confirmed by the presence of retroplacental clots or the depression of the underlying placental tissue. At the time of admission complete general physical examination and

obstetrical examination were performed and full investigations including Hb%, blood grouping, peripheral smear, platelet count, coagulation profile, RFTs, LFTs and urine examination were performed.

Special attention was given to those patients in the antenatal clinic who were found at high risk for abruption (elderly, grand multiparous, hypertensive, history of previous abruption placenta, hydramnios etc). These patients were carefully booked and were advised more frequent visits and they were strictly told about the hospital delivery. Base line investigations were performed in the antenatal clinic and whenever needed, the patients were admitted in the antenatal ward and were managed accordingly. In the antenatal clinic they were specifically told about the signs and symp-

**RISK FACTORS OF ABRUPTIO PLACENTAE**

S. No	Risk factors	Frequency n=151	Percentage	
1.	Gravida	• Primigravida	7	4.63%
		• Multigravida	64	42.3%
		• Grand multigravida	80	52.98%
2.	Medical disorders	• Anaemia	130	86.09%
		• PET	30	19.86%
		• Chronic Hypertension	20	13.20%
		• Diabetes	15	9.93%
		• Eclampsia	5	3.31%
3.	Smoking	-----	4	2.64%
4.	Naswar	-----	7	4.635%
5.	Trauma	• Road Traffic Accidents	2	1.324%
		• Fall from the stairs	1	0.660%
		• Physical Assault	2	1.324%
6.	Hydramnios	-----	4	2.649%
7.	PROM*	-----	5	3.3%
8.	Socioeconomic status	• Monthly Income < Rs. 2000/-	80	52.900%
		• Monthly Income Rs. 2000-5000	51	34.100%
		• Monthly Income above Rs. 5000	20	13.245%

\* premature rupture of membrane

TABLE-2

**MODE OF DELIVERY**

S. No.	Mode of delivery	Frequency n=151	Percent- age
1.	Normal Vaginal Delivery	124	82.119%
2.	Caesarean Section	12	7.49%
3.	Breech (assisted)	7	4.63%
4.	Forceps	6	3.97%
5.	Vacuum extraction	2	1.32%

TABLE-3

toms of abruption and were advised immediate arrival to the hospital on the occurrence of this possible emergency.

In the emergency cases, detailed history and examination were performed. After providing with the emergency measures, mode of delivery was decided depending upon state of the mother and state of the fetus. Fetal well being was assessed with the help of ultrasonography and cardiotocography. Resuscitative measures were taken in patients with moderate or severe degree of haemorrhage.

Some patients needed caesarean section while a few ended up in hysterectomy. Babies were weighed, examined for any congenital abnormality and were referred to paediatrician for assessment routinely. After observing the patients postnatally for appropriate period, they were discharged and were counselled for family planning. Permanent contraception was advised to the patients who had completed their families. Those who desired future pregnancies, were advised

**AMOUNT OF RETROPLACENTAL CLOTS**

S. No.	Amount	No.	Percentage
1.	Less than 300 cc	15	9.93%
2.	> 300 - 700 cc	50	33.1%
3.	> 700 - 1500 cc	60	39.7%
4.	> 1500 cc	26	17.2%

TABLE-4

pre-pregnancy counselling and temporary contraception.

Follow up visits were also organized.

**RESULTS**

Total deliveries in the above mentioned time period were 3291, in the Gynae A Unit of Post Graduate Medial Institute, Lady Reading Hospital, Peshawar. Out of these 291 cases of APH were found and total number of patients who had abruption placenta was 151 (4.5%). Rest were due to placenta praevia and incidental causes.

The incidence of abruption was common in the poor people and lower middle class.

In this study group only 7 patients were primigravidae whereas the largest group was of grand multigravida composing 80 patients out of the total of 151. In this study 67 (44.37%) patients were in the age group of 36-40 years while 44 cases (29.1%) belonged to age group of more than 40 years.

A total of 11 patients gave history of addiction, out of which 4 were smokers and 7 patients (4.635%) used Naswar in the pregnancy.

Two Patients got abruption immediately after traffic accident.. One patient had fetal bradycardia and underwent caesarean section. Similarly two cases were found after physical assault 1 patient presented with history of fall from the stairs.

**INCIDENCE OF STILL BORN BABIES (TOTAL BABIES 158)**

S.No.	Babies	No.	Percentage
1.	Alive	78	49.36%
2.	Still born	80	50.632%
	I U D	21	26.25% (Out of still born)
	Fresh still births	59	73.75%

TABLE-5

**WEIGHTS OF THE BABIES**

S.No	Weight	No.	Percentage
1.	1.5 — 2.5 Kg.	46	29.11%
2.	> 2.5 — 3.5 Kg	92	58.22%
3.	> 3.5 — 4 Kg	10	6.32%
4.	> 4 Kg	10	6.32%

TABLE-6

Twenty (13.2%) patients gave history of chronic hypertension. Thirty patients were diagnosed as PET, only 5 patients had eclampsia, 3 were grand multigravidas and 2 were multigravida.

Fifteen cases of diabetes were found, out of this 14 were using insulin but one patient was still on oral hypoglycemic agents as she never had come to the antenatal clinic in this pregnancy.

The predominant medical disorder in the study group was anaemia. One hundred and thirty (86.09%) patients were found to be anaemic. Hb level of 10gm percent was taken as cut off point for anaemia.

Out of all, 4 patients were diagnosed as polyhydramnios, which were diagnosed by examination and by ultrasound. Five (3.3%) patients were preceded by preterm premature rupture of membrane.

Out of 151 patients 82.119% delivered spontaneously, 12 patients had cesarean section for various indications. Seven patients had breech presentations, they were delivered as assisted breech deliveries. Six patients were delivered by forceps while only 2 were delivered by vacuum extraction. Twelve patients were delivered by caesarian section(C/S). Three patients had C/S for fetal distress and another 3 under went C/S because of failure to progress. One patient was a combined case of abruption and praevia. One patient was in shock due to massive vaginal bleeding and only 1 patient had previous caesarian section for CPD. Two

patients, making an incidence of 16.66% developed chorioamionitis and ended up in C/S. Four patients after C/S had hysterectomy due to severe PPH. In 2 patients internal illiac ligation was done because of bad obstetrical history in one case and no male issue in another.

The amount of retroplacental clots was measured in the kidney trays. Most of the patients (60) had retroplacental clots of more than 700ml while 26 (17.2%) patients with abruptio placenta had more then 1500ml clots. In 15 patients the clots were less then 300ml while 50 patients had clots between 300-700ml.

Seven cases (4.63%) of multiple pregnancy were included in the study group. All twins delivered vaginally, 5 were binovular while 2 were uniovular.

In this study a total 158 babies were delivered, 78 alive and 80 dead. Out of still born babies 21 (26.25%) were intrauterine deaths while 73.75% babies were intra-natal deaths.

Total number of babies born were 158, male babies were 78 and females were 80. In this study 29.11% infants were low birth weight babies. Mostly they were due to pre maturity.

Ten babies were above 4 Kg. The known causes in this study for macrosomia were diabetes and grand multiparty.

The incidence of congenitally malformed babies were 7.59%, 6 delivered with anen-

**COMMON MATERNAL COMPLICATIONS**

S. No.	Maternal Complications	No.	Percentage
1.	D I C	25	16.55%
2.	P P H	22	14.569%
3.	Renal failure (mild)	3	1.98%
4.	Deaths	2	1.32%

TABLE-7

cephaly, 4 had hydrocephalus while 2 babies delivered with cleft lip.

Major maternal complications in this study were DIC (16.55%) followed by PPH (14.56%). Only 3 cases (1.98%) with mild renal failure were noted and 2 deaths in the year 94 - 95 in Gynae A unit occurred due to abruptio placentae. They were received in shock with severe abruption and in spite of resuscitation and emergency treatment they did not recover and expired due to severe blood loss and cardiac failure respectively.

## DISCUSSION

Placental abruption is still a gravest obstetrical emergency despite a significant reduction in maternal mortality ratio. The incidence rate of AP is much higher than studies from developed countries<sup>1-3</sup>. However this study supports the figures from other local studies where incidence rate of 5.2 to 7 % have been reported<sup>9-11</sup>. This great variation in the incidence rate may be due to difference in the definition and accuracy of diagnosis<sup>12</sup>. Other contributing factors affecting higher incidence rate in our population may be low socioeconomic conditions, grand multiparity, ignorance about antenatal care and poor diagnosis and poor control of predisposing and precipitating factors of AP. Significantly increased incidence rate of abruption was found in low socioeconomic class and grand multiparity with advancing age. This observation is also evident from other studies<sup>13,14</sup>.

This study was conducted at a tertiary level hospital where complicated cases from a large number of hospitals, private clinics and other health care centers, located far away from the province are referred. The frequency of medical disorders associated with AP was significantly high in our study. Majority of our patients were anemic. However it is difficult to determine whether it was the cause or sequele of AP.

A significant number of patients with AP had PET and chronic hypertension. Evidence on the link between abruption and hypertensive disorders remains inconclusive although some studies have confirmed the association between AP and hypertension<sup>7,8</sup>. It has been shown that chronically hypertensive patients had a three fold increased risk of abruption compared to normotensive women<sup>15</sup>. Other associated medical disorder in our study was diabetes mellitus. Diabetes can cause and aggravate the placental dysfunction thus causing placental abruption<sup>16</sup>.

The incidence of smoking in association with AP is low in our study as compared to other studies<sup>2,6,7,17-19</sup>. This may be due to the fact that smoking is significantly less frequent in our female population. Other risk factors predisposing to AP were history of trauma and premature rupture of membranes.

Delivery outcome of this study concludes that the caesarian section (C-section) rate is not very high ( 7.94%). Most of the patients had normal vaginal delivery. The reason for this was that most of the babies were already dead and in many cases patients were in advanced labour. Women with first birth C-section have significantly increased risk of placental abruption at second birth<sup>20</sup>.

This study showed a very drastic fetal outcome as (50.632%) i.e. 80/158 babies were delivered dead. It means that abruptio placenta is a major risk factor for fetal and perinatal mortality and morbidity. The incidence of low birth weight babies was 29.11%. Majority were due to prematurity followed by toxemia's of pregnancy. It has been found that placental abruption is associated with I.U.G.R and foetal malformations<sup>19</sup>. Ten cases of fetal macrosomia (> 4 Kg) were also noted and the incidence was obviously raised in the diabetic patient and old gravidas.

Twelve (7.59%) babies were found to be congenitally abnormal and predominant anomalies were that of the CNS. This incidence is about thrice that of the population as a whole.

Perinatal mortality correlates with the severity of the abruptio placenta, gestational age of the baby, birth weight, amount of concealed haemorrhage and maternal hypertension. Even the live new born is at risk for neonatal anaemia DIC, respiratory distress syndrome hyperbilirubinemia, patent ductus arteriosus and CNS depression from anaemia<sup>6,8,16,21</sup>. Neonatal anaemia may be due to fetal to maternal transfusion that occurs in upto 2/3 of abruptio placentae cases. Similarly cases of neonatal DIC in the face of maternal DIC have been reported. In addition to abruptio placentae, the accompanying risk factors are also responsible for the poor fetal outcome. As regards the maternal outcome in cases of abruptio placentae, we found that PPH and DIC were the major maternal complications followed by renal failure and maternal mortality. The causes of PPH were either relaxed uterus or DIC.

Obstetric conditions classically associated with DIC include abruptio placenta amniotic fluid embolism septic abortion and intrauterine infection, retained dead fetus, H. mole, placenta accereta. PET, eclampsia and prolonged shock from any cause. In a woman already shocked by an abruption, coagulopathy adds considerably to the dangers to the mother and to the problem of management, successful treatment requires the resources of a competent haematology laboratory and blood transfusion service.

Renal failure which occurred in this study (1.98%) was quite low compared to 14% of Nizam et al<sup>4</sup>. All these cases were not very severe and as advised by expert nephrologist only conservative management resulted in complete recovery. These pa-

tients did not undergo permanent renal failure.

In this study two cases of maternal mortality were noted i.e. 1.32% which is slightly greater than Ara et al<sup>9</sup> (0.4%). The two patients who died due to abruptio placenta came from far away places they remained in prolonged shock and did not recover in spite of intensive management.

## CONCLUSION

Abruptio placentae is common in women with advancing age, high parity, hypertensive disorders of pregnancy and smoking. As abruptio placentae is a major risk factor for maternal and foetal morbidity and mortality, efforts should be taken to reduce the risk factors for AP. All women at risk should be strictly followed up and prompt action should be taken to reduce perinatal mortality and morbidity. Antenatal services should be provided to all women specially to poor socioeconomic class.

## REFERENCES

1. Sheiner E, Shoham-Vardi I, Hallak M, et al. Placental abruption in term pregnancies: clinical significance and obstetric risk factors. *J Matern Fetal Neonatal Med* 2003;13(1): 45-9.
2. Ananth CV, Smulian JC, Vintzileos AM. Incidence of placental abruption in relation to cigarette smoking and hypertensive disorders during pregnancy: a meta-analysis of observational studies. *Obstet Gynecol* 1999;93(4):622-8.
3. Misra DP, Ananth CV. Risk factor profiles of placental abruption in first and second pregnancies: heterogeneous etiologies. *J Clin Epidemiol.* 1999;52(5):453-61.
4. Nizam K, Memon N, Laghari MS. Renal failure - A dreadful complication seen in patients with Abruptio Placentae. *Pak Armed Forces Med J*, 2004;54(1):84-7

5. Ananth CV, Wilcox AJ, Savitz DA, et al. Effect of maternal age and parity on the risk of uteroplacental bleeding disorders in pregnancy. *Obstet Gynecol* 1996; 88: 511-516
6. Kyrklund-Blomberg NB, Gennser G, Cnattingius S. Placental abruption and perinatal death. *Paediatr Perinat Epidemiol*. 2001;15(3):290-7.
7. Williams MA, Mittendorf R, Monson RR. Chronic hypertension, cigarette smoking, and abruptio placentae. *Epidemiology*. 1991;2(6):450-3.
8. Abu-Heija A, al-Chalabi H, el-Iloubani N. Abruptio placentae: risk factors and perinatal outcome. *J Obstet Gynaecol Res*. 1998;24(2):141-4.
9. Ara J, Jamal M, Sultana N. Perinatal outcome in Pregnancy induced hypertensive mothers. *Pak Armed Forces Med J*, 2004;54(1):76-8.
10. Begum S. Age and parity related problems affecting out come of labor in grand multiparas. *Pak J Med Res*, 2003;42(4):179-84.
11. Naqvi MM. Outcome of twin pregnancy in booked versus unbooked cases. *J Coll Physicians Surg Pak* 2003;13(9): 498-500.
12. Drife J. Bleeding in pregnancy. Chap 14, *In: Chamberlain G, Steer p (Editors). Turnbull's Obstetrics*, 2001, 3<sup>rd</sup> Edition, Churchill Livingstone, London.
13. Kramer MS, Usher RH, Pollock R et al. Etiologic detrimnants of abruptio placentae. *Obstet Gynecol* 1997;89:221-6
14. Rasmussen S, Irgen LM, Bergsjø P et al. The occurrence of placental abruption in Norway 1967-91. *Acta Obstet Gynecol Scand* 1996;75:222-8
15. Ananth CV, Soritz PA, Williams MA. Placental abruption and its association with hypertension and prolonged rupture of membranes: a methodologic review and metanalysis. *Obstet Gynecol* 1996;88: 309-18
16. Rasmussen S, Irgens LM, Dalaker K. A history of placental dysfunction and risk of placental abruption. *Paediatr Perinat Epidemiol*. 1999;13(1):9-21.
17. Voigt LF, Hollenbach KA, Krohn MA, Daling JR, Hickok DE. The relationship of abruptio placentae with maternal smoking and small for gestational age infants. *Obstet Gynecol*. 1990;75(5):771-4.
18. Mortensen JT, Thulstrup AM, Larsen H, Møller M, Sørensen HT. Smoking, sex of the offspring, and risk of placental abruption, placenta previa, and preeclampsia: a population-based cohort study. *Acta Obstet Gynecol Scand*. 2001;80(10):894-8.
19. Nisell H, Palm K, Wolff K. Prediction of maternal and fetal complications in preeclampsia. *Acta Obstet Gynecol Scand*. 2000;79(1):19-23.
20. Lydon-Rochelle M, Holt VL, Easterling TR, Martin DP First-birth cesarean and placental abruption or previa at second birth(1). *Obstet Gynecol*. 2001;97 (5 Pt 1):765-9
21. Saadia Z, Khan A Z, Nahid F. Fetal Outcome varies with different grades of Placental Abruption. *Ann King Edward Med Coll* 2003;9(1):40-2.

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