

Association of Placental Abruption with Hypertensive Disorders of Pregnancy and Its Fetomaternal Outcomes

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Submitted for Publication: 03-02-2023
Accepted for Publication 29-03-2023

How to Cite: Yasmin N, Faisal S, Khanum Z, Parveen A. Association of Placental Abruption with Hypertensive Disorders of Pregnancy and Its Fetomaternal Outcomes. APMC 2023;17(1):40-44. DOI: 10.29054/APMC/2023.152

ABSTRACT

Background: There is an increase in incidence of placental abruption with hypertensive disorders of pregnancy with associated maternal and fetal mortality and morbidity. **Objective:** To determine the association of abruption placentae with hypertensive disorders of pregnancy and its fetomaternal outcomes. **Study Design:** Descriptive study. **Settings:** Obstetrics & Gynecology Department, Unit-II, Sir Ganga Ram Hospital, Lahore Pakistan. **Duration:** December 2021 to December 2022. **Methods:** During these one years study a total of eighty pregnant women with diagnosis of abruption placen and belonged to poor socio economics class. It is common in the women of age group 30-35 years. Maximum of the patient has Gravidity above three (62.5%).50 (62.5%) of cases were associated with severe preeclampsia. Still birth were recorded in 46 (57.5%) of cases while live birth pregnancy occurred in 34 (42.5%) of cases. Most of the patients presented at gestational age 33-36 weeks. Hypertensive disordered was the commonest risk factor detected in 55(68.75%) of cases. Post-partum hemorrhage occurred in 15 (18.75%) requiring B lynch suture and internal artery ligation and hysterectomy in 2(2.5%), 4(5%) and 1 (1.25%) respectively. out of eighty patients mode of delivery was caesarean section in 30 (37.5%) of patents while 50 (62.5%) delivered vaginally. DIC, ARF, Pulmonary edema & ICU admission occurred in 10 (12.5%) 6 (7.5%) and 1 (1.25%) 8(10%) of cases respectively. 2 (2.5%) maternal death occur due to DIC and Pulmonary edema associated with abruption were the causes of death. The average stays of the patients with abruptio ranged between 3-10 days. **Results:** Pregnancy induced hypertension increases the risk of placental abruption. Abruptio placentae is associated with perinatal morbidity and mortality as well as maternal morbidity. Good antenatal care reduces the adverse outcomes associated with abruptio placentae. **Conclusion:** Pregnancy induced hypertension increases the risk of placental abruption. Abruptio placentae is associated with perinatal morbidity and mortality as well as maternal morbidity. Good antenatal care reduces the adverse outcomes associated with abruptio placentae.

Keywords: Abruptio placenta, Pregnancy induced hypertension, Perinatal mortality, Fetal and maternal morbidity.

INTRODUCTION

Placental abruptio is a relatively rare but serious complication of pregnancy and affects the wellbeing of both mother and fetus. It is one of the causes of bleeding during the second half of pregnancy. It is also called abruptio placentae.^{1,2} Its incidence is around 0.4 to 1%.^{3,4} It pre is premature separation of the placenta from the uterine wall and is associated with serious maternal and perinatal morbidity and mortality.⁵ Its exact etiology is not known. There are number of factors which are associated with its occurrence. The factors which increase the risk of placental abruption are: maternal age above 35

years, teenage pregnancy previous caesarean section poly hydramnios, and preeclampsia, chronic hypertension.⁶⁻⁹ Clinical features of abruption are, pain in abdomen antepartum hemorrhage labour pain and fetal distress.¹⁰

Pregnancy induced hypertension, sudden uterine decompression, premature rupture of membrane, cigarette smoking, short umbilical card and trauma to the abdomen.⁴ However hypertensive disorder of pregnancy is associated with 2.5 to 17.9%. risk of placental abruptio.⁵ Further more risk of fetal growth retardation and abruptio placentae is increased in patients with pregnancy induced hypertension.⁶ Abruptio placentae

complicates around one percent of pregnancies.^{6,7,8} Two third of these cases are classified as severe due to associated maternal, fetal and neonatal morbidity.⁹ An Abruption placenta is one of the leading causes of antepartum hemorrhage and is associated with serious obstetrics complications with associated risk of perinatal and maternal morbidity and mortality.¹⁰ Fifty percent of perinatal mortalities occur due to abruption placenta and Abruption placenta is associated with disseminated intravascular coagulation, increase need for blood or blood components renal failure, postpartum hemorrhage, obstetrical hysterectomy, shock and maternal death.¹¹

Abruption placenta is associated with low birth weight, prematurity, intrauterine growth restriction, birth asphyxia, fetal distress, low Apgar score, congenital anomalies prolonged hospital stay need for new born intensive care and perinatal mortality all are associated with abruption placenta. Perinatal asphyxia is major risk factors for perinatal death and brain damage.¹² The Management of abruption placenta depends on clinical status of patient, amount of bleed, fetal gestational age, grade of abruption placenta, associated complications and whether patient is in labor or not. It requires immediate and intense treatment. Women should receive intravenous fluid along with continuous fetomaternal monitoring.¹³ Immediate delivery is the option in the management of most cases of abruption placenta and it is either by vaginal route or caesarean section. The aim of this study was to correlate the association of pregnancy induced hypertension with abruption placenta and its effect on fetomaternal well beings and outcomes.

METHODS

This was descriptive study conducted at Gynecology Unit-II of Sir Ganga Ram Hospital, Lahore Pakistan. The duration of the study was one year from December 2021 to December 2022.

The sample size of the study was calculated by using WHO sample size calculator taking 95% anticipated population prevalence of abruption in PIH patient was 0.37%. The sample size turned out to be 80. The patient with PIH non probability consecutive sampling was used for the study.

Gestational age 24 weeks onwards and singleton pregnancy. Blood pressure 140/90mmHg were included in the study.

Gestational age less than 24 weeks, multiple gestation and women with medical disorders like diabetes, renal disease and cardiac disease were excluded from the study.

Data of patients with abruption placenta was collected from the labor ward, delivery register, operating room,

records and the patient case notes obtained from the main records department. Details of patients with abruption placenta like, age, parity and maternal high-risk factors were noted. All other causes of APH like placenta previa and other extra placental causes of antepartum were ruled out. Patients detailed including high risk factors like PIH, PROM, Previous history of abruption noted. General physical examination and abdominal and pelvic examination (once placenta previa had been ruled out) carried out:- Most of the patients who were presented in emergencies and placental where abruption was suspected on clinical ground like history of vaginal bleeding, uterine tenderness, and diagnosis was confirmed by retro placental clot after delivery were included. Relevant investigations such as complete blood examination, clotting profile and another relevant lab. Tests and imaging were carried out-Fetal wellbeing was assessed by cardiotocography. After initial resuscitation mode of delivery was planned depending upon fetomaternal conditions. Maternal complications like PPH, preeclampsia, DIC, ARF, Shock and pulmonary edema were assessed. Fetal outcome in the term of perinatal mortality like still birth and neonatal death, prematurity and admission to the neonatal care unit were recorded. All information was noted in a specially design Performa. All data were processed using SPSS system.

RESULTS

Total number of deliveries from December 2021 to December 2022 were 39000. During this period 80 cases of abruption placenta were included. Incidence of abruption placenta was 0.37%. During this period 70 (87.5) patients were un-booked and not taking antenatal care. The mean age of the patient was 30 years while majority of the patients were in the 31-35 years age group. Next most common age ranged between 20-25 years. While only two (2.5%) patients were less than 20 years old. 50 (62.5%) women had parity of three and above. Sixty (75%) of the patients presented before term, whereas 20 (25%) presented at term. Abruption was most common among women who had hypertensive disorders of pregnancy. Among eighty patients fifty (62.5) had severe preeclampsia, five (6.25%) had chronic hypertension. While in 20(25%) of patients were taking antihypertensive therapy irregularly while in 60% (75%) there is no history of intake of antihypertensive drugs.

While 25 (31.32%) of the patients were normotensive. Five (6.25%) patients had PROM and there was previous history of abruption placenta in 4 (5%) of patients. 2 (2.5%) patients had polyhydramnios along with diabetes. While in 14 (17.5%) of patients there was no risk identified. Out of eighty women 18 (22.5) were in established labor at their presentation vaginal bleeding abdominal pain were the major presenting complaints in majority of the cases 70 (87.5%) and 50 (62.5%) respectively. 30 (37.5%) patients

had emergency caesarean section the indication of caesarean section was abruption placenta with live fetus. 50(62.5%) patients had vaginal delivery while abruption placenta was diagnosed after delivery or per-operatively in asymptomatic patients in 10 (12.5%) of cases. Regarding fetal outcome out of eighty patients of abruption 34 (42.5%) had live birth while still birth occurred in 46 (57.5%) of cases. Among live birth 10 (29.4%) had early neonatal death. Causes of death were prematurity and birth asphyxia. Regarding maternal complications 15 (18.75%) of patients had postpartum hemorrhage followed by Application of Blynch suture internal iliac artery ligation and hysterectomy in 2 (2.5%) 4 (5%) and 1 (1.25%) of cases respectively. Coagulation disorder like disseminate intravascular coagulation (DIC) reported in 10 (12.5%) of cases. Acute renal failure pulmonary edema **غرف** occurred in 4 (5%), 6 (7.5%) 1 (1.25%) of cases respectively. Two maternal deaths reported in our study cause of death was DIC & Pulmonary edema. 8 (10%) needed ICU admission. Average hospital stay ranged between 3-10 days.

Table 1: Association of previous Antenatal care abruption placenta (n=80)

Booked		Un-booked	
No	Percentage	Number	Percentage
10	12.5%	70	87.5%

Table 2: Association of age with Abruption (n=80)

Age	N	Percentage %
<20	2	2.5%
20-25	20	25%
26-30	8	10%
31-35	50	62.5%

Table 3: Association of gravidity with abruption (n=80)

Gravidity	N	Percentage
Primigravida	10	12.5%
Gravid a 2	20	25%
Gravid a >3	50	62.5%

Table 4: Associated risk factors in abruption (n=80)

Risk Factors	N	Percentage
Severe preeclampsia	50	62.5%
Chronic hypertension	5	6.35%
PROM	5	6.25%
Previous abruption	4	5%
Polyhydramnios	2	2.5%
No risk factors	14	17.5%

Table 5: Number of patients taking antihypertensive therapy (n=80)

	N	Percentage
Patients with irregular intake of antihypertensive therapy	20	25%
Patients without anti-hypertensive therapy	60	75%

Table 6: Common presentation in abruption placenta

Presentation	N	Percentage
Preterm Labor	18	22.5%
Vaginal bleeding	70	87.5%
Abdominal pain	50	62.5%

Table 7: Mode of delivery in abruption placenta (n=80)

Mode of delivery	N	Percentage
Caesarean section	30	37.5%
Vaginal delivery	50	62.5%

Table 8: Fetal out come in abruption placenta (n=80)

Fetal outcome	N	Percentage
Still birth	46	57.5%
Live birth	34	42.5%

Table 9: Neonatal outcomes in abruption placenta

Abruption placenta	N	Percentage
Total live birth	34	42.5%
Early neonatal death	10	29.41%

Table 10: Maternal complication in abruption placenta (n=80)

Maternal complications	N	Percentage
Postpartum hemorrhage (PPH)	5	18.75%
B.lynch suture	2	2.5%
Internal artery ligation	4	5%
Hysterectomy	1	1.25%
DIC	10	12.5%
ARF	6	7.5%
Pulmonary oedema	1	1.25%
ICU admission	8	10.5%
Maternal death	2	2.5%

DISCUSSION

Abruption placentae is associated with poor fetomaternal outcome. The incidence of abruption placentae in our study was 0.37% which is consistent with other Studies,¹⁴ 70 (87.5%) of the patients in our study were un-booked and not taking any antenatal care. This was consistent with the study carried out by Attah RA *et al*¹⁵ Majority of patients in our study was above 30 years old and having gravidity above three. Advanced maternal age and high parity are associated with increased risk factor of placental abruption.¹⁶ This was similar to the study carried out by Takai IU *et al*.¹⁷ Most of the patients (50%) in our study present at gestational age between 33-36 weeks, this is consistent with the study carried out by Bibis *et al*,¹⁸ where most of the cases of abruption were reported at 32-36 weeks of pregnancy. Regarding associated risk factors of abruption placentae there is strong association of pregnancy induced hypertension and abruption.¹⁹ 62.5% (50 patients) in our study had severe preeclampsia while 6.25% (5 patients) had chronic hypertension. This is consistent with the study carried out by Sengodan SS *et al*²⁰ which showed 67% of patients had preeclampsia and 7% of patients had chronic hypertension.

Other predisposing and precipitating factors of abruption are premature rupture of membrane, gestational, diabetes, poly hydramnios, and previous history of abruption placentae but in some patients, there is no associated risk factors and primary cause of abruption still not known. In our study five (6.25%) patient present with PROM. There is history of previous abruption in 4(5%) of patients. Our study is consistent with the studies carried out by Akadri AA *et al*¹⁶ which showed similar incidence (5.8%) associated with past history of abruption placentae. In our study 4(5%) of women had poly hydramnios, similarly in studies carried out by Yang Li *et al*¹⁰ which showed 12.2% to 16% association with polyhydramnios respectively which is higher than our study. Similarly, in 5 (6.25%) of cases there is history of premature rupture of membrane, which is lower than the study carried out by Yang Li *et al*.¹⁰

Severe preeclampsia and chronic hypertension were highest risk factors in our study 55(68.75%) cases, followed by PROM, poly hydramnios and previous history of abruption which present in 14(17.5%) cases while in 12 (15%) of cases no risk was identified. The signs and symptoms of abruption placenta depends on the amount of bleeding and degree of placental separation. The most common presenting feature of placental abruption is vaginal bleeding, uterine and abdominal pain and tenderness, uterine contraction, preterm labor, fetal demise, fetal distress and hemodynamic instability because of concealed and revealed hemorrhage.²¹ In our study 70 (87.5%) of patients presented with vaginal

bleeding while abdominal pain and tonically contracted uterus was noticed in 50 (62.5%) of cases. 18 (22.5%) patients presented in preterm labor. Our study was consistent with the study carried out by Mukherjee S *et al*¹³ which showed vaginal bleeding in 90.6% of cases abdominal pain in 71.7% of cases. Regarding mode of delivery most of the patients with pregnancies complicated by placental abruption with live fetus are best managed by emergency caesarean section. While some other studies showed a large proportion of patients were delivered vaginally.²¹ The reason for this difference in mode of delivery may be due to status of fetus at the time of presentation as patients with live fetus with abruption are delivered by caesarean section Akadri AA *et al*.¹⁶

There is high association of perinatal mortality with abruption. Abruption placentae is associated with 12% off all perinatal deaths. In our study still birth occurred in 46 (57.5%) of cases while 34 (42.5%) delivered alive. Out of these patients early neonatal deaths recorded in 10 (12.5%) of cases. Our study is consistent with the study carried out by Akadri AA *et al*¹⁶ which showed 59% perinatal deaths. This is also consistent with other study Irinyenikan TA *et al*.²¹ There is association of maternal morbidity and mortality in cases of abruption placentae. About 50 (62.2%) patients in our study needed blood transfusion. Similar findings were also noted in other studies carried out Attah RA¹⁵ Because of excessive blood loss there is shocks blood clotting problems, kidney failure, need of hysterectomy in case of uncontrollable hemorrhage and maternal deaths in association with abruption placentae 26 in our study post-partum hemorrhage noted in 15 (18.75%) cases which needed application of B Lynch suture, internal artery ligation, hysterectomy in 2 (2.5%) 4 (5%), 1 (1.25%) of cases respectively. Our study is consistent with the study carried out by Sengodan SS *et al*²⁰ in which postpartum hemorrhage occurred in 19.6% of cases. While study carried out by Mukerjee S *et al*,¹³ recorded application of Blynch Sutures internal artery ligation and obstetrical hysterectomy in 0.9%, 1.3%, 2.2% of cases respectively. In our study disseminated intravascular coagulation (DIC) occurred in 10 (12.5%) of cases, acute renal failure 6 (7.5%) in of cases, pulmonary edema in 1 (1.25%) of cases and ICU admission was needed in 8 (10%). Our study is consistent with the studied carried out by Subha Sivagami Sengodan, Soma Mukherjee, *et al*.^{13,20} Two (2.5%) maternal deaths occurred in our study, one was associated with severe preeclampsia concealed abruption and DIC and other death were due to pulmonary edema secondary to the severe abruption. Our study is consistent with the studied carried out by soma Mukherjee *et al*.¹³ Which showed maternal mortality of 3.5% which is higher compare to our study. Low maternal morbidity in

our study is due to early diagnosis timely intervention and arrangement of fresh blood and blood products.

CONCLUSION

An abruptio placentae is one of the serious obstetric problem which leads to increased risk of neonatal and maternal morbidity and mortality. Our study revealed that pregnancy induced hypertension and chronic hypertension were independent risk factors for placental abruption besides other risk factors. Regular antenatal care, identification of pregnancy induced hypertension, timely treatment of PIH will prevent, abruptio placentae associated fetomaternal morbidity and mortality. However, a team effort consisting of an experienced hemorrhage obstetrician, hematologist neonatologist and a good blood bank is support required for good fetomaternal outcome.

LIMITATIONS

No limitation experienced in this study.

SUGGESTIONS / RECOMMENDATIONS

Early booking and regular antenatal care should be enforced to all pregnant patients in order to detect and manage pregnancy induced hypertension and its associated complications like abruption at early stage.

CONFLICT OF INTEREST / DISCLOSURE

There is no conflict of interest or funding involved in this study.

ACKNOWLEDGEMENTS

We sincerely thankful to all our doctor's clerical and medical record keeping department for facilitating this study.

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