

Frequency of Placental Abruption in Pregnancy induced Hypertension

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Submitted for Publication: 24-01-2023
Accepted for Publication 19-03-2023

How to Cite: Reena, Habib A, Naz U, Hira AK, Javed UK, Khan AZ. Frequency of Placental Abruption in Pregnancy induced Hypertension. APMC 2023;17(1):93-96. DOI: 10.29054/APMC/2023.1250

ABSTRACT

Background: Placental abruption is a major contributor to maternal mortality and morbidity, with hypertension being a significant underlying cause. Early indications suggest that placental abruption may elevate the risk of various adverse outcomes, irrespective of preterm births, and could also have long-term implications for the well-being of mothers and surviving infants. **Objective:** To determine the rate of placental abruption in pregnancy induced hypertension (PIH). **Study Design:** Cross sectional study. **Settings:** The study has been done at the Department of Gynecology and Obstetrics, Civil Hospital, Karachi Pakistan. **Duration:** Six months from May 2021 to November 2021. **Methods:** All the pregnant women between the ages of 25 and 45 with singleton pregnancies who were diagnosed with pregnancy-induced hypertension (PIH) or pre-eclampsia were included. Placental abruption was defined based on the presence of clinical manifestations like abdominal pain, vaginal bleeding, uterine tenderness, and foetal distress, along with supporting evidence from medical investigations. All the information was collected via a self-made study proforma. **Results:** A total of 177 eligible patients were enrolled in this study based on the specified inclusion and exclusion criteria. The mean age and gestational age in our study were 31.14 ± 6.49 years and 37.72 ± 2.24 weeks, respectively. Out of 177 patients, 22 (12.4%) had placental abruption, and 155 (87.6%) did not. **Conclusion:** As per the study conclusion, the frequency of placental abruption in pregnancy-induced hypertension was 12.5%. This indicates a significant link between PIH and the occurrence of placental abruption.

Keywords: PIH, Placental abruption, Preeclampsia.

INTRODUCTION

Women during pregnancy, susceptible to experiencing severe complications that can pose a threat to their lives during pregnancy, childbirth, or the postpartum period. Hypertensive disorders are prevalent worldwide and represent a significant medical complication in pregnancy. However, the incidence of these disorders can vary across different populations.¹ Globally, there has been an observed increase in the occurrence of hypertensive disorders of pregnancy has increased from 16.30 million to 18.08 million cases. This represents a total increase of 10.92% between the years 1990 and 2019.² Chronic hypertension in pregnancy is often accompanied by several maternal risks, including PIH, preeclampsia, resistance of insulin, and placental abruption.³ Hypertension affects approximately 10% of

pregnancies throughout the world, with eclampsia and pre-eclampsia constituting the primary contributors to maternal and fetal complications and deaths.⁴ Although PIH is considered one of the pregnancy hypertensive disorders, it is estimated to impact approximately 5–8% of women during pregnancy all around the world.^{4,5}

Abruptio placentae, which refers to the detachment of the placenta from its normal position after 24 weeks of gestation, occurs in approximately 1 out of every 129 births.⁶ The significance of abruptio placentae has been emphasized due to its association with hypertension and cocaine use. Severe cases of placental abruption have a fetal mortality rate of 0.2%.^{6,7} The link between hypertension and the abruptio placenta has been a subject of uncertainty, with the question of whether hypertension is a cause or a consequence of abruption remaining

unanswered. However, it is hypothesized that there is a notable association between PIH and abruptio placenta.^{8,9} The occurrence of placental abruption has been documented to be 1.56% in women having chronic hypertension, while it was 0.6% among those without chronic hypertension.^{3,10} After accounting for other influencing factors, it was determined that females having chronic hypertension had a 2.4 times higher risk of experiencing placental abruption compared to those without chronic hypertension.^{3,10} It has been revealed that in cases of preterm births with placental abruption, the averages of both placental weights and birth weights were compared to preterm births without abruption. However, this association was not observed in term births with abruption, suggesting that the occurrence of preterm abruption is more closely linked to uteroplacental ischemia.³ Premature separation of the placenta is primarily due to the maternal vessels rupture within the decidua basalis. In rare cases, the bleeding may originate from the fetal-placental vessels. The accumulating blood leads to the splitting of the decidua, resulting in the separation of a thin layer of decidua along with its attachment with the placenta. Complete or nearly complete placental separations occur when there are higher pressure arterial hemorrhages in the placental central area, causing extensive dissection through the placental-decidual interface.

This results in the rapid emergence of severe clinical symptoms associated with placental abruption, which can be life-threatening. These symptoms may include severe bleeding, maternal DIC, and abnormalities in fetal heart rate.¹¹ The frequency of placental abruption in pregnancy-induced hypertension is essential for expanding our knowledge of the relationship between these conditions and enhancing the care provided to affected women. Hence, the objective of this study was to ascertain the incidence of placental abruption specifically in cases of pregnancy-induced hypertension.

METHODS

This cross-sectional study was conducted at Department of Gynecology Unit 1, Civil Hospital, Karachi Pakistan. The duration of the study was six months from May 2021 to November 2021.

Sample size was calculated using WHO sample size calculator by taking the prevalence of placental abruption in pregnancy induced hypertension, $P_1=8\%$.⁹ The total sample size came out to be 177 patients by using marginal of error = 4% and confidence level 95%. Non-probability consecutive sampling technique was used.

Cases with PIH or pre-eclampsia, pregnant women with a singleton pregnancy and patients of age 25-45 years was included in the study.

Medical problems in the mother, women diagnosed as placenta previa, Normotensive and chronic hypertensive, patients with uterine anomalies and vaginal bleeding and those patients who were unable to give informed consent were excluded from the study.

Pregnant women who visited the Department of Gynecology, Civil Hospital Karachi, following inclusion criteria were included in the study. Study was included patients with pregnancy induced hypertension who presented to the OPD or Emergency department and met inclusion criteria were enrolled in the study. The study was carried out following approval from the institutional research and ethical committee, as well as the College of Physicians and Surgeons Pakistan. Informed consent was obtained from all patients, who willingly participated in the study and allowed their data to be used for research purposes. The collected patient data included clinical features observed during admission and other relevant information. Placental abruption was diagnosed on the basis of the presence of clinical signs and symptoms such as pain of abdomen, bleeding per vagina, tenderness of the uterus, and fetal distress, along with supporting evidence from medical investigations. Placental abruption was categorized as mild, moderate, or severe, depending on the extent of placental separation and associated clinical manifestations. The presence and severity of placental abruption was determined by skilled healthcare professionals having minimum experience of five years involved in the study based on standardized diagnostic criteria and guidelines. Intrapartum and labor characteristics encompassed conditions such as preterm or term premature rupture of membranes, anemia, fever during labor, chorioamnionitis, oligohydramnios and the polyhydramnios. Data was collected on a predesigned proforma and analysis was done by SPSS version 21.

RESULTS

A total of 177 patients admitted to the Department of Gynecology and Obstetrics, Civil Hospital, Karachi who met the inclusion and exclusion criteria were included in this study. The mean age and gestational age in our study were 31.14 ± 6.49 years and 37.72 ± 2.24 weeks, respectively. Neonatal status showed that out of 177 patients, 58 (32.8%) had preterm and 119 (67.2%) had full term neonatal status, respectively. 08 (4.5%) had chronic renal disease, 18 (10.2%) cases had asthma. Anemia was in 62 (35%) of the women. The frequency of PROM was 21 (11.9%). Intrapartum fever was present in 17 (9.6%) of the cases. Chorioamnionitis was 21 (11.9%) patients. The frequency of polyhydramnios was 13 (7.3%). The frequency of oligohydramnios was found in 25 (14.1%) patients.

Out of 177 patients, 22 (12.4%) had 155 (87.6%) did not have placental abruption. As shown in Figure 1.

The frequency of abruption placenta was observed to be statistically significant according to maternal age, mostly in women aged > 35 years old ($p = 0.04$), and the occurrence of abruption placenta was also statistically significant according to neonatal status ($p = 0.05$). Table.2

Table 1: Demographic and clinical features of the patients (n=177)

Variables		Statistics	
Age (mean±SD)		31.14 ± 6.49 years	
Gestational age (mean±SD)		37.72 ± 2.24 weeks	
Neonatal status	Full term	119	67.23%
	Pre-term	58	32.77%
Chronic renal disease	Yes	08	4.52%
	No	169	95.48%
Asthma	Yes	18	10.17%
	No	159	89.83%
Anemia	Yes	62	35.03%
	No	115	64.97%
PROM	Yes	21	11.86%
	No	156	88.14%
Intra partum fever	Yes	17	9.60%
	No	160	90.40%
Chorioamnionitis	Yes	21	11.86%
	No	156	88.14%
Polyhydramnios	Yes	13	7.34%
	No	164	92.66%
Oligohydramnios	Yes	25	14.12%
	No	152	85.88%

Figure 1: Placental abruption (n=177)

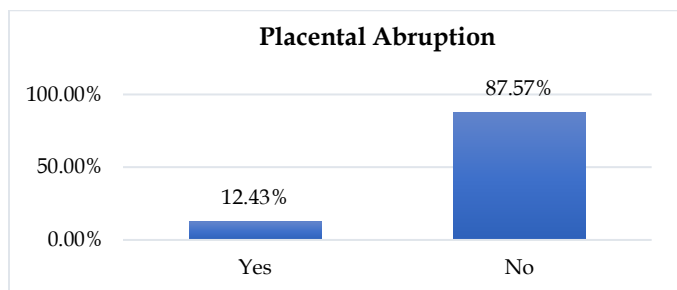


Table 2: Placental abruption according to age and neonatal status (n=177)

Age (Years)	Placental Abruption		Total	p-value
	Yes	No		
Age Groups	20-35	09 (40.9%)	98 (63.2%)	0.04
	36-45	13 (59.1%)	57 (36.8%)	
	Total	22 (100%)	155 (100%)	
Neonatal Status	Pre term	11 (50%)	47 (30.3%)	0.05
	Full term	11 (50%)	108 (69.7%)	
	Total	22 (100%)	155 (100%)	

DISCUSSION

refers to the development of hypertension during pregnancy, which can have various complications, including abruption placenta. Placental abruption refers to the detachment of the placenta from the uterine wall prior to childbirth, which can lead to significant maternal and

fetal risks. The current study has been done to assess the rate of abruption placenta in PIH and included 177 patients who were admitted to the Department of Gynecology and Obstetrics at Civil Hospital, their mean age of the participants in our study was 31.14 ± 6.49 years, and the average gestational age was 37.72 ± 2.24 weeks. Consistently, Khan S *et al*¹² demonstrated that the mean age of their study subjects was 24.26 ± 2.92 years, with a mean gestational age of 30.82 ± 3.22 weeks. The mean parity, representing the average number of previous pregnancies, was 2.59 ± 0.80. In the comparison of this study, Masselli G, *et al*¹³ also reported that the patient's mean age was 29 years and the mean gestational age was 30.7 weeks.

In this study, neonatal status showed that out of 177 patients, 32.8% had preterm and 67.2% had full term neonatal status, 4.5% had chronic renal disease, 10.2% cases had asthma, anemia was in 35% of the women, the frequency of PROM was 11.9%, intrapartum fever was in 9.6%, chorioamnionitis was in 11.9% of patients, polyhydramnios was 7.3%, and the frequency of oligohydramnios was in 14.1% of patients. The above few findings were supported by Kanavi JV *et al*.¹⁴

In this study, out of 177 patients, 22 (12.4%) had placental abruption. In the comparison of these findings, Khan S *et al*¹² reported that the frequency of abruption placenta was 14.1%.

On the other hand, Tewari V *et al*¹⁵ reported that the occurrence rate of placental abruption in cases of preeclampsia is reported to be 16%. In the study by Kanavi JV *et al*¹⁴ demonstrated that the prevalence of placental abruption was 7.8%. The observed frequency of placental abruption in our study differs from that reported in previous studies. There could be several reasons for this discrepancy. Firstly, variations in the study population, such as demographic characteristics, comorbidities, and risk factors, may contribute to different frequencies. Secondly, differences in study design, sample size, and methodology might influence the accuracy and generalizability of the findings. Additionally, variations in healthcare settings, access to prenatal care, and regional differences in the occurrence of the risk factors could also play a role. Therefore, it is important to consider these factors when comparing the frequency of placental abruption across different studies. In this series, the frequency of abruption placenta was significantly high in women aged >35 years. These findings were supported by Anderson E *et al*¹⁶ as in the univariable analysis, there was a significant association between pregnancies with placental abruption and maternal age ranging from 35 to 39 years. A few other studies also demonstrated that placental abruption is more common in older women (aged 35 years and above).^{17,18}

In accordance with the several study limitations, the relatively small sample size in this study could restrict the generalizability of the findings to a larger population. The study focused solely on the frequency of placental abruption in PIH and did not explore other potential risk factors or variables that could influence the occurrence of abruption. The study was conducted in a specific geographical area or healthcare setting, which may limit the external validity of the findings to other populations or settings. Furthermore, the study did not include a comparison group of pregnant women without PIH, which could limit the ability to determine the specific impact of PIH on the frequency of placental abruption. Further research is needed to explore the underlying mechanisms and pathophysiology linking PIH and placental abruption, which could help develop preventive strategies and targeted interventions.

CONCLUSION

As per the study conclusion, the frequency of abruptio placenta in PIH was 12.5%. These findings demonstrate a notable correlation between pregnancy-induced hypertension and the incidence of placental abruption. Placental abruption, a serious complication in obstetrics, can have detrimental effects on both maternal and fetal well-being. The identification and management of pregnancy-induced hypertension are crucial in order to minimize the risk of placental abruption and its potential consequences.

LIMITATIONS

This was as single Centre and limited sample size study. The exact frequency of placental abruption in pregnancy-induced hypertension can vary depending on several factors, including the severity of hypertension, gestational age, and individual patient characteristics.

SUGGESTIONS / RECOMMENDATIONS

Further research and larger studies are needed to explore the underlying mechanisms and risk factors associated with placental abruption in the context of pregnancy-induced hypertension. Early detection, timely intervention, and close monitoring of pregnant women with hypertension can contribute to improved maternal and neonatal outcomes

CONFLICT OF INTEREST / DISCLOSURE

None.

ACKNOWLEDGEMENTS

We would like to express our sincere appreciation and gratitude to the following individuals for their invaluable contributions to the study.

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