

## Clinical and Therapeutic Epidemiological Aspects of Placental Abruption in Obstetrics and Gynecology

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**Abstract:** The present study has been conducted with the objective of investigating the impact of placental abruption on both fetal development and maternal health outcomes, as well as on newborn health. A cross-sectional study was conducted on 110 Iraqi female patients, with demographic information and data collected from several different hospitals in Iraq. Initial information related to the age, height, weight, and body mass index of female patients was extracted, and all the necessary licenses were obtained for the purpose of conducting this study, which included the written form from the patients. The study found that the analysis encompassed 110 patients, with the majority of cases (40 patients) falling within, the majority of patients diagnosed with placental abruption were identified as overweight, with a low fifth-minute APGAR score for eight patients, total neonatal deaths for one baby, NICU for seven patients, the data obtained indicate an increased risk of placental abruption in patients with nicotine dependence. A modifiable risk factor such as nicotine addiction is also a significant risk factor for the development of premature rupture of membranes. In contrast, other modifiable risk factors, such as obesity, play an important role in the development of placental insufficiency. Consequently, the correction of these modifiable risk factors will not only facilitate the prevention of preeclampsia, but also numerous other obstetric diseases.

**Keywords:** Patients, Placental abruption, Obstetrics, Preeclampsia, APGAR.

### INTRODUCTION

Placental abruption is defined as the separation of the placenta from the inner wall of the uterus prior to childbirth, which can impede fetal growth and elevate the probability of an early delivery. This condition may result in premature birth or pregnancy complications, with the severity of the consequences contingent on the extent of the abruption and the gestational age at the time of onset. A very small number of cases result in the infant not surviving the event, and this is referred to as being stillborn (Workalemahu, T. *et al.*, 2018). The symptoms associated with placental abruption can include vaginal bleeding, stomach pain, contractions, and lower back pain. If such symptoms are experienced, it is important to contact the local maternity unit without delay (Martinelli, K.G. *et al.*, 2018). Premature abruption of the placenta previa is a serious and potentially life-threatening complication of pregnancy. It is widely acknowledged that the risks to the fetus generally outweigh those to the mother (Workalemahu, T. *et al.*, 2018). Traditionally, the classification of PONRP has been based on the extent of abruption, with mild, moderate, and severe categories denoting the area affected (Sylvester, H.C. & Stringer, M., 2017). The volume of blood loss is determined by the total bloodshed from the vagina and the

retroplacental hematoma. The incidence of PONRP is low, ranging from 0.3–0.4% in Russia and Japan (Workalemahu, T. *et al.*, 2018), 0.69–1% in the USA (Martinelli, K.G. *et al.*, 2018), and up to 1% of all births in Finland (Tikkanen, M. *et al.*, 2012) and Iran (Miller, C. *et al.*, 2019), and 0.78% in France (Plowman, R.S. *et al.*, 2017). As a rule, these cases are considered when surgical intervention, resuscitation procedures, or blood transfusion are required. According to Ananth, C.V. *et al.* (Martinelli, K.G. *et al.*, 2018), severe abruptions, defined as total blood loss exceeding 1000 ml, account for 50 out of 2,500 births per year, with severe cases accounting for 0.05–0.08% of all births (DeRoo, L. *et al.*, 2016).

Placental abruption is a serious pregnancy complication characterised by the detachment of the placenta from the uterus. In nearly half of placental abruption cases (44%), the pregnant mother is hypertensive, and one of the most common causes of hypertension during pregnancy is a condition known as pre-eclampsia (Tikkanen, M. *et al.*, 2012; Boisramé, T. *et al.*, 2014; Nath, C.A. *et al.*, 2008).

### MATERIAL AND METHOD

A cross-sectional study was conducted on 110 Iraqi female patients, with demographic

information and data collected from several different hospitals in Iraq. Initial information related to the age, height, weight, and body mass index of female patients was extracted, and all the necessary licences were obtained for the purpose of conducting this study, which included the written form from the patients.

The study identified two distinct types of early placental abruption: complete and partial. In the case of complete abruption, the entire extrauterine space of the organ moves away from the body of the uterus. In partial cases, the tissue loses its integrity with the uterine wall in some places. The categorisation of partial abruption is as follows:

Progressive: bleeding does not cease, and non-progressive: blood clots form in the area of the abruption, and bleeding stops. The partially formed haematoma disappears within two weeks and does not affect the condition of the woman or the foetus. The severity of the disease is classified as mild, where less than 25% of the placenta is detached, and up to 100ml of blood is lost. The condition is frequently asymptomatic and is diagnosed during routine scans or after birth. In the moderate form, 25-50% of the placenta is detached, and 100-500ml of blood is lost. The woman experiences prolonged cramping, especially on the side where the placenta has detached. While blood pressure remains generally normal, pulse rate is typically accelerated. It is important to note that a pregnant woman may experience light bleeding. Auscultation of the foetal heartbeat may reveal heart murmurs, indicating varying degrees of oxygen deprivation.

The tone of the uterus will increase, and contractions may be continuous.

The objective of the study was to identify the negative aspects and complications of placental abruption in women and its effect on women during pregnancy or on the foetus. Furthermore, the study sought to ascertain the impact of placental abruption on the quality of life of patients. The data and all results related to this study were analysed using the statistical analysis programme IBM SOFT SPSS 22. The analysis of two PE characteristics (early/late and moderate/severe) yielded a compelling argument supporting a close association between early PE and its severe form in patients with preeclampsia. Within the study group, the probability of early PE in severe form was found to be approximately three times higher, and this effect was deemed to be statistically significant ( $p < 0.0001$ ). Statistical analysis methods. The data obtained during the analysis of the date of birth were processed primarily using descriptive statistical methods, in particular, the absolute frequency (n) and relative frequency (%) of occurrence of each outcome in the study group, and the corresponding comparison were calculated. The influence of risk factors was measured using the sample odds ratio (OR) calculated for each risk factor studied, as well as the 95% confidence interval (95% CI). The level of statistical significance for accepting the hypothesis about the difference in frequencies and the significance of the effect was taken as (0.05).

## RESULTS

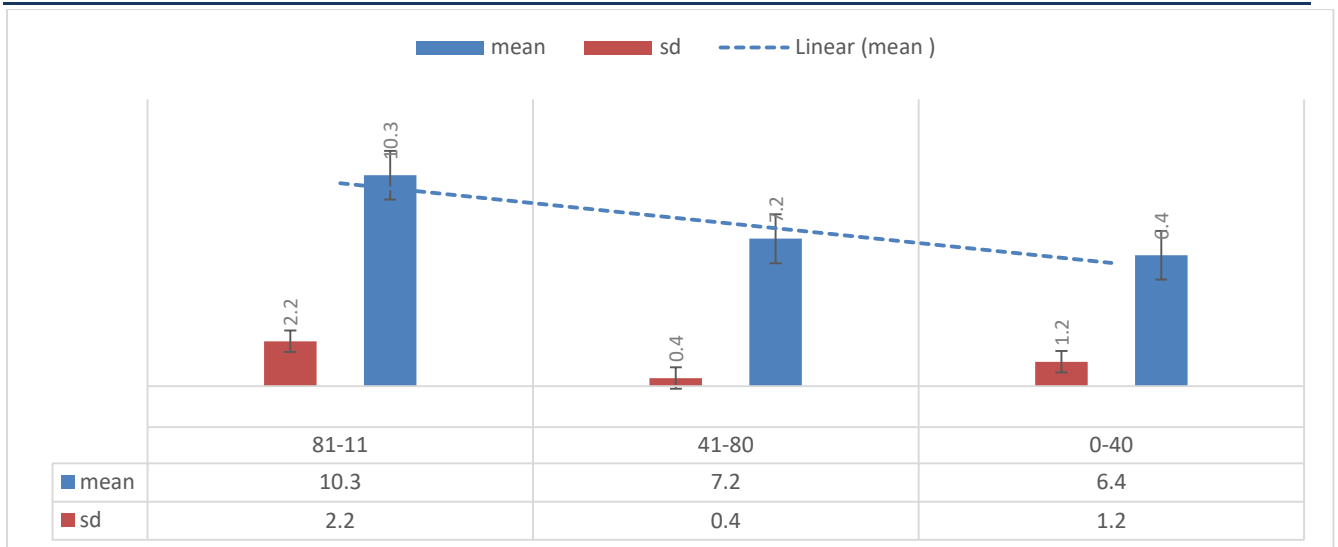
**Table 1:** Description of the general characteristics of the patients participating in this study

Variable	f	P%
Age		
20-24	40	36.36
25-29	30	27.27
30-34	22	20.00
>35	18	16.36
BMI		
Overweight	80	72.73
Obese	30	27.27
Education		
Low	21	19.09
Secondary	29	26.36
College	40	36.36
High	20	18.18
Outcomes		
<700\$	65	59.09
>700\$	45	40.91

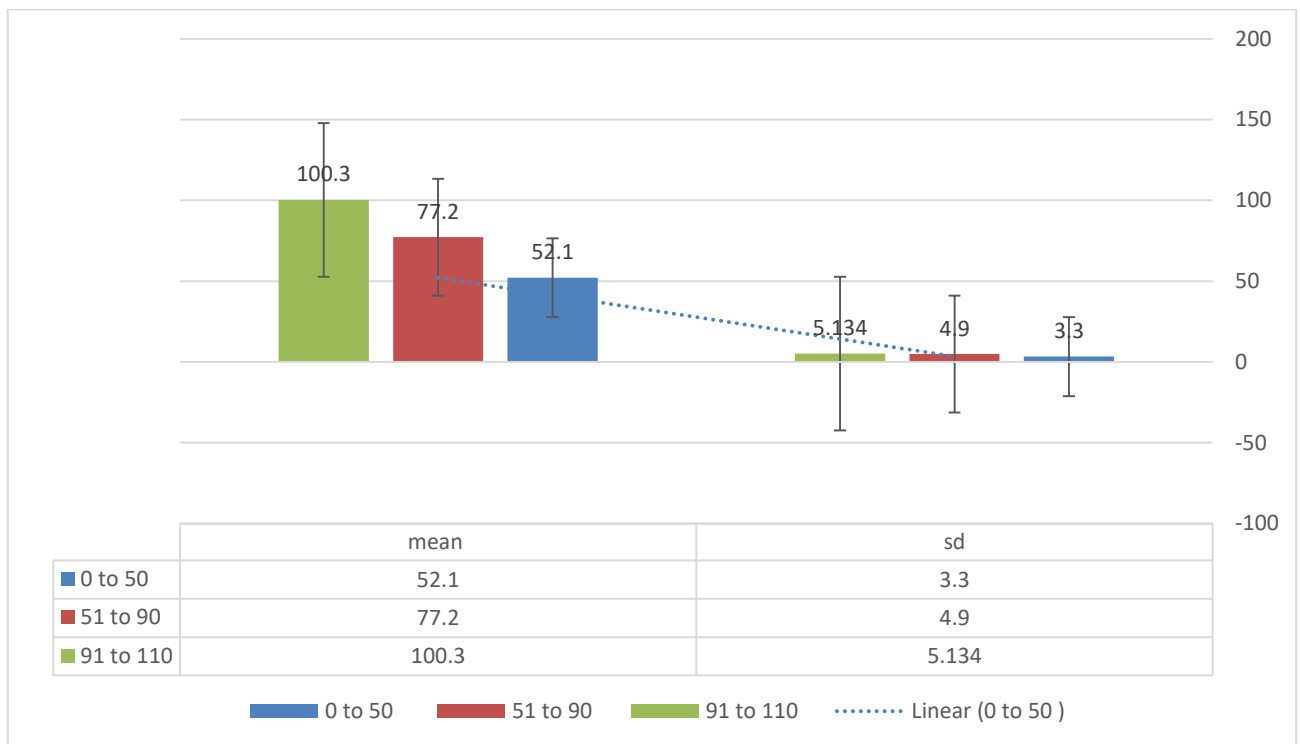
Comorbidities		
Joints	23	20.91
Diabetes	27	24.55
Obesity	30	27.27
Blood Pressure	30	27.27
Residence		
Rural	44	40
Urban	66	60
Smoking		
Yes	10	9.09
No	100	90.91

**Table 2:** Description of the secondary outcomes related to mothers of 110 patients with placental abruption.

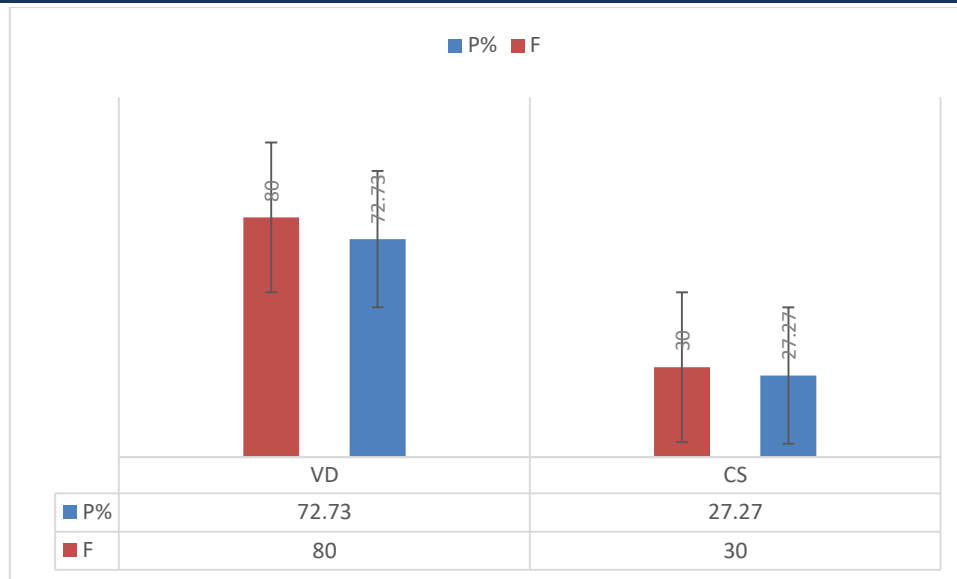
Variable	f	P%
Gravidity		
Primigravida	30	27.27
Multigravida	80	72.73
Parity		
Nulliparous (0)	40	36.36
Multiparous (1 – 4)	40	36.36
Grand multiparous ( $\geq 5$ )	30	27.27
Common Symptoms		
Vaginal Bleeding	30	27.27
Abdominal Pain	25	22.73
Uterine Contractions	30	27.27
Fetal Heart Rate Abnormalities	15	13.64
Interpregnancy interval	10	9.09
Number of abortions		
1	3	2.73
2	2	1.82
3	1	0.91
Previous cesarean section (CS)		
Yes	7	6.36
No	103	93.64
Polyhydramnios		
Yes	105	95.45
No	5	4.55
Gestational age at diagnosis		
<37	40	36.36
>37	70	63.64



**Figure 1:** Distribution of patients according to Duration of bleeding/symptoms of abruption



**Figure 2:** Health outcomes of patients according to Systolic blood pressure (BP) at admission, Diastolic BP at admission



**Figure 3:** Classification of patients according to Mode of delivery

**Table 3:** Final characteristics of mothers with placental abruption and their negative effects on patients

Variable	f	P%
prematurity	5	4.55
NICU	7	6.36
resuscitation	4	3.64
low fifth-minute APGAR score	8	7.27
Total neonatal deaths	1	0.91

**Table 4:** Logistic regression to describe risk factors affecting patients

Variable	CSO	P value
Age	1.23 (0.44-1.45)	0.783
Fetal Heart Rate Abnormalities	1.42 (0.56-1.73)	0.7712
Vaginal Bleeding	2.3 (1.55-3.2)	<0.001
Abdominal Pain	2.86 (1.5-4.92)	<0.001
Multiparous (1 – 4)	1.1 (0.5-1.3)	0.9821
Grand multiparous ( $\geq 5$ )	1.67 (0.83-2.2)	0.021
Primigravida	1.44 (1.1-2.2)	0.92
Gestational age at diagnosis <37	2.7 (2.2-3.3)	<0.001

**Table 5:** The relationship between placental abruption and birth weight in kg

	f	P%
1	10	9.09
>1 to 1.5	30	27.27
1.6 to 2	30	27.27
>2	40	36.36

## DISCUSSION

Placental abruption is a pathological condition characterized by the separation of the tissues from the walls of the uterus prior to the expected delivery date. This condition manifests during pregnancy and at the time of childbirth, with severe complications during pregnancy having the potential to result in fatality for both the mother and the foetus. The primary risk group consists of

women who have previously given birth (Pariante, G. *et al.*, 2011).

The placenta, an organ located externally of the foetus, commences formation in the second trimester of pregnancy. Its primary functions include the delivery of oxygen and essential elements to the fetus (Ananth, C.V. & Vintzileos, A.M., 2006), the secretion of hormones that promote a healthy pregnancy, and the provision of reliable protection against infection.

The present study is an evaluation of placental abruption in pregnant women, determining the initial and final effects on maternal outcomes and newborns.

The analysis encompassed 110 patients, with the majority of cases (40 patients) falling within the 20-24 age group.

The majority of patients diagnosed with placental abruption were identified as overweight, as demonstrated in Table 1. In partial placental abruption, a portion of the placenta detaches from the uterine wall; in contrast, complete placental abruption involves the separation of the entire placenta. Partial placental abruption can be classified as marginal, characterised by the separation of the placental edge, or central, involving the separation of the central portion. In the case of placental abruption in its normal location, a distinction is made between:

- Abruption with external or visible bleeding (bleeding from the vagina).
- Abruption with internal or hidden bleeding (blood accumulates between the placenta and the uterine wall, forming a retroplacental hematoma) (Ananth, C.V. *et al.*, 2011; Räisänen, S. *et al.*, 2013; Ofori, B.D. *et al.*, 2008; Ananth, C.V. *et al.*, 1999).
- Abruption with combined or mixed bleeding (there is both hidden and visible bleeding).

The term placental abruption refers to a life-threatening complication in pregnancy that may further extend such danger into labor since it can be experienced during the first and second stages of labor. Pain syndrome is characterized by the sudden and sharp nature of pain in areas where the placenta protrudes; it then spreads throughout the uterine region, lower back, and buttocks before becoming diffuse. This hurts more on an average with respect to central abruption, but it hurts less in marginal abruption because it can also mimic a condition called renal colic when the placenta is located on the back wall of the uterus (Salihu, H.M. *et al.*, 2005; Workalemahu, T. *et al.*, 2018). Uterine hypertonicity, which has the potential to progress to tetany, cannot be relieved through antispasmodics and tocolytics methods. While marginal or central abruption may range from slight to profuse in some instances, vaginal bleeding may also occur due to the severity and nature of placental abruption. Presence of a hematoma behind the placenta does not necessarily mean there is an external bleeding since there are

three types of bleeding patterns identified: external (where the edge of the placenta separates and blood flows through the reproductive tract), internal (where blood accumulates between the placenta and the uterine wall), and mixed (where some flow out while some remains behind the placenta). Violation of fetal intrauterine conditions (weaker movements, arrhythmia or bradycardia, inline intrauterine death) (Martinelli, K.G. *et al.*, 2018; Adane, A.A. *et al.*, 2019; Kyozyuka, H. *et al.*, 2021).

Added symptoms of hypovolemic shock and DIC syndrome. The classical clinical picture is evident in 25% of all pregnant women, and pain syndrome in a third of pregnant women does not exist despite being considered as an important diagnostic sign for this disease. The most predominant clinical symptoms include blood discharges from the genital tract and fetal distress.

In cases of persistent genital tract bleeding, an internal obstetric examination is performed in a full-scale operating room setting. In cases of increased bleeding, an emergency abdominal operation or caesarean section is performed, with the amount of blood loss being determined by the weight of used nappies and bedding, in addition to the presence of blood clots in the vagina. During the internal obstetric examination, the tension of the amniotic sac is determined (in the absence of leakage of amniotic fluid), and bleeding of varying intensity is observed. In the event of leaking amniotic fluid, staining may be evident. In the case of central placental abruption, the absence of external bleeding may be observed (Ananth, C.V. *et al.*, 1999).

## CONCLUSION

One of the principal causes of bleeding in the early stages of pregnancy is placental abruption. It is imperative that expectant mothers are aware of the signs of this potentially life-threatening condition and seek medical assistance with utmost urgency. The management of the pregnancy and the prevention of complications arising from placental abruption are contingent on various factors, including the obstetric situation and the condition of the mother and fetus, and the present study has demonstrated that uterine fibroid has a detrimental effect on HRQOL.

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