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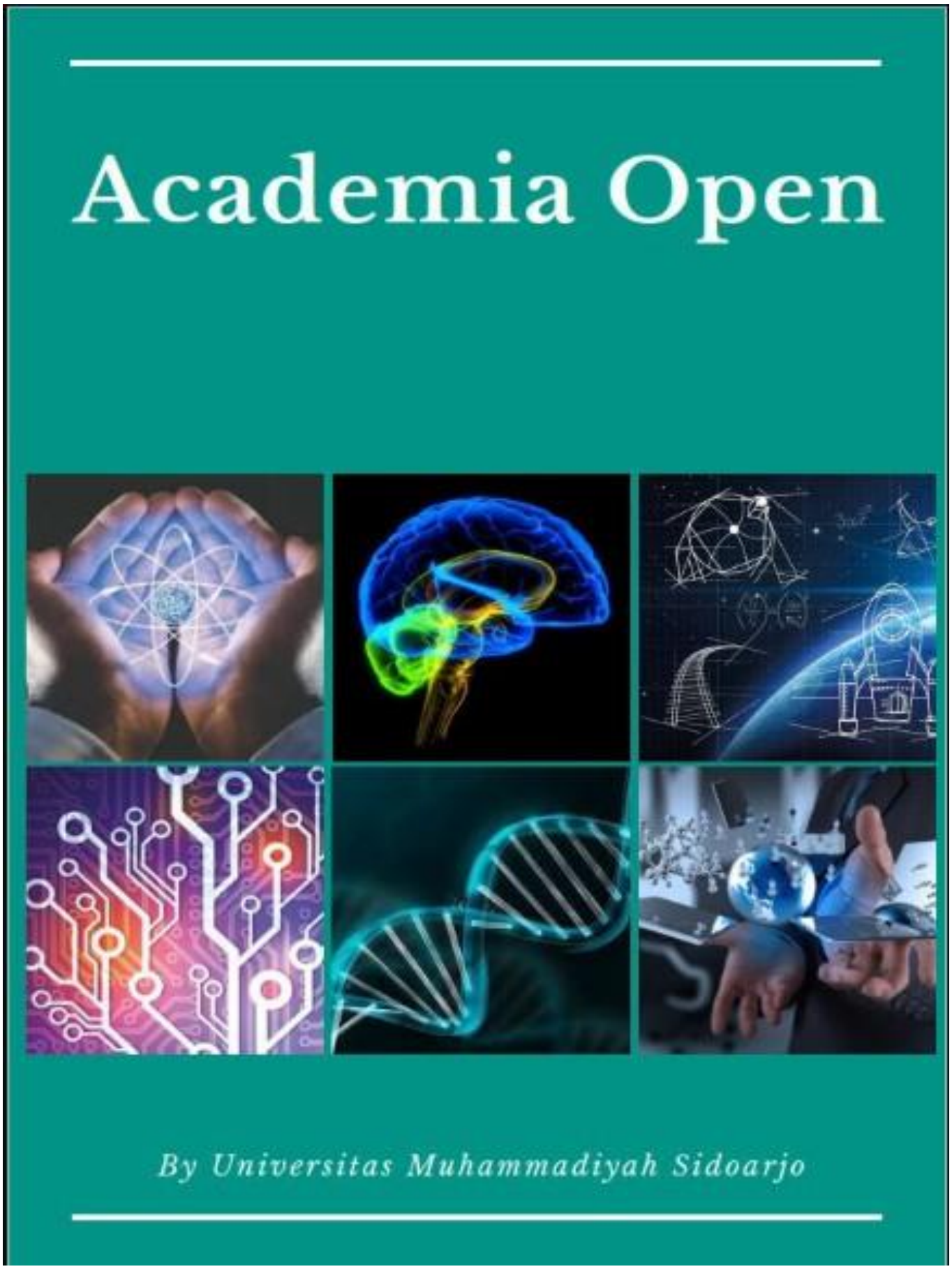

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The Mode of Delivery and Fetal outcome in Abruptio Placentae

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Abstract

General Background: Abruptio placentae is the premature separation of the placenta after 20 weeks of gestation and remains a major obstetric emergency associated with substantial maternal and perinatal morbidity and mortality. **Specific Background:** This condition frequently leads to cesarean delivery, maternal anemia, postpartum hemorrhage, disseminated intravascular coagulation, shock, prematurity, and fetal death. **Knowledge Gap:** National data on abruptio placentae and its associated delivery patterns and fetal outcomes remain limited in Iraq, particularly in the Kurdistan Region. **Aims:** This study aimed to determine the prevalence of abruptio placentae and to assess the mode of delivery and fetal outcomes among affected pregnancies in Erbil Maternity Teaching Hospital. **Methods:** A descriptive cross-sectional study was conducted from August 2019 to January 2020 involving 65 pregnant women diagnosed with abruptio placentae. **Results:** The prevalence of abruptio placentae was 0.69%. Cesarean section was performed in 73.8% of cases. Maternal complications included anemia (95.4%), postpartum hemorrhage (20.0%), blood transfusion (32.3%), disseminated intravascular coagulation (4.6%), and shock (7.7%). Preterm birth occurred in 36.9% of neonates, and fetal death was recorded in 16.9% of cases. Fetal mortality was significantly associated with advanced maternal age, disseminated intravascular coagulation, maternal shock, and prematurity. **Novelty:** This study provides updated evidence on abruptio placentae outcomes from a tertiary hospital in Iraqi Kurdistan. **Implications:** Early recognition and prompt management of abruptio placentae are essential to reduce severe maternal complications and perinatal mortality.

Highlights:

- Abruptio placentae prevalence at Erbil Maternity Teaching Hospital was 0.69%.
- Cesarean section was the predominant delivery approach in nearly three-quarters of cases.
- Prematurity, maternal shock, and disseminated intravascular coagulation were linked to fetal death.

Keywords: Abruptio Placentae, Cesarean Section, Fetal Mortality, Maternal Complications, Prematurity

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Introduction

Placental abruption, defined as the partial or complete separation of the placenta from the uterine lining after the midpoint of pregnancy, is a critical cause of severe health complications for both the pregnant individual and the unborn child. Its clinical signs may include, but are not solely dependent upon, uterine tenderness, labor pains, external bleeding, or indications of fetal distress [1] . This condition involves the progressive failure and detachment of the placenta, reducing the vital area for fetal oxygenation and nourishment. Consequently, it substantially raises the likelihood of death for the baby before or shortly after birth. In its most acute form, the situation can quickly escalate to profound maternal hemorrhage and severe oxygen deprivation for the fetus, often requiring an emergency surgical birth to save lives [2]. Recognized as a leading cause of pregnancy-related crisis, it contributes significantly to rates of illness and death among mothers and infants worldwide, with a disproportionate impact in regions with limited healthcare resources [3] . More than half of all prenatal and infant fatalities linked to placental abruption also involve births before full term. This condition is responsible for one-fifth to one-quarter of significant bleeding episodes during late pregnancy and raises the likelihood of serious complications such as widespread blood-clotting problems, profound circulatory shock in the mother, kidney dysfunction [4], severe bleeding after childbirth, and maternal mortality [5]. The mother also faces dangers from excessive blood loss, which may require transfusions, surgical removal of the uterus, or postpartum pituitary damage known as Sheehan syndrome [6] . For the developing baby, placental abruption is connected to poor outcomes like reduced birth weight, early delivery , restricted growth in the womb, oxygen deprivation during birth, life-threatening fetal stress, low newborn health scores, admission to intensive neonatal care, stillbirth, and death shortly before or after birth [7] . The condition begins as maternal blood vessels separate from the placenta, causing bleeding to fill the space between the uterine wall and the placenta. This gathering blood then progressively forces the placenta away from the uterus. Since the placenta supplies the fetus with oxygen and essential nutrients while also removing its metabolic wastes, this separation disrupts these vital functions. The exchange of substances between the maternal bloodstream and the placenta is critical for supporting fetal life. The accumulation of blood that detaches the placenta from its maternal blood supply disrupts these essential processes. Insufficient oxygen and nutrient delivery resulting from this detachment leads to fetal demise [8] .

The severity of a placental separation depends on both its degree and its position. Such an event may involve either the entire placenta or only a portion, and it can occur at the edge or the center of the organ [9] .

Methods

This study was a descriptive cross sectional study carried out in Maternity Teaching Hospital in Erbil city,Kurdistan Region,Iraq. The duration of study was throughout the period from 1st of August, 2019 till 31st of January, 2020 . A convenient sample of Sixty five pregnant women with abruptio placentae (AP) presented to Labour room was selected after eligibility to inclusion and exclusion criteria. The data collection was carried out through direct interview with selected women and filling in a prepared questionnaire. An approval was taken from Genecology and Obstetrics department and an oral informed consent was taken from women . The maternal outcomes were assessed by the researcher and supervisor, while fetal outcomes were assessed by Pediatrician. The data of women were analyzed by Statistical Package for Social Sciences (SPSS) version 23. Chi square test and Fishers exact tests were used for categorical variables. P value of 0.05 or less was regarded as significant.

Results

Nine thousands , three hundred and sixty five pregnant women deliveries recorded in Erbil Maternity Teaching Hospital throughout six months duration; 65 deliveries of pregnant women accompanied by abruptio placentae. The prevalence of abruptio placentae in in Erbil Maternity Teaching Hospital was (0.69%). There was a significant association between increased age of pregnant women with abruptio placenta and fetal death outcome (p=0.05); 27.3% of abruptio placentae pregnant women with dead fetuses were 40 years age and more in comparison to 3.7% of women with alive fetuses at 40 years age and more. **(Figure 1).**

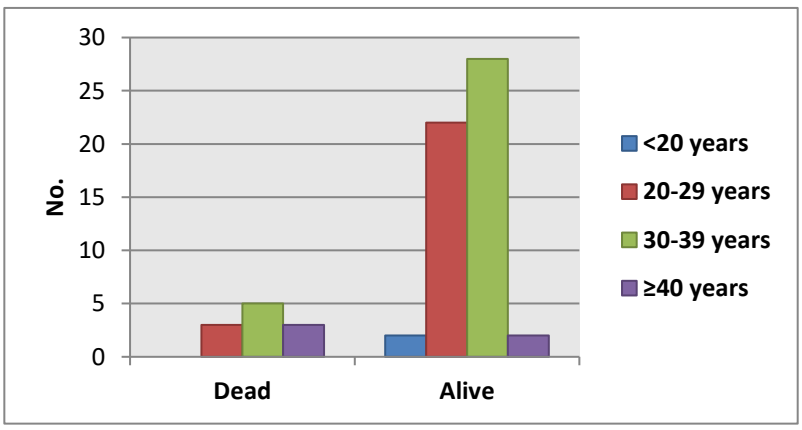

Figure 1: Maternal age distribution according to fetal outcomes.

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Regarding maternal outcomes of women with abruptio placentae, 80% of them were presented in Labour, while 20% of them were not. About two thirds (73.8%) of women with abruptio placentae were delivered by cesarean section and 26.2% of them were delivered vaginally. Most (95.4%) of women with abruptio placentae were anemic after delivery, while 4.6% of pregnant women with abruptio placentae had DIC, 20% of them had postpartum hemorrhage and history of blood transfusion was positive in 32.3% of them. 5 (7.7%) pregnant women with abruptio placentae were presented with shock at delivery. **(Table 1)**.

Variable	No.	%
Labour presentation		
Not in Labour	13	20.0
In Labour	52	80.0
Total	65	100.0
Mode of delivery		
vaginal delivery	17	26.2
Cesarean section	48	73.8
Total	65	100.0
Anaemic		
Yes	62	95.4
No	3	4.6
Total	65	100.0
Disseminated intravascular coagulation		
Negative	62	95.4
Positive	3	4.6
Total	65	100.0
Post partum hemorrhage		
Negative	52	80.0
Positive	13	20.0
Total	65	100.0
Blood transfusion		
Negative	44	67.7
Positive	21	32.3
Total	65	100.0
Shock on presentation		
Negative	60	92.3
Positive	5	7.7
Total	65	100.0

Table 1: Maternal outcomes of pregnant women with Abruptio Placenta.

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Regarding fetal outcomes for pregnant women with abruptio placentae, mean gestational age of fetuses at delivery was (36.5 weeks); 36.9% of fetuses were preterm. Death outcome was observed for 11 (16.9%) fetuses of pregnant women with abruptio placentae, while alive outcome was recorded for 83.1% of them. **(Table 2).**

Variable	No.	%
Mean Gestational age (36.5±2.8 weeks)		
Preterm	24	36.9
Term	41	63.1
Total	65	100.0
Fetal outcome		
still birth	11	16.9
Alive	54	83.1
Total	65	100.0

Table 2: Fetal outcomes of pregnant women with AP.

No significant differences were observed between abruptio placentae pregnant women with dead or alive fetal outcomes regarding maternal labour presentation (p=0.1), maternal mode of delivery (p=0.5), maternal hemoglobin level (p=0.4), maternal postpartum hemorrhage (p=0.5) and maternal blood transfusion (p=0.08). There was a highly significant association between disseminated intravascular coagulation of pregnant women with abruptio placentae and dead fetal outcome (p<0.001). A highly significant association was observed between maternal shock on presentation for pregnant women with abruptio placentae and dead fetal outcome (p<0.001). Premature fetuses of pregnant women with abruptio placentae were significantly associated with higher death rates than term fetuses (p=0.001). **(Table 3)**

Variable	Dead		Alive		P
	No.	%	No.	%	
Labour presentation					0.1* NS
Not in Labour	4	36.4	9	16.7	
In Labour	7	63.6	45	83.3	
Mode of delivery					0.5* NS
Normal vaginal delivery	2	18.2	15	27.8	
Cesarean section	9	81.8	39	72.2	
Hemoglobin					0.4* NS
Anemic	10	90.9	52	96.3	
Normal	1	9.1	2	3.7	
Disseminated intravascular coagulation					**<0.001*** S
Negative	8	72.7	54	100.0	
Positive	3	27.3	0	0	
Post partum hemorrhage					0.5* NS
Negative	8	72.7	44	81.5	
Positive	3	27.3	10	18.5	
Blood transfusion					0.08* NS
Negative	5	45.5	39	72.2	
Positive	6	54.5	15	27.8	

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Shock on presentation					**<0.001*** S**
Negative	7	63.6	53	98.1	
Positive	4	36.4	1	1.9	
Gestational age					**0.001*** S**
Preterm	9	81.8	15	27.8	
Term	2	18.2	39	72.2	

* Fishers exact test, NS=Not significant, S=Significant.

Table 3: Distribution of maternal outcomes according to fetal outcome

Discussion

National researches discussing the incidence and risk factors for abruptio placentae are scarce although its great burden on National Health Budget and Health Institutes [10]. . In Erbil city, the incidence of antepartum hemorrhage was 2.34% [11].while Globally, the reported prevalence of abruptio placentae is ranging between 0.5%-2% and this range is attributed to variation in the diagnosis in addition to differences in burden of risk factors and health services between different communities [12]. Present study showed a prevalence rate of (0.69%) for placenta abruption among 9365 women deliveries within 6 months period. This prevalence is higher than finding of previous Iraqi study conducted by Sharief et al [13] study in Basra which found the prevalence of placental abruption as (0.2%) among women for one year duration. In general, the prevalence of current study of (0.69%) is lower than abruptio placentae prevalence rates in developing countries and close to rates in Arabic and American countries, while higher than prevalence rates of abruptio placentae in European countries [13], [14] . The cesarean section outcome for women with abruptio placentae is varying between 33.3%–91% and it is the most common adverse outcome associated with abruption [15] , [16] . The reported differences in risk may be linked to variability in study populations or the specific circumstances of the cesarean procedure. For instance, research involving newborns at the threshold of viability [17] indicated a reduced risk, while unplanned cesareans in women with prior births were associated with an elevated risk [18]. Beyond its primary complications, placental abruption is additionally connected to a substantially higher likelihood—between 3.5 and 31.1 times—of requiring a second surgical intervention after the initial cesarean, alongside an increased chance of needing a hysterectomy [19] , [20]. Common severe complications observed in mothers included anemia (95.4%), disseminated intravascular coagulation (95.4%), significant bleeding after delivery (80%), the necessity for a blood transfusion (32.3%), and shock (7.7%). These observations align with findings from other international studies, including research conducted in Pakistan and India [21] , [22].

In the current research, fetal demise was observed in 16.9% of pregnancies involving abruptio placentae, whereas a live birth outcome was noted in 83.1% of these cases. This documented perinatal mortality of 16.9% is lower than the 35% rate reported by Chavan and colleagues in an Indian investigation [23] . Conversely, the mortality figure from this study exceeds the 5.7% perinatal death rate identified by Budak et al. in a Turkish study of placental abruption cases [24] .Additionally, this analysis found that 36.9% of infants born to mothers with placental abruption were delivered preterm, confirming prematurity as a common consequence of this condition. Preterm infants in these pregnancies demonstrated a statistically significant increase in mortality compared to those born at term (p=0.001). This observation aligns with findings from Pandit et al. in India [25] , which indicated that most fetal complications arising from placental abruption are connected to premature delivery. Furthermore, several severe maternal outcomes, including disseminated intravascular coagulation and shock, showed a significant correlation with fetal death. These results are consistent with conclusions from Sharma's research in India [26] , and the work of Ananth et al. in the United States [27] .

Conclusions

-The placental abruption among pregnant women is commonly related to higher rate of cesarean section delivery in addition to other adverse maternal outcomes like anemia, postpartum hemorrhage and need to blood transfusion

-Prematurity of neonates for pregnant women with placental abruption is a common risk factor for high perinatal mortality

-The perinatal mortality linked to placental abruption is more likely to be related with advanced maternal age, disseminated intravascular coagulation and shock.

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