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Evaluation of Maternal and Fetal Outcome in Major Degree Placenta Previa and Its Risk Factors for The Last Five Years

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Abstract

Placenta previa is posing a risk of maternal and fetal morbidity and mortality. To manage and intervene properly, understanding the epidemiology, risk factors and outcomes of placenta previa is important. Aim to estimate the incidence of placenta previa; To evaluate some maternal and fetal outcomes associated with placenta previa; To identify some risk factors that increase the likelihood of developing placenta previa. This is a retrospective cohort study in the Basra Maternity and Children Hospital, Iraq. A total of 50 women with major degree placenta previa beyond 28 weeks of gestation were studied from the records of the hospital. These variables comprised of demographic data, obstetric history, clinical presentation, maternal and fetal outcomes and ultrasound findings. The study population had a mean age of 30.2 years. 96% had a history of previous caesarean section of which 70% had 2-4 previous scars. Placenta accreta was diagnosed in 72% of the cases. The majority of births were emergency cesarean section (66%). Among maternal outcomes, 32% suffered postpartum hemorrhage, 48% had a total abdominal hysterectomy, and 24% had bladder injuries. Outcome of fetus showed that 80% of neonates were admitted to NICU, 48% had birth weight less than 2.5 kg and 22% of neonates were dead. Statistically significant relationship was found between adherent placenta and variables including parity, previous scars and emergency cesarean section ($p<0.05$). Placenta previa is associated with high maternal and fetal morbidity. Risk factors, such as multiparity and history of previous cesarean section, significantly contribute to adverse outcomes.

Keywords: Evaluation, Maternal, Fetal Outcome, Placenta Previa, Risk Factors

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1. INTRODUCTION

Placenta previa is when the placenta covers the internal os of the cervix entirely or partially. It is an important risk factor for POH and can lead to morbidity and mortality in mother and newborn. [1]

Placenta accreta is characterised by aberrant trophoblast invasion of the placenta into the myometrium, either partially or completely. Previously known as morbidly adherent placenta, the placenta accreta spectrum is a spectrum of abnormal adherence of the placenta encompassing several grades of abnormal adhesion including placenta accreta, placenta increta and placenta percreta. [2] Placenta previa is responsible for 1/5 of all cases of bleeding in pregnancy. It is estimated that placenta previa occurs in 0.3% to 0.5% of the world's population. It is a condition which poses a major problem in obstetrics because of the serious consequences for both mother and fetus. [3]

It is estimated that, worldwide, 5.2 per 1,000 pregnant women develop placenta previa. However, there is significant variation in prevalence from place to place, with Asian studies finding the highest prevalence and studies from sub-Saharan Africa finding a lower prevalence. [4]

One of the most frequent clinical signs is painless vaginal bleeding, which occurs in approximately 70-80% of cases during the second part of pregnancy. In addition, another 10-20% of women experience uterine contractions as well as bleeding, which mimics an abruptio placenta. The bleeding may seem to have no reason or it may be caused by vaginal check-ups, childbirth or sexual activity. [5]

Massive obstetric haemorrhage is the most frequent and life-threatening consequence of placenta previa, and increased morbidity mostly arises from blood transfusion, hysterectomy, and surgical damage to the bladder, intestine, or ureter, maternal intensive care admission, septicaemia, and maternal death. [6]

Placenta previa is associated with a three to four times higher incidence of infant death and morbidity, mostly due to premature birth. [7]

Approximately 90% of instances of placenta previa are resolved via the process of childbirth. [8] Jing et al. discovered that women with anterior placentas exhibit unfavourable prognostic characteristics and are at a greater risk of experiencing significant blood loss and elevated rates of hysterectomy, as compared to women with placentas located elsewhere. [9] The occurrence of this outcome is a consequence of the placenta adhering to a previous surgical cut in the uterus, leading to placenta accreta spectrum (PAS), and a surgical incision passing through the placenta. Subsequent pregnancies additionally provide a higher risk.

Aim of the study

1. To estimate the incidence of placenta previa.
2. To evaluate maternal and fetal outcomes.
3. To study the risk factors which may increase the risk for placenta previa.

2. METHODS

A retrospective cohort study was conducted in the obstetrical department of Basra Maternity and Children Hospital in Basra City/Iraq for the last five years. The data was collected during the period from the 1st of October 2023 to the 31st of May 2024. To evaluate maternal and fetal outcomes in major degree placenta previa and to study the risk factors which may increase it. The data were collected from the hospital records, fifty women who were visited Al Basra Maternity and Children Hospital during the last five years and diagnosed with major degree placenta previa were included in the study population.

Women with missing data, and patients with APH before 28 weeks of gestation were excluded.

The patients who were diagnosed with major degree placenta previa on ultrasonography beyond 28 weeks of gestation were included in the study.

The data was collected from the patient's records who were included in the study through a well-formed questionnaire developed for the study. Data on the social and demographic characteristics were collected. Detailed obstetric history includes gravidity, parity, abortion, number of previous CS, previous D&C or evacuation, Assisted Reproductive Technology, mode of delivery of the pregnancy under study (emergency or elective) and gestational age at pregnancy termination. The clinical presentation for the placenta previa: bleeding, preterm labor, and presence of PAS. Maternal past medical and surgical history especially any previous uterine surgery. The ultrasound characteristic: grade of PP, placenta accreta or not.

Any Maternal complication which includes anaemia, bleeding, IUGR, need for blood transfusion, hysterectomy, bowel injury, bladder injury, need ICU admission, pulmonary embolism, and death. The fetal outcome includes Fetal weight at delivery, Gender, Low birth weight, Admission to the neonatal intensive care unit, Neonatal death, Stillbirth, and 1-minute and 5-minute APGAR score. The maternal hospital stay after delivery and the Intraoperative blood loss was assessed by visual estimation.

This study has been approved by the Ethics Committee of the Faculty of Medicine at Basrah University. And the Confidentiality of data was taken into consideration.

The Data analysis was done through computerized statistical software; Statistical Package for Social Sciences (SPSS) version 26 was used. The level of significance (p-value) is set at ≤ 0.05.

3. Results

The study includes 50 women. Their mean age was 30.2 years, and most of them 46.0% were between 20-29 years. Eighty percent of women lived in rural areas. Regarding their educational level, 58% of them had primary education, 90% were housewives, 60% had more than 2 children, 54% of them were between 34-36 weeks of gestational age, 96% of them had a history of previous scar, and 70% of them had 2-4 previous scars. Only 8% of women had a history of curettage. Seventy-two percent of women had accreta and 66% of women had emergency cesarean section. All these data are summarized in Table 1.

Table 1. Demographic characteristics of the patients

Variables		**No.**	**%**
Age	Mean ±SD	30.2± 5.7	
	20-29	23	46.0
	30-39	21	42.0
	>40	6	12.0
Residency	Rural	40	80.0
	Urban	10	20.0
Educational level	Illiterate	15	30.0
	Primary	29	58.0
	Secondary	5	10.0
	College and higher education	1	2.0
Employment status	Housewives	45	90.0
	Employed	5	10.0
ANC	Regular	25	50.0
	Irregular	25	50.0

Parity	1-2	20	40.0
	More than 2	30	60.0
Gestational age	Less than 34	16	32.0
	34-36	27	54.0
	Term	7	14.0
Previous scar	Yes	48	96.0
	No	2	4.0
No of scars (n=48)	1	9	18.0
	2-4	35	70.0
	>4	6	12.0
History of curettage	Yes	4	8.0
	No	46	92.0
ULS Finding	Accreta	36	72.0
	Not accreta	14	28.0
Cause of termination	Elective	17	34.0
	Emergency	33	66.0
Total		50	100.0

The maternal outcome is presented in Table 2. 32% of women had postpartum hemorrhage. All of them need blood transfusion, and 52% need 2-4 pints of blood. Total abdominal hysterectomy was done for 48% of the women. 24% had bladder injury, 18% needed bilateral internal iliac artery ligation, and 58% needed surgeons' consultation. 90% of women had ICU admission. No maternal death was recorded during the study period.

Table 2. The maternal outcome

Variables		**No.**	**%**
PPH		16	32.0
Blood transfusion	One pint	3	6.0
	2-4	26	52.0
	More than 4	21	42.0
TAH		24	48.0
Bladder injury		12	24.0
Bilateral internal iliac artery ligation		9	18.0
Surgeons' consultation		29	58.0
Admission to ICU	Yes	45	90.0

	No	5	10.0
Maternal death		0	0.0

The fetal outcome is presented in Table 3. 80% of neonates need NICU admission. 22% of neonates died. 66% were boys. Their birth weight mean was 2.4 kg and 48% of them were below 2.5 kg. The APGAR score was measured at 1 and 5 minutes, 60% of them had a 1-minute APGAR score <7, and 24% had a 5-minute APGAR score <7.

Table 3. The fetal outcome

Variables		**No.**	**%**
Admission to NICU	Yes	40	80.0
	No	10	20.0
Fetal death	Yes	11	22.0
	No	39	78.0
Gender	Boy	33	66.0
	Girl	17	34.0
Birth weight	Mean ± sd	2.4± 0.54	
	<2.5	24	48.0
	2.5-3.75	25	25.0
	>3.75	1	2.0
1 minute APGAR score <7		30	60.0
5-minute APGAR score <7		12	24.0

Table 4 shows a comparison of patient criteria in major degree PP with adhesions and without adhesion. There is a significant statistical association between the adherent placenta and parity, previous scar and the cause of termination since p-value <0.05. Women with more than two children had more prevalence of adherent placenta. All women with previous scars had adherent placenta. The percentage of emergency cesarean section was higher among women with adherent placenta.

Table 4. Comparison of patient criteria in major degree pp with adhesions and without adhesion

Variables		**Adherent placenta (n=36)**		**Non-adherent placenta (n=14)**		**p-value**
Age	Mean ±SD	30.86 ± 5.58		27.64± 5.04		0.067
ANC	Regular	18	50.0	8	57.1	0.999
	Irregular	18	50.0	6	42.9	
Parity	1-2	11	30.5	9	64.3	0.045

	More than 2	25	69.5	5	35.7	
Gestational age	Less than 34	14	38.9	2	14.2	0.101
	34-36	19	52.8	6	42.9	
	Term	3	8.3	6	42.9	
Previous scar	Yes	36	100.0	12	85.7	0.02
	No	0	0.0	2	12.3	
No of scars	1	7	19.4	3	25.0	0.177
	2-4	23	63.9	9	75.0	
	>4	6	16.7	0		
History of curettage	Yes	2	5.6	2	14.3	0.115
	No	34	94.4	12	85.7	
Cause of termination	Elective	7	19.4	10	71.4	0.045
	Emergency	29	80.3	4	28.6	

Table 5 shows a comparison of maternal outcomes in major degree PP with adhesions and without adhesion. There is a significant statistical association between the adherent placenta and blood transfusion, TAH, bladder injury, Bilateral internal iliac artery ligation and the need for Surgeons' consultation since p-value <0.05. Women with adherent placentas need more blood transfusions. 55.6% of women with adherent placenta vs 28.6% of women with non-adherent placenta need TAH. The bladder injury, Bilateral internal iliac artery ligation and the need for Surgeons' consultation all had a higher percentage among women with adherent placenta.

Table 5. Comparison of maternal outcome in major degree pp with adhesions and without adhesion

Variables		**Adherent placenta (n=36)**		**Non-adherent placenta (n=14)**		**p-value**
PPH		14	38.9	2	14.3	0.079
Blood transfusion	One pint	0	0.0	3	21.4	0.015
	2-4	18	50.0	8	57.1	
	More than 4	18	50.0	3	21.5	
TAH		20	55.6	4	28.6	0.041
Bladder injury		12	33.3	0	0.0	0.045
Bilateral internal iliac artery ligation		9	25	0	0.0	0.05
Surgeons' consultation		25	69.4	4	28.6	0.004
Admission to ICU	Yes	34	94.4	11	78.6	0.403
	No	2	5.6	3	21.4	

Maternal death	0	0.0	0	0.0	1.00

Table 6 shows a comparison of fetal outcomes in major degree PP with adhesions and without adhesion. There is a significant statistical association between the adherent placenta and a 5-minute APGAR score <7 since p-value= 0.05. Thirty percent of neonates for mothers with adherent placenta had low APGAR scores after 5 minutes.

Table 6. Comparison of fetal outcome in major degree pp with adhesions and without adhesion

Variables		**Adherent placenta (n=36)**		**Non-adherent placenta (n=14)**		**p-value**
Admission to NICU	Yes	31	86.1	9	64.3	0.591
	No	5	13.9	5	35.7	
Fetal death	Yes	10	27.8	1	7.1	0.114
	No	26	72.2	13	92.9	
Gender	Boy	24	66.7	9	64.3	0.700
	Girl	12	33.3	5	35.7	
Birth weight	Mean ±Sd	2.3± 0.51		2.6 ±0.59		0.102
1 minute APGAR score <7		23	63.9	7	50.0	0.368
5-minute APGAR score <7		11	30.6	1	7.1	0.05

4. Discussion

Placenta previa (PP) and its complications are a major problem in obstetric practice, especially when combined with other factors such as, for example, placenta accreta [10]. The aim of this study was to explore the maternal and fetal complications of placenta previa with and without placental adhesions. These high risk pregnancies are influenced by several factors and understanding these factors is vital to improving the management of these pregnancies to reduce morbidity and mortality associated with them [11]. The study population was largely rural (80% rural residents). The mean age of the participants was 30.2 years and the age group of most women was 20-39 years. These results align with the research by other authors like Senkoro et al., [11] and Kumari et al., [12] which reported a higher incidence of placenta previa and its related complications in younger age group and rural areas due to poor health care access and prenatal care. The majority of the women in this study were housewives (90%) with a primary education level, which may be related to their socioeconomic status and low level of health literacy – factors associated with poor pregnancy outcomes [12].

Clinical characteristics were that 60% of the women had more than two previous pregnancies and 96% had a history of caesarean sections (CS), of which 70% had 2-4 CS. It is interesting to note that the prevalence of previous CS was high as this is a known risk factor for placenta previa and placenta accreta, as CS leaves scars and this results in abnormal attachment of the placenta. The history of curettage, in turn, underlines the risk factors associated with placental complications: curettage is associated with uterine scarring and abnormal placentation [14] were reported in 92% of the participants. Postpartum Haemorrhage (PPH) was observed in 32% of cases which is a concern as PPH is a major concern with placenta previa, particularly with accreta. One study by Fan et al. [15] included 11 meta-analyses with a total of 5146 individual pregnant women with placenta previa and reported the pooled incidence of PPH as 22.3% which is a little less than

our incidence. In addition significant blood transfusion needs were recorded (42% of women required more than 4 pints of blood), reflecting the high risk of blood loss associated with these conditions.

There was a high rate of subtotal abdominal hysterectomy (sTAH) at 48%, in keeping with a study that reported high sTAH rates in placenta accreta cases as a life-saving measure to control bleeding [16]. A bladder injury was present in 24% of cases, a significant surgical finding that emphasizes the difficulty in surgery in cases of placenta accreta as the invasive placental tissue may involve surrounding organs leading to increased chances of complications which is in accordance with Konijeti et al. [17]. A further indication of how much effort was put in to control hemorrhage in these high-risk situations was the bilateral internal iliac artery ligation, which was performed in 18% of cases, consistent with the results of Madhubala et al. [18]. Ninety percent of the women required admission to the ICU, and complications of placenta previa and accreta are serious.

Although these conditions may have been serious, there were no maternal deaths which may be due to effective management and prompt surgical interventions, which was better than historical data where maternal mortality rate was higher [19]. The results of this study were also alarming with respect to fetal outcomes, 80% of newborns being admitted to NICU and 22% of newborns being stillbirths. The high rate of NICU admissions reflects the high rate of prematurity and of low birth weight seen in these pregnancies, which frequently requires early delivery to avoid complications for mother and baby. These findings are in line with the findings of Lawrence et al. [20]. The mean birth weight was 2.4 kg and 48% of the infants weighed <2.5 kg, indicating the incidence of intra-uterine growth restriction (IUGR) in pregnancies complicated by placental problems [21].

Sixty percent of babies scored below 7 and 24 percent below 7 on the 1-minute and 5-minute APGAR scores, respectively, indicating poor neonates were born into the world. This is in line with the other studies that revealed lower APGAR score in infants born to mothers with placenta previa and accreta which is attributed to the prematurity and possible asphyxia from abnormal placental function as shown by Razaz et al. [22] and He et al. [23]. A number of differences were found between cases of adherent placenta and those without. Women with adherent placenta were more likely to have higher parity and more previous scars, which is consistent with the knowledge that uterine scar from previous CS increases the risk of placenta accreta [24]. The need for sTAH was also much higher in adherent group (55.6% vs. 28.6%, p=0.041) which is in line with Teixidor et al. [25] and complications were more frequently present in adherent group such as bladder injury and bilateral internal iliac artery ligation.

These results provide a greater understanding of the complexity and risk of surgery for placental adhesions. A higher number of women with adherent placenta were more likely to have emergency termination of pregnancy (80.3% vs. 28.6%, p=0.045) which indicates that the cases were more likely to have sudden and severe problems and needed urgent intervention, similar to what Pegu et al. [16] reported. This is in contrast to elective cases which are more likely to be treated in a predictable manner, such as planned cesarean hysterectomy as mentioned in the study by Thang et al. [26].

This study highlights the high risk for maternal and fetal morbidity in placenta previa, especially with other associated conditions such as placental adhesions. The results underscore the need for timely diagnosis, surgical planning and proper peripartum care in these high-risk pregnancies. Good management measures, such as being prepared for massive transfusion and surgical skills in complicated situations.

5. Conclusion

High maternal and fetal morbidity is associated with placenta previa. Multiparity and history of cesarean section are important risk factors. Women with placenta previa have a better prognosis and fewer complications with early diagnosis by regular ultrasound examination and with appropriate management. Additional research is suggested with larger populations to confirm the results and formulate interventions.

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