

Hysterectomy in Pregnant Women with a Diagnosis of Placenta Previa

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Abstract: Low-lying placenta and placenta previa are important obstetric conditions with high morbidity among the mother and fetus. These conditions are risk factors for postpartum hemorrhage (PPH), placenta accreta spectrum (PAS), and peripartum hysterectomy. Aim to find the incidence of hysterectomy in pregnant women with diagnosis of Low-Lying Placenta or Placenta Previa and to find maternal, obstetric, intraoperative risk factors, outcome of mother and influence of placental type and placental adherence on surgical and maternal outcome. This study was a prospective observational study carried out in Al-Basra Maternity and Children Hospital between April 2024 and April 2025. All women with ultrasonic placental measurements of low-lying placenta and placenta previa between 24–40 weeks' gestation were included. A pre-designed questionnaire was used for data collection and operative and medical records were checked. Maternal characteristics, ultrasound findings, intraoperative events, were assessed. The main outcome was hysterectomy and secondary outcomes were identification of associated risk factors. Results of the 115 cases analyzed, 22 women (19.1%) underwent hysterectomy and 93 (80.9%) did not. The mean maternal age was 30.16 ± 5.7 years and mean BMI was 25.69 ± 5.11 . Most frequent indications for hysterectomy were placental bed postpartum hemorrhage (PPH) (11 cases, 50%), placenta accreta spectrum PPH (6 cases, 27.3%) and uterine atony PPH (5 cases, 22.7%). Hysterectomy was significantly more frequent among women aged ≥ 35 years (54.5% vs. 22.6%, $p = 0.03$) and those with placenta previa stage ≥ 3 (100% vs. 43%, $p < 0.001$). One case of maternal mortality (4.55%) was seen in the hysterectomy group and none (0%) in the non-hysterectomy group ($p = 0.007$). Hysterectomy is an important life-saving procedure in low-lying placenta and placenta previa and is significantly dependent on the PAS, obstetric history, and operative factors. Careful imaging and prenatal assessment are important to identify high-risk patients early in order to reduce morbidity and improve outcome. The purpose of this study is to determine the necessity of early diagnosis, special care and timing of surgical intervention for optimal results in this high-risk patient group.

Keywords: Placenta Previa, Peripartum Hysterectomy, Cesarean Hysterectomy, Obstetric Hemorrhage

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Introduction

Placenta previa is a serious obstetric condition, in which the placenta is abnormally located in part or in full over the internal cervical os. It is a significant cause of maternal and perinatal morbidity and mortality, mainly linked to antepartum bleeding, postpartum bleeding and emergency obstetric procedures [1,2]. The prevalence of fAS varies according to geographical region and is estimated at 0.21% in Iraqi pregnant women [3].

Placenta previa is associated with several maternal and obstetric factors such as previous cesarean delivery, advanced maternal age, multiparity, previous placenta previa, multiple pregnancies and uterine surgery [4]. Uterine scarring has been shown to be an important risk factor, especially in women who have had cesarean deliveries previously, as it puts them at risk of abnormal placental implantation and placenta accreta spectrum (PAS) (placenta accreta, placenta increta and placenta percreta) [5].

Placenta previa can cause significant maternal morbidity which includes massive obstetric hemorrhage, blood transfusion, emergency cesarean section and peripartum hysterectomy. Fetal complications include preterm delivery, low birth weight, neonatal respiratory problems and perinatal death [6]. Conservative management is acceptable for clinically stable patients, but hysterectomy is indicated in the presence of life-threatening hemorrhage which cannot be controlled, or abnormal placental adherence that prevents safe separation of the placenta [7].

Peripartum hysterectomy is a lifesaving procedure, which nevertheless has significant surgical and psychological implications. The most serious complications include bladder and ureteral injury, excessive blood loss, post-operative infection, and lengthy hospital stays. Additionally, the psychological distress and permanent loss of fertility can have a negative impact on women's quality of life in the long run [8,9]. Thus, further knowledge about the factors associated with hysterectomy in women with placenta previa is a key to better obstetric care. The objectives of this study are to identify the prevalence of hysterectomy, risk factors for hysterectomy, maternal outcomes, and the effects of placental location and abnormal adherence on the approach to surgery and maternal outcomes.

Methodology

The study was a prospective observational study at Al-Basra Maternity and Children Hospital, a tertiary referral center for high-risk pregnancies located in Basra, Iraq, from April 2024 to April 2025. The study sought to ascertain the prevalence of hysterectomy among women who have been diagnosed with low-lying placenta or placenta previa as well to find risk factors and maternal outcomes.

Participants in the study were those pregnant women who were diagnosed by abdominal ultrasound between 24 and 40 weeks of pregnancy with low lying placenta and/or placenta previa, including those who underwent hysterectomy because of the placenta previa and/or abnormal location of the placenta. Women who had an hysterectomy for reasons other than obstetric, e.g. uterine rupture or uterine atony, were excluded. The lowest number of participants involved in the calculation of the sample size was 108, and the number of participants targeted to be recruited was about 125 due to the possibility of missing participants.

A structured questionnaire was used to obtain data from mothers on their demographics, obstetric history, ultrasonographic findings and pregnancy complications, which were collected prospectively. Perioperative parameters were delivery gestational age, estimated blood loss, operation time, bladder injury, bladder invasion, intravenous fluid and transfusion of blood, surgical consultation and hospital stay after surgery.

Senior consultant obstetricians decided when to do cesarean hysterectomy, depending on clinical

condition, amount of hemorrhage and degree of placental adherence. The cesarean section was performed first then the need for hysterectomy was assessed. Intraoperative assessment was made for the presence of cervical placental invasion and in the case of bladder injuries, urologists were consulted.

The main outcome measured was the rate of hysterectomy among women suffering from low-lying placenta and/or placenta previa. Additional maternal and obstetric risk factors, maternal mortality/complications, and the effect of placental site and adherence on surgical outcomes were secondary outcomes.

Data analysis was done by SPSS version 24.0. The Kolmogorov–Smirnov test was used to evaluate the normality. Descriptive values of continuous variables were given as mean $\pm$ standard deviation, and independent-samples t-test was used for comparison. The categorical data were summarized by frequencies and percentages and subjected to chi-square analysis. A p value of <0.05 was considered to be statistically significant.

Permission was taken from Scientific Council of the Iraqi Board of Medical Specializations and Basra Health Directorate. All participants were given verbal informed consent after being informed about the aims and procedures of the study.

Results

The mean age of the study population was 30.16 ± 5.7 years which is a relatively young reproductive age group. The mean BMI of the participants was 25.69 ± 5.11 in which the average was in the overweight category. When assessing the socioeconomic status, 45 patients (39.1%) were classified as having low socioeconomic level, 39 patients (33.9%) as medium, and 31 patients (27%) as high, with a fairly equal distribution, though with slightly more low socioeconomic level patients.

Table 1. Sociodemographic Characteristics of the Study Population

Variable		Mean $\pm$ SD	
Age group (years)		30.16 ± 5.7	
BMI		25.69 ± 5.11	
Variable		Frequency (n)	Percentage (%)
Sociodemographic status	Low	45	39.1 %
	Medium	39	33.9 %
	High	31	27 %

The incidence of hysterectomy among patients with placenta previa was 22 (19.1%), as illustrated in Figure 1

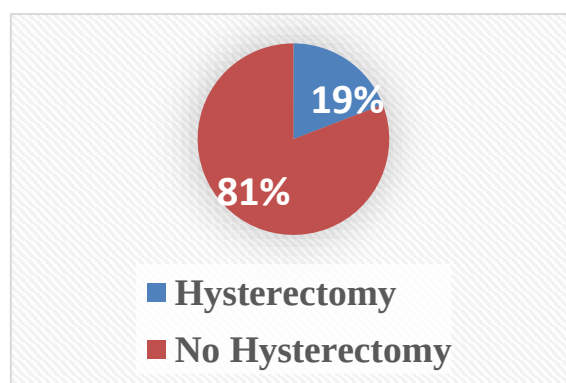


Figure 1. Incidence of hysterectomy in patients with low lying placenta

Analyzing the indications for hysterectomy, PPH from placental bed was the most frequent cause, accounting for 11 cases (50%). This was followed by PPH from placenta accreta spectrum, observed in 6 cases (27.3 %), and PPH from uterine atony in 5 cases (22.7 %).

Table 2. Indications for Hysterectomy

Indication	Frequency (n)	Percentage (%)
PPH from uterine atony	5	22.7%
PPH from placental bed	11	50%
PPH from placenta accreta spectrum	6	27.3%
Total number of Hysterectomy cases	22	100%

Maternal outcomes were also compared between the two groups and there was one maternal death (4.55%) in the hysterectomy group and none (0%) in the non-hysterectomy group, with a statistically significant difference ($p=0.007$).

The mean blood loss were significantly higher in the hysterectomy group (1250 ± 650 ml) than in the non hysterectomy group (850 ± 320 ml) ($p<0.001$). In addition, patients who had been admitted for hysterectomy were more likely to be admitted to the ICU (5, 22.7%) than those who had not been admitted for hysterectomy (2, 2.1%) ($p<0.001$).

Likewise, a significantly higher proportion of patients in the hysterectomy group (17, 77.3%) required blood transfusion than patients in the non-hysterectomy group (28, 30.1%) ($p<0.001$). In addition, urinary system injury was more common in patients undergoing hysterectomy (3, 13.6%) and less common in patients who did not undergo hysterectomy (1, 1.1%) (Statistically, $p=0.018$).

Table 3. Maternal Outcomes Between Patients with and Without Hysterectomy

Variable	Category	Hysterectomy (N=22)	No Hysterectomy (N=93)	p-value
Maternal Mortality	Yes	1 (4.55%)	0 (0%)	0.007
	No	20 (90.9%)	93 (100%)	
Blood Loss (ml)	Mean $\pm$ SD	1250 $\pm$ 650	850 $\pm$ 320	<0.001
ICU Admission	Yes	5 (22.7%)	2 (2.1%)	<0.001
	No	17 (77.3%)	91 (97.9%)	
Need for Blood Transfusion	Yes	17 (77.3%)	28 (30.1%)	<0.001
	No	5 (22.7%)	65 (69.9%)	
Urinary System Injury	Yes	3 (13.6%)	1 (1.1%)	0.018
	No	19 (86.4%)	92 (98.9%)	

Discussion

The present study was designed to estimate hysterectomy rate among pregnant women with placenta previa and to assess the risk factors and result of hysterectomy. Placenta previa continues to be a major obstetric problem because of its complications, which include excessive bleeding and peripartum hysterectomy. It is important to understand the clinical profile and outcomes of the patients affected in order to guide management and decrease adverse events.

19.1% of the cohort had hysterectomy, a much higher rate than that observed in the general obstetric population where peripartum hysterectomy ranges from 0.06% to 0.23% of births [10]. However, the rate in our study was high because we only studied women with placenta previa, a known risk factor for severe obstetric hemorrhage and surgery. Choi et al. reported the rate of hysterectomy performed for

peripartum bleeding secondary to major bleeding as 9% and stressed the importance of placenta previa and low-lying placenta in the occurrence of hysterectomy in peripartum bleeding [11]. One of the studies by Prasanth reported 7.14% incidence rate [12]. This study had relatively small number of patients and emergency cases not prepared in a proper manner may have contributed to the higher rate of hysterectomies and also other socio-cultural factors like tribal disputes and medico-legal reasons may have an influence on choosing hysterectomy.

PPH from the placental bed was the most common reason for hysterectomy in our study (50%), followed by PPH due to P.A.S. (27.3%) and PPH due to failure of medical measures (22.7%). These findings are similar to those of a prior study by Hsu et al., which found PPH as the most common diagnosis for emergency peripartum hysterectomy in women with placenta previa/accreta [13].

A study conducted by Mbakwa et al. [14] showed that the most frequent cause of emergency obstetric hysterectomy was intractable PPH (33.3%) followed by uterine atony (30%). This is also consistent with the results of Forna et al. [15] and Njamen et al. [16] from the United States and Cameroon respectively. Among the groups, the most common indication for cesarean hysterectomy was intractable postpartum hemorrhage (PPH) (33.3%) and the most common indication for peripartum hysterectomy (PH) was abnormal placentation (50%).

The high rate of PAS and PPH in more than 25% of our cases highlights the complicated and life-threatening nature of these overlapping pathologies that may need aggressive surgical management when medical treatment fails to stabilize the patient. This is consistent with the literature that indicates that abnormal placentation (particularly previous cesarean deliveries) is a strong risk factor for hysterectomy [17,18].

In our study, higher maternal age (≥ 35 years) and stage of placenta previa (stage ≥ 3) were significant risk factors for hysterectomy. This finding is confirmed by previous studies which have shown that aging is associated with reduced myometrial contractility, higher prevalence of placenta previa and placenta accreta and increased cesarean delivery rates [19]. All of the hysterectomy cases had advanced stage placenta previa, making this finding another important factor in the prediction of severe peripartum complications related to the location and extent of coverage of the placenta. Routine prenatal imaging and staging of placental insertion are still very important in risk stratification and clinical readiness [20,21].

Other traditional risk factors, including prior cesarean section, higher parity, placenta previa history, prior uterine surgery, BMI and socioeconomic status were not significantly different between patients who had hysterectomy compared to those who did not. Although multiple cesarean deliveries have been found to be associated with an increased risk of PAS and with surgical morbidity [22], this was not significant in our study, which perhaps reflected the number of cesarean deliveries or the incidence of variable surgical technique, degree of placental invasion or timing of cesarean delivery. Socioeconomic status, which is commonly associated with health inequalities, did not significantly predict hysterectomy in our population, which may be partly because of the relatively homogeneous access to health care at the tertiary care center where the study took place.

Concerning maternal outcome, mortality in women subjected to hysterectomy was 4.55% whereas none of the non-hysterectomy group was observed to be dead, which was statistically significant. This is better than the earlier published reports where the maternal mortality rates post emergency obstetric hysterectomy were between 16–18% [23,24].

In sum, these results emphasize the need for early detection of high-risk patients with placenta previa, those ≥ 35 years and those with advanced-stage placenta previa. Prenatal counseling, delivery planning at well-equipped centers and the involvement of obstetricians, anesthesiologists, blood bank services, etc.,

are very important factors to reduce maternal morbidity and mortality. If possible, the extent of placental invasion should be evaluated using advanced imaging techniques as color Doppler or MRI before surgery particularly in women with cesarean section history.

Conclusion

In our study, the frequency of hysterectomy was relatively high among women with low-lying placenta with the most common indications being PPH from placental bed, PPH of PAS and PPH due to uterine atony. Severe placenta previa, but not other common risk factors, were significant predictors of hysterectomy, and so was advanced maternal age. Maternal mortality rate was significantly higher among hysterectomy group highlighting the need for early diagnosis, specialized care and timely surgical intervention in order to maximize outcome in this vulnerable group.

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