RISK FACTORS AND OUTCOME OF MORBIDLY ADHERENT PLACENTA IN SULAYMANIYAH MATERNITY TEACHING HOSPITAL

Huda Muhaddien Muhammad [a]

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ABSTRACT

Background

Over the last three decades, the incidence of placenta accreta has increased dramatically in concert with the increase in cesarean delivery rate. Moreover, placenta previa has been reported to be associated with a high rate of placenta accreta, which is mainly responsible for direct maternal mortality and morbidity.

Objectives

The present study aimed to determine the risk factors of the morbidly adherent placenta and their outcomes.

Patients and Methods

The present cross-sectional study was carried out from May 1, 2018, to May 1, 2019. For this purpose, a total number of 38 pregnant women with morbidly adherent placenta above 20 weeks' gestations were selected. Afterwards, the patients were interviewed using a constructed questionnaire. The data were analyzed using the Chi-square test by Statistical Package for Social Science (version 24). P-values of less than 0.05 were regarded as significant.

Results

Approximately 63% of patients did not report a previous history of previous surgical evacuation, and more than half of them did not have a history of previous abortions. More than 88% of cases of placenta accreta were reported among those with late gestational age. In more than 76% of the patients, the placental position was in an anterior position. Cesarean hysterectomy was the most commonly used surgical intervention. Also, more than two-thirds of them needed a blood transfusion. Furthermore, 75% of placenta increta occurred among anterior placental positions.

Conclusion

The morbidly adherent placenta is common in patients with repeated cesarean section. Cesarean hysterectomy is the traditional method of managing mean arterial pressure (MAP) to prevent severe blood loss and other maternal morbidities.

Keywords: *Placenta Accreta, Morbidly, Risk Factor, Sulaymaniyah.*

[a] College of Medicine, University of Sulaimani, Kurdistan Region, Iraq.
Correspondence: huda.muhammad@univsul.edu.iq

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INTRODUCTION

Over the last three decades, the incidence of placenta accreta has increased dramatically, associated with an increased cesarean delivery rate. The incidence of placenta accreta is 1 per 2,500 deliveries, and it can be caused by a defect in decidua basalis, resulting in abnormally invasive placentation of the placenta [1, 2]. History of cesarean section (CS) and uterine surgeries, such as myomectomy and curettage, has been associated with abnormal placentation.

However, placenta previa has been chiefly associated with a high rate of placenta accreta[3]. The term morbidly adherent placenta includes aberrant placentation characterized by abnormally implanted, invasive, or adhered placenta. These disorders are collectively known as accreta syndromes, and these terms are used interchangeably[4, 5].

Classification

The mean arterial pressure (MAP) classification is based on the depth of trophoblastic growth, which modern pathologists introduced in the 1960s [6]. Placenta accreta indicates that villi are attached to the myometrium. With placenta increta, villi invade the myometrium, and placenta percreta defines villi that penetrate through the myometrium or the serosa [7]. In all three varieties, abnormal adherence may involve all lobules-total placenta accreta. A focal placenta accreta is described as when all or part of a single lobule is abnormally attached (see Figure 1).

The maternal mortality risk due to morbidly adherent placenta may reach 7%, and the extensive surgery-related morbidities include massive transfusions, infections, urologic injuries, and fistula formation [8]. Therefore,appropriate management of placenta accreta involves early recognition of high-risk women based on clinical risk factors, accurate preoperative diagnosis, and detailed maternal counselling before the surgery [9]. The most important risk factors are an associated Previa in the recent pregnancy, a prior cesarean delivery, and more likely a combination of the two [10]. In addition, a higher risk of the subsequent accreta placenta may follow classical cesarean incision [11].

Another type of myometrial trauma, such as curettage or endometrial ablation, may cause dysfunctional decidual formation [12]. In older and multiparous women, placenta previa is more common [13, 14]. The reason is not apparent, but it may be associated with the ageing of the vasculature of the uterus. Placental hypertrophy and enlargement may increase the likelihood of the placenta encroaching on the lower segment. Birth spacing of more than four years has been reported to be associated with placenta previa because there will be scarring or poor vasculature of the uterus with increasing age [14].

Figure 1. Different types of placenta accreta

The maternal outcome of morbidly adherent placenta

The morbidly adherent placenta is a severe pregnancy complication associated with massive intrapartum haemorrhage and high maternal morbidity and mortality. Surgery of morbidly adherent placenta is a considerable challenge. However, it has been reported that maternal morbidity is reduced in women who deliver in a tertiary care hospital with a multispecialty care team. Postpartum hemorrhage (PPH) in women with placenta previa is more than in the general population. In addition, women with placenta previa are more likely to deliver babies before 37 weeks due to antepartum hemorrhage. In addition, morbidly adherent placenta can lead to considerable maternal morbidities, including massive blood transfusion, urinary tract injury, hysterectomy, intensive care unit (ICU) admission, sepsis, and extended hospital stay [15, 16].

Currently, the management options for morbidly adherent placenta include conservative and surgical approaches. The conservative strategy includes leaving the placenta in situ, followed by medical management with methotrexate, uterine artery embolization, internal iliac artery ligation or embolization, dilatation, and curettage or curettage hysteroscopic loop resection. However, the risk of sepsis and delayed haemorrhage was also incurred. The surgical approach consists of immediate cesarean hysterectomy, avoiding placental removal during operation. Therefore, it is essential to know the risk factors of MAP to decrease the complications that may result due to the delayed diagnosis and during surgical management in those cases [17, 18].

The main objective of the present study is to determine recent maternal and neonatal delivery outcomes among women with a morbidly adherent placenta in major centres affiliated with Sulaymaniyah Maternity Teaching Hospital.

PATIENTS AND METHODS

Study design and setting

The present study was a cross-sectional descriptive study. Required data were collected from Sulaymaniyah Maternity Teaching Hospital in the Kurdistan region, Iraq, for one year from May 1, 2018, to May 1, 2019.

Sample size and sampling method

A total of 38 pregnant women with morbidly adherent placenta above 20 weeks gestation underwent an ultrasound diagnosis. The patients were selected by convenience sampling method.

Data collection and data analysis

Data collection was performed by direct interviews conducted by the researcher through a constructed questionnaire. The questionnaire was composed of obstetrical history, method of conception, previous cesarean section, history of other uterine surgery, and information related to the adherent placenta. Data were first entered into an Excel sheet and then transferred to Statistical Package for Social Science (SPSS, version 24). Descriptive statistics were used to present all variables, and the chi-square test was used to find the relationship between variables. P-values of less than 0.05 were regarded as significant.

Ethical considerations

Ethical considerations were taken into account by obtaining permission from the Ethical Committee of the College of Medicine. Moreover, verbal consent was received from all patients.

RESULTS

The patients' mean age was 34.4 ± 2.4 years old. More than 68% were between 31 and 40 years old. The mean gestational age was 34.7 weeks, and the gestation age was equal to or over 35 weeks in more than 75% of the patients. Nearly 63% of the patients were not reported with or did not report the previous history of previous surgical evacuation. In addition, no history of the previous abnormal invasive placenta was reported. Regarding the mode of conception, only one case became pregnant by in vitro fertilization (IVF), while 97.4% of them reported automatic mode (Table 1).

More than half of the patients did not have a history of previous abortion, while half were reported with para 3 (Table 2).

The patients' age and the number of previous CS are not statistically associated with different outcomes (p-value>0.05), while there was a highly significant association with gestational age (p-value=0.001). The gestational age was ≥ 35 weeks in more than 88% of placenta accreta cases (Table 3).

Regarding placental position, 76.3% and 60.5% were reported with anterior position and focal morbidly

adherent placenta, respectively. CS hysterectomy was the most commonly used surgical intervention (36.8%). More than 70% of the cases needed a blood transfusion, and more than one-third of them (36.6%) received two pints of blood (Table 4).

The placental position of 75% of placenta increta was anterior, while 100% of cases of placenta percreta were anterior (p-value=0.391). In addition, there was a highly significant association between the extent of morbidly adherent placenta and outcomes (p-value=0.001). More than 88% of placenta accreta were reported among focal placental invasion, while all cases of percreta were reported among diffuse and anterior placental positions (see Table 5).

Table 1. Socio-demographic and obstetrical characteristics of participants

Variable	Frequency	Percentage
Age (years)		
≤ 30	9	23.7
31-35	12	31.6
36-40	14	36.8
> 40	3	7.9
Gestational age at the time of delivery (weeks)		
20-27	4	10.5
28-34	5	13.2
≥ 35	29	76.3
Number of previous C/S		
1	7	18.4
2	7	18.4
3	17	44.7
4	5	13.1
5	2	5.2
Number of previous surgical evacuation		
None	24	63.2
1	10	26.3
2	4	10.5
History of previous abnormal invasive placenta	0	0
Mode of conception		
Spontaneous	37	97.4
IVF	1	2.6
Previous uterine surgery		
No	37	97.3
Metroplasty	1	2.6
Total	38	100

Table 2. The patients' abortion history and parity.

		Frequency	Percentage
Previous abortion			
1.0		12	31.6
2.0		3	7.9
3.0		3	7.9
No		20	52.6
Total		38	100.0
Parity status			
Primigravid	1	3	7.9
Multiparous	2	6	15.8
	3	19	50.0
	4	6	15.8
Grand multiparity	5	3	7.9
	6	1	2.6
Total		38	100.0

Table 3. Association between age and obstetrical variables with the outcomes of different types of mean arterial pressure (MAP).

Variables	Outcome			P-value
	placenta accreta No. [%]	Placenta increta No. [%]	placenta percreta No. [%]	
Age (years)				
≤ 30	6[35.3]	2[12.5]	1[20.0]	0.451
31-35	3[17.6]	6[37.5]	3[60.0]	
36-40	7[41.2]	6[37.5]	1[20.0]	
> 40	1[5.9]	2[12.5]	0[0.0]	
No. of previous CS				
1	5[29.4]	2[12.5]	0[0.0]	0.651
2	3[17.6]	3[18.8]	1[20.0]	
3	5[29.4]	8[50.0]	4[80.0]	
4	3[17.6]	2[12.5]	0[0.0]	
5	1[5.9]	1[6.3]	0[0.0]	
Gestational age (weeks)				
20-27	1[5.9]	0	3[60.0]	0.001
28-34	1[5.9]	4[25]	0 [0.0]	
≥ 35	15[88.2]	12[75]	2[40.0]	
Total	17	16	5	

Table 4. Characteristics of placenta previa and types of intervention.

Variables	Frequency	Percentage
Placental position		
Anterior	29	76.3
Posterior	9	23.7
Extend of morbidly adherent placenta		
Diffuse	15	39.5
Focal	23	60.5
Surgical intervention		
*B-Lynch, & intrauterine balloon	12	31.6
*C/S hysterectomy	14	36.8
*B-Lynch& intrauterine balloon & internal iliac artery ligation	1	2.6
*B-lynch		
*Intrauterine balloon	4	10.5
*Wedge resection of a lower segment done	3	7.9
*B-Lynch &internal iliac artery ligation	1	2.6
*CS hysterectomy + internal iliac artery ligation	1	2.6
	2	5.3
Pints of blood transfused		
0	11	28.9
1	7	18.4
2	13	34.2
3	4	10.5
4	1	2.6
6	1	2.6
9	1	2.6

Table 5. Characteristics of placenta previa and types of intervention in relation with types of outcomes

Variables	Outcome			P-value
	placenta accreta No. [%]	Placenta increta No. [%]	placenta percreta No. [%]	
Placental position				
Anterior	12[70.6]	12[75.0]	5[100]	**0.391**
Posterior	5[29.4]	4[25.0]	0[0.0]	
The extent of morbidly adherent placenta				
Diffuse	2[11.8]	8[50.0]	5[100]	
Focal	15[88.2]	8[50.0]	0 [0.0]	**0.001**
Surgical intervention				
*B-Lynch, & intrauterine balloon	7[41.2]	5[31.3]	0[0.0]	
*C/S HYSTERECTOMY	2[11.8]	7[43.8]	5[100.0]	
*B-Lynch& intrauterine balloon &internal iliac art. ligation	1[5.9]	0[0.0]	0	
*B-lynch	3[17.6]	1[6.3]	0	
* Intrauterine balloon	3[17.6]	0[0.0]	0	**0.123**
*Wedge resection of a lower segment done	0[0%]	1[6.3]	0	
*B-Lynch &internal iliac artery ligation	0[0.0]	1[6.3]	0	
*Cs hysterectomy internal iliac art. ligation	1[5.9]	1[6.3]	0	
Pints of blood transfused				
No	5[29.4]	6[37.5]	0	
1	5[29.4]	2[12.5]	0	
2	6[35.3]	4[25.0]	3[60]	
3	0	3[18.8]	1[20]	
4	0	1[6.3]	0	**0.115**
6	1[5.9]	0 [0.0]	0	
9	0	0	1[20]	

DISCUSSION

A morbidly adherent placenta is a severe complication of pregnancy and is associated with massive intrapartum hemorrhage and high maternal morbidity and mortality. It has been reported that maternal morbidity is reduced in women who deliver in a tertiary care hospital with a multispecialty care team [19].

In the current study, the frequency of MAP was more in the age group of the late thirties. This finding is supported by most of the worldwide studies that have shown increases in the chance of MAP with advancing maternal age; therefore, increasing maternal age is a risk factor for placenta accreta [20]. Regarding placental position, about 76% of the placentas were anterior, which can be explained by the possibility of myometrial defects that happened due to previous cesarean section scars. Also, the granulation tissue and scar itself may be a feasible or attractive site for MAP.

In this study, about 76% of the patients were presented at or over 35 weeks of gestational age, which is close to the result of the study done by Duzyj et al. in India [21]. Regarding the gestational age in percreta type of MAP, it was less than 27 weeks in 60% of the cases. This was because those cases were presented with severe uterine bleeding, which needed termination of the pregnancy at the time of presentation. On the other hand, in most cases of accreta type of MAP, the gestational age was more than 35 weeks because their delivery was elective, and they had been managed conservatively till the time of delivery. Regarding the number of previous CS in the current study, cases with the previous 3 CS were more frequent; most of the studied patients (19 cases) had previous parity of 3.

Regarding the extent of MAP, all cases of percreta type were diffuse, while it was equal between focal and diffuse extension in increta type; however, 88% of the accreta type of MAP were focal extension. These findings are similar to the findings reported by many researchers [22, 23].

The explained in the accreta syndromes, abnormal placental adherence to the myometrium stem may

happen from the partial or total absence of the decidua basalis and imperfect development of the fibrinoid or nitabuch layer. So, if there is a lack of decidual spongy layer, either partially or totally, then there will be an absence of the physiological line of cleavage and some or all cotyledons are densely anchored [(24)].

Cesarean hysterectomy was done for 16 cases out of 38; all cases of percreta type underwent a cesarean hysterectomy; this goes with the mainstay of management in the majority of cases which is hysterectomy. In contrast, internal iliac artery ligation before the hysterectomy is reported to reduce perioperative blood loss [(25)] as we did in two cases out of the hysterectomies in the current study. Conservative surgical options, which have been reported to be successful in selected cases, are B-lynch suture with balloon tamponade and endocrine hemostatic suture [(26)]. Alternatively, prophylactic bilateral uterine artery ligation followed by the arrest of hemorrhage from placental vessels by balloon tamponade is another suggestion in cases where uterine conservation is desirable [(26)]. The mainstay of conservative management in a non-hemorrhaging patient involves uterine conservation leaving the placenta in situ for later use of systemic methotrexate [(27)]. At the same time, only two cases of accreta type got cesarean hysterectomy, which is mainly because about 88% of the accreta type had a focal extension. Hence, the hemorrhage was not severe enough to do the hysterectomy.

In conclusion, the present study results demonstrated that nearly 90% of placenta accreta were reported among focal placental invasion. CS hysterectomy was the most commonly used surgical intervention for managing patients with focal morbidly adherent placenta, yielding satisfactory outcomes. The combination of an intrauterine balloon with B-lynch and cesarean hysterectomy was among the most current interventions that could be applied to manage placenta previa patients. Moreover, it is recommended that researchers should try other conservative surgical methods to preserve fertility as successful substitutes, especially in young aged females, to prevent iatrogenic menopause and its complications.

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