



The Rate of Total Abdominal Hysterectomy and Complication Associated with Abnormal Placental Adherence: Accreta, Increta, And Percreta

Hayat Jabir Hamad

Al-Diwaniyah Maternity and Children Teaching Hospital, Al-Qadisiyah, Iraq

Abstract

Background: The placenta may adhere abnormally to the uterus leading to three main types of abnormalities categorized according to the degree of histological depth of placenta within the uterine wall. These are accrete, increta and percent. The rate of total abdominal hysterectomy depends on the depth of invasion and other associated complications.

The aim of the study: To evaluate the rate of total abdominal hysterectomy according to the type of placenta and to study risk factor associated with more severe forms and to assess other maternal complication often associated with this condition.

Patients and methods: The current cross-sectional study included 75 cases with placenta accrete/increta and per treat. These cases were among the cases that have routinely visited Al-Diwaniyah maternity and children teaching hospital/ Al-Diwaniyah province/ Iraq. Age, parity, number of cesarean sections and complications in form of urinary bladder injury and ureter injury in addition to main fate of management (hysterectomy versus uterine preserving surgery) were the main variables included in the study.

Results: Total abdominal hysterectomy was limited to cases with placenta percreta (47.4%). Age of more than 30 was associated with a higher rate of placenta percreta (sensitivity of 55.3% and specificity of 83.8%). Mean age was 26.50, 28.55 and 31.21 years in women with placenta accrete, increta and percent and it was significantly higher in women with placenta percreta than other women ($P < 0.05$). Women with multiparity were more liable to have placenta percreta than other women ($P < 0.05$).

Conclusion: placenta percreta can be predicted in women with advanced age and multiparity and those patients should receive a great attention and medical support than other in anticipation of abnormal placental adherence and that total abdominal hysterectomy is the rule in about half of patients with placenta percreta.

Keywords: placenta accrete; increta, percent; hysterectomy

INTRODUCTION

The placenta may adhere abnormally to the uterus leading to three main types of abnormalities categorized according to degree of histological depth of placenta within the uterine wall. In the condition known as placenta accreta, the decidual surface of the myometrium is invaded by tissues of the placenta. When tissues of the placenta go more deep within myometrium (not reaching the serosa), the condition is more severe and is called placenta increta. The last category is called placenta percreta and is characterized by extension of the placental villi all the way through uterine wall and sometimes even invasion of the surrounding tissues and organs such as the urinary bladder. Abnormal placental adherence may lead to serious pregnancy-associated complications [1]. There is some evidence that these conditions are becoming more frequent [2] and this regard two major risk factors were recognized namely advancing age and increasing frequency of delivery by cesarean section [3, 4]. However, risk associated with conditions is poorly identified in terms of epidemiology and pathophysiology [5]. In a large British case-control study, it was found that Women with both a prior caesarean delivery and placenta praevia have a high incidence of placenta accreta/increta/percreta and that there is a need to maintain a high index of suspicion of abnormal placental invasion in such women and preparations for delivery should be made accordingly [5].

The incidence of these disorders is highly related to the week of gestation. The rate of these abnormalities in the 20th week of gestation has been estimated to be about 5 %; however, at time of delivery, the rate has been estimated to be only about 0.3%, this thought to be due to the fact that growth of uterus throughout pregnancy is usually accompanied by migration of the placenta to a position that is away from the internal os [6, 7]. The process of placentation is a complicated process and is mediated by sex hormones and prostaglandins, in addition to some cytokines and immunological factors [8]. Placentation happens during early pregnancy just after ovum fertilization. The fertilized ovum or zygote reaches the uterine cavity around 4 days after fertilization. The zygote divides repeatedly, developing into a blastocyst consisting of two layers. The outer layer of the blastocyst is made up of trophoblast cells which will form the

placenta and the fetal membranes. The inner cell layer, the embryoblast, will later develop into the embryo. Physiologically, invasion of the endometrium by the trophoblast is limited to the decidua basalis. Placenta accreta is present when there is excessive invasion during placentation extending beyond the decidua basalis. If invasion by the placenta extends into the uterine myometrium, this is known as placenta increta. If the placental villi penetrates the myometrium and reach the uterine serosa or even invade neighboring organs such as the bladder, this is known as placenta percreta [9]. Rosen has suggested that placentation is regulated by the degree of oxygen saturation of the tissue, with local hypoxia promoting invasion by placental villi. This would explain why scar tissue resulting from previous uterine surgical procedures contributes to placentation disorders [10].

The present study was carried out aiming at identifying the rate of abnormal placental adherence and risk factors associated with more severe forms in a cross-sectional study.

PATIENTS AND METHODS

This is a retrospective cross-sectional study of 75 cases of abnormal placentation attended Al – Diwaniya Maternity Teaching Hospital, Iraq in the period from the fifth of February 2007 up to the thirty of November 2017; age from 21 to 38 years (mean age 29.79 ± 4.31 year); all had a history of previous Cesarean Section.

Patients included in the study were diagnosed with either: 1. Antenatal by U/S or MRI or 2. Those patients who were not under the regular antenatal care and presented as emergency cases with antepartum Hemorrhage to the emergency room or delivery room and diagnosed to have placenta previa by clinical examination and emergency ultrasound and documented to be placenta accreta during operation.

The type of surgery was either total abdominal hysterectomy or conservative surgical approach with excision of the severely affected lower uterine segment and over sewing of the affected area of the uterus with or without uterine artery ligation, achieving hemostasis using hemostatic powder or intrauterine balloon or packing.

RESULTS

Table 1 showed the general characteristics of the study sample. The number of cases was 75, mean age of women enrolled in this study was 29.79±4.31 years, median parity and interquartile range were 3 (2), median number and interquartile range of cesarean operations were 3 (2). The study included 4 cases with placenta accrete, 33 cases with placenta increta and 38 cases with placenta percreta, as shown in table 2. Total abdominal hysterectomy was limited to cases with placenta percreta and accounted for 47.4%, as shown in table 2. Table 3 showed the main complications encountered, they were mainly seen in association with placenta percreta in the form of urinary bladder injury in 15.8%, ureteric injury in 2.6% and disseminated intravascular coagulopathy in 7.9%. figure 1 showed the mean age of women according to placenta type and was 26.50±5.00, 28.55 ±3.82 and 31.21 ±3.85 years in women with placenta accrete, increta and percent, respectively and the mean age was significantly higher in women with placenta percent (P<0.05). figure 2 is a receiver operator characteristic (ROC) curve analysis to identify the best age that can predict the risk of having placenta percreta and the age was >30 years with a sensitivity of 55.3% and specificity of 83.8%, as shown in table 4. Figure 3 showed that median parity rate was significantly higher in women with placenta percreta than the rest of women (P<0.05).

Table 1: Characteristics of the study group

Characteristics	Value
Number of cases	75
Age	
Mean ±SD (years)	29.79±4.31
Range (minimum-maximum) (years)	17 (21-38)
Parity	
Median (IQR)	3 (2)
Minimum-maximum	1-7
Number of CS	
Median (IQR)	3 (2)
Minimum-maximum	0-5
Admission	
Elective	66 (88%)
Emergency	9 (12%)

SD: standard deviation; IQR: inter-quartile ranges; CS: cesarean section

Table 2: Type of placenta and surgical outcome

Surgical outcome	Placenta type			Total
	Accreta	Increta	Pericreta	
TAH*	0 (0%)	0 (0%)	18 (47.4%)	18 (24%)
Repair	4 (100%)	33 (100%)	20 (52.6%)	57 (76%)
Total	4 (100%)	33 (100%)	38 (100%)	75 (100%)

TAH: total abdominal hysterectomy; *: TAH was limited to women with placenta percreta and the association was highly significant (P<0.001).

Table 3: Complications according to placenta type

Complication	Accreta n = 4	Increta n = 33	Percreta n = 38	Total n = 75
UB injury *	0 (0%)	0 (0%)	6 (15.8%)	6 (8%)
Ureter injury**	0 (0%)	0 (0%)	1 (2.6%)	1 (1.3%)
DIC***	0 (0%)	1 (3%)	3 (7.9%)	4 (5.33%)

UB: urinary bladder; *: UB injury is limited to placenta percreta (P=0.025); **: insignificant association (P=1.000); ***: insignificant association (P=0.615).

Table 4: Characteristics of ROC curve regarding women age

Cutoff value (years)	>30 years
Accuracy (AUC)	70.4% (0.704)
P	<0.001
Sensitivity	55.3%
Specificity	83.8%

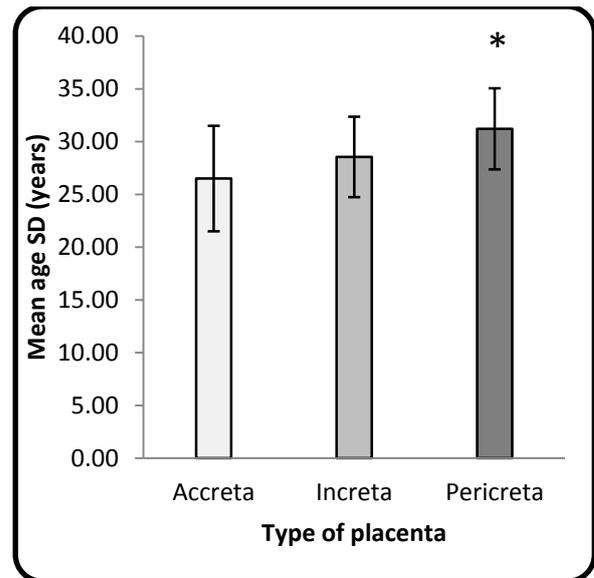


Figure1: Mean age of women according to placental type

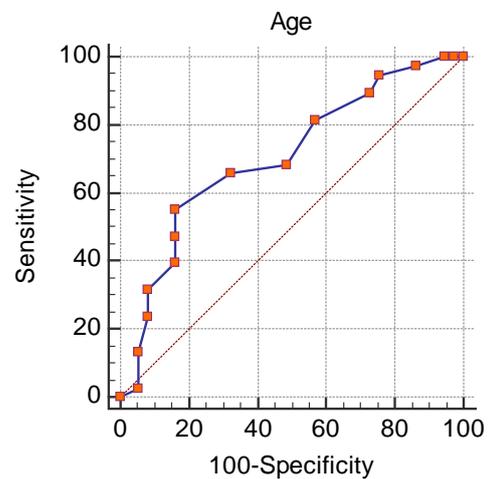


Figure 2: Receiver operator characteristic (ROC) curve analysis

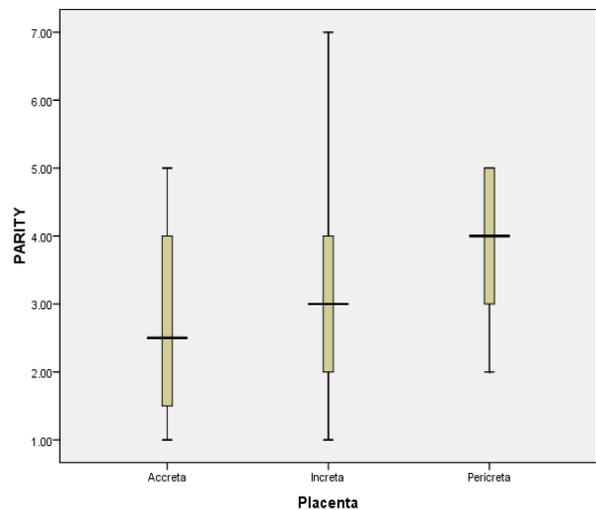


Figure 3: Association between parity and type of placenta

DISCUSSION

In the present study, only 75 cases of abnormal placenta were included despite the long period of the study which included the delivery registration at Al-Diwaniyah teaching hospital for the last 5 years. This either indicates low incidence of placental abnormalities in our community or a defect in the registration system. The reported rate of placenta percreta /increta/ accreta all over the world ranges from 4 per 10,000 deliveries in the United States [11] to about 90 per 10,000 deliveries in some Middle East countries [12]. The variation in incidence of placental abnormalities is attributable to a number of factors. There is no clear definition from clinical point of view of placenta percreta /increta/ accreta and it is mainly pathological diagnosis and this is usually the rule in cases submitted to hysterectomy. The literature that took into consideration the incidence of placental abnormalities included predominately studies conducted using retrospective review of medical registrations over few years in a single or more hospitals. This approach harbors the limitation that these studies are mainly hospital-based ones which may render them with figures that bare overestimation of the real incidence because high risk and emergency conditions are the usual cases that are referred from nearby regions [13]. A number of factors were reported in various literatures that are considered to be risk factors for abnormal placental adherence, such as previous caesarean delivery [11, 12, 14-16], other uterine operations [12, 17, 18], high rate of parity [12, 18], women older than 30 [11, 12, 14, 19], hypertensive disease [15], smoking habit [15], and assisted reproduction [20].

In the current study, the operation of total abdominal hysterectomy was limited to cases with placenta percreta (47.4%), whereas repair was successful in all cases of placenta accrete and increta. In one study the rate of hysterectomy ranged from 57 to 66% and that, in accordance with our findings, placenta percent was the main type that was associated with hysterectomy as the main management strategy [21]. Moreover, in the current study, complications in the form of bladder injury, ureter injury and disseminated intravascular coagulopathy were mainly seen in the more severe type of placenta abnormality (namely percreta).

In the present study, we identified to main risk factors for prediction of placenta percreta which is the more severe of the three types of abnormal placental adherence. The risk factors were an age of more than 30 and multiparity. Fitzpatrick et al in 2012 identified two main risk factors for abnormal placental adherence and these were Age >35 with an Odds ratio (OR) of 3.48 (95% confidence interval of 1.52-7.96) and the significance level was P<0.001. Moreover, they identified multiparity to be a risk factor with an OR 11.11 (5.63–21.90) and a P-value of <0.001 [13].

CONCLUSION

In conclusion, placenta percreta can be predicted in women with advanced age and multiparity and those patients should receive a great attention and medical support than other in anticipation of abnormal placental adherence and that total abdominal hysterectomy is the rule in about half of patients with placenta percreta.

REFERENCES

- Oyelese Y, Smulian JC. Placenta previa, placenta accreta, and vasa previa. *Obstetrics and Gynecology*; 2006: 107: 927–941.
- Khong TY. The pathology of placenta accreta, a worldwide epidemic. *Journal of clinical pathology*; 2008: 61: 1243–1246.
- Wu S, Kocherginsky M, Hibbard JU. Abnormal placentation: twenty-year analysis. *American journal of obstetrics and gynecology*; 2005: 192: 1458–1461.
- Miller DA, Chollet JA, Goodwin TM. Clinical risk factors for placenta previa-placenta accreta. *American journal of obstetrics and gynecology*; 1997, 177: 210–214.
- Fitzpatrick KE, Sellers S, Spark P *Et al.* Incidence and Risk Factors for Placenta Accreta/Increta/Percreta in the UK: A National Case-Control Study. *PLoS One*. 2012; 7(12): e52893.
- Schneider H, Husslein P, Schneider K TM. Berlin, Heidelberg, New York: Springer; 2006. Die Geburtshilfe. 3. Aufl. p. 794.
- Husslein H, Chalubinski K. Plazentationsstörungen bei Zustand nach Sectio caesarea. *Gynäkologe*. 2013;46:728–734
- Norwitz E. Defective implantation and placentation: laying the blueprint for pregnancy complications. *Reprod Biomed Online*. 2006;13:591–599.
- Weyerstahl T, Stauber M. Stuttgart: Thieme; 2007. Duale Reihe Gynäkologie und Geburtshilfe. 3. Aufl. p. 295.
- Rosen T. Placenta accreta and cesarean scar pregnancy: overlooked costs of the rising cesarean section rate. *Clin Perinatol*. 2008;35:519–529.
- Miller DA, Chollet JA, Goodwin TM (1997) Clinical risk factors for placenta previa-placenta accreta. *American journal of obstetrics and gynecology* 177: 210–214.
- Gielchinsky Y, Rojansky N, Fasouliotis SJ, Ezra Y. Placenta accreta—summary of 10 years: a survey of 310 cases. *Placenta* 2002; 23: 210–214.
- Fitzpatrick KE, Sellers S, Spark P, Kurinczuk JJ, Brocklehurst P, Knight M. Incidence and Risk Factors for Placenta Accreta/Increta/Percreta in the UK: A National Case-Control Study. *Baradaran HR, ed. PLoS ONE*. 2012;7(12):e52893.
- Wu S, Kocherginsky M, Hibbard JU. Abnormal placentation: twenty-year analysis. *American journal of obstetrics and gynecology* 2005;192: 1458–1461.
- Usta IM, Hobeika EM, Musa AA, Gabriel GE, Nassar AH. Placenta previa-accreta: risk factors and complications. *American journal of obstetrics and gynecology*, 2005;193: 1045–1049.
- Silver RM, Landon MB, Rouse DJ, Leveno KJ, Spong CY, et al. Maternal morbidity associated with multiple repeat cesarean deliveries. *Obstetrics and gynecology*, 2006, 107: 1226–1232.
- Al-Serehi A, Mhoyan A, Brown M, Benirschke K, Hull A, et al. Placenta accreta: an association with fibroids and Asherman syndrome. *Journal of ultrasound in medicine: official journal of the American Institute of Ultrasound in Medicine* 2008, 27: 1623–1628.
- Jacques SM, Qureshi F, Trent VS, Ramirez NC. Placenta accreta: mild cases diagnosed by placental examination. *International journal of gynecological pathology: official journal of the International Society of Gynecological Pathologists* 1996, 15: 28–33.
- Hung TH, Shau WY, Hsieh CC, Chiu TH, Hsu JJ, et al. Risk factors for placenta accreta. *Obstetrics and gynecology* 1999, 93: 545–550.
- Esh-Broder E, Ariel I, Abas-Bashir N, Bdoлах Y, Celnikier DH. Placenta accreta is associated with IVF pregnancies: a retrospective chart review. *BJOG : an international journal of obstetrics and gynaecology* 2011, 118: 1084–1089.
- Fitzpatrick K, Sellers S, Spark P, Kurinczuk J, Brocklehurst P, Knight M. The management and outcomes of placenta accreta, increta, and percreta in the UK: a population-based descriptive study. *Bjog*. 2014;121(1):62-71.