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Original Article

Double-uterine-incision in the management of placenta previa complicated by placenta accreta spectrum

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Abstract: Objective: To compare the effectiveness of a new double-uterine-incision, based on Ar's incision, with single-uterine-incision during cesarean section in pregnancy concurrently complicated by placenta previa and placenta accreta spectrum. Methods: A retrospective cohort study including 260 participants was conducted between January 2014 and June 2019. The participants only underwent Ar's incision in the single-uterine-incision group and participants underwent two uterine incisions in the new double-uterine-incision group. The demographic and clinical characteristics were compared between the two groups. Results: Fifty-six participants (21.5%) underwent a double-incision, and the other 204 underwent a single-incision. The incidence of previous cesarean delivery (91.1% vs. 68.6%) and anterior placenta (76.8% vs. 53.4%) was higher in the double-incision group. The blood loss (3400 ml vs. 1600 ml) and the need for blood transfusion (100.0% vs. 82.8%) were higher in the double-incision group. There was no significant difference between the two groups (one (1.8%) in the double-incision group and 10 (4.9%) in the single-incision group) in need for subtotal hysterectomy. After adjusting for confounding factors, there was no significant difference between the two groups concerning blood loss, blood transfusion, maternal ICU, or length of hospital stay; and the incidence of subtotal hysterectomy was lower in the double-incision group. Conclusion: This new double-uterine-incision, based on Ar's incision, is an effective and valuable procedure for pregnant women with placenta previa complicated by placenta accreta spectrum, especially in women with a serious condition. It is an option for pregnant women concurrently complicated by placenta previa and placenta accreta spectrum who desire future fertility.

Keywords: Placenta previa, placenta accreta spectrum, double-uterine incision, Ar's incision

Introduction

Placenta accreta spectrum (PAS) is defined as an abnormal placental adherence to the uterine wall that does not easily or immediately separate after delivery. According to histopathologic analysis of chorionic villi invasion, it is classified into three grades, placenta accreta, placenta increta, and placenta percreta [1]. Along with an increasing maternal age and the number of cesarean sections, the incidence of PAS is increasing [2]. It is observed that the overall incidence of PAS is 1 in 533 deliveries in the USA [3], and we also find the overall incidence is 1.1 in 500 deliveries in mainland China [4]. It is associated with massive and severe hemorrhage intrapartum and postpartum, and increased risks of blood transfusions, hysterectomy, intensive care unit (ICU) admission, and even maternal death.

Some conservative approaches and nonconservative surgical managements have been reported to reduce blood loss, morbidity, and mortality in patients with PAS [5, 6]. However, it always precludes routine cesarean section operations to these patients. Ultimately, hysterectomy is recommended to avoid intractable postpartum hemorrhage in pregnant women concurrently complicated with placenta previa and PAS. We previously reported that Ar's incision (random placental margin incision) could effectively control the perioperative bleeding and reduce the incidence of postpartum hemor-

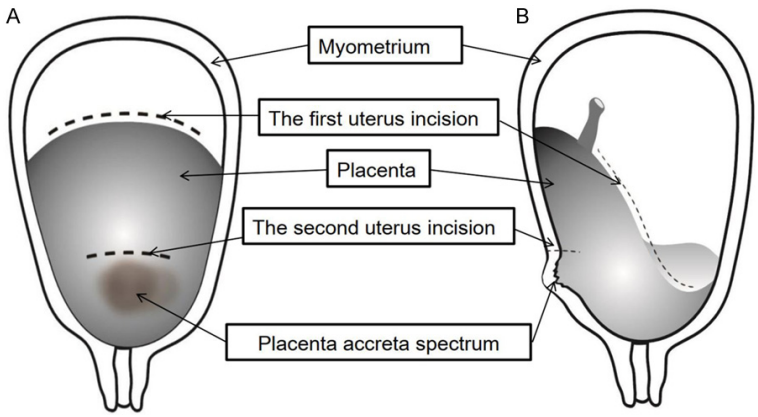

Figure 1. Schematic illustration of the new double-uterine incision. The front (A) and side (B).

rhage among women with complete placenta previa, including those complicated by PAS [7].

In this study, we introduced a new double-uterine-incision, based on Ar's incision, to treat placenta previa complicated by PAS. Furthermore, we also compared the effectiveness, maternal characteristics and outcomes of double-uterine incision and single-incision in these patients with placenta previa complicated by PAS.

Materials and methods

A retrospective cohort study was conducted at Affiliated Foshan Women and Children Hospital, Southern Medical University, Guangdong, China. A total of 260 cesarean delivery women were diagnosed with placenta previa complicated by PAS between January 2014 and June 2019. Placenta previa was diagnosed by experienced ultrasonologists based on a transabdominal ultrasound before delivery and further confirmed by obstetricians at delivery. All pregnant women were closely followed at two-week intervals before delivery after 32 weeks of gestation. Placental mapping, including upper placental borders, placental findings, and precise placental placement, were evaluated and recorded by different experienced ultrasonologists to help further the diagnosis. Highly suspicious placental and uterine tissue was removed during the operation, and all the tissues were diagnosed as PAS by histopathologic examination. The study was approved by the Ethics Committee of the Affiliated Foshan Women and Children Hospital, Southern Medical University (Ethics Approval Number: FSFY-MEC-2019-044).

All the participants' medical electronic databases were collected and the following characteristics and outcomes were assessed retrospectively: maternal age and gestational age at delivery, body mass index (BMI) at admission, gravidity and parity, history of previous cesarean delivery and in vitro fertilization, placental location, depth of placental invasion, operation time, newborn sex, weight and Apgar score at 5 minutes, estimated blood loss, need for transfusion, maternal ICU admission, and the length of hospital stay after birth. Postpartum hemorrhage (PPH) was defined as a blood loss more than 1000 ml within 24 hours following delivery [8].

Procedures of surgery

If the pregnant woman was suspected to have placenta previa complicated by PAS, a multidisciplinary team involving the obstetrician, gynecologist, radiologist, fetal sonographer, urologist, anesthetist, neonatologist, and blood transfusion specialist was consulted to prepare for the operation. A conventional incision in the abdomen exposed the uterus [9]. First, the fetus was delivered through the Ar's incision (the first uterus incision). Ar's incision has been described in detail in the previous article [7]. After the safe delivery of the fetus, the second uterine incision, along the top of the PAS, was done. Then, the placenta and involved PAS tissue were removed through the second uterine incision. The participants underwent the two-incisions in the double-uterine vincision group, and the single-uterine incision was only an Ar's incision. **Figure 1** shows the location of the incision in participants with placenta previa complicated by PAS. Meanwhile, if necessary, other approaches, such as B-Lynch sutures, Bakri balloon, and gauze packing, were also used in the process of surgery. Finally, if the bleeding was not controlled satisfactorily, hysterectomy or subtotal hysterectomy was performed in these patients.

Statistical analysis

All statistical analyses were performed using SPSS statistics software. Descriptive data were

presented as the mean (standard deviation) (normal distribution) or median (interquartile range [IQR]) (abnormal distribution), respectively. Dichotomous and categorical data were reported as numbers and percentages. Circumstantially, the t-test, Mann-Whitney U test, χ^2 test, or Fisher's test was used to assess the differences in the two groups. Univariable and multivariable linear or logistic regression was used to compare the results of the group, respectively. Two-tailed $P < 0.05$ was considered significant.

Results

Fifty-six participants (21.5%) underwent a double-incision, and the other 204 participants (78.5%) underwent a single-incision. The mean age, BMI, and gestational age at delivery were 33.09 years, 26.00 kg/m^2, and 36.09 weeks, respectively. Thirteen of them (5%) were nulliparous, fifteen of them (5.8%) had in vitro fertilization, and forty-seven of them (18.6%) underwent emergency cesarean delivery. The median gravidity was 3.0 (range 2.0 to 4.0). The above demographic and obstetric characteristics were similar between the two groups (**Table 1**).

The incidence of previous cesarean delivery and an anterior placenta was higher in the double-incision group (91.1% vs. 68.6% and 76.8% vs. 53.4%, respectively). The median number of previous cesarean deliveries was more in the double-incision group (2.0 (2.0-2.0) vs. 2.0 (1.0-2.0)). The incidence of placenta percreta and increta in PAS was also higher in the double-incision group (8.9% vs. 2.0% and 71.4% vs. 53.4%, respectively). The operation time was longer in the double-incision group (165.0 min vs. 99.0 min). However, the neonatal weight and the ratio of male newborn and Apgar score at 5 min ≤ 7 were similar between the two groups (**Table 1**).

The maternal outcomes of the two groups were shown in **Table 2**. The blood loss (3400 ml vs. 1600 ml), and the incidence of PPH (94.6% vs. 71.1%) and maternal ICU (78.6% vs. 54.9%) were higher, and the length of hospital stay (5.0 (5.0-7.0) vs. 5.0 (4.0-6.0)) was longer in the double-incision group, respectively. The need for blood transfusion during operation (100.0% vs. 82.8%), including red blood cell units (10.0 vs. 6.0) and plasma (800 ml vs. 400 ml), was higher in the double-incision group. Eleven (4.2%) participants underwent a subtotal hysterectomy, and there was no significant difference between the two groups (one (1.8%) in the double-incision group and 10 (4.9%) in the single-incision group).

After adjusting for confounding factors, including previous cesarean delivery, anterior placenta, depth of invasion, and operation time, the incidence of post-partum hemorrhage was still higher in the double-incision group; there was no significant difference between the two groups with regard to blood loss, blood transfusion, maternal ICU, and length of hospital stay. However, the incidence of subtotal hysterectomy was lower in the double-incision group. We further adjusted other approaches in the process of surgery, such as B-Lynch sutures, Bakri balloon, and gauze packing as confounding factors, and found that the results did not substantially change (**Table 3**).

Discussion

In this retrospective cohort study, we reported a new double-uterine-incision, based on Ar's incision, to treat pregnant women concurrently complicated by placenta previa and PAS. Women with placenta previa and PAS in the double-incision group had a higher incidence of previous cesarean delivery, anterior placenta, and placenta increta and percreta. These clinical characteristics could increase the seriousness of maternal complications. Through the new double-uterine-incision, the blood loss, transfusion blood, maternal ICU, and length of hospital stay did not increase in these serious patients. What's more important, it could decrease the risk of hysterectomy, and this brings hope for women who desire future fertility.

Placenta previa with PAS is an important cause of maternal morbidity and mortality secondary to life-threatening perinatal hemorrhage. Therefore, methods, including surgical incision selection, have been proposed to control hemorrhage and thus decrease the risk of adverse consequences [10, 11]. A study showed that double-uterine-incision allowed for the safe extraction of the fetuses during uterus-preserving surgery in patients with placenta percreta without worsening the results [10]. In 2004, Palacios et al. [11] reported a total of 68 series to describe a comprehensive surgical approach for the treatment of anterior placenta percreta.

Table 1. Characteristics of study participants in the two study groups

Variable	Total (n = 260)	Double-incision (n = 56)	Single-incision (n = 204)	t/Z/χ^2	*P* value
Age, years, mean ± sd	33.09±5.22	32.53±4.38	33.24±5.43	1.023	0.309
BMI, kg/m^2, mean ± sd	26.00±3.22	26.28±3.41	25.92±3.17	-0.731	0.465
EGA at delivery, week, mean ± sd	36.09±1.84	35.80±1.65	36.17±1.89	1.330	0.185
Gravidity, median [IQR]	3.00 (2.00-4.00)	3.00 (2.25-4.00)	3.00 (2.00-4.00)	-0.082	0.934
First pregnancy, n, %	13 (5.0)	0 (0)	13 (6.4)	3.756	0.077
In vitro fertilization, n, %	15 (5.8)	3 (5.4)	12 (5.9)	0.022	0.999
Previous CD, n, %	191 (73.5)	51 (91.1)	140 (68.6)	11.353	0.001
Number of previous CDs, median [IQR]	2.00 (1.00-2.00)	2.00 (2.00-2.00)	2.00 (1.00-2.00)	-2.941	0.003
Anterior placenta	152 (58.5)	43 (76.8)	109 (53.4)	9.869	0.002
Depth of invasion, n, %					
Accreta	102 (39.2)	11 (19.6)	91 (44.6)	15.626	0.001
Increta	149 (57.3)	40 (71.4)	109 (53.4)		
Percreta	9 (3.5)	5 (8.9)	4 (2.0)		
Emergency CD, n, %	47 (18.6)	7 (12.7)	40 (20.2)	1.590	0.244
Operation time, minute, mean ± sd	120.00 (73.00-168.00)	165.00 (125.00-205.00)	99.00 (65.50-154.00)	-5.165	0.001
Neonatal weight, gram, median [IQR]	2700.00 (2400.00-2940.00)	2620.00 (2370.00-2900.00)	2735.00 (2470.00-2967.00)	-1.732	0.083
Male newborn, n, %	144 (55.4)	34 (60.7)	110 (53.9)	0.820	0.448
Apgar_5 min ≤ 7	9 (3.6)	2 (3.9)	7 (3.5)	0.021	0.999

BMI, body mass index; CD, cesarean delivery; EGA, estimated gestational age.

Table 2. Maternal outcomes in the two study groups

Variable	Total (n = 260)	Double-incision (n = 56)	Single-incision (n = 204)	t/Z/χ^2	*P* value
EBL, ml, median [IQR]	2000.00 (1000.00-4000.00)	3400.00 (2075.00-4500.00)	1600.00 (800.00-3500.00)	-4.699	0.001
PPH, n, %	198 (76.2)	53 (94.6)	145 (71.1)	13.435	0.001
Maternal ICU, n, %	156 (60.0)	44 (78.6)	112 (54.9)	10.257	0.002
Transfusion, n, %	225 (86.5)	56 (100.0)	169 (82.8)	11.102	0.001
RBC units transfused, median [IQR]	6.00 (4.00-12.00)	10.00 (6.00-18.00)	6.00 (2.00-10.00)	-4.886	0.001
Plasma ml transfused, median [IQR]	510.00 (0-1000.00)	800.00 (600.00-1200.00)	400.00 (0-800.00)	-4.949	0.001
Subtotal hysterectomy, n, %	11 (4.2)	1 (1.8)	10 (4.9)	1.053	0.466
Length of hospital stay, days, median [IQR]	5.00 (4.00-6.00)	5.00 (5.00-7.00)	5.00 (4.00-6.00)	-2.800	0.005

EBL, estimated blood loss; ICU, intensive care unit; PPH, post-partum hemorrhage; RBC, red blood cell.

Table 3. Results of maternal outcome after adjusting for confounding factors

Variable	*OR (95% CI)/β (95% CI)**	*P* value*	*OR (95% CI)/β (95% CI)***	*P* value**
EBL	205.436 (-236.102-646.974)	0.360	194.361 (-219.832-627.764)	0.426
PPH	4.832 (1.203-19.412)	0.026	4.603 (1.459-17.295)	0.021
Transfusion	4.706 (0.502-44.089)	0.175	4.903 (0.625-42.054)	0.211
Maternal ICU	1.419 (0.633-3.179)	0.396	1.596 (0.507-3.239)	0.426
Subtotal hysterectomy	0.016 (0.001-0.913)	0.045	0.014 (0.001-0.865)	0.039
Length of hospital stay	0.135 (-0.582-0.853)	0.711	0.117 (-0.601-0.826)	0.629

CD, cesarean delivery; EBL, estimated blood loss; EGA, estimated gestational age; ICU, intensive care unit; PPH, post-partum hemorrhage; *Adjusting for previous CD, anterior placenta, depth of invasion, and operation time; **Adjusting for * and other approaches in the process of surgery, such as B-Lynch sutures, Bakriballoon, and gauze packing.

By the trans-placental approach, a single uterine incision was performed at the upper border of the placental invasion area. If not suited to safe extraction of the fetus, a second hysterotomy incision was performed in their study. Although this approach has allowed adequate uterine repair in patients with anterior placenta percreta, eighteen of sixty-eight (26.5%) patients underwent hysterectomies due to massive destruction and secondary coagulopathy.

The double-uterus incision seems to be a safe surgical approach for delivering the fetus and preventing severe hemorrhage in patients with placenta previa complicated by PAS [10, 11]. However, it is hard to reduce the amount of bleeding due to instantaneous bleeding risk after the transection of the placenta. Meanwhile, the myometrium is poorly contractile in these patients, and it does not adequately compress myometrial vessels to control blood loss during cesarean section [12]. Ar's incision could successfully avoid the placenta and the uterine corpus in the first uterine incision in this study. This is an effective method to reduce the risk of bleeding in patients with placenta previa. This may explain why the patients are more seriously affected, but the risk of hysterectomy is even lower in the double-uterine incision in this study.

Placenta previa is usually classified into anterior and posterior placenta previa [13, 14]. However, this rough and simple distinction is not very helpful for obstetricians before a cesarean section. Identifying accurate placental location could be instrumental to improving maternal pregnancy outcome. We, therefore, have further categorized the complete placenta previa into four categories to conveniently guide the obstetricians to operate. According to the location of the major placenta concerning the uterine wall, complete placenta previa is reclassified into type I (posterior placenta), type II (posterior side placenta), type III (anterior side placenta) and type IV (anterior placenta) [15]. One study has reported that the new double-uterine-incision, based on Ar's incision, is more effective in patients with serious complete placenta previa (type III and type IV) [16].

Placenta previa complicated by PAS is associated with significant morbidity of hysterectomy. Many obstetricians and gynecologists endorse cesarean hysterectomy as the treatment of choice for PAS to decrease postpartum hemorrhage. However, it makes childbearing impossible in future. Therefore, performing a hysterectomy in women who desire future fertility is stressful for obstetricians. A retrospective cohort study of hysterectomies reported no histologic confirmation of placenta accreta in 28% of patients [17]. In the present study, we found double-uterine incision based on the Ar's incision could reduce the risk of hysterectomy in women with placenta previa complicated by PAS, especially in serious cases. This offers an opportunity for patients who desire another pregnancy.

Several studies have demonstrated the preservation of fertility after successful conservative management of PAS [18-20]. In a cohort study, of 131 women who had successful conservative management of PAS, 24 women had 34 spontaneously conceived pregnancies [18]. In a retrospective study, authors also found pregnancies after conservative treatment of placenta accreta were mostly successful, but there was an increased risk of recurrence of placenta accreta and postpartum hemorrhage [20]. Double-uterine-incision based on the Ar's

incision does little harm to the fundus uteri and corpus uteri in patients with placenta previa complicated by PAS. Theoretically, it will be more favorable for the mother to have another pregnancy. In this study, unfortunately, we do not have the data on this treatment of subsequent pregnancies. We will follow to investigate the results of subsequent pregnancies in women who desire future fertility in the next study.

A major strength of this study is the number of participants observed in this cohort, since double-uterine incision for placenta previa complicated by PAS is a rare event. Meanwhile, relatively homogeneous participants and unity in the treatment and care protocol are advantages in this single-center study. However, this might limit the external validity of our results. Therefore, multi-center databases might be warranted to validate the results. Meanwhile, the occurrence of sample size was small in some outcomes. For example, there was just one participant with a subtotal hysterectomy in the double-uterine-incision group. The small occurrence sample size may cause there to be no significant differences between the two groups. Besides, the limitations of the retrospective design, such as incomplete data and recall bias, cannot be avoided in this study.

In conclusion, this new double-uterine incision, based on Ar's incision, is an effective and valuable procedure for pregnant women with placenta previa complicated by PAS, especially in women with a serious condition. It is an option for pregnant women concurrently complicated by placenta previa and PAS who desire future fertility.

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Disclosure of conflict of interest

None.

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References

[1] Collins SL, Alemdar B, van Beekhuizen HJ, Bertholdt C, Braun T, Calda P, Delorme P, Duvekot JJ, Gronbeck L, Kayem G, Langhoff-Roos J, Marcellin L, Martinelli P, Morel O, Mhallem M, Morlando M, Noergaard LN, Nonnenmacher A, Pateisky P, Petit P, Rijken MJ, Ropacka-Lesiak M, Schlembach D, Sentilhes L, Stefanovic V, Strindfors G, Tutschek B, Vangen S, Weichert A, Weizsäcker K and Chantraine F; International Society for Abnormally Invasive Placenta (IS-AIP). Evidence-based guidelines for the management of abnormally invasive placenta: recommendations from the International Society for Abnormally Invasive Placenta. Am J Obstet Gynecol 2019; 220: 511-526.

[2] Eshkoli T, Weintraub AY, Sergienko R and Sheiner E. Placenta accreta: risk factors, perinatal outcomes, and consequences for subsequent births. Am J Obstet Gynecol 2013; 208: 219, e211-217.

[3] Wu S, Kocherginsky M and Hibbard JU. Abnormal placentation: twenty-year analysis. Am J Obstet Gynecol 2005; 192: 1458-1461.

[4] Fan D, Li S, Wu S, Wang W, Ye S, Xia Q, Liu L, Feng J, Wu S, Guo X and Liu Z. Prevalence of abnormally invasive placenta among deliveries in mainland China: a PRISMA-compliant systematic review and meta-analysis. Medicine (Baltimore) 2017; 96: e6636.

[5] Sentilhes L, Kayem G, Chandraharan E, Palacios-Jaraquemada J and Jauniaux E; FIGO Placenta Accreta Diagnosis and Management Expert Consensus Panel. FIGO consensus guidelines on placenta accreta spectrum disorders: Conservative management. Int J Gynaecol Obstet 2018; 140: 291-298.

[6] Allen L, Jauniaux E, Hobson S, Papillon-Smith J and Belfort MA; FIGO Placenta Accreta Diagnosis and Management Expert Consensus Panel. FIGO consensus guidelines on placenta accreta spectrum disorders: nonconservative surgical management. Int J Gynaecol Obstet 2018; 140: 281-290.

[7] Fan D, Wu S, Ye S, Wang W, Wang L, Fu Y, Zeng M, Liu Y, Guo X and Liu Z. Random placenta margin incision for control hemorrhage during cesarean delivery complicated by complete placenta previa: a prospective cohort study. J Matern Fetal Neonatal Med 2019; 32: 3054-3061.

[8] Fan D, Xia Q, Liu L, Wu S, Tian G, Wang W, Wu S, Guo X and Liu Z. The incidence of postpartum hemorrhage in pregnant women with placenta previa: a systematic review and meta-analysis. PLoS One 2017; 12: e0170194.
[9] Fan D, Zhang H, Rao J, Lin D, Wu S, Li P, Chen G, Zhou Z, Liu J, Chen T, Chen F, Guo X and Liu Z. Maternal and neonatal outcomes in transverse and vertical skin incision for placenta previa : skin incision for placenta previa. BMC Pregnancy Childbirth 2021; 21: 441.
[10] Polat I, Yucel B, Gedikbasi A, Aslan H and Fendal A. The effectiveness of double incision technique in uterus preserving surgery for placenta percreta. BMC Pregnancy Childbirth 2017; 17: 129.
[11] Palacios Jaraquemada JM, Pesaresi M, Nassif JC and Hermosid S. Anterior placenta percreta: surgical approach, hemostasis and uterine repair. Acta Obstet Gynecol Scand 2004; 83: 738-744.
[12] Lin B, Zhou B, Chen J and Yang J. Prophylactic application of Bakri balloon tamponade versus uterine gauze packing during cesarean section in patients with placenta previa. J Int Med Res 2020; 48: 300060520910049.
[13] Torricelli M, Vannuccini S, Moncini I, Cannoni A, Voltolini C, Conti N, Di Tommaso M, Severi FM and Petraglia F. Anterior placental location influences onset and progress of labor and postpartum outcome. Placenta 2015; 36: 463-466.
[14] Oyelese Y and Smulian JC. Placenta previa, placenta accreta, and vasa previa. Obstet Gynecol 2006; 107: 927-941.
[15] Liu ZP, Guo XL, Liu Y, Sou DM and Ai W. Classification of complete placenta previa (CPP) and clinic significance. Maternal and Child Health Care of China 2008; 23: 3964-3967.
[16] Liu ZP, Guo XL, Liu Y, Suo DM and Ai W. Clinic application of Ar's incision in complete placenta previa. Maternal and Child Health Care of China 2008; 23: 4203-4205.
[17] Eller AG, Porter TF, Soisson P and Silver RM. Optimal management strategies for placenta accreta. BJOG 2009; 116: 648-654.
[18] Sentilhes L, Kayem G, Ambroselli C, Provansal M, Fernandez H, Perrotin F, Winer N, Pierre F, Benachi A, Dreyfus M, Bauville E, Mahieu-Caputo D, Marpeau L, Descamps P, Bretelle F and Goffinet F. Fertility and pregnancy outcomes following conservative treatment for placenta accreta. Hum Reprod 2010; 25: 2803-2810.
[19] Provansal M, Courbiere B, Agostini A, D'Ercole C, Boubli L and Bretelle F. Fertility and obstetric outcome after conservative management of placenta accreta. Int J Gynaecol Obstet 2010; 109: 147-150.
[20] Kabiri D, Hants Y, Shanwetter N, Simons M, Weiniger CF, Gielchinsky Y and Ezra Y. Outcomes of subsequent pregnancies after conservative treatment for placenta accreta. Int J Gynaecol Obstet 2014; 127: 206-210.