

Prognosis and related risk factors of patients with scarred uterus complicated with central placenta previa

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ABSTRACT

Objectives: To analyze the prognosis and related risk factors of patients with scarred uterus complicated with central placenta previa.

Material and methods: A total of 272 parturient women admitted to our hospital between June 2013 and December 2016 were selected, of whom 142 cases with central placenta previa were designated as a control group and another 130 with scarred uterus complicated with central placenta previa were allocated as an observation group. The delivery outcomes of the two groups were compared, and the influencing factors were comprehensively analyzed.

Results: The prenatal and postpartum blood losses of the observation group were significantly higher than those of the control group ($P < 0.05$). The incidence rates of placental adhesion, placenta accreta, hysterectomy and puerperal infection in the obstetric group significantly exceeded those of the control group ($P < 0.05$). Logistic regression analysis showed that postpartum hemorrhage and placenta implantation were risk factors affecting prognosis ($P < 0.05$).

Conclusions: Patients with scarred uterus and central placenta previa suffered from serious complications such as profuse postpartum hemorrhage and placental adhesion after delivery. Particular attention should be paid to women with scarred uterus during subsequent pregnancy to prevent placenta previa and to reduce the risks of delivery, thereby benefiting prognosis evaluation.

Key words: scarred uterus; central placenta previa; risk factor

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INTRODUCTION

Most scarred uteri contain traumatic uterine scars caused by cesarean section. A woman with scarred uterus may be prone to uterine rupture or ectopic pregnancy during subsequent pregnancy [1]. Pregnant women who have received cesarean sections are vulnerable to placenta previa, being closely related to the number of surgeries [2, 3]. Cesarean section is an important measure to save lives when parturient women give birth. In recent years, the cesarean section rate has rapidly increased due to patient requirements or social factors, reaching over 20% in China. Central placenta previa is an extremely dangerous adverse pregnancy, also known as dangerous placenta previa if complicated with scarred uterus. These parturient women are often subjected to secondary pregnancy after receiving cesarean section that produces scars attaching the placenta. As a result, postpartum hemorrhage frequently occurs in clinical practice, endangering the life safety of

mothers and infants [4]. Intrauterine bleeding during induction of labor is the main problem, possibly leading to total hysterectomy which affects the reproductive functions of pregnant women and even severely threatens their life safety. For this type of pregnancy, prophylactic uterine artery embolization (UAE) or internal iliac artery balloon occlusion can be performed before delivery [5, 6]. UAE prior to induction of labor can elevate the success rate of surgery, decrease blood loss, relieve the injury to pregnant women, and shorten the time of postoperative menstrual relapse. Preoperative internal iliac artery balloon occlusion can effectively reduce the intraoperative bleeding, blood transfusion amount, and incidence rates of complications of cesarean section. Therefore, prenatal preventive measures are in need to improve maternal outcomes. The purpose of this study was to explore the prognosis of patients with scarred uterus complicated with central placenta previa and related influencing factors.

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MATERIALS AND METHODS

Baseline clinical data

This study has been approved by the ethics committee of our hospital, and written consent has been obtained from all patients. A total of 272 patients with central placenta previa admitted to our hospital from June 2013 to December 2016 were selected as the subjects and diagnosed referring to the Guidelines for Diagnosis and Treatment of Placenta Previa. Among them, 142 cases with central placenta previa were designated as a control group that was aged 25–42 years old, (28.94 ± 3.26) on average. The gestational ages ranged from 28 to 41 weeks, (35.27 ± 2.13) on average. Besides, 90 cases had pregnancies \leq twice and 52 cases underwent pregnancies \geq 3 times. In addition, 84 cases had induced abortions $<$ twice and 58 cases did so $>$ 3 times. Meanwhile, 130 cases of scarred uterus complicated with central placenta previa were included as an observation group aged from 27 to 43 years old, with an average of (30.35 ± 4.74). The gestational ages ranged from 28 to 42 weeks, (35.89 ± 2.67) on average. Besides, 68 cases had pregnancies \leq twice and 62 cases underwent pregnancies \geq 3 times. In addition, 74 cases had induced abortions $<$ twice and 56 cases did so $>$ 3 times. The baseline clinical data of the two groups were similar ($P > 0.05$).

Inclusion criteria: The gestation cycle was over 28 weeks; Doppler color ultrasonography suggested that the placenta was obviously attached to the lower uterus; the placenta edge reached the cervix until full coverage. Exclusion criteria: Pregnant women who were complicated with coagulopathies, cardiovascular and cerebrovascular diseases, or chronic liver and kidney dysfunction.

Treatment methods

Patients diagnosed as scarred uterus complicated with central placenta previa all received cesarean section, and those with gestational ages $<$ 34 weeks were administered with ritodrine to inhibit uterine contraction and with dexamethasone to promote fetal heart and lung maturation. In the meantime, fetal heart rate monitoring was performed, and vaginal bleeding was observed. The patients who were pregnant for at least 34 weeks were subjected to elective cesarean section. Immediately after delivery, 20 IU of oxytocin and 250 μ g of hemabate were injected into the fundus

of uterus, and iodoform gauze was used to stop bleeding in the uterine cavity. Then the uterine cavity was packed with a balloon or bilateral uterine upper arterial branches were ligated. Catheterization was conducted through the iliac artery for UAE, and the lower uterine segment was subjected to annular narrowing suture. If the above treatments all failed, whether hysterectomy was needed should be determined during surgery.

Observation indices

Prenatal and postpartum hemorrhages of the two groups were compared. The incidence rates of placental adhesion, placenta accreta and hysterectomy after delivery were recorded, and the risk factors affecting prognosis were analyzed.

Statistical analysis

All data were analyzed by SPSS 21.0. The categorical data were expressed as mean \pm standard deviation ($x \pm s$), and inter-group comparisons were performed by the t test. The numerical data were expressed as percentage (%), and inter-group comparisons were conducted by the χ^2 test. Factors affecting prognosis were subjected to Logistic multivariate regression analysis. $P < 0.05$ was considered statistically significant.

RESULTS

Prenatal and postpartum blood losses

The prenatal and postpartum blood losses of the observation group were significantly higher than those of the control group ($P < 0.05$) (Tab. 1).

Incidence rates of hysterectomy and complications

No patients died after delivery. The incidence rates of placental adhesion, placenta accreta, hysterectomy and puerperal infection in the obstetric group significantly exceeded those of the control group ($P < 0.05$) (Tab. 2).

Risk factors affecting prognosis

Logistic regression analysis showed that postpartum hemorrhage and placenta implantation were risk factors affecting prognosis ($P < 0.05$) (Tab. 3).

Table 1. Prenatal and postpartum blood losses

Group	Case No.	Prenatal blood loss [mL]	Postpartum blood loss [mL]	t value	P value
Control	142	53.19 ± 17.34	473.26 ± 138.42	16.344	< 0.05
Observation	130	214.63 ± 50.27	652.48 ± 147.69	18.752	< 0.05
t value		11.864	12.267		
P value		< 0.05	< 0.05		

Table 2. Incidence rates of hysterectomy and complications [case (%)]

Group	Case No.	Hysterectomy	Placental adhesion	Placenta accreta	Puerperal infection
Control	142	2	22	8	6
Observation	130	10	24	12	8
χ^2 value		11.752	10.756	11.283	9.674
P value		< 0.05	< 0.05	< 0.05	< 0.05

Table 3. Risk factors affecting prognosis

Risk factor	β value	Wald value	P value	OR value	95% CI
Postpartum hemorrhage	0.623	65.248	< 0.05	0.352	0.238–0.527
Placenta accreta	0.147	7.136	< 0.05	1.084	1.034–3.803
Hysterectomy	1.815	5.27	< 0.05	1.291	0.898–4.726

DISCUSSION

As an effective measure to save the risk of mother and infant, cesarean section has been widely used in clinical practice. In recent years, some parturient women have often abandoned natural production in order to alleviate the pain of childbirth, which makes the cesarean section rate increase year by year [7, 8]. Uterine scars caused by cesarean section are of serious risk to those who are pregnant again. Serious complications such as major bleeding and placenta previa are often caused during childbirth. If they cannot be rescued in time, the lives of both mother and fetus will be threatened. The results of related studies showed that China's cesarean section rate reached 21.7% in 2014, and the incidence of scarred uterus combined with placenta previa increased year by year, due to the damage of cesarean section to the endometrium and the occurrence of scars hinders the ability of the placenta to move up in the last trimester, thereby increasing the risk of placenta previa [9, 10]. The proportion of central placenta previa in women of childbearing age in China is about 2.3% [11], which is on the rise year by year. The cause of central placenta previa is closely related to multiple pregnancies, induced abortions, and cesarean section. When sperm enters the damaged endometrium, the placenta needs to expand the volume continuously, and even extend to the lower part of the uterus so as to obtain adequate ingestion of nutrients because the blood cannot be supplied in time. By the last trimester, the placenta will cover the entire cervix and form a central placenta previa.

Scarred uterus combined with central placenta previa is a clinical phenomenon of placenta previa in the uterus after trauma, also known as sinister placenta previa, which has the highest mortality rate in the pregnancy risk syndromes [12]. In pregnant women with a history of cesarean section, the endometrium has degenerative lesions due to multiple births, the endometrium at the scar is thinned and the

contraction of the inner wall muscle weakened [12–14]. In addition, the villi can easily invade the uterine wall muscle, causing the implantation of placenta. And the scar is prone to uterine rupture and cause massive bleeding after being stretched, so that the woman has to undergo hysterectomy to save her life.

The results of this study showed that the amount of bleeding before and after delivery was significantly higher in the observation group than in the control group, which proves that the scarred uterus has a higher incidence of postpartum hemorrhage in parturient women. The incidence rate of maternal placental adhesion, placental implantation, puerperal infection and hysterectomy of the observation group was also significantly higher than that of the control group, which also indicates that the scarred uterus combined with central placenta previa is a serious risk of pregnancy. Analysis of the above factors by logistic regression model found that postpartum hemorrhage, placental implantation and hysterectomy were the main risk factors affecting the prognosis of parturient women with scarred uterus combined with central placenta previa. For many families planning re-pregnancy, it is necessary to prevent the occurrence of scarred uterus in order to prevent the occurrence of adverse events such as placenta previa. Medical staff must pay attention to avoiding abuse of cesarean section and encourage pregnant women to choose natural delivery [15].

CONCLUSIONS

In summary, scarred uterus combined with central placenta previa is likely to cause serious complications such as postpartum hemorrhage and placenta implantation, resulting in an increase in the rate of hysterectomy, which is an irreversible harm to women. Therefore, for such pregnant women, it is recommended to improve placental color

Doppler ultrasound or placental MR detection for definitive diagnosis during pregnancy of 28–32 weeks, pay attention to close monitoring during pregnancy, and give priority to all emergency-response measures, and strive to raise the maternal and infant survival rate and improve clinical prognosis.

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Conflict of interests

The authors have no competing interests to declare.

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