

Lower Uterine Segment Strapping Is An Effective Way to Treat Pernicious Placenta Previa Complicated With Placenta Percreta - 3 Cases Review

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Abstract: Objective To investigate the treatment and surgical approach of lower uterine segment strapping in pernicious placenta previa complicated with placenta percreta. To improve the prognosis of the placenta previa complicated with placenta percreta women and their babies. **Methods** The clinical data were reviewed and analyzed in 3 pregnant women with pernicious placenta previa complicated with placenta percreta in our hospital through year 2012. These 3 patients had no vaginal bleeding during the pregnancy. These patients were diagnosed initially by color doppler ultrasound at 36⁺⁶, 37⁺², and 34⁺² weeks' pregnancy respectively. Selective cesarean section were performed. During the operation just after delivery, we used a tourniquet to strap lower uterine segment immediately, so that the uterine blood supply could be blocked effectively, thus minimizing uterine bleeding, which gave us time deciding whether the uterus could be reserved or not. **Results** All of the three patients were definitively diagnosed postoperatively. One underwent cesarean section and uterus repair; the others underwent cesarean section and panhysterectomy. During the operation, the amount of bleeding was 2500 ml, 3000 ml and 800 ml separately. No maternal or neonatal death occurred. **Conclusions** The pregnant women who were dignosed pernicious placenta previa complicated with placenta percreta need operation to terminate pregnancy. During operation after the childbirth, the method of using a tourniquet to strap lower uterine segment quickly can block uterine blood supply immediately, and minimize the intraoperative blood loss, so as to rescue maternal life.

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Pernicious placenta previa(PPP) was defined by Chattopadhyay [1] for the first time in 1993: the placenta overlying uterine scar after previous cesarean section. Pernicious placenta previa often causes severe obstetric hemorrhage, diffused intravascular coagulation, and other serious complications. PPP with placenta accreta brings great harm on maternal and infant. Once it penetrates the uterual serosa, a severe and rare type of pernicious placenta previa is formed, which can even threaten the pregnant woman's life seriously.

We analysed the clinical data of 3 cases of pernicious placenta previa complicated with placenta percreta during the past 1 year retrospectively. The method of lower uterine segment strapping was explored as a surgical emergency therapy to deal with the patients with pernicious placenta previa

complicated with placenta percreta and thus investigating the feasibility of the treatment during intraoperative bleeding.

1 Clinical data

1.1 General data From Jan. to Dec. in 2012, there were 5560 cases of childbirth pregnant women in our hospital totally, in which 116 cases included of placenta previa. Among those, there were 3 cases of pernicious placenta previa complicated with placenta percreta. Amongst the 3 cases, placenta was attached to the uterine scar, and fully penetrated through the myometrium, partly penetrated through the uterus bladder peritoneum, and infiltrated the posterior bladder wall. In addition, 3 patients were all complete placenta previa. The general data of the 3 patients were shown in table 1.

Table 1. The clinical data of 3 patients

| | case1 | case 2 | case 3 |
|--|------------------|------------------|------------------|
| Age(year) | 23 | 34 | 37 |
| Cesarean section history(time) | 1 | 2 | 1 |
| Abortion history(time) | 0 | 3 | 1 |
| History of vaginal bleeding during pregnancy | none | none | none |
| Time of first diagnosis for the PPP (weeks) | 36 ⁺⁶ | 37 ⁺² | 34 ⁺² |

Case 1

A 23-year-old pregnant woman whose chief complaint was "37⁺¹ week of gestation, ultrasound found complete placenta previa 9 weeks" transferred from other hospital to the second affiliated hospital of Zhengzhou University in Aug. 17, 2012. LMP: Nov. 29, 2011, EDC: Sept. 5, 2012. Without vaginal bleeding during pregnancy, she was diagnosed complete placenta previa by ultrasound for the first time at 28 week of gestation. In Aug. 15, the ultrasound found that the placental margin covered intracervical mouth completely; the placenta was 34 mm in thickness of the upper part, thickening partly at the midpiece, and the thickest part was at about 66 mm. The post-gap of placenta located in the cesarean section incision disappeared, and there was no obvious boundary between placenta and uterus. Ultrasound tip: late pregnancy single live births, transverse presentation, complete placenta previa, placenta accreta. Previous history: cesarean section was done 2 years ago. Admitting diagnosis: pernicious placenta previa, placenta accreta, scarred uterus, G2C1, transverse presentation, 37⁺¹ weeks of gestation. Selective operation was done 2 days later. Intraoperatively we found that peritoneal and uterine serosa layer had different degrees of adhesion. The front part of lower uterine segment emerged large area of purple blue, distended and tortuous veins, ranging from the upper bound of the uterus bladder reflex peritoneal 6 cm to the bottom of the bladder wall, left and right edges of the uterus. The deficiency of myometrium was in range of 3 cm in uterine scar for boundaries. The exposed placenta only covered a layer of uterine serosa (Figure 1). Operating procedure: ① Separation of the adhesion, suturing and ligation the vessels which connected to the posterior bladder wall, because it could not be avoided the placenta and engorged blood vessels, as close to the placenta above (near the uterine body), we opened the serosa layer and placenta quickly, and then took out the baby. ② Because the lower uterine segment was bleeding seriously, we stripped the placenta immediately, the assistant's hands lifted up the inferior to the uterus incision at the same time, and held on both sides of uterine artery ascending branch, using a tourniquet to bind edge of the lower uterine segment incision for blocking the uterine blood supply and reducing uterine bleeding. ③ After injection of oxytocin and Hemabate to the uterus, we dealt with residual placenta, and checked the uterus incision, then removed the implanted placenta tissue and trimmed the uterine incision that was deficient of myometrium to the uterine wall muscle layer, sutured and ligated active hemorrhagic spots. ④ We loosened the tourniquet and observed no significant bleeding, uterine contraction was good, then the uterus was sutured by conventional

methods. Intraoperative blood loss was about 2500 ml, the patient was transfused PRBC 4 units, plasma 400 ml.



Figure 1 The Uterine of PPP complicated with placenta percreta

Case 2

A 34-year-old pregnant woman whose chief complaint was "37⁺⁴ week of gestation, ultrasound found complete placenta previa 2 days" was transferred from other hospital to ours in Sept. 10, 2012. LMP: 2011.12.20, EDC: 2012.9.27. Without a history of vaginal bleeding or discharge during pregnancy, she has a history of cesarean section twice, which was performed 9 years and 4 years ago respectively. In Sept. 8, the ultrasound found: late pregnancy single live births, cross bits, the placenta was located in the front wall of uterine, thicker at about 35 mm. The placental margin covered intracervical mouth completely; the myometrium in the front wall of lower uterine segment located by the placenta displayed unclearly. Physical examination: severe anemia, BP 110/70 mmHg. Blood routine examination: WBC $12.56 \times 10^9/L$, HB 54 g/L, PLT $73 \times 10^9/L$. Liver function, renal function and coagulation function were normal. Primary diagnosis: pernicious placenta previa, placenta accreta, scarred uterus, pregnancy with severe anemia, G6C2A3, cross bits, 37⁺⁴ weeks of gestation. After admission and being transfused PRBC 4 units, the patient underwent selected cesarean section 2 days later. During operation, after separating the dense adhesion between peritoneal and uterine serosa layer, we found that the front lower uterine segment emerged purple blue extensively, vascular engorgement and local eminence could be seen obviously. The deficiency of myometrium and the operation procedure were the same as case 1. Because the lower uterine segment was damaged seriously beyond being repaired, complete hysterectomy was executed by routine procedure. It should be pointed out that until both sides of uterine artery ligation, the tourniquet in the lower uterine

segment incision could be removed. Otherwise, it would bleed heavily. Intraoperative blood loss was about 3000 ml, the patient was transfused PRBC 12units, plasma 400 ml.

Case 3

A 37-year-old pregnant woman whose chief complaint was "34⁺⁴ weeks' gestation, ultrasound found complete placenta previa 9 weeks" was found in the ultrasound. She was admitted to our hospital on Sept. 27, 2012. LMP:2012.1.28, EDC:2012.11.5. Without vaginal bleeding or discharge during pregnancy, the patient was diagnosed placenta previa by ultrasound at 7 months' gestation. On Sept. 25, the ultrasound found: the placental margin covered intracervical mouth completely; the placenta local thickness was 56 mm, the gap of placenta located in the cesarean section incision disappeared, there was no obvious boundary between placenta and uterus. Ultrasound tip: late pregnancy single live births, cross bits, complete placenta previa, placenta accreta. The patient had cesarean section 8 years ago. Admitting diagnosis: pernicious placenta previa, placenta accreta, scarred uterus, G3C1A1, cross bits, 34⁺⁴ weeks of gestation. The cesarean section was done at 35⁺⁶ weeks of gestation.

During operation, we found slight adhesion between peritoneal and uterine serosa layer. Around the uterine incision, there was myometrium deficient at a range of 4cm which was emerged large area of purple blue, vascular engorgement and local eminence. The operation procedure was of the same. But the uterine did not contract continually, we decided to do hysterectomy immediately, and methods were the same as case 2. Intraoperative blood loss was about 800 ml, the patient was transfused PRBC 2 units.

Sufficient preoperative evaluation and discussion were given to the 3 patients, furthermore, we reported the state of the patients to the medical department and conversed the illness with their family members time and again, also informed the high probability of hysterectomy. Before operation, we notified the department of anesthesiology, department of urology, pediatrics, ICU and blood bank, fully preparing for doing hysterectomy. Before anesthesia, we opened 2 venous channels at least, and made the neck vein catheterization. At the same time, the director presiding over rescue and coordination did communications with family members. All patients were transferred to ICU on the deep observation and treatment.

2 Results

One patient underwent cesarean section and uterus repair, the other two underwent cesarean section and total hysterectomy. During the operation, the amount of bleeding of the one who did not have

hysterectomy was 2500 ml, the others were 3000 ml and 800 ml respectively. No maternal and neonatal died.

3 Discussion

Normally, placental villi only erodes uterine decidua, but not the muscular layer of uterus. If uterine decidua dysplasia was induced by some reasons, such as cesarean section, multiple births and curettage, hysteroscopic myomectomy, and so on, the endometrial would be damaged or forming scar. If villi adhere to the damaged uterine endometrium, scars or decidua dysplasia parts can erode and implant into the muscle of the uterus layer while being conceived again. With the rise of cesarean section rate, the incidence of placenta accreta ascends, as long as the probability of uterine scar formation increases, therefore, pernicious placenta previa complicated with placenta percreta which is very rare has also been reported sometimes.

Penetrating placenta accreta occurs mostly due to two or more high risk factors. Generally the fertilized egg implants in cesarean section scar in early pregnancy, which lead to cesarean scar pregnancy (CSP). If the pregnancy continues, it will stand a good chance of placenta accreta or placenta percreta occurring in the middle and late pregnancy. According to Wu's reports, researchers have reported the incidence of placenta accreta as 1 in 533 pregnancies for the period of 1982-2002[2]. It is much higher than the incidence in the 1980s, which is 1 in 2,510 pregnancies [3]. In our country, it is reported that placenta accreta in normal uterine is 0.005%, and the placenta accreta in scar uterus is up to 9.3% [4]. Thus the probability of placenta accreta occurred in scar uterus increases significantly.

Zheng Yunying [5] reported 3 cases of pernicious placenta previa complicated with placenta percreta in pregnant women with cesarean section history and the history of induced abortion and curettage. The mentioned 3 cases of pregnant women all had cesarean section history, including 2 cases of induced abortion history, it was suggested that cesarean section may be an independent risk factor of pernicious placenta percreta. If adding the history of uterine injury history, the probability of pernicious placenta percreta increases greatly.

The pregnant women of pernicious placenta previa complicated with placenta percreta may have clinical symptoms or not, such as abdominal pain and vaginal bleeding. In our article, none of the 3 patients had the history of vaginal bleeding during the entire pregnancy. Therefore, with regard to the pregnant women who has high risk factors, especially with a history of cesarean section, we should notice: ①No matter there are abdominal pain and vaginal bleeding or not through pregnancy, ultrasound examination should

be done at early pregnancy, particularly careful examining the relationship between placenta and intramural uterine scar. Once being find CSP, the patient should undergo early termination of pregnancy.

② Without doing ultrasound examination or the ultrasound finding no CSP during early pregnancy, the patient should review the B-mode ultrasonography in mid-term gestation in order to confirm the relationship between placenta and intramural uterine scar. ③ We should take into account the probability of placenta accreta in the third trimester to the patient who has no vaginal bleeding but suspected CSP by ultrasound, even the possibility of pernicious placenta previa complicated with placenta percreta. ④ The patient who is diagnosed pernicious placenta previa in mid-term gestation with or without vaginal bleeding should not be suggested induced labor treatment, because the risk of mid-term induced labor is the same as late pregnancy, especially complicated with placenta accreta.

There is no characteristic manifestation on pernicious placenta previa complicated with placenta percreta, and still lack of specific diagnosis method. It relies on B-mode ultrasonography diagnosis currently. Ultrasound image has the following characteristics[6]: ① Placenta thickening; ② Different size and irregular anechoic areas in placenta, which called placental lacunae, with rich blood flow; ③ The soft tissue of uterine muscular layer posterior to placenta attenuates or disappears; ④ Uterine adjacent strong echo with bladder serosa layer disappears, and there is irregular structure without echo to bladder; ⑤ Arcuate artery blood flow in uterine myometrium posterior to placenta shows interruption, disappearance or irregular mass. In our article, ultrasound image in the data of 3 pregnant women all have the above characteristics. We believe that as long as the ultrasonic doctors understand sonogram of the disease enough and check carefully, we can predict either the placenta implantation or penetration. Masselli[7] believes that the sensitivity and specificity of ultrasonography was 91% and 100% respectively. The diagnostic accuracy rate in the data of 3 cases was up to 100%.

Once the ultrasound diagnoses pernicious placenta previa complicated with placenta percreta, selective termination of pregnancy should be performed. On the termination of pregnancy opportunity in our country, complete placenta previa is looked forward to 36 weeks of pregnancy at present, but for pernicious placenta previa complicated with placenta percreta, there is no uniform advice. We think that once it is diagnosed pernicious placenta previa complicated with placenta percreta, and the fetus is certified mature, it should be considered elective termination of pregnancy; if the fetus is certified immature, termination of pregnancy should also be done after the treatment of

promoting fetal lung maturation, so that we can avoid the placenta penetrating the uterine serosa and infiltrating bladder continually.

Cesarean section should be chosen to terminate pregnancy. It should be prepared enough before operation, such as blood preparation, multi-department cooperation, etc. In order to obtain the family's full recognition and understanding, the patients and their family members should be consulted repeatedly. Before anesthesia, it is essential to open 2 venous channels at least, and make the neck vein catheterization.

In recent years, in order to reduce the ratio of maternal mortality, obstetricians try to use various methods to control the hemorrhage in cesarean section, such as the B-lynch suture, bilateral uterine artery ligation, ligation of internal iliac artery, and so on. Recently there are some reports that with regards to the pernicious placenta previa highly suspected placenta accreta, they preset femoral artery catheter before operation, then act arterial embolization after delivery of the baby during operation, which win precious time for the effective treatment [8, 9]. But at the moment of fetal disengagement, massive hemorrhage in the short term can lead to circulatory decompensation and shock, regardless of the methods mentioned above in which needs time and high technology. In our opinion, during operation after the childbirth, the method of using tourniquet fast strapping lower uterine segment can block uterine blood supply immediately and is simply without using special apparatus to save lives and "grab" time, for reducing the intraoperative blood loss so as to rescue maternal life. It is worthy of clinical promotion.

Prevention is the key to reduce pernicious placenta previa complicated with placenta percreta. We should do prenatal health care well, pay more attention to the pregnancy with high risk factors. It should be selected early termination of pregnancy while diagnosed for CSP during early-term pregnancy.

Reference

- [1] Chattopadhyay SK, Kharif H, Sherbeeni MM. Placenta previa and accreta after previous cesarean section. *Eur J Obstet Gynecol Reprod Biol*, 1993, 52(3):151-156
- [2] Wu S, Kocherginsky M, Hibbard JU. Abnormal placentation: twenty-year analysis. *Am J Obstet Gynecol*, 2005;192:1458-1461.
- [3] Miller DA, Chollet JA, Goodwin TM. Clinical risk factors for placenta previa-placenta accreta. *Am J Obstet Gynecol*, 1997;177:210-214.
- [4] Li Sheng-li. *Prenatal Ultrasonographic Diagnosis of Fetal Abnormalities*, Beijing: People's Military Medical Press. 2004: 6,540.
- [5] Zheng Yun-ying, Wang Yan, Zhang Jian-guo, et al. Pernicious placenta previa complicated with

- placenta percreta: analysis of 3 cases and literature review [J]. Chinese Journal of Practical Medicine, 2011, 38(23):18-20.
- [6] Yan ying-liu, Yang xiu-xiong. Ultrasonography in Obstetrics, Beijing: People's Medical Publishing House. 2012.3:103.
- [7] Masselli G, Brunelli R, Casciani E, et al. Magnetic resonance imaging in the evaluation of placental adhesive disorders: correlation with color Doppler ultrasound [J].European Radiology, 2008, 18: 1292-1299.
- [8]Dai Jian-rong, Tao Jian-ying, Hou Shun-yu. Treatment of arterial embolization after delivery with presetting tube artery catheter in 4 cases of pernicious placenta previa complicated with placenta percreta [J]. Journal of Practical Obstetrics and Gynecology, 2011, 27(5):388-390.
- [9] Zhang Gong-lin, Jiang Yong-neng, Ma Run-mei, et al. The application of temporary balloon occlusion of the internal iliac artery in performing cesarean hysterectomy for patients with pernicious placenta previa: an initial experience in five cases [J]. Journal of Interventional Radiology, 2012, 21(12):991-994.