

# Clinical Experience of Patients with Full-Term Uterine Incarceration: Case Report

Junxiu Yao<sup>1,2</sup>, Xin Guo<sup>1,2</sup>, Xudong Dong<sup>2\*</sup>

<sup>1</sup>Medical School, Kunming University of Science and Technology; Department of Obstetrics, The First People's Hospital of Yunnan Province, Kunming, China

<sup>2</sup>Department of Obstetrics, The First People's Hospital of Yunnan Province; The Affiliated Hospital of Kunming University of Science and Technology, Kunming, China

Email: \*dxdmail@sohu.com

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## Abstract

Uterine incarceration is a rare disease of abnormal uterine morphology, the proportion during pregnancy was 1 in 3000 - 10,000. Previously reported patients with uterine incarceration have different symptoms. Rarely, asymptomatic cases persist into the third trimester of pregnancy. In fact, the patients with uterine incarceration can be asymptomatic and normally carry their fetuses to the term because it mainly changes the cervix, which does not affect fetal growth in utero directly. Additionally, cesarean section is both a treatment and a direct method to clarify the diagnosis again, and low-molecular-heparin anticoagulant therapy should be considered immediately after surgery. Here, we present two cases clarifying that patients with uterine incarceration can be pregnant without any discomfort during pregnancy and provide a successful treatment plan.

## Keywords

Cesarean Section, Uterine Incarceration, Pregnancy

## 1. Introduction

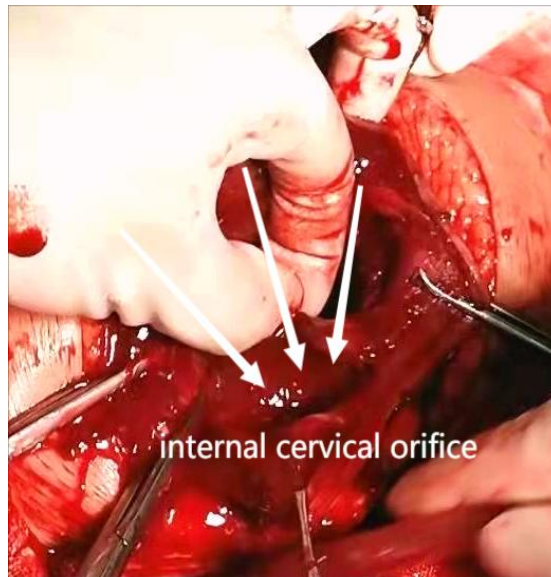
Uterine incarceration is caused by the uterus becoming trapped between the sacral promontory and the pubic symphysis during pregnancy [1]. The proportion of women with uterine incarceration during pregnancy was 1 in 3000 - 10,000 [2]. Approximately 15% of women have a retroverted uterus before pregnancy, and retroversion of the uterus occurs in 11% - 19% of women in very early pregnancy. In most cases, the uterus ascends into the abdominal cavity from the pelvis, spontaneously correcting the retroversion before 14 - 16 weeks of gesta-

tion. On rare occasions, the uterus remains in a retroverted position as it enlarges, becoming trapped in the pelvis between the sacral promontory and the symphysis pubis that results in uterine incarceration [3]. Uterine retroversion is closely related to uterine incarceration, but its cause is unclear. The reason may be attributed to pelvic inflammatory disease, endometriosis, previous pelvic surgery, pelvic tumors, uterine malformation, and a deep sacral concavity with an overhanging promontory [4]. The clinical symptoms include dysuria; urinary retention; constipation; sensations of pelvic fullness, discomfort, distention, and tenderness; and lower abdominal or back pain [4]. Rarely, asymptomatic cases persist into the third trimester of pregnancy. We present two cases clarifying that patients with uterine incarceration can be pregnant without any discomfort into the third trimester of pregnancy and provide a successful treatment plan.

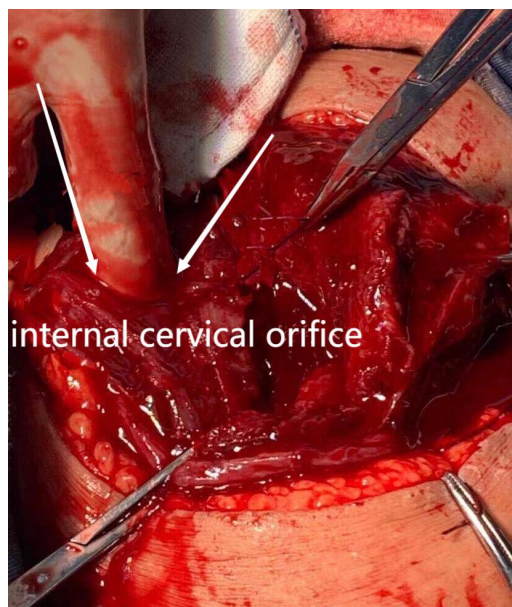
## 2. Case Report

### 2.1. Case 1

A 30-year-old woman, G1P0, underwent intrauterine procedures. The pregnancy was conceived by in vitro fertilization-embryo transplantation due to fallopian tube blockage. She was admitted on July 22, 2021, there was no discomfort throughout the entire pregnancy. Vital signs were stable on admission, and the height of the uterine fundus, 34 cm, was appropriate for gestational age. The fetal heart rate was 140 beats per minute. Retroversion of the uterus, a left ovarian cyst, and a mixed mass in the right attachment area were indicated by ultrasound at 7 weeks of gestation. The last ultrasound examination at 36 + 4 weeks of pregnancy, the patient had extremely posterior uterine flexion, the uterine fundus was located in the Douglas cul-de-sac, and the cervical canal and lower uterine segment were shifted to the head of the pregnant woman, and the fetus had a shoulder presentation. The patient was diagnosed with uterine incarceration. After making some preoperative preparations for the patient, we performed the cesarean section at 37 + 3 weeks of pregnancy. The operator made a 13 cm-long vertical incision at 3 cm above the pubic symphysis. The bladder was drawn up to the usual location of the uterine fundus. The degree of uterine enlargement was appropriate for the stage of pregnancy, but the formation of the lower uterine segment was poor. The bilateral attachments and the uterine fundus were completely adhered to the pelvic cavity, which could not be exposed. A 3 cm-long transverse incision was made at the position that extends 4 - 5 cm in the direction of cartilago ensiformis based on the conventional uterine incision. The cervix was 0.5 - 1.0 cm below the incision, but the incision did not damage the cervix (Figure 1). The cervix was observed to move upward (Figure 2). A 3200 g baby boy was delivered with footling presentation. Apgar scores at 1, 5 and 10 min after birth were 9, 10, and 10, respectively. The surgery bleeding was approximately 350 ml. There was no abnormality in the postoperative review and the patient was discharged on the fourth postoperative day. The patient recovered well from outpatient follow-up 42 days after delivery.



**Figure 1.** White arrows point to the pulled cervix, which was approximately 0.5 - 1.0 cm from the uterine incision.



**Figure 2.** The cervix was observed to move upward.

## 2.2. Case 2

A 41-year-old woman, G4P1, had previously had two induced abortions. In 2014, the patient underwent one cesarean section in another hospital due to placenta previa. This pregnancy was naturally conceived. She was admitted on August 06, 2021. There was no discomfort during middle and late pregnancy and vital signs were stable at admission. The height of the uterine fundus, 34 cm, was appropriate for gestational age. The fetal heart rate was 152 beats per minute. No vaginal examination was performed because the previous ultrasound indicated complete placenta previa. Retroversion of the uterus and a left ovarian cyst were

indicated by ultrasound at both 7 weeks and 9 weeks of gestation. Ultrasound on the day before admission to the hospital at 37 + 6 weeks of pregnancy indicated complete placenta previa. The preoperative examination revealed an elevated D-dimer level of 8.71 µg/mL. An elective cesarean section was performed at 38 + 3 weeks of pregnancy. The operator made a 13 cm-long transverse incision 3 cm above the pubic symphysis. The original scar was removed, and the abdomen was successively opened to reveal the abdominal cavity. The uterus was enlarged appropriately; the lower uterine segment was significantly stretched; the left attachment area was completely adhered to the pelvic cavity, which could not be exposed; the corpora uteri were extremely retroflexed and located in the Douglas cul-de sac; and the posterior wall of the uterus was partially adhered to the intestinal canal. A 3 cm-long transverse incision was made 3 cm above the original uterine scar. The placenta was attached to the posterior wall of the uterus, and the revised diagnosis was uterine incarceration rather than placental previa. Similarly, A 3200 g baby boy was delivered with footling presentation. Apgar scores at 1, 5 and 10 min after birth were 9, 10, and 10, respectively. The surgery bleeding was approximately 700 ml. The postoperative D-dimer level was 16.66 µg/mL, and we initiated low-molecular-weight heparin anticoagulant therapy the day after surgery. The patient reached the discharge index on the seventh postoperative day and was discharged. Due to the heparin anticoagulant treatment, the patient returned to the hospital for review 7 days after discharge, with no abnormal blood results and a good recovery.

### 3. Discussion

Although the causes of uterine incarceration in the two patients were unclear, the patients were similar in that both of them had a posterior uterine position and ovarian cysts in early pregnancy and a history of previous pelvic surgery. These may be the causes of uterine incarceration.

Some scholars have reported that uterine height is significantly lower than that appropriate for gestational age [5], and the normal cervical structure was not exposed upon vaginal examination or the cervix was found to move extremely upward and forward which located behind or even above the symphysis pubis [6]. Due to the misdiagnosis of placental previa without vaginal examination, it suggests that we should improve the MRI (Magnetic Resonance Imaging) in the future without clear ultrasound or difficult diagnosis. At present, scholars generally suggest that MRI can clearly see the location of the placenta or even clarify the diagnosis of the uterine incarceration [2] [7]. However, the uterine height and abdominal circumference of these two patients were appropriate for pregnancy. It's proved that uterine incarceration mainly changes the cervix, which does not affect fetal growth in utero directly.

Maneesh, N. *et al.* [8] proposed that prophylactic low-molecular-weight heparin administered during the antepartum period should be considered for possible venous stasis due to the anatomy of the uterus. Similarly, In Case 2, because

of the increase in D-dimer levels before delivery and postpartum, combined with the high risk of thrombosis due to older age, cesarean section and the abnormal anatomy of uterus, we started low-molecular-heparin anticoagulant therapy as soon as possible to treat and slow the progression of the condition. Therefore, in patients with uterine incarceration, especially those at risk of thrombosis, we propose that low-molecular-heparin anticoagulant therapy should be considered immediately after surgery.

Additionally, there are reports that uterine incarceration causes a series of severe maternal and infant complications, including premature rupture of membranes, abortion, preterm birth, fetal growth restriction, bladder rupture, urinary retention, thrombosis, etc. [8] [9] [10]. Masafumi, Y. *et al.* [11] reported four cases of fetal death as a result of uterine incarceration in middle and late pregnancy. Fortunately, neither of these patients had special symptoms and successfully carried their fetuses to term, and the babies were normally and effortlessly delivered by cesarean section. Previous studies reported that the treatment of uterine incarceration in early and middle pregnancy includes knee-chest positioning, manual reduction, endoscopic reduction, etc. [3] [4] [12]. However, the recommended delivery mode of patients with uterine incarceration in the third trimester is not standardized, although most scholars suggest that cesarean section should be the first choice, as infant deaths were reported in three uterine incarceration patients with vaginal delivery. Based on our two successful cases, we suggest that cesarean section is preferred for patients with uterine incarceration, and a high uterine incision to avoid loss of bladder and cervix, which are both a treatment and a direct method to clarify the diagnosis again.

#### **4. Conclusion**

The patients with uterine incarceration can be asymptomatic and normally carry their fetuses to the term because it mainly changes the cervix, which does not affect fetal growth in utero directly. Additionally, cesarean section is both a treatment and a direct method to clarify the diagnosis again, and low-molecular-heparin anticoagulant therapy should be considered immediately after surgery.

#### **Statement**

In this manuscript, all the subjects have got their written informed consent to publish their case, including the images.

#### **Acknowledgements**

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#### **Conflicts of Interest**

The authors declare no conflicts of interest regarding the publication of this paper.

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